



west virginia department of environmental protection

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

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

Thursday, March 15, 2018
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
1320 SOUTH UNIVERSITY DRIVE, SUITE 500
FORT WORTH, TX 76107

Re: Permit Modification Approval for TEN HIGH 1N-3HM
47-051-01944-00-00

Modified Lateral by Extension

TUG HILL OPERATING, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before 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-3HM
Farm Name: LAWRENCE & SHIRLEY CONKLE ESTS
U.S. WELL NUMBER: 47-051-01944-00-00
Horizontal 6A New Drill
Date Modification Issued: March 15, 2018

Promoting a healthy environment.

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-3HM 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' RECEIVED
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5) Well Type (a) Gas X Oil _____ Underground Storage _____ FEB 23 2018
Other _____

(b) If Gas Shallow x Deep _____
Horizontal X _____
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Dr 2/21/18

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6713' - 6765', thickness of 52' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,865'

9) Formation at Total Vertical Depth: Onondoga

10) Proposed Total Measured Depth: 15,465'

11) Proposed Horizontal Leg Length: 8,328'

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.

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#	1,175'	1,175'	1166ft^3(CTS)
Coal	13 3/8"	NEW	H40	48#	1,175'	1,175'	1166ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,983'	2,983'	976ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	15,465'	15,465'	3946ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,612'	
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						

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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 20,820,000 lb proppant and 321,892 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

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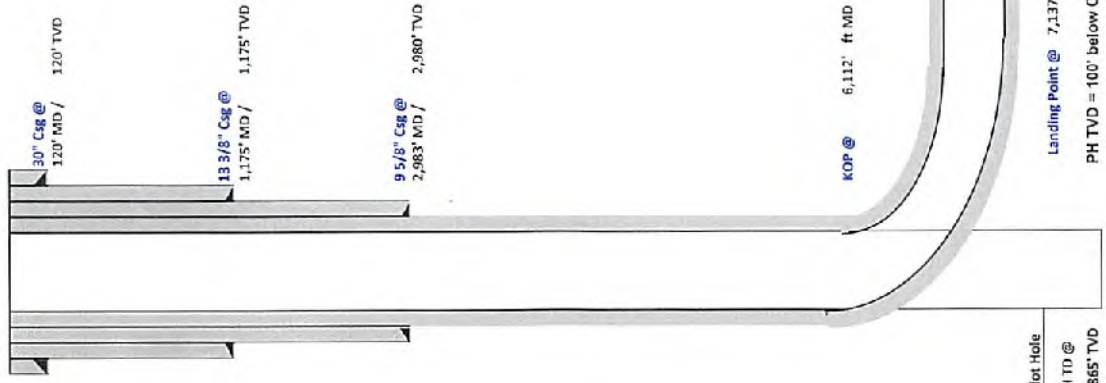
25) Proposed borehole conditioning procedures:

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

*Note: Attach additional sheets as needed.



WELL NAME: Ten High 1N-3HM
STATE: West Virginia **county:** Marshall
DISTRICT: Meade
DP Elev: 1,310' **dt Elev:** 1,310'
TD: 15,465'
TH Latitude: 39.80674496
TH Longitude: -80.68098361
OH Latitude: 39.827487
OH Longitude: -80.693315



Formation	Depth TVD
Deepest Fresh Water	1026
Sawtooth coal	935
PHBurch coal	1020
Big Bone	2049
Weir	2475
Berea	2673
Gordon	2935
Rhinescreek	6057
Gasoso/Burkett	6575
Tully	6606
Hambro	6639
Marcellus	6713
Landing Depth	6739
Onondaga	6765
Pilot Hole Depth	6865

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	1,175'	1,175'	48	H40	Surface
Intermediate 1	12 1/4	9 5/8	2,983'	2,980'	36	J55	Surface
Production	8 7/8 x 8.3/4	5 1/2	15,465'	6,593'	20	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Sacks	Class	Density	Fluid Type	Centralizer Notes	
338	A	15.6	Air	None	
1,184	A	15.6	Air	3 Centralizers at equal distance	
954	A	15	Air	1 Centralizer every other ft	
3,477	A	14.5	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other ft to sfc	

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Lateral TD @ 15,465' ft MD
 6,593' ft TVD

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Landing Point @ 7,137' MD / 6,739' TVD
 PH TVD = 100' below Onondaga Top

Pilot Hole
 PH TD @
 6,865' TVD

51-01944400



Tug Hill Operating, LLC Casing and Cement Program

Handwritten signature
2/21/18

Ten High 1N-3HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	H40	17 1/2"	1,175'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,983'	CTS
Production	5 1/2"	P110	8 7/8 x 8 3/4"	15,465'	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: Ten High 1N-03HM (K)
Site: Ten High
Project: Marshall County, West Virginia
Design: rev4



SECTION DETAILS

Sec	MD C 00	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	V/Sect	Annotation
2	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	2000.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1'1100' build
4	2502.55	5.00	180.00	1958.37	-21.80	0.00	1.00	180.00	-15.21	Begin 5.00° tangent
5	3002.55	5.00	180.00	2500.00	-55.60	0.00	1.00	180.00	-67.79	Begin 1'1100' drop
6	4503.18	0.00	180.00	2599.37	-87.41	0.00	1.00	180.00	-77.00	Begin vertical hold section
7	5018.45	15.46	180.00	4500.00	-87.41	0.00	1.00	180.00	-77.00	Begin 3'1100' build
8	6112.33	15.46	168.13	5009.04	-103.51	55.65	3.00	108.13	-127.01	Begin 15.46° tangent
9	7137.41	91.00	329.60	6739.00	-199.64	342.73	0.00	0.00	-338.08	Begin 10'1100' build/turn
10	15465.04	91.00	329.60	6593.00	7538.77	-4060.54	0.00	0.00	-137.29	Begin 91.00° lateral section

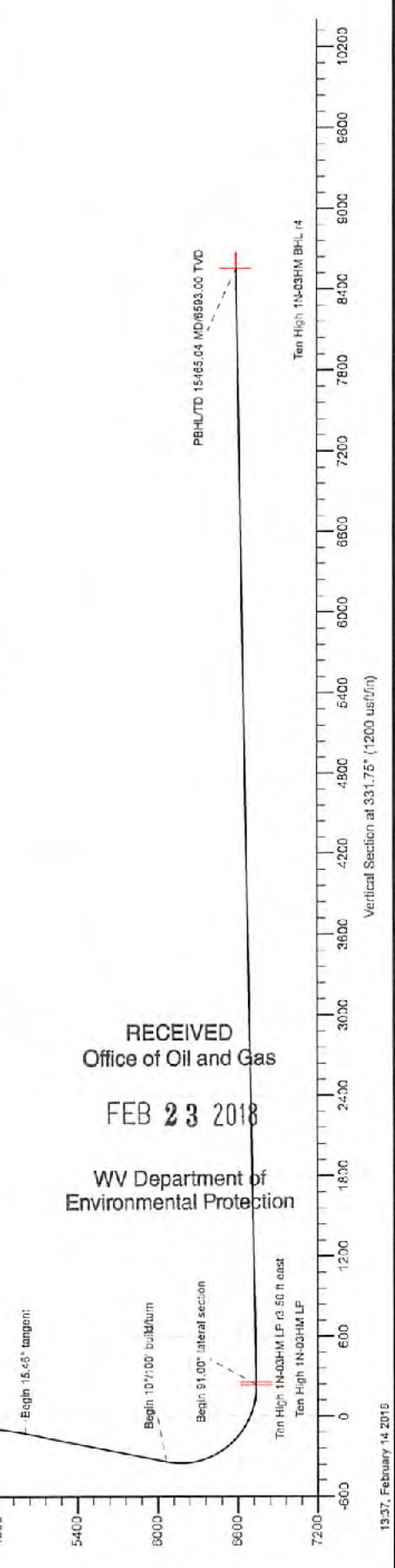
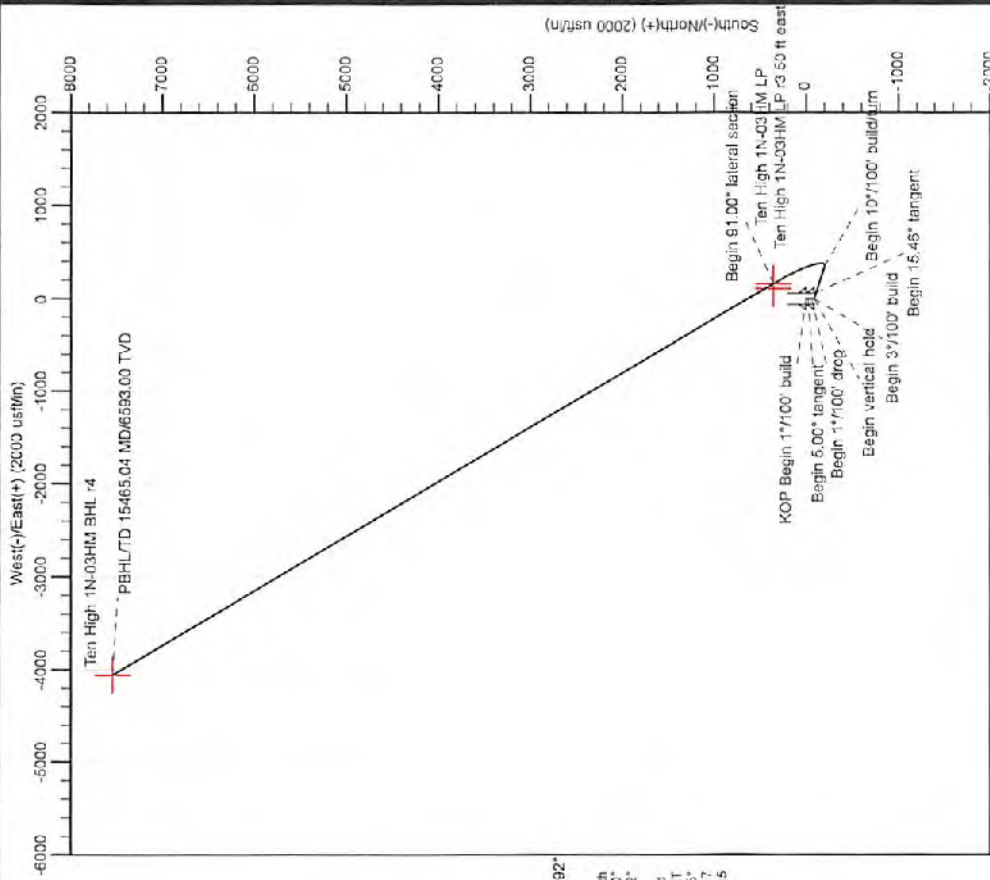
Gaodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1960
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
 Depth Reference: GL=151D @ 1310.00ustt
 Northing: 14456522.38
 Easting: 1730006.94
 Longitude: 39.80574486
 Latitude: -80.68069361

Total Corr. (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.92°



Azimuths to Grid North
 True North: -0.20°
 Magnetic North: -8.92°
 Magnetic Field
 Strength: 52156.55nT
 Dip Angle: 85.85°
 Date: 9/1/2017
 Model: IGRF2015



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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (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

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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-3HM

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
4705101964	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
4705101960	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101961	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101965	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101966	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705170078	Wheeling Natural Gas Co	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be an old shallow well	Well records are incomplete. A field survey was conducted to locate this well and no evidence of this well was found.
4705100838	Hope Natural Gas Company	Unknown	Unknown	Unknown	Unknown but unlikely, probably an old shallow well or coal test bore, now plugged	Well records incomplete. Well plugged 12/4/1998. A field survey was conducted to locate this well and the well location was found but no evidence of the well head was found at the location shown on the well plat.

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WV Geological & Economic Survey: **Well: County = 51 Permit = 70078**

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_FS	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4735170078	Marshall	70078	Meads	Glen Easton	Cameron	39.83065	-80.860731	826485	14407697.2

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VO	PROP
4735170078	-/-	-/-	Original Loc. Completed	Gerby Meigs	1	M 43				Wheeling Natural Gas Co., The		

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTD	Q
4735170078	-/-	-/-	1385	Baismeter			unclassified	unclassified	Dry	unknown	unknown	3522		3522	

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 Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

WV Geological & Economic Survey: **Well: County = 51 Permit = 00838**

Well Reassignment Information: [Reassigned From](#)

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70044	51	838

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_FS	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4735100838	Marshall	838	Meads	Glen Easton	Cameron	39.813527	-80.636027	825873.4	4407108

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VO	PROP
4735100838	12/4/1998	Plugging	Completed	Ronald & Theresa Moore	90-2	(M 35)				McEroy Gas Company		
4735100838	-/-	-/-	Original Loc. Completed	A.M. Anguish						Hope Natural Gas Company		

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTD	Q
4735100838	12/4/1998	11/16/1998	1173	Ground Level			unclassified	unclassified	not available	unknown	unknown				

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Stratigraphy data for this well

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4735100838	12/4/1998	0

There is no Sample data for this well

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Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-03HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-03HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

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:	-80.88101011
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Ten High 1N-03HM (K)					
Well Position	+N/-S	0.00 usft	Northing:	14,456,522.36 usft	Latitude:	39.80674496
	+E/-W	0.00 usft	Easting:	1,730,008.94 usft	Longitude:	-80.88098361
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	1,310.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/1/2017	-8.71	66.95	52,156.45448823

Design	rev4			
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	331.75

Plan Survey Tool Program	Date	2/14/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	15,465.04 rev4 (Original Hole)	MWD MWD - Standard	

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Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-03HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-03HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

