

05/24/2019



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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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

May 22, 2019

Estate of William J. Hughes  
862 Scheidler Run Rd.  
New Martinsville, WV 26155

Re: Permits for SWN Production Company, LLC, Arthur Waryck MSH, API numbers: 47-051-02169, 47-051-02170, 47-051-02171, 47-051-02172, 47-051-02182, 47-051-02183 and 47-051-02184.

Madam/Sir:

The Office of Oil and Gas (Office) has reviewed your January 10<sup>th</sup> emailed comments concerning the SWN Production Company, LLC applications for the above referenced wells. The comment was sent to the operator for a response. The operator has responded and the response is enclosed for your records.

After considering your comments, the applicant's response, the inspector's findings, and the enforcement records, the Office has determined that the applications meet the requirements set forth in the West Virginia Code and Legislative Rule Title 35 Series 8. Consequently, the Office will be issuing the permits today. For your information and convenience, I am including with this letter a copy of the permits as issued.

Please contact me at (304) 926-0499, extension 1547 if you have any questions.

Charles T. Brewer  
Assistant Chief – Permitting  
WVDEP – Office of Oil and Gas

Enclosures

Promoting a healthy environment.

**Rhodes, Jacob K**

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**From:** Harmon, Henry J  
**Sent:** Tuesday, January 15, 2019 12:48 PM  
**To:** Rhodes, Jacob K  
**Subject:** FW: Recent well work application by SWN for additional Waryck wells; more buried drill cuttings on pad  
**Attachments:** CHK old WELL PADs.pdf; Stern well pad waste pit.pdf; Waryck CHK 6032.JPG

Are you the keeper of public comments for pending well work applications?

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**From:** Bill Hughes <hugheselectric@frontier.com>  
**Sent:** Thursday, January 10, 2019 1:57 PM  
**To:** Harmon, Henry J <Henry.J.Harmon@wv.gov>  
**Cc:** Stottlemeyer, Dennis O <Dennis.O.Stottlemeyer@wv.gov>  
**Subject:** Recent well work application by SWN for additional Waryck wells; more buried drill cuttings on pad

Jason and others,

The Office of Oil & Gas on Nov. 16, 2018 sent a response letter to Wayne Goddard who then made copies for the other nearby neighbors who had originally signed the letter and contacted the OOG. They are all potentially affected by the buried drill cuttings which are still on the Davis Pad in Blake Ridge. Wayne Goddard also gave a copy of that letter to me.

Then yesterday there were some notices concerning additional well work applications (about 4) filed with the OOG by SWN for the Waryck pad on Pleasants Ridge in southern Marshall county. The Waryck is rather small pad so it is hard to see how 4 more wells will fit without disturbing the surface or enlarging the pad area. What SWN has done elsewhere is to remove everything, e.g. separators and tanks and temporarily stored them.

To the best of our knowledge and documentation, the Waryck pad among ALL the others listed in my old CHK list (attached) all had the drill cuttings left on the pad and buried there. As far as we know all the drill cuttings are still mixed in with the surrounding dirt with the **notable exception** of the Schostag. On that well pad due to some input from the current surface owner the drill cuttings were removed and trucked off site recently. The close proximity of the Waryck and Schostag can be seen on the below screen capture. Also both waste pits existed at the same time. But by Oct. 2011 both waste pits had been filled in.

Below is overall view, NOT north up, showing two of the early CHK well pads Waryck and Schostag.

The view is from June of 2009. No well pad activity shows up before then. Waste pits clearly visible here.



I have also attached a short selection of Google Earth based slides on the waste pit on the Stern Pad, in the same general area out on Greenfield Ridge. When we measured the actual surface there a year or two ago, and compared it with the Google Earth view and other input, the location seemed to agree with where samples have already been taken of the remaining drill cuttings. Upon information and belief there might have been a second waste pit on or near that pad.

Therefore the concern and problem remains for all these old CHK well pads that there are buried drill cuttings on each site which will continue, for many decades (or much longer, as in centuries) to present a risk to ground water contamination. It is well recognized that the mix of black shale rock and its formation fluids, with other contaminants were reasonably safe where they were---7000 feet down. However we allowed them to be brought to the surface, and now it is our problem, and will remain a problem for many succeeding generations.

I concede that it is very difficult to quantify the degree of risk and when it might become more important. It is easy for CEC consultants of SWN to say that the buried cuttings are. "NOT LIKELY" to present a risk to anyone currently living nearby. Of course it is just as easy to say, yes they are likely to become a greater risk later,---to who, we do not know yet. It is especially problematic when these blobs of drill cuttings are in unmarked, unlined areas. Given the sharply decreasing production curves of many of the oldest Marcellus wells in Green and Washington counties (Penn) it is not unlikely that many of these well also with significantly decreasing and non-profitable production rates will be abandoned in 50-80 years. Radium 226 (1600 yrs) will barely be out of its infancy by then.

