

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

API 47 - 051 - 02024 County MARSHALL District LIBERTY  
Quad LITTLETON Pad Name YOCUM MSH PAD Field/Pool Name VICTORY FIELD WET  
Farm name JOSEPH LEE AND MICHAEL D. YOCUM Well Number YOCUM MSH 5H  
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 4,398,200.470 Easting 535,688.920  
Landing Point of Curve Northing 4,398,385.480 Easting 535,783.470  
Bottom Hole Northing 4,400,621.440 Easting 533,299.500

Elevation (ft) 1079.4' 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 SEP 19 2019

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Date permit issued 8/28/2018 Date drilling commenced 3/6/2019 Date drilling ceased 3/21/2019  
Date completion activities began 5/18/2019 Date completion activities ceased 7/08/2019  
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 437 Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 894 Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 878 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed

Jam Nicholson  
Jackie Shorntz 1/23/2020

Reviewed by: \_\_\_\_\_

API 47-051 - 02024 Farm name JOSEPH LEE AND MICHAEL D. YOCUM Well number YOCUM MSH 5H

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	537	NEW	J-55/54.50#		Y, 27 BBLs
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25	9.625	2548	NEW	J-55/36#		Y, 38 BBLs
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	18518	NEW	HCP-110/20#		Y, 35 BBLs
Tubing		2.375		NEW	L-80/4.7#		N
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	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	487	15.60	1.20	584.4	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	949	16.00	1.12	1,062.88	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	3,386	15.60	1.19	4,029.34	SURFACE	24
Tubing							

Drillers TD (ft) 18,518 Loggers TD (ft) 18,518  
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A  
 Plug back procedure N/A

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Kick off depth (ft) 6,300'

Check all wireline logs run  caliper  density  deviated/directional  induction  temperature  sonic  
 neutron  resistivity  gamma ray

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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 \_\_\_\_\_

API 47- 051 - 02024 Farm name JOSEPH LEE AND MICHAEL D. YOCUM Well number YOCUM MSH 5H

**PERFORATION RECORD**

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE	ATTACHMENT 1	1		

Please insert additional pages as applicable.

**STIMULATION INFORMATION PER STAGE**

Complete a separate record for each stimulation stage.

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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 other (units)
	SEE	ATTACHMENT 2	2					

Please insert additional pages as applicable.

API 47- 051 - 02024 Farm name JOSEPH LEE AND MICHAEL D. YOCUM Well number YOCUM MSH 5H

PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	7,096'	TVD 7,468' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump  
 SHUT-IN PRESSURE Surface 4021 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs  
 OPEN FLOW Gas 20,573 mcfpd Oil 0 bpd NGL \_\_\_\_\_ bpd Water 533 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
	SEE	ATTACHMENT	3		

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Please insert additional pages as applicable.

Drilling Contractor SWN DRILLING COMPANY  
 Address PO BOX 12359 City SPRING State TX Zip 77391-2359  
 Logging Company BAKER HUGHES  
 Address 9110 GROGANS MILL ROAD City THE WOODLANDS State TX Zip 77380  
 Cementing Company BJ SERVICES  
 Address 11211 FM 2920 City TOMBALL State TX Zip 77377  
 Stimulating Company HALLIBURTON ENERGY SERVICES INC.  
 Address 1628 JACKSON MILL RD City JANE LEW State WV Zip 26378

Please insert additional pages as applicable.

Completed by BOBBY WILLIS Telephone 832-796-2884  
 Signature [Signature] Title SENIOR REGULATORY ANALYST Date 9/18/2019

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





# Hydraulic Fracturing Fluid Product Component Information Disclosure

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Job Start Date:	5/18/2019
Job End Date:	6/15/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-02024-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Yocum MSH 5H
Latitude:	39.73294700
Longitude:	-80.58351800
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,945
Total Base Water Volume (gal):	19,003,793
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	Water	7732-18-5	100.00000	86.23672	Density = 8.34
Produced Water	Halliburton	Base Fluid	Water	7732-18-5	100.00000	3.94930	Density = 8.34



