

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

RECEIVED
Office of Oil and Gas

JAN 26 2023

WV Department of
Environmental Protection

API 47-051-02238 County Marshall District Franklin
Quad Powhatan Point 7.5' Pad Name Old Crow Field/Pool Name _____
Farm name Donna Yoho Well Number Old Crow N-6HM
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 4,403,202.05 Easting 520,288.37
Landing Point of Curve Northing 4,404,209.6 Easting 521,003.2
Bottom Hole Northing 4,406,488.9 Easting 519,670.1

Elevation (ft) 1,264.99' 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

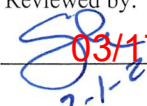
Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

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 7/26/2019 Date drilling commenced spud: 1/24/21 big rig: 9/27/2021 Date drilling ceased 4/19/2022
Date completion activities began 8/23/2022 Date completion activities ceased 9/10/2022
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 919' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,353' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 821-827', 913-919' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

03/17/2023
2-1-2023

API 47- 051 - 02238 Farm name Donna Yoho Well number Old Crow N-6HM

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"	1,013'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1,013'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	3,042'	NEW	36#	N/A	Y
Intermediate 2							Y
Intermediate 3							
Production	8 1/2"	5 1/2"	16,932'	NEW	20#	N/A	Y
Tubing		2 7/8"	8,466'	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	65	15.6	1.21	78	0	8
Surface	A	1080	15.6	1.2	900	0	8
Coal	A	1080	15.6	1.2	900	0	8
Intermediate 1	A	860	15	1.4	614	0	8
Intermediate 2							
Intermediate 3							
Production	A	4235	14.5	1.16	3,651	0	8
Tubing							

Drillers TD (ft) 16,979' Loggers TD (ft) n/a

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

Plug back procedure n/a

Kick off depth (ft) 7,377'

RECEIVED
Office of Oil and Gas
JAN 26 2023

WV Department of
Environmental Protection

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 _____

**OLD CROW N-6HM
PERFORATION RECORD**

RECEIVED
Office of Oil and Gas

JAN 26 2023

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	8/23/2022	16,746	16,794	12	Marcellus
2	8/24/2022	16,547	16,693	36	Marcellus
3	8/24/2022	16,373	16,519	36	Marcellus
4	8/25/2022	16,199	16,345	36	Marcellus
5	8/25/2022	16,026	16,171	36	Marcellus
6	8/26/2022	15,852	15,998	36	Marcellus
7	8/26/2022	15,678	15,824	36	Marcellus
8	8/26/2022	15,505	15,650	36	Marcellus
9	8/27/2022	15,331	15,477	36	Marcellus
10	8/27/2022	15,157	15,303	36	Marcellus
11	8/27/2022	14,983	15,129	36	Marcellus
12	8/28/2022	14,810	14,956	36	Marcellus
13	8/28/2022	14,636	14,782	36	Marcellus
14	8/28/2022	14,462	14,608	36	Marcellus
15	8/29/2022	14,289	14,434	36	Marcellus
16	8/29/2022	14,115	14,261	36	Marcellus
17	8/30/2022	13,941	14,087	36	Marcellus
18	8/30/2022	13,768	13,913	36	Marcellus
19	8/30/2022	13,594	13,740	36	Marcellus
20	8/31/2022	13,420	13,566	36	Marcellus
21	8/31/2022	13,246	13,392	36	Marcellus
22	8/31/2022	13,073	13,219	36	Marcellus
23	8/31/2022	12,899	13,045	36	Marcellus
24	9/1/2022	12,725	12,871	36	Marcellus
25	9/1/2022	12,552	12,697	36	Marcellus
26	9/2/2022	12,378	12,524	36	Marcellus
27	9/2/2022	12,204	12,350	36	Marcellus
28	9/2/2022	12,031	12,176	36	Marcellus
29	9/3/2022	11,857	12,003	36	Marcellus
30	9/3/2022	11,683	11,829	36	Marcellus
31	9/3/2022	11,509	11,655	36	Marcellus
32	9/4/2022	11,336	11,482	36	Marcellus
33	9/4/2022	11,162	11,308	36	Marcellus
34	9/4/2022	10,988	11,134	36	Marcellus
35	9/5/2022	10,815	10,960	36	Marcellus
36	9/5/2022	10,641	10,787	36	Marcellus
37	9/6/2022	10,467	10,613	36	Marcellus
38	9/6/2022	10,294	10,439	36	Marcellus
39	9/6/2022	10,120	10,266	36	Marcellus
40	9/7/2022	9,946	10,092	36	Marcellus
41	9/7/2022	9,772	9,918	36	Marcellus

WV Department of
Environmental Protection

03/17/2023

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
42	9/8/2022	9,599	9,745	36	Marcellus
43	9/8/2022	9,425	9,571	36	Marcellus
44	9/9/2022	9,251	9,397	36	Marcellus
45	9/9/2022	9,078	9,223	36	Marcellus
46	9/9/2022	8,904	9,050	36	Marcellus
47	9/10/2022	8,730	8,876	36	Marcellus
48	9/10/2022	8,557	8,702	36	Marcellus
49	9/10/2022	8,383	8,529	36	Marcellus
50	9/10/2022	8,209	8,355	36	Marcellus