Is there any long term solution being considered for ALL these older legacy wells from CHK with regard to permanently removing the on-site drill cuttings ?

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BTW, I have also attached a photo of the Waryck 6032 during the fracturing operations. This was the same day we toured the area with Randy Huffman. I think James Martin et al were also there. In the picture, the waste pit would have been to the far left side of the picture. The Pleasants Compressor station was being built and it is slightly visible in the distance.

Thanks for looking into this.

Bill Hughes

Wetzel County



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Austin Caperton, Cabinet Secretary  
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Wednesday, May 22, 2019  
WELL WORK PERMIT  
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC  
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit approval for ARTHUR WARYCK MSH UD 2H  
47-051-02182-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless 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: ARTHUR WARYCK MSH UD   
Farm Name: A. MICHAEL WARYCK & D   
U.S. WELL NUMBER: 47-051-02182-00-00  
Horizontal 6A New Drill  
Date Issued: 5/22/2019

**PERMIT CONDITIONS** 4705105/28/2019

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

**CONDITIONS**

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

API Number: 4705102182 05/24/2019

# PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to [DEPOOGNotify@wv.gov](mailto:DEPOOGNotify@wv.gov).

WW-6B  
(10/14)

4705102182  
05/24/2019

API NO. 47- 51 -  
OPERATOR WELL NO. Arthur Waryck MSH UD 2H  
Well Pad Name: Arthur Waryck MSH PAD

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

1) Well Operator: SWN Production Co., LLC 494512924 51-Marshall 009-Mea 681-Wileyville  
Operator ID County District Quadrangle

2) Operator's Well Number: Arthur Waryck MSH UD 2H Well Pad Name: Arthur Waryck MSH PAD

3) Farm Name/Surface Owner: A. Michael Waryck & Deborah Ellen Waryck Public Road Access: Pleasant Ridge Road

4) Elevation, current ground: 1326' Elevation, proposed post-construction: 1326'

5) Well Type (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas Shallow  Deep

Horizontal

6) Existing Pad: Yes or No yes

*Handwritten signature and date: 5/15/19*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Target Formation- Burket, Target Top TVD- 7105', Target Base TVD- 7145', Anticipated Thickness- 35', Associated Pressure- 4634

8) Proposed Total Vertical Depth: 6964'

9) Formation at Total Vertical Depth: Burket

10) Proposed Total Measured Depth: 18209'

11) Proposed Horizontal Leg Length: 10,874.66'

12) Approximate Fresh Water Strata Depths: 557'

13) Method to Determine Fresh Water Depths: Salinity Profile and Logs

14) Approximate Saltwater Depths: 892' Salinity Profile

15) Approximate Coal Seam Depths: 1150'

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: \_\_\_\_\_

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18) CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	H-40	48#	658'	658'	617 sx/CTS
Coal	See	Interm	Casing				
Intermediate	9 5/8"	New	J-55	36#	2703'	2703'	1037 sx/CTS
Production	5 1/2"	New	HCP-110	20#	18209'	18209'	Lead 532x Innl 2936x 100' Inside Innl 
Tubing							
Liners							

JW  
11/13/18

<u>TYPE</u>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Max. Associated Surface Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
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	See	Interm	Casing				
Intermediate	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/15% Excess
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and stimulate any potential zones between and including the Benson to Burket Shale. \*\*If we should encounter a void place basket above and below void area- balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50' below void. (\*If freshwater is encountered deeper than anticipated it must be protected, set casing 50' below and cts.)

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. The well is produced through surface facilities consisting of high pressure production unites, horizontal separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 100 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 11.0

22) Area to be disturbed for well pad only, less access road (acres): 6.4

23) Describe centralizer placement for each casing string:

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

24) Describe all cement additives associated with each cement type:

See Attachment \*\*\*

25) Proposed borehole conditioning procedures:

All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

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\*Note: Attach additional sheets as needed.

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and stimulate any potential zones between and including the Benson to Burket Shale. \*\*If we should encounter a void place basket above and below void area- balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50' below void. (\*If freshwater is encountered deeper than anticipated it must be protected, set casing 50' below and cts.)

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21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 9.8

22) Area to be disturbed for well pad only, less access road (acres): 5.2

23) Describe centralizer placement for each casing string:

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

24) Describe all cement additives associated with each cement type:

See Attachment \*\*\*

25) Proposed borehole conditioning procedures:

All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

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\*Note: Attach additional sheets as needed.