Ingredients	Listed Above	Listed Above						
			Water	7732-18-5	100.00000			
MC LD-2850	MultiChem	Friction Reducer						
				Listed Below				
BE-9	Halliburton	Biocide						
				Listed Below				
Exceletrate LX-1	Halliburton	Friction Reducer						
				Listed Below				
FSTI-CI-01	FSTI	Acid Corrosion Inhibitor						
				Listed Below				
Sand-Premium White-40/70	Halliburton	Proppant						
				Listed Below				
FSTI-IC-001	FSTI	Iron Control Agent						
				Listed Below				
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent						
				Listed Below				
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant						

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				Listed Below					
SCAL 16486A	Nalco (Champion)	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	8.95410			
		Hydrochloric acid		7647-01-0	15.00000	0.11338			
		Hydrotreated light petroleum distillate		64742-47-8	30.00000	0.02424			
		Polyacrylate		Proprietary	30.00000	0.01369			
		Ethanediaminium, N,N,N-trimethyl-2-[(1-oxo-2-propen-1-yl)oxy]-chloride (1:1), polymer with 2-propenamide		69418-26-4	30.00000	0.01055			
		Ammonium chloride		12125-02-9	10.00000	0.00580			
		Sodium chloride		7647-14-5	10.00000	0.00580			
		Castor oil, ethoxylated		61791-12-6	10.00000	0.00352			
		Ethoxylated fatty acid		Proprietary	5.00000	0.00228			
		Fatty acid ester		Proprietary	5.00000	0.00228			
		Acetic acid		64-19-7	60.00000	0.00227			
		Amine Triphosphate		Proprietary	30.00000	0.00193			
		Ethylene glycol		107-21-1	30.00000	0.00193			
		9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-(Z)		93-83-4	5.00000	0.00176			
		Sorbitan monooleate polyoxyethylene derivative		9005-65-6	5.00000	0.00176			
		Alcohols, C12-16, ethoxylated		68551-12-2	5.00000	0.00176			
		Citric acid		77-92-9	40.00000	0.00152			
		Tributyl tetradecyl phosphonium chloride		81741-28-8	10.00000	0.00119			
		Methanol		67-56-1	80.00000	0.00087			

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**YOCUM MSH 5H  
ATTACHMENT 1  
PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	5/1/2019	18,475	18,376	36
2	5/18/2019	18,342	18,166	24
3	5/18/2019	18,132	17,956	24
4	5/19/2019	17,922	17,748	24
5	5/19/2019	17,712	17,536	24
6	5/19/2019	17,502	17,326	18
7	5/19/2019	17,292	17,118	24
8	5/20/2019	17,082	16,906	18
9	5/20/2019	16,872	16,696	18
10	5/21/2019	16,662	16,486	18
11	5/21/2019	16,479	16,276	18
12	5/22/2019	16,242	16,066	18
13	5/22/2019	16,032	15,856	36
14	5/23/2019	15,823	15,646	18
15	5/24/2019	15,612	15,436	18
16	5/24/2019	15,403	15,226	18
17	5/25/2019	15,192	15,016	18
18	5/25/2019	14,982	14,806	36
19	5/26/2019	14,772	14,596	18
20	5/26/2019	14,562	14,386	18
21	5/27/2019	14,352	14,178	18
22	5/27/2019	14,142	13,966	36
23	5/28/2019	13,932	13,756	18
24	5/28/2019	13,722	13,546	18
25	6/2/2019	13,512	13,336	18
26	6/3/2019	13,302	13,126	18
27	6/4/2019	13,092	12,910	36
28	6/5/2019	12,882	12,706	18
29	6/5/2019	12,672	12,496	24
30	6/6/2019	12,463	12,286	36
31	6/6/2019	12,253	12,076	36
32	6/7/2019	12,043	11,866	36
33	6/7/2019	11,833	11,656	36
34	6/7/2019	11,623	11,446	36
35	6/8/2019	11,412	11,236	36
36	6/8/2019	11,202	11,026	36
37	6/9/2019	10,993	10,816	36
38	6/9/2019	10,783	10,606	36
39	6/9/2019	10,573	10,396	36
40	6/10/2019	10,363	10,186	36
41	6/11/2019	10,153	9,976	36
42	6/11/2019	9,943	9,766	36
43	6/11/2019	9,733	9,556	36
44	6/11/2019	9,523	9,346	36
45	6/11/2019	9,312	9,136	36
46	6/13/2019	9,102	8,926	36
47	6/13/2019	8,887	8,716	36
48	6/14/2019	8,678	8,506	36
49	6/14/2019	8,472	8,296	36
50	6/14/2019	8,262	8,086	36
51	6/15/2019	8,052	7,876	36
52	6/15/2019	7,842	7,666	36
53	6/15/2019	7,632	7,456	36