RECEIVED
 Office of Oil and Gas
 JAN 26 2023
 WV Department of
 Environmental Protection

03/17/2023

Old Crow N-6HM
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	79.54	7419	5524	3037	59300	3,301	0
2	85.09	7144	4740	4268	443630	8,520	0
3	83.89	7339	4971	4563	446590	8,617	0
4	84.14	7154	4801	4850	442580	8,699	0
5	83.97	7208	4952	5250	451440	8,650	0
6	83.83	7102	4728	4768	435100	8,342	0
7	84.85	6972	5051	4552	444100	8,473	0
8	84.01	7005	4893	5349	446200	8,563	0
9	84.29	7042	4559	5054	443260	8,533	0
10	84.61	7002	4569	4730	439120	8,432	0
11	84.54	6927	5308	5127	445480	8,468	0
12	84.60	6870	4675	5050	440760	8,323	0
13	84.50	6761	5115	4946	444560	8,367	0
14	84.06	6847	4870	4988	447900	8,504	0
15	84.38	6906	5051	4513	446100	8,513	0
16	84.45	6940	5037	5313	454100	8,600	0
17	84.23	6783	4475	4973	446260	8,424	0
18	84.15	6805	4800	4852	444500	8,416	0
19	84.40	6735	4888	5122	443320	8,450	0
20	84.05	6843	5097	5098	442780	8,379	0
21	84.14	6791	4819	4800	440970	8,277	0
22	84.83	6735	4951	4994	444260	8,082	0
23	84.24	6765	4811	5007	449140	8,417	0
24	84.26	6564	4427	5316	449080	8,387	0
25	84.81	6565	4794	4951	434800	8,260	0
26	84.13	6880	4641	5151	445300	8,449	0
27	82.95	6746	4769	4761	447100	8,282	0
28	84.05	6703	4646	5097	439540	8,222	0
29	84.08	6672	5088	4725	435240	8,198	0
30	84.12	6483	5480	5373	447520	8,242	0
31	84.35	6620	4580	4881	444460	8,281	0
32	85.11	6797	4732	4693	439880	8,208	0

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)
33	83.81	6629	4834	4827	443820	8,276	0
34	84.78	6459	4620	5318	446560	8,340	0
35	84.00	6581	4645	5100	448580	8,396	0
36	84.76	6406	4931	4869	442110	8,157	0
37	84.66	6603	4855	4988	446560	8,286	0
38	84.68	6472	4563	5217	445480	8,247	0
39	84.92	6298	4789	4879	437420	8,098	0
40	84.43	6495	4637	5085	442100	8,147	0
41	84.71	6457	4559	4590	448220	8,366	0
42	84.13	6419	4729	4821	448600	8,227	0
43	84.45	6563	4792	4017	440500	8,039	0
44	85.40	6307	4480	5169	441480	8,030	0
45	84.43	6130	4863	4967	438780	8,060	0
46	83.93	6282	4627	4878	433000	7,975	0
47	85.55	6292	4826	5048	452460	8,165	0
48	83.64	6096	4839	4927	434520	8,059	0
49	83.60	6068	4849	5195	435200	8,849	0
50	85.04	5973	4985	4825	456960	8,141	0

RECEIVED
 Office of Oil and Gas
JAN 26 2023
 WV Department of
 Environmental Protection

Old Crow N-6HM

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	2015	2105	2037	2134	Sandstone
Big Lime	2105	2175	2134	2211	Limestone
Big Injun	2175	2459	2211	2537	Sandstone
Weir	2459	2654	2537	2757	Sandstone
Berea	2654	2999	2757	3158	Sandstone
Gordon	2999	3053	3158	3224	Sandstone
Fifty Foot	3053	3601	3224	3905	Sandstone
Speechley	3601	5023	3905	5659	Sandstone
Benson	5023	5378	5659	6099	Sandstone
Alexander	5378	5969	6099	6823	Siltstone
Rhinestreet	5969	6398	6823	7383	Black Shale
Middlesex	6398	6471	7383	7502	Black Shale
Geneseo/Burkett	6471	6498	7502	7552	Black Shale
Tully	6498	6538	7552	7640	Limestone
Hamilton	6538	6589	7640	7797	Gray Shale
Marcellus	6589	-	7797	-	Black Shale

RECEIVED
Office of Oil and Gas

JAN 26 2023

PA Department of
Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/23/2022
Job End Date:	9/10/2022
State:	West Virginia
County:	Marshall
API Number:	47-051-02238-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Old Crow N 6HM
Latitude:	39.77851669
Longitude:	-80.76308293
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,568
Total Base Water Volume (gal):	17,292,954
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
Water	Tug Hill Operating	Carrier/Base Fluid	Water	7732-18-5	100.00000	86.53252	None
Sand (40/70 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	8.85824	None
Sand (100 Mesh Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	3.01779	None
Sand (30/50 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	1.19995	None
Hydrochloric Acid (7.5%)	CNR	Acidizing	Water	7732-18-5	85.00000	0.23445	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.10206	None
StimStream FR 9800	Chemstream	Friction Reducer	Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01722	None
			Butene, homopolymer	9003-29-6	25.00000	0.01722	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00207	None

