

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

API 47 - 051 - 01976 <sup>02074</sup> 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 1S-10HM  
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 4,406,358.00 Easting 527,331.48  
Landing Point of Curve Northing 4,406,348.5 Easting 528,099.0  
Bottom Hole Northing 4,404,345.4 Easting 529,359.7

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 9/12/2018 Date drilling commenced 2/5/2019 Date drilling ceased 2/19/2019  
Date completion activities began 3/26/2019 Date completion activities ceased 6/19/2019  
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

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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 Nicholas  
6/23/2020

API 47-051 - 01976 Farm name Lawrence & Shirley Conkle, ests. Well number Ten High 1S-10HM

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"	1,178'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1,178'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,899'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	17,092'	NEW	20#	N/A	Y
Tubing		2 3/8"		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 (MD)	WOC (hrs)
Conductor	A		15.6	1.19		0	8
Surface	A	1206	15.6	1.19	1457	0	8
Coal	A	1206	15.6	1.19	1457	0	8
Intermediate 1	A	947	15.6	1.19	1305	0	8
Intermediate 2							
Intermediate 3							
Production		4016	14.5	4679	1.17	0	8
Tubing							

Drillers TD (ft) 17,106' Loggers TD (ft) n/a  
 Deepest formation penetrated Marcellus Plug back to (ft) n/a  
 Plug back procedure n/a

Kick off depth (ft) 6,745'

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 \_\_\_\_\_  
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WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_







**Ten High 1S-10HM  
PEFORATION RECORD**

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Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
0	5/30/2019	16,950	17,000	48	Marcellus
1	5/30/2019	16,950	16,996	48	Marcellus
2	5/30/2019	16,544	16,690	48	Marcellus
3	5/31/2019	16,369	16,515	48	Marcellus
4	5/31/2019	16,194	16,340	48	Marcellus
5	5/31/2019	16,019	16,164	48	Marcellus
6	6/1/2019	15,843	15,989	48	Marcellus
7	6/1/2019	15,668	15,814	48	Marcellus
8	6/1/2019	15,493	15,639	48	Marcellus
9	6/2/2019	15,318	15,464	48	Marcellus
10	6/2/2019	15,143	15,289	48	Marcellus
11	6/2/2019	14,968	15,114	48	Marcellus
12	6/2/2019	14,793	14,939	48	Marcellus
13	6/3/2019	14,618	14,764	48	Marcellus
14	6/4/2019	14,443	14,589	48	Marcellus
15	6/5/2019	14,268	14,413	48	Marcellus
15 Inj Test	6/5/2019	14,268	14,413	48	Marcellus
16	6/6/2019	14,092	14,238	48	Marcellus
17	6/6/2019	13,917	14,063	48	Marcellus
18	6/6/2019	13,742	13,888	0	Marcellus
19	6/7/2019	13,567	13,713	48	Marcellus
20	6/7/2019	13,392	13,538	48	Marcellus
21	6/7/2019	13,217	13,363	48	Marcellus
22	6/8/2019	13,042	13,188	48	Marcellus
23	6/8/2019	12,867	13,013	48	Marcellus
24	6/8/2019	12,692	12,838	48	Marcellus
25	6/9/2019	12,517	12,662	48	Marcellus
26	6/9/2019	12,341	12,487	48	Marcellus
27	6/9/2019	12,166	12,312	48	Marcellus
28	6/10/2019	11,991	12,137	48	Marcellus
29	6/10/2019	11,816	11,962	48	Marcellus
30	6/11/2019	11,641	11,787	48	Marcellus
31	6/11/2019	11,466	11,612	48	Marcellus
32	6/11/2019	11,291	11,437	48	Marcellus
33	6/12/2019	11,116	11,262	48	Marcellus
34	6/12/2019	10,941	11,087	48	Marcellus
35	6/12/2019	10,766	10,911	48	Marcellus
36	6/13/2019	10,590	10,736	48	Marcellus
37	6/13/2019	10,415	10,561	48	Marcellus
38	6/13/2019	10,240	10,386	48	Marcellus
39	6/13/2019	10,065	10,211	48	Marcellus
40	6/14/2019	9,890	10,036	48	Marcellus
41	6/14/2019	9,715	9,861	48	Marcellus
42	6/14/2019	9,540	9,686	48	Marcellus
43	6/15/2019	9,365	9,511	48	Marcellus
44	6/15/2019	9,190	9,336	48	Marcellus

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45	6/15/2019	9,015	9,160	48	Marcellus
46	6/16/2019	8,839	8,985	48	Marcellus
47	6/16/2019	8,664	8,810	48	Marcellus
48	6/16/2019	8,489	8,635	48	Marcellus
49	6/17/2019	8,314	8,460	48	Marcellus