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		
2,000.00	5.00	180.00	1,999.37	-21.80	0.00	1.00	1.00	0.00	180.00		
2,502.55	5.00	180.00	2,500.00	-65.60	0.00	0.00	0.00	0.00	0.00		
3,002.55	0.00	180.00	2,999.37	-87.41	0.00	1.00	-1.00	0.00	180.00		
4,503.18	0.00	180.00	4,500.00	-87.41	0.00	0.00	0.00	0.00	180.00		
5,018.45	15.46	108.13	5,009.04	-108.91	65.66	3.00	3.00	0.00	108.13		
6,112.33	15.46	108.13	6,063.35	-199.64	342.73	0.00	0.00	0.00	0.00		
7,137.41	91.00	329.60	6,739.00	356.89	162.38	10.00	7.37	-13.51	-137.29	Ten High 1N-03HM LI	
15,465.04	91.00	329.60	6,593.00	7,538.77	-4,050.54	0.00	0.00	0.00	0.00	Ten High 1N-03HM BI	

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Planning Report - Geographic



Database: DB_Jul2218dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Ten High
 Well: Ten High 1N-03HM (K)
 Wellbore: Original Hole
 Design: rev4

Local Co-ordinate Reference: Well Ten High 1N-03HM (K)
 TVD Reference: GL=1310 @ 1310.00usft
 MD Reference: GL=1310 @ 1310.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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 Environmental Protection

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
100.00	0.00	0.00	100.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
200.00	0.00	0.00	200.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
300.00	0.00	0.00	300.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
400.00	0.00	0.00	400.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
500.00	0.00	0.00	500.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
600.00	0.00	0.00	600.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
700.00	0.00	0.00	700.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
800.00	0.00	0.00	800.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
900.00	0.00	0.00	900.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,456,522.36	1,730,008.94	39.80674496	-80.68098361
KOP Begin 1°/100' build									
1,600.00	1.00	180.00	1,599.99	-0.87	0.00	14,456,521.49	1,730,008.94	39.80674257	-80.68098362
1,700.00	2.00	180.00	1,699.98	-3.49	0.00	14,456,518.87	1,730,008.94	39.80673536	-80.68098365
1,800.00	3.00	180.00	1,799.86	-7.85	0.00	14,456,514.51	1,730,008.94	39.80672340	-80.68098371
1,900.00	4.00	180.00	1,899.68	-13.96	0.00	14,456,508.41	1,730,008.94	39.80670663	-80.68098379
2,000.00	5.00	180.00	1,999.37	-21.80	0.00	14,456,500.56	1,730,008.94	39.80666509	-80.68098389
Begin 5.00° tangent									
2,100.00	5.00	180.00	2,098.99	-30.52	0.00	14,456,491.85	1,730,008.94	39.80666115	-80.68098400
2,200.00	5.00	180.00	2,198.60	-39.23	0.00	14,456,483.13	1,730,008.94	39.80663722	-80.68098411
2,300.00	5.00	180.00	2,298.22	-47.95	0.00	14,456,474.41	1,730,008.94	39.80661328	-80.68098422
2,400.00	5.00	180.00	2,397.84	-56.67	0.00	14,456,465.70	1,730,008.94	39.80658935	-80.68098433
2,500.00	5.00	180.00	2,497.46	-65.38	0.00	14,456,456.98	1,730,008.94	39.80656541	-80.68098444
2,502.55	5.00	180.00	2,500.00	-65.60	0.00	14,456,456.76	1,730,008.94	39.80656480	-80.68098444
Begin 1°/100' drop									
2,800.00	4.03	180.00	2,597.15	-73.27	0.00	14,456,449.09	1,730,008.94	39.80654374	-80.68098454
2,700.00	3.03	180.00	2,696.96	-79.42	0.00	14,456,442.95	1,730,008.94	39.80652686	-80.68098462
2,800.00	2.03	180.00	2,796.88	-83.83	0.00	14,456,438.54	1,730,008.94	39.80651476	-80.68098467
2,900.00	1.03	180.00	2,896.82	-86.49	0.00	14,456,435.88	1,730,008.94	39.80650745	-80.68098471
3,000.00	0.03	180.00	2,996.82	-87.40	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,002.55	0.00	180.00	2,999.37	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
Begin vertical hold section									
3,100.00	0.00	0.00	3,096.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,200.00	0.00	0.00	3,196.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,300.00	0.00	0.00	3,296.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,400.00	0.00	0.00	3,396.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,500.00	0.00	0.00	3,496.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,600.00	0.00	0.00	3,596.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,700.00	0.00	0.00	3,696.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,800.00	0.00	0.00	3,796.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
3,900.00	0.00	0.00	3,896.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
4,000.00	0.00	0.00	3,996.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
4,100.00	0.00	0.00	4,096.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
4,200.00	0.00	0.00	4,196.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
4,300.00	0.00	0.00	4,296.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
4,400.00	0.00	0.00	4,396.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
4,500.00	0.00	0.00	4,496.82	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
4,503.18	0.00	0.00	4,500.00	-87.41	0.00	14,456,434.96	1,730,008.94	39.80650493	-80.68098472
Begin 3°/100' build									

51-01944 MOD



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-03HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-03HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

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Planned Survey									WV Department of Environmental Protection	
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,600.00	2.90	108.13	4,596.76	-86.17	2.33	14,456,434.20	1,730,011.27	39.80650281	-80.63097643	
4,700.00	5.90	108.13	4,696.47	-90.56	8.83	14,456,431.81	1,730,018.57	39.80649617	-80.63095047	
4,800.00	8.90	108.13	4,795.63	-94.57	21.88	14,456,427.90	1,730,030.82	39.80648504	-80.63090692	
4,900.00	11.90	108.13	4,893.97	-100.19	39.04	14,456,422.18	1,730,047.98	39.80646944	-80.63084589	
5,000.00	14.90	108.13	4,991.23	-107.40	61.07	14,456,414.96	1,730,070.01	39.80644941	-80.63076754	
5,018.35	15.46	108.13	5,008.95	-108.90	65.63	14,456,413.47	1,730,074.57	39.80644526	-80.63075130	
Begin 15.46° tangent										
5,018.45	15.46	108.13	5,009.04	-108.91	65.66	14,456,413.46	1,730,074.60	39.80644524	-80.63075121	
5,100.00	15.46	108.13	5,087.64	-115.67	86.31	14,456,406.69	1,730,095.25	39.80642646	-80.63067774	
5,200.00	15.46	108.13	5,184.02	-123.97	111.64	14,456,399.40	1,730,120.58	39.80640343	-80.63058766	
5,300.00	15.46	108.13	5,280.41	-132.26	136.97	14,456,390.10	1,730,145.91	39.80638040	-80.63049757	
5,400.00	15.46	108.13	5,376.79	-140.56	162.30	14,456,381.81	1,730,171.24	39.80635737	-80.63040749	
5,500.00	15.46	108.13	5,473.17	-148.85	187.63	14,456,373.51	1,730,196.57	39.80633434	-80.63031740	
5,600.00	15.46	108.13	5,569.55	-157.15	212.96	14,456,365.22	1,730,221.90	39.80631132	-80.63022732	
5,700.00	15.46	108.13	5,665.94	-165.44	238.29	14,456,356.92	1,730,247.23	39.80628829	-80.63013723	
5,800.00	15.46	108.13	5,762.32	-173.73	263.62	14,456,348.63	1,730,272.56	39.80626526	-80.63004714	
5,900.00	15.46	108.13	5,858.70	-182.03	288.95	14,456,340.33	1,730,297.89	39.80624223	-80.62995706	
6,000.00	15.46	108.13	5,955.08	-190.32	314.28	14,456,332.04	1,730,323.22	39.80621920	-80.62986697	
6,100.00	15.46	108.13	6,051.47	-198.62	339.61	14,456,323.74	1,730,348.55	39.80619617	-80.62977689	
6,112.33	15.46	108.13	6,063.35	-199.64	342.73	14,456,322.72	1,730,351.67	39.80619333	-80.62976578	
6,112.35	15.46	108.13	6,063.37	-199.64	342.74	14,456,322.72	1,730,351.68	39.80619333	-80.62976576	
Begin 10°/100' build/turn										
6,200.00	10.76	74.51	6,148.83	-201.10	361.76	14,456,321.27	1,730,370.70	39.80618916	-80.62969805	
6,300.00	12.68	24.54	6,246.96	-186.58	375.35	14,456,333.78	1,730,384.29	39.80622338	-80.62964950	
6,400.00	20.09	359.95	6,342.96	-161.35	379.91	14,456,361.01	1,730,388.85	39.80629813	-80.62963293	
6,500.00	29.06	349.11	6,433.85	-120.22	375.29	14,456,402.14	1,730,364.23	39.80641112	-80.62964884	
6,600.00	38.50	343.15	6,516.90	-66.45	361.64	14,456,455.92	1,730,370.58	39.80655893	-80.62969675	
6,700.00	48.15	339.27	6,589.58	-1.66	339.38	14,456,520.70	1,730,348.32	39.80673707	-80.62977521	
6,800.00	57.88	336.41	6,649.67	72.17	309.17	14,456,594.53	1,730,318.11	39.80694012	-80.62988183	
6,900.00	67.67	334.12	6,695.36	152.80	271.94	14,456,675.16	1,730,280.88	39.80716191	-80.63001337	
7,000.00	77.49	332.13	6,725.26	237.77	228.82	14,456,760.14	1,730,237.76	39.80739570	-80.63016583	
7,100.00	87.32	330.28	6,738.45	324.52	181.11	14,456,846.88	1,730,190.05	39.80763440	-80.63033459	
7,137.41	91.00	329.60	6,739.00	356.89	162.38	14,456,879.25	1,730,171.32	39.80772347	-80.63040083	
Begin 91.00° lateral section										
7,200.00	91.00	329.60	6,737.90	410.87	130.72	14,456,933.23	1,730,139.66	39.80787202	-80.63051294	
7,300.00	91.00	329.60	6,736.15	497.11	60.13	14,457,019.47	1,730,089.07	39.80810936	-80.63069188	
7,400.00	91.00	329.60	6,734.40	583.35	29.54	14,457,105.72	1,730,038.48	39.80834670	-80.63087103	
7,500.00	91.00	329.60	6,732.64	669.59	-21.05	14,457,191.96	1,729,987.89	39.80858403	-80.63105007	
7,600.00	91.00	329.60	6,730.89	755.83	-71.64	14,457,278.20	1,729,937.30	39.80882137	-80.63122912	
7,700.00	91.00	329.60	6,729.14	842.08	-122.23	14,457,364.44	1,729,886.71	39.80905870	-80.63140816	
7,800.00	91.00	329.60	6,727.38	928.32	-172.82	14,457,450.68	1,729,836.12	39.80929604	-80.63158721	
7,900.00	91.00	329.60	6,725.63	1,014.56	-223.41	14,457,536.92	1,729,785.53	39.80953337	-80.63176626	
8,000.00	91.00	329.60	6,723.88	1,100.80	-274.00	14,457,623.16	1,729,734.94	39.80977070	-80.63194531	
8,100.00	91.00	329.60	6,722.12	1,187.04	-324.59	14,457,709.41	1,729,684.35	39.81000804	-80.63212437	
8,200.00	91.00	329.60	6,720.37	1,273.28	-375.18	14,457,795.65	1,729,633.76	39.81024537	-80.63230342	
8,300.00	91.00	329.60	6,718.62	1,359.53	-425.77	14,457,881.89	1,729,583.17	39.81048271	-80.63248247	
8,400.00	91.00	329.60	6,716.86	1,445.77	-476.36	14,457,968.13	1,729,532.58	39.81072004	-80.63266153	
8,500.00	91.00	329.60	6,715.11	1,532.01	-526.95	14,458,054.37	1,729,481.99	39.81095737	-80.63284059	
8,600.00	91.00	329.60	6,713.36	1,618.25	-577.54	14,458,140.61	1,729,431.40	39.81119470	-80.63301964	
8,700.00	91.00	329.60	6,711.60	1,704.49	-628.13	14,458,226.86	1,729,380.81	39.81143204	-80.63319870	
8,800.00	91.00	329.60	6,709.85	1,790.73	-678.72	14,458,313.10	1,729,330.22	39.81166937	-80.63337776	
8,900.00	91.00	329.60	6,708.10	1,876.97	-729.31	14,458,399.34	1,729,279.63	39.81190670	-80.63355683	
9,000.00	91.00	329.60	6,706.35	1,963.22	-779.90	14,458,485.58	1,729,229.04	39.81214403	-80.63373589	
9,100.00	91.00	329.60	6,704.59	2,049.46	-830.49	14,458,571.82	1,729,178.45	39.81238136	-80.63391495	

SI-01944 MOD



Planning Report - Geographic



Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Ten High
 Well: Ten High 1N-03HM (K)
 Wellbore: Original Hole
 Design: rev4