MC MX 9-4743	Multi-Chem	Biocide					
			Sodium Nitrate	7631-99-4	60.00000	0.02198	None
LD-7750W	Multi-Chem	Scale Inhibitor					
			Methanol	67-56-1	60.00000	0.00497	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00041	None
ProHib 100	CNR	Acid Inhibitor					
			2-Butoxyethanol	111-76-2	60.00000	0.00052	None
			Proprietary material	Proprietary	30.00000	0.00026	None
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00017	None
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00009	None
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00009	None
ProFE 105	CNR	Iron Control					
			Citric Acid	77-92-9	20.00000	0.00021	None
			Acetic Acid	64-19-7	5.00000	0.00005	None

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Water	7732-18-5	85.00000	0.23445	
			Butene, homopolymer	9003-29-6	25.00000	0.01722	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00207	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00041	
			Proprietary material	Proprietary	30.00000	0.00026	
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00017	
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00009	
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00009	
			Acetic Acid	64-19-7	5.00000	0.00005	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

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)

RECEIVED
Office of Oil and Gas
JAN 26 2023
WV Department of
Environmental Protection

5,676' B.H. A.D. 3,677' T.H. A.D.

**OLD CROW N LEASE
WELL 6HM
TUG HILL OPERATING**

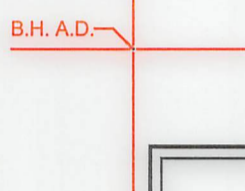
T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°50'00"

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

NAD'83 S.P.C.(FT)	N. 468,170.89	E. 1,613,521.72
NAD'83 GEO.	LAT-(N) 39.778517	LONG-(W) 80.7543083
NAD'83 UTM (M)	N. 4,403,202.05	E. 520,288.37
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 471,384.8	E. 1,615,957.0
NAD'83 GEO.	LAT-(N) 39.787433	LONG-(W) 80.754579
NAD'83 UTM (M)	N. 4,404,193.6	E. 521,013.9
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 478,991.1	E. 1,611,685.8
NAD'83 GEO.	LAT-(N) 39.808148	LONG-(W) 80.770159
NAD'83 UTM (M)	N. 4,406,489.1	E. 519,674.0

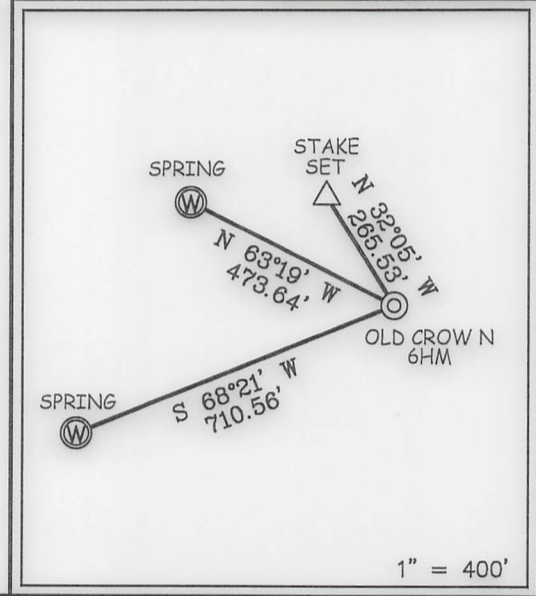
T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
5-9-4.3	HARRY E. KARR, JR., ET UX	1.471
5-9-4.7	FRANCIS D. BARR, ET UX	0.481
5-9-4.8	THOMAS MIDCAP, ET UX	0.376
5-9-4.10	DEBORAH S. MIDCAP	0.819
5-9-4.11	GARY PORTER	1.00
5-9-4.14	PAUL G. BROWN	0.500
5-9-4.15	PAUL G. BROWN	0.500
5-9-4.18	PAUL G. BROWN	0.657
5-9-4.19	SAMUEL L. CANTERBURY, ET UX	2.078
5-9-14	DENNIS P. CADMUS	136 POLES
5-9-15	DENNIS P. CADMUS	3.85
5-9-16	SHEENA ROSE	1.65
5-9-17.1	MARK S. STOCKLASK	1.187
5-9-18	MALCOMB H. BROWNLEE, ET AL	25,300 SQ. FT.
5-9-19	MARK STEPHEN STOCKLASK	2.38
5-9-23	DELBERT K. & LINDA K. MYERS	7.00
5-9-33.2	KEITH D. DANIELS, ET UX	1.534
5-10-1.2	JOSHUA A. & SHANNON N. HOYT	2.436
5-10-4.1	WILLIAM F. RULONG, ET AL	0.39
5-10-4.2	JACK E. RECTOR	2.887
5-10-4.3	ANTHONY A. & KAREN L. ANKROM	5.697
5-10-4.8	SAMUEL FRANKLIN	1.8808
5-10-4.9	JAMES E. & KAREN M. WILSON	0.8692
5-10-4.10	SHEENA ROSE	0.803
5-10-4.11	JASON E. BONNETTE	1.50
5-10-6	WILLIAM F. RULONG, ET AL	P/O 1.00



9,175' B.H. A.D.

