

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

API 47 - 051 - 02039 County Marshall District Franklin  
Quad New Martinsville 7.5' Pad Name Lily Field/Pool Name \_\_\_\_\_  
Farm name Ula F. Nelson Well Number Weller 7HM  
Operator (as registered with the OOG) Tug Hill Operating, LLC  
Address 380 Southpointe Boulevard, Plaza II, Suite 200 City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,398,627.84 Easting 516,591.99  
Landing Point of Curve Northing 4,398,273.63 Easting 517,012.16  
Bottom Hole Northing 4,396,384.94 Easting 518,104.75

Elevation (ft) 1272.6' 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 6/14/2018 Date drilling commenced 3/14/2019 Date drilling ceased 3/27/2019  
Date completion activities began 4/28/2019 Date completion activities ceased 9/10/2019  
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 804-810', 892-896' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
*Jane [Signature]*  
6/22/2020

API 47-051 - 02039 Farm name Ula F. Nelson Well number Weller 7HM

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"	1013'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1013'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2680'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	14,250'	NEW	20#	N/A	Y
Tubing		2 3/8"	7125'	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	1051	15.6	1.19	1270	0	8
Coal	A	1051	15.6	1.19	1270	0	8
Intermediate 1	A	775	15.6	1.19	1068	0	8
Intermediate 2							
Intermediate 3							
Production	A	3719	14.5	1.17	4371	0	8
Tubing							

Drillers TD (ft) 14,285' Loggers TD (ft) n/a  
 Deepest formation penetrated Marcellus Plug back to (ft) n/a  
 Plug back procedure n/a

Kick off depth (ft) 6,146'

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 \_\_\_\_\_ WV Department of Environmental Protection

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

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

API 47-051 - 02039

Farm name Ula F. Nelson

Well number Weller 7HM

**PERFORATION RECORD**

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	<b>*see attached</b>				

Please insert additional pages as applicable.

**STIMULATION INFORMATION PER STAGE**

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	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)
	<b>attached</b>							

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6527' - 6548'	TVD	7050' - 14285'	MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 1132 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 0 mcfpd Oil 0 bpd NGL 0 bpd Water 600 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

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 (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	0		0		
*attached					

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Please insert additional pages as applicable.

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Drilling Contractor Nabors Drilling USA  
Address 505 West Greens Road, Suite 1000 City Houston State TX Zip 77067 WV Department of Environmental Protection

Logging Company n/a  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Cementing Company Halliburton Energy Services, Inc.  
Address 121 Champion Way, Suite 200 City Canonsburg State PA Zip 15317

Stimulating Company Halliburton Energy Services, Inc.  
Address 121 Champion Way, Suite 200 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Amy L. Miller Telephone 304-376-0111  
Signature  Title Permitting Specialist Date 5-15-2020

**Weller 7HM  
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	7/10/2019	13859	14004	48	Marcellus
2	7/11/2019	13685	13830	48	Marcellus
3	7/11/2019	13510	13655	48	Marcellus
4	7/11/2019	13336	13481	48	Marcellus
5	7/11/2019	13161	13306	48	Marcellus
6	7/12/2019	12987	13132	48	Marcellus
7	7/12/2019	12812	12957	48	Marcellus
8	7/12/2019	12638	12783	48	Marcellus
9	7/13/2019	12463	12608	48	Marcellus
10	7/13/2019	12289	12434	48	Marcellus
11	7/13/2019	12115	12260	48	Marcellus
12	7/14/2019	11940	12085	48	Marcellus
13	7/14/2019	11766	11911	48	Marcellus
14	7/14/2019	11591	11736	48	Marcellus
15	7/14/2019	11417	11562	48	Marcellus
16	7/15/2019	11243	11388	48	Marcellus
17	7/15/2019	11068	11213	48	Marcellus
18	7/16/2019	10894	11039	48	Marcellus
19	7/16/2019	10719	10864	48	Marcellus
20	7/16/2019	10545	10690	48	Marcellus
21	7/17/2019	10371	10516	48	Marcellus
22	7/17/2019	10196	10341	48	Marcellus
23	7/17/2019	10022	10167	48	Marcellus
24	7/17/2019	9847	9992	48	Marcellus
25	7/18/2019	9673	9818	48	Marcellus
26	7/18/2019	9499	9644	48	Marcellus
27	7/18/2019	9324	9469	48	Marcellus
28	7/19/2019	9150	9295	48	Marcellus
29	7/19/2019	8975	9120	48	Marcellus
30	7/19/2019	8801	8946	48	Marcellus
31	7/20/2019	8627	8772	48	Marcellus
32	7/20/2019	8452	8597	48	Marcellus
33	7/20/2019	8278	8423	48	Marcellus
34	7/20/2019	8103	8248	48	Marcellus
35	7/21/2019	7929	8074	48	Marcellus
36	7/21/2019	7755	7900	48	Marcellus
37	7/21/2019	7580	7725	48	Marcellus
38	7/22/2019	7406	7551	48	Marcellus
39	7/22/2019	7231	7376	48	Marcellus
40	7/22/2019	7057	7202	48	Marcellus