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**YOCUM MSH 5H  
ATTACHMENT 2  
STIM REPORT**

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment	Max Breakdown	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/othe
1	5/18/2019	73.8	8,002	8,805	4,230	279,915	7,565	0
2	5/18/2019	68.1	8,030	6,529	4,391	315,280	7,748	0
3	5/19/2019	76	8,586	6,543	4,372	314,650	8,093	0
4	5/19/2019	72.7	8,168	6,507	4,388	314,604	7,856	0
5	5/19/2019	74.8	8,463	6,321	4,609	312,590	8,073	0
6	5/19/2019	49.5	8,261	5,784	4,115	314,420	11,163	0
7	5/20/2019	68.6	8,206	5,431	4,123	319,838	7,669	0
8	5/20/2019	66.6	8,391	5,823	4,411	314,870	9,891	0
9	5/20/2019	67.7	8,443	5,398	4,219	314,340	9,176	0
10	5/21/2019	59.2	8,381	5,821	4,591	315,591	7,381	0
11	5/21/2019	44.8	8,590	5,339	4,767	315,300	10,927	0
12	5/22/2019	68.4	8,450	5,601	4,632	315,518	7,624	0
13	5/22/2019	70.7	8,245	5,390	4,305	317,254	10,176	0
14	5/23/2019	58.2	7,086	5,301	4,629	316,103	12,407	0
15	5/24/2019	48.8	7,992	5,765	4,294	318,151	8,565	0
16	5/24/2019	66.5	7,923	5,526	4,583	315,570	8,864	0
17	5/25/2019	39.8	8,317	5,732	4,595	316,593	8,073	0
18	5/25/2019	70	7,877	5,526	4,635	317,493	11,227	0
19	5/26/2019	59.7	8,105	5,615	4,411	316,149	8,412	0
20	5/26/2019	58.8	8,224	5,979	4,407	314,670	11,213	0
21	5/27/2019	49.8	8,492	5,899	4,465	315,761	10,793	0
22	5/27/2019	60.8	7,959	5,624	4,525	315,050	12,114	0
23	5/28/2019	44.4	8,174	6,069	4,594	314,730	10,436	0
24	5/29/2019	54.8	7,639	6,182	4,852	220,216	8,870	0
25	6/3/2019	79.7	8,289	5,941	5,627	228,606	8,377	0
26	6/3/2019	85.3	8,327	6,188	5,560	221,316	6,769	0
27	6/5/2019	45.3	7,325	6,546	5,060	6,304	4,953	0
28	6/5/2019	98.9	8,020	5,423	4,732	319,220	8,423	0
29	6/5/2019	95.6	8,264	6,026	4,626	314,900	7,672	0
30	6/6/2019	88.7	8,472	5,796	4,833	227,980	6,712	0
31	6/7/2019	97.3	8,215	5,706	4,869	315,240	7,672	0
32	6/7/2019	97.8	8,065	5,653	4,660	316,150	8,462	0
33	6/7/2019	91	8,170	5,901	4,635	315,760	8,753	0
34	6/8/2019	95.2	7,909	5,896	4,906	315,000	8,328	0
35	6/8/2019	98.8	7,928	6,180	5,387	322,150	8,836	0
36	6/9/2019	95.7	8,355	5,291	5,620	315,950	8,716	0
37	6/9/2019	98.1	7,973	5,451	5,439	314,700	7,713	0
38	6/9/2019	99.1	8,052	5,651	5,606	267,120	7,598	0
39	6/9/2019	97.3	8,032	6,232	5,093	291,810	8,861	0
40	6/10/2019	94.6	7,981	5,725	5,401	251,480	7,935	0
41	6/11/2019	99.8	7,626	5,555	5,644	315,820	8,552	0
42	6/11/2019	98.5	8,135	5,775	4,558	312,720	8,280	0
43	6/11/2019	98.6	8,022	5,642	4,536	315,940	8,057	0
44	6/11/2019	96.7	8,060	5,436	4,983	297,290	8,802	0
45	6/12/2019	93.9	8,126	6,011	4,875	314,702	8,175	0
46	6/13/2019	95.6	8,075	5,987	4,953	251,100	7,234	0
47	6/13/2019	97.3	7,757	6,124	4,789	315,018	10,553	0
48	6/14/2019	94.2	7,929	6,069	5,419	251,600	7,458	0
49	6/14/2019	99.7	7,781	5,963	4,590	315,419	7,895	0
50	6/15/2019	99.6	7,537	5,646	4,420	315,125	7,813	0
51	6/15/2019	99.1	7,608	5,737	4,813	315,590	7,954	0
52	6/15/2019	99.2	7,551	5,707	4,558	312,160	7,599	0
53	6/16/2019	99.7	7,391	6,163	4,335	315,944	7,724	0

