

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47-051-0217 ⁰²⁰¹⁷ County Marshall District Meade
Quad Glen Easton 7.5' Pad Name Ten High Field/Pool Name 19HM
Farm name Lawrence & Shirley Conkle, ests. Well Number Ten High 1N-18HM
Operator (as registered with the OOG) Tug Hill Operating, LLC
Address 1320 S. University Drive, Suite 500 City Ft. Worth State TX Zip 76107

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,406,365.60 Easting 527,298.06
Landing Point of Curve Northing 4,406,906.2 Easting 527,869.6
Bottom Hole Northing 4,409,556.7 Easting 526,354.9

Elevation (ft) 1310' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM; Base oil, osmotic inhibitor, weighting agent, viscosifier, emulsifier, hardness buffer, fluid loss additive, LCM, Shale inhibitor, de-foamer, soaping agent, coagulant, flocculant; specific additives per WSSP and Permit.

Date permit issued 9/18/2017 Date drilling commenced 11/27/2018 Date drilling ceased 3/28/2019
Date completion activities began 12/15/2018 Date completion activities ceased 2/9/2019
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 70' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1595' Void(s) encountered (Y/N) depths N
Coal depth(s) ft Sewickely Coal - 968 - 974' and Pittsburgh Coal - 1053 - 1058' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
Jim Hershberger
6/23/2020

API 47-051 - 0217

Farm name Lawrence & Shirley Conkle, ests. Well number Ten High 1N-18HM 19HM

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	36"	30"	120'	NEW	94.5#	N/A	Y
Surface	17 1/2"	13 3/8"	1,137'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1,137'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,837'	NEW	20#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	18,294'	NEW	20#	N/A	Y
Tubing		2 3/8"	9,147'	NEW	4.7#	N/A	Y
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	A		15.6	1.19		0	8
Surface	A	1173	15.6	1.19	1417	0	8
Coal	A	1173	15.6	1.19	1417	0	8
Intermediate 1	A	902	15.6	1.19	1172	0	8
Intermediate 2							
Intermediate 3							
Production	A	4370	14.5	1.17	5091	0	8
Tubing							

Drillers TD (ft) 18,318' Loggers TD (ft) n/a

Deepest formation penetrated Marcellus Plug back to (ft) n/a

Plug back procedure n/a

Kick off depth (ft) 6,939'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING 3 centralizers on surface casing at equal distance
intermediate - 1 centralizer every other joint
Production - one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

**Ten High 1N-19HM
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	4/5/2019	18,106	18,154	48	Marcellus
2	4/5/2019	17,902	18,055	48	Marcellus
3	4/6/2019	17,726	17,880	48	Marcellus
4	4/6/2019	17,551	17,704	48	Marcellus
5	4/7/2019	17,375	17,529	48	Marcellus
6	4/7/2019	17,200	17,353	48	Marcellus
7	4/7/2019	17,025	17,178	48	Marcellus
8	4/8/2019	16,849	17,003	48	Marcellus
9	4/8/2019	16,674	16,827	48	Marcellus
10	4/9/2019	16,498	16,652	48	Marcellus
11	4/9/2019	16,323	16,476	48	Marcellus
12	4/9/2019	16,148	16,301	48	Marcellus
13	4/9/2019	15,972	16,126	48	Marcellus
14	4/9/2019	15,797	15,950	48	Marcellus
15	4/10/2019	15,621	15,775	48	Marcellus
16	4/10/2019	15,446	15,599	48	Marcellus
17	4/10/2019	15,271	15,424	48	Marcellus
18	4/10/2019	15,095	15,249	48	Marcellus
19	4/10/2019	14,920	15,073	48	Marcellus
20	4/11/2019	14,744	14,898	48	Marcellus
21	4/11/2019	14,569	14,722	48	Marcellus
22	4/11/2019	14,394	14,547	48	Marcellus
23	4/11/2019	14,218	14,372	48	Marcellus
24	4/12/2019	14,043	14,196	48	Marcellus
25	4/12/2019	13,867	14,021	48	Marcellus
26	4/12/2019	13,692	13,845	48	Marcellus
27	4/12/2019	13,517	13,670	48	Marcellus
28	4/12/2019	13,341	13,495	48	Marcellus
29	4/13/2019	13,166	13,319	48	Marcellus
30	4/13/2019	12,990	13,144	48	Marcellus
31	4/13/2019	12,815	12,968	48	Marcellus
32	4/13/2019	12,640	12,793	48	Marcellus
33	4/13/2019	12,464	12,618	48	Marcellus
34	4/13/2019	12,289	12,442	48	Marcellus
35	4/14/2019	12,113	12,267	48	Marcellus
36	4/14/2019	11,938	12,091	48	Marcellus
37	4/14/2019	11,763	11,916	48	Marcellus
38	4/14/2019	11,587	11,741	48	Marcellus
39	4/14/2019	11,412	11,565	48	Marcellus
40	4/15/2019	11,236	11,390	48	Marcellus
41	4/15/2019	11,061	11,214	48	Marcellus
42	4/15/2019	10,886	11,039	48	Marcellus
43	4/15/2019	10,710	10,864	48	Marcellus
44	4/15/2019	10,535	10,688	48	Marcellus
45	4/15/2019	10,359	10,513	48	Marcellus
46	4/16/2019	10,184	10,337	48	Marcellus