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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	87.7	7064	5153	3730	526150	9940	0
2	87.7	7229	5650	4184	528450	10277	0
3	88.2	7307	5005	4106	531590	9734	0
4	87.9	7349	5270	3655	531800	9779	0
5	89	7162	5305	4538	530260	9820	0
6	87.2	7112	5173	4748	530980	10546	0
7	87.4	7123	5166	4132	531520	10188	0
8	89.2	7097	5342	4027	531775	9858	0
9	88.9	7280	5335	4740	529495	10206	0
10	86	7268	5124	3847	532395	10195	0
11	88.2	7365	5217	4508	527375	9936	0
12	89	7459	5642	5281	531080	10424	0
13	86	7147	5300	4675	527740	10854	0
14	86.7	6944	5294	4904	528760	10781	0
15	89.2	7265	5147	4120	530720	11021	0
16	87.4	7184	5236	4195	524120	9958	0
17	85.4	7242	5198	5001	517600	9793	0
18	89.3	7080	5425	4323	531060	10673	0
19	86.7	6765	5933	4399	523740	10726	0
20	86.5	6654	6031	4742	527320	11762	0
21	89.2	6866	5841	3500	528100	10848	0
22	89.8	6593	5801	3885	486100	10693	0
23	88.9	6687	5461	4723	527340	10550	0
24	89.4	6654	5962	3805	533720	11049	0
25	89.8	6559	5630	6545	528385	10872	0
26	88.4	6789	5644	4333	526725	10636	0
27	89.5	6651	5698	4148	532765	11127	0
28	89.7	6477	5340	4425	527445	11181	0
29	89.4	6361	5393	3783	528575	10825	0
30	89	6439	5699	3632	525755	11092	0
31	89.5	6278	5294	3610	530495	12135	0
32	89.3	6317	5254	4114	533895	10715	0
33	89.7	6338	5503	4372	530275	10640	0

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34	89.3	6267	5595	3995	527475	10929	0
35	89.5	6245	5642	3808	532495	10985	0
36	89.3	6251	5306	4593	528575	10689	0
37	89.4	6265	5509	3608	528355	9657	0
38	89	6289	5384	4840	528015	9922	0
39	87.8	6553	5919	4709	526635	10197	0
40	89.2	6282	5469	3894	529475	9641	0

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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	1958	2053	1959	2056	Sandstone
Big Lime	2053	2108	2056	2111	Limestone
Big Injun	2108	2410	2111	2416	Sandstone
Weir	2410	2593	2416	2602	Sandstone
Berea	2593	2903	2602	2923	Sandstone
Gordon	2903	2963	2923	2986	Sandstone
Fifty Foot	2963	3541	2986	3590	Sandstone
Speechley	3541	4932	3590	5039	Sandstone
Benson	4932	5308	5039	5432	Sandstone
Alexander	5308	5898	5432	6048	Siltstone
Rhinestreet	5898	6319	6048	6546	Black shale
Middlesex	6319	6398	6546	6679	Black shale
Geneseo/Burkett	6398	6425	6679	6732	Black shale
Tully	6425	6455	6732	6799	Limestone
Hamilton	6455	6494	6799	6907	Grey shale
Marcellus	6494	-	6907	-	Black shale

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/10/2019
Job End Date:	7/23/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-02039-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	WELLER 7HM
Latitude:	39.73738110
Longitude:	-80.80636220
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,548
Total Base Water Volume (gal):	17,973,893
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	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	87.16553	Density = 8.34
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.52902	

LD-2950	MultiChem	Friction Reducer																	
					Listed Below														
FDP-S1296-17	Halliburton	Acid Corrosion Inhibitor			Listed Below														
LEGEND(TM) LD-7750W	MultiChem	Scale Control			Listed Below														
OilPerm A	Halliburton	Non-ionic Surfactant			Listed Below														
Sand-Premium White-40/70	Halliburton	Proppant			Listed Below														
Sand-Premium White-30/50	Halliburton	Proppant			Listed Below														
MC MX 8-4743	MultiChem	Additive			Listed Below														
HYDROCHLORIC ACID, 10-30%	Halliburton	Solvent			Listed Below														
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant			Listed Below														

