



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, June 14, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

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

Re: Permit approval for TEN HIGH 1N-11HU
47-051-01960-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

A blue ink signature of James A. Martin, written in a cursive style.

Operator's Well Number: TEN HIGH 1N-11HU
Farm Name: LAWRENCE & SHIRLEY CON.
U.S. WELL NUMBER: 47-051-01960-00-00
Horizontal 6A New Drill
Date Issued: 6/14/2018

PERMIT CONDITIONS

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

CONDITIONS

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

API Number: 51-01960

PERMIT CONDITIONS

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



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

March 16, 2018

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

RE: Application for Deep Well Permit – API #47-051-01960

COMPANY: Tug Hill Operating, LLC


FARM: Tug Hill Operating, LLC Ten High 1N-11HU

COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton 7.5'

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

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

1. Comments to Notice of Deviation filed? No.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: 47-051-01967, 47-051-01969, 47-051-01961, and 47-051-01965
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Susan Rose
Administrator

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-11HU 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: 1320' Elevation, proposed post-construction: 1310'

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

Other _____

(b) If Gas Shallow _____ Deep

Horizontal

6) Existing Pad: Yes or No No

JW5/11/18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,589' - 11,728' thickness of 139' and anticipated pressure of approx. 9500 psi

8) Proposed Total Vertical Depth: 11,878'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 18,186'

11) Proposed Horizontal Leg Length: 6,074'

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: 2,167'

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 No _____

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine
Depth: 1020' TVD and 300' 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	105'	100'	216FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	1,096'	1,086'	1,725ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,810'	2,800'	1,969ft^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,550'	10,540'	3,440ft^3(CTS)
Production	5 1/2"	NEW	HCP110	23#	18,196'	18,186'	4,345ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,747'	
Liners							

JW5/1/18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE#24	1.99
Production	5 1/2"	8 1/2"	.415	13,580	10,864	SEE#24	1.18
Tubing	2 7/8"			14,530	11,624		
Liners							

PACKERS

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

JW5/1/18

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

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

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

Well to be completed with approximately x lb proppant and x bbl of water. Max rate = 100 bpm; max psi = 12,500#.

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

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

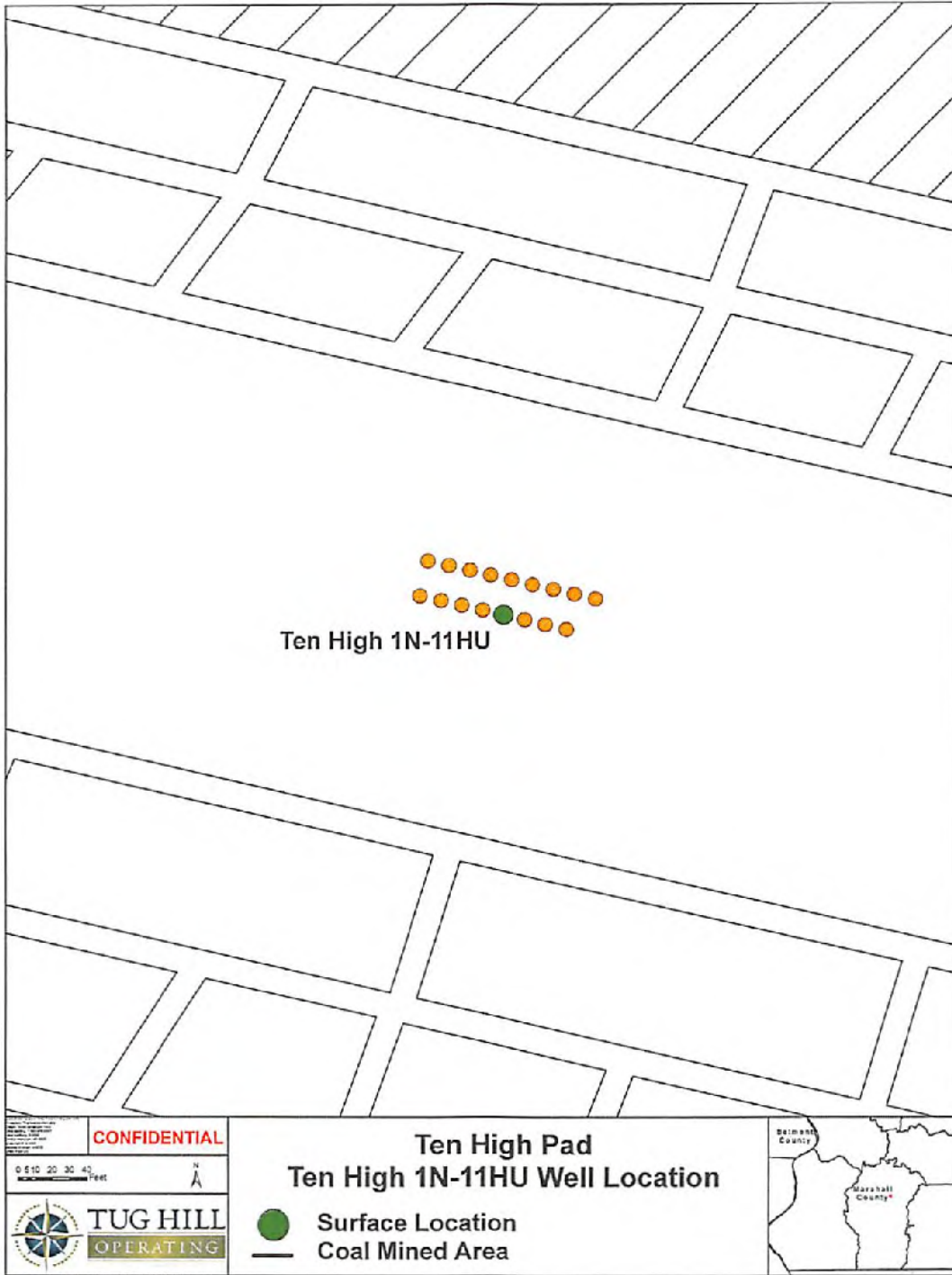
*See Attachment

25) Proposed borehole conditioning procedures:

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

*Note: Attach additional sheets as needed.

51-01960



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Tug Hill Operating, LLC Casing and Cement Program

Ten High 1N-11HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	100'	CTS
Surface	20"	J55	26"	1,086'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,800'	CTS
Intermediate 2	9 5/8"	HP110	12 1/4"	10,540'	CTS
Production	5 1/2"	HCP110	8 1/2"	18,187'	CTS

Cement

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

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

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

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

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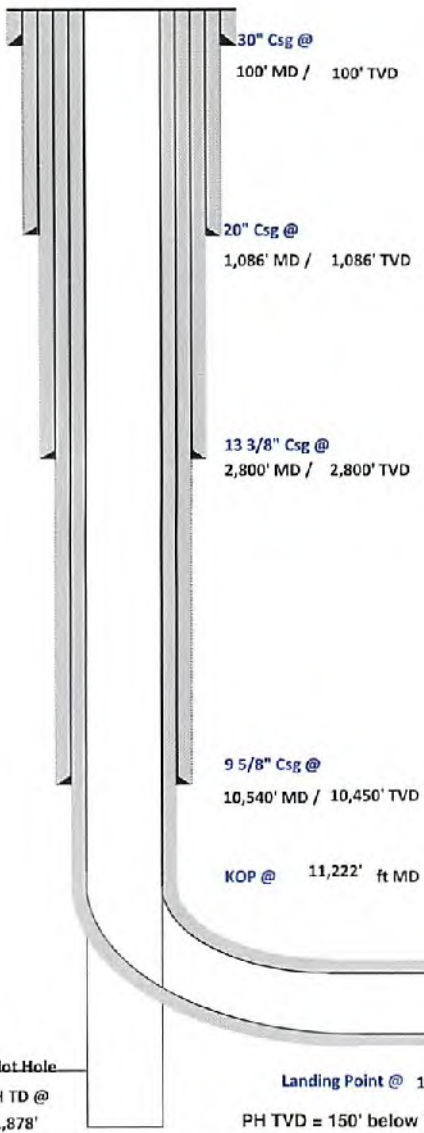
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51-01960



WELL NAME: Ten High 1N-11HU
 STATE: West Virginia COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 1,310' GL Elev: 1,310'
 TD: 18,187'
 TH Latitude: 39.80673723
 TH Longitude: 80.68094026
 BH Latitude: 39.82124911
 BH Longitude: 80.69583274

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FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1,026'
Sewickley Coal	935'
Pittsburgh Coal	1,020'
Big Lime	2,049'
Berea	2,673'
Tully	6,606'
Marcellus	6,713'
Onondaga	6,765'
Salina	7,497'
Lockport	8,562'
Utica	11,413'
Point Pleasant	11,589'
Landing Depth	11,601'
Trenton	11,728'
Pilot Hole TD	11,878'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	100'	100'	BW	BW	Surface
Surface	26	20	1,086'	1,086'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,800'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,540'	10,450'	47	HP110	Surface
Production	8 1/2	5 1/2	18,187'	11,495'	23	HCP110	Surface

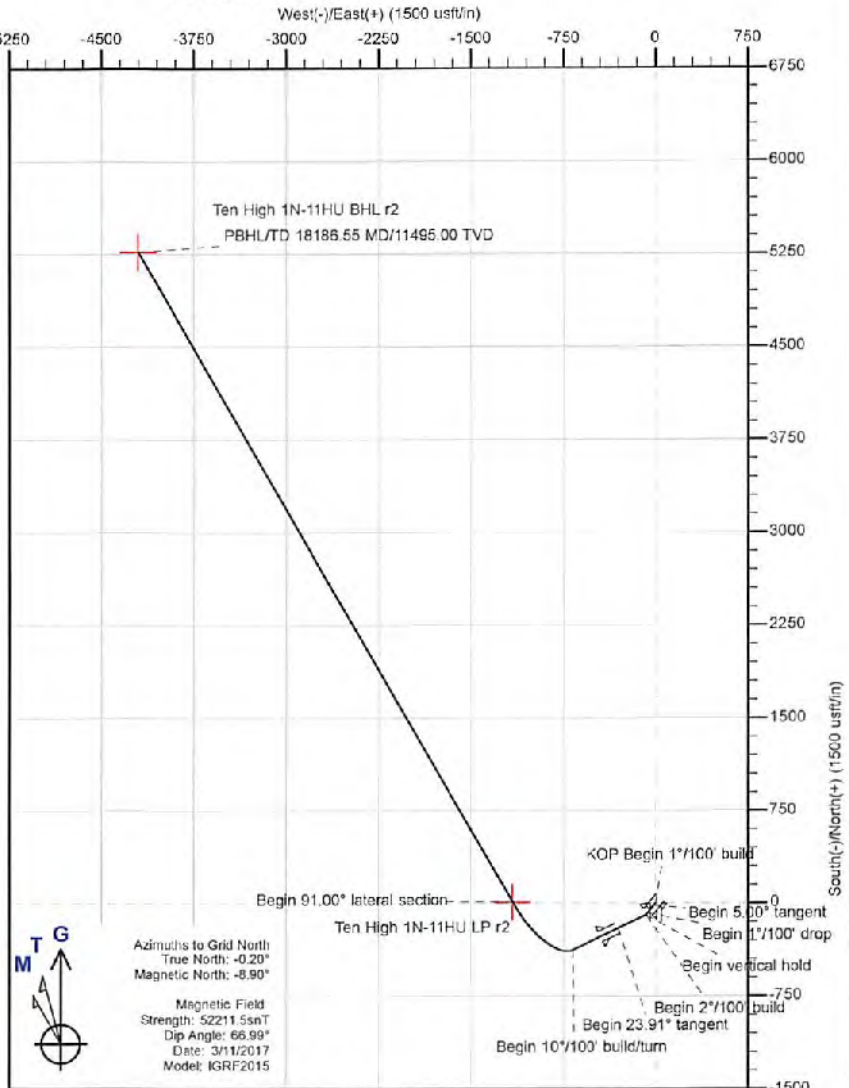
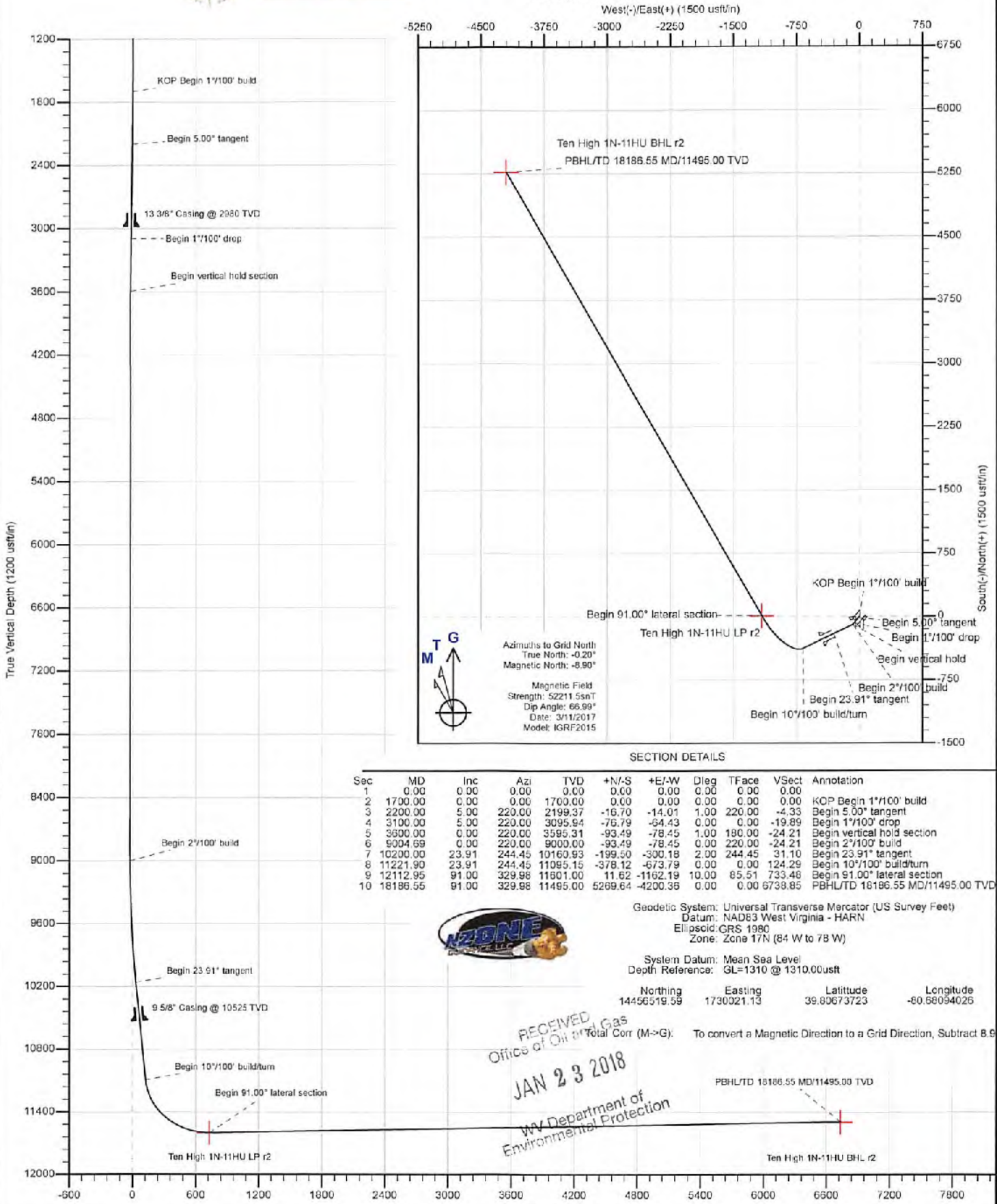
CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	291	A	15.6	Air	None
Surface	1,872	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,139	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,802	A	14.5	Air	1 Centralizer every other jt
Production	3,729	A	15	Air / SOB M1	every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc

Handwritten signature and date: 1/17/18

Pilot Hole PH TD @ 11,878' Landing Point @ 12,113' MD / 11,601' TVD Lateral TD @ 18,187' ft MD / 11,495' TVD
 PH TVD = 150' below Trenton Top



Well: Ten High 1N-11HU (L)
 Site: Ten High
 Project: Marshall County, West Virginia
 Design: rev4



Azimuths to Grid North:
 True North: -0.20°
 Magnetic North: -8.90°
 Magnetic Field
 Strength: 52211.5nT
 Dip Angle: 66.99°
 Date: 3/11/2017
 Model: IGRF2015

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1700.00	0.00	0.00	1700.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1'100' build
3	2200.00	5.00	220.00	2199.37	-16.70	-14.01	1.00	220.00	-4.33	Begin 5.00° tangent
4	3100.00	5.00	220.00	3095.64	-76.79	-64.43	0.00	0.00	-19.89	Begin 1'100' drop
5	3600.00	0.00	220.00	3595.31	-93.49	-78.45	1.00	180.00	-24.21	Begin vertical hold section
6	9004.69	0.00	220.00	9000.00	-93.49	-78.45	0.00	220.00	-24.21	Begin 2'100' build
7	10200.00	23.91	244.45	10160.93	-199.50	-300.18	2.00	244.45	31.10	Begin 23.91° tangent
8	11221.90	23.91	244.45	11095.15	-378.12	-673.79	0.00	0.00	124.29	Begin 10'100' build/turn
9	12112.95	91.00	329.98	11601.00	11.62	-1162.19	10.00	65.51	733.46	Begin 91.00° lateral section
10	18186.55	91.00	329.98	11495.00	5269.64	-4200.35	0.00	0.00	6738.85	PBHL/TD 18186.55 MD/11495.00 TVD



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

System Datum: Mean Sea Level
 Depth Reference: GL=1310 @ 1310.00ustf

Northing	Easting	Latitude	Longitude
14456519.59	1730321.13	39.93673723	-80.68094026

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 Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.9°

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

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

Data Sources Reviewed:

1. IHS Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases

2. Farm Maps

3. Topo Maps: Recent and older (contact WVGES)

4. Check with DPS

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (12/19/2016) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

1. Wellbore with IHS All Wells Layer

2. Map with Farm lines overlain and any well spots identified on Farm Maps

3. More recent (1970s vintage) topos and older topos

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

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

Permit well - Ten High 1N-11HU

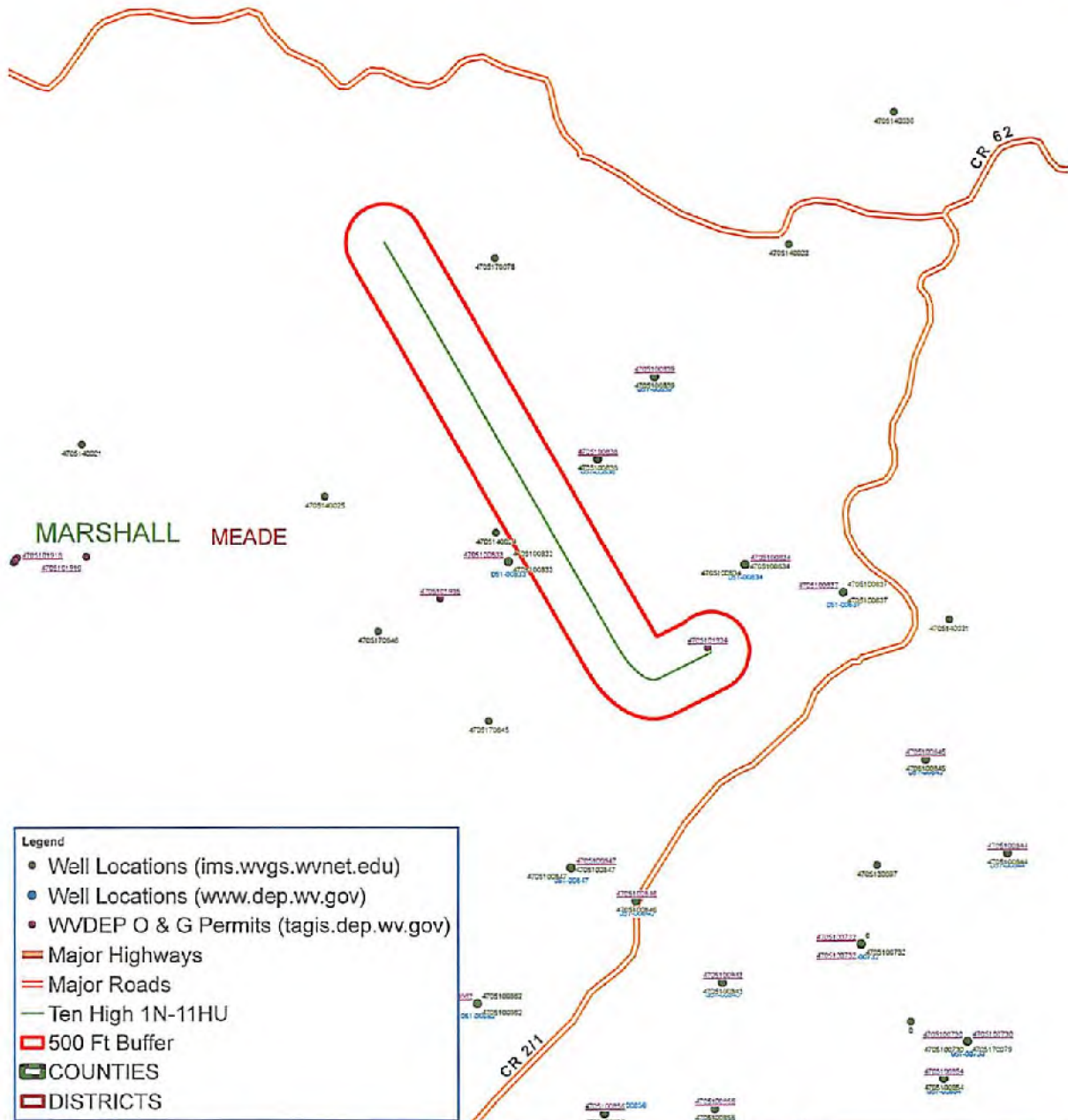
Wells within 500' Buffer

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	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled

5.11. Area of Review-- The permittee shall review the area surrounding the proposed well pad so as to identify and evaluate potential conditions for unintended fracture propagation, a report of which the permittee shall provide to the Office with the application for well work. All existing active, plugged, abandoned, and undocumented wells within a five hundred feet (500') radius of the surface location of the well that is the subject of the new application and within a five hundred feet (500') radius of the lateral section of the wellbore shall be considered for the potential of unintended fracture propagation. The report shall detail those wells that are known or reasonably expected to penetrate a depth that could be within the range of the fracture propagation. The detail shall include at a minimum the API number, operator name, total depth, perforated formation(s) and producing zones not perforated.

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Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Well Locations (www.dep.wv.gov)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Ten High 1N-11HU
- ▭ 500 Ft Buffer
- ▭ COUNTIES
- ▭ DISTRICTS



Ten High 1N-11HU
Meade District
Marshall County, WV



Map Created July 7, 2017
Map Current As Of July 7, 2017

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

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Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-11HU (L)
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-11HU (L)	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:	-80.68101011
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Ten High 1N-11HU (L)					
Well Position	+N/-S	0.00 usft	Northing:	14,456,519.59 usft	Latitude:	39.80673723
	+E/-W	0.00 usft	Easting:	1,730,021.12 usft	Longitude:	-80.68094026
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	3/11/2017	-8.70	66.99	52,211.49076463

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	321.44

Plan Survey Tool Program	Date	11/26/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,186.55 rev4 (Original Hole)	MWD MWD - Standard	

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51-01960



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-11HU (L)
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-11HU (L)	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		
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00		
2,200.00	5.00	220.00	2,199.37	-16.70	-14.01	1.00	1.00	0.00	220.00		
3,100.00	5.00	220.00	3,095.94	-76.79	-64.43	0.00	0.00	0.00	0.00		
3,600.00	0.00	220.00	3,595.31	-93.49	-78.45	1.00	-1.00	0.00	160.00		
9,004.69	0.00	220.00	9,000.00	-93.49	-78.45	0.00	0.00	0.00	220.00		
10,200.00	23.91	244.45	10,160.93	-199.50	-300.18	2.00	2.00	2.05	244.45		
11,221.90	23.91	244.45	11,095.15	-378.12	-673.79	0.00	0.00	0.00	0.00		
12,112.95	91.00	329.98	11,601.00	11.62	-1,162.19	10.00	7.53	9.60	85.51	Ten High 1N-11HU LF	
18,186.55	91.00	329.98	11,495.00	5,269.64	-4,200.36	0.00	0.00	0.00	0.00	Ten High 1N-11HU BF	

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WV Department of
Environmental Protection

51-01960



Planning Report - Geographic



Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Ten High
 Well: Ten High 1N-11HU (L)
 Wellbore: Original Hole
 Design: rev4

Local Co-ordinate Reference: Well Ten High 1N-11HU (L)
 TVD Reference: GL=1310 @ 1310.00usft
 MD Reference: GL=1310 @ 1310.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