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## Schlumberger Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number
Intermediate Surface	S001	accelerator	calcium chloride up to 3%	10043-52-4
Intermediate Surface	S001	accelerator	calcium chloride	10043-52-4
Kick Off Plug	D080	dispersant	sodium polynaphthalene sulfonate	9008-63-3
	D801	retarder	aromatic polymer derivative	proprietary
	D047	antifoam	polypropylene glycol	25322-69-4
Production-Lead	D167	fluid loss	aliphatic amide polymer	proprietary
	D154	extender	non-crystalline silica	7631-86-9
	D400	gas migration	boric acid	10043-35-3
	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgate)	8031-18-3
	D201	retarder	chrySTALLINE silica	14808-60-7
			metal oxide	proprietary
D202	dispersant	sulphonated synthetic polymer formaldehyde (impurity)	proprietary proprietary	
Production-Tail	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgate)	8031-18-3
	D167	fluid loss	aliphatic amide polymer	proprietary
	D065	dispersant	sodium polynaphthalene sulfonate	9008-63-3
			sodium sulfate	7757-82-6
	D201	retarder	chrySTALLINE silica	14808-60-7
metal oxide			proprietary	
D153	anti-settling	chrySTALLINE silica	14808-60-7	

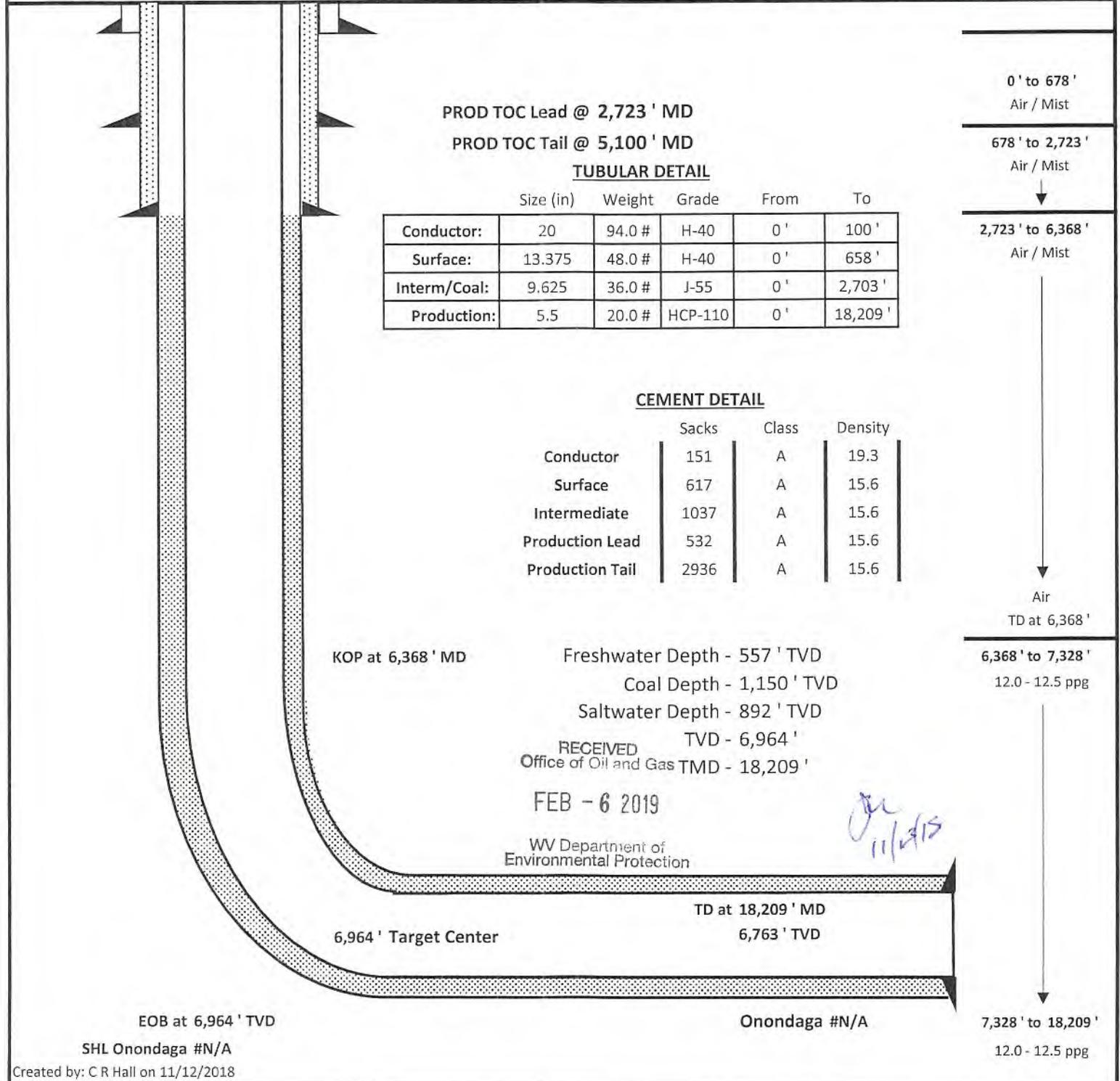
Rev. 5/18/2018

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<b>Southwestern Energy Company</b>			<b>Proposed Drilling Program</b>		
Well:	ARTHUR WARYCK UD MSH 2		Re-entry Rig:	TBD	
Field:	VICTORY FIELD WET		Prospect:	VICTORY	
County:	MARSHALL		State:	WV	
SHL:	39.7241 Latitude	-80.6720 Longitude			
BHL:	39.7439 Latitude	-80.7019 Longitude			
KB Elev:	1,352 ft MSL	KB: 26 ft AGL	GL Elev:	1,326 ft MSL	



STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name SWN Production Co., LLC OP Code 494512924

Watershed (HUC 10) Lynn Camp Run of Fish Creek Quadrangle Wileyville

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes  No

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: \_\_\_\_\_

Will a synthetic liner be used in the pit? Yes  No  If so, what ml.? \_\_\_\_\_

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number 34-155-22403, 34-059-24067, 34-119-26776, 34-167-23662, 34-155-23795, 34-121-23995, 34-155-21693 )
- Reuse (at API Number \_\_\_\_\_ at next anticipated well, API# will be included with the WR-34/DDMR &/or permit addendum. )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain flow back fluids will be put in steel tanks and reused or taken to a permitted disposal facility)

Will closed loop system be used? If so, describe: Yes- See Attachment 3C

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air drill to KOP, fluid drill with SOBM from KOP to TD

-If oil based, what type? Synthetic, petroleum, etc. Synthetic Oil Base

Additives to be used in drilling medium? Attachment 3A

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust)

-Landfill or offsite name/permit number? Meadowfill SWF- 1032, Short Creek SWF-1034, Carbon Limestone MSWL018781, Wetzel County 1021

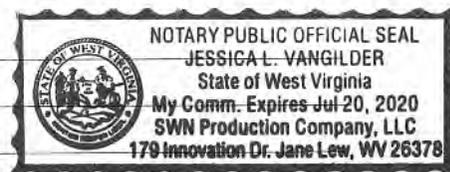
Arden Landfill 10072, Apex Sanitary Landfill 06-08438, Brooke Co SWF-1013, Valley 100280

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature *Brittany Woody*  
Company Official (Typed Name) Brittany Woody  
Company Official Title Regulatory Analyst



Subscribed and sworn before me this 12<sup>th</sup> day of November, 2018

*Jessica L. Vangilder* Notary Public

My commission expires Jul 20, 2020

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**SWN Production Co., LLC**

Proposed Revegetation Treatment: Acres Disturbed 11.0 Prevegetation pH \_\_\_\_\_

Lime as determined by pH test min. 2 Tons/acre or to correct to pH 6.4

Fertilizer type 10-20-20

Fertilizer amount 600 lbs/acre

Mulch Hay/Straw 2.5 Tons/acre

Seed Mixtures

**Temporary**

**Permanent**

Seed Type lbs/acre

Seed Type lbs/acre

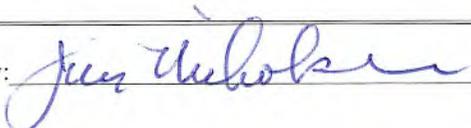
**Attachment 3B**

**Attach:**

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: \_\_\_\_\_



Comments: \_\_\_\_\_

Title: Oil & Gas Inspector

Date: 11/3/18

Field Reviewed? (  ) Yes (  ) No

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## Attachment 3A

### Drilling Mediums

#### Surface/Coal(if present)/Freshwater Intervals:

#### Intermediate/Coal (if present):

Air

Brine (In Gas Storage areas)

Organophilic Bentonite

#### Production Hole:

Air

Synthetic Oil (Base Fluid for mud system)

Barite

Calcium Chloride

Lime

Organophilic Bentonite

Primary and Secondary Emulsifiers

Gilsonite

Calcium Carbonate

Friction Reducers

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# WVD Seeding Specification

$\frac{R^+}{A} \rightarrow V^+$

To Order Seed contact Lyndsi Eddy Flippo office 570-996-4271 cell 501-269-5451 lyndsi\_eddy@swn.com (please allow 7 to 10 days for delivery)

NON-ORGANIC PROPERTIES	
Seed Mixture: ROW Mix	SWN Supplied
Orchardgrass	40%
Timothy	15%
Annual Ryegrass	15%
Brown Top Millet	5%
Red Top	5%
Medium Red Clover	5%
White Clover	5%
Birdsfoot Trefoil	5%
Rough Bluegrass	5%
All legumes are inoculated at 5x normal rate	
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%; color: red;">                     Apply @ 100lbs per acre April 16th- Oct. 14th                 </div> <div style="width: 45%; color: red;">                     Apply @ 200lbs per acre Oct. 15th- April 15th PLUS 50lbs per acre of Winter Wheat                 </div> </div>	

