

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

API 47-069-00276 County OHIO District LIBERTY
Quad BETHANY & VALLEY GROVE, WV Pad Name MICHAEL RATCLIFFE-OHI-PAD1 Field/Pool Name PANHANDLE FIELD WET
Farm name MICHAEL T. RATCLIFFE Well Number MICHAEL RATCLIFFE OHI 10H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY, LLC
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,444,331.01 Easting 536,876.93
Landing Point of Curve Northing 4,444,289.58 Easting 537,578.70
Bottom Hole Northing 4,439,680.51 Easting 539,653.11

Elevation (ft) 1281.3' 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

Date permit issued 05/09/2018 Date drilling commenced 03/06/2019 Date drilling ceased 03/23/2019
Date completion activities began 04/18/2019 Date completion activities ceased 07/01/2019
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A
Office of Oil and Gas

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug SEP 13 2019

Freshwater depth(s) ft 402' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 755' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 611' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

C-782 10-16-19

Reviewed by: CS 10-16-19

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API 47-069 - 00276 Farm name MICHAEL T. RATCLIFFE Well number MICHAEL RATCLIFFE OHI 10H

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	24	20	126'	NEW	J-55/94#		Y
Surface	17.5	13.375	665'	NEW	J-55/54.50#	484.1' / 443.9'	Y; 10 BBLS
Coal	SURFACE						
Intermediate 1	12.25	9.625	2,067'	NEW	J-55/36#		Y; 46 BBLS
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	23,760'	NEW	P-110/20#		Y
Tubing		2.375	7,172'	NEW	P-110/4.70#		N
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	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	622	15.60	1.20	746.40	SURFACE	8
Coal	SURFACE						
Intermediate 1	CLASS A	780	15.60	1.18	920.40	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	4,497	15.60	1.19	5,351.43	SURFACE	24
Tubing							

Drillers TD (ft) 23,760' Loggers TD (ft) 23,760'
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6,350'

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 _____
 SURFACE: 7 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 INTERMEDIATE: 24 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 PRODUCTION: 181 CENTRALIZERS - EVERY THIRD JOINT FROM SURFACE TO TOP OF CURVE, THEN EVERY JOINT UNTIL TD

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 _____

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SOUTHWESTERN ENERGY

Location: Ohio County, WV
 Field: Ohio
 Facility: Michael Ratcliffe OHI Pad
 Slot: Slot 10H
 Well: Michael Ratcliffe OHI 10H
 Wellbore: Michael Ratcliffe OHI 10H PWB

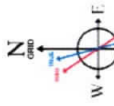
Plot reference wellpath is Michael Ratcliffe OHI 10H PWP Rev-B.0 Grid System: NAD83 / UTM Zone 17 North, US feet
 True vertical depths are referenced to SDC 41 (KB)
 Measured depths are referenced to SDC 41 (KB)
 SDC 41 (KB) to Mean Sea Level: 1307.3 feet
 Mean Sea Level to Ground level (At Slot, Slot 10H): -1281.3 feet
 Coordinates are in feet referenced to Slot



Location Information

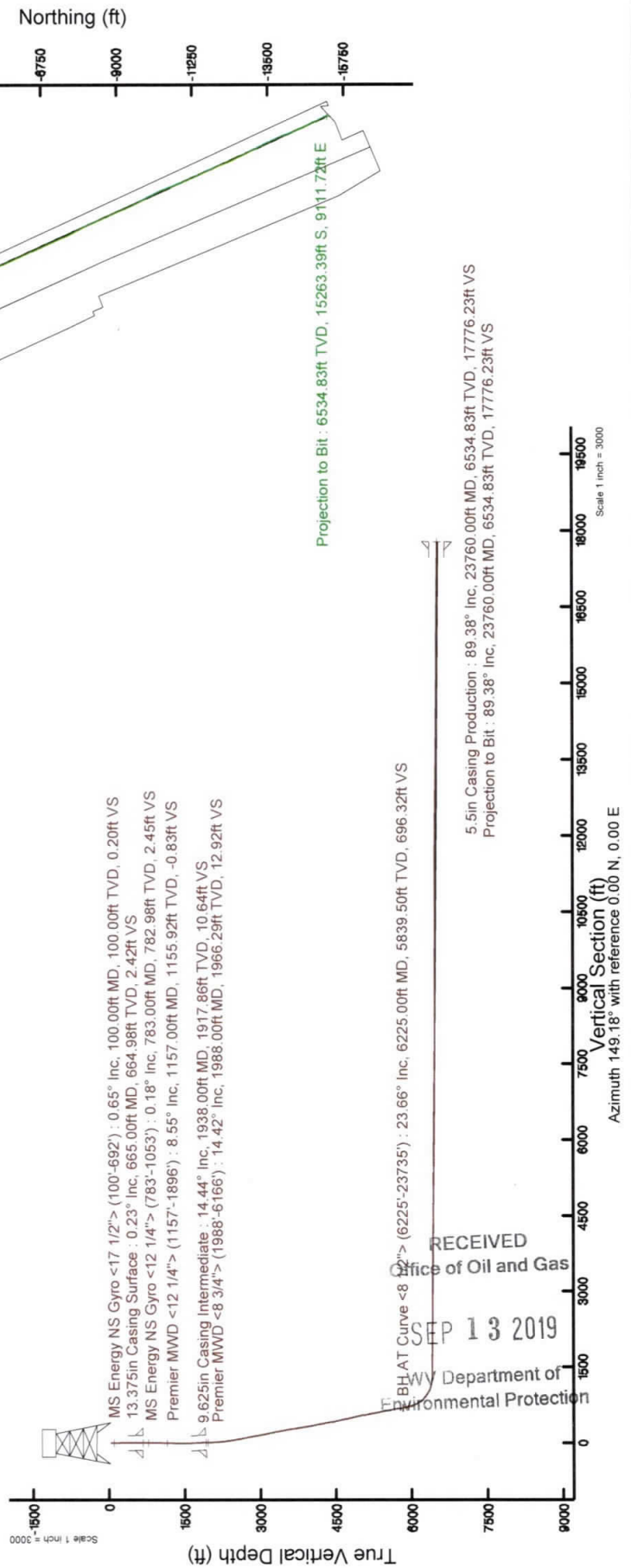
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Michael Ratcliffe OHI Pad	1761519.275	14581031.088	40°08'53.876"N	80°33'59.872"W
Slot	Local N (ft)	Local E (ft)	Latitude <td>Longitude</td>	Longitude
Slot 10H	78.27	-115.61	40°08'54.655"N	80°34'01.356"W
SDC 41 (KB) to Ground level (At Slot, Slot 10H)	26ft			
Mean Sea Level to Ground level (At Slot, Slot 10H)	-1281.3ft			
SDC 41 (KB) to Mean Sea Level	1307.3ft			

