

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

API 47-051-02019 County Marshall District Meade  
Quad Glen Easton 7.5' Pad Name Ten High Field/Pool Name \_\_\_\_\_  
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 **RECEIVED**  
Top hole Northing 4,406,364.76 Easting 527,301.77 Office of Oil and Gas  
Landing Point of Curve Northing 4,406,832.8 Easting 527,623.5 JUN 10 2020  
Bottom Hole Northing 4,409,478.8 Easting 526,128.3 WV Department of  
Environmental Protection

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 9/2/2018 Date drilling ceased 11/26/2018  
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

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 Sewickley Coal - 868 - 974' and Pittsburgh Coal - 1063 - 1058' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by: Jamie Johnson  
8/4/2020

API 47-051 - 02019

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

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"	1,145'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1,145'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,798'	NEW	20#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	17,961'	NEW	20#	N/A	Y
Tubing		2 3/8"	8,981'	NEW	4.7#	N/A	
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MID)	WOC (hrs)
Conductor	A		15.6	1.19		0	8
Surface	A	1119	15.6	1.19	1351	0	8
Coal	A	1119	15.6	1.19	1351	0	8
Intermediate 1	A	896	15.6	1.19	1165	0	8
Intermediate 2							
Intermediate 3							
Production	A	4224	14.5	1.17	4921	0	8
Tubing							

Drillers TD (ft) 18,054'

Deepest formation penetrated Marcellus

Plug back procedure n/a

Loggers TD (ft) n/a

Plug back to (ft) n/a

Kick off depth (ft) 6,338'

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.

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-18HM  
PERFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	1/15/2019	17,814	17,863	2	Marcellus
2	1/15/2019	17,591	17,737	48	Marcellus
3	1/16/2019	17,416	17,562	48	Marcellus
4	1/16/2019	17,241	17,387	48	Marcellus
5	1/16/2019	17,066	17,212	48	Marcellus
6	1/17/2019	16,891	17,037	48	Marcellus
7	1/18/2019	16,716	16,862	48	Marcellus
8	1/20/2019	16,541	16,687	48	Marcellus
9	1/21/2019	16,366	16,512	48	Marcellus
10	1/21/2019	16,191	16,337	48	Marcellus
11	1/22/2019	16,016	16,162	48	Marcellus
12	1/22/2019	15,841	15,987	48	Marcellus
13	1/23/2019	15,666	15,812	48	Marcellus
14	1/23/2019	15,491	15,637	48	Marcellus
15	1/24/2019	15,316	15,462	48	Marcellus
16	1/24/2019	15,141	15,287	48	Marcellus
17	1/25/2019	14,966	15,112	48	Marcellus
18	1/26/2019	14,791	14,937	48	Marcellus
19	1/26/2019	14,616	14,762	48	Marcellus
20	1/26/2019	14,441	14,587	48	Marcellus
21	1/27/2019	14,266	14,412	48	Marcellus
22	1/27/2019	14,091	14,237	48	Marcellus
23	1/28/2019	13,916	14,062	48	Marcellus
24	1/29/2019	13,741	13,887	48	Marcellus
25	1/29/2019	13,566	13,712	48	Marcellus
26	1/30/2019	13,391	13,551	48	Marcellus
27	1/30/2019	13,216	13,362	48	Marcellus
28	1/31/2019	13,041	13,187	48	Marcellus
29	2/1/2019	12,866	13,012	48	Marcellus
30	2/1/2019	12,691	12,837	48	Marcellus
31	2/2/2019	12,516	12,662	48	Marcellus
32	2/3/2019	12,341	12,487	48	Marcellus
33	2/3/2019	12,166	12,312	48	Marcellus
34	2/4/2019	11,991	12,151	48	Marcellus
35	2/5/2019	11,816	11,962	48	Marcellus
36	2/5/2019	11,641	11,787	48	Marcellus
37	2/6/2019	11,466	11,612	48	Marcellus
38	2/6/2019	11,291	11,437	48	Marcellus
39	2/6/2019	11,116	11,262	48	Marcellus
40	2/7/2019	10,941	11,087	48	Marcellus
41	2/7/2019	10,766	10,912	48	Marcellus
42	2/8/2019	10,591	10,737	48	Marcellus
43	2/9/2019	10,416	10,562	48	Marcellus
44	2/9/2019	10,241	10,387	48	Marcellus
45	2/9/2019	10,066	10,212	48	Marcellus
46	2/10/2019	9,891	10,037	48	Marcellus