ORGANIC PROPERTIES	
Seed Mixture: SWN Production Organic Mix	SWN Supplied
Organic Timothy	50%
Organic Red or White Clover	50%
OR	
Organic Perennial Ryegrass	50%
Organic Red or White Clover	50%
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%; color: red;">                     Apply @ 100lbs per acre April 16th- Oct. 14th                 </div> <div style="width: 45%; color: red;">                     Apply @ 200lbs per acre Oct. 15th- April 15th                 </div> </div>	
Organic Fertilizer @ 200lbs per Acre	Pelletized Lime @ 2 Tons per Acre

SOIL AMENDMENTS	
10-20-20 Fertilizer	*Apply @ 500lbs per Acre
Pelletized Lime	Apply @ 2 Tons per Acre
*unless otherwise dictated by soil test results	

Seeding Calculation Information:
1452' of 30' ROW/LOD is One Acre
871' of 50' ROW/LOD is One Acre
622' of 70' ROW/LOD is One Acre

Synopsis:
Every 622 linear feet in a 70' ROW/LOD, you should be using (2) 50lb bags of seed, (4) 50lb bags of fertilizer and (80) 50lb bags of Lime (2x seed in winter months + 50lb Winter Wheat/ac).

Special Considerations:
Landowner Special Considerations including CREP program participants require additional guidance that is not given here. Discuss these requirements with SWN supervision at the beginning of the project to allow time for special seed delivery.

WETLANDS (delineated as jurisdictional wetlands)	
Seed Mixture: Wetland Mix	SWN Supplied
VA Wild Ryegrass	20%
Annual Ryegrass	20%
Fowl Bluegrass	20%
Cosmos 'Sensation'	10%
Redtop	5%
Golden Tickseed	5%
Maryland Senna	5%
Showy Tickseed	5%
Fox Sedge	2.5%
Soft Rush	2.5%
Woolgrass	2.5%
Swamp Verbena	2.5%
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%; color: red;">                     Apply @ 25lbs per acre April 16th- Oct. 14th                 </div> <div style="width: 45%; color: red;">                     Apply @ 50lbs per acre Oct. 15th- April 15th                 </div> </div>	
NO FERTILIZER OR LIME INSIDE WETLAND LIMITS	

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## Attachment 3C

## CLOSED LOOP SYSTEM

The closed loop system is designed to eliminate the use of reserve pits by providing a higher level of solids control processing and using steel pits for capture of drill cuttings. The cuttings are then processed to achieve landfill requirements before hauling to approved landfills. The liquids are processed to recycle into the active mud system or to transfer to onsite temporary storage as needed.

The closed loop system consists of several sets of a shale gas separator (often called a 'methana'), several banks of solids shakers, high speed centrifuges (1 or 2) used to process the fluid portion of the mud system to remove low gravity solids, low speed centrifuge used for barite recovery in high weight liquid drilling systems, a dewatering system (for air intervals and if freshwater mud systems are in use) used to further clean liquids by flocculation and additional mechanical separation, associated open top tanks for processing liquids and capturing solids for disposal, and transfer pumps to move fluids through the processes. There is an area adjacent to the cuttings tanks (Red Zone) where a track hole is utilized to recover the processed cuttings for loading into containers for hauloff. (See attached schematic of a generic closed loop system layout)

Below are discussions of the processes used when drilling the air interval or liquids interval.

