

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

SEP 11 2018

WV Department of
Environmental Protection

API 47-051-01920 County Marshall District Franklin
Quad Powhatan Point 7.5' Pad Name Yoder Field/Pool Name _____
Farm name Nathan D. Yoder, et al Well Number Yoder E-4HM
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 4,403,409.97 Easting 513,699.45
Landing Point of Curve Northing 4,403,570.07 Easting 513,706.60
Bottom Hole Northing 4,401,774.47 Easting 514,741.09

Elevation (ft) 1,084' 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 7/17/2017 Date drilling commenced 7/31/2017 Date drilling ceased 1/8/2018
Date completion activities began 3/8/2018 Date completion activities ceased 4/19/2018
Verbal plugging (Y/N) n/a Date permission granted n/a Granted by n/a

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 70' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1450' Void(s) encountered (Y/N) depths N
Coal depth(s) ft Sewickley 589', Pittsburgh 679' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

Reviewed by:

[Signature]
12/28/18

API 47-051 - 01920 Farm name Nathan D. Yoder, et al Well number Yoder E-4HM

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	YES
Surface	17 1/2	13 3/8	765	NEW	61#	N/A	YES
Coal	17 1/2	13 3/8	765	NEW	61#	N/A	YES
Intermediate 1	12 1/4	9 5/8	2625	NEW	36#	N/A	YES
Intermediate 2							
Intermediate 3							
Production	8 3/4	5 1/2	13,556	NEW	20#	N/A	YES
Tubing		2 3/8	6403	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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	A	150	15.6	1.19	1856	0	8
Surface	A	891	15.6	1.19	1060	0	8
Coal	A	891	15.6	1.19	1060	0	8
Intermediate 1	A	930	15.6	1.19	1107	0	8
Intermediate 2							
Intermediate 3							
Production	A	3333	14.5	1.19	3966	0	8
Tubing							

Drillers TD (ft) 13,537 Loggers TD (ft) _____
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

Kick off depth (ft) 5594

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 _____

API 47- 051 - 01920 Farm name Nathan D. Yoder, et al Well number Yoder E-4HM

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	See attached				

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)
	attached							

Please insert additional pages as applicable.

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WR-35
Rev. 8/23/13

Page ___ of ___

API 47- 051 - 01920 Farm name Nathan D. Yoder, et al Well number Yoder E-4HM

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6,101' - 6,192'</u> TVD	<u>6,622' - 13,581'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1400 psi Bottom Hole _____ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 1152 mofpd Oil 216 bpd NGL _____ bpd Water 1536 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 ₂ S, ETC)
	<u>0</u>		<u>0</u>		
<u>see attached</u>					

Please insert additional pages as applicable.

Drilling Contractor Nabors Drilling USA
Address 505 West Greens Road, Suite 1000 City Houston State TX Zip 77067

Logging Company n/a
Address _____ City _____ State _____ Zip _____

Cementing Company C&J Well Services
Address 300 Southpointe Boulevard, Suite 210 City Canonsburg State PA Zip 15317

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

Please insert additional pages as applicable.

Completed by Sean Gasser Telephone 817-632-5200
Signature _____ Title Engineer Date _____

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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**Yoder E-4HM
Perforation Record**