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					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	12.27773
					Hydrochloric acid	7647-01-0	60.00000	0.27959
					Complex Amine Compound	Proprietary	60.00000	0.04048
					Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02024
					Sodium nitrate	7631-99-4	60.00000	0.01136
					Methanol	67-56-1	100.00000	0.00739
					Ethoxylated alcohols	Proprietary	5.00000	0.00337
					Sodium molybdate	10102-40-6	5.00000	0.00095
					Adipic acid	124-04-9	1.00000	0.00067
					Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00067
					Ethanol	64-17-5	60.00000	0.00023
					Sodium chloride	7647-14-5	5.00000	0.00022
					Phosphoric Acid Salt	Proprietary	5.00000	0.00020
					Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00011
					Oxyalkylated nonyl phenolic resin	Proprietary	30.00000	0.00011
					Modified thiourea polymer	Proprietary	30.00000	0.00011
					Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00011
					Oxyalkylated phenolic resin	Proprietary	10.00000	0.00004
					Sodium lactate	72-17-3	0.10000	0.00002
					Yeast extract	8013-01-2	0.10000	0.00002
					Sodium acetate	127-09-3	0.10000	0.00002
					Monopotassium phosphate	7778-77-0	0.10000	0.00002

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		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
		Hexadecene	629-73-2	5.00000	0.00002
		Propargyl alcohol	107-19-7	5.00000	0.00002
		Ethoxylated alcohols	Proprietary	5.00000	0.00002
		Formaldehyde	50-00-0	0.10000	0.00000
		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: Weller 7 HM (D)**  
**Site: Lily/Weller**  
**Project: Marshall County, West Virginia.**  
**Design: rev2**  
**SECTION DETAIL: Rig: Nabors B28**

SECTION DETAIL

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dieg	TFace	VFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2'/100' build
2	1626.00	0.00	0.00	1626.00	0.00	0.00	0.00	0.00	0.00	0.00	Begin 2'/100' build
3	2026.00	8.00	185.00	2024.70	-27.77	-2.43	2.00	185.00	21.69	0.00	Begin 2'/100' build
4	2787.00	16.37	117.16	2770.97	-130.07	88.90	2.00	-96.19	157.54	0.00	Begin 16.37° tangent
5	6181.74	16.37	117.16	6028.13	-566.68	940.10	0.00	0.00	994.99	0.00	Begin 87/100' build
6	6628.10	50.00	142.40	6397.77	-736.37	1105.77	8.00	34.04	1228.27	0.00	Begin 10/100' build
7	7024.18	89.00	150.00	6534.00	-1040.25	1305.35	10.00	11.97	1591.80	0.00	Begin 89.00° lateral
8	14337.74	89.00	150.00	6661.71	-7373.05	4961.49	0.00	0.00	8886.97	0.00	PBHL/TD 14337.74 MD/6661.71 TVD