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47	4/16/2019	10,009	10,162	48	Marcellus
48	4/16/2019	9,833	9,987	48	Marcellus
49	4/16/2019	9,658	9,811	48	Marcellus
50	4/16/2019	9,482	9,636	48	Marcellus
51	4/16/2019	9,307	9,460	48	Marcellus
52	4/17/2019	9,132	9,285	48	Marcellus
53	4/17/2019	8,956	9,110	48	Marcellus
54	4/17/2019	8,781	8,934	48	Marcellus
55	4/17/2019	8,605	8,759	48	Marcellus
56	4/17/2019	8,430	8,583	48	Marcellus
57	4/18/2019	8,255	8,408	48	Marcellus

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Ten High 1N-19HM

STIMULATION INFORMATION PER STAGE

Stage No.	Ave. Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/other (units)
1	25	4627	4143	3380	0	1144	0
2	81.3	7330	3993	3634	437500	9184	0
3	82.6	7075	4365	4164	437560	8392	0
4	83.5	7433	5579	4673	436110	10421	0
5	86.2	7503	5557	4755	442750	8463	0
6	80.9	7106	5596	4217	437270	8046	0
7	81.1	7364	5222	4752	440340	7930	0
8	84.9	7294	5574	4832	440070	8775	0
9	86.8	7511	5600	4510	442410	8394	0
10	87.3	7664	5398	4799	438130	8265	0
11	83.9	7353	5129	4849	440830	8433	0
12	84.2	7349	5565	4872	443790	7973	0
13	85.3	7481	5449	4791	443370	8017	0
14	88.3	7646	5172	4820	445710	8227	0
15	89.2	7631	5279	4988	443670	8272	0
16	84.3	7798	5573	4641	221520	5369	0
17	89.6	7857	5284	4737	445770	7902	0
18	89.5	7570	5350	4826	437950	7854	0
19	89.4	7716	5275	4576	442000	7903	0
20	89.4	7677	5160	4722	441350	7936	0
21	89.1	7720	5140	5073	442300	8005	0
22	89.5	7864	5650	4992	437040	8011	0
23	88.9	7805	5208	5009	446080	7991	0
24	89.2	7698	5265	4969	444650	7856	0
25	88.1	7790	5526	5060	443220	7987	0
26	89.1	7696	5144	5115	445910	7943	0
27	89.1	7813	5402	5113	439990	7679	0
28	88.6	7799	5552	5126	443440	7988	0
29	89.2	7584	5562	5020	439760	7767	0
30	85.5	7657	5474	4621	360950	6831	0
31	88.9	7585	5481	5227	439990	7740	0
32	88.7	7472	5364	5137	441060	7727	0
33	89.5	7599	5552	5251	440870	7772	0

34	84.5	7860	5508	4952	439970	8111	0
35	85.2	7974	5453	5214	440260	7828	0
36	85.5	7980	5407	4966	442280	7616	0
37	85.8	7731	5386	5252	438670	7644	0
38	89	7028	5351	5287	439050	7504	0
39	84.9	7473	5730	4584	439730	8201	0
40	83.8	7846	5647	5097	440180	7541	0
41	83.9	7957	5563	5089	429120	7960	0
42	89.5	7103	5434	5276	437400	7668	0
43	86	7188	5507	5306	410390	7077	0
44	89.5	7011	5527	5316	438960	7905	0
45	89.6	7190	5724	5120	439520	8024	0
46	89.2	7412	5570	4858	443240	7946	0
47	89.6	7399	5448	5307	438690	7929	0
48	89.1	7395	5555	5161	434580	7829	0
49	89.1	7250	5711	5386	437700	7928	0
50	89.3	7197	5634	5334	199820	4800	0
51	89.1	7172	5484	5273	439060	8039	0
52	85.4	7364	5720	4725	438280	8696	0
53	89.4	7392	5857	5007	441730	8071	0
54	89.2	7031	5415	4917	439790	7896	0
55	89.7	7021	5432	5308	437750	7834	0
56	89.4	7000	5799	5251	438200	7962	0
57	89.3	6979	5819	5420	438690	7904	0

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TEN HIGH 1N-19HM

LITHOLOGY/FORMATION	TOP DEPTH IN FT/ Name TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID
Maxton	2035	2207	2037	2210	Sandstone
Big Lime	2207	2338	2210	2342	Limestone
Big Injun	2338	2633	2342	2638	Sandstone
Weir	2633	2831	2638	2837	Sandstone
Berea	2831	3093	2837	3100	Sandstone
Gordon	3093	3178	3100	3185	Sandstone
Fifty Foot	3178	3760	3185	3770	Sandstone
Speechley	3760	5221	3770	5370	Sandstone
Benson	5221	5593	5370	5803	Sandstone
Alexander	5593	6215	5803	6516	Siltstone
Rhinestreet	6215	6677	6516	7153	Black shale
Middlesex	6677	6747	7153	7275	Black shale
Geneseo/Burkett	6747	6774	7275	7327	Black shale
Tully	6774	6800	7327	7385	Limestone
Hamilton	6800	6876	7385	7630	Grey shale
Marcellus	6876	-	7630	-	Black shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/18/2019
Job End Date:	4/23/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-21017-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Ten High 1N-19HM
Latitude:	39.80624330
Longitude:	-80.68109681
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,915
Total Base Water Volume (gal):	19,405,812
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid	Water	7732-18-5	100.00000	86.49467	Density = 8.330
Ingredients	Listed Above	Listed Above		7732-18-5	100.00000	0.52174	