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47	2/10/2019	9,716	9,862	48	Marcellus
48	2/10/2019	9,541	9,687	48	Marcellus
49	2/11/2019	9,366	9,512	48	Marcellus
50	2/11/2019	9,191	9,337	48	Marcellus
51	2/12/2019	9,016	9,162	48	Marcellus
52	2/12/2019	8,841	8,987	48	Marcellus
53	2/12/2019	8,666	8,812	48	Marcellus
54	2/13/2019	8,491	8,637	48	Marcellus
55	2/14/2019	8,316	8,462	48	Marcellus
56	2/14/2019	8,141	8,287	48	Marcellus
57	2/14/2019	7,966	8,112	48	Marcellus

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**Ten High 1N-18HM  
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 (bbls)	Amount of Nitrogen/other (units)
1	83.4	7213	4288	2934	339640	8369	0
2	81.2	7493	5498	3688	445600	8010	0
3	81.8	7777	6055	3694	454035	8507	0
4	72.7	8188	5249	4026	440590	9055	0
5	79.8	7541	5375	3610	442170	8899	0
6	87	7654	5262	3749	441590	8684	0
7	86.3	7993	5655	3409	438090	8686	0
8	80.6	8218	5601	3787	299980	7601	0
9	71.9	7596	5279	3946	433470	8972	0
10	79	7833	5342	4439	404790	7588	0
11	77.4	7874	5694	3681	444920	9386	0
12	83.5	7777	5511	3491	439080	7890	0
13	86	7926	5457	3728	442520	7824	0
14	84.7	8309	5769	3257	433660	8272	0
15	88.5	7859	5269	3542	437920	7864	0
16	84.9	7762	5097	4119	435570	7780	0
17	81.3	8052	5939	4207	433080	8125	0
18	81.3	7848	5592	3715	442720	7922	0
19	85	8020	5497	3796	435820	7995	0
20	82.2	7797	5123	4409	418920	7648	0
21	84.5	7926	5387	4057	435170	7565	0
22	84.8	7818	5470	5065	439390	7258	0
23	84.2	7935	5468	3848	444050	7873	0
24	83.6	7854	5882	4024	300930	10523	0
25	84.8	7509	5230	3449	439000	7323	0
26	84.8	7480	5832	3716	430500	8744	0
27	84.9	7817	5386	3986	436080	7742	0
28	69.5	6965	5508	3925	433630	15128	0
29	80	7190	5560	4388	436760	7847	0
30	81.8	7599	05430	9648	309700	5673	0
31	81	7316	5271	4835	448300	7931	0
32	79.8	7518	5533	5067	432900	7966	0
33	72.9	7605	5505	5367	320260	6475	0