Local Co-ordinate Reference: Well Ten High 1N-03HM (K)
 TVD Reference: GL=1310 @ 1310.00usft
 MD Reference: GL=1310 @ 1310.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey										WV Department of Environmental Protection	
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude		
9,200.00	91.00	329.60	6,702.84	2,135.70	-881.08	14,458,658.06	1,729,127.86	39.81261869	-80.68409402		
9,300.00	91.00	329.60	6,701.09	2,221.94	-931.67	14,458,744.31	1,729,077.27	39.81285602	-80.68427309		
9,400.00	91.00	329.60	6,699.33	2,308.18	-982.26	14,458,830.55	1,729,026.68	39.81309335	-80.68445215		
9,500.00	91.00	329.60	6,697.58	2,394.42	-1,032.85	14,458,916.79	1,728,976.10	39.81333068	-80.68463122		
9,600.00	91.00	329.60	6,695.83	2,480.67	-1,083.43	14,459,003.03	1,728,925.51	39.81356801	-80.68481029		
9,700.00	91.00	329.60	6,694.07	2,566.91	-1,134.02	14,459,089.27	1,728,874.92	39.81380534	-80.68498937		
9,800.00	91.00	329.60	6,692.32	2,653.15	-1,184.61	14,459,175.51	1,728,824.33	39.81404267	-80.68516844		
9,900.00	91.00	329.60	6,690.57	2,739.39	-1,235.20	14,459,261.75	1,728,773.74	39.81428000	-80.68534751		
10,000.00	91.00	329.60	6,688.81	2,825.63	-1,285.79	14,459,348.00	1,728,723.15	39.81451733	-80.68552659		
10,100.00	91.00	329.60	6,687.06	2,911.87	-1,336.36	14,459,434.24	1,728,672.56	39.81475466	-80.68570566		
10,200.00	91.00	329.60	6,685.31	2,998.12	-1,386.97	14,459,520.48	1,728,621.97	39.81499198	-80.68588474		
10,300.00	91.00	329.60	6,683.55	3,084.36	-1,437.56	14,459,606.72	1,728,571.38	39.81522931	-80.68606382		
10,400.00	91.00	329.60	6,681.80	3,170.60	-1,488.15	14,459,692.96	1,728,520.79	39.81546664	-80.68624290		
10,500.00	91.00	329.60	6,680.05	3,256.84	-1,538.74	14,459,779.20	1,728,470.20	39.81570397	-80.68642198		
10,600.00	91.00	329.60	6,678.29	3,343.08	-1,589.33	14,459,865.45	1,728,419.61	39.81594129	-80.68660107		
10,700.00	91.00	329.60	6,676.54	3,429.32	-1,639.92	14,459,951.69	1,728,369.02	39.81617862	-80.68678015		
10,800.00	91.00	329.60	6,674.79	3,515.56	-1,690.51	14,460,037.93	1,728,318.43	39.81641595	-80.68695923		
10,900.00	91.00	329.60	6,673.03	3,601.81	-1,741.10	14,460,124.17	1,728,267.84	39.81665327	-80.68713832		
11,000.00	91.00	329.60	6,671.28	3,688.05	-1,791.69	14,460,210.41	1,728,217.25	39.81689060	-80.68731741		
11,100.00	91.00	329.60	6,669.53	3,774.29	-1,842.28	14,460,296.65	1,728,166.66	39.81712792	-80.68749650		
11,200.00	91.00	329.60	6,667.77	3,860.53	-1,892.87	14,460,382.90	1,728,116.07	39.81736525	-80.68767559		
11,300.00	91.00	329.60	6,666.02	3,946.77	-1,943.46	14,460,469.14	1,728,065.48	39.81760257	-80.68785468		
11,400.00	91.00	329.60	6,664.27	4,033.01	-1,994.05	14,460,555.38	1,728,014.89	39.81783990	-80.68803377		
11,500.00	91.00	329.60	6,662.52	4,119.26	-2,044.64	14,460,641.62	1,727,964.30	39.81807722	-80.68821287		
11,600.00	91.00	329.60	6,660.76	4,205.50	-2,095.23	14,460,727.86	1,727,913.71	39.81831455	-80.68839196		
11,700.00	91.00	329.60	6,659.01	4,291.74	-2,145.82	14,460,814.10	1,727,863.12	39.81855187	-80.68857106		
11,800.00	91.00	329.60	6,657.26	4,377.98	-2,196.41	14,460,900.35	1,727,812.53	39.81878919	-80.68875015		
11,900.00	91.00	329.60	6,655.50	4,464.22	-2,247.00	14,460,986.59	1,727,761.94	39.81902652	-80.68892925		
12,000.00	91.00	329.60	6,653.75	4,550.46	-2,297.59	14,461,072.83	1,727,711.35	39.81926384	-80.68910835		
12,100.00	91.00	329.60	6,652.00	4,636.71	-2,348.18	14,461,159.07	1,727,660.76	39.81950116	-80.68928745		
12,200.00	91.00	329.60	6,650.24	4,722.95	-2,398.77	14,461,245.31	1,727,610.17	39.81973848	-80.68946656		
12,300.00	91.00	329.60	6,648.49	4,809.19	-2,449.36	14,461,331.55	1,727,559.58	39.81997581	-80.68964566		
12,400.00	91.00	329.60	6,646.74	4,895.43	-2,499.95	14,461,417.79	1,727,508.99	39.82021313	-80.68982477		
12,500.00	91.00	329.60	6,644.98	4,981.67	-2,550.54	14,461,504.04	1,727,458.40	39.82045045	-80.69000387		
12,600.00	91.00	329.60	6,643.23	5,067.91	-2,601.13	14,461,590.28	1,727,407.82	39.82068777	-80.69018298		
12,700.00	91.00	329.60	6,641.48	5,154.15	-2,651.71	14,461,676.52	1,727,357.23	39.82092509	-80.69036209		
12,800.00	91.00	329.60	6,639.72	5,240.40	-2,702.30	14,461,762.76	1,727,306.64	39.82116241	-80.69054120		
12,900.00	91.00	329.60	6,637.97	5,326.64	-2,752.89	14,461,849.00	1,727,256.05	39.82139973	-80.69072031		
13,000.00	91.00	329.60	6,636.22	5,412.88	-2,803.48	14,461,935.24	1,727,205.46	39.82163705	-80.69089942		
13,100.00	91.00	329.60	6,634.48	5,499.12	-2,854.07	14,462,021.49	1,727,154.87	39.82187437	-80.69107853		
13,200.00	91.00	329.60	6,632.71	5,585.36	-2,904.66	14,462,107.73	1,727,104.28	39.82211169	-80.69125765		
13,300.00	91.00	329.60	6,630.96	5,671.60	-2,955.25	14,462,193.97	1,727,053.69	39.82234901	-80.69143676		
13,400.00	91.00	329.60	6,629.20	5,757.85	-3,005.84	14,462,280.21	1,727,003.10	39.82258633	-80.69161588		
13,500.00	91.00	329.60	6,627.45	5,844.09	-3,056.43	14,462,366.45	1,726,952.51	39.82282365	-80.69179500		
13,600.00	91.00	329.60	6,625.70	5,930.33	-3,107.02	14,462,452.69	1,726,901.92	39.82306097	-80.69197412		
13,700.00	91.00	329.60	6,623.94	6,016.57	-3,157.61	14,462,538.94	1,726,851.33	39.82329828	-80.69215324		
13,800.00	91.00	329.60	6,622.19	6,102.81	-3,208.20	14,462,625.18	1,726,800.74	39.82353560	-80.69233236		
13,900.00	91.00	329.60	6,620.44	6,189.05	-3,258.79	14,462,711.42	1,726,750.15	39.82377292	-80.69251149		
14,000.00	91.00	329.60	6,618.69	6,275.30	-3,309.38	14,462,797.66	1,726,699.56	39.82401024	-80.69269061		
14,100.00	91.00	329.60	6,616.93	6,361.54	-3,359.97	14,462,883.90	1,726,648.97	39.82424755	-80.69286974		
14,200.00	91.00	329.60	6,615.18	6,447.78	-3,410.56	14,462,970.14	1,726,598.38	39.82448487	-80.69304886		
14,300.00	91.00	329.60	6,613.43	6,534.02	-3,461.15	14,463,056.38	1,726,547.79	39.82472219	-80.69322799		
14,400.00	91.00	329.60	6,611.67	6,620.26	-3,511.74	14,463,142.63	1,726,497.20	39.82495950	-80.69340712		
14,500.00	91.00	329.60	6,609.92	6,706.50	-3,562.33	14,463,228.87	1,726,446.61	39.82519682	-80.69358625		
14,600.00	91.00	329.60	6,608.17	6,792.75	-3,612.92	14,463,315.11	1,726,396.02	39.82543413	-80.69376538		



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-03HM (K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1310 @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1310 @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-03HM (K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

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Planned Survey									WV Department of Environmental Protection	
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,700.00	91.00	329.60	6,606.41	6,878.99	-3,863.51	14,463,401.35	1,726,345.43	39.82567145	-80.69394452	
14,800.00	91.00	329.60	6,604.66	6,965.23	-3,714.10	14,463,487.59	1,726,294.84	39.82590876	-80.69412365	
14,900.00	91.00	329.60	6,602.91	7,051.47	-3,764.69	14,463,573.83	1,726,244.25	39.82614608	-80.69430279	
15,000.00	91.00	329.60	6,601.15	7,137.71	-3,815.28	14,463,660.08	1,726,193.66	39.82638339	-80.69448192	
15,100.00	91.00	329.60	6,599.40	7,223.95	-3,865.87	14,463,746.32	1,726,143.07	39.82662071	-80.69466106	
15,200.00	91.00	329.60	6,597.65	7,310.19	-3,916.46	14,463,832.56	1,726,092.48	39.82685802	-80.69484020	
15,300.00	91.00	329.60	6,595.89	7,396.44	-3,967.05	14,463,918.80	1,726,041.89	39.82709534	-80.69501934	
15,400.00	91.00	329.60	6,594.14	7,482.68	-4,017.64	14,464,005.04	1,725,991.30	39.82733265	-80.69519848	
15,465.04	91.00	329.60	6,593.00	7,538.77	-4,050.54	14,464,061.13	1,725,958.40	39.82748700	-80.69531500	

PBHL/TD 15465.04 MD/6593.00 TVD

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Ten High 1N-03HM BHL - hit/miss target - Shape - Point	0.00	0.01	6,593.00	7,538.77	-4,050.54	14,464,061.14	1,725,958.40	39.82746700	-80.69531500	
Ten High 1N-03HM LP r: - plan hits target center - Point	0.00	0.01	6,739.00	356.89	162.38	14,456,879.26	1,730,171.32	39.80772348	-80.68040088	
Ten High 1N-03HM LP - plan misses target center by 43.13usft at 7162.71usft MD (8738.56 TVD, 378.70 N, 149.58 E) - Point	0.00	0.01	6,739.00	356.89	112.38	14,456,879.26	1,730,121.32	39.80772397	-80.68057891	

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,175.00	1,175.00	13 3/8" Casing @ 1175 TVD	13-3/8	17-1/2
2,983.18	2,980.00	9 5/8" Casing @ 2980 TVD	9-5/8	12-1/4

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	KOP Begin 1"/100' build
2,000.00	1,999.37	-21.80	0.00	Begin 5.00" tangent
2,502.55	2,500.00	-65.60	0.00	Begin 1"/100' drop
3,002.55	2,999.37	-87.41	0.00	Begin vertical hold section
4,503.18	4,500.00	-87.41	0.00	Begin 3"/100' build
5,018.35	5,008.95	-108.90	65.83	Begin 15.48" tangent
6,112.35	6,063.37	-199.64	342.74	Begin 10"/100' build/turn
7,137.41	6,739.00	356.89	162.38	Begin 91.00" lateral section
15,465.04	6,593.00	7,538.77	-4,050.54	PBHL/TD 15465.04 MD/6593.00 TVD

Form WW-9

Operator's Well No. Ten High 1N-3HM

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: *Jim [Signature]*

Comments: _____

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JAN 2 2018
WV Department of
Environmental Protection

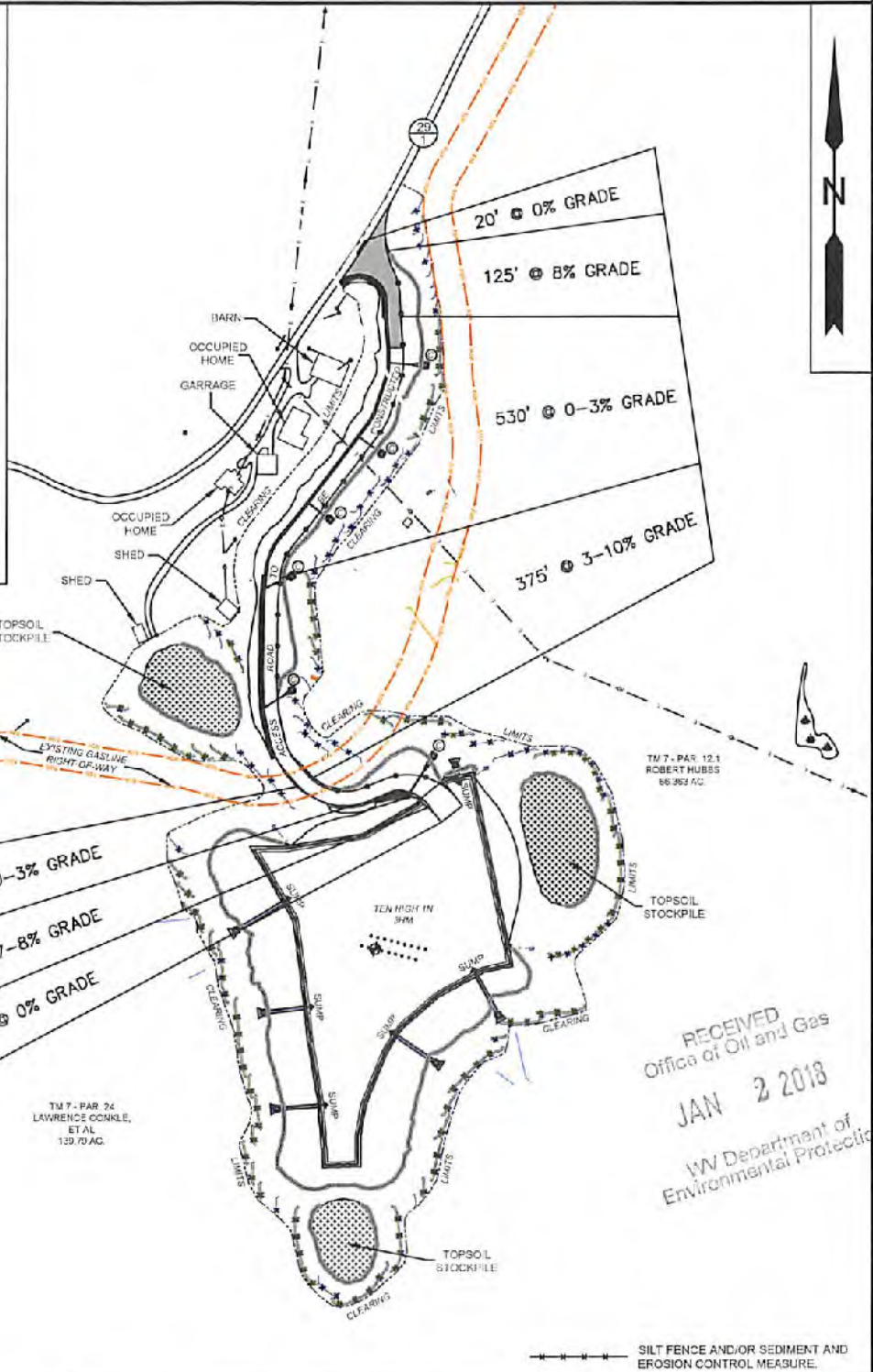
Title: Oil + Gas Inspector Date: 6/19/17