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MC MX 8-4743	Multi-Chem	Additive						
						Listed Below		
Hydrochloric Acid	Halliburton	Solvent						
						Listed Below		
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant						
						Listed Below		
MC MX 2-2822	Halliburton	Scale Inhibitor						
						Listed Below		
Legend LD-2115	Multi-Chem	Friction Reducer						
						Listed Below		
FDP-S1296-17	Halliburton Energy Services	Corrosion Inhibitor						
						Listed Below		
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant						
						Listed Below		
LD-2850	Multi-Chem	Friction Reducer						
						Listed Below		

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OILPERM A	Halliburton	Non-ionic Surfactant							
					Listed Below				
SAND-PREMIUM WHITE-30/50 BULK	Halliburton	Proppant							
					Listed Below				
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.									
			Crystalline silica, quartz	14808-60-7		100.00000		12.88802	
			Hydrochloric acid	7647-01-0		7.50000		0.03877	
			Sodium Nitrate	7631-99-4		60.00000		0.02117	
			Hydrotreated light petroleum distillate	64742-47-8		30.00000		0.01729	
			Ethaniminium, N,N,N-trimethyl-2-[[1-oxo-2-propen-1-yl)owy]-,chloride(1:1), polymer with 2-propenamide	69418-26-4		30.00000		0.01726	
			Ammonium chloride	12125-02-9		10.00000		0.00575	
			Sodium Chloride	7647-14-5		10.00000		0.00575	
			Methanol	67-56-1		100.00000		0.00307	
			9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-(Z)	93-83-4		5.00000		0.00288	
			Amines, polyethylenepoly-, ethoxylated, phosphonomethylated, sodium salts	70900-16-2		30.00000		0.00263	
			Sodium chloride	7647-14-5		5.00000		0.00044	
			Ethanol	64-17-5		60.00000		0.00028	
			Oxyalkylated phenolic resin	Proprietary		30.00000		0.00019	
			Heavy aromatic petroleum naphtha	64742-94-5		30.00000		0.00014	

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			Modified thiourea polymer	Proprietary	30.00000	0.00013	
			Inorganic salt	Proprietary	30.00000	0.00003	
			Naphthalene	91-20-3	5.00000	0.00002	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00002	
			Propargyl alcohol	107-19-7	5.00000	0.00002	
			Ethoxylated alcohols	Proprietary	5.00000	0.00002	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Formaldehyde	50-00-0	0.09000	0.00001	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00000	

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
 ** Information is based on the maximum potential for concentration and thus the total may be over 100%
 *** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
 Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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Well: Ten High 1N-19HM (R)
Site: Ten High
Project: Marshall County, West Virginia.
Design: rev6
Rig: Nabors X08

SECTION DETAILS

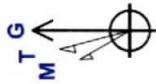
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VFace	VSector	Annotation
1	2791.00	4.01	35.16	2787.77	68.10	28.46	0.00	0.00	57.77	Survey @ 2791.00 MD 2787.77 TVD
2	3137.08	4.01	35.16	3133.00	87.88	40.39	0.00	0.00	72.78	KOP Begin 3'100' buildthum
3	3675.59	20.00	50.00	3658.09	162.97	122.32	3.00	18.35	121.47	Begin 3'100' buildthum
4	4343.60	37.08	73.04	4244.42	296.50	405.35	3.00	43.52	169.05	Begin 37.08" tangent
5	6974.68	37.08	73.04	6343.51	759.21	1922.68	8.00	0.00	181.34	Begin 8'100' buildthum
6	7399.14	45.00	21.53	6672.58	941.50	2105.53	8.00	-97.74	304.13	Begin 10'100' buildthum
7	8044.40	91.00	330.28	6922.00	1493.47	2020.08	10.00	-59.74	857.61	Begin 91.00" lateral
8	18379.16	91.00	330.28	6740.90	10466.98	-3103.45	0.00	0.00	0917.37	PBHLTD 18379.16 MD/6740.90 TVD