API: 47-069-00276-0000
 BH Job #: 109617461
 Rig: SDC 41
 Duration: 03/13/2019 - 03/19/2019



User specified Dip: 67.46° Field: 52830 nT
 Magnetic North is 8.28 degrees West of True North (at 12/Mar/2019)
 To correct azimuth from True to Grid subtract 0.28 degrees
 To correct azimuth from Magnetic to Grid subtract 8.56 degrees

MS Energy NS Gyro <17 1/2"> (100°-692') : 100.00ft TVD, 0.36ft S, 0.22ft W
 MS Energy NS Gyro <12 1/4"> (783°-1053') : 782.98ft TVD, 3.90ft S, 1.75ft W
 Premier MWD <12 1/4"> (1157°-1896') : 1155.92ft TVD, 10.42ft N, 15.83ft E
 Premier MWD <8 3/4"> (1988°-6166') : 1966.29ft TVD, 90.87ft N, 177.53ft E
 BH AT Curve <8 1/2"> (6225°-23735') : 5839.50ft TVD, 304.25ft N, 1869.06ft E



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/19/2019
Job End Date:	6/9/2019
State:	West Virginia
County:	Ohio
API Number:	47-069-02760-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Michael Ratcliffe OHI 10H
Latitude:	40.14851500
Longitude:	-80.56704300
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,467
Total Base Water Volume (gal):	29,106,482
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
Fresh Water	Halliburton	Base Fluid					
Produced Water	Halliburton	Base Fluid	Water	7732-18-5	100.00000	73.07754	Density = 8.34
			Water	7732-18-5	100.00000	13.90112	Density = 8.34

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Ingredients	Listed Above	Listed Above	Listed Above							
				Water		7732-18-5	100.00000	0.02550		
Sand-Common White-100 Mesh, SSA-2	Halliburton		Proppant			Listed Below				
MC LD-2850	MultiChem		Friction Reducer			Listed Below				
FSTI-IC-001	FSTI		Iron Control Agent			Listed Below				
BE-9W	Halliburton		Biocide			Listed Below				
FSTI-CI-01	FSTI		Acid Corrosion Inhibitor			Listed Below				
Exceletrate LX-1	Halliburton		Friction Reducer			Listed Below				
Sand-Premix White-40/70	Halliburton		Proppant			Listed Below				
FSTI HCl			Acid			Listed Below				

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BE-9	Halliburton	Biocide			Listed Below				
Nalco SCAL 16486A	Nalco	Scale Inhibitor			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	12.01392			
			Hydrochloric acid	7647-01-0	7.50000	0.06802			
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02254			
			Ethaniminium, N,N,N-trimethyl-2-[(1-oxo-2-propen-1-yl)oxy]-, polymer chloride (1:1), polymer with 2-propenamide	69418-26-4	30.00000	0.02144			
			Sodium chloride	7647-14-5	10.00000	0.00733			
			Ammonium chloride	12125-02-9	10.00000	0.00733			
			Castor oil, ethoxylated	61791-12-6	10.00000	0.00715			
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6	5.00000	0.00357			
			9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-,(Z)	93-83-4	5.00000	0.00357			
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00357			
			Ethylene glycol	107-21-1	30.00000	0.00192			
			Amine triphosphate	Proprietary	30.00000	0.00192			
			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00161			
			Acetic acid	64-19-7	60.00000	0.00134			
			Polyacrylate	Proprietary	30.00000	0.00110			
			Propylene glycol	57-55-6	60.00000	0.00092			

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**MICHAEL RATCLIFFE OHI 10H
ATTACHMENT 1
PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	4/12/2019	23,717	23,625	36
2	4/28/2019	23,590	23,483	42
3	4/29/2019	23,450	23,343	42
4	4/30/2019	23,310	23,203	42
5	5/1/2019	23,170	23,063	42
6	5/1/2019	23,030	22,923	42
7	5/2/2019	22,890	22,783	42
8	5/2/2019	22,750	22,643	42
9	5/3/2019	22,610	22,503	42
10	5/3/2019	22,470	22,363	42
11	5/3/2019	22,330	22,223	42
12	5/4/2019	22,190	22,083	42
13	5/5/2019	22,050	21,943	42
14	5/5/2019	21,910	21,803	42
15	5/6/2019	21,770	21,663	42
16	5/6/2019	21,630	21,523	42
17	5/6/2019	21,490	21,383	42
18	4/11/2019	21,350	21,243	42
19	5/7/2019	21,210	21,103	42
20	5/7/2019	21,070	20,963	42
21	5/7/2019	20,930	20,823	42
22	5/8/2019	20,790	20,683	42
23	5/8/2019	20,650	20,543	42
24	5/8/2019	20,510	20,403	42
25	4/11/2019	20,364	20,263	42
26	5/9/2019	20,230	20,123	42
27	5/9/2019	20,090	19,983	42
28	5/11/2019	19,948	19,843	42
29	5/12/2019	19,810	19,705	42
30	5/12/2019	19,670	19,563	42
31	5/13/2019	19,530	19,423	42
32	5/13/2019	19,390	19,283	42
33	5/13/2019	19,250	19,143	42
34	5/14/2019	19,110	19,003	42
35	5/14/2019	18,970	18,865	42
36	5/15/2019	18,830	18,723	42
37	5/15/2019	18,690	18,583	42
38	5/16/2019	18,550	18,443	42
39	5/16/2019	18,410	18,303	42
40	5/17/2019	18,270	18,163	42
41	5/17/2019	18,130	18,023	42
42	5/17/2019	17,990	17,883	42
43	5/18/2019	17,850	17,743	42
44	5/18/2019	17,710	17,603	42
45	5/18/2019	17,570	17,463	42