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

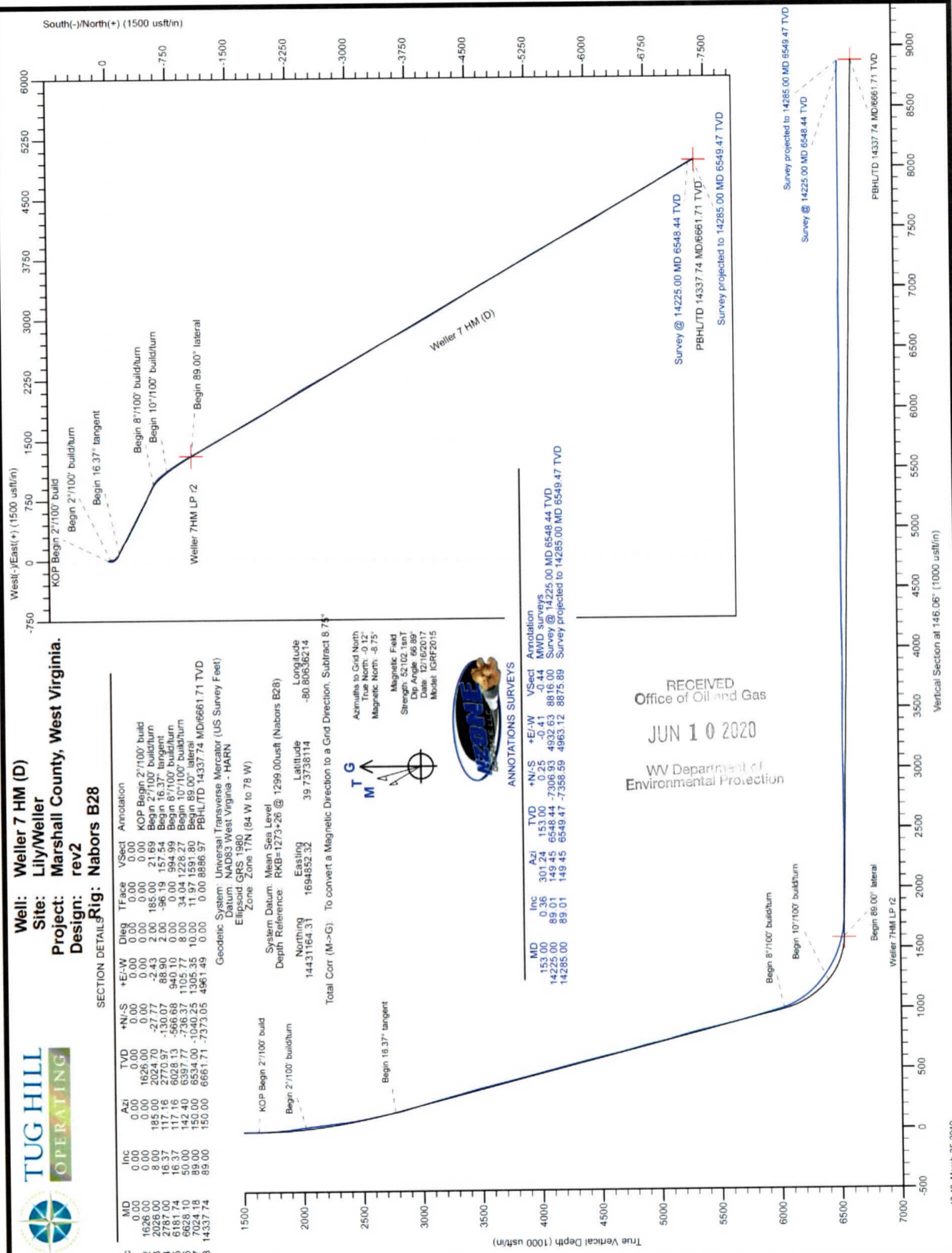
System Datum: Mean Sea Level  
 Depth Reference: RKB=1273+26 @ 1298.00usft (Nabors B28)  
 Northing: 14431164.31  
 Easting: 1694852.32  
 Latitude: 39.73738114  
 Longitude: -80.80636214

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.75°



ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Annotation
153.00	0.36	301.24	153.00	0.25	-0.41	-0.44	MWD surveys
14225.00	89.01	149.45	6548.44	-7306.93	4932.63	8816.00	Survey @ 14,225.00 MD 6548.44 TVD
14285.00	89.01	149.45	6549.47	-7358.59	4963.12	8875.89	Survey projected to 14285.00 MD 6549.47 TVD



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**WELLER LEASE  
WELL N-7HM  
545.232± ACRES**

Number	TAX MAP-PARCEL	ADJOINER OWNER	ACRES
S1	22-7.1	TH EXPLORATION II, LLC & ATINUM MARCELLUS I, LLC	21.68
S2	22-7	PATRICIA ACETTOLO ET AL.	25.02
S3	23-1	PATRICIA ACETTOLO ET AL.	146.66
S4	23-28.2	MARK W. TENNANT ET AL.	10.80
S5	23-23	MICHAEL J. WILEY ET AL	1.00
S6	23-24	MICHAEL J. WILEY ET AL	0.25
S7	23-25	ARTHUR A. WILEY	0.43
S8	23-22	DANIEL D. RHYAND & LAUREL R. GREENE	6.25
S9	23-29	JAMES WILEY	0.25
S10	23-18.1	MARK A. YOHO	7.80
S11	23-17.1	CURTIS E. HALL ET UX	10.051
S12	23-17.2	DICK JR. & CAROL J. ROWAN	14.920
S13	26-7	DOMINION TRANSMISSION, INC.	71.00
S14	26-23	RICHARD JOSEPH OTTE	11.34
S15	26-14	THERESA A. WALTON, TRUSTEE OF ROBERT D. & BONNIE L. OLIVER TRUST	27.56
S16	2-4	EDITH SALEM & LISA G. LARSON	56.25
S17	2-4.1	TYRONE SULTZBACH & RICHARD WOLF	1.00
S18	27-23	ROBERT F. ROTHLSBERGER	35.77
S19	28-6	ULA F. NELSON	70.00
S20	26-1	EDWIN BOOTH ANDERSON & MARK W. ANDERSON	12.94
S21	26-2	EDWIN BOOTH ANDERSON & MARK W. ANDERSON	67.50
S22	26-4.5	ERIC JAY BOOTH	74.388
S23	26-4	JAMES R. & MELODY A. ANDERSON	3.887
S24	26-4.2	OTIS S. & GLENDA RUSH	1.58
S25	26-4.1	OTIS S. RUSH ET UX.	12.188
S26	26-4.3	CRYSTAL & RANDOPH F. MATASK	2.253
S27	26-4.4	OTIS F. & GLENDA M. RUSH	39.436
S28	26-18	ERIC JAY BOOTH	94.00