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

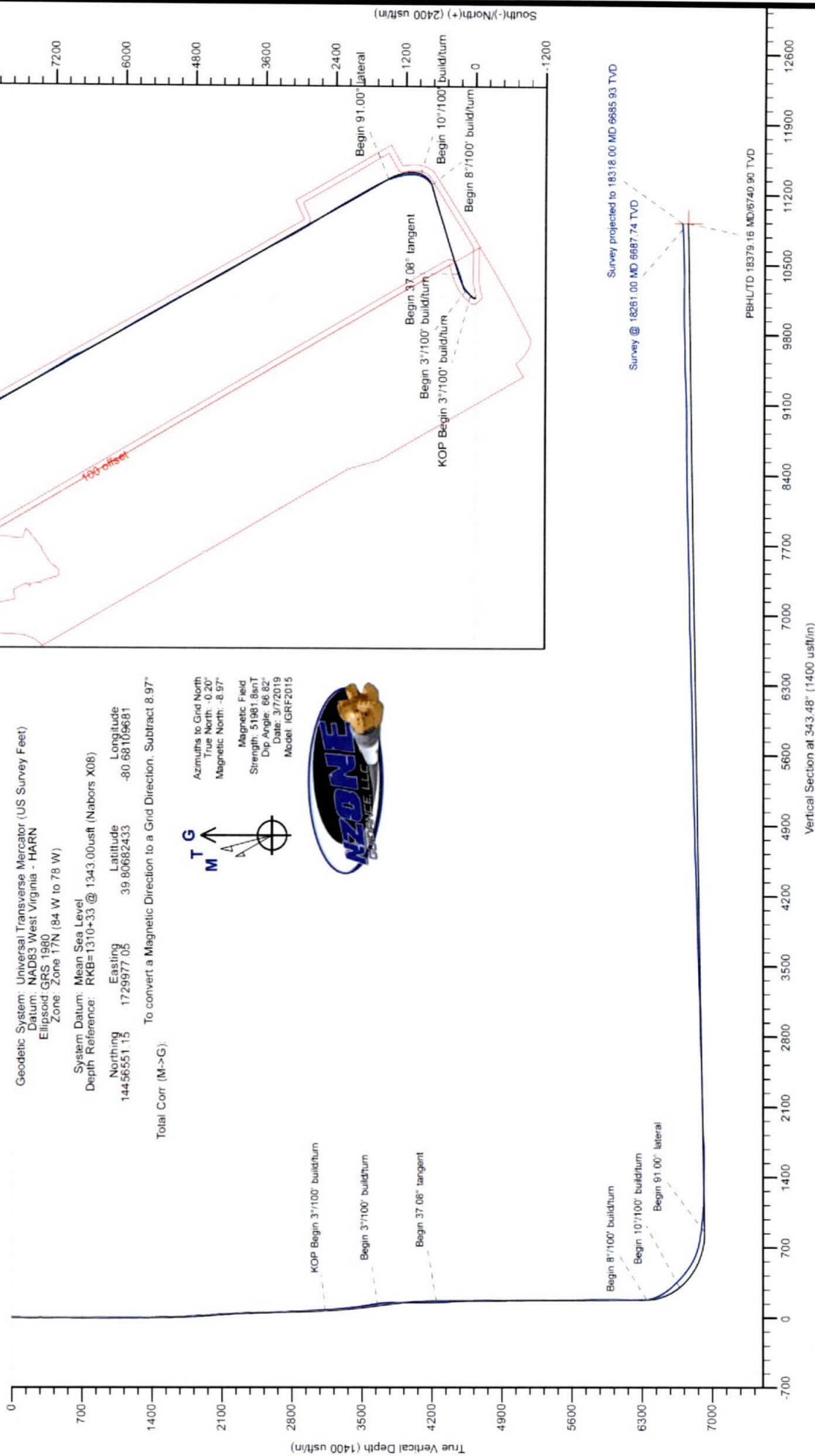
System Datum: Mean Sea Level
 Depth Reference: RKB=1310+33 @ 1343.00usft (Nabors X08)

Northing: 14456551.15
 Easting: 1729977.05
 Latitude: 39.80682433
 Longitude: -80.68105681

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.97"



Azimuths to Grid North
 True North: -0.20"
 Magnetic North: -8.97"
 Magnetic Field
 Strength: 51981.8snT
 Dip Angle: 66.82"
 Date: 3/7/2019
 Model: IGRF2015



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7,110' B.H. AS DRILLED 4,054' T.H. AS DRILLED

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

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

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

9,657' T.H. AS DRILLED 14,350' B.H. AS DRILLED

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

NAD83 S.P.C. (FT)	N. 478,167.69	E. 1,636,697.38
NAD83 GEO.	LAT-(N) 39.806824	LONG-(W) 80.681097
NAD83 UTM (M)	N. 4,406,365.60	E. 527,298.06
LANDING POINT		
NAD83 S.P.C. (FT)	N. 479,584.2	E. 1,638,766.4
NAD83 GEO.	LAT-(N) 39.810787	LONG-(W) 80.673798
NAD83 UTM (M)	N. 4,406,807.7	E. 527,921.2
BOTTOM HOLE		
NAD83 S.P.C. (FT)	N. 488,688.6	E. 1,633,768.3
NAD83 GEO.	LAT-(N) 39.835599	LONG-(W) 80.692019
NAD83 UTM (M)	N. 4,409,555.9	E. 526,352.1

**AS DRILLED COORDINATES
FOR WELL NO. 19HM**

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

NAD83 S.P.C. (FT)	N. 478,167.69	E. 1,636,697.38
NAD83 GEO.	LAT-(N) 39.806824	LONG-(W) 80.681097
NAD83 UTM (M)	N. 4,406,365.60	E. 527,298.06
LANDING POINT		
NAD83 S.P.C. (FT)	N. 479,910.3	E. 1,638,602.7
NAD83 GEO.	LAT-(N) 39.811677	LONG-(W) 80.674397
NAD83 UTM (M)	N. 4,406,906.2	E. 527,869.6
BOTTOM HOLE		
NAD83 S.P.C. (FT)	N. 488,691.0	E. 1,633,777.3
NAD83 GEO.	LAT-(N) 39.835606	LONG-(W) 80.691987
NAD83 UTM (M)	N. 4,409,556.7	E. 526,354.9

MAP PARCEL	ADJOINING SURFACE OWNER LIST (SEE SHEET 2)	ACRES
9-1-14.1	ALICE J. & DOUGLAS J. MARTIN	0.905
9-5-5.1	DAVID M. TOLER, ET UX	0.985
9-5-6.1	JON B. CRAWFORD	4.679
9-5-6.2	MICHAEL JOSEPH SNYDER	2.82
9-5-6.3	DEUTICHE BANK NATIONAL TRUST CO.	1.391
9-5-6.4	NANCY L. SNYDER	0.694
9-5-6.5	LINDA GORBY DELBERT	1.087
9-5-6.6	NANCY L. SNYDER	0.420
9-5-6.7	NANCY L. SNYDER	0.678
9-5-6.8	NANCY L. SNYDER	0.691
9-5-7	M.E. CHURCH	81.5 POLES 6 AC. (ASSD)
9-5-8.2	MISTY CROW WITH ROBERT & ELSIE WHETZEL (LIFE ESTATE)	1.973
9-5-14.4	BETTY R. OIT	10.501
9-5-16	LARRY L. CONKLE, JR.	2.365
9-5-16.1	SCOTT A. HOSTUTLER	0.142
9-5-21	RALPH E. WELLMAN, ET UX	1.00
9-5-22	RALPH E. WELLMAN, ET UX	0.5