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46	5/19/2019	17,430	17,323	42
47	5/19/2019	17,290	17,183	42
48	5/19/2019	17,150	17,043	42
49	5/19/2019	17,010	16,903	42
50	5/20/2019	16,870	16,763	42
51	5/23/2019	16,730	16,623	42
52	5/26/2019	16,590	16,483	42
53	5/26/2019	16,450	16,343	42
54	5/26/2019	16,310	16,203	42
55	5/27/2019	16,170	16,063	42
56	5/27/2019	16,030	15,923	42
57	5/27/2019	15,890	15,783	42
58	5/27/2019	15,750	15,643	42
59	5/27/2019	15,610	15,503	42
60	5/28/2019	15,470	15,363	42
61	5/28/2019	15,330	15,223	42
62	4/11/2019	15,190	15,083	42
63	5/28/2019	15,050	14,943	42
64	5/28/2019	14,910	14,803	42
65	5/29/2019	14,770	14,663	42
66	5/29/2019	14,630	14,523	42
67	5/29/2019	14,490	14,383	42
68	5/29/2019	14,350	14,243	42
69	5/29/2019	14,210	14,103	42
70	5/29/2019	14,070	13,963	42
71	5/30/2019	13,930	13,823	42
72	5/30/2019	13,790	13,683	42
73	5/30/2019	13,650	13,543	42
74	5/30/2019	13,510	13,403	42
75	5/30/2019	13,370	13,263	42
76	5/30/2019	13,230	13,123	42
77	5/31/2019	13,090	12,983	42
78	5/31/2019	12,950	12,843	42
79	5/31/2019	12,810	12,703	42
80	5/31/2019	12,670	12,563	42
81	5/31/2019	12,530	12,423	42
82	5/31/2019	12,390	12,283	42
83	6/1/2019	12,250	12,143	42
84	6/1/2019	12,110	12,003	42
85	6/1/2019	11,970	11,863	42
86	6/2/2019	11,830	11,723	42
87	6/2/2019	11,690	11,583	42
88	6/2/2019	11,550	11,443	42
89	6/2/2019	11,410	11,303	42
90	6/2/2019	11,270	11,163	42
91	6/2/2019	11,130	11,023	42
92	6/3/2019	10,990	10,883	42
93	6/3/2019	10,850	10,743	42
94	6/3/2019	10,710	10,603	42

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95	6/3/2019	10,570	10,463	42
96	6/3/2019	10,430	10,323	42
97	6/3/2019	10,290	10,183	42
98	6/4/2019	10,150	10,043	42
99	6/4/2019	10,010	9,903	42
100	6/4/2019	9,870	9,763	42
101	6/4/2019	9,730	9,623	42
102	6/5/2019	9,590	9,483	42
103	6/5/2019	9,450	9,343	42
104	6/5/2019	9,305	9,203	42
105	6/5/2019	9,170	9,063	42
106	6/6/2019	9,030	8,923	42
107	6/6/2019	8,890	8,783	42
108	6/6/2019	8,750	8,643	42
109	6/6/2019	8,610	8,503	42
110	6/7/2019	8,470	8,363	42
111	6/7/2019	8,330	8,223	42
112	6/7/2019	8,190	8,083	42
113	6/7/2019	8,050	7,943	42
114	6/7/2019	7,910	7,803	42
115	6/8/2019	7,770	7,663	42
116	6/8/2019	7,630	7,523	42
117	6/8/2019	7,490	7,383	42
118	6/8/2019	7,350	7,243	42
119	6/8/2019	7,210	7,103	42
120	6/9/2019	7,070	6,963	42