**SURFACE HOLE**UTM. NAD83, ZONE 17  
IN METERS

N) 4,398,627.68

E) 516,592.02

**LANDING POINT 1**UTM. NAD83, ZONE 17  
IN METERS

N) 4,398,310.60

E) 516,989.87

**BOTTOM HOLE**UTM. NAD83, ZONE 17  
IN METERS

N) 4,396,380.37

E) 518,104.29

P.S.  
708

*David L Jackson*



**TUG HILL**  
OPERATING

## OPERATOR'S

API #: 47-051-02039

WELL #: Weller 7HM

DISTRICT: Franklin

COUNTY: Marshall

STATE: WV

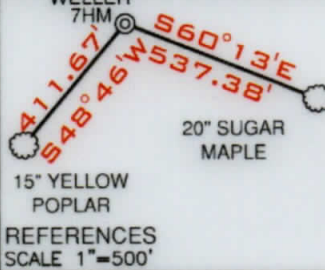
WELL PLAT

PAGE 2 OF 2

DATE: 04/21/2020

# WELLER LEASE WELL 7HM 545.232± ACRES

WELLER 7HM



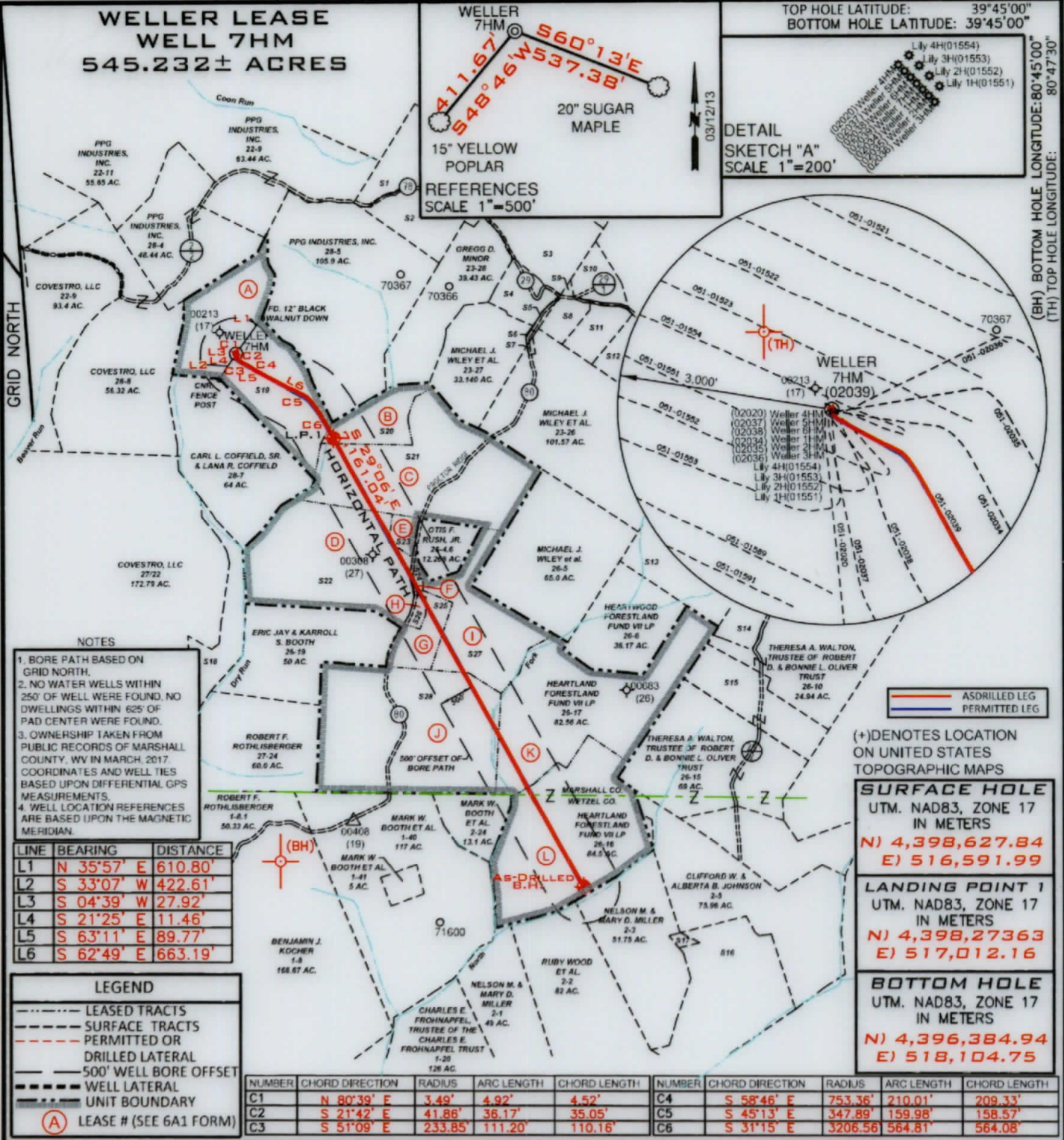
TOP HOLE LATITUDE: 39°45'00"  
BOTTOM HOLE LATITUDE: 39°45'00"