02/15/2019

Stage	Date Perforated	Bottom Perf (ft)	Top Perf (ft)	Number of Perfs	Formation
1	3/9/2018	13,557	13,410	2	Marcellus
2	3/10/2018	13,273	13,142	48	Marcellus
3	3/11/2018	13,098	12,967	48	Marcellus
4	3/11/2018	12,923	12,792	48	Marcellus
5	3/11/2018	12,748	12,617	48	Marcellus
6	3/12/2018	12,573	12,442	48	Marcellus
7	3/12/2018	12,398	12,267	48	Marcellus
8	3/13/2018	12,223	12,092	48	Marcellus
9	3/13/2018	12,048	11,917	48	Marcellus
10	3/14/2018	11,873	11,742	48	Marcellus
11	3/14/2018	11,698	11,567	48	Marcellus
12	3/14/2018	11,523	11,392	48	Marcellus
13	3/15/2018	11,348	11,217	48	Marcellus
14	3/15/2018	11,173	11,042	48	Marcellus
15	3/15/2018	10,998	10,867	48	Marcellus
16	3/16/2018	10,823	10,692	48	Marcellus
17	3/16/2018	10,648	10,517	48	Marcellus
18	3/16/2018	10,473	10,342	48	Marcellus
19	3/17/2018	10,298	10,167	48	Marcellus
20	3/18/2018	10,123	9,992	48	Marcellus
21	3/18/2018	9,948	9,817	48	Marcellus
22	3/19/2018	9,773	9,642	48	Marcellus
23	3/19/2018	9,598	9,467	48	Marcellus
24	3/20/2018	9,423	9,292	48	Marcellus
25	3/20/2018	9,248	9,117	48	Marcellus
26	3/21/2018	9,073	8,942	48	Marcellus
27	3/21/2018	8,898	8,767	48	Marcellus
28	3/22/2018	8,723	8,592	48	Marcellus
29	3/22/2018	8,548	8,417	48	Marcellus
30	3/23/2018	8,373	8,242	48	Marcellus
31	3/23/2018	8,198	8,067	48	Marcellus
32	3/24/2018	8,023	7,892	48	Marcellus
33	3/25/2018	7,848	7,717	48	Marcellus
34	3/25/2018	7,673	7,542	48	Marcellus
35	3/25/2018	7,498	7,367	48	Marcellus
36	3/25/2018	7,323	7,192	48	Marcellus
37	3/27/2018	7,148	7,017	48	Marcellus
38	3/27/2018	6,973	6,842	48	Marcellus
39	3/28/2018	6,798	6,667	48	Marcellus
40	3/28/2018	6,623	6,492	48	Marcellus

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**Yoder E-4HM
Stimulation Summary**

Stage	Avg. Pump Rate (BPM)	Avg. Treating Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Proppant Total (lbs)	Water Total (bbls)	N2 Volume (scf)
1	81.9	6,810	5,667	2,865	346,100	7,053	0
2	84.9	7,437	5,393	3,582	343,860	6,542	0
3	85.8	7,395	5,457	4,098	344,480	6,451	0
4	89.2	7,351	5,517	4,022	444,200	7,513	0
5	88.8	7,463	5,364	3,922	442,997	7,504	0
6	85.4	7,137	5,340	3,968	442,940	8,146	0
7	88.8	7,622	5,200	3,812	455,140	7,410	0
8	88.9	7,493	5,304	3,439	444,140	7,518	0
9	88.5	7,463	5,165	3,841	453,880	7,521	0
10	87.6	7,415	5,519	4,248	442,560	7,417	0
11	89.1	7,257	5,139	3,881	452,860	7,449	0
12	86.4	7,260	5,400	3,718	445,180	6,962	0
13	85.5	7,204	5,481	3,866	435,680	7,572	0
14	89.2	7,271	5,487	3,711	450,020	7,484	0
15	87.3	7,016	5,810	4,462	451,210	7,365	0
16	88.7	6,937	5,365	4,376	449,920	7,256	0
17	76.4	7,076	5,695	4,024	446,080	10,741	0
18	80.4	7,133	5,519	4,581	449,320	9,733	0
19	88.9	6,641	5,238	4,098	451,013	7,592	0
20	85.4	6,887	5,349	4,238	448,940	7,321	0
21	89.6	6,674	5,165	3,976	448,970	7,337	0
22	89.3	6,936	5,430	4,004	448,760	7,235	0
23	87.1	7,062	5,403	4,348	443,660	9,565	0
24	86.2	6,897	5,290	4,551	443,920	7,189	0
25	88.3	6,613	5,392	4,014	458,410	7,341	0
26	89.3	6,508	5,033	4,054	441,040	7,625	0
27	88.9	7,034	5,153	3,948	437,040	7,234	0
28	89.1	6,730	5,141	3,912	439,680	7,301	0
29	89.4	6,668	5,285	4,509	459,180	7,207	0
30	89.5	6,242	5,057	4,309	457,160	7,402	0
31	89.2	6,577	5,206	3,730	443,360	7,109	0
32	89.8	6,604	5,204	4,210	452,930	7,423	0
33	89.8	6,290	4,869	4,164	456,510	7,160	0
34	89	6,250	5,325	4,104	452,280	7,518	0
35	89.7	6,064	4,808	4,016	452,680	7,158	0
36	89.7	6,031	4,970	4,064	455,580	7,272	0
37	89.7	6,075	4,822	4,183	460,110	7,427	0