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34	76.7	7423	5459	5048	438140	8473	0
35	79.6	7602	5405	5035	419610	9522	0
36	78.3	7514	5555	5078	440680	10102	0
37	80.2	7698	5354	4914	443780	10372	0
38	79.2	7415	5411	5055	444890	9221	0
39	80.2	7285	5672	4728	443320	9449	0
40	78.1	7336	5683	5150	444780	9488	0
41	76.5	7339	5461	5110	382900	7991	0
42	78.9	7315	5484	5138	381840	10697	0
43	79.2	7349	5427	5163	415470	8341	0
44	79.7	7444	5455	4939	439640	9690	0
45	79.9	7439	5490	5134	442618	9306	0
46	80.4	7192	5363	5200	444620	8983	0
47	80.2	7449	5538	5091	340740	7376	0
48	80.4	7307	5476	5238	441040	9261	0
49	80.3	7165	5397	5106	441200	8874	0
50	80.3	7258	5371	4900	443170	9228	0
51	80.1	7270	5495	4958	442810	9296	0
52	79.9	7250	5415	5379	416280	8217	0
53	80.3	7296	5327	4985	424520	9083	0
54	80.2	7266	5430	5125	434280	9191	0
55	80.9	7053	5334	5015	436710	10105	0
56	79.4	6995	5435	5028	437800	9574	0
57	80.6	6934	5455	4405	435610	10214	0

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TEN HIGH 1N-18HM

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

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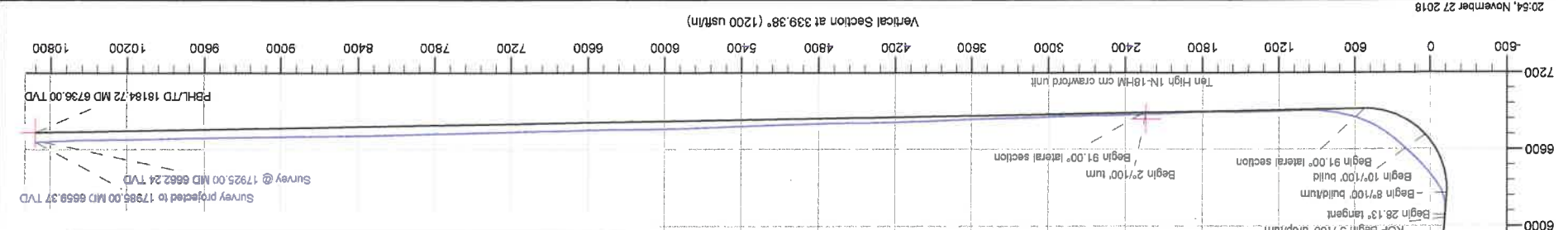
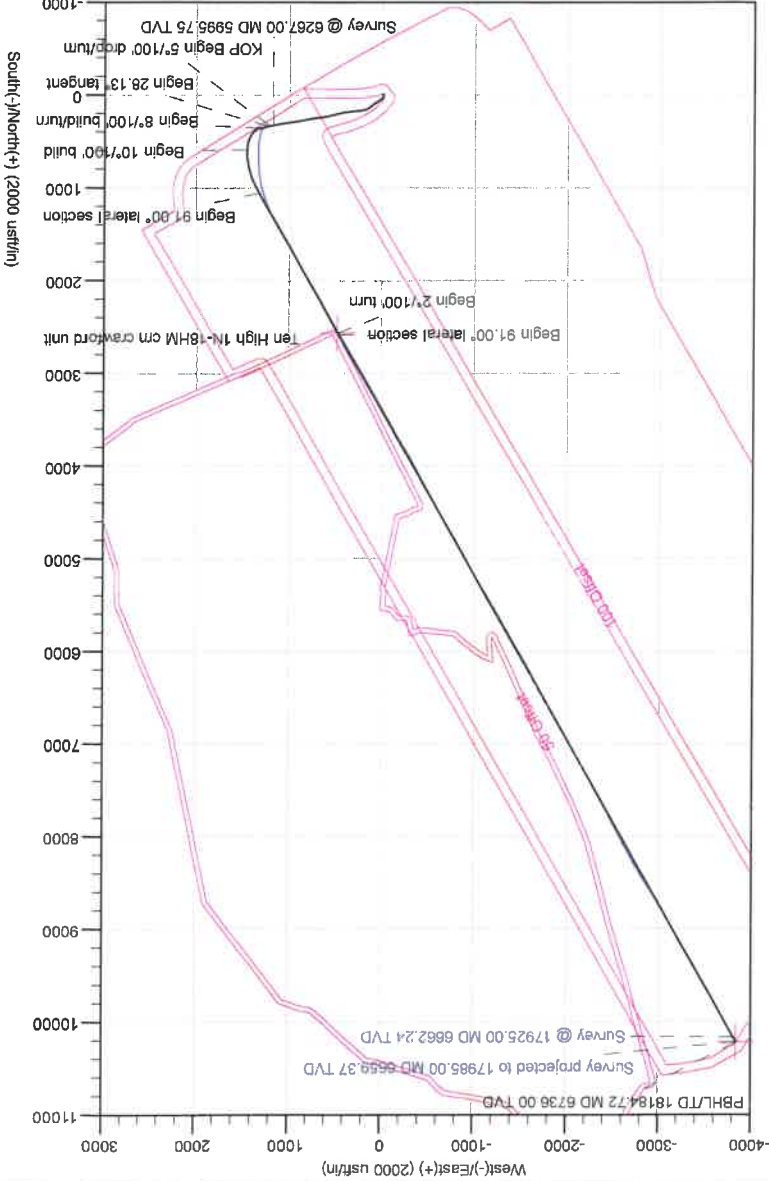
**Well: Ten High 1N-18M (S)**  
**Site: Ten High Marshall County, West Virginia.**  
**Project: rev8**  
**Design: Nabors X08**