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Ten High 1S-10HM

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)
0	28.3	6649	5907	4774	0	666	0
1	85	7655	5729	4359	440180	8012	0
2	89	7908	5408	4178	441200	7887	0
3	88.2	8168	5477	4174	445105	7751	0
4	84.2	7733	5675	4170	440940	8058	0
5	89	7841	5377	4587	445980	7732	0
6	88.5	8000	5436	3909	440400	7653	0
7	89.4	7611	5379	4489	441460	8030	0
8	86.4	7754	5826	4346	441120	7805	0
9	89.1	7454	5329	4618	440940	7647	0
10	89.4	7682	5430	4753	441340	7791	0
11	89.4	7633	5579	4774	440200	7753	0
12	89	7913	5426	4463	441690	7781	0
13	87.8	7689	5498	4426	445330	8590	0
14	87.3	7923	5652	5114	440720	7941	0
15	88.3	7603	5329	6088	440730	8412	0
15 Inj Test	5.4	3131	N/A	4017	0	797	0
16	85.8	7709	5269	4273	439870	8719	0
17	87.3	7617	5255	4252	400840	7827	0
18	88.7	7652	5142	4513	341170	7506	0
19	87.4	7445	5391	3950	431990	8546	0
20	87.5	7857	5490	4740	430940	10082	0
21	85.8	7520	5446	4922	438300	8465	0
22	88.2	7467	5564	4798	440510	8471	0
23	87.5	7577	5958	4624	348430	7142	0
24	87.5	7609	5655	4942	443060	8377	0
25	89.3	7650	5238	4706	440390	8339	0
26	86.8	7593	5350	6276	430325	8517	0
27	86.3	7625	5014	4187	439190	8908	0

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28	89.5	7394	5029	4517	438800	8247	0
29	89.6	7362	4989	4709	440890	8373	0
30	88.1	7389	5028	4259	440650	8351	0
31	84.5	7424	5180	4761	410585	9436	0
32	87.7	7228	4856	4395	440720	8277	0
33	88.2	7285	5043	4556	439730	8380	0
34	89.6	7023	5209	4897	440320	8217	0
35	87.7	7359	5528	4504	440510	8255	0
36	88.3	7214	5598	4645	450135	8439	0
37	86.1	7019	5540	4406	439810	8526	0
38	87.8	6965	5242	4273	440330	8174	0
39	89.2	7061	5672	4863	450555	8453	0
40	89.1	7203	5575	4507	440870	8417	0
41	88.1	7093	5181	4668	439980	8719	0
42	89.6	6825	5619	4941	439820	8160	0
43	89.2	6809	5827	4786	439800	8180	0
44	89.7	6736	5305	4913	443060	8018	0
45	89.5	6915	5710	4765	444200	8415	0
46	89.4	6767	6117	5033	439040	8145	0
47	85.6	6616	5611	5078	435320	7940	0
48	86.1	6559	5968	4934	441180	8114	0
49	88.9	6446	5686	4799	442120	8232	0

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TEN HIGH 1S-10HM

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	2209	Sandstone
Big Lime	2207	2338	2209	2340	Limestone
Big Injun	2338	2633	2340	2636	Sandstone
Weir	2633	2831	2636	2835	Sandstone
Berea	2831	3093	2835	3097	Sandstone
Gordon	3093	3178	3097	3182	Sandstone
Fifty Foot	3178	3760	3182	3776	Sandstone
Speechley	3760	5221	3776	5677	Sandstone
Benson	5221	5593	5677	6180	Sandstone
Alexander	5593	6215	6180	7009	Siltstone
Rhinestreet	6215	6680	7009	7573	Black shale
Middlesex	6680	6757	7573	7709	Black shale
Geneseo/Burkett	6757	6785	7709	7763	Black shale
Tully	6785	6810	7763	7815	Limestone
Hamilton	6810	6899	7815	8101	Grey shale
Marcellus	6899	-	8101	-	Black shale

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/30/2019
Job End Date:	6/17/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-02074-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Ten High 1S-10HM
Latitude:	39.80675471
Longitude:	-80.68070666
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,957
Total Base Water Volume (gal):	17,554,170
Total Base Non Water Volume:	0



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## 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	94.47168	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.64550	



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	4.76728
			Complex amine compound	Proprietary	60.00000	0.05164
			Hydrochloric acid	7647-01-0	7.50000	0.04841
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02582
			Sodium nitrate	7631-99-4	60.00000	0.01301
			Methanol	67-56-1	100.00000	0.00456
			Ethoxylated alcohols	Proprietary	5.00000	0.00433
			Poly(oxy-1,2-ethanediyl), .alpha.-tridecyl-, omega.-hydroxy-, branched	69011-36-5	5.00000	0.00430
			Phosphoric Acid Salt	Proprietary	5.00000	0.00034
			Ethanol	64-17-5	60.00000	0.00032
			Oxyalkylated phenolic resin	Proprietary	30.00000	0.00021
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00016
			Modified thiourea polymer	Proprietary	30.00000	0.00015
			Naphthalene	91-20-3	5.00000	0.00003
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00003
			Propargyl alcohol	107-19-7	5.00000	0.00002
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001