DETAIL SKETCH "A" SCALE 1"=200'

(BH) BOTTOM HOLE LONGITUDE: 80°45'00"  
(TH) TOP HOLE LONGITUDE: 80°47'30"

GRID NORTH



- NOTES
- BORE PATH BASED ON GRID NORTH.
  - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND. NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
  - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
  - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

LINE	BEARING	DISTANCE
L1	N 35°57' E	610.80'
L2	S 33°07' W	422.61'
L3	S 04°39' W	27.92'
L4	S 21°25' E	11.46'
L5	S 63°11' E	89.77'
L6	S 62°49' E	663.19'

LEGEND

- LEASED TRACTS
- SURFACE TRACTS
- PERMITTED OR DRILLED LATERAL
- 500' WELL BORE OFFSET
- WELL LATERAL
- UNIT BOUNDARY
- LEASE # (SEE 6A1 FORM)

NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH	NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C1	N 80°39' E	3.49'	4.92'	4.52'	C4	S 58°46' E	753.36'	210.01'	209.33'
C2	S 21°42' E	41.86'	36.17'	35.05'	C5	S 45°13' E	347.89'	159.98'	158.57'
C3	S 51°09' E	233.85'	111.20'	110.16'	C6	S 31°15' E	3206.56'	564.81'	564.08'

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

**SURFACE HOLE**  
UTM, NAD83, ZONE 17  
IN METERS  
N) 4,398,627.84  
E) 516,591.99

**LANDING POINT 1**  
UTM, NAD83, ZONE 17  
IN METERS  
N) 4,398,273.63  
E) 517,012.16

**BOTTOM HOLE**  
UTM, NAD83, ZONE 17  
IN METERS  
N) 4,396,384.94  
E) 518,104.75

FILE NUMBER \_\_\_\_\_

DRAWING NUMBER WELLER\_WP\_7HM

SCALE 1" = 2000'

MINIMUM DEGREE OF ACCURACY 1/200

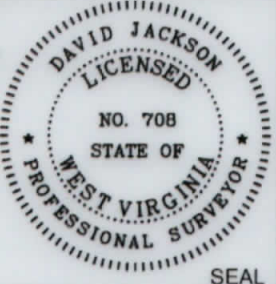
PROVEN SOURCE OF ELEVATION SUBMETER MAPPING  
GRADE GPS

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

P.S. 708

*David L Jackson*

JACKSON SURVEYING INC.  
P.O. Box 1460  
Clarksburg, WV 26302  
304-623-5851



WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET, SE  
CHARLESTON, WV 25304

DATE: APRIL 21, 2020

OPERATORS WELL NO. WELLER 7HM

API WELL NO. 47-051-02039

STATE WV COUNTY MARSHALL PERMIT \_\_\_\_\_

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
(IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X