Field Reviewed? Yes No

PROPOSED TEN HIGH 1N - 3HM

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 LOGATION.
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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P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26031 • (304) 462-5634
www.slsurveys.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	12-28-17	1" = 300'

TUG HILL
OPERATING



Well Site Safety Plan

Tug Hill Operating, LLC

ju
12/29/17

Well Name: Ten High 1N-3HM

Pad Location: Ten High

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing-4,406,356.83

Easting -527,307.78

RECEIVED
Office of Oil and Gas

JAN 2 2018

WV Department of
Environmental Protection
December 2017

PROPOSED TEN HIGH 1N - 3HM



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

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 51°01'33" W AT 52,972' FROM TEN HIGH 1N - 3HM SURFACE LOCATION

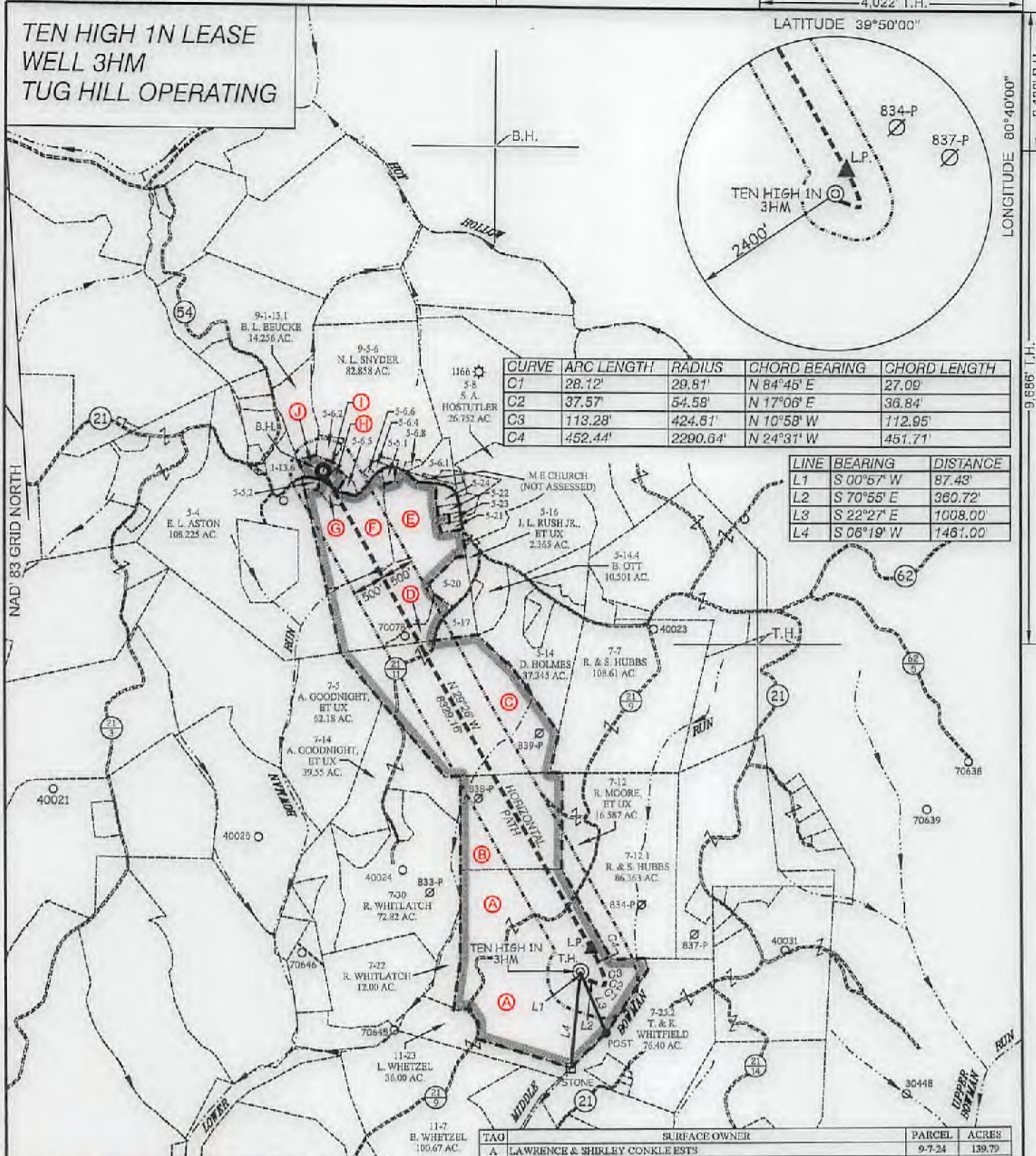
Handwritten signature and date: 6/19/17
WV Department of Environmental Protection

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TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 360 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8655	06/15/2017	1" = 2000'

TUG HILL
OPERATING

TEN HIGH 1N LEASE
WELL 3HM
TUG HILL OPERATING

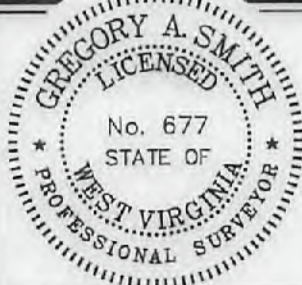


CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	28.12'	29.81'	N 84°45' E	27.09'
C2	37.57'	54.58'	N 17°06' E	36.84'
C3	118.28'	424.81'	N 10°58' W	112.95'
C4	452.44'	2290.64'	N 24°31' W	451.71'

LINE	BEARING	DISTANCE
L1	S 00°57' W	87.43'
L2	S 70°55' E	360.72'
L3	S 22°27' E	1008.00'
L4	S 06°19' W	1461.00'

TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.79
B	RONALD MOORE, ET UX	9-7-13	51.49
C	TERESA L. HORNER WITH JERRY G. & CAROLYN K. FLETCHER (LIFE ESTATE)	9-7-6	103.30
D	KELLY WILSON WITH DONLD E. LEACH (LIFE ESTATE)	9-5-18	5.807
E	MICHAEL JOSEPH SNYDER	9-5-5-4	64.00
F	MICHAEL JOSEPH SNYDER	9-5-5	35.02
G	MICHAEL JOSEPH SNYDER & NANCY L. SNYDER	9-5-5-3	1.870
H	DEUTSCHE BANK NATIONAL TRUST CO.	9-5-6-3	1.391
I	ALICE J. & DOUGLAS J. MARTIN	9-1-14-1	0.905
J	ALICIA JANE MARTIN	9-1-14	2.4602

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

P.S. 677
Gregory A. Smith

LEGEND

LEASE LINE	
SURFACE LINE	
WELL LATERAL	
OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
TAX MAP-PARCEL	00-00
SURFACE OWNER (SEE TABLE)	
LEASE # (SEE WW-6A1)	

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'83 S.P.C.(FT) N. 478,138.87 E. 1,638,728.80
 NAD'83 GEO. LAT-(N) 39.808745 LONG-(W) 80.680984
 NAD'83 UTM (M) N. 4,408,356.88 E. 827,307.78
LANDING POINT
 NAD'83 S.P.C.(FT) N. 478,492.6 E. 1,638,897.2
 NAD'83 GEO. LAT-(N) 39.807723 LONG-(W) 80.680401
 NAD'83 UTM (M) N. 4,408,465.6 E. 827,357.3
BOTTOM HOLE
 NAD'83 S.P.C.(FT) N. 485,746.3 E. 1,632,803.5
 NAD'83 GEO. LAT-(N) 39.827487 LONG-(W) 80.695315
 NAD'83 UTM (M) N. 4,408,654.7 E. 526,073.2

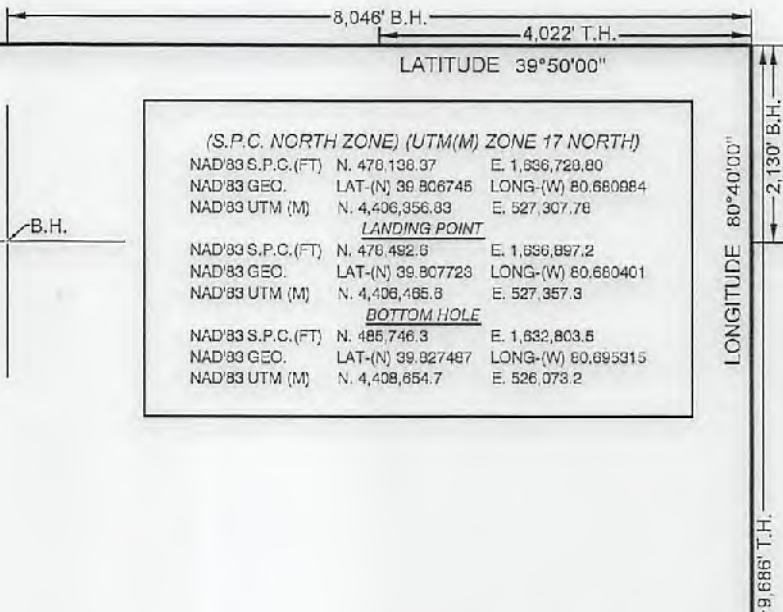
SCALE 1" = 2000' FILE NO. 8655P3HMR4.dwg
 DATE JUNE 15, 20 17
 REVISED 09/12/2017, 12/28/2017 & 02/19/18
 OPERATORS WELL NO. TEN HIGH 1N-3HM
 API WELL NO. 47 - OSI - 01444 MOD
 NO. STATE COUNTY PERMIT

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

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

COUNTY NAME PERMIT

TEN HIGH 1N LEASE
WELL 3HM
TUG HILL OPERATING



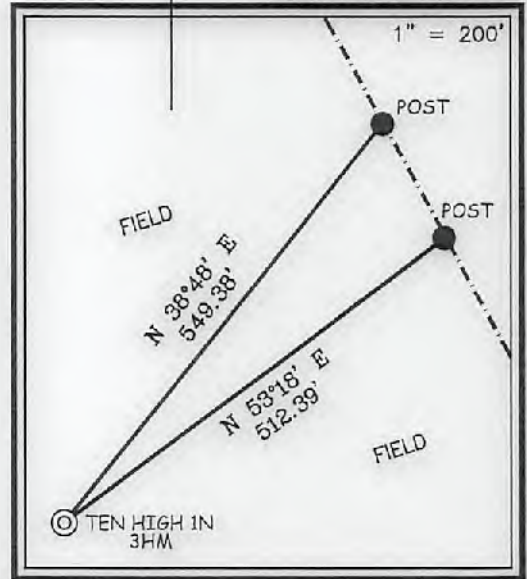
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C.(FT)	N. 470,130.97	E. 1,836,720.80
NAD'83 GEO.	LAT-(N) 39.806745	LONG-(W) 80.680984
NAD'83 UTM (M)	N. 4,406,356.83	E. 527,307.78
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 470,492.5	E. 1,836,897.2
NAD'83 GEO.	LAT-(N) 39.807723	LONG-(W) 80.680401
NAD'83 UTM (M)	N. 4,406,485.8	E. 527,357.3
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 485,746.3	E. 1,832,803.5
NAD'83 GEO.	LAT-(N) 39.827487	LONG-(W) 80.695315
NAD'83 UTM (M)	N. 4,408,654.7	E. 526,073.2

MAPPARCEL	ADJOINING SURFACE OWNER LIST	ACRES
9-1-13.5	GERALD E. LOGSDON, ET UX	7.621
9-5-5.1	DAVID M. TOLER, ET UX	0.985
9-5-5.2	PETER PARKER	0.873
9-5-6.1	ION E. CRAWFORD	4.679
9-5-6.2	MICHAEL JOSEPH SNYDER	2.82
9-5-6.4	NANCY L. SNYDER	0.694
9-5-6.5	LINDA GORBY DELBERT	1.087
9-5-6.6	NANCY L. SNYDER	0.420
9-5-6.8	NANCY L. SNYDER	0.691
9-5-17	CARLA SUE CROW	6.341
9-5-20	KEITH WILSON - DONALD E. LEACH (LIFE ESTATE)	6.924
9-5-21	RALPH E. WELLMAN, ET UX	1.00
9-5-22	RALPH E. WELLMAN, ET UX	0.5
9-5-23	RALPH E. WELLMAN, ET UX	1.00
9-5-24	ALVIE & MARCELLA DARRAH	1.986

NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'

REFERENCES



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 JUNE 15, 20 17
REVISED 09/12/2017, 12/28/2017 & 02/19/18
OPERATORS WELL NO. TEN HIGH 1N-3HM
API WELL NO. 47 - 051 - 01944 MOD
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8655P3HMR4.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: ELEVATION GROUND = 1,321.20' PROPOSED = 1,310.06' 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 - SEE 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: 6,885' / TMD: 15,465'

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

COUNTY NAME PERMIT

WW-6A1
(5/13)

Operator's Well No. Ten High 1N-3HM

**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 sheets				

**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

RECEIVED
Office of Oil and Gas

FEB 23 2018

WV Department of
Environmental Protection

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 Miller *Amy Miller*
 Its: Permit Specialist - Appalachia