## AIR DRILLING INTERVALS

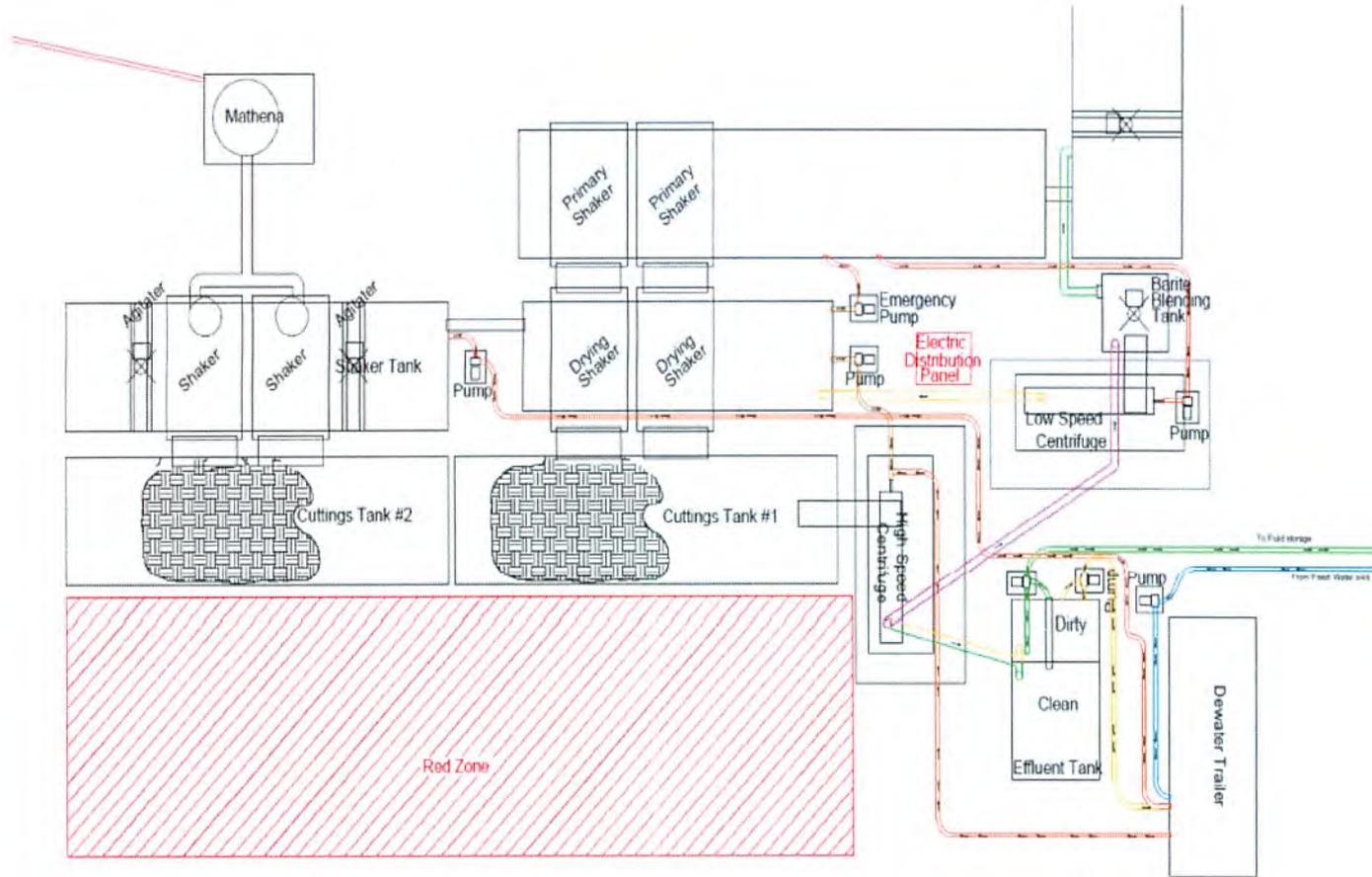
During air drilling operations, flow from the rig will pass down the flowline to the Shale Gas Separator (sometimes called a methane) where gas and liquids/solids are separated. Gas is sent to the flare scrubber tank and is flared at the flare stack. Solids and fluids pass across a shaker system to separate solids from liquids. Solids pass into the cuttings tanks where they are captured for drying and hauloff to an approved landfill site. Liquids fall into a shaker tank and are collected by a centrifugal pump to be processed by the high speed centrifuge to further separate liquids and solids. Solids are then dumped into the cuttings tank for drying and hauloff. Liquids are further processed to remove additional low gravity solids before being reused or transferred to onsite storage.

## LIQUIDS DRILLING (FRESHWATER, BRINE, SOBM)

When drilling is converted to liquids drilling, the shale gas separator and associated shaker tank are bypassed, and the liquids system is processed over the primary and drying shaker systems. Cuttings drop into the cuttings tank for additional processing. Any recoverable associated liquids attached to the cutting are recovered out the tank and processed through the low gravity (high speed) and barite recovery centrifuges (low speed) to further remove low gravity solids and to recover barite for reuse in the mud systems.

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# Solids Control Layout



EXAMPLE SCHEMATIC FOR CLOSED LOOP SOLIDS CONTROL SYSTEM

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# MARCELLUS WELL DRILLING PROCEDURES AND WELL SITE SAFETY PLAN



SWN Production Company, LLC  
179 Innovation Drive  
Jane Lew, West Virginia 26378

**API NO. 47-XXX-XXXXX**  
**WELL NAME: Arthur Waryck MSH UD 2H**  
**Wileyville QUAD**  
**Meade DISTRICT**  
**Marshall County, WEST VIRGINIA**

Submitted by:

Brittany Woody Brittany Woody Date: 9/24/2018  
Title: Regulatory Analyst SWN Production Co., LLC

Approved by:

Jim Nichols Date: 11/13/18  
Title: Oil & Gas Inspector

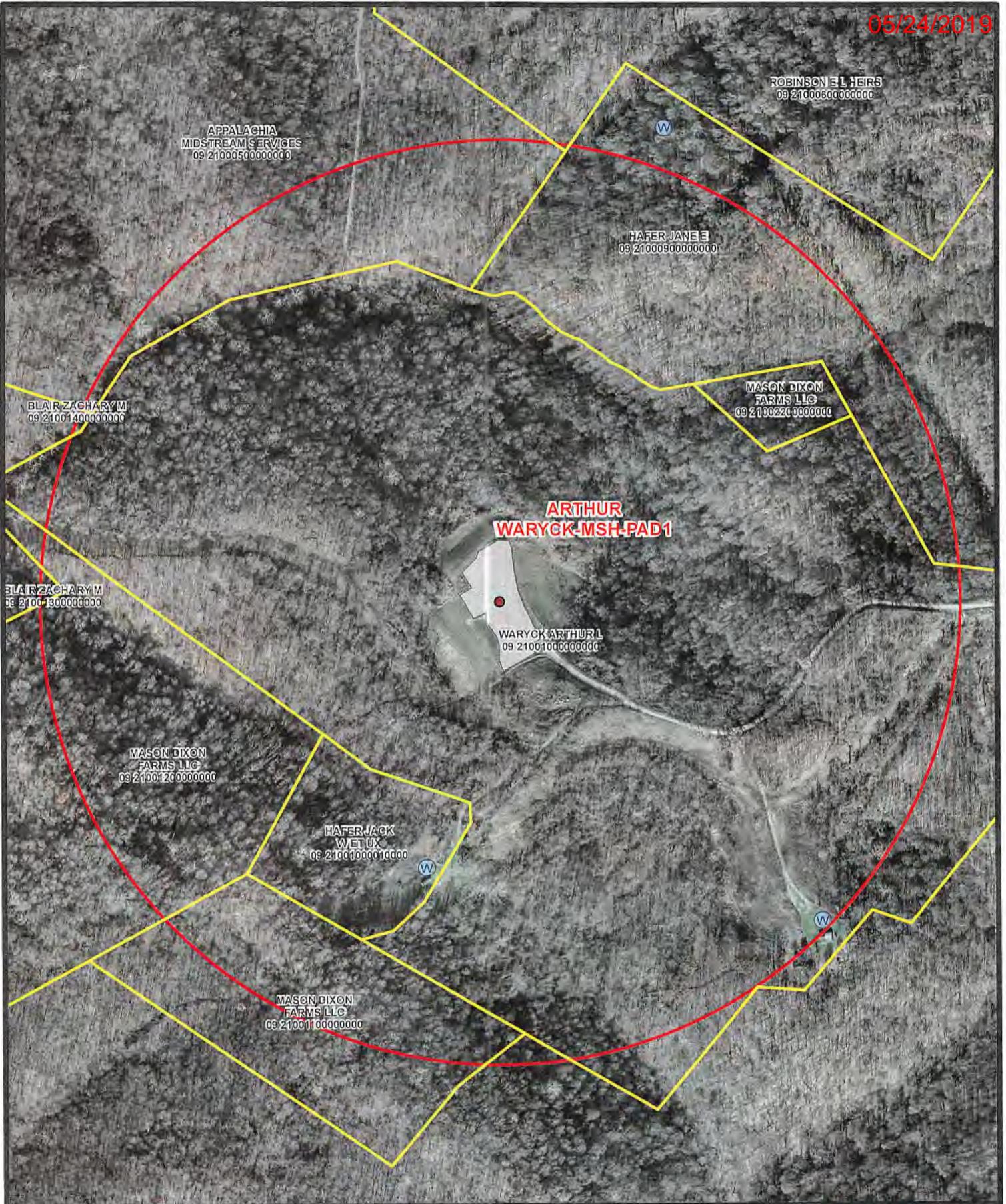
Approved by:

\_\_\_\_\_  
Date: \_\_\_\_\_  
Title: \_\_\_\_\_

SWN PRODUCTION COMPANY, LLC – CONFIDENTIAL

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<p>1 in = 417 ft</p> <p>0 0.025 0.05 0.1 0.15 0.2 METERS</p> <p>Coordinate System: NAD 1983 UTM Zone 17N Units: Meter</p>	<ul style="list-style-type: none"> <li> Spring</li> <li> Water Well</li> <li> Pond</li> <li> 1500' Buffer</li> </ul>	<p><b>Water Purveyor Map</b> Well Pad: Arthur Waryck County: MSH</p>	
		<p>Southwestern Energy®</p>	
<p><b>Coordinates: 39.724222, -80.671936</b></p>		<p>Date: 9/26/2018</p>	<p>Author: willisb</p>

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Latitude: 39°45'00" (SH)

SURFACE HOLE 1,499'