\* 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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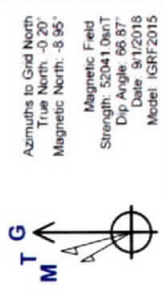
**Well:** Ten High 1S-10HM (H)  
**Site:** Ten High  
**Project:** Marshall County, West Virginia.  
**Design:** rev4  
**Rig:** Nabors X08

**SECTION DETAILS**

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	VSEct	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1433.00	0.00	0.00	1433.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2'100' build
3	1633.00	4.00	45.00	1632.84	4.93	2.00	4.50	0.03	0.03	Begin 4.00' tangent
4	3237.07	4.00	45.00	3233.00	84.06	0.00	0.00	0.44	0.44	Begin 3'7100' buildturn
5	4545.59	43.25	43.82	4408.52	454.39	440.82	-1.28	-7.26	-7.26	Begin 43.25' tangent
6	6875.02	43.25	43.82	6105.08	1606.06	1546.08	0.00	-34.20	-34.20	Begin 8'7100' buildturn
7	7812.45	89.00	150.26	6820.47	1486.90	2030.11	8.00	125.57	393.27	Begin 10'7100' buildturn
8	8152.45	89.00	150.26	6924.00	1210.24	2188.18	10.00	0.00	700.36	Begin 89.00' lateral
9	17153.55	89.00	150.26	7081.00	-6603.98	6652.83	0.00	0.00	9374.04	PBHLTD 17153.55 MD/7081.00 TVD

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: GRS 1980  
 Zone: 17N (84 W to 78 W)  
 System Datum: Mean Sea Level  
 Depth Reference: RKB=1310+33 @ 1343.00usft (Nabors X08)  
 Northing: 14456526.19  
 Easting: 1730086.71  
 Latitude: 39.80675471  
 Longitude: -80.68070666

Total Corr. (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.95°



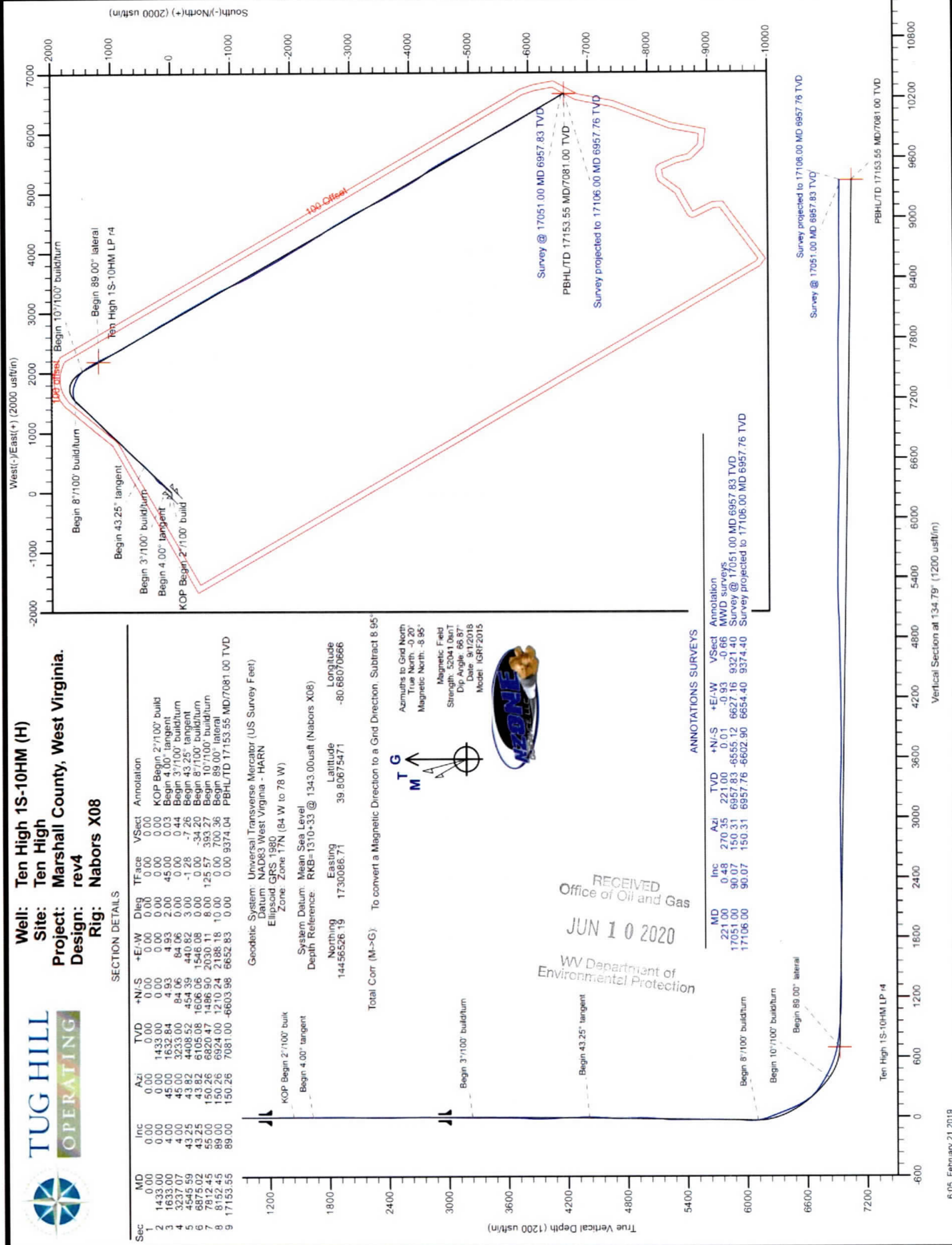
Azimuths to Grid North  
 True North: 0.20°  
 Magnetic North: -8.95°  
 Strength: 52041 Deut  
 Dip Angle: 66.87°  
 Date: 9/12/2018  
 Model: IGRF2015