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MICHAEL RATCLIFFE OHI 10H

ATTACHMENT 2

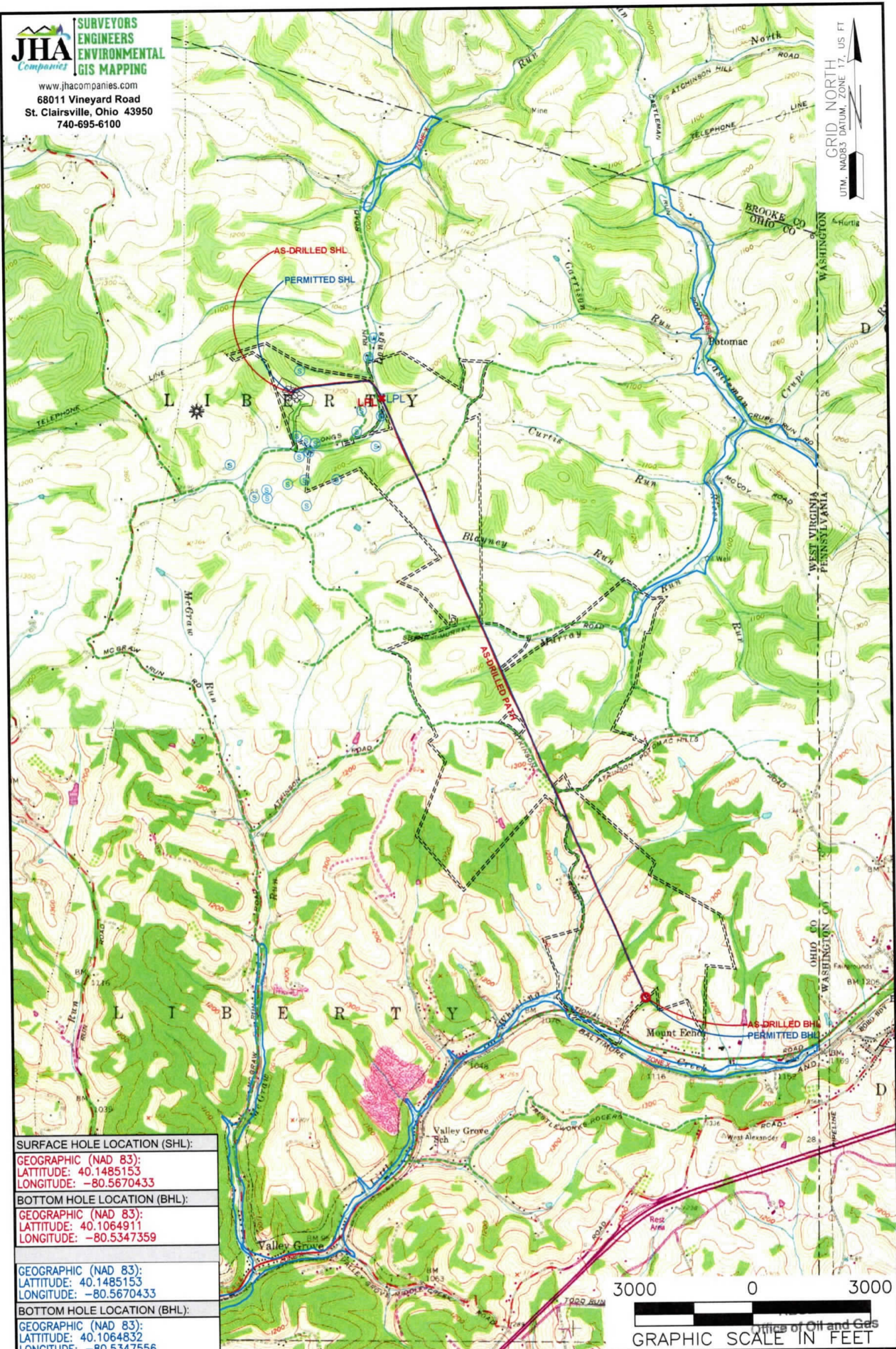
STIM REPORT

STAGE NUM	Stim 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
1	4/19/2019	73.9	8,197	6,544	3,654	279,399	8,199	0
2	4/29/2019	83.6	7,945	5,897	4,228	230,456	10,654	0
3	4/29/2019	95.5	8,446	5,589	4,832	279,880	9,390	0
4	4/30/2019	83.6	8,067	6,990	4,680	282,000	8,893	0
5	5/1/2019	87.1	8,336	7,531	4,280	278,150	9,042	0
6	5/1/2019	89.6	8,508	5,587	4,371	281,510	8,839	0
7	5/2/2019	82	8,350	6,480	4,442	280,030	9,072	0
8	5/2/2019	88.6	8,516	5,986	4,821	282,022	10,455	0
9	5/3/2019	88.3	8,556	5,809	4,726	280,080	8,839	0
10	5/3/2019	88.4	8,347	6,372	4,719	281,464	10,160	0
11	5/4/2019	90.6	8,319	8,192	4,735	280,443	10,009	0
12	5/4/2019	88.8	8,606	6,549	4,953	281,250	9,548	0
13	5/5/2019	91.5	8,299	6,543	4,890	280,230	9,338	0
14	5/5/2019	87.2	8,552	6,551	4,923	280,031	8,792	0
15	5/6/2019	90.3	8,308	6,601	4,895	279,790	9,314	0
16	5/6/2019	89.2	8,509	5,756	4,794	282,650	9,227	0
17	5/6/2019	80.5	8,632	6,631	4,651	281,270	8,643	0
18	5/7/2019	87.4	8,364	6,433	5,463	280,180	8,697	0
19	5/7/2019	85.2	8,220	6,675	4,746	281,323	9,174	0
20	5/7/2019	93.5	8,661	5,737	4,555	283,650	9,039	0
21	5/7/2019	95.6	8,753	6,317	4,934	281,830	8,604	0
22	5/8/2019	89.1	8,290	6,430	4,848	281,170	8,792	0
23	5/8/2019	89.8	8,215	6,041	4,927	280,758	8,901	0
24	5/8/2019	98	8,507	5,200	5,015	280,300	8,941	0
25	5/8/2019	88.4	8,370	5,956	4,684	278,860	8,572	0
26	5/9/2019	92	8,296	5,845	5,046	281,290	8,691	0
27	5/11/2019	94.7	8,329	5,425	4,427	282,387	8,472	0
28	5/11/2019	94.9	8,587	6,058	4,696	279,540	8,308	0
29	5/12/2019	90.9	8,240	5,925	4,705	280,180	8,660	0
30	5/12/2019	92	8,495	5,650	4,335	281,620	8,394	0
31	5/13/2019	91.3	8,443	5,878	4,381	280,460	6,182	0
32	5/13/2019	83.9	8,211	1,552	4,736	282,695	6,137	0
33	5/14/2019	90.7	8,382	6,004	4,869	280,370	6,283	0
34	5/14/2019	88.7	8,398	6,479	4,640	282,505	6,085	0
35	5/14/2019	94.9	8,545	8,389	4,207	280,060	6,268	0
36	5/15/2019	87.8	8,101	4,793	4,178	280,487	6,160	0
37	5/15/2019	92.8	8,464	5,875	4,494	279,390	6,318	0
38	5/16/2019	89	8,111	6,301	4,588	278,636	6,085	0
39	5/16/2019	96	8,382	5,928	4,200	280,090	6,072	0
40	5/17/2019	86.9	8,249	5,286	4,631	281,250	6,365	0
41	5/17/2019	84	8,124	6,226	4,992	279,892	5,857	0
42	5/17/2019	95.1	8,384	6,355	4,370	280,990	6,123	0
43	5/18/2019	78	8,241	6,098	4,624	281,053	5,943	0
44	5/18/2019	85.6	8,245	6,261	4,652	280,624	5,819	0
45	5/18/2019	96.3	8,460	5,373	4,503	279,050	5,951	0
46	5/19/2019	92.8	8,395	5,711	4,493	280,020	5,877	0
47	5/19/2019	87	8,380	5,833	4,352	279,295	5,678	0
48	5/19/2019	91.2	8,390	5,598	4,473	280,470	5,910	0
49	5/20/2019	98.4	8,398	5,669	4,422	281,180	6,004	0
50	5/20/2019	91.5	8,197	5,877	4,672	280,562	5,886	0
51	5/24/2019	99.1	8,224	1,564	4,728	280,379	5,990	0
52	5/26/2019	98.4	8,008	5,955	4,676	278,446	5,242	0
53	5/26/2019	98.6	8,150	6,245	4,718	280,500	5,203	0
54	5/27/2019	96.2	7,986	5,818	4,537	279,950	5,177	0
55	5/27/2019	100	8,173	5,900	4,446	278,417	5,127	0
56	5/27/2019	94.8	8,154	6,068	4,332	280,700	5,227	0
57	5/27/2019	97.5	8,222	5,912	4,548	279,610	5,143	0
58	5/27/2019	99.2	8,134	6,050	4,567	279,530	5,372	0
59	5/27/2019	96.6	8,288	6,328	4,352	278,190	5,169	0