51-01944MOD

WW-6A1 Supplement

Operator's Well No. Ten High 1N - 3HM

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*15662	A	9-7-24	LARRY LEE CONKLE	CHEVRON U.S.A. INC.	1/8+	863 354	N/A	N/A	Chevron to Tug Hill: 35/148
10*15663	A	9-7-24	ROY A CONKLE SR	CHEVRON U.S.A. INC.	1/8+	863 311	N/A	N/A	Chevron to Tug Hill: 35/148
10*15664	A	9-7-24	TERESA ANNE HUGHES	CHEVRON U.S.A. INC.	1/8+	863 343	N/A	N/A	Chevron to Tug Hill: 35/148
10*15665	A	9-7-24	BRENDA J WHEITZEL	CHEVRON U.S.A. INC.	1/8+	863 635	N/A	N/A	Chevron to Tug Hill: 35/148
10*16049	A	9-7-24	DANNY SHAWN KERNS AND AMY LYNN KERNS	TH EXPLORATION LLC	1/8+	905 518	N/A	N/A	N/A
10*16820	A	9-7-24	ROBERTA ANN AND DAVID S GIBB	TH EXPLORATION LLC	1/8+	919 237	N/A	N/A	N/A
10*17370	A	9-7-24	MISTI JOANNE GOODMAN	TH EXPLORATION LLC	1/8+	927 468	N/A	N/A	N/A
10*47051.295.10	A	9-7-24	KELLY JUNE GOODMAN	TH EXPLORATION LLC	1/8+	927 470	N/A	N/A	N/A
10*47051.295.11	A	9-7-24	DEENA J PALOMO	TH EXPLORATION LLC	1/8+	905 470	N/A	N/A	N/A
10*47051.295.12	A	9-7-24	REGINA D FIGUEROA AND DAVID FIGUEROA	TH EXPLORATION LLC	1/8+	905 435	N/A	N/A	N/A
10*47051.295.13	A	9-7-24	EARL D WELLMAN	TH EXPLORATION LLC	1/8+	905 432	N/A	N/A	N/A
10*47051.295.13	A	9-7-24	THE DOLY F WOOD REVOCABLE TRUST BY NICHOLAS CHARLES WOOD AS TRUSTEE	TH EXPLORATION LLC	1/8+	904 641	N/A	N/A	N/A
10*47051.295.4	A	9-7-24	HAZEL ARIZONA MOORE REYNOLDS	TH EXPLORATION LLC	1/8+	904 632	N/A	N/A	N/A
10*47051.295.4	A	9-7-24	LLOYD D MOORE	TH EXPLORATION LLC	1/8+	904 459	N/A	N/A	N/A
10*47051.295.5	A	9-7-24	DALE R MOORE	TH EXPLORATION LLC	1/8+	904 635	N/A	N/A	N/A
10*47051.295.6	A	9-7-24	MARY BURKHART	TH EXPLORATION LLC	1/8+	904 638	N/A	N/A	N/A
10*47051.295.7	A	9-7-24	JEANNE V MELCHIONI	TH EXPLORATION LLC	1/8+	904 462	N/A	N/A	N/A
10*47051.295.9	A	9-7-24	JAMES E HIMELRICK JR AND KAREN HIMELRICK	TH EXPLORATION LLC	1/8+	904 465	N/A	N/A	N/A
10*15501	B	9-7-13	RONALD AND EDNA MOORE	TRIENERGY INC	1/8+	661 449	NPARR to NPARR: 24/196	N/A	Chevron to Tug Hill: 35/148
10*15500	B	9-7-13	RONALD AND EDNA MOORE	TRIENERGY INC	1/8+	661 449	NPARR to NPARR: 24/196	N/A	Chevron to Tug Hill: 35/148
10*15502	C	9-7-6	JERRY FLETCHER AND CAROLYN FLETCHER HUSBAND AND WIFE	TRIENERGY INC	1/8+	661 454	NPARR to NPARR: 24/196	N/A	Chevron to Tug Hill: 35/148
10*15481	C	9-7-6	JERRY FLETCHER AND CAROLYN FLETCHER HUSBAND AND WIFE	TRIENERGY INC	1/8+	661 454	NPARR to NPARR: 24/196	N/A	Chevron to Tug Hill: 35/148
10*15482	C	9-7-6	JERRY FLETCHER AND CAROLYN FLETCHER HUSBAND AND WIFE	TRIENERGY INC	1/8+	661 454	NPARR to NPARR: 24/196	N/A	Chevron to Tug Hill: 35/148
10*15674	D	9-5-18	SUSAN NELSON	CHEVRON U.S.A. INC.	1/8+	882 209	N/A	N/A	Chevron to Tug Hill: 35/148
10*15686	D	9-5-18	DEAN P RIGBY AND SUSAN RIGBY	TH EXPLORATION LLC	1/8+	908 197	N/A	N/A	N/A
10*15750	D	9-5-18	JOHN OMER BOLTZ	TH EXPLORATION LLC	1/8+	908 360	N/A	N/A	N/A
10*16058	D	9-5-18	SANDRA K TRULL	TH EXPLORATION LLC	1/8+	908 229	N/A	N/A	N/A
10*16118	D	9-5-18	MATTIE RUTH JACKSON PRESCOTT	TH EXPLORATION LLC	1/8+	908 231	N/A	N/A	N/A
10*16383	D	9-5-18	RUBY RIDGLE JACKSON	TH EXPLORATION LLC	1/8+	908 233	N/A	N/A	N/A
10*16414	D	9-5-18	ROBERT STEPHEN DRIGGERS	TH EXPLORATION LLC	1/8+	908 224	N/A	N/A	N/A
10*16416	D	9-5-18	MARY ELIZABETH DRIGGERS	TH EXPLORATION LLC	1/8+	908 208	N/A	N/A	N/A
10*16424	D	9-5-18	CYNTHIA HUDSON	TH EXPLORATION LLC	1/8+	908 219	N/A	N/A	N/A
10*16448	D	9-5-18	ROBERT J RIGBY	TH EXPLORATION LLC	1/8+	908 241	N/A	N/A	N/A
10*16478	D	9-5-18	RALPH L AND JUANITA L GRIM	TH EXPLORATION LLC	1/8+	908 594	N/A	N/A	N/A
10*16514	D	9-5-18	ALEX RUSSELL AND JOYCE A CAMPBELL	TH EXPLORATION LLC	1/8+	908 245	N/A	N/A	N/A
10*16515	D	9-5-18	ANNA MARIE JACKSON	TH EXPLORATION LLC	1/8+	908 251	N/A	N/A	N/A
10*16516	D	9-5-18	WILSON ANDREW JACKSON	TH EXPLORATION LLC	1/8+	908 253	N/A	N/A	N/A
10*16800	D	9-5-18	RICHARD THOMAS AND VICKI J MINNS	TH EXPLORATION LLC	1/8+	908 263	N/A	N/A	N/A
10*16805	D	9-5-18	JAMES KENNETH JACKSON AND JULIE JACKSON	TH EXPLORATION LLC	1/8+	921 93	N/A	N/A	N/A
10*16805	D	9-5-18	VIRGINIA I WHITMAN	TH EXPLORATION LLC	1/8+	921 528	N/A	N/A	N/A

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Operator's Well No. Ten High 1N - 3HM

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*16962	D	9-5-18	DEWITT S AND BARBARA EZZEL FLORY	TH EXPLORATION LLC	1/8+	921 70	N/A	N/A	N/A
10*16976	D	9-5-18	LESTER G AND CONSTANCE B NICKOLSON	TH EXPLORATION LLC	1/8+	921 343	N/A	N/A	N/A
10*16987	D	9-5-18	LAURIE EZZEL PERRY	TH EXPLORATION LLC	1/8+	921 355	N/A	N/A	N/A
10*17130	D	9-5-18	CINDY L BARBER	TH EXPLORATION LLC	1/8+	921 137	N/A	N/A	N/A
10*17155	D	9-5-18	JESSE LEON JR AND TERESA GAIL EZZEL	TH EXPLORATION LLC	1/8+	921 118	N/A	N/A	N/A
10*17156	D	9-5-18	HENRI NELL JACKSON KENT BARNES	TH EXPLORATION LLC	1/8+	921 139	N/A	N/A	N/A
10*17157	D	9-5-18	JAMES N REEVES JR AND RITA M REEVES	TH EXPLORATION LLC	1/8+	921 367	N/A	N/A	N/A
10*17198	D	9-5-18	THOMAS G AND DIANE W BAYLESS	TH EXPLORATION LLC	1/8+	921 141	N/A	N/A	N/A
10*17205	D	9-5-18	SANDRA JEAN WILSON	TH EXPLORATION LLC	1/8+	921 524	N/A	N/A	N/A
10*17274	D	9-5-18	DAVID H WILSON	TH EXPLORATION LLC	1/8+	921 474	N/A	N/A	N/A
10*17275	D	9-5-18	JOHN R REEVES AND MONA G REEVES	TH EXPLORATION LLC	1/8+	921 373	N/A	N/A	N/A
10*17276	D	9-5-18	BERTHA EZZEL WYATT	TH EXPLORATION LLC	1/8+	921 526	N/A	N/A	N/A
10*17278	D	9-5-18	MICHAEL L EZZEL	TH EXPLORATION LLC	1/8+	921 121	N/A	N/A	N/A
10*17377	D	9-5-18	MILTON HOWARD EZZEL JR AND ELIZABETH A EZZEL	TH EXPLORATION LLC	1/8+	921 123	N/A	N/A	N/A
10*17438	D	9-5-18	DEVIN M WILSON	TH EXPLORATION LLC	1/8+	921 476	N/A	N/A	N/A
10*17441	D	9-5-18	RALPH J WILSON	TH EXPLORATION LLC	1/8+	921 522	N/A	N/A	N/A
10*17449	D	9-5-18	PHYLLIS J BLAKE	TH EXPLORATION LLC	1/8+	921 150	N/A	N/A	N/A
10*17482	D	9-5-18	TERESA EZZEL RALVA AND DAVID L RALVA	TH EXPLORATION LLC	1/8+	927 487	N/A	N/A	N/A
10*17484	D	9-5-18	NELDA S JACKSON	TH EXPLORATION LLC	1/8+	921 330	N/A	N/A	N/A
10*17485	D	9-5-18	MARGIE ANN JACKSON ROBBINS GRAHAM	TH EXPLORATION LLC	1/8+	921 91	N/A	N/A	N/A
10*17526	D	9-5-18	JEFFREY L REEVES AND JODY L REEVES	TH EXPLORATION LLC	1/8+	921 370	N/A	N/A	N/A
10*17527	D	9-5-18	JAMES MICHAEL EZZEL AND LUCILLE D EZZEL	TH EXPLORATION LLC	1/8+	921 111	N/A	N/A	N/A
10*17561	D	9-5-18	KATHRYN L & ROGER L TYRELL	TH EXPLORATION LLC	1/8+	921 519	N/A	N/A	N/A
10*17564	D	9-5-18	JAMES R & TRACEY E NICKOLSON	TH EXPLORATION LLC	1/8+	921 340	N/A	N/A	N/A
10*17565	D	9-5-18	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	TH EXPLORATION LLC	1/8+	921 327	N/A	N/A	N/A
10*17566	D	9-5-18	NATHAN P & BARBARA T ERDOSSY	TH EXPLORATION LLC	1/8+	921 108	N/A	N/A	N/A
10*17589	D	9-5-18	MARY CHRISTINE MCKENNA	TH EXPLORATION LLC	1/8+	921 325	N/A	N/A	N/A
10*17744	D	9-5-18	SMY PRESLEY EZZEL	TH EXPLORATION LLC	1/8+	921 332	N/A	N/A	N/A
10*17744	D	9-5-18	JEAN ANNE GORBY STORCH	TH EXPLORATION LLC	1/8+	877 216	N/A	N/A	N/A
10*17744	D	9-5-18	LARRY D TALUNT AND NANCI L TALUNT	TH EXPLORATION LLC	1/8+	908 14	N/A	N/A	N/A
10*17744	D	9-5-18	BARBARA A BUZZARD	TH EXPLORATION LLC	1/8+	908 24	N/A	N/A	N/A
10*17744	D	9-5-18	GARY T WARD AND SHARON D WARD	TH EXPLORATION LLC	1/8+	908 19	N/A	N/A	N/A
10*17744	D	9-5-18	STEPHANIE SCHIEFER AND GEORFREY SCHIEFER	TH EXPLORATION LLC	1/8+	908 321	N/A	N/A	N/A
10*17744	D	9-5-18	LAURIE DRIGERS MANDERSON	TH EXPLORATION LLC	1/8+	908 165	N/A	N/A	N/A
10*17744	D	9-5-18	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	TH EXPLORATION LLC	1/8+	885 324	N/A	N/A	N/A
10*17744	D	9-5-18	JOSHUA RINE AND REBECCA RINE	TH EXPLORATION LLC	1/8+	907 634	N/A	N/A	N/A
10*17744	D	9-5-18	DEAN P RIGBY AND SUSAN RIGBY	TH EXPLORATION LLC	1/8+	908 197	N/A	N/A	N/A
10*17744	D	9-5-18	SUSAN NELSON	TH EXPLORATION LLC	1/8+	908 203	N/A	N/A	N/A
10*17744	D	9-5-18	MICHAEL J SINDNER	TH EXPLORATION LLC	1/8+	865 186	N/A	N/A	N/A
10*17744	D	9-5-18	JOHN OWEN BOLTZ	TH EXPLORATION LLC	1/8+	908 160	N/A	N/A	Chevron to Tug Hill 36/148
10*17744	D	9-5-18	SANDRA K TRULL	TH EXPLORATION LLC	1/8+	908 229	N/A	N/A	N/A
10*17744	D	9-5-18	MATTIE NUTH JACKSON PRESCOTT	TH EXPLORATION LLC	1/8+	908 231	N/A	N/A	N/A