JAN 23 2018

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	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
100.00	0.00	0.00	100.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
200.00	0.00	0.00	200.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
300.00	0.00	0.00	300.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
400.00	0.00	0.00	400.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
500.00	0.00	0.00	500.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
600.00	0.00	0.00	600.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
700.00	0.00	0.00	700.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
800.00	0.00	0.00	800.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
900.00	0.00	0.00	900.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,456,519.59	1,730,021.12	39.80673723	-80.68094026
KOP Begin 1°/100' build									
1,800.00	1.00	220.00	1,799.99	-0.67	-0.56	14,456,518.92	1,730,020.56	39.80673540	-80.68094227
1,900.00	2.00	220.00	1,899.96	-2.67	-2.24	14,456,516.92	1,730,018.88	39.80672891	-80.68094628
2,000.00	3.00	220.00	1,999.86	-6.02	-5.05	14,456,513.58	1,730,016.06	39.80672076	-80.68095831
2,100.00	4.00	220.00	2,099.68	-10.69	-8.97	14,456,508.90	1,730,012.15	39.80670796	-80.68097234
2,200.00	5.00	220.00	2,199.37	-16.70	-14.01	14,456,502.69	1,730,007.11	39.80669150	-80.68099037
Begin 5.00° tangent									
2,300.00	5.00	220.00	2,298.99	-23.38	-19.62	14,456,496.21	1,730,001.51	39.80667322	-80.68101041
2,400.00	5.00	220.00	2,398.60	-30.05	-25.22	14,456,489.54	1,729,995.91	39.80665494	-80.68103044
2,500.00	5.00	220.00	2,498.22	-36.73	-30.82	14,456,482.66	1,729,990.30	39.80663666	-80.68105047
2,600.00	5.00	220.00	2,597.84	-43.41	-36.42	14,456,476.19	1,729,984.70	39.80661838	-80.68107050
2,700.00	5.00	220.00	2,697.46	-50.08	-42.03	14,456,469.51	1,729,979.10	39.80660010	-80.68109054
2,800.00	5.00	220.00	2,797.08	-56.76	-47.63	14,456,462.83	1,729,973.50	39.80658182	-80.68111057
2,900.00	5.00	220.00	2,896.70	-63.44	-53.23	14,456,456.16	1,729,967.89	39.80656354	-80.68113060
3,000.00	5.00	220.00	2,996.32	-70.11	-58.83	14,456,449.48	1,729,962.29	39.80654526	-80.68115064
3,100.00	5.00	220.00	3,095.94	-76.79	-64.43	14,456,442.80	1,729,956.69	39.80652698	-80.68117067
Begin 1°/100' drop									
3,200.00	4.00	220.00	3,195.63	-82.80	-69.48	14,456,436.79	1,729,951.65	39.80651052	-80.68118870
3,300.00	3.00	220.00	3,295.44	-87.48	-73.40	14,456,432.12	1,729,947.72	39.80649772	-80.68120273
3,400.00	2.00	220.00	3,395.35	-90.82	-76.21	14,456,428.77	1,729,944.92	39.80648857	-80.68121276
3,500.00	1.00	220.00	3,495.31	-92.82	-77.89	14,456,426.77	1,729,943.24	39.80648308	-80.68121878
3,600.00	0.00	220.00	3,595.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
Begin vertical hold section									
3,700.00	0.00	220.00	3,695.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
3,800.00	0.00	0.00	3,795.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
3,900.00	0.00	220.00	3,895.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,000.00	0.00	220.00	3,995.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,100.00	0.00	220.00	4,095.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,200.00	0.00	220.00	4,195.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,300.00	0.00	220.00	4,295.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,400.00	0.00	220.00	4,395.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,500.00	0.00	220.00	4,495.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,600.00	0.00	220.00	4,595.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,700.00	0.00	0.00	4,695.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,800.00	0.00	220.00	4,795.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078
4,900.00	0.00	220.00	4,895.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078

WV Department of Environmental Protection

51-01960



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-11HU (L)
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-11HU (L)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,000.00	0.00	220.00	4,995.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,100.00	0.00	220.00	5,095.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,200.00	0.00	220.00	5,195.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,300.00	0.00	220.00	5,295.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,400.00	0.00	220.00	5,395.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,500.00	0.00	220.00	5,495.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,600.00	0.00	0.00	5,595.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,700.00	0.00	220.00	5,695.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,800.00	0.00	220.00	5,795.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
5,900.00	0.00	220.00	5,895.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,000.00	0.00	220.00	5,995.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,100.00	0.00	220.00	6,095.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,200.00	0.00	220.00	6,195.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,300.00	0.00	0.00	6,295.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,400.00	0.00	220.00	6,395.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,500.00	0.00	220.00	6,495.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,600.00	0.00	220.00	6,595.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,700.00	0.00	220.00	6,695.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,800.00	0.00	220.00	6,795.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
6,900.00	0.00	220.00	6,895.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,000.00	0.00	220.00	6,995.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,100.00	0.00	220.00	7,095.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,200.00	0.00	0.00	7,195.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,300.00	0.00	220.00	7,295.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,400.00	0.00	220.00	7,395.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,500.00	0.00	220.00	7,495.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,600.00	0.00	220.00	7,595.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,700.00	0.00	220.00	7,695.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,800.00	0.00	220.00	7,795.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
7,900.00	0.00	220.00	7,895.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,000.00	0.00	220.00	7,995.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,100.00	0.00	0.00	8,095.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,200.00	0.00	220.00	8,195.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,300.00	0.00	220.00	8,295.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,400.00	0.00	0.00	8,395.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,500.00	0.00	220.00	8,495.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,600.00	0.00	220.00	8,595.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,700.00	0.00	220.00	8,695.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,800.00	0.00	220.00	8,795.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
8,900.00	0.00	220.00	8,895.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
9,000.00	0.00	220.00	8,995.31	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
9,004.69	0.00	220.00	9,000.00	-93.49	-78.45	14,456,426.10	1,729,942.68	39.80648125	-80.68122078	
Begin 2"/100' build										
9,100.00	1.91	244.45	9,095.29	-94.18	-79.88	14,456,425.42	1,729,941.24	39.80647938	-80.68122588	
9,200.00	3.91	244.45	9,195.16	-96.36	-84.45	14,456,423.23	1,729,936.67	39.80547342	-80.68124220	
9,300.00	5.91	244.45	9,294.78	-100.05	-92.17	14,456,419.54	1,729,928.96	39.80646337	-80.68126972	
9,400.00	7.91	244.45	9,394.05	-105.24	-103.02	14,456,414.36	1,729,918.11	39.80544923	-80.68130841	
9,500.00	9.91	244.45	9,492.84	-111.92	-116.98	14,456,407.68	1,729,904.14	39.80643103	-80.68135822	
9,600.00	11.91	244.45	9,591.03	-120.08	-134.05	14,456,399.52	1,729,897.07	39.80540879	-80.68141910	
9,700.00	13.91	244.45	9,688.50	-129.71	-154.20	14,456,389.88	1,729,886.92	39.80638253	-80.68149097	
9,800.00	15.91	244.45	9,785.13	-140.60	-177.41	14,456,378.79	1,729,843.72	39.80635228	-80.68157374	
9,900.00	17.91	244.45	9,880.80	-153.35	-203.64	14,456,368.25	1,729,817.48	39.80631809	-80.68166732	
10,000.00	19.91	244.45	9,975.40	-167.32	-232.87	14,456,352.27	1,729,788.45	39.80528000	-80.68177158	
10,100.00	21.91	244.45	10,068.82	-182.71	-265.07	14,456,338.88	1,729,756.06	39.80623805	-80.68188640	

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Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-11HU (L)
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-11HU (L)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

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Office of Oil and Gas
JAN 23 2018

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
15,100.00	91.00	329.98	11,548.87	2,597.56	-2,656.39	14,459,117.15	1,727,364.74	39.81389639	-80.69036688
15,200.00	91.00	329.98	11,547.12	2,664.13	-2,706.41	14,459,203.73	1,727,314.71	39.81413461	-80.69054395
15,300.00	91.00	329.98	11,545.38	2,770.70	-2,756.43	14,459,290.30	1,727,264.89	39.81437283	-80.69072102
15,400.00	91.00	329.98	11,543.63	2,857.28	-2,806.46	14,459,376.87	1,727,214.67	39.81461106	-80.69089809
15,500.00	91.00	329.98	11,541.89	2,943.85	-2,856.48	14,459,463.44	1,727,164.65	39.81484928	-80.69107516
15,600.00	91.00	329.98	11,540.14	3,030.42	-2,906.50	14,459,550.01	1,727,114.62	39.81508750	-80.69125224
15,700.00	91.00	329.98	11,538.40	3,116.99	-2,956.52	14,459,636.59	1,727,064.60	39.81532572	-80.69142931
15,800.00	91.00	329.98	11,536.65	3,203.56	-3,006.55	14,459,723.16	1,727,014.58	39.81556394	-80.69160639
15,900.00	91.00	329.98	11,534.91	3,290.14	-3,056.57	14,459,809.73	1,726,964.55	39.81580216	-80.69178346
16,000.00	91.00	329.98	11,533.16	3,376.71	-3,106.59	14,459,896.30	1,726,914.53	39.81604038	-80.69196054
16,100.00	91.00	329.98	11,531.42	3,463.28	-3,156.62	14,459,982.87	1,726,864.51	39.81627860	-80.69213762
16,200.00	91.00	329.98	11,529.67	3,549.85	-3,206.64	14,460,069.44	1,726,814.49	39.81651682	-80.69231470
16,300.00	91.00	329.98	11,527.93	3,636.42	-3,256.66	14,460,156.02	1,726,764.46	39.81675504	-80.69249178
16,400.00	91.00	329.98	11,526.18	3,723.00	-3,306.68	14,460,242.59	1,726,714.44	39.81699326	-80.69266887
16,500.00	91.00	329.98	11,524.43	3,809.57	-3,356.71	14,460,329.16	1,726,664.42	39.81723148	-80.69284595
16,600.00	91.00	329.98	11,522.69	3,896.14	-3,406.73	14,460,415.73	1,726,614.40	39.81746970	-80.69302303
16,700.00	91.00	329.98	11,520.94	3,982.71	-3,456.75	14,460,502.30	1,726,564.37	39.81770792	-80.69320012
16,800.00	91.00	329.98	11,519.20	4,069.28	-3,506.77	14,460,588.88	1,726,514.35	39.81794613	-80.69337721
16,900.00	91.00	329.98	11,517.45	4,155.86	-3,556.80	14,460,675.45	1,726,464.33	39.81818435	-80.69355430
17,000.00	91.00	329.98	11,515.71	4,242.43	-3,606.82	14,460,762.02	1,726,414.31	39.81842257	-80.69373139
17,100.00	91.00	329.98	11,513.96	4,329.00	-3,656.84	14,460,848.59	1,726,364.28	39.81866079	-80.69390848
17,200.00	91.00	329.98	11,512.22	4,415.57	-3,706.86	14,460,935.16	1,726,314.26	39.81889900	-80.69408557
17,300.00	91.00	329.98	11,510.47	4,502.14	-3,756.89	14,461,021.74	1,726,264.24	39.81913722	-80.69426267
17,400.00	91.00	329.98	11,508.73	4,588.71	-3,806.91	14,461,108.31	1,726,214.22	39.81937544	-80.69443976
17,500.00	91.00	329.98	11,506.98	4,675.29	-3,856.93	14,461,194.88	1,726,164.19	39.81961365	-80.69461685
17,600.00	91.00	329.98	11,505.24	4,761.86	-3,906.95	14,461,281.45	1,726,114.17	39.81985187	-80.69479395
17,700.00	91.00	329.98	11,503.49	4,848.43	-3,956.98	14,461,368.02	1,726,064.15	39.82009009	-80.69497105
17,800.00	91.00	329.98	11,501.75	4,935.00	-4,007.00	14,461,454.60	1,726,014.12	39.82032830	-80.69514815
17,900.00	91.00	329.98	11,500.00	5,021.57	-4,057.02	14,461,541.17	1,725,964.10	39.82056652	-80.69532526
18,000.00	91.00	329.98	11,498.26	5,108.15	-4,107.04	14,461,627.74	1,725,914.08	39.82080473	-80.69550236
18,100.00	91.00	329.98	11,496.51	5,194.72	-4,157.07	14,461,714.31	1,725,864.06	39.82104294	-80.69567946
18,186.55	91.00	329.98	11,495.00	5,289.64	-4,200.36	14,461,789.24	1,725,820.76	39.82124911	-80.69583274

PBHL/TD 18186.55 MD/11495.00 TVD

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Ten High 1N-11HU BHL - hit/miss target - Shape - Point	0.00	0.01	11,495.00	5,269.64	-4,200.36	14,461,789.24	1,725,820.76	39.82124911	-80.69583274
Ten High 1N-11HU LP r2 - plan hits target center - Point	0.00	0.00	11,601.00	11.62	-1,162.19	14,456,531.21	1,728,858.94	39.80678044	-80.68507833



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-11HU (L)
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-11HU (L)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev4		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,175.00	1,175.00	20" Casing @ 1175 TVD	20	24	
2,983.62	2,980.00	13 3/8" Casing @ 2980 TVD	13-3/8	17-1/2	
10,598.24	10,525.00	9 5/8" Casing @ 10525 TVD	9-5/8	12-1/4	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,700.00	1,700.00	0.00	0.00	KOP Begin 1°/100' build	<p>RECEIVED Office of Oil and Gas</p> <p>JAN 23 2018</p> <p>WV Department of Environmental Protection</p>
2,200.00	2,199.37	-16.70	-14.01	Begin 5.00° tangent	
3,100.00	3,095.94	-76.79	-64.43	Begin 1°/100' drop	
3,600.00	3,595.31	-93.49	-78.45	Begin vertical hold section	
9,004.69	9,000.00	-93.49	-78.45	Begin 2°/100' build	
10,200.00	10,160.93	-199.50	-300.18	Begin 23.91° tangent	
11,221.90	11,095.15	-376.12	-673.79	Begin 10°/100' build/turn	
12,112.95	11,601.00	11.62	-1,162.19	Begin 91.00° lateral section	
18,186.55	11,495.00	5,269.64	-4,200.36	PBHL/TD 18186.55 MD/11495.00 TVD	