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60	5/28/2019	95.8	8,512	5,911	4,489	278,077	5,100	0
61	5/28/2019	94	8,416	6,418	4,068	280,964	4,463	0
62	5/28/2019	98.8	8,454	5,702	4,939	280,789	4,459	0
63	5/28/2019	91.1	8,166	6,188	4,720	280,004	4,457	0
64	5/28/2019	88.7	8,146	6,200	4,838	280,205	4,429	0
65	5/29/2019	88.3	8,220	5,977	4,962	280,205	4,305	0
66	5/29/2019	90.1	8,211	5,905	4,590	280,334	4,305	0
67	5/29/2019	99.4	8,292	5,659	4,756	280,420	4,230	0
68	5/29/2019	99.6	8,234	5,751	4,526	278,480	4,681	0
69	5/29/2019	93.7	8,043	5,895	4,863	279,580	4,359	0
70	5/29/2019	93	8,149	5,828	4,556	280,775	4,191	0
71	5/30/2019	94.4	8,018	5,496	4,668	280,025	4,311	0
72	5/30/2019	100.3	7,889	5,929	4,584	280,790	4,271	0
73	5/30/2019	100.5	8,314	6,072	4,548	280,340	4,324	0
74	5/30/2019	98	8,198	6,149	4,982	280,010	4,290	0
75	5/30/2019	94.1	7,884	6,037	4,774	280,007	4,243	0
76	5/31/2019	93	8,029	5,925	4,638	280,080	4,348	0
77	5/31/2019	92.7	8,090	6,225	4,801	279,568	4,253	0
78	5/31/2019	100.4	8,221	6,185	4,687	279,750	4,277	0
79	5/31/2019	99.7	8,296	6,474	4,799	281,000	4,318	0
80	5/31/2019	100.4	8,121	5,983	4,529	280,910	4,269	0
81	5/31/2019	100.4	7,767	6,020	4,601	282,834	4,240	0
82	5/31/2019	93.1	8,029	6,283	5,018	278,804	3,987	0
83	6/1/2019	94.9	7,816	6,031	4,661	281,632	4,324	0
84	6/1/2019	97.3	8,016	6,157	4,608	280,097	4,289	0
85	6/1/2019	98.9	8,067	6,122	4,481	279,970	4,279	0
86	6/2/2019	92.2	7,912	6,488	4,574	280,880	4,736	0
87	6/2/2019	99.7	7,662	5,814	4,599	277,930	4,181	0
88	6/2/2019	99.5	7,817	6,029	4,705	280,938	4,196	0
89	6/2/2019	99.6	7,771	5,958	4,858	281,002	4,224	0
90	6/2/2019	100.3	7,552	5,400	4,587	280,476	4,260	0
91	6/3/2019	100.3	7,875	5,635	4,333	280,077	4,218	0
92	6/3/2019	94.7	7,921	6,082	4,603	280,087	4,186	0
93	6/3/2019	100.3	7,390	5,929	4,892	279,330	4,129	0
94	6/3/2019	99.7	7,364	6,213	4,919	280,220	4,214	0
95	6/3/2019	99.6	7,566	5,942	4,786	281,232	4,173	0
96	6/3/2019	99.7	7,162	5,711	4,647	280,152	4,376	0
97	6/3/2019	96	7,694	5,637	4,514	280,024	4,136	0
98	6/4/2019	95	7,405	5,270	4,555	280,082	4,208	0
99	6/4/2019	100.7	7,558	6,016	4,745	280,020	4,133	0
100	6/4/2019	100.2	7,623	6,034	4,424	279,180	4,098	0
101	6/4/2019	96.4	7,604	6,148	4,790	290,001	4,263	0
102	6/5/2019	96.9	7,548	5,757	4,810	279,995	4,063	0
103	6/5/2019	100.2	7,331	6,032	4,534	279,700	4,236	0
104	6/5/2019	100.1	7,735	5,894	4,504	277,970	4,156	0
105	6/5/2019	99.2	7,203	6,067	4,802	281,272	4,086	0
106	6/6/2019	100.3	7,501	5,938	4,571	280,893	4,038	0
107	6/6/2019	100.6	7,402	6,331	4,777	280,290	4,100	0
108	6/6/2019	100.5	7,272	6,070	4,671	280,080	4,086	0
109	6/6/2019	99.1	7,179	5,677	4,753	279,440	5,412	0
110	6/7/2019	99.9	6,833	5,555	4,770	279,932	4,061	0
111	6/7/2019	98.5	6,992	6,045	4,595	279,540	4,060	0
112	6/7/2019	99.3	6,885	5,182	4,607	278,410	4,166	0
113	6/7/2019	97.4	6,712	5,475	4,514	278,407	4,127	0
114	6/8/2019	98.1	6,763	5,576	4,519	280,335	4,196	0
115	6/8/2019	99.5	6,704	5,608	4,211	279,820	4,048	0
116	6/8/2019	97.7	6,872	5,852	4,295	280,880	4,501	0
117	6/8/2019	99.4	6,939	5,408	4,512	280,250	4,119	0
118	6/8/2019	98.2	6,551	5,486	4,216	280,119	3,981	0
119	6/9/2019	100.1	6,666	5,807	4,538	279,597	3,987	0
120	6/9/2019	99.1	6,551	5,293	4,148	318,146	4,290	0

