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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

August 15, 2016  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / Horizontal 6A Well - 1

SWN PRODUCTION COMPANY, LLC  
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for CONSTANCE TAYLOR WTZ 5H  
47-103-03149-00-00

Shorten Lateral

SWN PRODUCTION COMPANY, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926-0450.

James A. Martin  
Chief

Operator's Well Number: CONSTANCE TAYLOR WTZ 5H  
Farm Name: TAYLOR, CONSTANCE A.  
U.S. WELL NUMBER: 47-103-03149-00-00  
Horizontal 6A / Horizontal 6A Well - 1  
Date Issued: August 16, 2016

Promoting a healthy environment.

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

- 1) Well Operator: SWN Production Co., LLC

<u>494512924</u>	<u>103-Wetzel</u>	<u>7-Proctor</u>	<u>681-Wileyville</u>
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Operator ID County District Quadrangle
- 2) Operator's Well Number: Constance Taylor Wtz 5H Well Pad Name: Constance Taylor Pad
- 3) Farm Name/Surface Owner: Constance A. Taylor Public Road Access: Brock Ridge Road
- 4) Elevation, current ground: 1426' Elevation, proposed post-construction: 1426'
- 5) Well Type (a) Gas  Oil  Underground Storage   
Other   
(b) If Gas Shallow  Deep   
Horizontal
- 6) Existing Pad: Yes or No No DHH  
12-11-15
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Target Formation- Marcellus, Target Top TVD-7392', Target Base TVD-7407', Anticipated Thickness- 47', Associated Pressure- 4500#
- 8) Proposed Total Vertical Depth: 7392'
- 9) Formation at Total Vertical Depth: Marcellus
- 10) Proposed Total Measured Depth: 13,585'
- 11) Proposed Horizontal Leg Length: 5800'
- 12) Approximate Fresh Water Strata Depths: 350'
- 13) Method to Determine Fresh Water Depths: Offset wells in the close proximity.
- 14) Approximate Saltwater Depths: 1282'
- 15) Approximate Coal Seam Depths: 1367'
- 16) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of.
- 17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes  No
- (a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	J-55	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	H-40	48#	450'	450'	419 sx/CTS
Coal	9 5/8"	New	J-55	36#	2872'	2872'	1108 sx/CTS
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	HCP-110	20#	13585'	13585'	Least 88 cu ft 1407 cu/107 holes req'd
Tubing	2 3/8"	New	P-110	4.7#	Approx. 7392'	Approx. 7392'	
Liners							

*Done  
12-17-15*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	81	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	3250	Class A	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190				
Liners							

PACKERS

Kind:	10K Arrowset AS1-X			
Sizes:	5 1/2"			
Depths Set:				

103-03149

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