1019442AD

WW-6A1 Supplement

Operator's Well No. Ten High 1N - 3HM

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*16118	E	9-5-5.4	RUBY RIDGE JACKSON	TH EXPLORATION LLC	1/8+	908 233	N/A	N/A	N/A
10*16383	E	9-5-5.4	ROBERT STEPHEN DRIGGERS	TH EXPLORATION LLC	1/8+	908 224	N/A	N/A	N/A
10*16414	E	9-5-5.4	MARY ELIZABETH DRIGGERS	TH EXPLORATION LLC	1/8+	908 208	N/A	N/A	N/A
10*16416	E	9-5-5.4	CYNTHIA HUDSON	TH EXPLORATION LLC	1/8+	908 219	N/A	N/A	N/A
10*16424	E	9-5-5.4	ROBERT J RIGBY	TH EXPLORATION LLC	1/8+	908 241	N/A	N/A	N/A
10*16448	E	9-5-5.4	RALPH L AND JUANITA L CRIM	TH EXPLORATION LLC	1/8+	908 584	N/A	N/A	N/A
10*16478	E	9-5-5.4	MARION L AND EMILY CAMPBELL	TH EXPLORATION LLC	1/8+	908 245	N/A	N/A	N/A
10*16514	E	9-5-5.4	ALEX HUSSEL AND JOYCE A CAMPBELL	TH EXPLORATION LLC	1/8+	908 248	N/A	N/A	N/A
10*16515	E	9-5-5.4	ANNA MARIE JACKSON	TH EXPLORATION LLC	1/8+	908 251	N/A	N/A	N/A
10*16516	E	9-5-5.4	WILSON ANDREW JACKSON	TH EXPLORATION LLC	1/8+	908 253	N/A	N/A	N/A
10*16662	E	9-5-5.4	RICHARD THOMAS AND VICKI L MIMS	TH EXPLORATION LLC	1/8+	908 263	N/A	N/A	N/A
10*16606	E	9-5-5.4	JAMES KENNETH JACKSON AND JULIE JACKSON	TH EXPLORATION LLC	1/8+	921 528	N/A	N/A	N/A
10*16606	E	9-5-5.4	VIRGINIA I WHITMAN	TH EXPLORATION LLC	1/8+	921 528	N/A	N/A	N/A
10*16662	E	9-5-5.4	DENNIS F AND BARBARA EZZEL FLORY	TH EXPLORATION LLC	1/8+	921 70	N/A	N/A	N/A
10*16976	E	9-5-5.4	LESTER G AND CONSTANCE B NICKOLSON	TH EXPLORATION LLC	1/8+	921 343	N/A	N/A	N/A
10*16987	E	9-5-5.4	LAURIE EZZEL PERRY	TH EXPLORATION LLC	1/8+	921 355	N/A	N/A	N/A
10*17130	E	9-5-5.4	CINDY L BARGER	TH EXPLORATION LLC	1/8+	921 137	N/A	N/A	N/A
10*17155	E	9-5-5.4	JESSE LEON JR AND TERESA GAIL EZZEL	TH EXPLORATION LLC	1/8+	921 118	N/A	N/A	N/A
10*17156	E	9-5-5.4	HENRI NELL JACKSON KENT BARNES	TH EXPLORATION LLC	1/8+	921 139	N/A	N/A	N/A
10*17157	E	9-5-5.4	JAMES N REEVES JR AND RITA M REEVES	TH EXPLORATION LLC	1/8+	921 367	N/A	N/A	N/A
10*17198	E	9-5-5.4	THOMAS G AND DIANE W BAYLESS	TH EXPLORATION LLC	1/8+	921 141	N/A	N/A	N/A
10*17205	E	9-5-5.4	SANDRA JEAN WILSON	TH EXPLORATION LLC	1/8+	921 524	N/A	N/A	N/A
10*17274	E	9-5-5.4	DAVID H WILSON	TH EXPLORATION LLC	1/8+	921 474	N/A	N/A	N/A
10*17275	E	9-5-5.4	JOHN R REEVES AND MONA G REEVES	TH EXPLORATION LLC	1/8+	921 373	N/A	N/A	N/A
10*17276	E	9-5-5.4	BERNHA EZZEL WYATT	TH EXPLORATION LLC	1/8+	921 526	N/A	N/A	N/A
10*17278	E	9-5-5.4	MICHAEL L EZZEL	TH EXPLORATION LLC	1/8+	921 121	N/A	N/A	N/A
10*17377	E	9-5-5.4	MILTON HOWARD EZZEL JR AND ELIZABETH A EZZEL	TH EXPLORATION LLC	1/8+	921 123	N/A	N/A	N/A
10*17388	E	9-5-5.4	DENNIS M WILSON	TH EXPLORATION LLC	1/8+	921 476	N/A	N/A	N/A
10*17441	E	9-5-5.4	RALPH J WILSON	TH EXPLORATION LLC	1/8+	921 522	N/A	N/A	N/A
10*17449	E	9-5-5.4	PHYLLIS J BLAKE	TH EXPLORATION LLC	1/8+	921 150	N/A	N/A	N/A
10*17482	E	9-5-5.4	TERESA EZZEL RALVA AND DAVID L RALVA	TH EXPLORATION LLC	1/8+	921 487	N/A	N/A	N/A
10*17484	E	9-5-5.4	NELDA S JACKSON	TH EXPLORATION LLC	1/8+	921 330	N/A	N/A	N/A
10*17485	E	9-5-5.4	MARGIE ANN JACKSON ROBBINS GRAHAM	TH EXPLORATION LLC	1/8+	921 91	N/A	N/A	N/A
10*17526	E	9-5-5.4	JEFFREY L REEVES AND IODY L REEVES	TH EXPLORATION LLC	1/8+	921 370	N/A	N/A	N/A
10*17527	E	9-5-5.4	JAMES MICHAEL EZZEL AND LUCILLE D EZZEL	TH EXPLORATION LLC	1/8+	921 111	N/A	N/A	N/A
10*17561	E	9-5-5.4	KATHRYN L & ROGER L TYBELL	TH EXPLORATION LLC	1/8+	921 519	N/A	N/A	N/A
10*17564	E	9-5-5.4	JAMES R & TRACET E NICKOLSON	TH EXPLORATION LLC	1/8+	921 340	N/A	N/A	N/A
10*17565	E	9-5-5.4	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	TH EXPLORATION LLC	1/8+	921 327	N/A	N/A	N/A
10*17566	E	9-5-5.4	NATHAN P & BARBARA T BROSSY	TH EXPLORATION LLC	1/8+	921 108	N/A	N/A	N/A
10*17588	E	9-5-5.4	MARY CHRISTINE MCKENNA	TH EXPLORATION LLC	1/8+	921 325	N/A	N/A	N/A
10*17589	E	9-5-5.4	SAM PRESLEY EZZEL	TH EXPLORATION LLC	1/8+	921 116	N/A	N/A	N/A
10*17744	E	9-5-5.4	JEAN ANNE GOHRBY STORCH	TH EXPLORATION LLC	1/8+	877 216	N/A	N/A	N/A

10-19144200

WW-6A1 Supplement

Operator's Well No. Ten High 1N - 3HM

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*47051.223.15	E	9-5-5.4	LARRY D TLAUNT AND NANCY L TLAUNT	TH EXPLORATION LLC	1/8+	908 14	N/A	N/A	N/A
10*47051.223.20	E	9-5-5.4	BARBARA A BUZZARD	TH EXPLORATION LLC	1/8+	908 24	N/A	N/A	N/A
10*47051.223.21	E	9-5-5.4	GARY T WARD AND SHARON D WARD	TH EXPLORATION LLC	1/8+	908 19	N/A	N/A	N/A
10*47051.223.2	E	9-5-5.4	STEPHANIE SCHIEFER AND GEOFFREY SCHIEFER	TH EXPLORATION LLC	1/8+	885 321	N/A	N/A	N/A
10*47051.223.30	E	9-5-5.4	LAURIE DRIGGERS MAUNDERSON	TH EXPLORATION LLC	1/8+	908 165	N/A	N/A	N/A
10*47051.223.3	E	9-5-5.4	ROBERT A LEADBETTER AND W REBECCA LEADBETTER	TH EXPLORATION LLC	1/8+	885 324	N/A	N/A	N/A
10*47051.223.6	E	9-5-5.4	JOSHUA RINE AND REBECCA RINE	TH EXPLORATION LLC	1/8+	907 634	N/A	N/A	N/A
10*15481	E	9-5-5.4	MICHAEL J SWYDER	CHEVRON U.S.A. INC.	1/8+	865 186	N/A	N/A	Chevron to Tug Hill 960/409
10*15482	F	9-5-5	DEAN P RIGBY AND SUSAN RIGBY	TH EXPLORATION LLC	1/8+	908 197	N/A	N/A	N/A
10*15488	F	9-5-5	SUSAN NELSON	TH EXPLORATION LLC	1/8+	908 203	N/A	N/A	N/A
10*15686	F	9-5-5	MICHAEL J SWYDER	CHEVRON U.S.A. INC.	1/8+	865 186	N/A	N/A	Chevron to Tug Hill 960/409
10*15750	F	9-5-5	JOHN OWER BOLTZ	TH EXPLORATION LLC	1/8+	908 160	N/A	N/A	N/A
10*16008	F	9-5-5	SANDRA K TRULL	TH EXPLORATION LLC	1/8+	908 229	N/A	N/A	N/A
10*16008	F	9-5-5	MATTIE RUTH JACKSON PRESCOTT	TH EXPLORATION LLC	1/8+	908 231	N/A	N/A	N/A
10*16118	F	9-5-5	RUBY RIDLE JACKSON	TH EXPLORATION LLC	1/8+	908 233	N/A	N/A	N/A
10*16383	F	9-5-5	ROBERT STEPHEN DRIGGERS	TH EXPLORATION LLC	1/8+	908 224	N/A	N/A	N/A
10*16414	F	9-5-5	MARY ELIZABETH DRIGGERS	TH EXPLORATION LLC	1/8+	908 208	N/A	N/A	N/A
10*16414	F	9-5-5	CYNTHIA HUDSON	TH EXPLORATION LLC	1/8+	908 219	N/A	N/A	N/A
10*16424	F	9-5-5	ROBERT J RIGBY	TH EXPLORATION LLC	1/8+	908 241	N/A	N/A	N/A
10*16448	F	9-5-5	RALPH L AND JUANITA L GRIM	TH EXPLORATION LLC	1/8+	908 584	N/A	N/A	N/A
10*16478	F	9-5-5	MARION L AND EMILY CAMPBELL	TH EXPLORATION LLC	1/8+	908 245	N/A	N/A	N/A
10*16514	F	9-5-5	ALEX RUSSELL AND JOYCE A CAMPBELL	TH EXPLORATION LLC	1/8+	908 248	N/A	N/A	N/A
10*16515	F	9-5-5	ANNA MARIE JACKSON	TH EXPLORATION LLC	1/8+	908 251	N/A	N/A	N/A
10*16516	F	9-5-5	WILSON ANDREW JACKSON	TH EXPLORATION LLC	1/8+	908 253	N/A	N/A	N/A
10*16662	F	9-5-5	RICHARD THOMAS AND VICIJI MINAS	TH EXPLORATION LLC	1/8+	908 263	N/A	N/A	N/A
10*16806	F	9-5-5	JAMES KENNETH JACKSON AND JULIE JACKSON	TH EXPLORATION LLC	1/8+	921 93	N/A	N/A	N/A
10*16806	F	9-5-5	VIRGINIA I WHILMAN	TH EXPLORATION LLC	1/8+	921 528	N/A	N/A	N/A
10*16976	F	9-5-5	DENNIS R AND BARBARA EZZLE FLORY	TH EXPLORATION LLC	1/8+	921 70	N/A	N/A	N/A
10*16987	F	9-5-5	LESTER G AND CONSTANCE B WICKOLSON	TH EXPLORATION LLC	1/8+	921 343	N/A	N/A	N/A
10*17130	F	9-5-5	LAURIE EZZLE PERRY	TH EXPLORATION LLC	1/8+	921 355	N/A	N/A	N/A
10*17130	F	9-5-5	CINCY L BARGER	TH EXPLORATION LLC	1/8+	921 137	N/A	N/A	N/A
10*17155	F	9-5-5	JESSE LEON JR AND TERESA GAIL EZZLE	TH EXPLORATION LLC	1/8+	921 118	N/A	N/A	N/A
10*17156	F	9-5-5	HENRI NELL JACKSON KEWT BARNES	TH EXPLORATION LLC	1/8+	921 139	N/A	N/A	N/A
10*17157	F	9-5-5	JAMES N REEVES JR AND WITA M REEVES	TH EXPLORATION LLC	1/8+	921 367	N/A	N/A	N/A
10*17198	F	9-5-5	THOMAS G AND DIANE W BAYLESS	TH EXPLORATION LLC	1/8+	921 141	N/A	N/A	N/A
10*17205	F	9-5-5	SANDRA JEAN WILSON	TH EXPLORATION LLC	1/8+	921 524	N/A	N/A	N/A
10*17274	F	9-5-5	DAVID H WILSON	TH EXPLORATION LLC	1/8+	921 474	N/A	N/A	N/A
10*17275	F	9-5-5	JOHN R REEVES AND MONA G REEVES	TH EXPLORATION LLC	1/8+	921 373	N/A	N/A	N/A
10*17276	F	9-5-5	BERNHA EZZLE WYATT	TH EXPLORATION LLC	1/8+	921 526	N/A	N/A	N/A
10*17278	F	9-5-5	MICHAEL L EZZLE	TH EXPLORATION LLC	1/8+	921 121	N/A	N/A	N/A
10*17377	F	9-5-5	MILTON HOWARD EZZLE JR AND ELIZABETH A EZZLE	TH EXPLORATION LLC	1/8+	921 123	N/A	N/A	N/A
10*17438	F	9-5-5	DENNIS M WILSON	TH EXPLORATION LLC	1/8+	921 476	N/A	N/A	N/A
10*17441	F	9-5-5	RALPH J WILSON	TH EXPLORATION LLC	1/8+	921 522	N/A	N/A	N/A

