

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

JUL 28 2020

API 47-051-02114 County Marshall District Franklin WV Department of Environmental Protection  
Quad Powhatan Point 7.5' Pad Name Woodford Field/Pool Name  
Farm name CNX RCPC, LLC Well Number Woodford 2HM  
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 4,406,025.73 Easting 516,091.14  
Landing Point of Curve Northing 4,406,129.94 Easting 515,654.52  
Bottom Hole Northing 4,404,370.47 Easting 516,677.34

Elevation (ft) 1233.84' 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 10/23/2018 Date drilling commenced 4/24/2019 Date drilling ceased 9/10/2019  
Date completion activities began 1/28/2020 Date completion activities ceased 2/6/2020  
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 838' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1595' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 734-740', 832-838' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
  
8/16/2020

API 47-051-02114 Farm name CNX RCPC, LLC Well number Woodford 2HM

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"	928'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	928'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,752'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	14,150'	NEW	20#	N/A	Y
Tubing		2 3/8"	7,075'	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	1014	15.6	1.19	1225	0	8
Coal	A	1014	15.6	1.19	1225	0	8
Intermediate 1	A	797	15.6	1.19	1098	0	8
Intermediate 2							
Intermediate 3							
Production	A	3364	14.5	1.17	3919	0	8
Tubing							

Drillers TD (ft) 14,308' Loggers TD (ft) n/a  
 Deepest formation penetrated Marcellus Plug back to (ft) n/a  
 Plug back procedure n/a

Kick off depth (ft) 5.990'

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





**WOODFORD 2HM**

**LITHOLOGY INFORMATION**

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	2027	2115	2028	2117	Sandstone
Big Lime	2115	2157	2117	2159	limestone
Big Injun	2157	2503	2159	2507	Sandstone
Weir	2503	2629	2507	2633	Sandstone
Berea	2629	2852	2633	2856	Sandstone
Gordon	2852	2899	2856	2903	Sandstone
Fifty Foot	2899	3459	2903	3498	Sandstone
Speechley	3459	4831	3498	5329	Sandstone
Benson	4831	5200	5329	5807	Sandstone
Alexander	5200	5821	5807	6498	Siltstone
Rhinestreet	5821	6175	6498	6925	Black shale
Middlesex	6175	6259	6925	7063	Black shale
Geneseo/Burkett	6259	6289	7063	7126	Black shale
Tully	6289	6312	7126	7184	Limestone
Hamilton	6312	6329	7184	7236	Grey shale
Marcellus	6329	-	7236	-	Black shale

Woodford ZHM

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	86.4	6779	5323	4194	523560	435013	0
2	90	6948	4877	4888	524420	419677	0
3	90.5	6971	5168	4488	524940	406099	0
4	90	6987	5112	5105	527260	424257	0
5	90.6	6964	2543	4604	522820	406220	0
6	90.2	6972	5097	4487	525540	411555	0
7	90.3	7017	5260	4712	524260	412548	0
8	90.3	6912	5046	4897	524960	402865	0
9	89.7	6746	5161	4491	527540	411298	0
10	90.3	6883	5524	4808	526220	410548	0
11	90.4	6669	4958	5017	525960	404858	0
12	90.4	6830	5230	4539	531760	399822	0
13	89.6	6777	5080	4724	526200	409364	0
14	90.7	6619	5383	4323	524740	400852	0
15	90.1	6621	4768	5196	521760	406507	0
16	90.1	6618	4940	4430	532400	403317	0
17	90.1	6517	4822	4335	526180	403522	0
18	90.2	6513	4826	5259	524600	399127	0
19	90.1	6499	5221	4613	521980	405865	0
20	90.2	6728	5329	4542	525870	399584	0
21	90.2	6568	5104	4220	525800	396991	0
22	90.8	6795	5961	4924	525540	403926	0
23	90.2	6568	5237	4733	531160	401092	0
24	90.2	6454	4992	4782	529770	400350	0
25	89.9	6653	5881	4513	523440	394994	0
26	90	6659	5668	4740	526840	398895	0
27	89.6	6605	5117	4958	530740	402612	0
28	90.2	6547	4961	4558	524280	397302	0
29	90.2	6617	5086	4998	523560	392180	0
30	90	6448	5053	4780	524520	393400	0
31	90.3	6364	5140	4652	529680	396276	0
32	90.1	6349	5470	4919	525160	395305	0

33	90.2	6177	4937	3895	526380	391724	0
34	90.2	6016	5301	3602	525100	396593	0
35	90.8	6256	5253	4778	522460	391717	0
36	90.5	6231	5273	4873	525480	395826	0
37	90.3	6247	5009	4276	526260	390092	0