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**ANNOTATIONS SURVEYS**

MD	Inc	Azi	TVD	+N/S	+E/W	VSEct	Annotation
17051.00	0.48	270.35	221.00	0.01	-0.93	-0.66	MWD surveys
17051.00	90.07	150.31	6957.83	-6555.12	6627.16	9321.40	Survey @ 17051.00 MD 6957.83 TVD
17106.00	90.07	150.31	6957.76	-6602.90	6654.40	9374.40	Survey projected to 17106.00 MD 6957.76 TVD



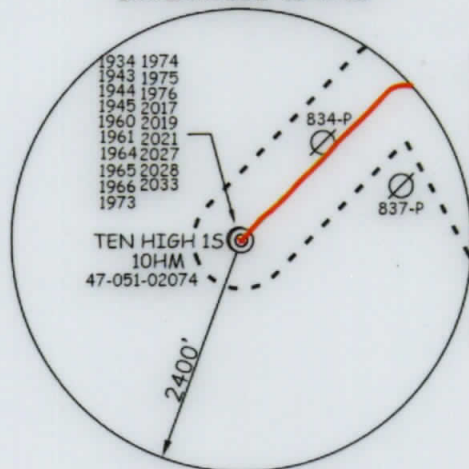
**TEN HIGH 1S LEASE  
WELL 10HM  
TUG HILL OPERATING**

B.H.

9,021' B.H. AS DRILLED

3,944' T.H. AS DRILLED

T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°47'30"



T.H. LONGITUDE 80°40'00"  
B.H. LONGITUDE 80°37'30"

1,134' T.H. AS DRILLED  
9,682' T.H. AS DRILLED

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

NAD'83 S.P.C. (FT)	N. 478,140.90	E. 1,636,806.64
NAD'83 GEO.	LAT-(N) 39.806755	LONG-(W) 80.680707
NAD'83 UTM (M)	N. 4,406,358.00	E. 527,331.48
<u>LANDING POINT</u>		
NAD'83 S.P.C. (FT)	N. 479,401.6	E. 1,638,968.1
NAD'83 GEO.	LAT-(N) 39.810293	LONG-(W) 80.673072
NAD'83 UTM (M)	N. 4,406,753.1	E. 527,983.6
<u>BOTTOM HOLE</u>		
NAD'83 S.P.C. (FT)	N. 471,424.4	E. 1,643,350.4
NAD'83 GEO.	LAT-(N) 39.788551	LONG-(W) 80.657108
NAD'83 UTM (M)	N. 4,404,345.1	E. 529,359.3

**AS DRILLED COORDINATES  
FOR WELL NO. 10HM**

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

NAD'83 S.P.C. (FT)	N. 478,140.90	E. 1,636,806.64
NAD'83 GEO.	LAT-(N) 39.806755	LONG-(W) 80.680707
NAD'83 UTM (M)	N. 4,406,358.00	E. 527,331.48
<u>LANDING POINT</u>		
NAD'83 S.P.C. (FT)	N. 478,724.1	E. 1,639,335.8
NAD'83 GEO.	LAT-(N) 39.808446	LONG-(W) 80.671732
NAD'83 UTM (M)	N. 4,406,548.5	E. 528,099.0
<u>BOTTOM HOLE</u>		
NAD'83 S.P.C. (FT)	N. 471,425.5	E. 1,643,352.0
NAD'83 GEO.	LAT-(N) 39.788554	LONG-(W) 80.657102
NAD'83 UTM (M)	N. 4,404,345.4	E. 529,359.7

T.H.