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Well Name: Yocum MSH 5H

47051020240000

LITHOLOGY/FORMATION	TOP DEPTH, MD (FT)	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, MD (FT)	BOTTOM DEPTH, TVD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	0.00	0.00	437.00	437.00	
Top of Salt Water	894.00	894.00	NA	NA	
Pittsburgh Coal	878.00	878.00	NA	NA	
Pottsville (ss)	980.00	980.00	1019.00	1019.00	
Raven Cliff (ss)	1508.00	1508.00	1605.00	1605.00	
Maxton (ss)	1864.00	1864.00	2063.00	2063.00	
Big Injun (ss)	2071.00	2063.00	2353.00	2344.00	
Berea (siltstone)	2686.00	2676.00	3628.00	3600.00	
Rhinstreet (shale)	6472.00	6400.00	6810.00	6723.00	
Cashaqua (shale)	6810.00	6723.00	6954.00	6843.00	
Middlesex (shale)	6954.00	6843.00	7094.00	6942.00	
Burket (shale)	7094.00	6942.00	7146.00	6972.00	
Tully (ls)	7146.00	6972.00	7189.00	6996.00	
Mahantango (shale)	7189.00	6996.00	7468.00	7096.00	
Marcellus (shale)	7468.00	7096.00	NA	NA	GAS

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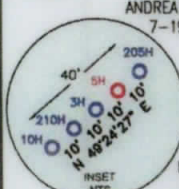
# THRASHER

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

**NOTES ON SURVEY**

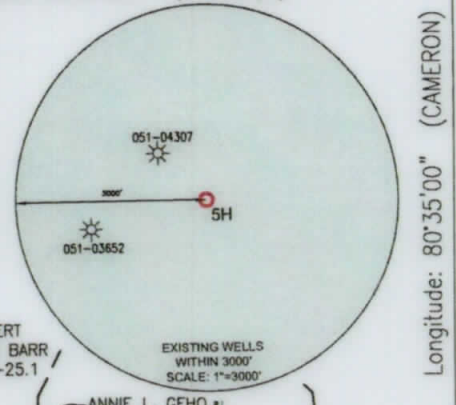
- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAN DOES NOT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

GRID NORTH  
UTM, NAD83 DATUM, ZONE 17, US FT



TRACT	SURFACE OWNER	TAX PARCEL
A	JOHN M & LISA A BUTLER	7-26-11.1
B	HUNDRED RESOURCES INC	7-26-11
C	MARY ESTHER GRIMM	7-19-10.1
D	ROBERT L MCKEY	7-16-9
E	RICHARD H KESTEL & EDWARD J SILCOX	7-16-12
F	LARRY M MYER ET UX	7-16-15
G	JOHN C & SONIA W RICHARDS	7-19-13
H	JOHN C & SONIA W RICHARDS	7-19-14
I	JOHN M & TERESA L HORNER	7-19-17
J	CHURCH OF CHRIST TRUSTEES	7-19-25
K	JAMES REGIEC SR ET AL	7-19-24
L	JAMES REGIEC SR ET AL	7-19-23.1
M	JAMES E JR & GINGER REGIEC	7-19-23.2
N	JAMES F & JAMIE ANN DRUSCHEL ET AL	7-19-23
O	GAL CUMPTON	7-19-20

Latitude: 39°45'00" (LITTLETON) SHL 119'  
BHL 7,924'  
Latitude: 39°47'30" (CAMERON)



Longitude: 80°35'00" (CAMERON)