WW-9
(4/16)

API Number 47 - 051 - 01960
Operator's Well No. Ten High 1N-11HU

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number UIC 2459, UIC 665, UIC 359, UIC 2D0732540, UIC 2D0732523)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Weston County Sanitary Landfill (SWP-1021 / WVC129188) and Westmoreland Sanitary Landfill, LLC (SAN14-05 / PA DEP EC#1336420)

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

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

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

Company Official Signature _____

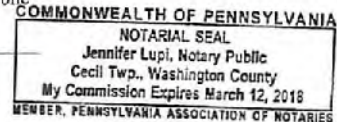
Company Official (Typed Name) Sean Gasser

Company Official Title Engineer

Subscribed and sworn before me this 8th day of June, 2017

Jennifer Lupi Notary Public

My commission expires March 12, 2018



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WV Department of
Environmental Protection

51-01960

Operator's Well No. Ten High 1N-11HU

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: *John ...*

Comments: _____

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WV Department of
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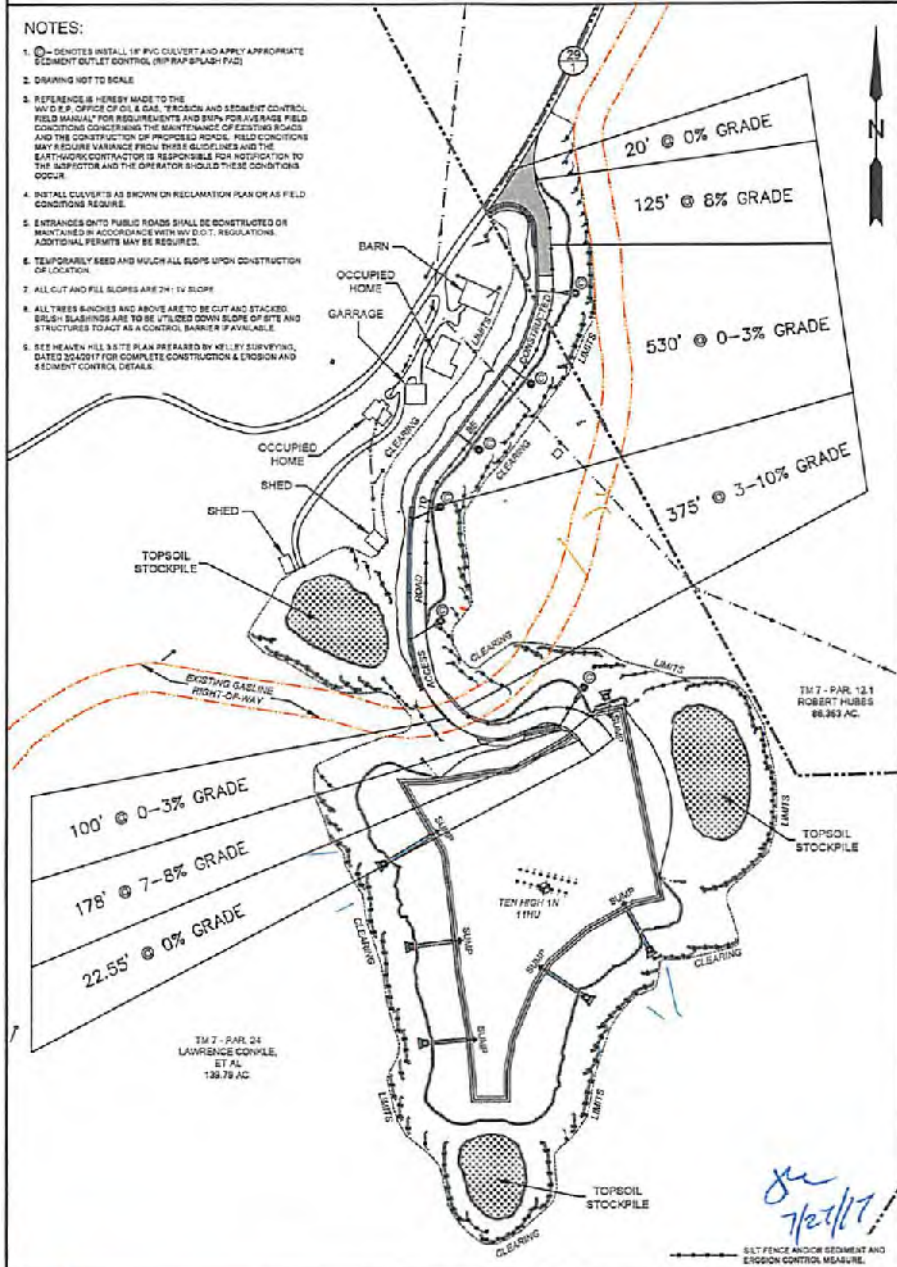
Title: Oil + Gas Inspector Date: 1/27/17

Field Reviewed? Yes No

PROPOSED
TEN HIGH 1N - 11HU

NOTES:

1. DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (OR RAP FLASH PAD)
2. DRAWING NOT TO SCALE
3. REFERENCE IS HEREBY MADE TO THE WV D.P. OFFICE OF OIL & GAS "PROBION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BURN FOR LIVE BASE 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 SUPERVISOR 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 DEMOLISHED OR BARRICADED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY REED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H:1V SLOPE
8. ALL TREES BRANCHES AND ABOVE ARE TO BE CUT AND STACKED BRUSH BARRIERS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE HEAVEN HILL SITE PLAN PREPARED BY KELLER SURVEYING, DATED 20-07-17 FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.

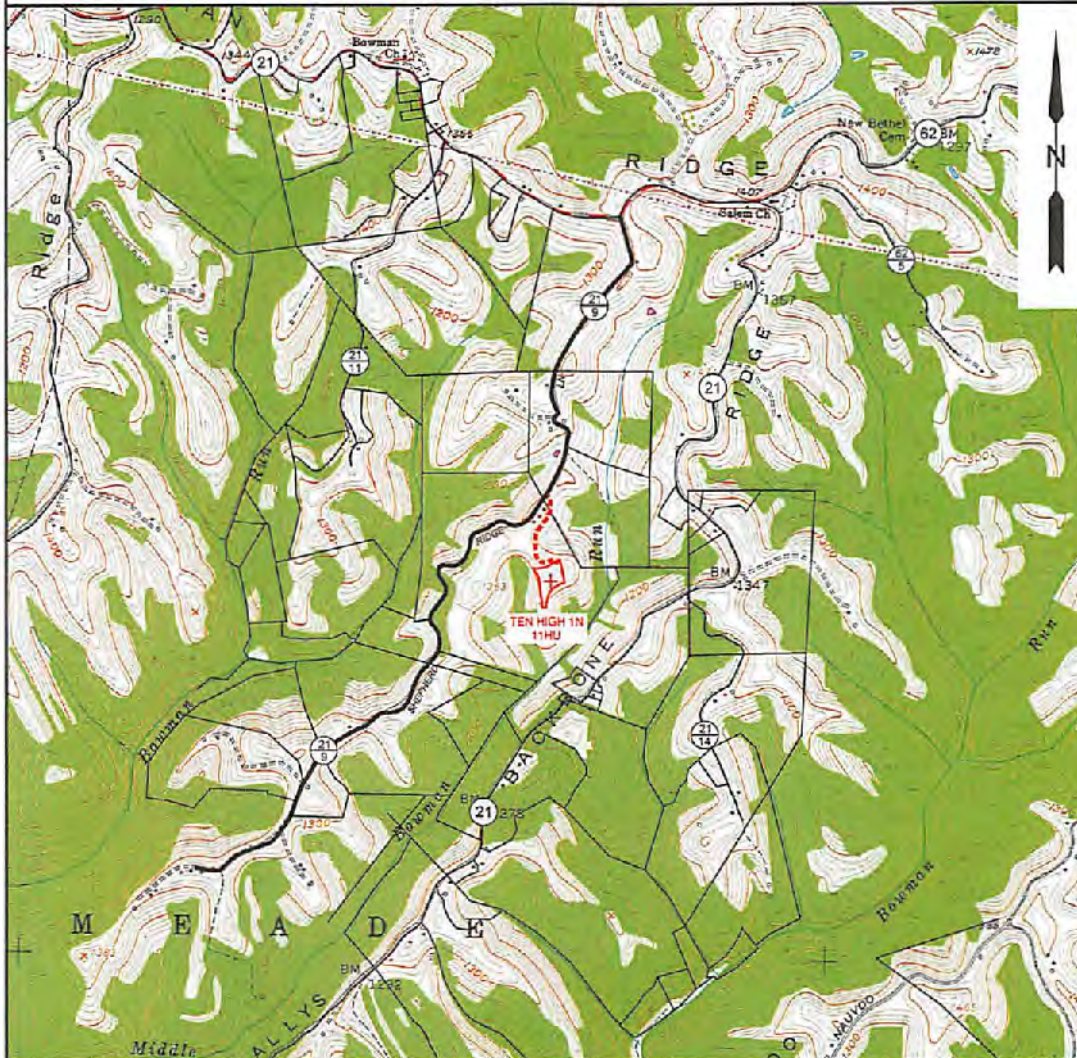


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WV Department of
Environmental Protection

Handwritten signature and date: J. H. 7/21/17

<p>SLS Land & Energy Development Solutions from the ground up. P.O. Box 158 412 Yankee Drive Kilminey, WV 26033 486-0 433-1111 www.slsenergy.com</p>	TOPO SECTION: GLEN EASTON 7.5'		OPERATOR: PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		<p>TUG HILL OPERATING</p>
	COUNTY:	DISTRICT:	DATE:	SCALE:	
	MARSHALL	MEADE	07-21-17	NONE	
	DRAWN BY:	JOB NO.:			
	K.G.M.	8655			



PROPOSED TEN HIGH 1N - 11HU



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

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 51°04'58" W AT 52,985' FROM TEN HIGH 1N - 11HU SURFACE LOCATION

OK 7/27/17

 SLS Land & Energy Development Solutions from the ground up. <small>P.O. Box 180 • 12 Vermont Drive • Glenville, WV 26031 • (304) 482-9834 www.slsurveys.com</small>	TOPO SECTION:		OPERATOR:		 TUG HILL OPERATING
	GLEN EASTON 7.5'		PREPARED FOR:		
	COUNTY	DISTRICT	TUG HILL OPERATING, LLC		
	MARSHALL	MEADE	380 SOUTHPOINTE BLVD		
			SUITE 200		
DRAWN BY	JOB NO.	DATE	SCALE		
K.C.M.	8655	07-21-17	1" = 2000'		

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WV Department of
Environmental Protection

51-01960



Well Site Safety Plan

Tug Hill Operating, LLC

Ju
1/17/18

Well Name: Ten High 1N-11HU

Pad Location: Ten High
Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING -4,406,355.98

EASTING -527,311.49

January 2018

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JAN 23 2018

WV Department of
Environmental Protection

8,192' B.H. 4,010' T.H. LATITUDE 39°50'00"

TEN HIGH 1N LEASE
WELL 11HU
TUG HILL OPERATING

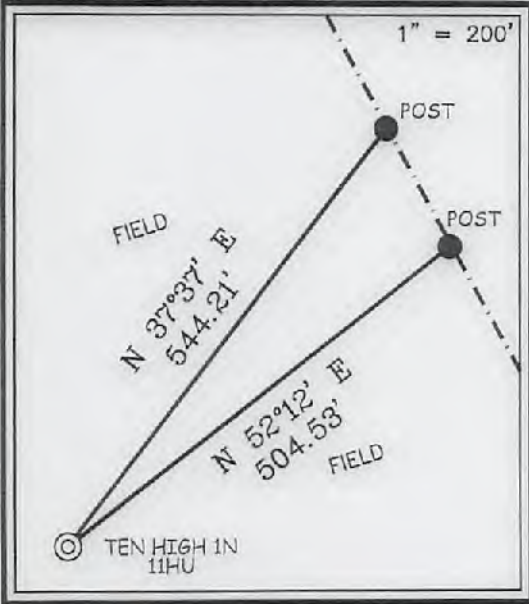
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'83 S.P.C.(FT)	N. 478,135.89	E. 1,636,740.94
NAD'83 GEO.	LAT-(N) 39.806737	LONG-(W) 80.680940
NAD'83 UTM (M)	N. 4,406,355.98	E. 527,311.49
<u>LANDING POINT</u>		
NAD'83 S.P.C.(FT)	N. 478,166.4	E. 1,635,576.7
NAD'83 GEO.	LAT-(N) 39.806780	LONG-(W) 80.685079
NAD'83 UTM (M)	N. 4,406,359.5	E. 526,957.3
<u>BOTTOM HOLE</u>		
NAD'83 S.P.C.(FT)	N. 483,476.3	E. 1,632,627.8
NAD'83 GEO.	LAT-(N) 39.821249	LONG-(W) 80.695833
NAD'83 UTM (M)	N. 4,407,962.2	E. 526,031.2

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 525' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'