REFERENCES



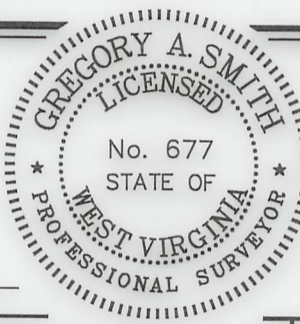
NOTES ON SURVEY

- 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 ARE 1"=2000'
- THE ASSESSMENT OF THE 1/10 ACRE LOT, OWNED BY JASON J. STEED AND DESCRIBED AS THE SECOND PARCEL IN DEED BOOK 643 PAGE 319 AND CORRECTIVE DEED 843 PAGE 300, IS NOT CURRENTLY ACCOUNTED FOR WITHIN THE 135.61 ACRE ASSESSMENT OF SURFACE TAX MAP 5-9-13.2
- PLAT UPDATED TO SHOW AS-DRILLED PATH.
- AS DRILLED DATA PROVIDED BY TUG HILL OPERATING.



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. 677 Gregory A. Smith

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JANUARY 17, 20 23
REVISED _____, 20 _____
OPERATORS WELL NO. _____ OLD CROW N-6HM
API WELL NO. 47 — 051 — 02238
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P6HMAD.dwg
OLD CROW NORTH 6HM REV3
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 INJECTION _____ WASTE DISPOSAL _____ IF "GAS" PRODUCTION X STORAGE _____ DEEP _____ SHALLOW X

LOCATION: ELEVATION 1,264.99' WATERSHED TRIBUTARY OF FISH CREEK (HUC-10)
DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE POWHATAN POINT 7.5'

SURFACE OWNER DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO ACREAGE 71.205±
ROYALTY OWNER DONNA VIVIAN YOHO, ET AL ACREAGE 71.205±

PROPOSED WORK: 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: 6,740' / TMD: 16,993'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107 ADDRESS 5098 WASHINGTON ST. W, STE 407 CHARLESTON, WV 25313-1561

COUNTY NAME PERMIT

03/17/2023

**OLD CROW N LEASE
WELL 6HM
TUG HILL OPERATING**

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

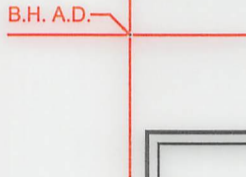
5,676' B.H. A.D. 3,677' T.H. A.D.

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

NAD'83 S.P.C.(FT)	N. 468,170.89	E. 1,613,521.72
NAD'83 GEO.	LAT-(N) 39.778517	LONG-(W) 80.763083
NAD'83 UTM (M)	N. 4,403,202.05	E. 520,288.37
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 471,384.8	E. 1,615,957.0
NAD'83 GEO.	LAT-(N) 39.787433	LONG-(W) 80.754579
NAD'83 UTM (M)	N. 4,404,193.6	E. 521,013.9
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 478,991.1	E. 1,611,685.8
NAD'83 GEO.	LAT-(N) 39.808148	LONG-(W) 80.770159
NAD'83 UTM (M)	N. 4,406,489.1	E. 519,674.0

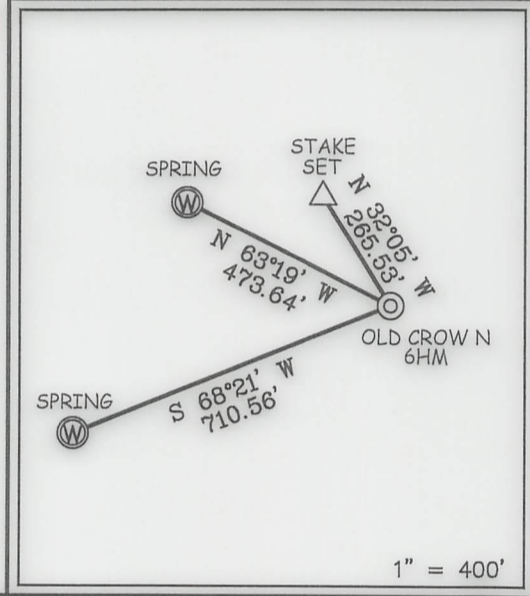
T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
5-9-4.3	HARRY E. KARR, JR., ET UX	1.471
5-9-4.7	FRANCIS D. BARR, ET UX	0.481
5-9-4.8	THOMAS MIDCAP, ET UX	0.376
5-9-4.10	DEBORAH S. MIDCAP	0.819
5-9-4.11	GARY PORTER	1.00
5-9-4.14	PAUL G. BROWN	0.500
5-9-4.15	PAUL G. BROWN	0.500
5-9-4.18	PAUL G. BROWN	0.657
5-9-4.19	SAMUEL L. CANTERBURY, ET UX	2.078
5-9-14	DENNIS P. CADMUS	136 POLES
5-9-15	DENNIS P. CADMUS	3.85
5-9-16	SHEENA ROSE	1.65
5-9-17.1	MARK S. STOCKLASK	1.187
5-9-18	MALCOMB H. BROWNLEE, ET AL	25,300 SQ. FT.
5-9-19	MARK STEPHEN STOCKLASK	2.38
5-9-23	DELBERT K. & LINDA K. MYERS	7.00
5-9-33.2	KEITH D. DANIELS, ET UX	1.534
5-10-1.2	JOSHUA A. & SHANNON N. HOYT	2.436
5-10-4.1	WILLIAM F. RULONG, ET AL	0.39
5-10-4.2	JACK E. RECTOR	2.887
5-10-4.3	ANTHONY A. & KAREN L. ANKROM	5.697
5-10-4.8	SAMUEL FRANKLIN	1.8808
5-10-4.9	JAMES E. & KAREN M. WILSON	0.8692
5-10-4.10	SHEENA ROSE	0.803
5-10-4.11	JASON E. BONNETTE	1.50
5-10-6	WILLIAM F. RULONG, ET AL	P/O 1.00



