

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

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Office of Oil and Gas

MAR 23 2018

WV Department of  
Environmental Protection

API 47-009-00189 County BROOKE District BUFFALO  
Quad BETHANY Pad Name JOHN GOOD JR BRK PAD Field/Pool Name PANHANDLE FIELD WET  
Farm name JOHN P. GOOD JR. IRREVOCABLE Well Number JOHN GOOD JR BRK 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 4,452,682.814 Easting 535,681.814  
Landing Point of Curve Northing 4,452,731.564 Easting 535,882.698  
Bottom Hole Northing 4,450,939.241 Easting 536,520.700

Elevation (ft) 1152.6 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 3/29/2017 Date drilling commenced 6/23/17 Date drilling ceased 8/30/17  
Date completion activities began 11/14/17 Date completion activities ceased 12/30/17  
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 326 Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 448 Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 308 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed

*C. JBL* 5-10-18

Reviewed by:

05/18/2018

API 47-009 - 00189 Farm name JOHN P. GOOD JR. IRREVOCABLE Well number JOHN GOOD JR BRK 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	26	20	126	NEW	J-55/94#		Y
Surface	17.5	13.375	390	NEW	H-40/48#		Y, 14 BBLS
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	1668	NEW	J-55/36#		Y, 32 BBLS
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	12521	NEW	HCP-110/20#		Y
Tubing		2.375	6159	NEW	P-110/4.7#		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	378	15.60	1.20	453.6	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	650	15.60	1.18	767	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	2290	15.60	1.19	2725.1	SURFACE	24
Tubing							

Drillers TD (ft) 12521 Loggers TD (ft) 12521  
 Deepest formation penetrated LOWER MARCELLUS Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5268

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

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WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_  
 WV Department of Environmental Protection

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_



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PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	5886.24	TVD 6155.53 MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 1540 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs

OPEN FLOW Gas 2534 mcfpd Oil 333 bpd NGL \_\_\_\_\_ bpd Water 319 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		

Please insert additional pages as applicable.

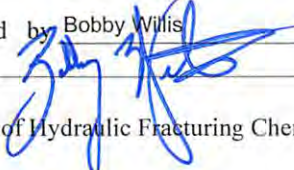
Drilling Contractor SWN DRILLING COMPANY  
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Logging Company BAKER HUGHES  
Address 9110 GROGANS MILL RD City THE WOODLANDS State TX Zip 77380

Cementing Company SCHLUMBERGER WELL SERVICES  
Address 110 SCHLUMBERGER DRIVE City SUGARLAND State TX Zip 77478

Stimulating Company HALLIBURTON ENERGY SERVICE  
Address 14851 MILNER ROAD, GATE 5A City HOUSTON State TX Zip 77032

Please insert additional pages as applicable.

Completed by Bobby Willis Telephone 832-796-2884  
Signature  Title Regulatory Analyst Date 3-21-18 WV Department of Environmental Protection

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

05/18/2018



JOHN GOOD JR BRK 10H

Perf Summary

Attachment 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	10/1/2017	12,192	12,389	42
2	11/14/2017	11,932	12,129	42
3	11/14/2017	11,672	11,869	42
4	11/15/2017	11,412	11,609	42
5	11/16/2017	11,152	11,349	42
6	11/16/2017	10,892	11,089	42
7	11/17/2017	10,632	10,829	42
8	11/17/2017	10,372	10,569	42
9	11/17/2017	10,112	10,309	42
10	11/18/2017	9,852	10,049	42
11	11/18/2017	9,590	9,789	42
12	11/18/2017	9,332	9,529	42
13	11/19/2017	9,072	9,269	42
14	11/19/2017	8,812	9,009	42
15	11/20/2017	8,552	8,749	42
16	11/20/2017	8,292	8,489	42
17	11/21/2017	8,032	8,229	42
18	11/21/2017	7,772	7,969	42
19	11/21/2017	7,512	7,709	42
20	11/22/2017	7,252	7,449	42
21	11/22/2017	6,992	7,189	42
22	11/22/2017	6,732	6,929	42
23	11/23/2017	6,472	6,669	42
24	11/23/2017	6,212	6,409	42