RECEIVED
Office of Oil and Gas
SEP 13 2019
Department of
Environmental Protection



SURFACE HOLE LOCATION (SHL):
GEOGRAPHIC (NAD 83): LATITUDE: 40.1485153 LONGITUDE: -80.5670433
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD 83): LATITUDE: 40.1064911 LONGITUDE: -80.5347359
GEOGRAPHIC (NAD 83): LATITUDE: 40.1485153 LONGITUDE: -80.5670433
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD 83): LATITUDE: 40.1064832 LONGITUDE: -80.5347556

NOTES ON SURVEY
 1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
 2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
 3. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

- LEGEND:**
- EXISTING BOTTOM HOLE
 - ☼ EXISTING / PRODUCING WELLHEAD
 - LPL ● EXISTING LANDING POINT LOCATION
 - PROPOSED SURFACE HOLE / BOTTOM HOLE
 - LPL ● PROPOSED LANDING POINT LOCATION

SEP 13 2019
 ACCESS ROAD
 PUBLIC ROAD
 FLOOD PLAIN
 LEASE BOUNDARY
 ENVIRONMENTAL PROTECTION
 DRILLED PATH
 PROPOSED PATH

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	WELL (FARM) NAME: MICHAEL RATCLIFFE OHI	WELL # 10H	SERIAL # XXXX
ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201, MORGANTOWN, WV 26508	COUNTY - CODE OHIO - 069	DISTRICT: LIBERTY	
SURFACE OWNER: MICHAEL T. RATCLIFFE	USGS 7 1/2 QUADRANGLE MAP NAME BETHANY & VALLEY GROVE, WV		

(2,000' SCALE) LATITUDE: 40°10'00" SURFACE HOLE

7098'

(2,000' SCALE) LATITUDE: 40°07'30" BOTTOM HOLE

9714'



www.jhacompanies.com
68011 Vineyard Road
St. Clairsville, Ohio 43950
740-695-6100

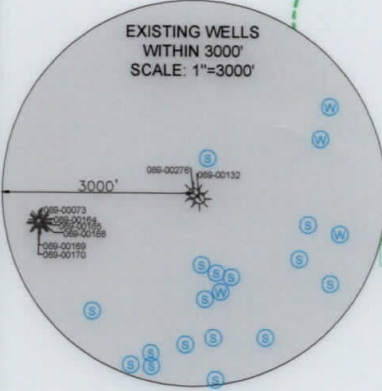
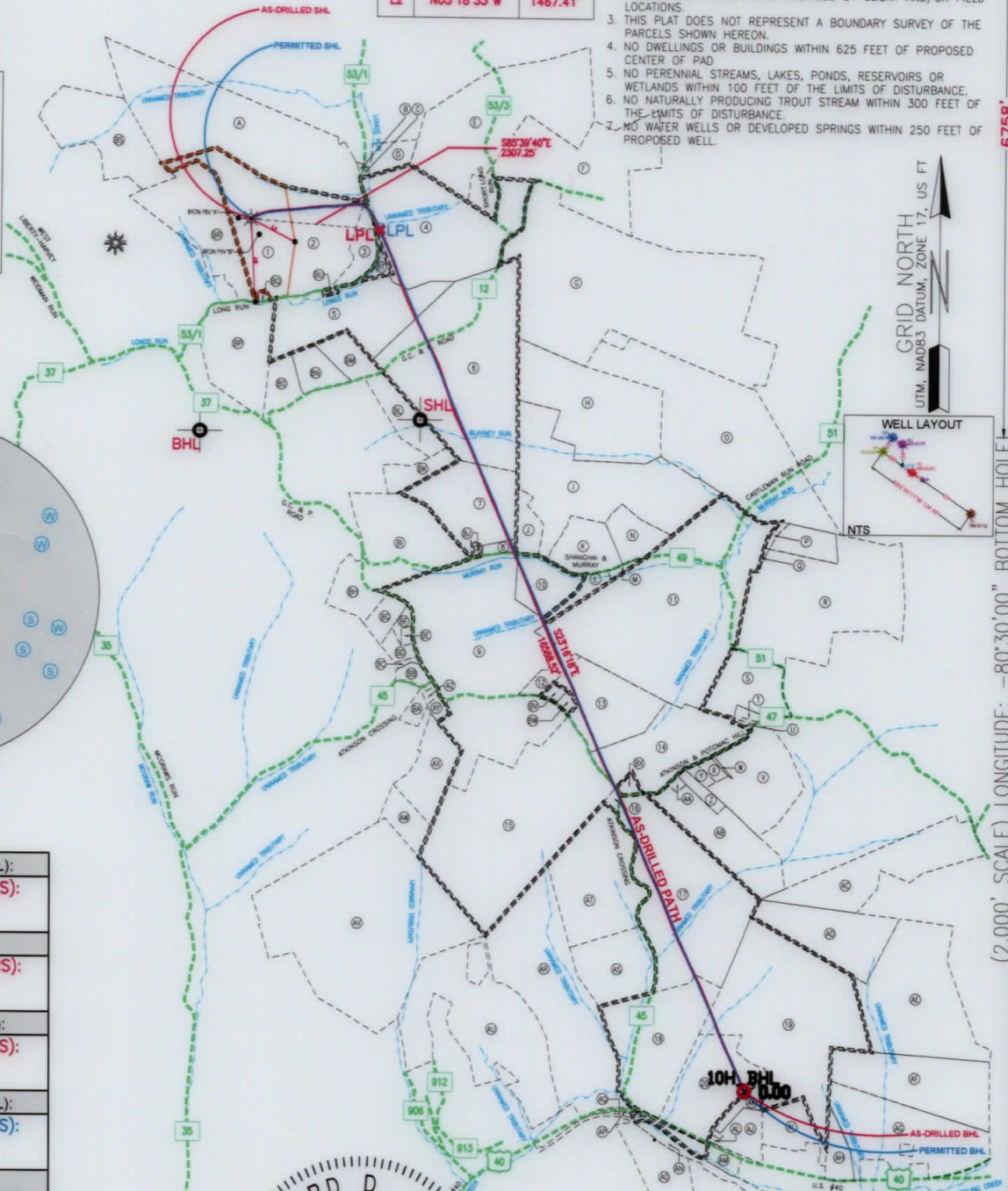
WELL REFERENCE DETAIL