4,790' T.H. A.D.
9,175' B.H. A.D.

REFERENCES



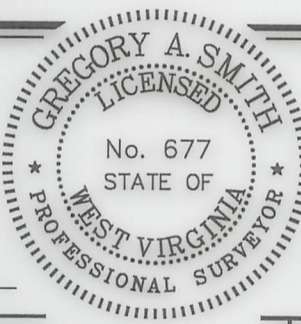
NOTES ON SURVEY

- 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 ARE 1"=2000'
- THE ASSESSMENT OF THE 1/10 ACRE LOT, OWNED BY JASON J. STEED AND DESCRIBED AS THE SECOND PARCEL IN DEED BOOK 643 PAGE 319 AND CORRECTIVE DEED 843 PAGE 300, IS NOT CURRENTLY ACCOUNTED FOR WITHIN THE 135.61 ACRE ASSESSMENT OF SURFACE TAX MAP 5-9-13.2
- PLAT UPDATED TO SHOW AS-DRILLED PATH.
- AS DRILLED DATA PROVIDED BY TUG HILL OPERATING.



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. 677 Gregory A. Smith

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JANUARY 17, 20 23
REVISED _____, 20 _____
OPERATORS WELL NO. OLD CROW N-6HM
API WELL NO. 47 - 051 - 02238
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P6HMAD.dwg
OLD CROW NORTH 6HM REV3
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 INJECTION _____ WASTE DISPOSAL _____ IF "GAS" PRODUCTION X STORAGE _____ DEEP _____ SHALLOW X

LOCATION: ELEVATION 1,264.99' WATERSHED TRIBUTARY OF FISH CREEK (HUC-10)

DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE POWHATAN POINT 7.5'

SURFACE OWNER DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO ACREAGE 71.205±

ROYALTY OWNER DONNA VIVIAN YOHO, ET AL ACREAGE 71.205±

PROPOSED WORK: 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: 6,740' / TMD: 16,993'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107 ADDRESS 5098 WASHINGTON ST. W, STE 407 CHARLESTON, WV 25313-1561