**SECTION DETAILS**

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Vsect	Annotation
1	6267.00	28.78	78.59	5995.75	327.67	1183.64	0.00	Diag TFace
2	6347.00	28.78	78.59	6065.86	335.29	1221.39	0.00	KOP Begin 5'100" drop/lum
3	6370.78	28.13	76.50	6086.77	337.73	1232.45	5.00	-124.11 -117.94
4	6665.91	28.13	76.50	6258.86	359.20	1321.91	0.00	Begin 28.13' tangent
5	7110.34	45.00	4.16	6713.51	592.48	1467.76	8.00	Begin 10'100" build
6	7599.82	76.50	6258.86	6918.00	1061.17	1335.15	10.00	Begin 8'100" build/lum
7	9398.36	91.00	330.23	6888.76	2570.07	472.12	0.00	Begin 91.00' lateral section
8	9414.77	91.00	330.56	6888.47	2584.34	464.01	2.00	Begin 2'100" turn
9	18184.72	91.00	330.56	6736.00	10220.73	-3845.79	0.00	PBHLTD 18184.72 MD 6736.00 TVD

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
Datum: NAD83 West Virginia - HARN  
Ellipsoid: GRS 1980  
Zone: Zone 17N (84 W to 78 W)  
System Datum: Mean Sea Level  
Depth Reference: RKB=1310+33 @ 1343.00usft (Nabors X08)  
Northing 14456548.37  
Easting 1729989.23  
Latitude 39.80681659  
Longitude -80.68105346  
Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.95°  
Azimuths to Grid North  
True North: -0.20°  
Magnetic North: -8.95°  
Magnetic Field  
Strength: 52041.1817  
Dip Angle: 66.87°  
Date: 9/1/2018  
Model: IGRF2015



## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/14/2018
Job End Date:	2/18/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-02019-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Ten High 18HM
Latitude:	39.80681659
Longitude:	-80.68105346
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,905
Total Base Water Volume (gal):	21,495,274
Total Base Non Water Volume:	0

## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.96944	Density = 8.330
Ingredients	Listed Above	Listed Above	Water	7732-18-5	100.00000	0.11820	



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LD-2115	Multi-Chem	Friction Reducer		Listed Below				
MURIATIC ACID	Halliburton	Solvent		Listed Below				
OILPERM A	Halliburton	Non-ionic Surfactant		Listed Below				
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (10003676)	Halliburton	Proppant		Listed Below				
CALCIUM CHLORIDE - FLAKE	Halliburton	Additive		Listed Below				
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant		Listed Below				
FDP-S1296-17	Halliburton	Additive		Listed Below				
LD-2850	Multi-Chem	Friction Reducer		Listed Below				