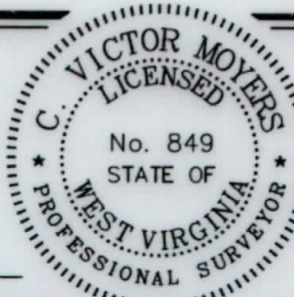
NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
- AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsrv.com

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




P.S. 849 C. Victor Moyers

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE MARCH 24, 20 20
REVISED _____, 20 ____
OPERATORS WELL NO. TEN HIGH 1N-19HM
API WELL NO. 47 - 051 - 2017
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8655P19HMAD.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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



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

LOCATION: GROUND = 1,321.20' ELEVATION PROPOSED = 1,310.06' WATERSHED MIDDLE BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

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

PROPOSED WORK: LEASE NO. SEE WW-6A1
DRILL X CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION _____ PERFORATE NEW FORMATION _____ PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____ OTHER _____
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD: 6,865' / TMD: 18,312'

WELL OPERATOR TUG HILL OPERATING, LLC 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

TUG HILL OPERATING WELL 19HM TEN HIGH 1N LEASE

T.H. LATITUDE 39°25'30"
B.H. LATITUDE 39°20'00"

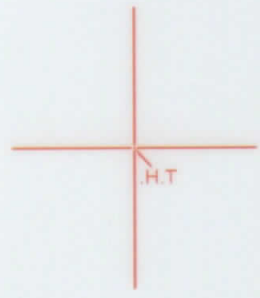
B.H. LONGITUDE 80°40'00"
T.H. LONGITUDE 80°40'00"

AS DRILLED COORDINATES FOR WELL NO. 19HM

BOTTOM HOLE	
NAD83 UTM (M)	N 4406252.7 E 258324.9
NAD83 GEO. LAT-(N)	39 25 59.6
NAD83 GEO. LONG-(W)	80 40 00.0
LANDING POINT	
NAD83 UTM (M)	N 4406252.5 E 257388.8
NAD83 GEO. LAT-(N)	39 25 59.6
NAD83 GEO. LONG-(W)	80 40 00.0
(2 P.C. NORTH ZONE) (UTM) ZONE 17 NORTH	
NAD83 UTM (M)	N 4406252.5 E 257388.8
NAD83 GEO. LAT-(N)	39 25 59.6
NAD83 GEO. LONG-(W)	80 40 00.0

BOTTOM HOLE	
NAD83 UTM (M)	N 4406252.9 E 258325.1
NAD83 GEO. LAT-(N)	39 25 59.6
NAD83 GEO. LONG-(W)	80 40 00.0
LANDING POINT	
NAD83 UTM (M)	N 4406252.5 E 257388.8
NAD83 GEO. LAT-(N)	39 25 59.6
NAD83 GEO. LONG-(W)	80 40 00.0
(2 P.C. NORTH ZONE) (UTM) ZONE 17 NORTH	
NAD83 UTM (M)	N 4406252.5 E 257388.8
NAD83 GEO. LAT-(N)	39 25 59.6
NAD83 GEO. LONG-(W)	80 40 00.0

MAP PARCEL	ADJOINING SURFACE OWNER LIST (SEE SHEET 2)	ACRES
0-2-22	RALPHE WELTMAN ET UX	0.2
0-2-21	RALPHE WELTMAN ET UX	1.00
0-2-18	SCOTT A HOSTETLER	0.142
0-2-16	LARRY L CONKLE JR	2.282
0-2-14	BETTY R OLT	10.501
0-2-8-2	MISTY CROW WITH ROBERT A ELSE WHEATN (HER ESTATE)	1.972
0-2-7	NE GRUBBS	81.2 AC. (ASDD)
0-2-8	NANCY L SNYDER	0.691
0-2-7	NANCY L SNYDER	0.678
0-2-6	NANCY L SNYDER	0.450
0-2-7	LINDY GORBY DELBERT	1.087
0-2-4	NANCY L SNYDER	0.694
0-2-3	DELTA BANK NATIONAL TRUST CO	1.791
0-2-2	MICHAEL JOSEPH SNYDER	1.87
0-2-1	RON R CRAWFORD	1.29
0-2-1	DAVID M TOLER ET UX	0.987
0-1-1	AILEE L & DOUGLAS L MARTIN	0.207



NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL NO AGRICULTURAL BUILDINGS > 5000 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOP MARK SCALE IS 1"=2000'
- AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.