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Yoder E-4HM
Stimulation Summary

38	89.6	5,917	4,871	4,203	460,490	7,118	0
99	89.9	5,896	4,895	4,512	442,160	7,169	0
40	89	5,668	5,416	3,437	458,750	7,638	0

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**Yoder E-4HM
Formations/Lithology Information**

FORMATION	TOP TVD	BASE TVD	TOP MD	BASE MD	DESCRIBE ROCKY TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H2S ETC)
Maxton	1640	1712	1640	1712	Sandstone
Big Lime	1712	1821	1712	1821	Limestone
Big Injun	1821	2129	1821	2129	Sandstone
Weir	2129	2319	2129	2319	Sandstone
Berea	2319	2637	2319	2638	Sandstone
Gordon	2637	2739	2638	2740	Sandstone
Fifty Foot	2739	3312	2740	3337	Sandstone
Speechley	3312	4648	3337	4777	Sandstone
Benson	4648	5017	4777	5178	Sandstone
Alexander	5017	5643	5178	5835	Siltstone
Rhinestreet	5643	5992	5835	6202	Black shale
Middlesex	5992	6077	6202	6321	Black shale
Geneseo/Burkett	6077	6106	6321	6374	Black shale
Tully	6106	6129	6374	6425	Limestone
Hamilton	6129	6134	6425	6439	Grey shale
Marcellus	6134	-	6439	-	Black shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/7/2018
Job End Date:	4/7/2018
State:	West Virginia
County:	Marshall
API Number:	47-051-01920-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Yoder E-4HM
Latitude:	39.78052164
Longitude:	-80.84002025
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,224
Total Base Water Volume (gal):	12,920,158
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	85.28058	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.71816	

MC B-8614	Halliburton	Biocide					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
SAND-PREMIUM WHITE-40/70	Halliburton	Proppant					
				Listed Below			
MC S-2510T	Halliburton	Scale Inhibitor					
				Listed Below			
OILPERM A	Halliburton	Non-ionic Surfactant					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
SAND-PREMIUM WHITE-30/50	Halliburton	Proppant					
				Listed Below			
LD-2850	Multi-Chem	Friction Reducer					

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				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2	Halliburton	Proppant					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			

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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	13.97144	
			Hydrochloric acid	7647-01-0	15.00000	0.10259	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02135	
			Sodium chloride	7647-14-5	30.00000	0.02135	
			Guar gum	9000-30-0	100.00000	0.01401	
			Ethylene Glycol	107-21-1	60.00000	0.01331	
			Glutaraldehyde	111-30-8	30.00000	0.00756	
			Ammonium chloride	12125-02-9	5.00000	0.00356	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00356	
			9-Octadecenamide, n,n-bis 2(hydroxy-ethyl),-(Z)	93-83-4	5.00000	0.00356	
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00222	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00126	
			Ethanol	64-17-5	60.00000	0.00090	
			Methanol	67-56-1	60.00000	0.00068	
			Sodium persulfate	7775-27-1	100.00000	0.00050	
			Oxyalkylated phenolic resin	Proprietary	30.00000	0.00043	

			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00033	
			Modified thiourea polymer	Proprietary	30.00000	0.00032	
			Fatty acids, tall oil	Proprietary	30.00000	0.00032	
			Ethoxylated alcohols	Proprietary	30.00000	0.00032	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Olefins	Proprietary	5.00000	0.00013	
			Propargyl alcohol	107-19-7	10.00000	0.00011	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)- omega-hydroxy-, branched	127087-87-0	5.00000	0.00005	
			Naphthalene	91-20-3	5.00000	0.00005	
			Phosphoric acid	7664-38-2	0.10000	0.00003	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001	
			Sodium sulfate	7757-82-6	0.10000	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