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\* 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)



**TEN HIGH 1N LEASE  
WELL 18HM  
TUG HILL OPERATING**

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	ROBERT GLENN HUBBS, ET AL.	9-7-7	108.61
F	DAVID L. HOLMES, ET UX	9-5-14	37.345
G	DAVID L. HOLMES, ET UX	9-5-14.2	4.995
H	BETTY R. OIT	9-5-14.5	1.66
I	LARRY L. CONKLE, JR	9-5-16	2.365
J	MARK H. FOX, ET UX	9-5-15	36.533
K	SCOTT A. HOSTUTLER	9-5-16.1	0.142
L	SCOTT A. HOSTUTLER	9-5-8	26.752
N	MISTY CROW WITH ROBERT & ELSIE WHEITZEL (LIFE ESTATE)	9-5-8.2	1.973
O	RALPH E. WELLMAN, ET UX	9-5-22	0.5
P	RALPH E. WELLMAN, ET UX	9-5-23	1.00
Q	ALAN & MARCELLA DARRAH	9-5-24	1.985
R	IRL STILES OF M.F. CHERCH	NOT ASSD	1.00
S	M.F. CHERCH FROM THE MAP OF THE ESTATE OF EZEKIAL GORBY SHOWING PARTITION TO HIS LAST WILL - PLAT BK. 2	NOT ASSD	NOT ASSD
T	JOHN B. CRAWFORD	9-5-6.1	4.679
U	NANCY L. SNYDER (LIFE ESTATE)	9-5-6	82.838
V	UNA LAND LLC	9-5-6.9	22.392

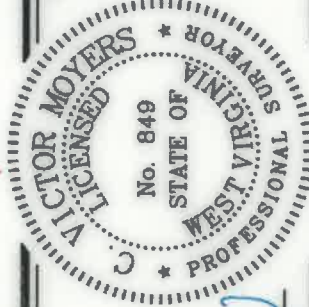
MAP PARCEL	ADJOINING SURFACE OWNER LIST (SEE SHEET 2)	ACRES
9-4-14.1	ALICE J. & DOUGLAS J. MARTIN	0.905
9-5-5.1	DAVID M. FOHRER, ET UX	6.985
9-5-6.2	MICHAEL JOSEPH SNYDER	2.82
9-5-6.3	DELUCHE BANK NATIONAL TRUST CO.	1.391
9-5-6.4	NANCY L. SNYDER	0.094
9-5-6.5	LONDA GORBY DELBERT	1.087
9-5-6.6	NANCY L. SNYDER	0.129
9-5-6.7	NANCY L. SNYDER	6.678
9-5-6.8	NANCY L. SNYDER	0.691
9-5-7	M.F. CHERCH	81.2 WELLS 6 AC. (ASSD)
9-5-8.1	ISAC BUCKINNEY, ET UX	2.875
9-5-11.2	LARRY WHEITZEL, JR.	2.355
9-5-12	LARRY WHEITZEL, JR.	1.391
9-5-13	SHELLEY ANN JORDAN - GEORGIA JORDAN LIFE ESTATE	5.51
9-5-14.1	SAVANNA WEST, ET AL.	2.819
9-5-14.3	MARK FOX, ET UX	10.714
9-5-17	CARLA SUE CROW	6.341
9-5-19	BETTY R. OIT	0.933
9-5-20	KEITH WILSON - DONALD E. LEACH (LIFE ESTATE)	6.924
9-5-21	RALPH E. WELLMAN, ET UX	1.69
9-7-13.1	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	3.63
9-7-37	CAROL J. ANDERSON - EHT	1.005
9-7-38	VICTOR & CLAIRE CAMERON	1.983
9-7-28.1	NAIHAN WILLIAMS	2.768
9-7-29.1	CAROL J. ANDERSON - EHT	5.004