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JOHN GOOD JR BRK 10H

Frac Summary

Attachment 2

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	11/14/2017	100	7,404	8,540	3,665	501,080	8,935	
2	11/14/2017	94	7,447	8,580	4,073	506,120	8,159	
3	11/15/2017	96	7,242	7,780	3,973	505,650	7,896	
4	11/16/2017	101	7,502	8,012	3,942	497,990	7,553	
5	11/16/2017	90	7,642	8,984	4,186	501,600	8,264	
6	11/16/2017	96	7,651	8,008	4,361	496,780	7,733	
7	11/17/2017	100	7,917	8,196	3,850	499,080	7,916	
8	11/17/2017	96	7,219	7,524	4,043	509,010	7,931	
9	11/18/2017	98	7,223	8,574	4,086	484,500	7,393	
10	11/18/2017	95	7,459	7,788	4,068	495,930	7,426	
11	11/18/2017	96	7,423	8,104	4,194	507,130	7,319	
12	11/19/2017	100	7,198	8,105	4,044	498,270	7,057	
13	11/19/2017	97	7,319	7,685	4,078	502,530	7,115	
14	11/20/2017	95	7,046	7,733	4,176	497,810	7,817	
15	11/20/2017	100	6,831	7,202	4,831	490,600	7,078	
16	11/20/2017	94	7,114	7,994	4,094	505,870	8,867	
17	11/21/2017	100	6,757	7,243	4,153	500,490	8,035	
18	11/21/2017	96	6,677	8,068	4,145	505,985	7,081	
19	11/22/2017	98	6,748	7,501	3,993	497,805	7,396	
20	11/22/2017	97	6,467	6,669	3,872	497,555	7,886	
21	11/22/2017	100	6,592	7,219	4,188	490,630	7,014	
22	11/23/2017	99	6,323	6,704	4,118	499,960	6,875	
23	11/23/2017	100	6,996	7,178	4,084	502,140	7,275	
24	11/23/2017	100	6,693	6,952	4,409	501,260	7,024	

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Well Name: John Good Jr BRK 10H 47009001890000

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	326.00	326.00	
Top of Salt Water	448.00	448.00	NA	NA	
Pittsburgh Coal	308.00	308.00	312.00	312.00	
Pottsville (ss)	440.00	440.00	477.00	477.00	
Mauch Chunk (shale)	639.00	639.00	1302.00	1302.00	
Raven Cliff (ss)	789.00	789.00	946.00	946.00	
Maxton (ss)	1130.00	1130.00	1302.00	1302.00	
Greenbriar (ls)	1302.00	1302.00	1448.00	1446.00	
Big Injun (ss)	1448.00	1446.00	1589.00	1585.00	
Berea (siltstone)	1932.00	1922.00	5666.00	5581.00	
Rhinestreet (shale)	5401.31	5333.19	5661.33	5577.35	
Cashaqua (shale)	5661.33	5577.35	5727.35	5633.47	
Middlesex (shale)	5727.35	5633.47	5803.18	5693.60	
Burket (shale)	5803.18	5693.60	5825.91	5709.57	
Tully (ls)	5825.91	5709.57	5909.45	5766.65	
Mahantango (shale)	5909.45	5766.65	6155.53	5886.24	
Marcellus (shale)	6155.53	5886.24	NA	NA	GAS



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/14/2017
Job End Date:	11/23/2017
State:	West Virginia
County:	Brooke
API Number:	47-009-00189-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	John Good Jr. BRK 10H
Latitude:	40.22381100
Longitude:	-80.58068110
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	5,956
Total Base Water Volume (gal):	7,632,636
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	Operator	Base Fluid					
			Water	7732-18-5	100.00000	83.12410	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.98812	





				Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02812	
				Acrylamide acrylate copolymer	Proprietary	30.00000	0.02812	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
				Methanol	67-56-1	60.00000	0.01284	
				Bezyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00642	
				Glutaraldehyde	111-30-8	10.00000	0.00214	
				Ethylene Glycol	107-21-1	30.00000	0.00149	
				Amine Triphosphate	Proprietary	30.00000	0.00149	Bryan Hooton, Nalco Champion, 7705 Highway 90-A Sugar Land, Text, 77478, 281 -263-7000
				Non-hazardous food substance	Proprietary	100.00000	0.00028	

\* 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)



Top Hole Latitude: 40°15'00"

10,934'

Bottom Hole Latitude: 40°15'00"

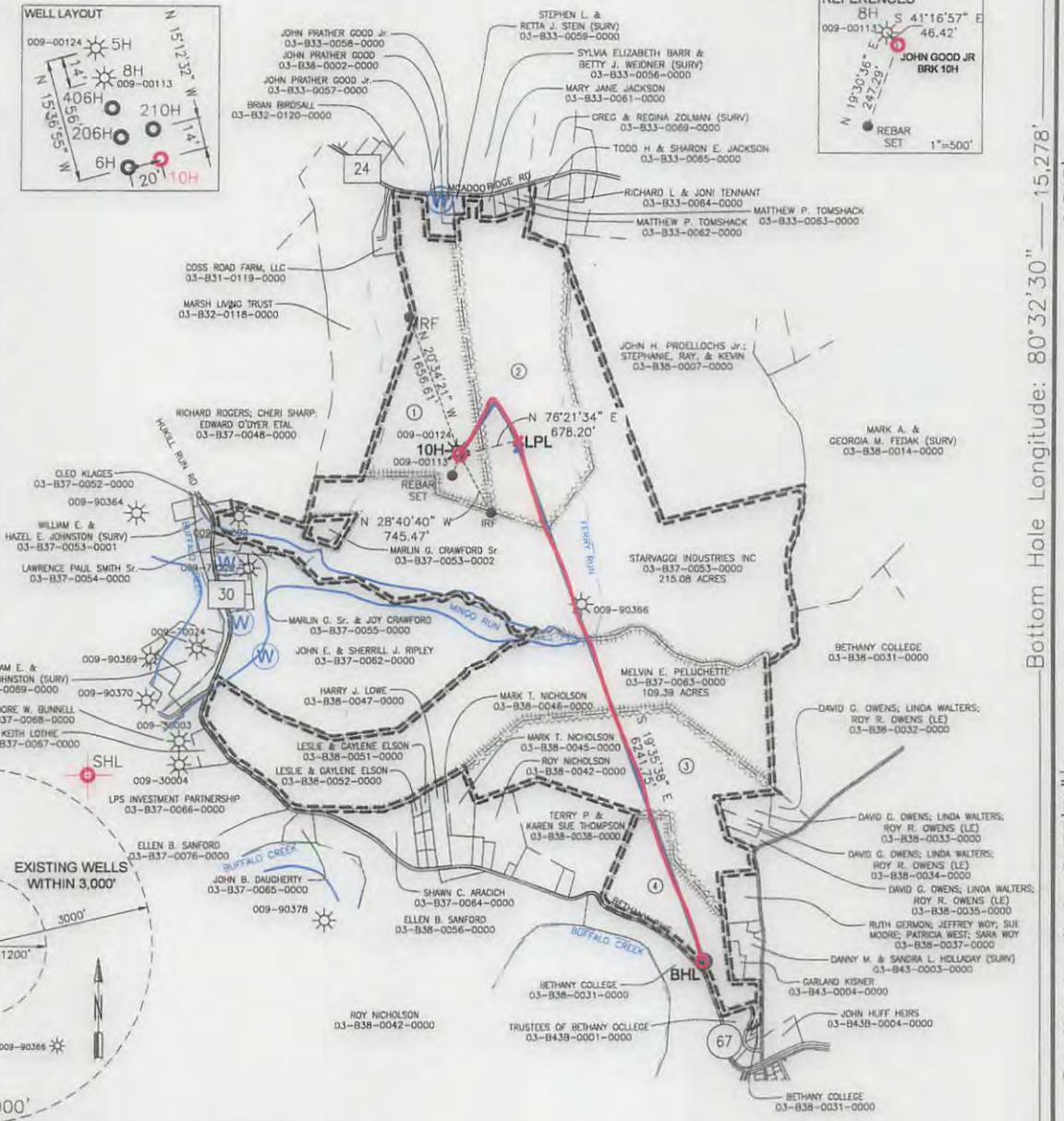
8,209'