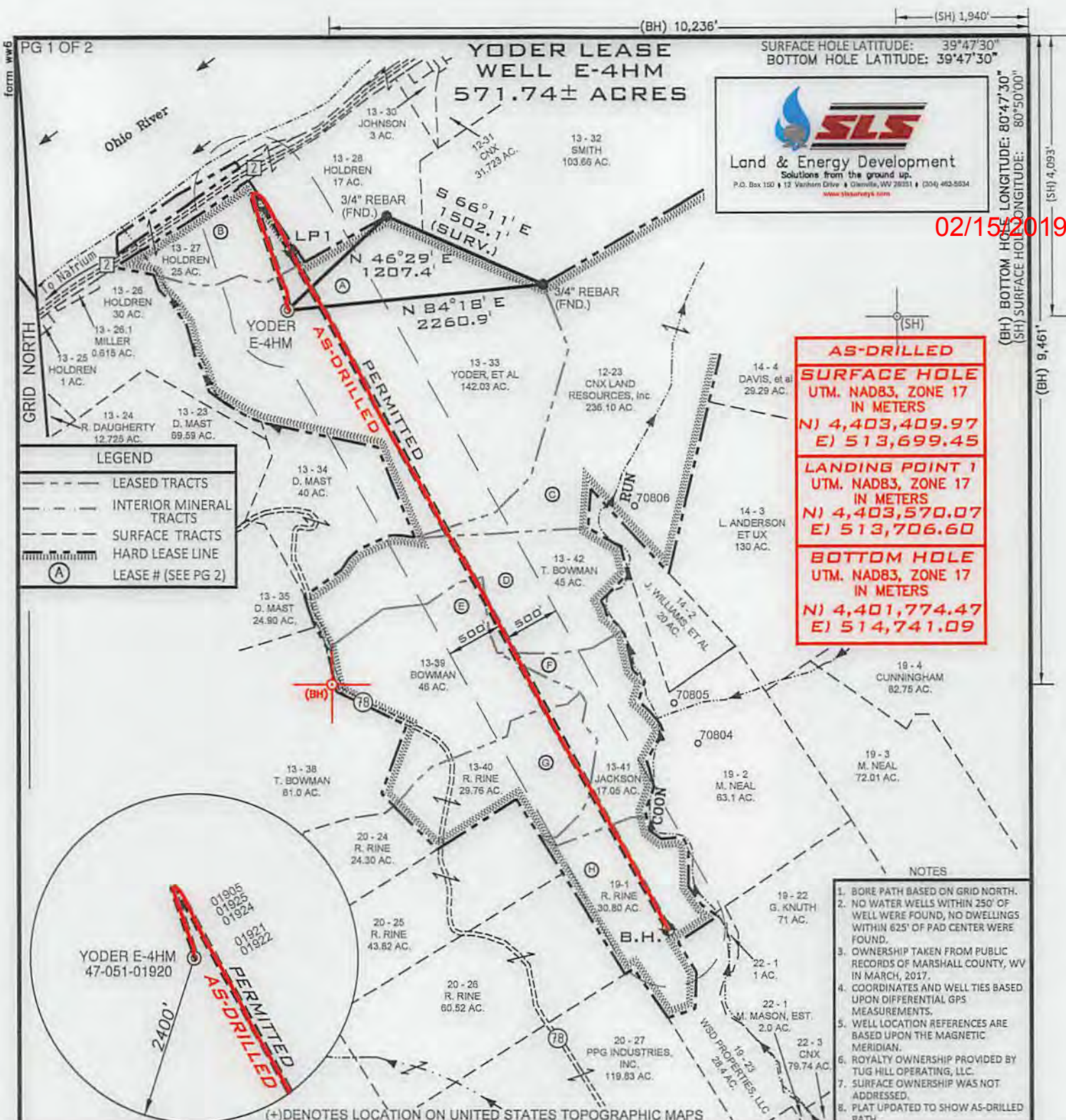
Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

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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SURFACE HOLE LATITUDE: 39°47'30"
 BOTTOM HOLE LATITUDE: 39°47'30"

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AS-DRILLED
SURFACE HOLE
 UTM, NAD83, ZONE 17
 IN METERS
 N) 4,403,409.97
 E) 513,699.45