11 Yehon Drive | P.O. Box 150 | Glenville, W.V. 26 85 | 304.462.5854  
102 Kanawha Boulevard, East | Charleston, WY 25301 | 304.548.3952  
254 East Buckley Avenue | Beckley, WV 25801 | 304.355.5396  
www.slsinc.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. *C. Victor Moyers*  
849



MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8655P18HMADR.dwg  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

WELL TYPE: OIL \_\_\_ GAS  LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_ IF "GAS" PRODUCTION  STORAGE \_\_\_ DEEP \_\_\_ SHALLOW   
LOCATION: ELEVATION \_\_\_\_\_ GROUND = 1,322.10' 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 ANDY PAUL & JACKIE KUHN, ET AL - WW-6A1 ACREAGE 139.79±

PROPOSED WORK: LEASE NO. SEE WW-6A1  
DRILL  CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE  PLUG OFF OLD  
FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_ OTHER \_\_\_  
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD: 6,898' / TMD: 18,054'

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

7.855' B.H. AS DRILLED

4.042' T.H. AS DRILLED

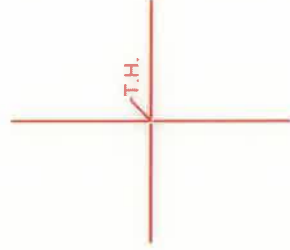
T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°52'30"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
NAD83 S.P.C.(FT) N. 478,104.71 E. 1,636,709.52  
NAD83 GEO. LAT-(N) 39.808817 LONG-(W) 80.681053  
NAD83 UTM (M) N. 4,406,364.76 E. 527,301.77  
LANDING POINT  
NAD83 S.P.C.(FT) N. 479,227.6 E. 1,638,106.3  
NAD83 GEO. LAT-(N) 39.809785 LONG-(W) 80.678132  
NAD83 UTM (M) N. 4,406,665.7 E. 527,721.9  
BOTTOM HOLE  
NAD83 S.P.C.(FT) N. 488,451.8 E. 1,639,033.8  
NAD83 GEO. LAT-(N) 39.854292 LONG-(W) 80.694623  
NAD83 UTM (M) N. 4,409,480.0 E. 528,129.6

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

9.659' T.H. AS DRILLED

14.603' B.H. AS DRILLED



**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.

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

DATE JANUARY 17, 20 19  
REVISED MARCH 24, 20 20  
OPERATORS WELL NO. TEN HIGH 1N-18HM

API WELL NO. 47 - 051 - 2019  
STATE COUNTY PERMIT

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



COUNTY NAME PERMIT

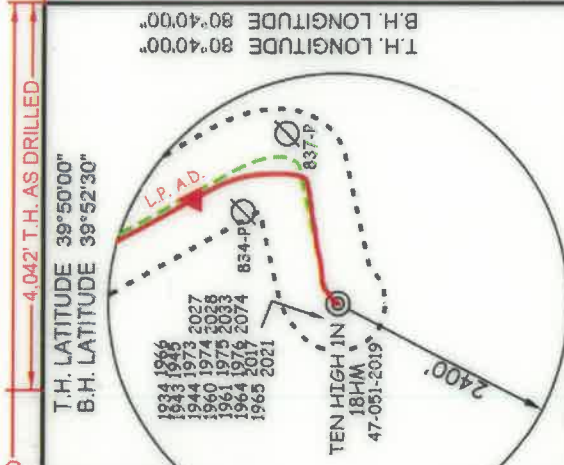


**TEN HIGH 1N LEASE  
WELL 18HM  
TUG HILL OPERATING**

LINE	BEARING	DISTANCE
L1	N 50°57' E	147.37'
L2	N 77°35' E	1074.67'
L3	S 05°28' W	1486.22'
L4	S 22°52' E	1039.74'