**NOTES ON SURVEY**

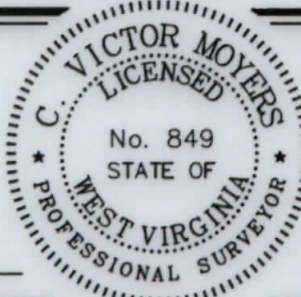
- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
- AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
- PLAT UPDATED TO SHOW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



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE MARCH 24, 20 20  
REVISED \_\_\_\_\_, 20 \_\_\_\_  
OPERATORS WELL NO. TEN HIGH 1S-10HM  
API WELL NO. 47 - 051 - 2074  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8655P10HMAD.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

<b>WELL TYPE:</b>	OIL <input type="checkbox"/>	GAS <input checked="" type="checkbox"/>	INJECTION <input type="checkbox"/>	WASTE DISPOSAL <input type="checkbox"/>	IF "GAS" PRODUCTION <input checked="" type="checkbox"/>	STORAGE <input type="checkbox"/>	DEEP <input type="checkbox"/>	SHALLOW <input checked="" type="checkbox"/>
<b>LOCATION:</b>	GROUND = 1,318.60' PROPOSED = 1,310.06'		WATERSHED <u>MIDDLE BOWMAN RUN OF FISH CREEK (HUC 10)</u>					
	DISTRICT <u>MEADE</u>		COUNTY <u>MARSHALL</u>		QUADRANGLE <u>GLEN EASTON 7.5'</u>			
<b>SURFACE OWNER</b>	<u>LAWRENCE &amp; SHIRLEY CONKLE ESTS</u>			ACREAGE <u>139.79±</u>				
<b>ROYALTY OWNER</b>	<u>ANDY PAUL &amp; JACKIE KUHN, ET AL - WW-6A1</u>			ACREAGE <u>139.79±</u>				
<b>PROPOSED WORK:</b>	DRILL <input checked="" type="checkbox"/> CONVERT <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> CLEAN OUT AND REPLUG <input type="checkbox"/> OTHER <input type="checkbox"/>							COUNTY NAME PERMIT
<b>PHYSICAL CHANGE IN WELL (SPECIFY)</b>				TARGET FORMATION <u>MARCELLUS</u> ESTIMATED DEPTH <u>TVD: 6,865' / TMD: 17,021'</u>				