LINE	BEARING	DISTANCE
L1	N62°47'08\"W	882.53'
L2	N03°18'33\"W	1467.41'

NOTES ON SURVEY

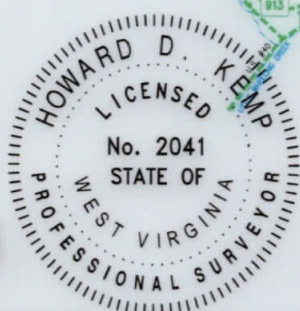
- COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS OR BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF THE LIMITS OF DISTURBANCE.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL



SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4444331.01 EASTING: 536876.93
LANDING POINT (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4444289.58 EASTING: 537578.70
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4439680.51 EASTING: 539653.11
SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4444331.01 EASTING: 536876.93
LANDING POINT (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4444292.76 EASTING: 537578.31
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4439679.63 EASTING: 539651.44

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2041



COMPANY: **SWN** Production Company, LLC

SWN ^{R-V+}_A Production Company™

OPERATOR'S WELL #:	MICHAEL RATCLIFFE OHI 10H		
API WELL #:	47	069	276
	STATE	COUNTY	PERMIT

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW

WATERSHED: OHIO UPPER SOUTH
DISTRICT: LIBERTY COUNTY: OHIO
SURFACE OWNER: MICHAEL T. RATCLIFFE
OIL & GAS ROYALTY OWNER: MICHAEL T. RATCLIFFE

DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION

CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) **AS-DRILLED**

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,535' TVD 23,760' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508	DESIGNATED AGENT: BRITTANY WOODY ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508
--	--

LEGEND:	<ul style="list-style-type: none"> ⊙ EXISTING WATER WELL ⊙ EXISTING SPRING ⊙ EXISTING / PRODUCING WELLHEAD — SURVEYED BOUNDARY LPL* EXISTING LANDING POINT LOCATION — LEASE BOUNDARY ⊙ PROPOSED SURFACE HOLE / BOTTOM HOLE — AS-DRILLED PATH LPL* PROPOSED LANDING POINT LOCATION — PROPOSED PATH
REVISIONS:	DATE: 09-06-2019
	DRAWN BY: D. REED
	SCALE: 1" = 3000'
	DRAWING NO: 2017-637
	WELL LOCATION PLAT

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	MICHAEL T. RATCLIFFE (S/R)	03-L5-12.4
TRACT	SURFACE OWNER	TAX PARCEL
2	TRAVIS C. RATCLIFFE	03-L5-12
3	TRAVIS CHRISTOPHER RATCLIFFE (LE)	03-L5-12.1
4	DONALD F. & J.L. DOLENCE	03-L5-11
5	DONALD D. PRINCE	03-L5-24
6	SUSAN LOUISE SMITH	03-L5-27
7	DONALD L. & DEBORAH JO WADDELL	03-L5-23
8	STEVEN DILLE	03-L8-8
9	ROBERT C. JONES	03-L8-11
10	SCOTT A. & JILL L. DILLE	03-L8-9.3
11	HOLLY HOLLOWAY & JOSHUA REASS	03-L9-1
12	RANDY J. CREIGHTON	03-L8-11.2
13	JODY LEE KLUG	03-L8-10
14	LARRY G. BALL	03-L8-42
15	DAVID E. DAVIS, JR.	03-L8-35
16	BERNARD T. & PATRICIA ADAMS	03-L8-37.1
17	TIMMY B. & AMY LYNN MINCH	03-L9-12
18	MARTHA E. CREIGHTON	03-L11-29
19	WILLIAM I. & DOUGLAS W. RODGERS	03-L12-1
20	MILDRED J. MAZGAJ	03-L11-62