10-194745-1

WW-6A1 Supplement

Operator's Well No. Ten High 1N - 3HM

Lease Name or No.	Tax Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*17449	F 9-5-5	PHYLLIS BLAKE	TH EXPLORATION LLC	1/8+	921 150	N/A	N/A	N/A
10*17482	F 9-5-5	TERESA EZEILE RAJVA AND DAVID L RAJVA	TH EXPLORATION LLC	1/8+	927 487	N/A	N/A	N/A
10*17484	F 9-5-5	NEIDA S JACKSON	TH EXPLORATION LLC	1/8+	921 390	N/A	N/A	N/A
10*17485	F 9-5-5	MARGIE ANN JACKSON ROBBINS GRAHAM	TH EXPLORATION LLC	1/8+	921 91	N/A	N/A	N/A
10*17526	F 9-5-5	JEFFREY L REEVES AND JODY L REEVES	TH EXPLORATION LLC	1/8+	921 370	N/A	N/A	N/A
10*17527	F 9-5-5	JAMES MICHAEL EZZEL AND LUCILLE D EZZEL	TH EXPLORATION LLC	1/8+	921 111	N/A	N/A	N/A
10*17561	F 9-5-5	KATHRYN L & ROGER L TYRELL	TH EXPLORATION, LLC	1/8+	921 519	N/A	N/A	N/A
10*17564	F 9-5-5	JAMES R & TRACEY E NICKOLSON	TH EXPLORATION, LLC	1/8+	921 340	N/A	N/A	N/A
10*17565	F 9-5-5	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	TH EXPLORATION LLC	1/8+	921 327	N/A	N/A	N/A
10*17566	F 9-5-5	MATHAN P & BARBARA T ERDOSSY	TH EXPLORATION, LLC	1/8+	921 108	N/A	N/A	N/A
10*17588	F 9-5-5	JAMES M JACKSON	TH EXPLORATION LLC	1/8+	921 325	N/A	N/A	N/A
10*17589	F 9-5-5	MARY CHRISTINE MCKENNA	TH EXPLORATION, LLC	1/8+	921 332	N/A	N/A	N/A
10*17744	F 9-5-5	SAM PRESLEY EZZEL	TH EXPLORATION, LLC	1/8+	921 116	N/A	N/A	N/A
10*47051.223.1	F 9-5-5	JEAN ANNE GORBY STORCH	TH EXPLORATION LLC	1/8+	877 216	N/A	N/A	N/A
10*47051.223.15	F 9-5-5	LARRY D TALUNT AND NANCY L TALUNT	TH EXPLORATION LLC	1/8+	808 14	N/A	N/A	N/A
10*47051.223.20	F 9-5-5	BARBARA A BLIZZARD	TH EXPLORATION LLC	1/8+	808 24	N/A	N/A	N/A
10*47051.223.21	F 9-5-5	GARY T WARD AND SHARON D WARD	TH EXPLORATION LLC	1/8+	808 19	N/A	N/A	N/A
10*47051.223.2	F 9-5-5	STEPHANIE SCHIEFER AND GEOFFREY SCHIEFER	TH EXPLORATION LLC	1/8+	885 321	N/A	N/A	N/A
10*47051.223.30	F 9-5-5	LAURIE DRIGGERS MANDERSON	TH EXPLORATION LLC	1/8+	808 185	N/A	N/A	N/A
10*47051.223.3	F 9-5-5	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	TH EXPLORATION LLC	1/8+	885 324	N/A	N/A	N/A
10*47051.223.6	F 9-5-5	JOSHUA RINE AND REBECCA RINE	TH EXPLORATION LLC	1/8+	907 634	N/A	N/A	N/A
10*47051.223.1	G 9-5-5.3	JEAN ANNE GORBY STORCH	TH EXPLORATION LLC	1/8+	577 2016	N/A	N/A	N/A
10*47051.223.2	G 9-5-5.3	STEPHANIE SCHIEFER AND GEOFFREY SCHIEFER	TH EXPLORATION LLC	1/8+	885 321	N/A	N/A	N/A
10*47051.223.3	G 9-5-5.3	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	TH EXPLORATION LLC	1/8+	885 324	N/A	N/A	N/A
10*47051.223.3	G 9-5-5.3	MICHAEL JOSEPH BAUM	CHESAPEAKE APPALACHIA LLC	1/8+	716 343	Chesapeake to Chevron: 30/461	N/A	Chesapeake to Tug Hill: 960/409
10*47051.223.2	H 9-5-6.3	STEPHANIE SCHIEFER AND GEOFFREY SCHIEFER	TH EXPLORATION LLC	1/8+	885 321	N/A	N/A	N/A
10*47051.223.3	H 9-5-6.3	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	TH EXPLORATION LLC	1/8+	885 324	N/A	N/A	N/A
10*47051.223.3	H 9-5-6.3	DAKAR JOSEPH D - SR	CHESAPEAKE APPALACHIA LLC	1/8+	694 71	Chesapeake to Chevron: 30/461	Chesapeake to Tug Hill: 960/409	Chesapeake to Tug Hill: 960/409
10*47051.223.3	H 9-5-6.3	RAU PATSY JO AKA GORBY PATSY JO - SR	CHESAPEAKE APPALACHIA LLC	1/8+	695 175	Chesapeake to Chevron: 30/461	Chesapeake to Tug Hill: 960/409	Chesapeake to Tug Hill: 960/409
10*47051.223.3	I 9-1-14.1	ALICE J MARTIN ET VIR	CHEVRON USA INC	1/8+	893 250	N/A	N/A	Chesapeake to Tug Hill: 960/409
10*47051.223.3	J 9-1-14	ALICE J MARTIN ET VIR	CHEVRON USA INC	1/8+	893 247	N/A	N/A	Chesapeake to Tug Hill: 960/409

COPY

AFFIDAVIT

STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

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

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

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Office of Oil and Gas

FEB 23 2018

FURTHER, AFFIANT SAITH NOT.

WV Department of
Environmental Protection

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

David D. Kalish
Affiant: David D. Kalish

JURAT

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

STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

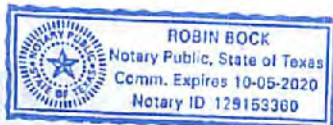
Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish

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

My Commission Expires: 10-05-2020

Signature/Notary Public: Robin Bock

Name/Notary Public (Print): Robin Bock



MEMORANDUM OF AGREEMENT

This Memorandum of Agreement is entered into this 16th 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 16th, 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.

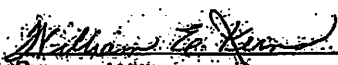
2. **MEMORANDUM FOR RECORDING PURPOSES ONLY:** This Memorandum is for recording purposes only and does not supplement or supersede the parties' respective rights set forth in the Letter Agreement or other agreements.

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. Kems
Its: Attorney-in-Fact

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

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FEB 23 2018

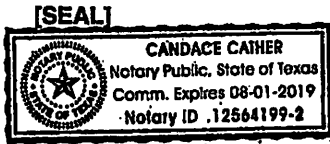
WV Department of
Environmental Protection

Prepared by Tug Hill Operating, LLC
1320 S. University Dr., Suite 500, Fort Worth, TX 76107

STATE OF Texas ;

COUNTY OF Tarrant : ^{cc}

Before me, Sean Willis ^{cc} Cardace Cather, a Notary Public, on this day personally appeared Sean Willis, known to me to be the VP Engineering & Development Manager Tug Hill Operating LLC, subscribed to the foregoing instrument, and acknowledged to me that he/she executed the instrument for the purposes and consideration therein expressed as his/her free act and deed. Given under my hand and seal of office this 14th day of February, 2018. My Commission expires: 08/01/2019.

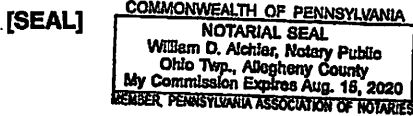


Cardace Cather
Notary Public

STATE OF Pennsylvania ;

COUNTY OF Allegheny :

Before me, William D. Alchier, a Notary Public, on this day personally appeared William F. Kelso, known to me to be the Attorney-in-Fact of Chevron U.S.A. Inc., subscribed to the foregoing instrument, and acknowledged to me that he/she executed the instrument for the purposes and consideration therein expressed as his/her free act and deed. Given under my hand and seal of office this 12th day of February, 2018. My Commission expires: 8-15-2020.



William D. Alchier
Notary Public

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My Office of Oil and Gas

FEB 23 2018

WV Department of
Environmental Protection

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 14th day of February, 2018, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 16th day of February, 2018 at 2:10 o'clock P. M.

TESTE: Jan Pest Clerk.

51-01944 Mod

DPS LAND SERVICE
6000 TOWN CENTER BLVD STE 145
CANDLERBURG, PA 15317-5341

BOOK 0036 PAGE 0148

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Jan Post
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/26/2016
Document Type ASH
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional 98.00

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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Oil and Gas
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WV Department of
Environmental Protection

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for new

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STATE OF TEXAS §
 § SS
COUNTY OF TARRANT §

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

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

FURTHER, AFFIANT SAITH NOT.

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

David D. Kalish
Affiant: David D. Kalish

JURAT

Jan Pest
MARSHALL County 03:44:28 PM
Instrument No 1416299
Date Recorded 10/19/2016
Document Type HIS
Pages Recorded 1
Book-Page 28-62
Recording Fee \$5.00
Additional \$6.00

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STATE OF TEXAS §
 § SS
COUNTY OF TARRANT §

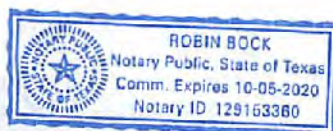
Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D Kalish Department of Environmental Protection

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

My Commission Expires: 10-05-2020

Signature/Notary Public: Robin Bock

Name/Notary Public (Print): Robin Bock





June 21, 2017

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

RE: Ten High 1N-3HM

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-3HM 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-hillop.com.

Sincerely,

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

Amy L. Miller
Permit Specialist – Appalachia

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

WW-PN
(11-18-2015)

**Horizontal Natural Gas Well Work Permit
Application Notice By Publication**

Notice is hereby given:

Pursuant to West Virginia Code 22-6A-10(e) prior to filing an application for a permit for a horizontal well the applicant shall publish in the county in which the well is located or is proposed to be located a Class II legal advertisement.

Paper: Moundsville Daily Echo

Public Notice Date: May 26 & June 02, 2017

The following applicant intends to apply for a horizontal natural well work permit which disturbs three acres or more of surface excluding pipelines, gathering lines and roads or utilizes more than two hundred ten thousand gallons of water in any thirty day period.

Applicant: Tug Hill Operating, LLC

Well Number: TEN HIGH 1N-3HM

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200

Canonsburg, PA 15317

Business Conducted: Natural gas production.

Location –

State: West Virginia

County: Marshall

District: Meade

Quadrangle: Glen Easton 7.5'

UTM Coordinate NAD83 Northing: 4,406,352.60

UTM coordinate NAD83 Easting: 527,326.35

Watershed: (HUC-10) Fish Creek

Coordinate Conversion:

To convert the coordinates above into longitude and latitude, visit: http://tagis.dep.wv.gov/convert/llutm_conus.php

Electronic notification:

To receive an email when applications have been received or issued by the Office of Oil and Gas, visit <http://www.dep.wv.gov/insidedep/Pages/DEPMailingLists.aspx> to sign up.

Reviewing Applications:

Copies of the proposed permit application may be reviewed at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE Charleston, WV 25304 (304-926-0450). Full copies or scans of the proposed permit application will cost \$15, whether mailed or obtained at DEP headquarters. Copies may be requested by calling the office or by sending an email to DEP.comments@wv.gov.

Submitting Comments:

Comments may be submitted online at <https://apps.dep.wv.gov/oog/comments/comments.cfm>, or by letter to Permit Review, Office of Oil and Gas, 601 57th Street, SE Charleston, WV 25304. Please reference the county, well number, and operator when using this option.

Regardless of format for comment submissions, they must be received no later than thirty days after the permit application is received by the Office of Oil and Gas.

For information related to horizontal drilling visit: www.dep.wv.gov/oil-and-gas/pages/default.aspx

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JAN 2 2018
WV Department of
Environmental Protection



(304) 845-2660
P.O. BOX 369
MOUNDSVILLE
WEST VIRGINIA
26041

AFFIDAVIT OF PUBLICATION

STATE OF WEST VIRGINIA,
COUNTY OF MARSHALL, to wit

I, Melanie S. Murdock being first duly sworn upon my oath, do depose and say:

- that I am Legal Advertising Manager of the MOUNDSVILLE DAILY ECHO, a Republican newspaper;
- that I have been duly authorized to execute this affidavit;
- that such newspaper has been published for over 119 years, is regularly published afternoons daily except Saturdays and Sundays, for at least fifty weeks during the calendar year, in the municipality of Moundsville, Marshall County, West Virginia;
- that such newspaper is a newspaper of "general circulation" as defined in Art. 3, Chap. 59 of the Code of West Virginia 1931 as amended, within Moundsville and Marshall County;
- that such newspaper averages in length four or more pages, exclusive of any cover, per issue;
- that such newspaper is circulated to the general public at a definite price or consideration;
- that such newspaper is a newspaper to which the general public resorts for passing events of a political, religious, commercial and social nature and for current happenings, announcements, miscellaneous reading matters, advertisements and other notices;
- and that the annexed notice described as follows:

Legal Advertisement

PARTY(ies)

Gas Well Permit / TEN HIGH 1N-3HM

NATURE (and agency if heard before one)

CERTIF-BILL TO

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

WAS PUBLISHED IN SAID NEWSPAPER AS FOLLOWS

Times	Dates
2	May 26, June 2, 2017
BY WORDS	PUBLICATION CHARGES
512.5	\$103.12

(signed) Melanie S. Murdock

NOTARIZATION

 Taken, sworn and subscribed before me this 2nd day of June 2017
Amy M. Humphrey
 Notary Public

LEGAL ADVERTISEMENT

Horizontal Natural Gas Well Work Permit

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For information related to horizontal drilling visit: www.dep.wv.gov/oil-and-gas/pages/default.aspx.

PUBLISH: May 26, June 2, 2017.