COUNTY NAME PERMIT

03/17/2023

← 5,676' B.H. A.D. → 3,677' T.H. A.D. →

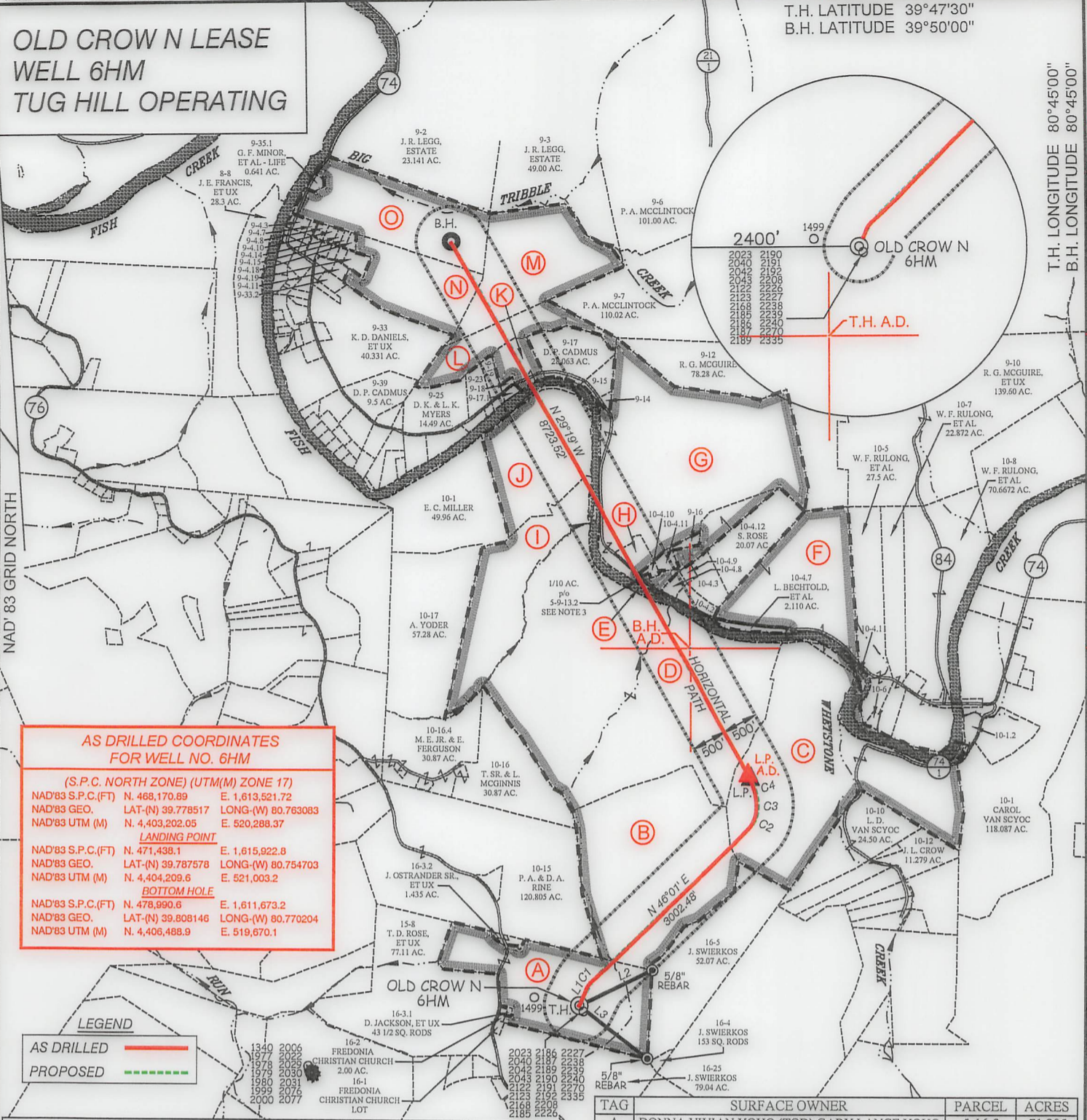
T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°50'00"

**OLD CROW N LEASE
WELL 6HM
TUG HILL OPERATING**

NAD'83 GRID NORTH

T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"

← 4,790' T.H. A.D. →
← 9,175' B.H. A.D. →



**AS DRILLED COORDINATES
FOR WELL NO. 6HM**

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

NAD'83 S.P.C.(FT)	N. 468,170.89	E. 1,613,521.72
NAD'83 GEO.	LAT-(N) 39.778517	LONG-(W) 80.763083
NAD'83 UTM (M)	N. 4,403,202.05	E. 520,288.37

LANDING POINT

NAD'83 S.P.C.(FT)	N. 471,438.1	E. 1,615,922.8
NAD'83 GEO.	LAT-(N) 39.787578	LONG-(W) 80.754703
NAD'83 UTM (M)	N. 4,404,209.6	E. 521,003.2

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 478,990.6	E. 1,611,673.2
NAD'83 GEO.	LAT-(N) 39.808146	LONG-(W) 80.770204
NAD'83 UTM (M)	N. 4,406,488.9	E. 519,670.1

LEGEND

AS DRILLED ———

PROPOSED - - - - -

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	267.91'	792.95'	N 37°08' E	266.64'
C2	212.35'	371.54'	N 28°06' E	209.47'
C3	256.18'	574.08'	N 00°34' W	254.06'
C4	266.01'	909.91'	N 20°55' W	265.06'

TAG	SURFACE OWNER	PARCEL	ACRES
A	DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO	5-16-3	71.205
B	JOHN SWIERKOS	5-10-14	100.00
C	HERBERT M. AULENBACHER, JR.	5-10-9	141.43
D	HERBERT M. AULENBACHER, JR.	5-10-3	225.50
E	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
F	SHEENA ROSE	5-10-4	74.229
G	JASON J. STEED	5-9-13.2	135.61
H	KAREN M. KAZEMKA (NKA KAREN M. WILSON)	5-9-13	3.69
I	WILLIAM A. PRASCIK, ET AL	5-10-2	52.00
J	EDWIN C. MILLER	5-9-20	51.64
K	DENNIS P. CADMUS	5-9-42	5.42
L	DENNIS P. CADMUS	5-9-24	21 AC 49 P.
M	LLOYD C. & JUDITH C. ARNOLD	5-9-41	93.00
N	LLOYD C. & JUDITH C. ARNOLD	5-9-4	18.854
O	LLOYD C. & JUDITH C. ARNOLD	5-9-35	47.00