REFERENCES



TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.79
B	ROBERT G. HUBBS & SCARLETT E. OTTE	9-7-12.1	86.363
C	RONALD MOORE, ET UX	9-7-12	16.587
D	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-22	12.00
E	RICKY L. WHITLATCH	9-7-30	72.82
F	ANDREW CORBY WHITLATCH	9-7-30.1	4.55
G	RONALD MOORE, ET UX	9-7-13	51.49
H	RICKY L. WHITLATCH	9-7-15	7.54
I	ARNIE GOODNIGHT, ET UX	9-7-14	39.55
J	TERESA L. HORNER, ET AL	9-7-6	103.30
K	ARNIE GOODNIGHT, ET UX	9-7-5	62.18
L	ELMER ASTON	9-5-4	108.225
M	MICHAEL JOSEPH SNYDER	9-5-5.4	64.00
N	KELLY WILSON, ET AL	9-5-18	5.807
O	CARLA SUE CROW	9-5-17	6.341
P	MICHAEL JOSEPH SNYDER	9-5-5	35.02

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 JULY 21 20 17
REVISED JANUARY 10 & FEBRUARY 8 20 18
OPERATORS WELL NO. TEN HIGH 1N-11HU
API WELL NO. 47-051-01960 ^{H6A}
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 8655P11HUR2.dwg
SCALE 1" = 1000'
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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 = 1,321.10' 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 LARRY LEE CONKLE, ET AL - SEE PGS. 3, 4, 5, 6 & 7 ACREAGE 139.79±
LEASE NO. SEE PGS. 3, 4, 5, 6 & 7

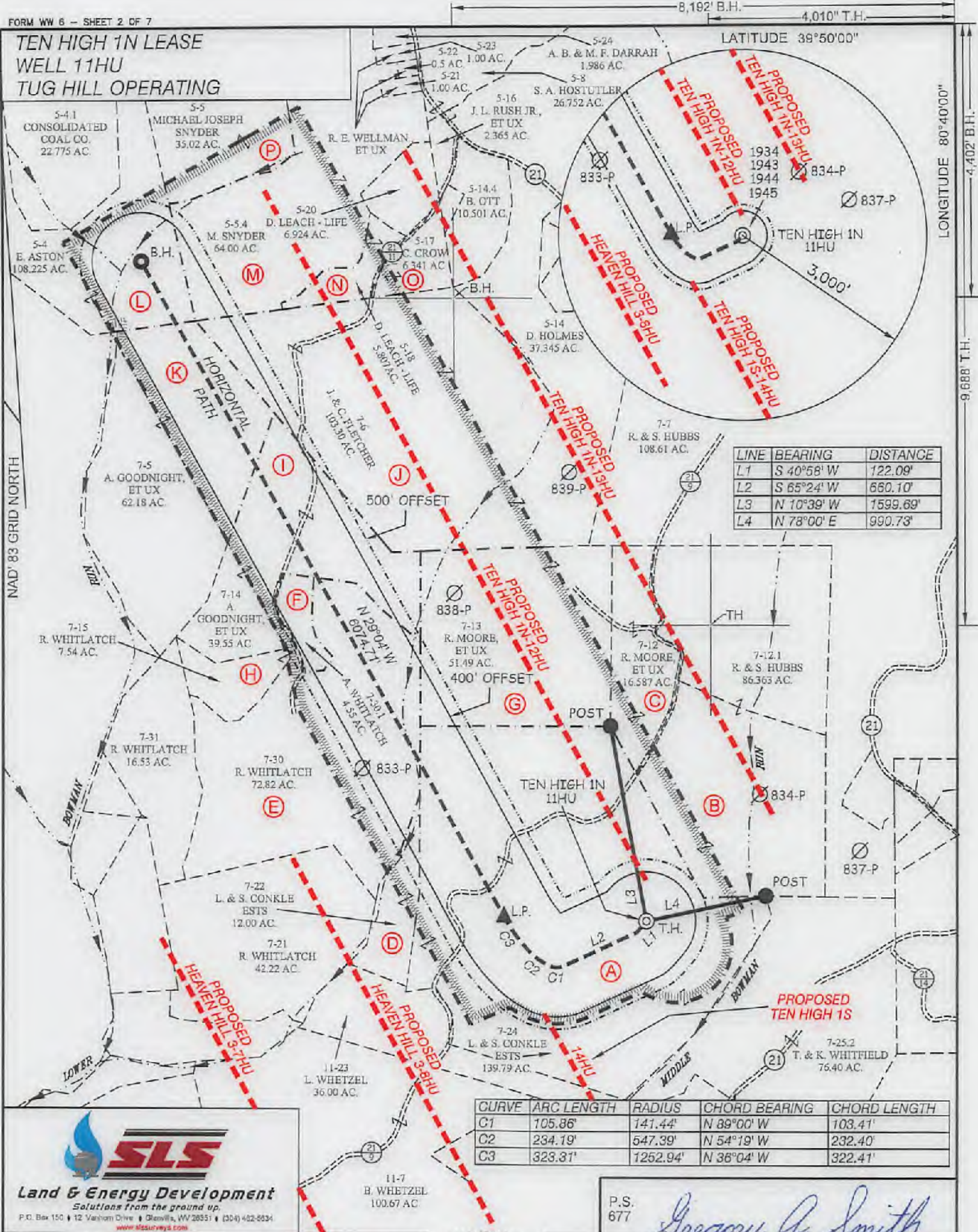
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION POINT PLEASANT
ESTIMATED DEPTH TVD: 11,878' / TMD: 18,197'

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

LONGITUDE 80°40'00" 4,402' B.H. 9,688' T.H.

**TEN HIGH 1N LEASE
WELL 11HU
TUG HILL OPERATING**



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

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	105.86'	141.44'	N 89°00' W	103.41'
C2	234.19'	547.39'	N 54°19' W	232.40'
C3	323.31'	1252.94'	N 36°04' W	322.41'

P.S.
677
Gregory A. Smith

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

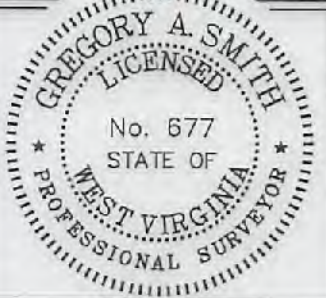
NAD83 S.P.C.(FT)	N. 478,135.89	E. 1,636,740.84
NAD83 GEO.	LAT-(N) 39.806737	LONG-(W) 80.680940
NAD83 UTM (M)	N. 4,406,355.98	E. 527,311.49

LANDING POINT

NAD83 S.P.C.(FT)	N. 478,166.4	E. 1,635,578.7
NAD83 GEO.	LAT-(N) 39.805780	LONG-(W) 80.685078
NAD83 UTM (M)	N. 4,406,359.5	E. 526,957.3

BOTTOM HOLE

NAD83 S.P.C.(FT)	N. 489,476.3	E. 1,632,627.8
NAD83 GEO.	LAT-(N) 39.821249	LONG-(W) 80.695833
NAD83 UTM (M)	N. 4,407,962.2	E. 526,031.2



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

LEGEND

UNIT BOUNDARY	
LEASED TRACTS INSIDE UNIT BOUNDARY	
SURFACE LINE	
DEED WELL LATERAL WITHIN 300'	
WELL LATERAL	
400' OFFSET LINE	
500' OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
SURFACE OWNER (SEE TABLE-SHEET 1)	
LEASE # (SEE PGS. 3,4,5,6&7)	

SCALE 1" = 1000' FILE NO. 6555P11HUR2.dwg
 DATE JULY 21, 20 17
 REVISED JANUARY 10 & FEBRUARY 8, 20 18
 OPERATORS WELL NO. TEN HIGH 1N-11HU
 API WELL NO. 47 - OS1 - 01960
 NO. STATE COUNTY PERMIT

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

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

COUNTY NAME
PERMIT

TEN HIGH 1N LEASE
WELL 11HU
TUG HILL OPERATING



Table with columns: No., Lease Name or No., Tag, Parcel, Oil & Gas Royalty Owners, Deed Book/Page. Lists 100 lease entries with owner names and deed references.

51-01960
H6A

FILE NO. 8655P11HUR2.dwg

DATE JULY 21, 20 17

REVISED JANUARY 10 & FEBRUARY 8, 20 18

OPERATORS WELL NO. TEN HIGH 1N-11HU

API WELL NO. 47 STATE COUNTY PERMIT



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



P.S.
677

Signature of Gregory A. Smith

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

DESIGNATED AGENT DIANNA STAMPER
ADDRESS CT CORPORATION SYSTEM
5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

COUNTY NAME PERMIT

TEN HIGH 1N LEASE
WELL 11HU
TUG HILL OPERATING



Table with columns: No., Lease Name or No., Tag, Parcel, Oil & Gas Royalty Owner - Continued, Deed Book/Page. Contains 200 rows of lease data.

51-01960
H6A

FILE NO. 8655P11HUR2.dwg
DATE JULY 21, 20 17
REVISED JANUARY 10 & FEBRUARY 8, 20 18
OPERATORS WELL NO. _____
API WELL NO. 47 STATE _____ COUNTY _____ PERMIT _____



STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
P.S. 677
Gregory A. Smith

COUNTY NAME
PERMIT

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

TEN HIGH 1N LEASE
WELL 11HU
TUG HILL OPERATING



No.	Lease Name or No.	Tag	Parcel	Oil & Gas Royalty Owner - Continued	Deed Book/Page
201	10*17208	L	9-5-4	PATRICK S GALLAGHER AND JOYCE ANN FOUNDS	921 85
202	10*17274	L	9-5-4	DAVID H WILSON	921 474
203	10*17275	L	9-5-4	JOHN R REEVES AND MONA G REEVES	921 373
204	10*17276	L	9-5-4	BERTHA EZELL WYATT	921 525
205	10*17278	L	9-5-4	MICHAEL L EZELLE	921 121
206	10*17339	L	9-5-4	JOSEPH W FOUNDS	921 76
207	10*17377	L	9-5-4	MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE	921 123
208	10*17416	L	9-5-4	ANDREW M. ORTIZ	921 345
209	10*17438	L	9-5-4	DENNIS M WILSON	921 475
210	10*17440	L	9-5-4	KENDRA WALISA	927 484
211	10*17441	L	9-5-4	RALPH J WILSON	921 522
212	10*17442	L	9-5-4	SHANE ALLEN AND MENDY JEAN ALLEN	921 134
213	10*17443	L	9-5-4	MICHELLE MORROW-BACK	921 337
214	10*17444	L	9-5-4	KELLY FOUNDS CAMPBELL	921 99
215	10*17449	L	9-5-4	PHYLUS J BLAKE	921 150
216	10*17482	L	9-5-4	TERESA EZELLE RALYA AND DAVID L RALYA	927 487
217	10*17483	L	9-5-4	RICHARD I PYLE	921 359
218	10*17484	L	9-5-4	NELDA S JACKSON	921 330
219	10*17485	L	9-5-4	MARGIE ANN JACKSON ROBBINS GRAHAM	921 91
220	10*17526	L	9-5-4	JEFFREY L REEVES AND JODY L REEVES	921 370
221	10*17527	L	9-5-4	JAMES MICHAEL EZELL AND LUCILLE D EZELL	921 111
222	10*17552	L	9-5-4	JOHN BEVACQUA AND PATRICIA A BEVACQUA	921 144
223	10*17554	L	9-5-4	MICHAEL T RANKIN	921 351
224	10*17561	L	9-5-4	KATHRYN L & ROGER L TYRELL	921 519
225	10*17564	L	9-5-4	JAMES R & TRACEY E NICKOLSON	921 340
226	10*17565	L	9-5-4	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	921 327
227	10*17566	L	9-5-4	NATHAN P & BARBARA T ERDOSSY	921 108
228	10*17568	L	9-5-4	JAMES M JACKSON	921 325
229	10*17589	L	9-5-4	MARY CHRISTINE MCKENNA	921 332
230	10*17744	L	9-5-4	SAM PRESLEY EZELL	921 116
231	10*47051.223.15	L	9-5-4	LARRY D TAUNT AND NANCY L TAUNT	908 14
232	10*47051.223.20	L	9-5-4	BARBARA A BUZZARD	908 24
233	10*47051.223.21	L	9-5-4	GARY T WARD AND SHARON D WARD	908 19
234	10*47051.223.30	L	9-5-4	LAURIE DRIGGERS MANDERSON	908 165
235	10*47051.223.6	L	9-5-4	JOSHUA RINE AND REBECCA RINE	907 634
236	10*15481	M	9-5-3.4	DEAN P RIGBY AND SUSAN RIGBY	908 197
237	10*15482	M	9-5-3.4	SUSAN NELSON	908 203
238	10*15668	M	9-5-3.4	MICHAEL J SNYDER	865 185
239	10*15686	M	9-5-3.4	JOHN OMER BOLTZ	908 160
240	10*15750	M	9-5-3.4	SANDRA K TRULL	908 223
241	10*16058	M	9-5-3.4	MATTIE RUTH JACKSON PRESCOTT	908 231
242	10*16118	M	9-5-3.4	RUBY RIDDLE JACKSON	908 233
243	10*16383	M	9-5-3.4	ROBERT STEPHEN DRIGGERS	908 224
244	10*16414	M	9-5-3.4	MARY ELIZABETH DRIGGERS	908 208
245	10*16416	M	9-5-3.4	CYNTHIA HUDSON	908 219
246	10*16424	M	9-5-3.4	ROBERT J RIGBY	908 241
247	10*16448	M	9-5-3.4	RALPH L AND JUANITA L CRIM	908 584
248	10*16478	M	9-5-3.4	MARION L AND EMILY CAMPBELL	908 245
249	10*16514	M	9-5-3.4	ALEX RUSSELL AND JOYCE A CAMPBELL	908 248
250	10*16515	M	9-5-3.4	ANNA MARIE JACKSON	908 251
251	10*16516	M	9-5-3.4	WILSON ANDREW JACKSON	908 253
252	10*16562	M	9-5-3.4	RICHARD THOMAS AND VICKI J MIMS	908 853
253	10*16800	M	9-5-3.4	JAMES KENNETH JACKSON AND JULIE JACKSON	921 93
254	10*16806	M	9-5-3.4	VIRGINIA I WHITMAN	921 528
255	10*16962	M	9-5-3.4	DENNIS P AND BARBARA EZELL FLORY	921 70
256	10*16976	M	9-5-3.4	LESTER G AND CONSTANCE B NICKOLSON	921 343
257	10*16987	M	9-5-3.4	LAURIE EZELL PERRY	921 355
258	10*17130	M	9-5-3.4	CINDY L BARGER	921 137
259	10*17155	M	9-5-3.4	JESSE LEON JR AND TERESA GAIL EZELLE	921 118
260	10*17196	M	9-5-3.4	HENRI NELL JACKSON KENT BARNES	921 139
261	10*17197	M	9-5-3.4	JAMES N REEVES JR AND RITA M REEVES	921 367
262	10*17198	M	9-5-3.4	THOMAS G AND DIANE W BAYLESS	921 141
263	10*17205	M	9-5-3.4	SANDRA JEAN WILSON	921 524
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273	10*17484	M	9-5-3.4	NELDA S JACKSON	921 330
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284	10*47051.223.1	M	9-5-3.4	JEAN ANNE GORBY STORCH	877 215
285	10*47051.223.15	M	9-5-3.4	LARRY D TAUNT AND NANCY L TAUNT	908 14
286	10*47051.223.2	M	9-5-3.4	STEPHANIE SCHIEFER AND GEOFFREY SCHIEFER	885 321
287	10*47051.223.20	M	9-5-3.4	BARBARA A BUZZARD	908 24
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289	10*47051.223.3	M	9-5-3.4	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	885 324
290	10*47051.223.30	M	9-5-3.4	LAURIE DRIGGERS MANDERSON	908 165
291	10*47051.223.6	M	9-5-3.4	JOSHUA RINE AND REBECCA RINE	907 634
292	10*15481	N	9-5-18	DEAN P RIGBY AND SUSAN RIGBY	908 197
293	10*15482	N	9-5-18	SUSAN NELSON	908 203
294	10*15674	N	9-5-18	DONALD E LEACH ET AL	882 209
295	10*15686	N	9-5-18	JOHN OMER BOLTZ	908 160
296	10*15750	N	9-5-18	SANDRA K TRULL	908 223
297	10*16058	N	9-5-18	MATTIE RUTH JACKSON PRESCOTT	908 231
298	10*16118	N	9-5-18	RUBY RIDDLE JACKSON	908 233
299	10*16383	N	9-5-18	ROBERT STEPHEN DRIGGERS	908 224
300	10*16414	N	9-5-18	MARY ELIZABETH DRIGGERS	908 208