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



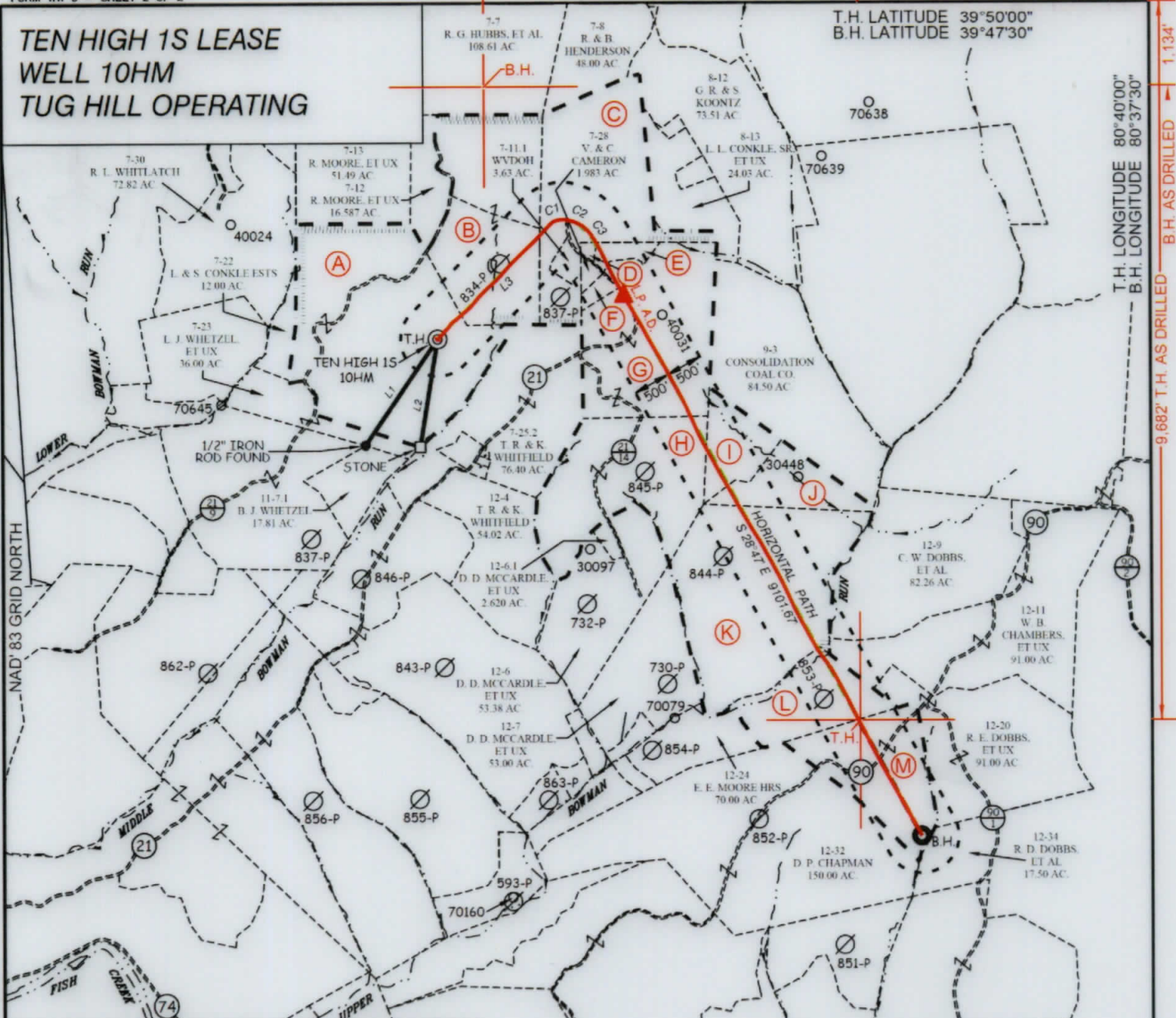




**TEN HIGH 1S LEASE  
WELL 10HM  
TUG HILL OPERATING**

9,021' B.H. AS DRILLED      3,944' T.H. AS DRILLED

T.H. LATITUDE 39°50'00"  
B.H. LATITUDE 39°47'30"



T.H. LONGITUDE 80°40'00"  
B.H. LONGITUDE 80°37'30"

NAD'83 GRID NORTH

TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.79
B	ROBERT G. & SCARLETT HUBBS	9-7-12.1	86.36
C	MARK H. FOX	9-7-11	75.37
D	CAROL J. ANDERSON - LIFE	9-7-27	1.00
E	CAROL J. ANDERSON - I LIFE	9-7-29.1	5.004
F	NATHAN WILLIAMS	9-7-28.1	2.768
G	CAROL J. ANDERSON - LIFE	9-7-29	85.54
H	DONALD DALE MCCARDLE, ET UX	9-12-5	75.28
I	DONALD DALE MCCARDLE, ET UX	9-9-2	21.11
J	DONALD DALE MCCARDLE, ET UX	9-9-1	20.89
K	DONALD DALE MCCARDLE, ET UX	9-12-8	117.85
L	OLIVER CROW	9-12-22	38.58
M	DAVID P. CHAPMAN	9-12-21	50.00

**AS DRILLED COORDINATES FOR WELL NO. 10HM**

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

NAD'83 S.P.C.(FT)	N 478,140.90	E 1,638,806.64
NAD'83 GEO	LAT-(N) 39.806755	LONG-(W) 80.680707
NAD'83 UTM (M)	N 4,406,358.00	E 527,331.48

**LANDING POINT**

NAD'83 S.P.C.(FT)	N 478,724.1	E 1,639,335.8
NAD'83 GEO	LAT-(N) 39.809445	LONG-(W) 80.671732
NAD'83 UTM (M)	N 4,406,548.5	E 528,099.0

**BOTTOM HOLE**

NAD'83 S.P.C.(FT)	N 471,425.5	E 1,643,352.0
NAD'83 GEO	LAT-(N) 39.788554	LONG-(W) 80.657102
NAD'83 UTM (M)	N 4,404,345.4	E 529,359.7

**LEGEND**  
AS DRILLED ——— (Red line)  
PROPOSED - - - - - (Green dashed line)

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	224.63'	240.52'	N 70°13' E	216.55'
C2	280.35'	482.44'	S 64°31' E	276.43'
C3	300.91'	853.76'	S 38°41' E	299.35'

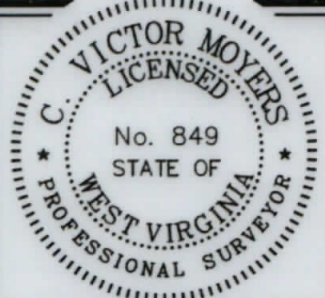
LINE	BEARING	DISTANCE
L1	S 34°23' W	1734.86'
L2	S 09°19' W	1474.10'
L3	N 44°39' E	2164.55'