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 25°57' E	255.96'
L2	N 63°56' E	1159.85'
L3	S 52°48' E	1228.02'

SLS
FROM THE GROUND UP

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
slsvv.com

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

NAD'83 S.P.C.(FT)	N. 468,170.89	E. 1,613,521.72
NAD'83 GEO.	LAT-(N) 39.778517	LONG-(W) 80.763083
NAD'83 UTM (M)	N. 4,403,202.05	E. 520,288.37

LANDING POINT

NAD'83 S.P.C.(FT)	N. 471,384.8	E. 1,615,957.0
NAD'83 GEO.	LAT-(N) 39.787433	LONG-(W) 80.754579
NAD'83 UTM (M)	N. 4,404,193.6	E. 521,013.9

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 478,991.1	E. 1,611,685.8
NAD'83 GEO.	LAT-(N) 39.808148	LONG-(W) 80.770159
NAD'83 UTM (M)	N. 4,406,489.1	E. 519,674.0



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

P.S. 677 *Gregory A. Smith*

SCALE 1" = 2000' FILE NO. 8796P6HMAD.dwg
OLD CROW NORTH 6HM REV3

DATE JANUARY 17, 2023
REVISED _____, 20__

OPERATORS WELL NO. OLD CROW N-6HM
API WELL NO. 47 — 051 — 02238
NO. STATE COUNTY PERMIT

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

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)

03/17/2023

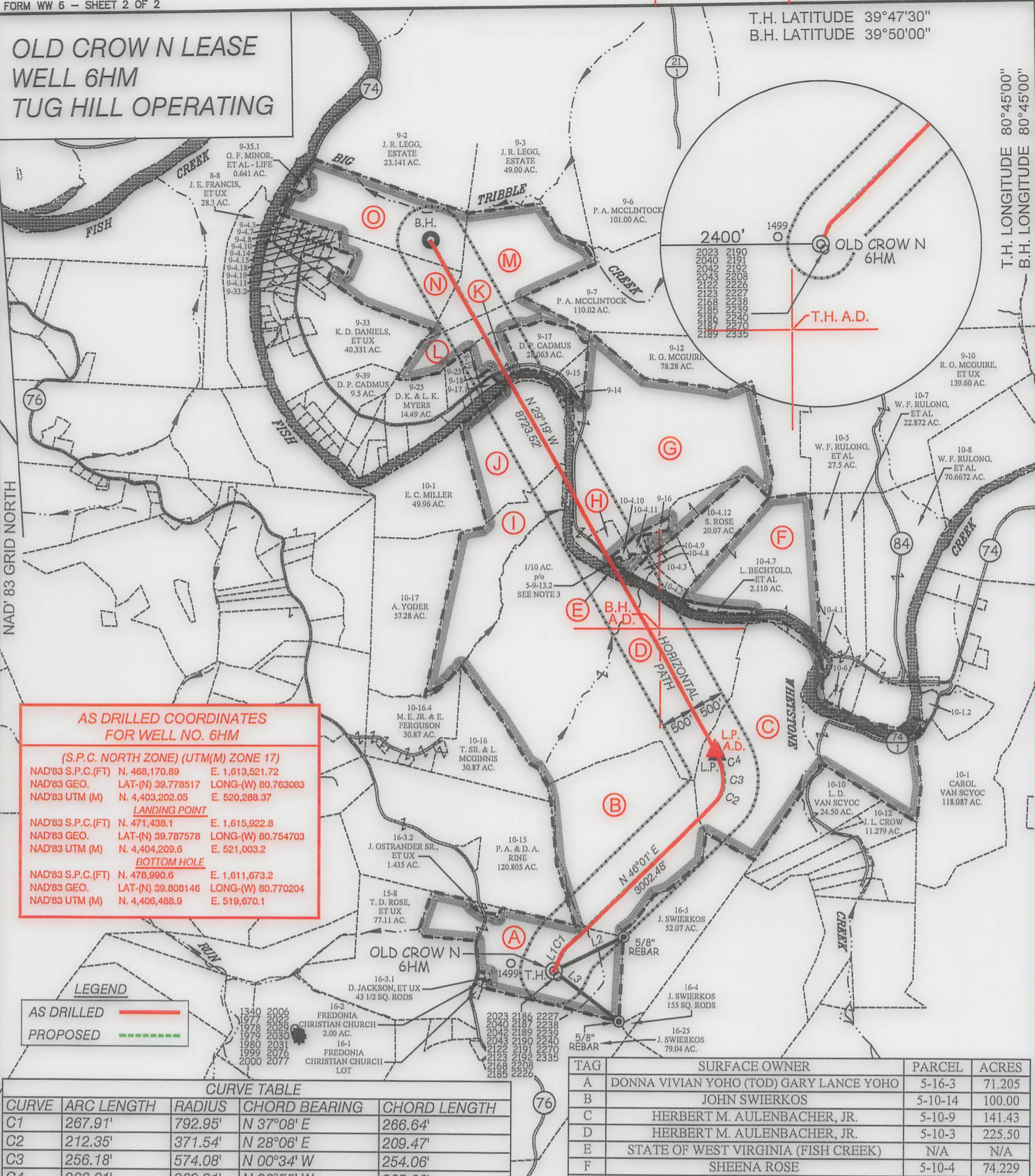
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107 ADDRESS 5098 WASHINGTON ST. W, STE 407 CHARLESTON, WV 25313-1561

**OLD CROW N LEASE
WELL 6HM
TUG HILL OPERATING**

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

T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"

NAD'83 GRID NORTH



5,676' B.H. A.D. 3,677' T.H. A.D.