51-01960
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FILE NO. 8655P11HUR2.dwg

DATE JULY 21, 20 17

REVISED JANUARY 10 & FEBRUARY 8, 20 18

OPERATORS WELL NO. _____

API WELL NO. 47 STATE _____ COUNTY _____ PERMIT _____



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



P.S. 677 *Gregory A. Smith*

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302	10*16424	N	9-5-18	ROBERT J RIGBY	908 241
303	10*16448	N	9-5-18	RALPH L AND JUANITA L CRIM	908 584
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307	10*16516	N	9-5-18	WILSON ANDREW JACKSON	908 253
308	10*16662	N	9-5-18	RICHARD THOMAS AND VICKI J MIMS	908 863
309	10*16800	N	9-5-18	JAMES KENNETH JACKSON AND JULIE JACKSON	921 93
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339	10*17744	N	9-5-18	SAM PRESLEY EZELL	921 116
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341	10*47051.223.15	N	9-5-18	LARRY D TALANT AND NANCY L TALANT	908 14
342	10*47051.223.2	N	9-5-18	STEPHANIE SCHIEFER AND GEOFFREY SCHIEFER	885 321
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347	10*47051.223.6	N	9-5-18	JOSHUA RINE AND REBECCA RINE	907 634
348	10*15481	O	9-5-17	DEAN P RIGBY AND SUSAN RIGBY	908 197
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350	10*15522	O	9-5-17	CARLA S CROW	728 412
351	10*15686	O	9-5-17	JOHN OMER BOLTZ	908 160
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353	10*16058	O	9-5-17	MATTIE RUTH JACKSON PRESCOTT	908 231
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427	10*17155	P	9-5-5	JESSE LEON JR AND TERESA GAIL EZELLE	921 118
428	10*17156	P	9-5-5	HENRI NELL JACKSON KENT BARNES	921 139
429	10*17157	P	9-5-5	JAMES N REEVES JR AND RITA M REEVES	921 367
430	10*17198	P	9-5-5	THOMAS G AND DIANE W BAYLESS	921 141
431	10*17205	P	9-5-5	SANDRA JEAN WILSON	921 524
432	10*17274	P	9-5-5	DAVID H WILSON	921 474
433	10*17275	P	9-5-5	JOHN R REEVES AND MONA G REEVES	921 373
434	10*17276	P	9-5-5	BERTHA EZELL WATT	921 526
435	10*17278	P	9-5-5	MICHAEL L EZELLE	921 121
436	10*17377	P	9-5-5	MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE	921 123
437	10*17438	P	9-5-5	DENNIS M WILSON	921 476
438	10*17441	P	9-5-5	RALPH J WILSON	921 522
439	10*17449	P	9-5-5	PHYLLIS J BLAKE	921 150
440	10*17482	P	9-5-5	TERESA EZELLE RALYA AND DAVID L RALYA	927 447
441	10*17484	P	9-5-5	NELDA S JACKSON	921 330
442	10*17485	P	9-5-5	MARGIE ANN JACKSON ROBBINS GRAHAM	921 91
443	10*17526	P	9-5-5	JEFFREY L REEVES AND JOEY L REEVES	921 370
444	10*17527	P	9-5-5	JAMES MICHAEL EZELL AND LUCILLE D EZELL	921 111
445	10*17561	P	9-5-5	KATHRYN L & ROGER L TYRELL	921 519
446	10*17564	P	9-5-5	JAMES R & TRACEY E NICKOLSON	921 340
447	10*17565	P	9-5-5	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	921 327
448	10*17566	P	9-5-5	NATHAN P & BARBARA T BRDOSSY	921 108
449	10*17588	P	9-5-5	JAMES M JACKSON	921 325
450	10*17589	P	9-5-5	MARY CHRISTINE MCKENNA	921 332
451	10*17744	P	9-5-5	SAM PRESLEY EZELL	921 116
452	10*47051.223.1	P	9-5-5	JEAN ANNE GORBY STORCH	877 216
453	10*47051.223.15	P	9-5-5	LARRY D TAUNT AND NANCY L TAUNT	908 14
454	10*47051.223.2	P	9-5-5	STEPHANIE SCHIEFER AND GEOFFREY SCHIEFER	885 321
455	10*47051.223.20	P	9-5-5	BARBARA A BUZZARD	908 24
456	10*47051.223.21	P	9-5-5	GARY T WARD AND SHARON D WARD	908 19
457	10*47051.223.3	P	9-5-5	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	885 324
458	10*47051.223.30	P	9-5-5	LAURIE DRIGGERS MANDERSON	908 165
459	10*47051.223.6	P	9-5-5	JOSHUA RINE AND REBECCA RINE	907 684

SI-01960 H6A

FILE NO. 8655P11HUR2.dwg

DATE JULY 21, 20 17

REVISED JANUARY 10 & FEBRUARY 8, 20 18


OPERATORS WELL NO. _____

API WELL 47 _____

NO. STATE COUNTY PERMIT



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



P.S. 677 Gregory A. Smith

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 _____

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

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

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

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

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

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

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

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

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

WW-6A1 Supplement

Operator's Well No. Ten High N-11 HU

Users ID	Tag	Typ-ID	Letter	Lessee	Royalty	Deed Book/Pgs	Assignment	Assignment	Assignment	Assignment	Assignment
10*15682	A	5-7-24	JARRY LEE COMBLE	CHEVRON U.S.A. INC.	1/84	653 354	N/A	N/A	N/A	N/A	Chevron to Tug Hill 367/148
10*15683	A	5-7-24	ROD A COMBLE JR AND LORIE A COMBLE	CHEVRON USA INC	1/84	653 311	N/A	N/A	N/A	N/A	Chevron to Tug Hill 367/148
10*15684	A	5-7-24	THRESEA ANNE RUGHES	CHEVRON USA INC	1/84	653 343	N/A	N/A	N/A	N/A	Chevron to Tug Hill 367/148
10*15685	A	5-7-24	BRINDAL WHITTEL	CHEVRON USA INC	1/84	653 633	N/A	N/A	N/A	N/A	Chevron to Tug Hill 367/148
10*15686	A	5-7-24	DANNY SHAWN BERNIS AND AMY LYNN BERNIS	TH EXPLORATION LLC	1/84	905 518	N/A	N/A	N/A	N/A	N/A
10*15687	A	5-7-24	JARRY W BURN AND YVETTE B BURN, HUSBAND AND WIFE	TH EXPLORATION LLC	1/84	905 522	N/A	N/A	N/A	N/A	N/A
10*15688	A	5-7-24	HUBERT DEAN RYAN AND ANDREA ROYAN	TH EXPLORATION LLC	1/84	905 524	N/A	N/A	N/A	N/A	N/A
10*15689	A	5-7-24	ANDY PAUL RYAN & JACQUE RYAN	TH EXPLORATION LLC	1/84	905 526	N/A	N/A	N/A	N/A	N/A
10*15690	A	5-7-24	HOWARD L RYAN AND DEBBI L RYAN	TH EXPLORATION LLC	1/84	905 528	N/A	N/A	N/A	N/A	N/A
10*15691	A	5-7-24	ROBERTA ANN GIBB AND DAVID S GIBB	TH EXPLORATION LLC	1/84	919 237	N/A	N/A	N/A	N/A	N/A
10*15692	A	5-7-24	MISTI JANELE GOODMAN	TH EXPLORATION LLC	1/84	917 468	N/A	N/A	N/A	N/A	N/A
10*15693	A	5-7-24	BILLY JUNE GOODMAN	TH EXPLORATION LLC	1/84	919 1	N/A	N/A	N/A	N/A	N/A
10*15694	A	5-7-24	JEFFREY STEPHEN GOODMAN	TH EXPLORATION LLC	1/84	905 470	N/A	N/A	N/A	N/A	N/A
10*15695	A	5-7-24	KEENA FRANSO	TH EXPLORATION LLC	1/84	905 485	N/A	N/A	N/A	N/A	N/A
10*15696	A	5-7-24	KEVIN D THOMAS	TH EXPLORATION LLC	1/84	905 432	N/A	N/A	N/A	N/A	N/A
10*15697	A	5-7-24	THE STATE OF MICHIGAN, RECEIVABLE TRUST BY NICHOLAS CHARLES	TH EXPLORATION LLC	1/84	904 651	N/A	N/A	N/A	N/A	N/A
10*15698	A	5-7-24	HAZEL MARGARET MOORE BETHMOLD	TH EXPLORATION LLC	1/84	904 642	N/A	N/A	N/A	N/A	N/A
10*15699	A	5-7-24	LEWIS J MOORE	TH EXPLORATION LLC	1/84	904 652	N/A	N/A	N/A	N/A	N/A
10*15700	A	5-7-24	DALE E MOORE	TH EXPLORATION LLC	1/84	904 653	N/A	N/A	N/A	N/A	N/A
10*15701	A	5-7-24	MARY BURDMANT	TH EXPLORATION LLC	1/84	904 648	N/A	N/A	N/A	N/A	N/A
10*15702	A	5-7-24	JAMES V WELCHER	TH EXPLORATION LLC	1/84	904 485	N/A	N/A	N/A	N/A	N/A
10*15703	A	5-7-24	JAMES E HAMELBERG AND KAREN HAMELBERG	TH EXPLORATION LLC	1/84	904 485	N/A	N/A	N/A	N/A	N/A
10*15704	A	5-7-24	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/84	766 228	N/A	N/A	N/A	N/A	N/A
10*15705	E	5-7-24	ARNIE AND BOBBIE E GOODNIGHT	CHEVRON USA INC	1/84	777 59	N/A	N/A	N/A	N/A	N/A
10*15706	K	5-7-5	ARNIE AND BOBBIE E GOODNIGHT	CHEVRON USA INC	1/84	777 59	N/A	N/A	N/A	N/A	N/A
10*15707	L	5-5-3	WAYT LAWRENCE ALLEN	CHESSAPEAKE APPALACHIA LLC	1/84	657 233	Cheapeake to Chescon: 30/461	Statall to Chescon: 30/437	Statall to Chescon: 30/461	Statall to Chescon: 30/461	Chevron to Tug Hill 956/409
10*15708	L	5-5-3	BLATRICE ANN RYD	CHESSAPEAKE APPALACHIA LLC	1/84	657 233	Cheapeake to Chescon: 30/461	Cheapeake to Chescon: 30/461	Cheapeake to Chescon: 30/461	Cheapeake to Chescon: 30/461	Chevron to Tug Hill 956/409