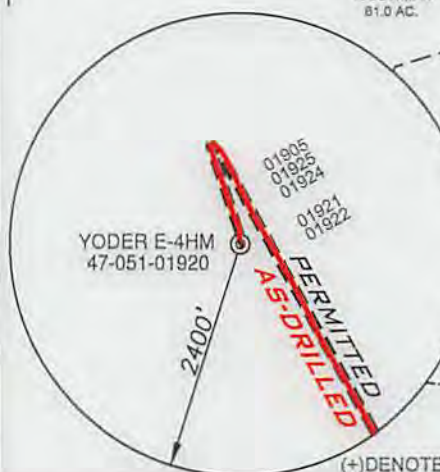
LANDING POINT 1
 UTM, NAD83, ZONE 17
 IN METERS
 N) 4,403,570.07
 E) 513,706.60

BOTTOM HOLE
 UTM, NAD83, ZONE 17
 IN METERS
 N) 4,401,774.47
 E) 514,741.09

LEGEND

- LEASED TRACTS
- - - INTERIOR MINERAL TRACTS
- - - SURFACE TRACTS
- ===== HARD LEASE LINE
- (A) LEASE # (SEE PG 2)

- 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.
 - ROYALTY OWNERSHIP PROVIDED BY TUG HILL OPERATING, LLC.
 - SURFACE OWNERSHIP WAS NOT ADDRESSED.
 - PLAT UPDATED TO SHOW AS-DRILLED PATH.



FILE NUMBER 8836

DRAWING NUMBER 8836ADE4HM.dwg

SCALE 1" = 1200'

MINIMUM DEGREE OF ACCURACY 1/2500

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. 677
Gregory A. Smith



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

DATE: JULY 17, 2018
 OPERATORS WELL NO. YODER E-4HM (AS-DRILLED)
 API WELL NO. 47-051-01920
 STATE COUNTY PERMIT

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

LOCATION ELEVATION 1084' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER

DISTRICT FRANKLIN COUNTY MARSHALL

QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE ATTACHED PG 2 OF 2

SURFACE OWNER NATHAN D. YODER, et al ACREAGE 142.03

OIL & GAS ROYALTY OWNER NATHAN D. YODER, et al - SEE PAGE 2 LEASE ACREAGE 571.74

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD 6,284' TMD:13,537'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM

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

02/15/2019

(BH) 10,236'
 (SH) 1,940'
 (BH) BOTTOM HOLE LONGITUDE: 80°47'30"
 (SH) SURFACE HOLE LONGITUDE: 80°50'00"
 (SH) 4,093'
 (BH) 9,461'

COUNTY NAME
 PERMIT

WELL E-4HM
YODER LEASE
271.74± ACRES

BOTTOM HOLE LATITUDE: 39°47'30"
SURFACE HOLE LATITUDE: 39°47'30"



02/15/2019

AS-DRIILLED
SURFACE HOLE
UTM NAD83, ZONE 17
IN METERS
E1 213,669.45
N1 4,403,409.97
LANDING POINT 1
UTM NAD83, ZONE 17
IN METERS
E1 213,706.60
N1 4,403,570.07
BOTTOM HOLE
UTM NAD83, ZONE 17
IN METERS
E1 214,741.09
N1 4,401,774.47

LEGEND

---	LEASE # (SEE PG 2)
- - - -	HARD LEASE LINE
-----	SURFACE TRACTS
-----	INTERIOR MINERAL TRACTS
-----	LEASED TRACTS

- NOTES
1. BORE PATH BASED ON GRID NORTH.
 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 652' OF PAD CENTER WERE FOUND.
 3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017.
 4. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 5. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 6. ROYALTY OWNERSHIP PROVIDED BY TUG HILL OPERATING, LLC.
 7. SURFACE OWNERSHIP WAS NOT ADDRESSED.
 8. PLOT UPDATED TO SHOW AS-DRIILLED PATH.