**Woodford 2HM  
PERFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	1/28/2020	13756	13910	48	Marcellus
2	1/28/2020	13580	13735	48	Marcellus
3	1/29/2020	13405	13559	48	Marcellus
4	1/29/2020	13229	13384	48	Marcellus
5	1/29/2020	13054	13208	48	Marcellus
6	1/29/2020	12879	13033	48	Marcellus
7	1/30/2020	12703	12858	48	Marcellus
8	1/30/2020	12528	12682	48	Marcellus
9	1/30/2020	12352	12507	48	Marcellus
10	1/31/2020	12177	12331	48	Marcellus
11	1/31/2020	12002	12156	48	Marcellus
12	1/31/2020	11826	11981	48	Marcellus
13	1/31/2020	11651	11805	48	Marcellus
14	2/1/2020	11475	11630	48	Marcellus
15	2/1/2020	11300	11454	48	Marcellus
16	2/1/2020	11125	11279	48	Marcellus
17	2/1/2020	10949	11104	48	Marcellus
18	2/2/2020	10774	10928	48	Marcellus
19	2/2/2020	10598	10753	48	Marcellus
20	2/2/2020	10423	10577	48	Marcellus
21	2/2/2020	10248	10402	48	Marcellus
22	2/3/2020	10072	10227	48	Marcellus
23	2/3/2020	9897	10051	48	Marcellus
24	2/3/2020	9721	9876	48	Marcellus
25	2/3/2020	9546	9700	48	Marcellus
26	2/4/2020	9371	9525	48	Marcellus
27	2/4/2020	9195	9350	48	Marcellus
28	2/4/2020	9020	9174	48	Marcellus
29	2/4/2020	8844	8999	48	Marcellus
30	2/5/2020	8669	8823	48	Marcellus
31	2/5/2020	8494	8648	48	Marcellus
32	2/5/2020	8318	8473	48	Marcellus
33	2/5/2020	8143	8297	48	Marcellus
34	2/6/2020	7967	8122	48	Marcellus
35	2/6/2020	7792	7946	48	Marcellus
36	2/6/2020	7617	7771	48	Marcellus
37	2/6/2020	7441	7596	48	Marcellus

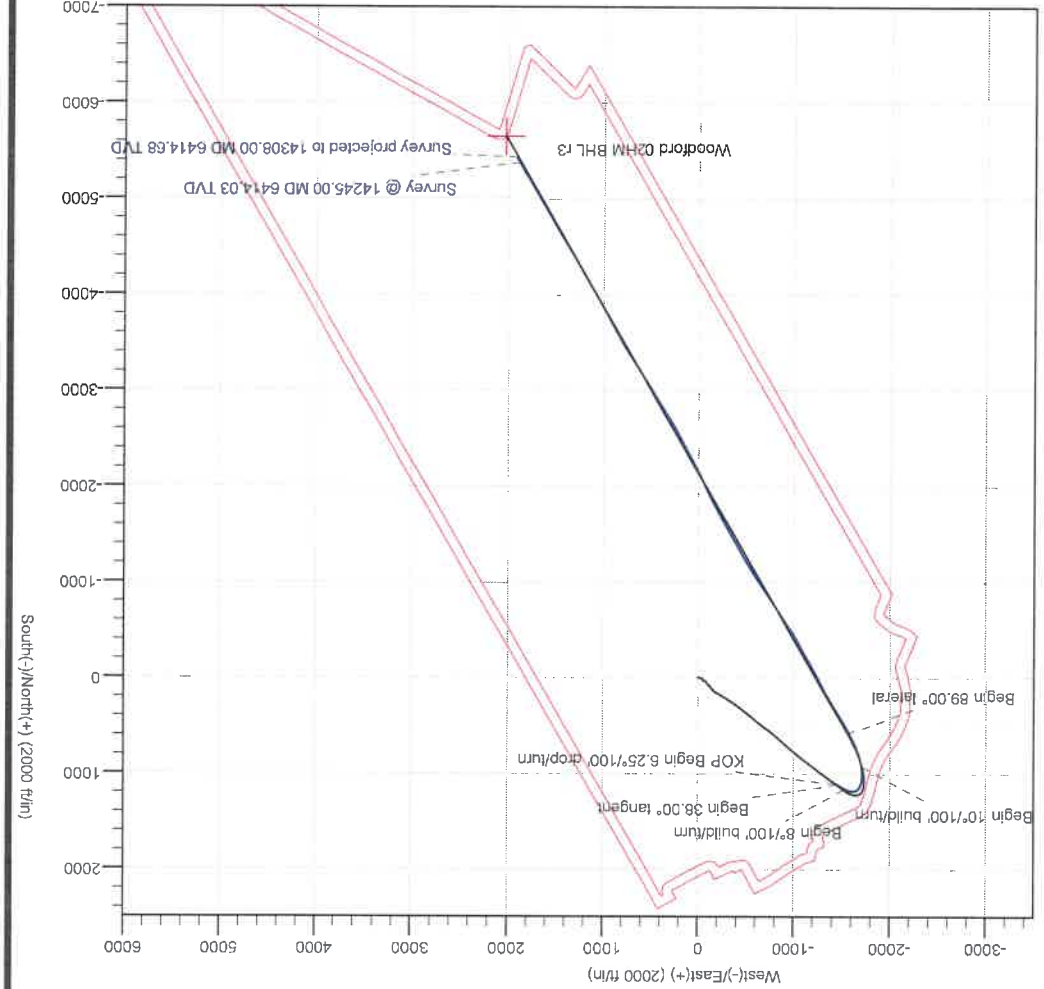
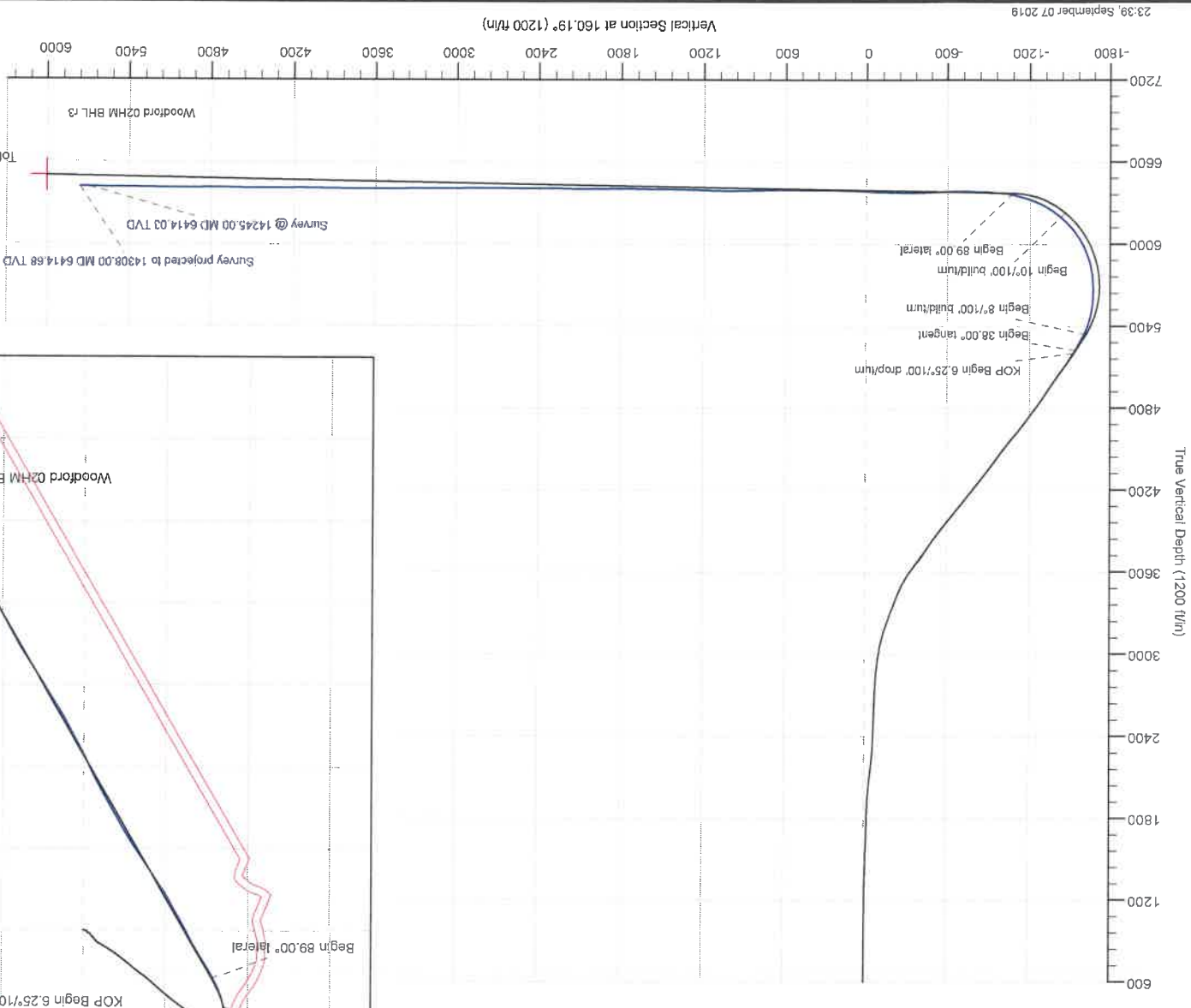