# THRASHER

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



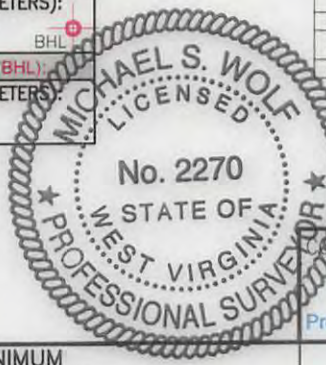
- NOTES ON SURVEY**
- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17. U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
  - SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.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



<b>SURFACE HOLE LOCATION (SHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,682.814 EASTING: 535,681.814	<b>SURFACE HOLE LOCATION (SHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,682.814 EASTING: 535,681.814
<b>LANDING POINT LOCATION (LPL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,705.616 EASTING: 535,884.969	<b>LANDING POINT LOCATION (LPL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,731.564 EASTING: 535,882.698
<b>BOTTOM HOLE LOCATION (BHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,450,937.270 EASTING: 536,527.212	<b>BOTTOM HOLE LOCATION (BHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4,450,939.241 EASTING: 536,520.700

TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	JOHN PRATHER GOOD III, TRUSTEE OF THE JOHN P. GOOD JR. IRREVOCABLE TRUST	03-838-0001-0000	66.57
2	MARY JANE JACKSON	03-833-0060-0000	89.784
3	ALLEN SCOTT JOHNSON, WARREN RAY JOHNSON, DEBORAH SUE CRAIG, VICTORIA LYNN OWENS, CHARLES LAWRENCE JOHNSON	03-838-0036-0000	84.00
4	BETHANY COLLEGE	03-838-0031-0000	29.77

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. 2270

WVDP OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

OPERATOR'S WELL #: JOHN GOOD JR BRK 10H

API WELL #: 47 STATE 009 COUNTY 00189 PERMIT

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

WATERSHED: BUFFALO CREEK ELEVATION: 1152.6'

DISTRICT: BUFFALO COUNTY: BROOKE QUADRANGLE: BETHANY

SURFACE OWNER: JOHN P. GOOD III, TRUSTEE OF THE JOHN P GOOD JR IRREVOCABLE TRUST ACREAGE: 66.57

OIL & GAS ROYALTY OWNER: JOHN P GOOD JR ACREAGE: 66.57

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: 6,003 FT

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL

ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:  
 PROPOSED SURFACE HOLE / BOTTOM HOLE  
 EXISTING / PRODUCING WELLHEAD  
 LPL LANDING POINT LOCATION  
 EXISTING WATER WELL  
 EXISTING SPRING  
 SURVEYED BOUNDARY  
 DRILLING UNIT  
 LEASE BOUNDARY  
 PROPOSED PATH  
 AS-DRILLED PATH

REVISIONS:  
 DATE: 01-08-2018  
 DRAWN BY: R. DOERR  
 SCALE: 1" = 2000'  
 DRAWING NO: 050-5700  
 WELL LOCATION PLAT