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

Date of Notice Certification: 12/29/2017

API No. 47- 051 - 01944 mod
Operator's Well No. Ten High 1N-3HM
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>527,307.78</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,356.83</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>
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JAN 2 2018
WV Department of
Environmental Protection

Required Attachments:

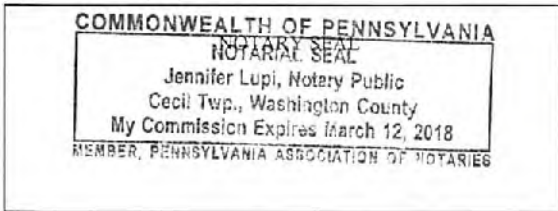
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

Certification of Notice is hereby given:

THEREFORE, I Amy Miller Amy 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
Its: Regulatory Analyst - Appalachia
Telephone: 724-749-8388

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030
Email: amiller@tug-hillop.com



Subscribed and sworn before me this 29th day of Dec 2017.
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 depprivacyofficer@wv.gov.

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WV Department of
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**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION**

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

Date of Notice: 12/29/2017 **Date Permit Application Filed:** 12/29/2017

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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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

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.**

RECEIVED
Office of Oil and Gas
JAN 2 2013
WV Department of
Environmental Protection

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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Office of Oil and Gas
JAN 2 2013
WV Department of
Environmental Protection

WW-6A
(8-13)

API NO. 47- 051 - 01944 mod
OPERATOR WELL NO. Ten High 1N-3HM
Well Pad Name: Ten High

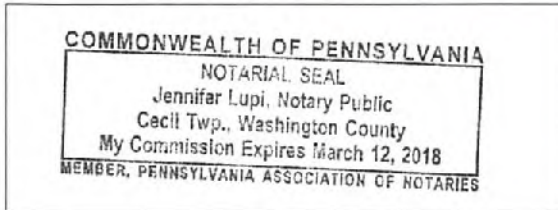
Notice is hereby given by:

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

Address: 380 Southpointe 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 *29th* day of *Dec*, *2017*.
Jennifer Lupi Notary Public
My Commission Expires *March 12, 2018*

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WV Department of
Environmental Protection

Operator Well Nos. TEN HIGH 1N-3HM

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

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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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')

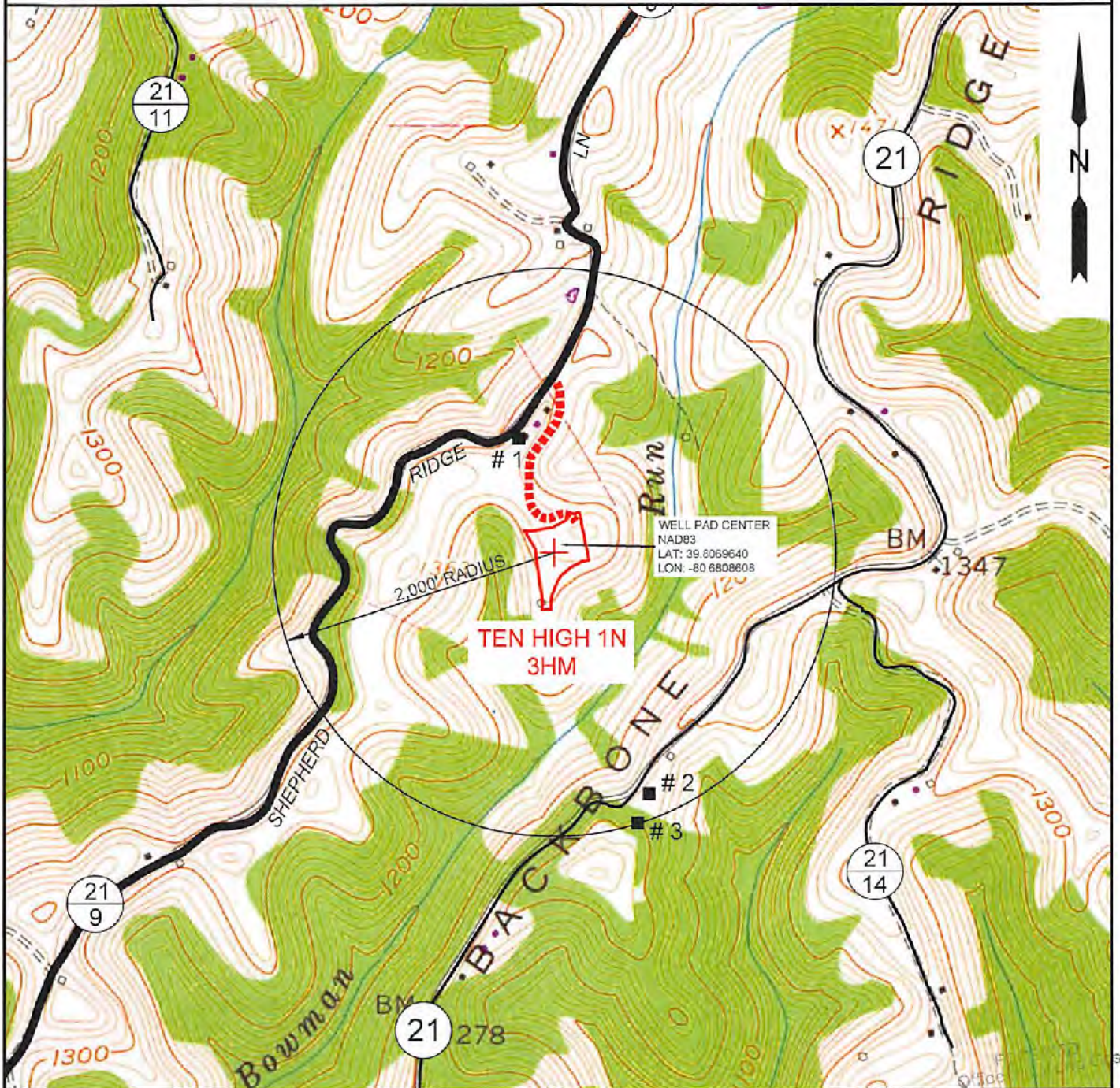
Well: Ten High 1N – 4HM
 District: Meade (House #'s 1-3)
 State: WV

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

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PROPOSED TEN HIGH 1N - 3HM



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

JAN 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 26031 • (304) 462-6634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8655	06/15/2017	1" = 1000'

TUG HILL
OPERATING

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<input type="checkbox"/> Return Receipt (electronic)	\$ _____
<input type="checkbox"/> Certified Mail Restricted Delivery	\$ _____
<input type="checkbox"/> Adult Signature Required	\$ _____
<input type="checkbox"/> Adult Signature Restricted Delivery	\$ _____

Postage
 \$ _____

To: Teresa Anne & Michael J. Hughes
 252 Conkle Drive
 Glen Easton, WV 26039

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<input type="checkbox"/> Return Receipt (hardcopy)	\$ _____
<input type="checkbox"/> Return Receipt (electronic)	\$ _____
<input type="checkbox"/> Certified Mail Restricted Delivery	\$ _____
<input type="checkbox"/> Adult Signature Required	\$ _____
<input type="checkbox"/> Adult Signature Restricted Delivery	\$ _____

Postage
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To: Larry Lee & Donna D. Conkle
 154 Conkle Drive
 Glen Easton, WV 26039

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<input type="checkbox"/> Certified Mail Restricted Delivery	\$ _____
<input type="checkbox"/> Adult Signature Required	\$ _____
<input type="checkbox"/> Adult Signature Restricted Delivery	\$ _____

Postage
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To: Roy A. Conkle, Sr. & Lorie A. Conkle
 75 Arlington Avenue
 Moundsville, WV 26041

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<input type="checkbox"/> Return Receipt (electronic)	\$ _____
<input type="checkbox"/> Certified Mail Restricted Delivery	\$ _____
<input type="checkbox"/> Adult Signature Required	\$ _____
<input type="checkbox"/> Adult Signature Restricted Delivery	\$ _____

Postage
 \$ _____

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

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<input type="checkbox"/> Return Receipt (electronic)	\$ _____
<input type="checkbox"/> Certified Mail Restricted Delivery	\$ _____
<input type="checkbox"/> Adult Signature Required	\$ _____
<input type="checkbox"/> Adult Signature Restricted Delivery	\$ _____

Postage
 \$ _____

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

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<input type="checkbox"/> Return Receipt (hardcopy)	\$ _____
<input type="checkbox"/> Return Receipt (electronic)	\$ _____
<input type="checkbox"/> Certified Mail Restricted Delivery	\$ _____
<input type="checkbox"/> Adult Signature Required	\$ _____
<input type="checkbox"/> Adult Signature Restricted Delivery	\$ _____

Postage
 \$ _____

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

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<input type="checkbox"/> Return Receipt (electronic)	\$ _____
<input type="checkbox"/> Certified Mail Restricted Delivery	\$ _____
<input type="checkbox"/> Adult Signature Required	\$ _____
<input type="checkbox"/> Adult Signature Restricted Delivery	\$ _____

Postage
 \$ _____

To: Murray Energy Corporation
 46226 National Road
 St. Clairsville, OH 43950

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

WW-6A Receipts for:
 Ten High 1N-1HM, 1N-2HM, 1N-3HM and 1N-4HM

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 Office of Oil and Gas
 JAN 2 2013
 WV Department of
 Environmental Protection

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY

Notice Time Requirement: Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

Date of Notice: February 9, 2017 **Date of Planned Entry:** February 17, 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 Eason, 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 Eason, 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: WEST VIRGINIA
County: MARSHALL
District: MEADE
Quadrangle: GLEN EASTON 7.5'

Approx. Latitude & Longitude: LAT 39.8067775 LONG -80.6809192
Public Road Access: SHEPHERD RIDGE LANE (Co. RT. 21/9)
Watershed: HUC-10 FISH CREEK
Generally used farm name: LAWRENCE & SHIRLEY CONKLE, ESTS

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: JWHITE@TUG-HILLOP.COM

Address: 380 SOUTHPOINTE 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.

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2-17-17

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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51-01944 MOD

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Ten High 1N-2HM
Ten High 1N-3HM
Ten High 1N-4HM
Ten High 1N-11HU
Ten High 1N-12HU
Ten High 1N-13HU
WW-A63

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<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$1.40

Total Postage and Fees \$7.50

Sent To: ESTATE OF LAWRENCE & SHIRLEY MAE CONKLE
C/O ROY CONKLE
75 ARLINGTON AVENUE
MOUNDSVILLE WV 26041

Postmark Here: FEB 9 2017 02/09/2017 0518 17

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<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$1.40

Total Postage and Fees \$7.50

Sent To: ROY A CONKLE SR AND LORIE A
75 ARLINGTON AVENUE
MOUNDSVILLE WV 26041

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Extra Services & Fees (check box, add fee as appropriate)	\$2.75
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$1.40

Total Postage and Fees \$7.50

Sent To: LARRY LEE CONKLE AND DONNA D
154 CONKLE DRIVE
GLEN EASTON WV 26039

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<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$1.40

Total Postage and Fees \$7.50

Sent To: MURRAY ENERGY CORPORATION
46226 NATIONAL ROAD
ST CLAIRSVILLE OH 43950

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<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$1.40

Total Postage and Fees \$7.50

Sent To: TERESA ANNE HUGHES AND MICHAEL J
252 CONKLE DRIVE
GLEN EASTON WV 26039

Postmark Here: FEB 9 2017 02/09/2017 0518 17

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51-01944 MOD

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- Ten High 1N-2HM
- Ten High 1N-3HM
- Ten High 1N-4HM
- Ten High 1N-11HU
- Ten High 1N-12HU
- Ten High 1N-13HU
- WW-A63

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	\$7.75	0518
Extra Services & Fees (check box, add fee as appropriate)		17
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$1.40	
Total Postage and Fees	\$7.50	

Sent To: BRENDA JOYCE WHETZEL
 Street and Apt.: 1853 SHEPHERDS RIDGE LANE
 City, State, ZIP+4: GLEN EASTON WV 26039

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	\$7.75	0518
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<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$1.40	
Total Postage and Fees	\$7.50	

Sent To: ROBERT G HUBBS AND SCARLETT OTTE
 Street and Apt.: 132 SHEPHERDS RIDGE LANE
 City, State, ZIP+4: GLEN EASTON WV 26039

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 WV Department of
 Environmental Protection

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

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1N-3HM

1N-4HM

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Extra Services & Fees (check box, add fee as appropriate)	\$2.75
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<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$8.50
Total Postage and Fees	\$14.60

Postmark Here
06/21/2017

Sent To: Murray Energy Corporation
Street: 46226 National Road
City, St: St. Clairsville, OH 43950

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Certified Mail Fee	\$3.35
Extra Services & Fees (check box, add fee as appropriate)	\$2.75
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$8.50
Total	\$14.60

Postmark Here
06/21/2017

Sent To: Estate of Lawrence & Shirley Conkle
Street: c/o Roy Conkle
City: Moundsville, WV 26041

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<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$7.80
Total Postage and Fees	\$13.90

Postmark Here
06/21/2017

Sent To: Robert G. Hubbs & Scarlett E. Otte
Street: 132 Shepherds Ridge Lane
City, St: Glen Easton, WV 26039

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7016 2140 0000 9580 5710

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<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$8.50
Total Postage and Fees	\$14.60

Postmark Here
06/21/2017

Sent To: Roy A. Conkle, Sr. & Lorie A. Conkle
Street: 75 Arlington Avenue
City: Moundsville, WV 26041

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WV Department
Economic Development

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Sent To: Larry Lee & Donna D. Conkle
 Street or Apt. No.: 154 Conkle Drive
 City, State, ZIP+4®: Glen Easton, WV 26039

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions



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Sent To: Brenda Joyce Whetzel
 Street and Apt. No.: 1863 Shepherds Ridge Lane
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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions



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Postage	\$8.50	
Total Postage and Fees	\$14.60	

Sent To: Teresa Anne & Michael J. Hughes
 Street and Apt. No.: 252 Conkle Drive
 City, State, ZIP+4®: Glen Easton, WV 26039

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Jim Justice
Governor

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

May 16, 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-3HM 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,

A handwritten signature in blue ink that reads "Gary K. Clayton".

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-4HM

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

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