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	JOSEPH P. & SHIRLEY J. TAGGART	03-L5-3
B	E.L. & S.J. MONROE (C/O: DORIS SMITH)	03-L5-7
C	GENE & SHIRLEY MONROE	03-L5-7.3
D	GEORGE W., JR. & LAURIE GROVE	03-L5-7.1
E	TIMOTHY R. & THELMA C. HAYS	03-L5-29
F	JOSEPH E. & MARJORIE G. ENNIS	03-L5-8
G	HELEN L. & JOHN I., JR. TOMINACK	03-L5-10
H	LYNN MCELVANY	03-L5-26
I	GLENN A. DILLE	03-L8-9.7
J	NEAL P. BROWN	03-L8-9.6
K	FRED E. & JANET K. FOSTER	03-L8-9
L	GEORGE E., III & M.A. PORTER	03-L8-9.5
M	MARGARET ANN PORTER & GEORGE E. PORTER, III	03-L8-9.2
N	JARRETT K. & LESLIE K. REEDY	03-L8-9.4
O	DELMER K. & V.G. LOEW	03-L6-19
P	RODNEY G. & JESSICA J. PLANTS	03-L9-2.2
Q	RODNEY G. & JESSICA J. PLANTS	03-L9-2.3
R	RODNEY G. & JESSICA J. PLANTS	03-L9-2
S	MICHAEL H. FISHER & SUSAN K. FISHER	03-L9-6.6
T	DOROTHY M. BALL	03-L9-6.3
U	DOROTHY BALL	03-L9-8
V	WILLIAM E. NOBLE & DAWN BALTICH	03-L9-14
W	CHARLES P. & D.E. SMITH	03-L9-14.1
X	CHARLES P. & D.E. SMITH	03-L9-10
Y	PATRICK E. & P.A. LEONARD	03-L9-9
Z	PATRICK & PAMELA LEONARD	03-L8-38
AA	WILLIAM H. & E.P. BALL	03-L8-40
AB	WILLIAM H. & LARRY G. BALL	03-L9-11
AC	CARL E. MILLER, JR. (LIFE ESTATE: THELMA A. MILLER)	03-L9-15
AD	JEFFREY S. & DANA R. OCH	03-L12-2.1
AE	RAYMOND M. & H.E. MILLER (C/O: HILDA MILLER)	03-L12-2
AF	TUNNEL RIDGE, LLC	03-L12-4.6
AG	JOSEPH & ANITA M. TANKOVITS	03-L12-4
AH	JACK M. & J. DILLIE	03-L12-4.1
AI	WILLIAM I. RODGERS & DOUGLAS WAYNE RODGERS	03-L12-5.1
AJ	TODD M. MAXWELL	03-L12-27
AK	CATHY J. & JERRY W. CALDWELL	03-L16-6
AL	LARRY MICHAEL PATRICK	03-L11-68
AM	MARION S. & MILDRED J. MAZGAJ	03-L11-67
AN	TUNNEL RIDGE, LLC	03-L12-32
AO	SHARON & WARREN GRIFFITH	03-L11-60.1
AP	JOHN A. NOLAN, JR.	03-L11-66
AQ	JOHN A. NOLAN, JR.	03-L11-63
AR	WINTERS FAMILY FARM, LLC	03-L11-28
AS	HOWARD WINTERS	03-L11-28.1
AT	HOWARD WINTERS	03-L8-36
AU	EDWARD G. GROUX, JR. & JEFFREY L. GROUX	03-L11-27
AV	EDWARD G. GROUX, JR. (L/E: EDWARD G. & LYDIA C. GROUX)	03-L11-26
AW	EDWARD G. GROUX, JR. (L/E: EDWARD G. & LYDIA C. GROUX)	03-L11-26.6
AX	ROBERT C. JONES	03-L8-11.1
AY	ROBERT S. SHILLING, SR.	03-L8-33.9
AZ	JOSEPH T. KLUG	03-L8-34.1
BA	ROBERT A. SHILLING, SR.	03-L8-33
BB	THOMAS P. & TERESA HUDRLIK	03-L8-12.12
BC	BILL RAILING	03-L8-12.8
BD	VICKI L. & DANIEL P. TUSTIN	03-L8-12.6
BE	DANIEL P. TUSTIN, JR.	03-L8-12.9
BF	DANIEL PAUL TUSTIN, JR.	03-L8-12.11
BG	RICHARD R. & L.L. BLOOMFIELD	03-L8-12.10
BH	BARNETT E. & LAURIE L. BECK	03-L8-12.5
BI	BERNARD T. & MARJORIE A. RAAB	03-L8-7
BJ	DONALD L. & D.J. WADDELL	03-L8-39
BK	DONALD L. & DEBORAH JO WADDELL	03-L5-23.6
BL	DALE R. & JACKIE A. RITCHEA	03-L5-23.2
BM	SUSAN NORTHWOOD SMITH & RICHARD ALAN SMITH	03-L5-23.1
BN	JASON & RACHEL MILLER	03-L5-23.3
BO	EDWARD & ELIZABETH LINK	03-L5-23.7
BP	EDWARD R. & ELIZABETH A. LINK	03-L5-22
BQ	MICHAEL T. RATCLIFFE	03-L5-12.3
BR	CASEY P. & DEVAN M. YOUNG	03-L5-13
BS	MARK & ANNELIESE KAUFMAN	03-L5-1.1
BT	JOSEPH G. PRINCE & DONALD D. PRINCE	03-L5-11.2
BU	JOSEPH G. PRINCE	03-L5-25
BV	PAUL A. MAIN	03-L8-10.1
BW	RICHARD C. & K.J. WHEAT	03-L8-10.2
BX	SUSAN J.H. HARDMAN	03-L8-37

REVISIONS:

COMPANY:

SWN
Production Company, LLC

SWN ^{R-V+}_A
Production Company™

OPERATOR'S MICHAEL RATCLIFFE

DATE: 09-06-2019

WELL #: OHI 10H

DRAWN BY: D. REED

DISTRICT:
LIBERTY

COUNTY:
OHIO

STATE:
WV

SCALE: N/A

DRAWING NO: 2017-637

WELL LOCATION PLAT

PROPERTY NUMBER 2501163391
PAD ID 3001155653