150 West Baskin Byway | Beckley, WV 26001 | 304 222 2200
1412 Kanawha Boulevard, East Charleston, WV 25301 | 304 346 2822
12 Westwood Drive | P.O. Box 150 | Glenville, WV 26031 | 304 462 2824



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

P.S. 849
C. Victor Moyers

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE MARCH 24, 2017
REVISED _____, 20____
OPERATORS WELL NO. TEN HIGH 1N-19HM
API NO. _____
WELL NO. 47
STATE COUNTY PERMIT 2017

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

CONTROL DETERMINED BY _____ (SURVEY GRADE TIE TO CORS NETWORK)
HORIZONTAL & VERTICAL SCALE 1" = 2000'
FILE NO. 8825P19HMAD.dwg
MINIMUM DEGREE OF ACCURACY 1/2500

PROPOSED WORK :
ROYALTY OWNER ANDY PAUL & JACKIE KUHN, ET AL - WW-6A1
SURFACE OWNER LAWRENCE & SHIRLEY CONKLE ESTS
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GREEN EASTON T.S.
ELEVATION PROPOSED = 1,310.06', GROUND = 1,321.20'
WATERSHED MIDDLE BOWMAN RUN OF FISH CREEK (HUC 10)WELL TYPE: OIL GAS INJECTION LIQUID WASTE
DISPOSAL "GAS" PRODUCTION STORAGE DEEP SHALLOW 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) _____
ESTIMATED DEPTH TVD: 6,865' \ TMD: 18,312'
TARGET FORMATION MARCELLUS
LEASE NO. SEE WW-6A1

WELL OPERATOR TUG HILL OPERATING, LLC
ADDRESS 1520 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107
DESIGNATED AGENT DIANNA STAMPER
ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313
CT CORPORATION SYSTEM

8 962', T.H. AS DRILLED

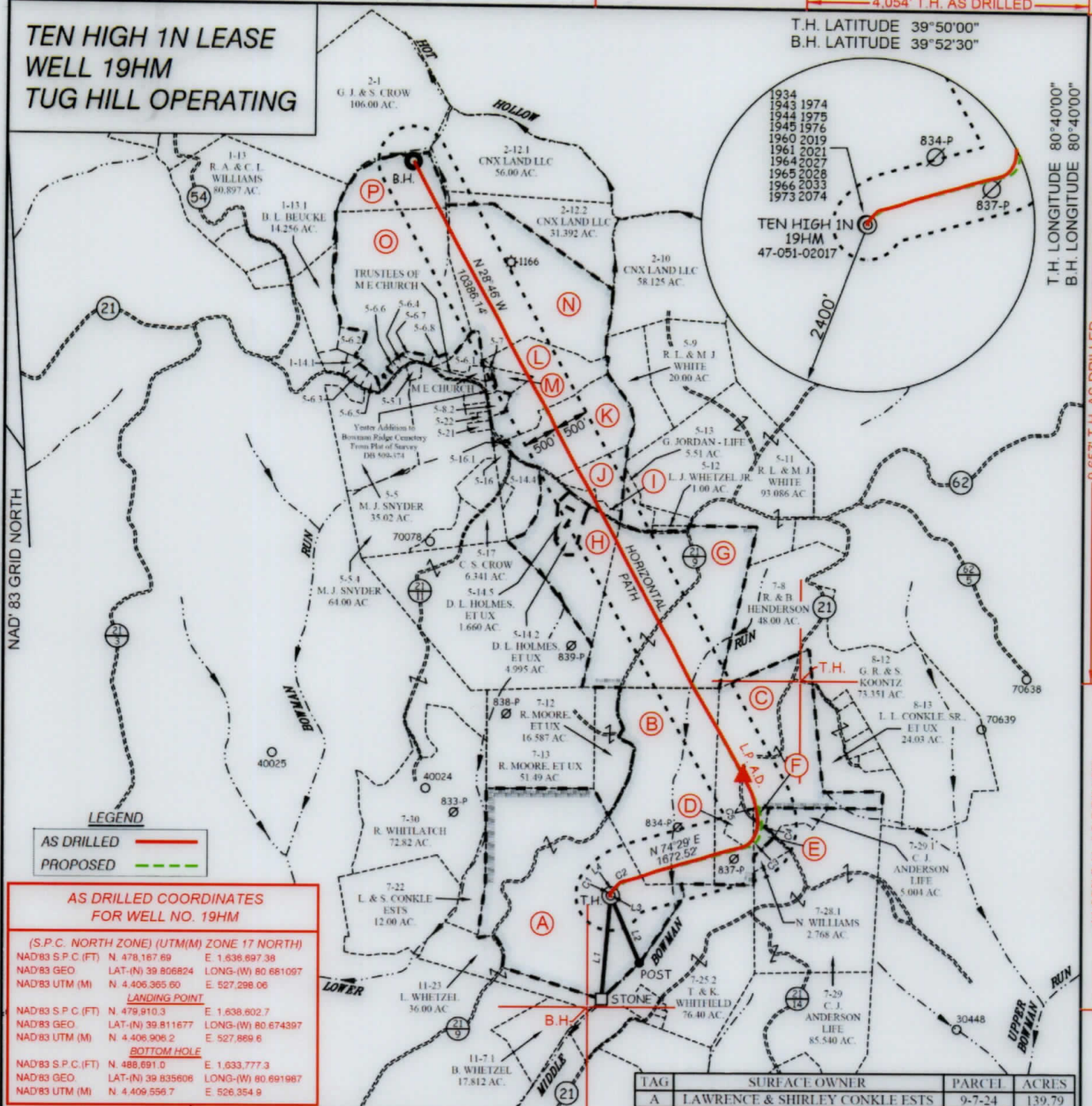
14 380.0 B.H. AS DRILLED

7,110' B.H. AS DRILLED 4,054' T.H. AS DRILLED

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

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

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



LEGEND

- AS DRILLED —
- PROPOSED - - -

**AS DRILLED COORDINATES
FOR WELL NO. 19HM**

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

NAD83 S.P.C.(FT)	N. 478,167.69	E. 1,636,697.38
NAD83 GEO.	LAT-(N) 39.806824	LONG-(W) 80.681097
NAD83 UTM (M)	N. 4,406,365.60	E. 527,298.06