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



Gregory A. Smith
P. S.
877

FILE NUMBER	8836
DRAWING NUMBER	8836ADE4HM.dwg
SCALE	1" = 1200'
MINIMUM DEGREE OF ACCURACY	1\2500
PROVEN SOURCE OF ELEVATION	SUBMETER MAPPING
	GRADE GPS



WVDEP
OFFICE OF OIL & GAS
601 5TH STREET, SE
CHARLESTON, WV 25304

DATE: JULY 17, 2018

OPERATORS WELL NO. YODER E-4HM (AS-DRIILLED)

API WELL NO. 47-051-01920

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

LOCATION ELEVATION 1084' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER

DISTRICT FRANKLIN COUNTY MARSHALL

QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE ATTACHED PG 2 OF 2

SURFACE OWNER NATHAN D. YODER, et al ACREAGE 142.03

OIL & GAS ROYALTY OWNER NATHAN D. YODER, et al - SEE PAGE 2 LEASE ACREAGE 271.74

PROPOSED WORK DRILL CONVERT DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE PLUG OFF OLD FORMATION ___

PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION MARCELLUS

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
FORT WORTH, TX 76102 CHARLESTON, WV 25313

ESTIMATED DEPTH TVD 6284', TMD:13237'

PERMIT CLEAN OUT & REPLUG

PLUG & ABANDON _____

COUNTY NAME _____

YODER E-4HM
WELL PLAT LEASE INFORMATION

LEASE NO.	TAG	PARCEL	Oil & Gas Royalty Owner	DEED BOOK / PG	
10*14701	A	5-13-33	ROSEITA THORNTON	885	600
10*14702	A	5-13-33	NATHAN D. YODER	708	71
10*16538	B	5-13-27	AMP FUND III LP	915	02875/2019
10*14699	C	5-12-23	CNX GAS COMPANY LLC AND NOBLE	833	514
10*14526	D	5-13-42	THOMAS WILLIAM BOWMAN	761	432
10*14527	D	5-13-42	VICTORIA BOWMAN	761	434
10*14878	E	5-13-39	ARTHUR BRUCE COULTER	839	519
10*14539	E	5-13-39	BERNEICE K. CUNNINGHAM	796	158
10*14534	E	5-13-39	BEVERLY J. MOORE	792	640
10*14550	E	5-13-39	CARRIE C WARREN	840	156
10*14542	E	5-13-39	CHRISTINE M. BERMAN	800	410
10*14541	E	5-13-39	CHRISTINE M. BOWMAN	800	412
10*14531	E	5-13-39	CORA A. WEST	791	641
10*14545	E	5-13-39	DEBRA A. BOWMAN	803	156
10*14547	E	5-13-39	ELIZABETH B. COULTER	809	537
10*14540	E	5-13-39	ELIZABETH P. SMITH & RICHARD J SMITH	800	414
10*14552	E	5-13-39	GLORIA J SILVERIO	844	81
10*14529	E	5-13-39	HELEN Y. BOWMAN	790	523
10*14536	E	5-13-39	JAMES L. BOYLE	795	150
10*14544	E	5-13-39	JANICE O. BOWMAN	803	158
10*14528	E	5-13-39	JO ANN SZAFRAN	790	525
10*14532	E	5-13-39	JOAN E. MENKEMELLER	791	639
10*14537	E	5-13-39	LOUISE V. TEGARDEN	796	162
10*14533	E	5-13-39	NANCY L FEISZLI	792	644
10*14530	E	5-13-39	NANCY L. VENS KosKE	790	521
10*14535	E	5-13-39	RALPH W. CONNER	794	513
10*14548	E	5-13-39	RAYMOND N. RUTAN & RHONDA B. RUTAN	821	38
10*14549	E	5-13-39	REBECCA PAUKNER	829	603
10*14551	E	5-13-39	SHARON S ANTALIS	842	392
10*14538	E	5-13-39	SONDRA L. LANTZ	796	160
10*14546	E	5-13-39	SUZAN R. MELLIS	803	154
10*14526	E	5-13-39	THOMAS WILLIAM BOWMAN	761	432
10*14543	E	5-13-39	TRAVIS STOUT	803	144
10*14527	E	5-13-39	VICTORIA BOWMAN	761	434
10*14526	E	5-13-39	THOMAS WILLIAM BOWMAN	761	432
10*14527	E	5-13-39	VICTORIA BOWMAN	761	434
10*14461	F	5-13-41	RODNEY JACKSON	739	411
10*14502	G	5-13-40	ROBERT E & DONNA M RINE	752	206
10*14878	G	5-13-40	ARTHUR BRUCE COULTER	839	519
10*14614	H	5-19-1	ROBERT E RINE	708	252