51-01960



July 18, 2017

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

RE: Ten High 1N-11HU

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-11HU well plat. THO has conducted a full title search in the relevant Court House to confirm its' ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

Amy L. Miller
Permit Specialist – Appalachia

RECEIVED
Office of Oil and Gas
JAN 23 2018
WV Department of
Environmental Protection

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

Date of Notice Certification: 06/21/2017

API No. 47- 051 - 01960
Operator's Well No. Ten High 1N-11HJ
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>527,318.92</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,354.29</u>
District:	<u>Meade</u>	Public Road Access:	<u>Shepherd Ridge Lane (Co. Rt. 21/B)</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: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
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Required Attachments:

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

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Office of Oil and Gas
JAN 23 2018
WV Department of
Environmental Protection

WW-6A
(9-13)

API NO. 47- 051 - 01960
OPERATOR WELL NO. Ten High 1N-11HU
Well Pad Name: Ten High

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

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

Date of Notice: 1/19/2018 **Date Permit Application Filed:** 1/19/2018

Notice of:

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

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

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

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

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

SURFACE OWNER(s)

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

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

SURFACE OWNER(s) (Road and/or Other Disturbance)

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

Name: None
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: None
Address: _____

COAL OWNER OR LESSEE

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

COAL OPERATOR

Name: Same as above coal owner
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: _____
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

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WW-6A
(8-13)

API NO. 47-051 - 01960
OPERATOR WELL NO. Ten High 1N-11HU
Well Pad Name: Ten High

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.**

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Office of Oil and Gas
JAN 23 2018
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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JAN 23 2018
WV Department of
Environmental Protection

WW-6A
(8-13)

API NO. 47-051 - 01960
OPERATOR WELL NO. Ten High 1N-11HU
Well Pad Name: Ten High

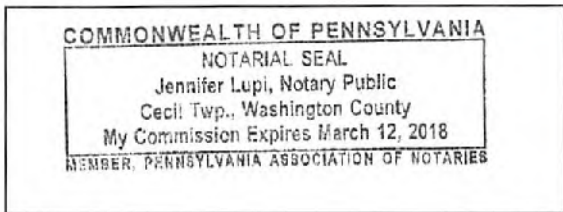
Notice is hereby given by:

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

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-358-2030

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 19th day of Jan, 2018.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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Office of Oil and Gas
JAN 23 2018
WV Department of
Environmental Protection

51-01960

Operator Well Nos. TEN HIGH 1N-11HU

WW-6A Notice of Application Attachment 1 of 1

Surface Owner(s):

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

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

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

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WV Department of
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51-01960

WW-6A3
(1/12)

Operator Well No. Ten High 1N-11HU

**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 Lorla A.
 Address: 75 Arlington Avenue
Moundsville, WV 26041

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

COAL OWNER OR LESSEE

Name: Murray Energy Corporation
 Address: 40228 National Road
St. Clairsville, OH 43080 *See Attached

MINERAL OWNER(S)

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

*please attach additional forms if necessary

Notice is hereby given:

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

State: <u>WEST VIRGINIA</u>	Approx. Latitude & Longitude: <u>LAT 39.8087775 LONG -80.8808182</u>
County: <u>MARSHALL</u>	Public Road Access: <u>SHEPHERD RIDGE LANE (Co. RT. 21/8)</u>
District: <u>MEADE</u>	Watershed: <u>HUC-10 FISH CREEK</u>
Quadrangle: <u>GLEN EASTON 7.5'</u>	Generally used farm name: <u>LAWRENCE CONKLE, SR.</u>

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

Notice is hereby given by:

Well Operator: <u>TUG HILL OPERATING, LLC</u>	Address: <u>380 SOUTHPOINTE BLVD, SOUTHPOINTE PLAZA II, SUITE 200</u>
Telephone: <u>724-749-8388</u>	<u>CANONSBURG, PA 15317</u>
Email: <u>JWHITE@TUG-HILLOP.COM</u>	Facsimile: <u>724-338-2030</u>

Oil and Gas Privacy Notice:

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

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Office of Oil and Gas
JAN 23 2018
WV Department of
Environmental Protection

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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JAN 23 2018
WV Department of
Environmental Protection

51-01960

WW-6A5
(1/12)

Operator Well No. Ten High 1N-11HJ

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

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.
Date of Notice: 07/31/2017 **Date Permit Application Filed:** 08/01/2017

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

CERTIFIED MAIL **HAND**
RETURN RECEIPT REQUESTED **DELIVERY**

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

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

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

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

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 527,318.92
County: Marshall Northing: 4,408,351.29
District: Meads Public Road Access: Shepherd Ridge Lane (Co. Rt. 210)
Quadrangle: Glen Easton 7.5' Generally used farm name: LAWRENCE & SHIRLEY CONKLE, ESTS
Watershed: (HUC 10) Fish Creek

This Notice Shall Include:

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

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amiller@tug-hill-op.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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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JAN 23 2018
WV Department of
Environmental Protection

Operator Well Nos. TEN HIGH 1N-11HU

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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WV Department of
Environmental Protection



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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-11HU Well site

Dear Mr. Martin,

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

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

Very Truly Yours,

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

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

E.E.O./AFFIRMATIVE ACTION EMPLOYER

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 JAN 23 2018
 WV Department of
 Environmental Protection

51-01960



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Ten High 1N-11HU

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

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

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Office of Oil and Gas
JAN 23 2018
WV Department of
Environmental Protection

**WEST VIRGINIA
COUNTY MAP**

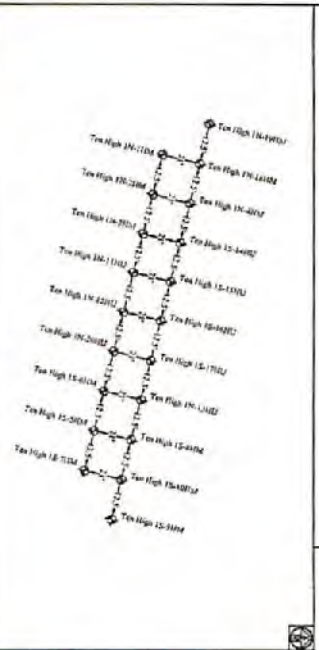


State Routes

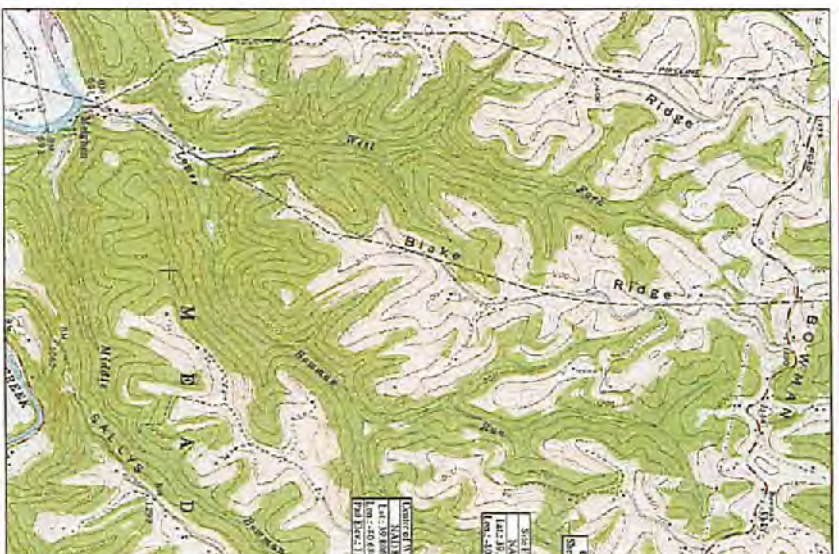
WV-50	WV-51	WV-52	WV-53	WV-54	WV-55	WV-56	WV-57	WV-58	WV-59	WV-60	WV-61	WV-62	WV-63	WV-64	WV-65	WV-66	WV-67	WV-68	WV-69	WV-70	WV-71	WV-72	WV-73	WV-74	WV-75	WV-76	WV-77	WV-78	WV-79	WV-80	WV-81	WV-82	WV-83	WV-84	WV-85	WV-86	WV-87	WV-88	WV-89	WV-90	WV-91	WV-92	WV-93	WV-94	WV-95	WV-96	WV-97	WV-98	WV-99	WV-100
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County of West Virginia

Adams	Boone	Buckhannon	Calwell	Cabell	Cass	Clay	Clinton	Crook	Cullin	Dodd	Fayette	Fleming	Floyd	Gauley	Grant	Greene	Harrison	Harrison	Jefferson	Lincoln	Mingo	Morgan	Putnam	Randolph	Roanoke	Summers	Taylor	Tucker	Wayne	Wetzel	Wood	Wyoming	Yule
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Ten High 10-100	Ten High 10-200	Ten High 10-300	Ten High 10-400	Ten High 10-500	Ten High 10-600	Ten High 10-700	Ten High 10-800	Ten High 10-900	Ten High 10-1000	Ten High 10-1100	Ten High 10-1200	Ten High 10-1300	Ten High 10-1400	Ten High 10-1500
WV-50-100-01	WV-50-200-01	WV-50-300-01	WV-50-400-01	WV-50-500-01	WV-50-600-01	WV-50-700-01	WV-50-800-01	WV-50-900-01	WV-50-1000-01	WV-50-1100-01	WV-50-1200-01	WV-50-1300-01	WV-50-1400-01	WV-50-1500-01



Ten Hi
Site Design,
Erosion and S
Tug
Man
M
Latitude
Longitude
Middle Fi

Exhibit

Site Location (Road 77)

Symbol	16044(DD)	16044
NEUTER	16044(DD)	16044
ROAD OF WEST PA	16044(DD)	16044

Approach Routes:

From the intersection of WV Rt 2 and OH Rt 7 near New Martins Hill, WV, Turn North on WV Rt 2 for 13.8 mi. Turn Right onto Co Rt 774 (Grubbs Creek). Follow Co Rt 774 for 262 ft. Turn Left onto Co Rt 271 (Tyrone Ridge Rd). Follow Co Rt 271 for 3.7 mi. Turn Left to continue out to Rt 271. Follow Co Rt 271 for 1.2 mi. Turn Right onto Co Rt 211 (Grubbs Ridge St. Joseph Rd). Follow Co Rt 21 for 3.3 mi. Turn Right onto Co Rt 2109 (Shepherd Ridge). Follow Co Rt 2109 for 0.7 mi. The site entrance will be on the left (east) side of the road.

Project Contacts

Ten Hill/Grading
Jasbeka Wild - Regulate Analyst
721-465-5800 OFF, 781-414-8707 CELL
1514-03-2300 OFF

Shortland/Excavate
Ecosia/Tracy
800-462-8311 OFF
Mike V. Sise
844-414-2429 OFF

Ten Hill/Operating, LLC
200 Sandstone Plaza
Stonelywood Park, Rt. 500, Box 100
Clemmons, PA 15117

Contractors/Excavate
Kiefer and Grubbs, Inc.
5041 Boushway Dr.
SOLA, PA 15117

Environmental/Excavate
Kiefer and Grubbs, Inc.
5041 Boushway Dr.
SOLA, PA 15117

Miss Utility of West Virginia
1-800-243-4184
Systems Dev. Group 210-C Center
17400 The Falls Road, Martinsburg, WV
Call for the State of West Virginia
IT'S THE LAW

811
Know what's below.
Call before you dig.

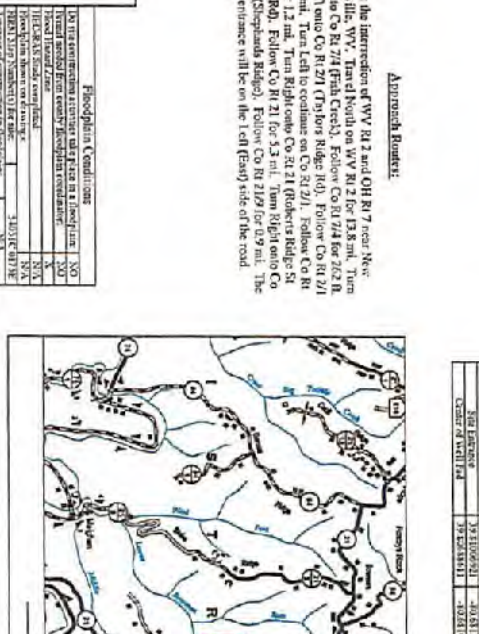
The topographic information shown herein is based on actual field work by West Virginia Aerial Mapping, Davis, WV dated February 17, 2011.