**LEGEND**  
— AS DRILLED  
- - - PROPOSED

AS DRILLED  
 PROPOSED



**AS DRILLED COORDINATES FOR WELL NO. 18HM**

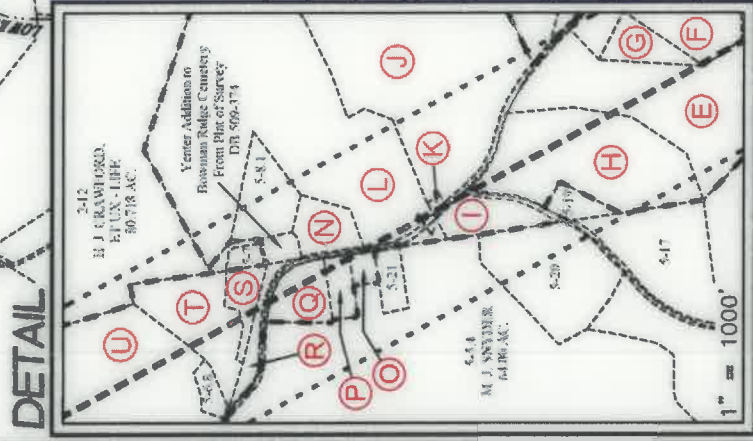
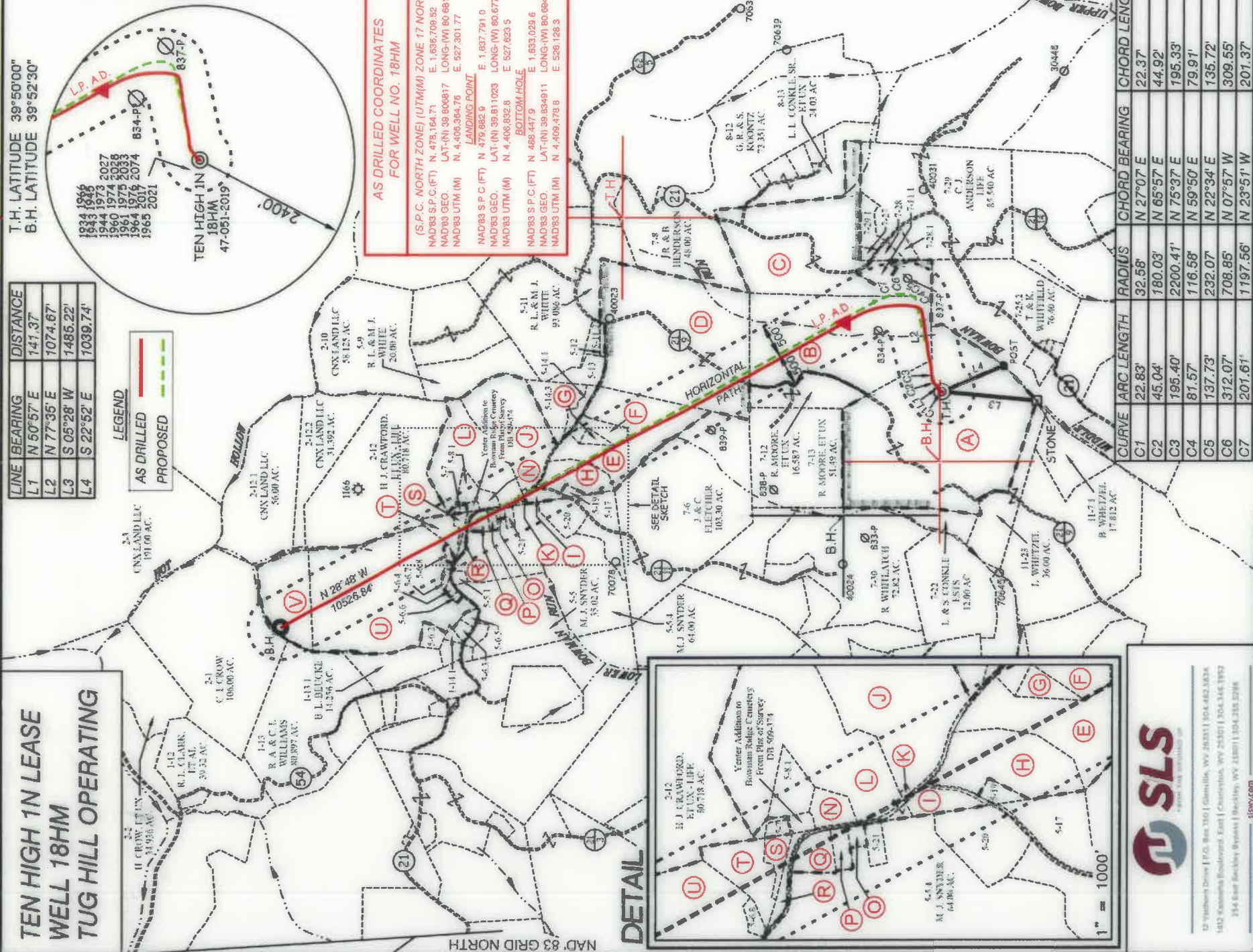
(S.P.C. NORTH ZONE) (UTM/M) ZONE 17 NORTH)  
 NAD83 S.P.C.(FT) N. 478,164.71 E. 1,636,709.52  
 NAD83 GEO. LAT.(N) 39.806817 LONG.(W) 80.681053  
 NAD83 UTM (M) N. 4,406,364.76 E. 527,301.77