SHL 6,260

Longitude: 80°35'00" (LITTLETON)

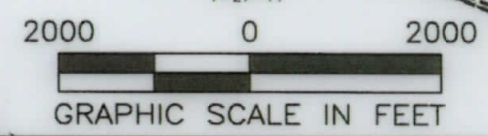
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	JOSEPH LEE & MICHAEL D. YOCUM (S)(R)	7-26-9	97.07
2	LORRETTA J. FRANCIS	7-27-4.2	25.00
3	CONSOLIDATED GAS SUPPLY CORPORATION	7-26-8	145.22
4	W. VA WILDLIFE RESOURCES SECTION	7-24-1	1842.263
5	M. PEGGY GRIBBEN REVOC. LIVING TRUST	7-19-28	112.16
6	M. PEGGY GRIBBEN REVOC. LIVING TRUST	7-19-29	115.439
7	NICK ZELIC ET UX	7-19-27	36
8	JOHN M. & TERESA L. HORNER	7-19-12	75.031
9	JERIMIAH MAGERS & ANDREA RIGGS	7-19-8	3.585
10	DIANE LEE RINE	7-19-11	1.780
11	DIANE LEE RINE	7-19-8.3	3.664

LINE	BEARING	DISTANCE
L1	N 53°52'48" W	2283.43'
L2	N 15°02'20" E	2573.53'
L3	N 26°19'15" E	674.72'

SURFACE HOLE LOCATION (SHL):	SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,398,200.470 EASTING: 535,688.915	UTM (NAD83, ZONE 17, METERS): NORTHING: 4,398,200.470 EASTING: 535,688.920
LANDING POINT LOCATION (LPL):	LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,398,384.805 EASTING: 535,780.103	UTM (NAD83, ZONE 17, METERS): NORTHING: 4,398,385.480 EASTING: 535,783.470
BOTTOM HOLE LOCATION (BHL):	BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,400,620.767 EASTING: 533,298.709	UTM (NAD83, ZONE 17, METERS): NORTHING: 4,400,621.440 EASTING: 533,299.500

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270 *[Signature]*



<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>WVDEP OFFICE OF OIL &amp; GAS 601 57TH STREET CHARLESTON, WV 25034</p>	<p>MINIMUM DEGREE ACCURACY: _____</p> <p>PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)</p>	<p>COMPANY: <b>SWN</b> Production Company, LLC</p> <p>OPERATOR'S WELL #: 5H</p> <p>API WELL #: <b>47 051 02024</b></p> <p>STATE COUNTY PERMIT</p>
	<p>WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/></p> <p>WATERSHED: FISH CREEK</p> <p>DISTRICT: LIBERTY COUNTY: MARSHALL</p> <p>SURFACE OWNER: JOSEPH LEE AND MICHAEL D. YOCUM</p> <p>OIL &amp; GAS ROYALTY OWNER: JOSEPH LEE AND MICHAEL D. YOCUM</p> <p>DRILL <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/></p> <p>CONVERT <input type="checkbox"/> PLUG &amp; ABANDON <input type="checkbox"/> CLEAN OUT &amp; REPLUG <input type="checkbox"/> OTHER CHANGE <input checked="" type="checkbox"/> (SPECIFY) AS-DRILLED</p> <p>TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,803.62 TVD 18,518 MD</p>	<p>ELEVATION: 1079.4'</p> <p>QUADRANGLE: LITTLETON, WV</p> <p>ACREAGE: ± 97.07</p> <p>ACREAGE: ± 97.07</p>
<p>WELL OPERATOR: SWN PRODUCTION COMPANY, LLC</p> <p>ADDRESS: 1300 FORT PIERPONT DRIVE SUITE 201</p> <p>CITY: MORGANTOWN STATE: WV ZIP CODE: 26508</p>	<p>DESIGNATED AGENT: BRITTANY WOODY</p> <p>ADDRESS: 1300 FORT PIERPONT DRIVE SUITE 201</p> <p>CITY: MORGANTOWN STATE: WV ZIP CODE: 26508</p>	<p>REVISIONS:</p> <p>DATE: 8-16-2019</p> <p>DRAWN BY: K. POTH</p> <p>SCALE: 1" = 2000'</p> <p>DRAWING NO: 030-3170</p> <p>WELL LOCATION PLAN</p>