LANDING POINT

NAD83 S.P.C.(FT)	N. 479,910.3	E. 1,638,602.7
NAD83 GEO.	LAT-(N) 39.811677	LONG-(W) 80.674397
NAD83 UTM (M)	N. 4,406,906.2	E. 527,869.6

BOTTOM HOLE

NAD83 S.P.C.(FT)	N. 488,691.0	E. 1,633,777.3
NAD83 GEO.	LAT-(N) 39.835606	LONG-(W) 80.691967
NAD83 UTM (M)	N. 4,409,556.7	E. 526,354.9

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

TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.79
B	ROBERT G. & SCARLETT HUBBS	9-7-12.1	86.363
C	MARK H. FOX	9-7-11	75.37
D	WEST VIRGINIA DEPT. OF HIGHWAYS	9-7-11.1	3.63
E	VICTOR & CLAIRE CAMERON	9-7-28	1,983
F	CAROL J. ANDERSON - LIFE	9-7-27	1,005
G	ROBERT GLENN HUBBS, ET AL.	9-7-7	108.61
H	DAVID L. HOLMES, ET UX	9-5-14	37,345
I	SAVANNA N. & MATTHEW WEST	9-5-14.1	2,819
J	MARK H. FOX, ET UX	9-5-14.3	10,714
K	MARK H. FOX, ET UX	9-5-15	36,533
L	SCOTT A. HOSTUTLER	9-5-8	26,752
M	ISAAC LEE MCKINNEY, ET UX	9-5-8.1	2,875
N	HARRY J. CRAWFORD, ET UX - LIFE	9-2-12	168.11
O	NANCY L. SNYDER (LIFE ESTATE)	9-5-6	82,858
P	CNX LAND LLC	9-5-6.9	22,392

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



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3932
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
 slsw.com



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

P.S. 849 *C. Victor Moyers*

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

NAD83 S.P.C.(FT)	N. 478,167.69	E. 1,636,697.38
NAD83 GEO.	LAT-(N) 39.806824	LONG-(W) 80.681097
NAD83 UTM (M)	N. 4,406,365.60	E. 527,298.06

LANDING POINT

NAD83 S.P.C.(FT)	N. 479,584.2	E. 1,638,766.4
NAD83 GEO.	LAT-(N) 39.810787	LONG-(W) 80.673798
NAD83 UTM (M)	N. 4,406,807.7	E. 527,921.2

BOTTOM HOLE

NAD83 S.P.C.(FT)	N. 488,688.6	E. 1,633,768.3
NAD83 GEO.	LAT-(N) 39.835599	LONG-(W) 80.692019
NAD83 UTM (M)	N. 4,409,555.9	E. 526,352.1

LEGEND

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

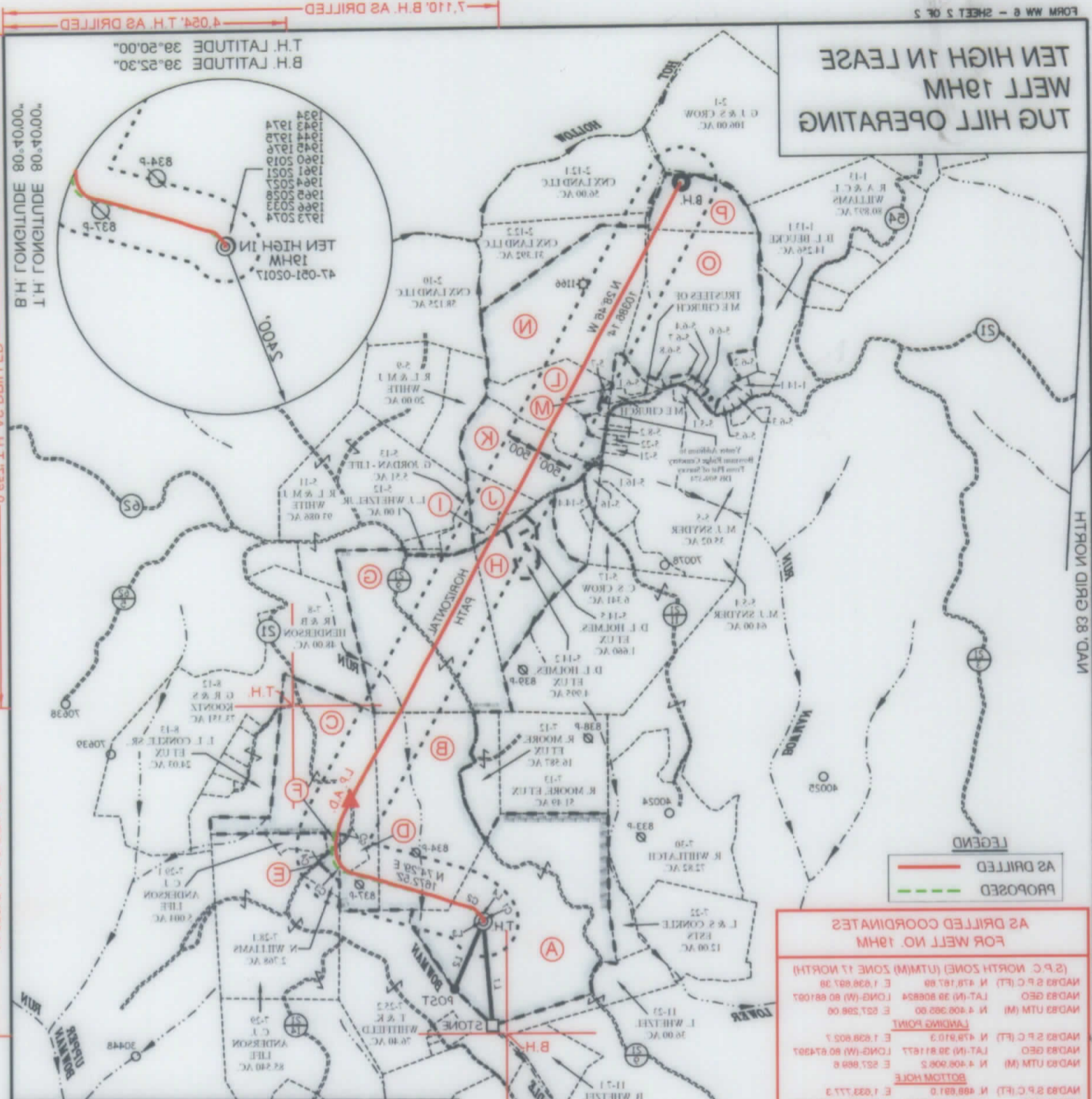
SCALE 1" = 2000' FILE NO. 8655P19HMAD.dwg
 DATE MARCH 24, 20 20
 REVISED _____, 20 ____
 OPERATORS WELL NO. TEN HIGH 1N-19HM
 API WELL NO. 47 — 051 — 2017
 NO. STATE COUNTY PERMIT