P.S. 849

*C. Victor Moyers*



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  
slsww.com



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

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

NAD'83 S.P.C.(FT)	N 478,140.90	E 1,638,806.64
NAD'83 GEO.	LAT-(N) 39.806755	LONG-(W) 80.680707
NAD'83 UTM (M)	N 4,406,358.00	E 527,331.48

**LANDING POINT**

NAD'83 S.P.C.(FT)	N 479,401.6	E 1,638,968.1
NAD'83 GEO.	LAT-(N) 39.810293	LONG-(W) 80.673072
NAD'83 UTM (M)	N 4,406,753.1	E 527,983.6

**BOTTOM HOLE**

NAD'83 S.P.C.(FT)	N 471,424.4	E 1,643,350.4
NAD'83 GEO.	LAT-(N) 39.788551	LONG-(W) 80.657108
NAD'83 UTM (M)	N 4,404,345.1	E 529,359.3

**LEGEND**

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

SCALE 1" = 2000'      FILE NO. 8655P10HMAD.dwg

DATE MARCH 24, 20 20

REVISED \_\_\_\_\_, 20 \_\_\_\_\_

OPERATORS WELL NO. TEN HIGH 1S-10HM

API WELL NO. 47 — 051 — 2074

NO. STATE COUNTY PERMIT

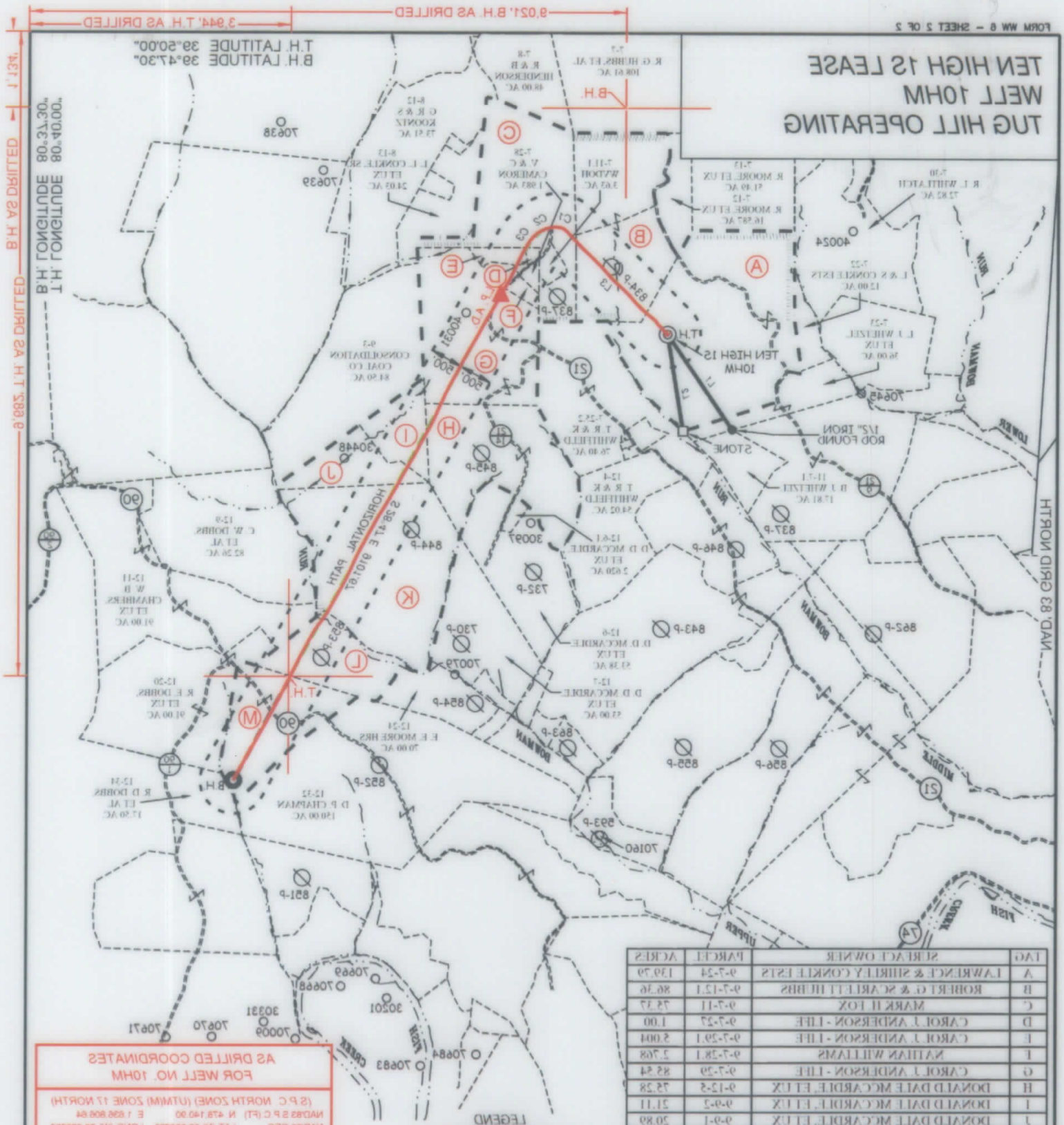
STATE OF WEST VIRGINIA  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