**Well:** Woodford 02HM (B)  
**Site:** Woodford  
**Project:** Marshall County, West Virginia  
**Design:** rev3  
**Rig:** Nabors X08

**SECTION DETAILS**

MD	Inc	Azi	+N/-S	+E/-W	Diag	Tface	Vsect	Annotation
5713.00	39.77	305.61	5126.35	1066.98	-1379.48	0.00	0.00	Survey @ 5713.00 MD 5126.35 TVD
56813.00	39.77	305.61	5226.43	1104.23	-1431.49	0.00	0.00	KOP Begin 6.25°/100' drop/turn
56812.84	38.00	306.55	5226.43	1115.26	-1446.62	6.25	161.855	-1539.58
56899.56	38.00	306.55	5342.05	1169.05	-1519.19	0.00	0.00	Begin 38.00° tangent
56899.56	38.00	306.55	5342.05	1169.05	-1519.19	0.00	0.00	Begin 8°/100' build/turn
56899.56	38.00	306.55	5342.05	1169.05	-1519.19	0.00	0.00	Begin 10°/100' build/turn
56899.56	38.00	306.55	5342.05	1169.05	-1519.19	0.00	0.00	Begin 10°/100' build/turn
7011.44	50.00	166.22	6373.00	583.88	-1563.73	10.00	-24.826	-1079.35
7428.43	89.00	150.00	6373.00	583.88	-1563.73	10.00	-24.826	-1079.35
14628.39	89.00	150.00	6498.66	-5650.48	2035.78	0.00	0.00	0.000 6009.03
								PBHL/TD 14628.39 MD/6498.66 TVD



**ANNOTATIONS SURVEYS**

MD	Inc	Azi	+N/-S	+E/-W	Vsect	Annotation
157.00	0.06	229.50	157.00	-0.05	0.03	MWD surveys
14245.00	89.41	149.93	6414.03	-5376.14	1891.65	Survey @ 14245.00 MD 6414.03 TVD
14308.00	89.41	149.93	6414.68	-5430.66	1923.21	Survey projected to 14308.00 MD 6414.68 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=1235+33 @ 1268.00ft (Nabors X08)  
 Northing 14455436.25  
 Easting 1693209.42  
 Latitude 39.80404847  
 Longitude -80.81202501  
 Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.788

Azimuths to Grid North  
 True North: -0.12°  
 Magnetic North: -8.80°  
 Magnetic Field  
 Strength: 51980.3nT  
 Dip Angle: 66.83°  
 Date: 4/24/2019  
 Model: IGRF2015



## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/28/2020
Job End Date:	2/6/2020
State:	West Virginia
County:	Marshall
API Number:	47-051-02114-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Woodford 2HM
Latitude:	39.80404847
Longitude:	-80.81202501
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,400
Total Base Water Volume (gal):	14,912,173
Total Base Non Water Volume:	0

## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Tug Hill Operating	Carrier/Base Fluid	Water	7732-18-5	100.00000	67.84788	None
Sand (30/50 White Proppant)	Profrac	Proppant	Silica Substrate	14808-60-7	100.00000	22.08249	None
Sand (40/70 White Proppant)	Profrac	Proppant	Silica Substrate	14808-60-7	100.00000		None
Sand (100 Mesh Proppant)	Profrac	Proppant	Silica Substrate	14808-60-7	100.00000	7.28683	None
Hydrochloric Acid (7.5%)	PVS	Acidizing	Silica Substrate	14808-60-7	100.00000	2.32405	None
ProSlick 710	Malco	Friction Reducer	Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.13642	None
			Water	7732-18-5	85.00000	0.31340	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.13642	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.13642	None
			Distillate	64742-47-8	30.00000	0.01540	None
			inorganic salt	PROPRIETARY	10.00000	0.00513	None
			Oxalkylated alcohol	PROPRIETARY	5.00000	0.00257	None



MC MX 9-4743	Multi-Chem	Bicide				
	Multi-Chem		Sodium Nitrate	7631-99-4	60.00000	0.0175/None
LD-7750W	Multi-Chem	Scale Inhibitor	Methanol	67-56-1	60.00000	0.0040/None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00034/None
PROFE 105	ProFrac	Iron Control	Citric Acid	77-92-9	100.00000	0.00147/None
Prohib 100	ProFrac	Acid Inhibitor	2-Propyn-1-ol compound w/ methylloxtrane	38172-91-7	15.00000	0.00018/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	0.31340
			inorganic salt	PROPRIETARY	10.00000	0.00513
			Oxyalkylated alcohol	PROPRIETARY	5.00000	0.00257
			Phosphonic Acid Salt	Proprietary	5.00000	0.00034

\* 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%

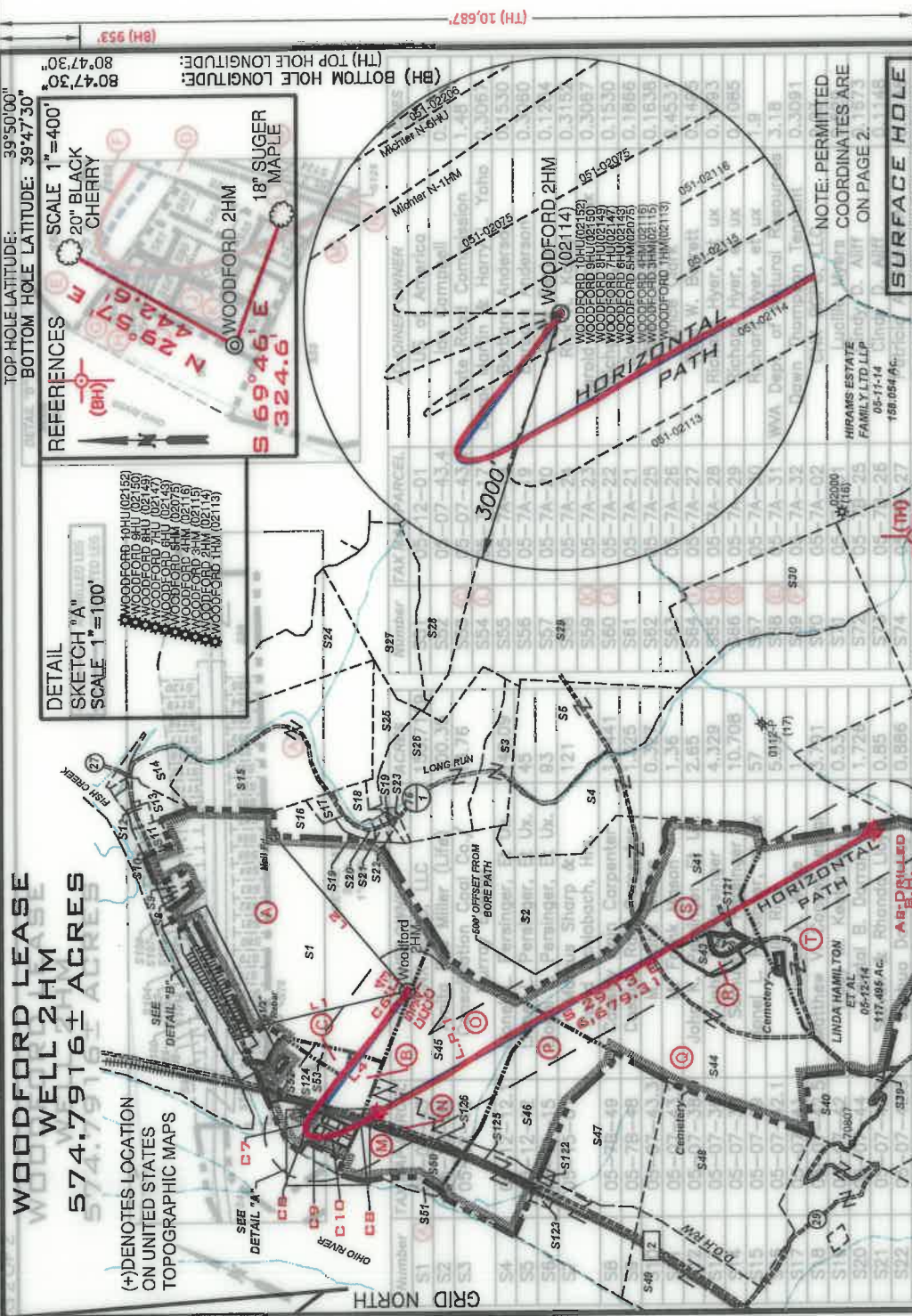
Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.  
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