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

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

14,350' B.H. AS DRILLED 9,657' T.H. AS DRILLED

**TEN HIGH IN LEASE
WELL 19HM
TUG HILL OPERATING**



LEGEND
 AS DRILLED (Red line)
 PROPOSED (Green dashed line)

AS DRILLED COORDINATES FOR WELL NO. 19HM

BOTTOM HOLE	
HADR 2 P.C. (FT)	N 408.252.2 E 527.889.8
HADR 3 GEO	LAT-(N) 39.825884 LONG-(W) 80.825019
HADR 3 UTM (M)	N 408.252.2 E 527.889.8
LANDING POINT	
HADR 2 P.C. (FT)	N 479.970.3 E 1,039.898.8
HADR 3 GEO	LAT-(N) 39.817877 LONG-(W) 80.825019
HADR 3 UTM (M)	N 479.970.3 E 1,039.898.8
(2 P.C. NORTH ZONE) (UTM) (ZONE 17 NORTH)	
HADR 2 P.C. (FT)	N 478.187.88 E 1,039.897.38
HADR 3 GEO	LAT-(N) 39.808854 LONG-(W) 80.825019
HADR 3 UTM (M)	N 478.187.88 E 1,039.897.38

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	20.08	29.13	N 52.49 E	19.88
C2	383.98	738.14	N 60.43 E	370.84
C3	189.89	520.38	N 48.18 E	184.58
C4	303.27	499.13	N 05.51 E	298.83
C5	294.90	889.54	N 19.21 W	293.58

TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	0-7-24	139.79
B	ROBERT G. & SCARLETT HUBBS	0-7-12.1	86.363
C	MARK H. FOX	0-7-11	72.37
D	WEST VIRGINIA DEPT. OF HIGHWAYS	0-7-11.1	3.63
E	VICTOR & CLARE CAMERON	0-7-28	1.983
F	CAROL J. ANDERSON - LIFE	0-7-27	1.002
G	ROBERT GILLEN HUBBS ET AL	0-7-7	108.61
H	DAVID L. HOBBS ET UX	0-2-14	27.242
I	SAVANNA N. & MATTHEW WEST	0-2-14.1	2.819
J	MARK H. FOX ET UX	0-2-14.3	10.714
K	MARK H. FOX ET UX	0-2-12	26.232
L	SCOTT A. HOSUTLER	0-2-8	26.252
M	ISAAC LEE MCKINNEY ET UX	0-2-8.1	2.822
N	HARRY J. CRAWFORD ET UX - LIFE	0-2-12	168.11
O	NANCY L. SNYDER (THE ESTATE)	0-2-8	82.828
P	CNX LAND LLC	0-2-8.0	22.202

LINE	BEARING	DISTANCE
L1	S 02.00 W	1487.08
L2	S 23.25 E	1047.28
L3	N 00.27 E	13.97
L3	N 41.22 E	72.17

SLS
 FROM THE GROUND UP
 12 Vinton Drive | P.O. Box 180 | Glenview, WV 26021 | 304.483.8234
 1412 Kanawha Boulevard, East | Charleston, WV 25310 | 304.244.3993
 254 East Backley Highway | Beckley, WV 26011 | 304.252.2286
 www.sls.com



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

FILE NO. 8825219HMAD.dwg
 SCALE 1" = 500'

DATE MARCH 24, 2017
 REVISED _____

OPERATORS WELL NO. TEN HIGH IN-19HM
 AP# 47-051-2017
 PERMIT COUNTY STATE

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

849 P.S. Victor Moyers

LEGEND

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

PERMIT COUNTY STATE

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

DESIGNATED AGENT
 ADDRESS 2400 D BIG TYLER ROAD
 CHARLESTON, WV 25313

DINNA STAMPER
 CT CORPORATION SYSTEM