LOCATION ELEVATION 1272.6' WATERSHED (HUC 10) French Creek - Ohio River

DISTRICT Franklin COUNTY Marshall

QUADRANGLE New Martinsville 7 1/2' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER Ula F. Nelson ACREAGE 70.0

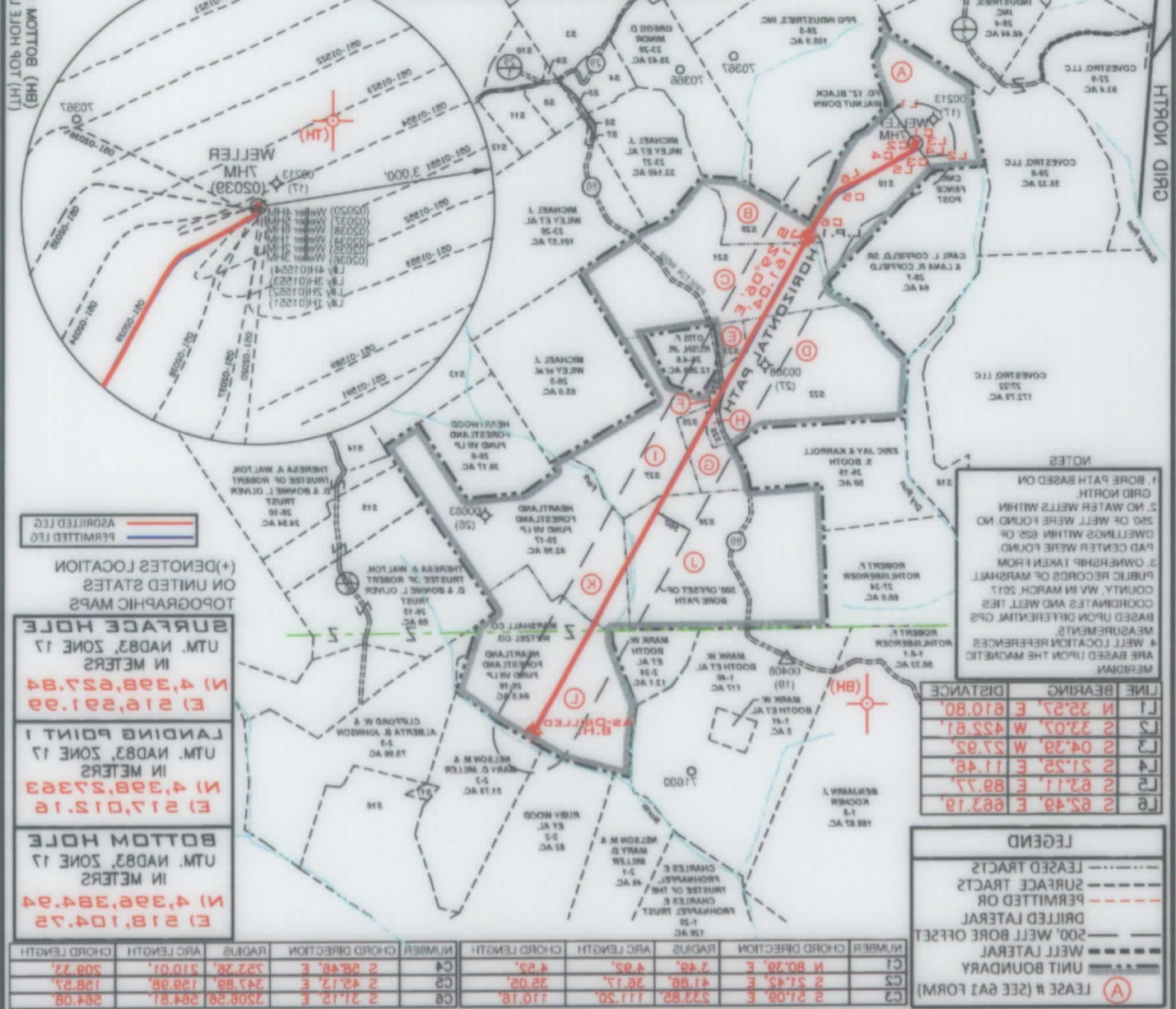
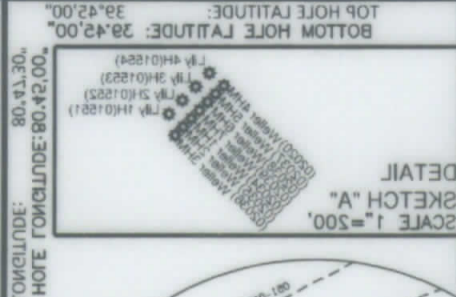
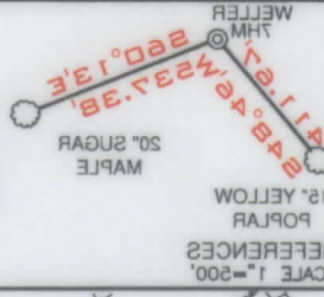
OIL & GAS ROYALTY OWNER Ula F. Nelson LEASE ACREAGE 70.0

PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_ PLUG OFF OLD FORMATION \_\_\_  
PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE (SPECIFY) AS-DRILLED

TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD: 6,549.47' TMD: 14,285'

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

**WELLER LEASE  
WELL 7HM  
242.232± ACRES**



**NOTES**

- BORE PATH BASED ON GRID NORTH.
- NO WATER WELLS WITHIN 250' OF WELL WERE FOUND. NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
- OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH 2017. COORDINATES AND WELL THEASERED UPON DIFFERENTIAL GPS MEASUREMENTS.
- WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

**LEGEND**

- LEASE # (SEE 6A1 FORM)
- UNIT BOUNDARY
- WELL LATERAL
- DILLED LATERAL
- 500' WELL BORE OFFSET
- PERMITTED OR SURFACE TRACTS
- LEASED TRACTS

LINE	BEARING	DISTANCE
L1	N 25.27' E	610.80'
L2	S 33.07' W	422.61'
L3	S 04.38' W	27.92'
L4	S 21.25' E	11.48'
L5	S 63.17' E	89.77'
L6	S 62.49' E	682.19'

NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C1	N 80.28' E	2.48'	4.92'	4.92'
C2	S 21.42' E	41.88'	38.17'	32.02'
C3	S 21.09' E	232.82'	117.20'	110.18'
C4	S 28.48' E	227.28'	227.28'	208.23'
C5	S 42.12' E	247.89'	129.98'	129.27'
C6	S 21.12' E	1208.28'	264.81'	264.08'

**SURFACE HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
N 4,388,627.84  
E 216,251.99

**LANDING POINT 1**  
UTM. NAD83, ZONE 17  
IN METERS  
N 4,388,273.63  
E 217,012.16

**BOTTOM HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
N 4,388,384.94  
E 218,104.22

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

ASDRILLED LEG  
PERMITTED LEG

TOP HOLE LATITUDE: 39.42.00  
BOTTOM HOLE LATITUDE: 39.42.00  
LONGITUDE: 80.42.00

DATE: APRIL 21, 2020  
OPERATORS WELL NO. WELLER 7HM  
API WELL NO. 47-051-02039  
STATE COUNTY PERMIT

LOCATION ELEVATION 1225.6' WATERSHED (HUC 10) French Creek - Ohio River  
(IF GAS) PRODUCTION STORAGE DEEP SHALLOW X  
WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL

QUADRANGLE New Martinsville 7 1/2' LEASE NUMBER SEE WW-6A1 Form  
DISTRICT Franklin COUNTY Marshall

SURFACE OWNER Ula F. Nelson ACREAGE 70.0  
OIL & GAS ROYALTY OWNER Ula F. Nelson LEASE ACREAGE 70.0  
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION

PERFORMATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) A2-DRILLED  
PLUG & ABANDON CLEAN OUT & REPLUG

TARGET FORMATION MARCELLUS  
ESTIMATED DEPTH TVD: 6,249.47' TMD: 14,285'  
DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM  
WELL OPERATOR TUG HILL OPERATING, LLC  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500  
FORT WORTH, TX 76102

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

*David S. Jackson*  
DAVID JACKSON  
LICENSED  
STATE OF WEST VIRGINIA  
NO. 708  
PROFESSIONAL SURVEYOR

JACKSON SURVEYING INC.  
P.O. Box 1460  
Clarksburg, WV 26302  
304-823-8881

GRADE GPS  
SUBMETER MAPPING  
PROVEN SOURCE  
MINIMUM DEGREE 1/200  
SCALE 1" = 200'  
DRAWING NUMBER WELLER\_WP\_7HM  
FILE NUMBER

OFFICE OF OIL & GAS  
601 57TH STREET, SE  
CHARLESTON, WV 25304

WV DEP

ADDRESS 5400 D BIG TYLER ROAD  
CHARLESTON, WV 25313

PERMIT

COUNTY NAME

ADDRESS 2400 D BIG TYLER ROAD  
CHARLESTON, WV 25313