**WOODFORD LEASE  
WELL 2HM  
574.7916 ± ACRES**

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

DETAIL SKETCH "A" SCALE 1" = 100'

REFERENCES SCALE 1" = 400'  
20" BLACK CHERRY  
S 69° 46' E 324.6'  
WOODFORD 2HM  
18" SUGAR MAPLE



**SURFACE HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
**N) 4,406,025.73**  
**E) 516,091.14**

**LANDING POINT 1**  
UTM. NAD83, ZONE 17  
IN METERS  
**N) 4,406,129.94**  
**E) 515,654.52**

**BOTTOM HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
**N) 4,404,370.47**  
**E) 516,677.34**

CURVE/CHORD	BEARING	CHORD	LENGTH	RADIUS	ARC LENGTH
C1	N 79.18° W	8.74'	9.21'	9.11'	9.21'
C2	N 74.58° W	21.08'	32.52'	21.44'	32.52'
C3	N 68.57° W	8.24'	8.66'	8.66'	8.66'
C4	N 80.55° W	35.05'	37.82'	38.47'	37.82'
C5	N 41.35° W	12.78'	10.11'	13.81'	10.11'

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

LEGEND

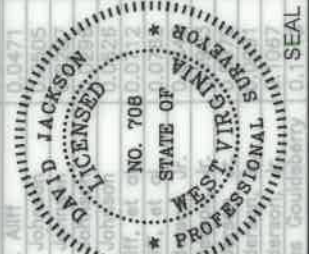
LINE	BEARING	DISTANCE
L1	N 12° 35' W	1732.81'
L2	N 49° 34' E	2407.99'
L3	N 32° 33' W	17.50'
L4	N 51° 45' W	1563.87'

NOTE: PERMITTED COORDINATES ARE ON PAGE 2.

FILE NUMBER \_\_\_\_\_  
DRAWING NUMBER WOODFORD\_WP\_2HM  
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

*David L Jackson*



JACKSON SURVEYING INC.  
P.O. Box 1458  
Chillicothe, WV 26032  
304-523-5951

WVDEP  
OFFICE OF OIL & GAS  
801 57TH STREET, SE  
CHARLESTON, WV 25304

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

LOCATION ELEVATION **1233.84'** WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER  
DISTRICT FRANKLIN COUNTY MARSHALL

QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER \_\_\_\_\_  
SURFACE OWNER CNX RCPC, LLC ACREAGE 155.7119

OIL & GAS ROYALTY OWNER HG ENERGY II APPALACHIA LC (TRACT 5-7-43) LEASE ACREAGE 155.7119  
PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG-OFF OLD FORMATION   
PERFORMATE NEW FORMATION  OTHER PHYSICAL CHANGE (SPECIFY) **ASDRILLED**

TARGET FORMATION MARCELLUS  ESTIMATED DEPTH **TVD: 6,415' TMD: 14,308'**  
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500  
FORT WORTH, TX 76107  
ADDRESS 5400 D BIG TYLER ROAD  
CHARLESTON, WV 25313

PERMIT \_\_\_\_\_  
CLEAN OUT & REPLUG \_\_\_\_\_

**WOODFORD LEASE  
WELL 2HM  
574.7916± ACRES**

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

SEE DETAIL "A"

SEE DETAIL "B"

SEE DETAIL "C"

SEE DETAIL "D"

SEE DETAIL "E"

SEE DETAIL "F"

SEE DETAIL "G"

SEE DETAIL "H"

SEE DETAIL "I"

SEE DETAIL "J"

SEE DETAIL "K"

SEE DETAIL "L"

SEE DETAIL "M"

SEE DETAIL "N"

SEE DETAIL "O"

SEE DETAIL "P"

SEE DETAIL "Q"

SEE DETAIL "R"

SEE DETAIL "S"

SEE DETAIL "T"

SEE DETAIL "U"

SEE DETAIL "V"

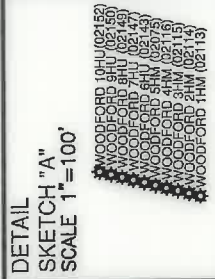
SEE DETAIL "W"

SEE DETAIL "X"