2400'	1499'
2023	2190
2040	2191
2043	2192
2045	2193
2122	2226
2123	2227
2168	2238
2189	2239
2186	2240
2187	2270
2189	2335

AS DRILLED COORDINATES FOR WELL NO. 6HM

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

NAD'83 S.P.C.(FT)	N. 468,170.89	E. 1,613,521.72
NAD'83 GEO.	LAT-(N) 39.778517	LONG-(W) 80.763083
NAD'83 UTM (M)	N. 4,403,202.05	E. 520,288.37

LANDING POINT

NAD'83 S.P.C.(FT)	N. 471,438.1	E. 1,615,922.8
NAD'83 GEO.	LAT-(N) 39.787578	LONG-(W) 80.754703
NAD'83 UTM (M)	N. 4,404,209.8	E. 521,003.2

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 478,990.6	E. 1,611,673.2
NAD'83 GEO.	LAT-(N) 39.808148	LONG-(W) 80.770204
NAD'83 UTM (M)	N. 4,406,488.9	E. 519,670.1

LEGEND

AS DRILLED ————

PROPOSED - - - - -

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	267.91'	792.95'	N 37°08' E	266.64'
C2	212.35'	371.54'	N 28°06' E	209.47'
C3	256.18'	574.08'	N 00°34' W	254.06'
C4	266.01'	909.91'	N 20°55' W	265.06'

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 25°57' E	255.96'
L2	N 63°56' E	1159.85'
L3	S 52°48' E	1228.02'

TAG	SURFACE OWNER	PARCEL	ACRES
A	DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO	5-16-3	71.205
B	JOHN SWIERKOS	5-10-14	100.00
C	HERBERT M. AULENBACHER, JR.	5-10-9	141.43
D	HERBERT M. AULENBACHER, JR.	5-10-3	225.50
E	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
F	SHEENA ROSE	5-10-4	74.229
G	JASON J. STEED	5-9-13.2	135.61
H	KAREN M. KAZEMKA (NKA KAREN M. WILSON)	5-9-13	3.69
I	WILLIAM A. PRASCIC, ET AL	5-10-2	52.00
J	EDWIN C. MILLER	5-9-20	51.64
K	DENNIS P. CADMUS	5-9-42	5.42
L	DENNIS P. CADMUS	5-9-24	21 AC 49 P.
M	LLOYD C. & JUDITH C. ARNOLD	5-9-41	93.00
N	LLOYD C. & JUDITH C. ARNOLD	5-9-4	18.854
O	LLOYD C. & JUDITH C. ARNOLD	5-9-35	47.00

SLS
FROM THE GROUND UP

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
slsvw.com

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

NAD'83 S.P.C.(FT)	N. 468,170.89	E. 1,613,521.72
NAD'83 GEO.	LAT-(N) 39.778517	LONG-(W) 80.763083
NAD'83 UTM (M)	N. 4,403,202.05	E. 520,288.37

LANDING POINT

NAD'83 S.P.C.(FT)	N. 471,384.8	E. 1,615,957.0
NAD'83 GEO.	LAT-(N) 39.787433	LONG-(W) 80.754579
NAD'83 UTM (M)	N. 4,404,193.6	E. 521,013.9

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 478,991.1	E. 1,611,685.8
NAD'83 GEO.	LAT-(N) 39.808148	LONG-(W) 80.770159
NAD'83 UTM (M)	N. 4,406,489.1	E. 519,674.0



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

P.S. 677 *Gregory A. Smith*

SCALE 1" = 2000' FILE NO. 8796P6HMAD.dwg
OLD CROW NORTH 6HM REV3

DATE JANUARY 17, 20 23
REVISED _____, 20 _____

OPERATORS WELL NO. _____ OLD CROW N-6HM
API WELL NO. 47 — 051 — 02238
NO. STATE COUNTY PERMIT

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

LEGEND

LEASE LINE ————

SURFACE LINE - - - - -

WELL LATERAL ————

OFFSET LINE - - - - -

THE LINE ————

CREEK ————

ROAD ————

COUNTY ROUTE ————

PROPOSED WELL ⊙

EXISTING WELL ⊙

TAX MAP—PARCEL ⊙

SURFACE OWNER (SEE TABLE) ⊙

LEASE # (SEE WW-6A1) ⊙

00-00 ⊙

03/17/2023

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5098 WASHINGTON ST. W, STE 407
FORT WORTH, TX 76107 CHARLESTON, WV 25313-1561