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

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

ADDRESS 1081 MORRIS TX 76101
 1350 SOUTH UNIVERSITY DRIVE SUITE 200
 MET OPERATOR THE HILL OPERATING, LLC

ADDRESS CHARGEION WA 52113
 2400 D BIG LAKER ROAD
 DESIGNATED AGENT CI CORPORATION SYSTEM
 DIANNA STAMBER

02/15/2019

JO*J4EJ4	H	2-J8-J	ROBERT E BINE	108	525
JO*J4818	C	2-J3-40	ARTHUR BRUCE CONGLE	838	218
JO*J4205	C	2-J3-40	ROBERT E & DONNA W BINE	125	50E
JO*J44EJ	E	2-J3-4J	KODIEY JACKSON	138	4JT
JO*J4251	E	2-J3-38	LICTORIA BOWMAN	1EJ	434
JO*J425E	E	2-J3-38	THOMAS MIGGIAN BOWMAN	1EJ	435
JO*J4251	E	2-J3-38	LICTORIA BOWMAN	1EJ	434
JO*J4243	E	2-J3-38	TRAVIS STOUT	803	J44
JO*J425E	E	2-J3-38	THOMAS MIGGIAN BOWMAN	1EJ	435
JO*J424E	E	2-J3-38	ZUSAN B. MEGGIS	803	J24
JO*J4238	E	2-J3-38	ZONDRY G. GAITS	18E	JEO
JO*J422J	E	2-J3-38	ZHAKON Z ANTALIS	845	385
JO*J4248	E	2-J3-38	REBECCA BARKNER	858	E03
JO*J4248	E	2-J3-38	RAYMOND W. BULTAN & RHONDA B. BULTAN	85J	38
JO*J4232	E	2-J3-38	RAGYH W. CONNER	184	2J3
JO*J4230	E	2-J3-38	MAISY G. LEIKKOKE	180	25J
JO*J4233	E	2-J3-38	MAISY G. REISZGI	185	E44
JO*J4231	E	2-J3-38	ROUSE V. TEBARDEI	18E	JES
JO*J4235	E	2-J3-38	JOAN E. MEIKEMEETTER	18J	E38
JO*J4258	E	2-J3-38	JO ANN SZAFERAN	180	252
JO*J4244	E	2-J3-38	LANICE O. BOWMAN	803	J28
JO*J423E	E	2-J3-38	JAMES G. BOYGE	182	J20
JO*J4258	E	2-J3-38	HELEN A. BOWMAN	180	253
JO*J4225	E	2-J3-38	EGOVIA I ZIGLERIO	844	8J
JO*J4240	E	2-J3-38	ELIZABETH B. SMITH & RICHARD I SMITH	800	4J4
JO*J4241	E	2-J3-38	ELIZABETH B. CONGLE	808	231
JO*J4242	E	2-J3-38	DEBRA A. BOWMAN	803	J2E
JO*J423J	E	2-J3-38	COVA A. WEST	18J	E4J
JO*J424J	E	2-J3-38	CHRISTINE W. BOWMAN	800	4J5
JO*J4245	E	2-J3-38	CHRISTINE W. BERMAN	800	4J0
JO*J4220	E	2-J3-38	CAVRIE C MARVEN	840	J2E
JO*J4234	E	2-J3-38	BELEBYA I. MOORE	185	E40
JO*J4238	E	2-J3-38	BERNEICE K. SNIJNICHAM	18E	J28
JO*J4818	E	2-J3-38	ARTHUR BRUCE CONGLE	838	218
JO*J4251	D	2-J3-45	LICTORIA BOWMAN	1EJ	434
JO*J425E	D	2-J3-45	THOMAS MIGGIAN BOWMAN	1EJ	435
JO*J4888	C	2-J5-53	SIX GAS COMPANY LLC AND IOBGE	833	214
JO*J4238	B	2-J3-51	AMR FUND III GP	8J2	J81
JO*J4105	A	2-J3-33	NATHAN D. YODEK	108	1J
JO*J410J	A	2-J3-33	ROSEITA THORNTON	882	E00
LEASE NO.	TYPE	PARCEL	Oil & Gas Royalty Owner	DEED BOOK \ BE	