MISS UTILITY OF WEST VIRGINIA
1-800-243-4184
Systems Dev. Group 210-C Center
17400 The Falls Road, Martinsburg, WV
Call for the State of West Virginia
IT'S THE LAW

811
Know what's below.
Call before you dig.

The WV Motor Vehicle user is notified: Any construction activities are within the AOI.

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



51-01966

Tug Hill Well Site

Construction Plan, &
 Sediment Control Plans
 for Operating
 Well in
 Marshall County
 Meade District

As-Built

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

WV DEP OOG
ACCEPTED AS-BUILT
 1/9/2018

WV State Plane Coordinate System
 North Zone, NAD83
 Projection: NAD83
 Produced by Survey Data, GIS
 and GIS's PostProcessing



Property Owner Information - Ten High Well Site

Owner	DI - Parcel	WOTF#	Access Road	Forward Corner	Map Contour	Year Installed
Project 1016X-E11A	7421	010	000	000	0.01	1317
Project 1016X-E11B	7421	324	142	142	0.01	1317
Site Area (Ac)	3.91	1.38	1.37	7.18		18.20

Access Road

Street Name	DI - Parcel	Front Feet	Year
Project 1016X-E11A	7421	119.77	None
Project 1016X-E11B	7421	119.77	None

Disturbed Area

Well Pad Construction	1.97 AC
Access Road Construction	1.18 AC
Clearing	1.18 AC
Additional Grading	7.18 AC
Total Disturbed Area	18.20 AC

Additional Information

ECN: WVDOT 2017-01-01
 (2017) Road Repair (Access Road) 10/25/2017

Ten High Well Site Quantities

Description	Quantity	Unit	Speed (MPH)	Horizontal (FT)	Max. Slope	Length of Slope
Well Pad	347053.5	cu yd	10	120.00	N/A	N/A
Well Pad Access Road	333.11	cu yd	10	99.21	N/A	N/A
Gravel Pad	324.00	cu yd	10	100.00	N/A	N/A
Gravel Pad Access Road	324.00	cu yd	10	100.00	N/A	N/A
Total Spill Spill	1028.61	cu yd				

Accepted

EXISTING API NUMBERS

4705101934
 4705101943
 4705101944
 4705101945
 4705101964

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 Office of Oil and Gas
 JAN 23 2018
 WV Department of
 Environmental Protection

Site Locations (NAVD 83)

Zone	Latitude (DD)	Longitude (DD)
Center of Well Pad	38.83333333	-80.83333333



This is a preliminary engineering plan and shall not be construed as a final plan. It is intended for informational purposes only. It is not intended to be used for any other purpose. The engineer's liability is limited to the professional services rendered by the engineer. The engineer does not warrant the accuracy or completeness of the information provided. The engineer's liability is limited to the professional services rendered by the engineer. The engineer does not warrant the accuracy or completeness of the information provided.

Zachary C. Sullivan
 Professional Engineer
 License No. 22114
 State of West Virginia

Sheet	Description
1	Cover Sheet
NI-N3	Schedule of Quantities
1	Site Plan
2	Site Section - Access Road
3	Clearing Exhibit
4	Overall Plan View
5	EAS Plan View
6-7	Top Key Exhibit
8	Plan View
9-10	Cross Sections - Well Pad
11-12	Cross Sections - Access Road
13	Grading Exhibit
GI-G7	Grading Exhibit - Access Road
14	Site Section - Access Road
SI	Site Declaration
MI-M3	Production and Sediment Control Details
DI-D2	Access Road Details
PI	Pad Details

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

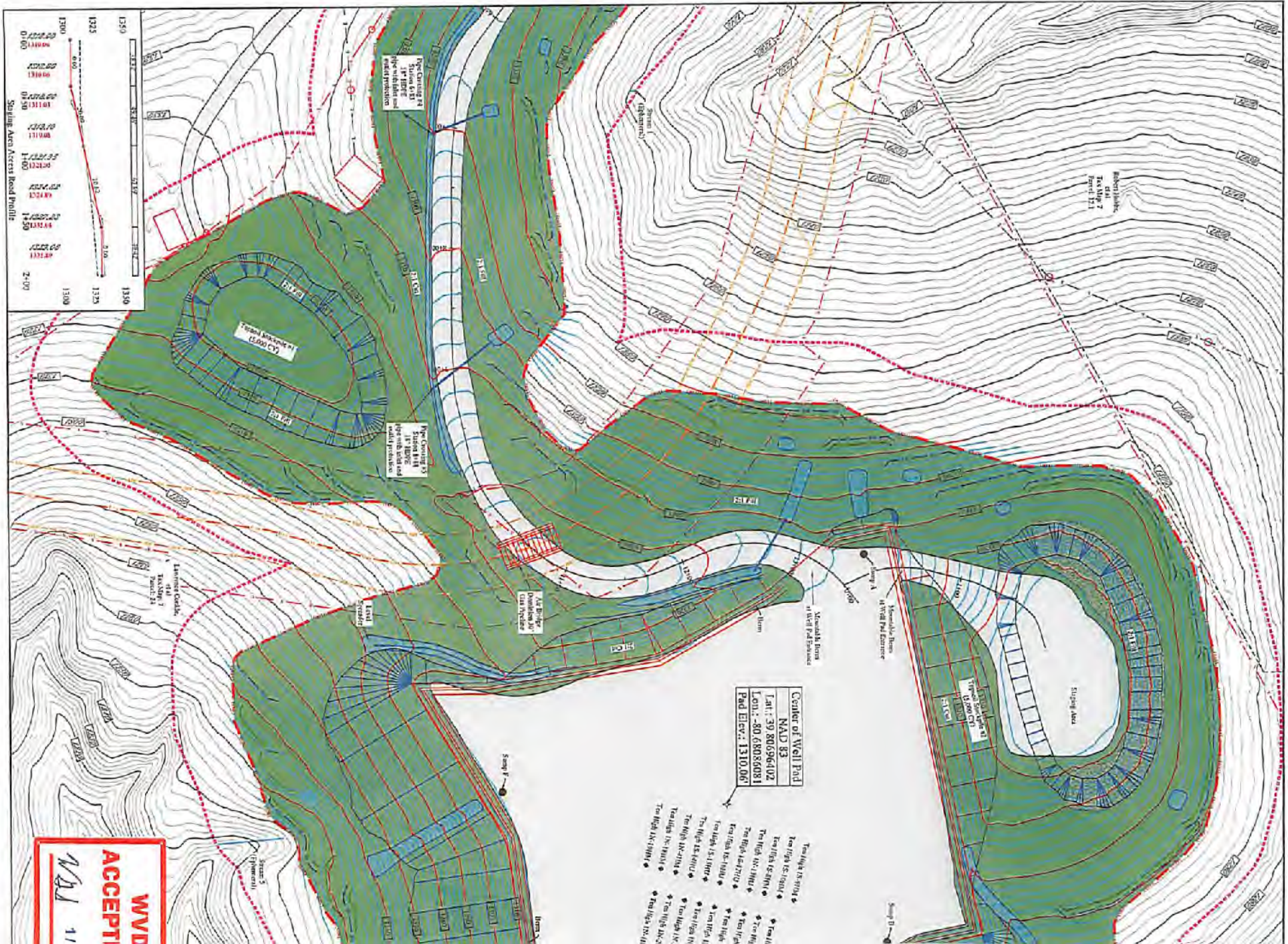
Kelly Sullivan
 Professional Engineer
 License No. 22114
 State of West Virginia

Date: 02-17-2017
 12-06-2017

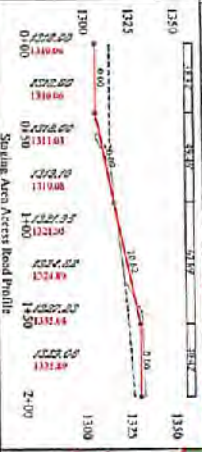
Revision: Design
 As-Built

Cover Sheet
 Ten High Well Site
 Meade District
 Marshall County, WV

Draw: 02/17/2017
 Design: AS Sullivan
 Drawn: B. ZS
 The No. SHEET 1 OF 13



WVDD
ACCEPT
 11/11/11



Site Contour #1
 Station 6.51
 1" = 80' H
 Pipe with 18" dia
 and
 vented production

Site Contour #3
 Station 8.16
 1" = 80' H
 Pipe with 18" dia
 and
 vented production

As Broken
 Conditions at
 this Location

Mound from
 at Well Pad Entrance

Mound from
 at Well Pad Entrance

11,100 cu yd of
 1" = 80' H
 13,100

Staging Area

Station 12.1
 1" = 80' H

Station 4

Station 3

Station 5
 (Elevation)

Limestone Gravel
 Station 1
 1" = 80' H

Total Area
 15,000 CY

51-01960

Ten High Well Site Tug Hill Operating Exhibit A: As-Built



Revision	
01	Design As-Built
02-17-2017	
12-06-2017	

TUG HILL OPERATING

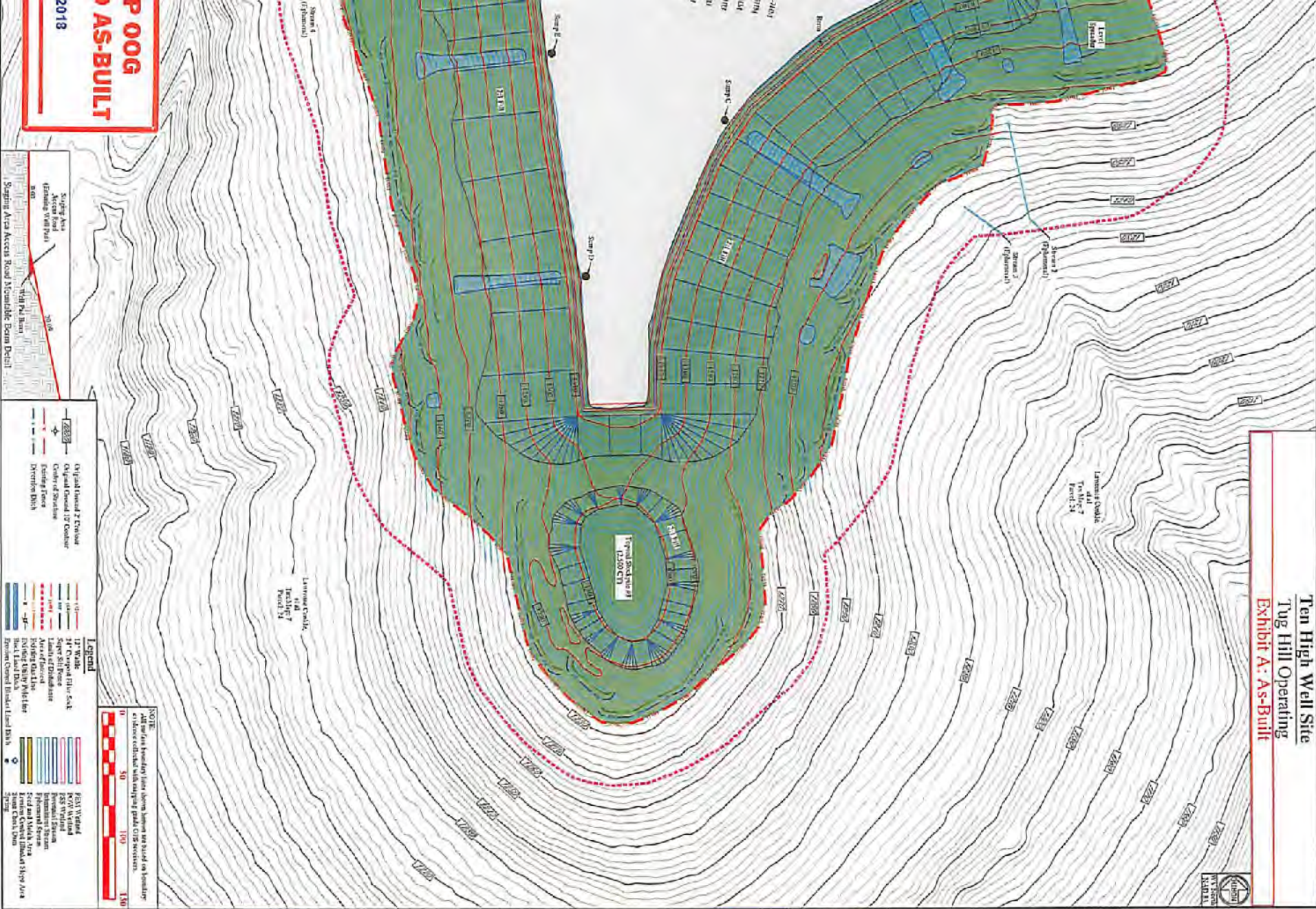


Kelly Surrain
Field Supervisor
Tug Hill Operating

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Office of Oil and Gas
JAN 23 2018

Erosion and Sediment Control Plan
Ten High Well Site
Meade District
Marshall County, WV

Date: 02/17/2017
Scale: As Shown
Designed by: JS
File No.
Sheet 7 of 11



AS-BUILT
2018