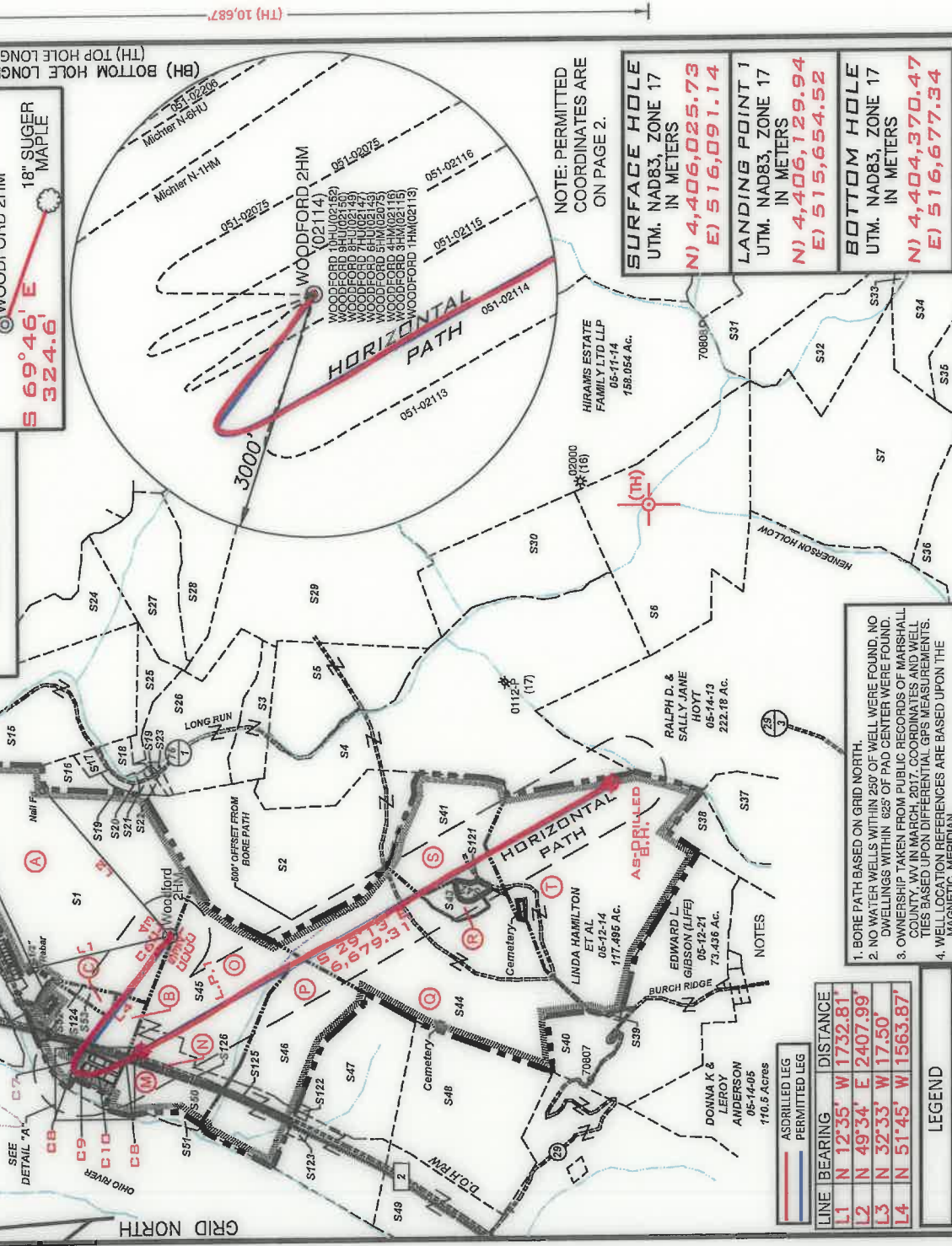
SEE DETAIL "Y"

SEE DETAIL "Z"

TOP HOLE LATITUDE: 39°50'00"  
BOTTOM HOLE LATITUDE: 39°47'30"  
REFERENCES  
SCALE 1"=400'  
20" BLACK CHERRY  
(BH) 80°47'30"  
(TH) TOP HOLE LONGITUDE: 80°47'30"  
(BH) 953'  
(TH) 10,687'



- WOODFORD 10H (02162)
- WOODFORD 9H (02149)
- WOODFORD 8H (02140)
- WOODFORD 7H (02147)
- WOODFORD 6H (02145)
- WOODFORD 5H (02143)
- WOODFORD 4H (02116)
- WOODFORD 3H (02115)
- WOODFORD 2H (02114)



NOTE: PERMITTED COORDINATES ARE ON PAGE 2.

<b>SURFACE HOLE</b> UTM. NAD83, ZONE 17 IN METERS <b>N) 4,406,025.73</b> <b>E) 516,091.14</b>	<b>LANDING POINT 1</b> UTM. NAD83, ZONE 17 IN METERS <b>N) 4,406,129.94</b> <b>E) 515,654.52</b>	<b>BOTTOM HOLE</b> UTM. NAD83, ZONE 17 IN METERS <b>N) 4,404,370.47</b> <b>E) 516,677.34</b>
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- 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.

LEGEND

	ASDRILLED LEG
	PERMITTED LEG
	LEASED TRACTS
	SURFACE TRACTS
	UNIT BOUNDARY
	LEASE # (SEE 6A1 FORM)

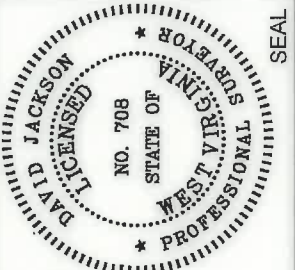
CURVE	CHORD	BEARING	CHORD RADIUS	LENGTH	ARC LENGTH
C8	N 47°24' W	210.21	368.72	212.72	158.60
C7	N 71°04' W	158.60	89.33	159.70	86.33
C6	N 45°16' W	86.33	86.33	90.10	86.33
C5	N 06°41' W	158.07	341.91	159.82	158.07
C4	N 80°55' W	35.05	37.89	36.47	35.05
C3	N 61°35' W	12.76	10.11	13.81	12.76
C2	N 78°18' W	8.74	9.21	9.11	8.74
C1	N 74°56' W	21.06	32.89	21.44	21.06

FILE NUMBER \_\_\_\_\_  
DRAWING NUMBER WOODFORD\_WP\_2HM  
SCALE 1" = 2000'  
MINIMUM DEGREE OF ACCURACY 1/200  
PROVEN SOURCE OF ELEVATION SUBMETER MAPPING  
GRADE GPS

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 L Jackson*  
P.S. 708

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: JULY 20, 2020  
OPERATORS WELL NO. Woodford 2HM  
API WELL NO. 47-051-02114  
STATE COUNTY PERMIT

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL  
(IF "GAS") PRODUCTION STORAGE DEEP SHALLOW X  
LOCATION ELEVATION 1233.84' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER

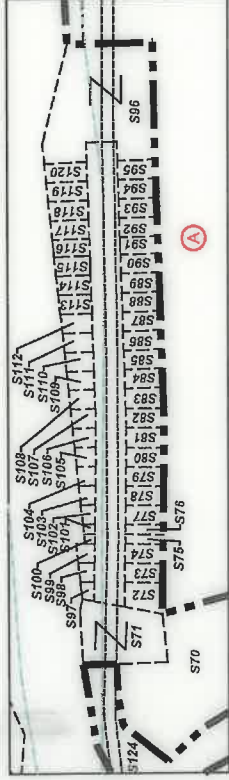
DISTRICT FRANKLIN COUNTY MARSHALL  
QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER CNX RPC, LLC ACREAGE 155.7119  
OIL & GAS ROYALTY OWNER HG ENERGY II APPALACHIA LC (TRACT 5-7-43) LEASE ACREAGE 155.7119  
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION  
PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) ASDRILLED

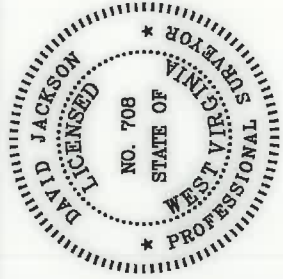
TARGET FORMATION MARCELLUS  
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD  
FORT WORTH, TX 76107 CHARLESTON, WV 25313

COUNTY NAME PERMIT  
ESTIMATED DEPTH TMD: 6,415' TMD: 14,308'  
PLUG & ABANDON CLEAN OUT & REPLUG

**WOODFORD LEASE  
WELL 2HM  
574.7916 ± ACRES**



Number	TAX MAP-PARCEL	ADJOINER OWNER	ACRES
S1	05-07-43	CNX RPC, LLC	155.7119
S2	05-12-08	Amita Rae Miller (Life)	100.35
S3	05-12-10	Consolidation Coal Co./ Murray Energy	13.76
S4	05-12-12.1	Lionel L. Persinger, Et Ux.	148.09
S5	05-12-12	Lionel L. Persinger, Et Ux.	45
S6	05-11-15	Lionel L. Persinger, Et Ux.	93
S7	05-15-01	Marcus Sharp & David Schlabach, Hrs.	121
S8	05-7B-49	Cassidy Rain Carpenter	1.1441
S9	05-7B-48	Cassidy Rain Carpenter	1.325
S10	05-07-43.3	M. Frank Mason	0.327
S11	05-07-43.2	M. Frank Mason	1.36
S12	05-07-38	John K. Persinger, Et Ux.	2.65
S13	05-07-36	John K. Persinger	4.329
S14	05-07-35	Samuel L. Persinger	10.708
S15	05-07-39	Lionel L. Persinger, et ux	57
S16	05-07-42.1	Holly Rice	5.99
S17	05-07-41	James A. Wade	1
S18	05-07-42.5	Matthew V. Conner, et al	3.791
S19	05-07-42	Tracy M. Kesterson	0.53
S20	05-07-44	Crystal B. Darrah	1.726
S21	05-07-42.2	Steven & Rhonda Lloyd	0.85
S22	05-07-42.3	Joshua David Hartley	0.886
S23	05-07-42.4	Jason Reed Hartley	0.94
S24	05-07-33	William N. Roupe	24.6
S25	05-12-09	Lionel & Mary Lee Persinger	10.15
S26	05-12-10.1	Consolidation Coal Co./ Murray Energy	38.48
S27	05-11-1.4	Larry W. Dunlap, et al	32.493
S28	05-11-1.1	Larry W. Dunlap & Charles Leroy Dunlap	34.405
S29	05-11-21	Karen Reed, et al	112.67
S30	05-12-11	Wesley B. Bryan & Wesley R. Bryan II	52.478
S31	05-15-04	Joseph J. Kramer, et ux	41.106
S32	05-15-03	Joseph J. Kramer, et ux	36.10
S33	05-15-02	John David Petrock, et ux	5
S34	05-15-14	John David Petrock, et ux	25
S35	05-15-12	John David Petrock, et ux	150.23
S36	05-15-15	Robert L. Shields, et al	49
S37	05-14-12	Dale R. Galtaher, et al	135.100
S38	05-14-10	Wanda P. Rime (Life)	107.372
S39	05-12-15	Woodland Hills Church of God Trs.	0.375
S40	05-12-21.1	Robert W. Jr. & Wendy L. Riggerbach	14.222
S41	05-12-13	Linda Hamilton, et al	41.887
S42	05-12-7.1	Raymond K. Miller	1.609
S43	05-12-7.2	Raymond K. Miller	4.66
S44	05-12-07	Robert Wm. Riggerbach, et ux	104.231
S45	05-12-02	CNX RPC, LLC	60.68
S46	05-12-03	CNX LAND, LLC	62.30
S47	05-12-05	CNX LAND, LLC	61.883
S48	05-12-06	CNX RPC, LLC	70.81
S49	05-12-6.2	Consolidation Coal Co./ Murray Energy	25.50
S50	05-12-2.1	Consolidation Coal Co./ Murray Energy	22