**LANDING POINT**  
 NAD83 S.P.C.(FT) N. 479,893.9 E. 1,637,791.0  
 NAD83 GEO. LAT.(N) 39.811023 LONG.(W) 80.677275  
 NAD83 UTM (M) N. 4,406,892.8 E. 527,892.5

**BOTTOM HOLE**  
 NAD83 S.P.C.(FT) N. 488,447.9 E. 1,633,029.6  
 NAD83 GEO. LAT.(N) 39.834911 LONG.(W) 80.664039  
 NAD83 UTM (M) N. 4,409,479.8 E. 526,128.3

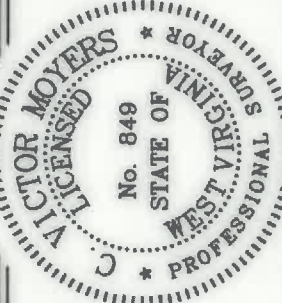
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 T.H. LONGITUDE 80°40'00"  
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Victor Moyers & Associates, Inc.  
 17 Veterans Drive P.O. Box 130 | Glenville, WV 26031 | 504-482-3834  
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 504-346-1952  
 254 East Buckley Avenue | Buckley, WV 24801 | 504-335-2296  
 sls.com

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	22.83'	32.58'	N 27°07' E	22.37'
C2	45.04'	180.03'	N 65°57' E	44.92'
C3	195.40'	2200.41'	N 75°37' E	195.33'
C4	81.57'	116.58'	N 59°50' E	79.91'
C5	137.73'	232.07'	N 22°34' E	135.72'
C6	312.07'	708.85'	N 07°57' W	309.55'
C7	201.61'	1197.56'	N 23°51' W	201.37'



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 P.S. 849  
*C. Victor Moyers*

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**BOTTOM HOLE**  
 NAD83 S.P.C.(FT) N. 488,451.8 E. 1,633,033.8  
 NAD83 GEO. LAT.(N) 39.834292 LONG.(W) 80.664623  
 NAD83 UTM (M) N. 4,409,480.0 E. 526,128.6

SCALE 1" = 2000'  
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 API WELL NO. 47-051-2019  
 STATE COUNTY PERMIT

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

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

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

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