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

COUNTY NAME  
PERMIT



**TUG HILL OPERATING  
WELL 10HM  
TEN HIGH 12 LEASE**



**AS DRILLED COORDINATES  
FOR WELL NO. 10HM**

(2 P.C. NORTH ZONE) (UTM) ZONE 17 NORTH)

NAD83 2 P.C. (FT)	N 478 140 90	E 1 898 808 84
NAD83 GEO.	LAT. (N) 39 806725	LONG. (W) 80 880707
NAD83 UTM (M)	N 4 408 358 00	E 527 321 48

**LANDING POINT**

NAD83 2 P.C. (FT)	N 478 754 1	E 1 899 352 8
NAD83 GEO.	LAT. (N) 39 808448	LONG. (W) 80 871732
NAD83 UTM (M)	N 4 408 248 2	E 528 099 0

**BOTTOM HOLE**

NAD83 2 P.C. (FT)	N 471 425 2	E 1 843 252 0
NAD83 GEO.	LAT. (N) 39 788524	LONG. (W) 80 887108
NAD83 UTM (M)	N 4 404 242 4	E 528 252 7

**LEGEND**

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

CURVE	R/C LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	254.63	240.52	N 70 13 E	218.88
C2	280.32	482.44	S 84 37 E	578.43
C3	300.91	823.78	S 28 47 E	599.32

TAG	TRACT OWNER	PART	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	0-7-24	130.29
B	ROBERT G & SARILETT HUBBS	0-7-12-1	88.38
C	MARK H FOX	0-7-11	7.77
D	CAROL J ANDERSON - LIFE	0-7-23	1.00
E	CAROL J ANDERSON - LIFE	0-7-20-1	2.004
F	NATHAN WILLIAMS	0-7-28-1	2.708
G	CAROL J ANDERSON - LIFE	0-7-29	82.24
H	DONALD DALE MCCARDLE ET UX	0-12-2	72.28
I	DONALD DALE MCCARDLE ET UX	0-0-2	2.11
J	DONALD DALE MCCARDLE ET UX	0-0-1	20.89
K	DONALD DALE MCCARDLE ET UX	0-12-8	117.82
L	OLIVER CROW	0-12-22	28.28
M	DAVID P CHAPMAN	0-12-21	20.00

LINE	BEARING	DISTANCE
L1	S 34 23 W	1734.88
L2	S 08 18 W	1474.10
L3	N 44 38 E	2184.25

*C. Victor Moyers*  
P.S.  
849

**SLS**  
FROM THE GROUND UP

12000 Hwy 150, Box 150 | Glenview, WV 25851 | 304-463-2224  
 14125 Riverside Boulevard, 2nd | Charleston, WV 25301 | 304-346-2892  
 224 East Beckley Bypass | Beckley, WV 25801 | 304-322-2288

**LEGEND**

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

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



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

(2 P.C. NORTH ZONE) (UTM) ZONE 17 NORTH)

NAD83 2 P.C. (FT)	N 478 140 90	E 1 898 808 84
NAD83 GEO.	LAT. (N) 39 806725	LONG. (W) 80 880707
NAD83 UTM (M)	N 4 408 358 00	E 527 321 48

**LANDING POINT**

NAD83 2 P.C. (FT)	N 478 401 8	E 1 898 988 1
NAD83 GEO.	LAT. (N) 39 810252	LONG. (W) 80 873022
NAD83 UTM (M)	N 4 408 232 1	E 527 983 8

**BOTTOM HOLE**

NAD83 2 P.C. (FT)	N 471 424 4	E 1 843 252 0
NAD83 GEO.	LAT. (N) 39 788524	LONG. (W) 80 887108
NAD83 UTM (M)	N 4 404 242 4	E 528 252 7

SCALE 1" = 2000'

DATE MARCH 24, 2020

REVISED \_\_\_\_\_

OPERATORS WELL NO. TEN HIGH 12-10HM

APL 47 - 051 - 2074

WELL NO. \_\_\_\_\_

STATE COUNTY PERMIT

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

DESIGNATED AGENT DIANNA STAMPER  
 CT CORPORATION SYSTEM  
 2400 D BIG TYLER ROAD  
 CHARLESTON, WV 25313

NO. STATE COUNTY PERMIT