P.S. 708  
*David L. Jackson*

**SURFACE HOLE**  
UTM, NAD83, ZONE 17  
IN METERS  
**N) 4,406,025.78**  
**E) 516,091.26**

**LANDING POINT 1**  
UTM, NAD83, ZONE 17  
IN METERS  
**N) 4,406,203.77**  
**E) 515,614.66**

**BOTTOM HOLE**  
UTM, NAD83, ZONE 17  
IN METERS  
**N) 4,404,319.25**  
**E) 516,702.68**

Number	TAX MAP-PARCEL	ADJOINER OWNER	ACRES
S51	05-12-01	US of America	1.68
S52	05-07-43.4	Ida Campbell	0.403
S53	05-07-43.1	State Road Commission	1.48
S54	05-7A-17	Carol Martin & Harry L. Yoho	0.3067
S55	05-7A-18	Barbara Anderson	0.1530
S56	05-7A-19	Barbara Anderson	0.3060
S57	05-7A-20	Betty Sexton	0.1204
S58	05-7A-24	Rick A. Kosky	0.3152
S59	05-7A-23	Harold S. Younga, et ux	0.3067
S60	05-7A-22	Richard Hyer, et ux	0.1530
S61	05-7A-21	David A. Beyser	0.1866
S62	05-7A-25	Rick A. Kosky	0.1638
S63	05-7A-26	Lance Clark	0.4531
S64	05-7A-27	Paul W. Barrett	0.1495
S65	05-7A-28	Richard Hyer, et ux	0.1093
S66	05-7A-29	Richard Hyer, et ux	0.1085
S67	05-7A-30	Richard Hyer, et ux	1.9
S68	05-7A-31	WVA Dept. of Natural Resources	3.18
S69	05-7A-32	Dawn Thompson Tennant	0.3091
S70	05-7A-02	CNX RPC, LLC	2.23
S71	05-7A-01	Lucille Myers	0.529
S72	05-7B-25	Cindy D. Aliff	0.1673
S73	05-7B-26	Cindy D. Aliff	0.1148
S74	05-7B-27	Patricia A. Johnson	0.1148
S75	05-7B-28	Patricia A. Johnson	0.0574
S76	05-7B-28.1	Patricia A. Johnson	0.0574
S77	05-7B-29	Patricia A. Johnson	0.1148
S78	05-7B-30	Cindy D. Aliff, et al	0.1148
S79	05-7B-31	Cindy D. Aliff, et al	0.1148
S80	05-7B-32	Albert J. Anderson, Jr.	0.1148
S81	05-7B-33	Albert J. Anderson, Jr.	0.1182
S82	05-7B-34	Albert J. Anderson, Jr.	0.1148
S83	05-7B-35	Albert J. Anderson, Jr.	0.1217
S84	05-7B-36	Albert J. Anderson, Jr.	0.1148
S85	05-7B-37	Teresa & Thomas Gouldsberry	0.1148
S86	05-7B-38	Teresa & Thomas Gouldsberry	0.1148
S87	05-7B-39	Teresa & Thomas Gouldsberry	0.1148
S88	05-7B-40	Teresa & Thomas Gouldsberry	0.1148
S89	05-7B-41	Teresa & Thomas Gouldsberry	0.1148
S90	05-7B-42	Teresa & Thomas Gouldsberry	0.1194
S91	05-7B-43	Teresa & Thomas Gouldsberry	0.1148
S92	05-7B-44	Daniel D. & Mary E. Robinson	0.1148
S93	05-7B-45	Daniel D. & Mary E. Robinson	0.1148
S94	05-7B-46	Daniel D. Robinson, et ux	0.1148
S95	05-7B-47	Daniel D. Robinson, et ux	0.1148
S96	05-7B-24	Cindy D. Aliff	0.0354
S97	05-7B-23	Cindy D. Aliff	0.0471
S98	05-7B-22	Patricia A. Johnson	0.0505
S99	05-7B-21	Patricia A. Johnson	0.0287
S100	05-7B-21.1	Patricia A. Johnson	0.0296
S101	05-7B-20	Patricia A. Johnson	0.0626
S102	05-7B-19	Cindy D. Aliff, et al	0.0712
S103	05-7B-18	Cindy D. Aliff, et al	0.0763
S104	05-7B-17	Albert J. Anderson, Jr.	0.0849
S105	05-7B-16	Albert J. Anderson, Jr.	0.0903
S106	05-7B-15	Albert J. Anderson, Jr.	0.0970
S107	05-7B-14	Albert J. Anderson, Jr.	0.0991
S108	05-7B-13	Albert J. Anderson, Jr.	0.1067
S109	05-7B-12	Teresa & Thomas Gouldsberry	0.1113
S110	05-7B-11	Teresa & Thomas Gouldsberry	0.1159
S111	05-7B-10	Teresa & Thomas Gouldsberry	0.1199
S112	05-7B-09	Teresa & Thomas Gouldsberry	0.1240
S113	05-7B-08	Teresa & Thomas Gouldsberry	0.1286
S114	05-7B-07	Teresa & Thomas Gouldsberry	0.1331
S115	05-7B-06	Teresa & Thomas Gouldsberry	0.1377
S116	05-7B-05	Daniel D. & Mary E. Robinson	0.1418
S117	05-7B-04	Daniel D. & Mary E. Robinson	0.1458
S118	05-7B-03	Daniel D. Robinson, et ux	0.1504
S119	05-7B-02	Daniel D. Robinson, et ux	0.1550
S120	05-7B-01	Patricia L. Robinson	1.257
S121	05-12-13.1	Raymond K. Miller	0.113
S122	05-12-5.1	CNX RPC, LLC	0.52
S123	05-12-04	CNX RPC, LLC	0.93
S124	Rt. 2	State Road Commission	17.62(Calc.)
S125	R.R.	CSX Transportation	4.99(Calc.)
S126	Rt. 2	WV DOT	3.93(Calc.)



**TUG HILL**  
OPERATING

OPERATOR'S  
API # 47-051-02114  
WELL # WOODFORD 2HM  
DISTRICT Franklin  
COUNTY Marshall  
STATE WV

WELL PLAT  
PAGE 2 OF 2  
DATE: 07/20/2020