# JACKSON SURVEYING INC.

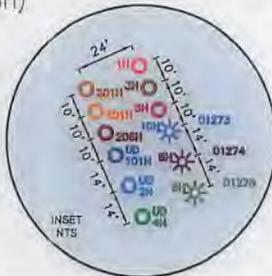
P.O. Box 1460  
677 W. Main St.  
Clarksburg, WV 26302  
304-623-5851

<b>SURFACE HOLE LOCATION (SHL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,397,182.360
EASTING: 528,110.454
<b>LANDING POINT (LPL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,397,152.456
EASTING: 528,000.792
<b>BOTTOM HOLE LOCATION (BHL):</b>
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,399,378.214
EASTING: 525,544.660

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

Latitude: 39°45'00" (BH)

BOTTOM HOLE 9,894'



05/24/2019

LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	S 44°26'18" W	1,222.47'	SHL TO LANDMARK	FOUND STONE
L2	S 25°55'25" W	1,204.59'	SHL TO LANDMARK	FENCE CORNER
LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L3	S 74°44'48" W	372.92'	1,059.92'	SHL TO LP



- WELL RESTRICTIONS**
1. NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
  2. NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
  3. WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 250 FEET OF PROPOSED WELL.
  4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
  5. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
  6. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.

**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.

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. 708 *David L Jackson*



COMPANY: **SWN** Production Company, LLC

<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>	MINIMUM DEGREE OF ACCURACY: 1/200	COMPANY: ARTHUR WARYCK UD MSH
	PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)	OPERATOR'S WELL #: 2H
	API WELL #: 47 051 02182 HGA	STATE COUNTY PERMIT

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

WATERSHED: LYNN CAMP RUN OF FISH CREEK (HUC-10) ELEVATION: 1325.7'

DISTRICT: MEADE COUNTY: MARSHALL QUADRANGLE: WILEYVILLE, WV

SURFACE OWNER: A. MICHAEL WARYCK & DEBORAH ELLEN WARYCK ACREAGE: ±125.39

OIL & GAS ROYALTY OWNER: CHARLES W. CAIN & PEARL CAIN ACREAGE: ±125.39

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

CONVERT  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY)

TARGET FORMATION: UPPER DEVONIAN ESTIMATED DEPTH: 6,964 TVD 18,209 TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378

DESIGNATED AGENT: BRITTANY WOODY ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378

<b>LEGEND:</b>	<ul style="list-style-type: none"> <li>PROPOSED SURFACE HOLE / BOTTOM HOLE</li> <li>EXISTING / PRODUCING WELLHEAD</li> <li>LPL LANDING POINT LOCATION</li> <li>EXISTING WATER WELL</li> <li>EXISTING SPRING</li> </ul>	<ul style="list-style-type: none"> <li>SURVEYED BOUNDARY</li> <li>DRILLING UNIT</li> <li>LEASE BOUNDARY</li> <li>PROPOSED PATH</li> </ul>	<b>REVISIONS:</b> DATE: 11-28-2018 DRAWN BY: N. MANO SCALE: 1" = 2000' DRAWING NO: WELL LOCATION PLAT
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**JACKSON SURVEYING  
INC.**

P.O. Box 1460  
677 W. Main St.  
Clarksburg, WV 26302  
304-623-5851

05/24/2019

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	A. MICHAEL WARYCK & DEBORAH ELLEN WARYCK (S) / CHARLES W. CAIN & PEARL CAIN (R)	09-21-10
TRACT	SURFACE OWNER	TAX PARCEL
2	APPALACHIAN MIDSTREAM SERVICES, LLC (S)	09-21-05
3	ZACHARY M. BLAIR (S)	09-21-04
4	APPALACHIAN MIDSTREAM SERVICES, LLC (S)	09-21-03
5	ROSELAND PROPERTY, LLC (S)	09-21-02
6	PATRICK A. FROHNAPFEL & LISA A. FROHNAPFEL (S)	09-20-11
7	CLEMENT E. FROHNAPFEL & BRENDA L. FROHNAPFEL (S)	09-18-13

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	MASON DIXON FARMS, LLC	09-21-11
B	ANORAH C. SCHOSTAG & RYAN U. SCHOSTAG	09-21-10.1
C	ZACHARY M. BLAIR	09-21-13
D	ZACHARY M. BLAIR	09-21-14
E	ZACHARY M. BLAIR	09-21-16
F	ZACHARY M. BLAIR	09-21-18
G	DAVID PAUL WEIGAND	09-20-12.1
H	ELEANOR T. MILLER & JAMES B. MILLER	09-20-8
I	ELEANOR T. MILLER & JAMES B. MILLER	09-20-9.2
J	ELEANOR T. MILLER & JAMES B. MILLER	09-20-9.1
K	JAMES MILLER ET UX	09-20-9.6
L	JAMES MILLER ET UX	09-20-9.5
M	DAVID PAUL FROHNAPFEL	09-20-7.1
N	KEITH A. FERRELL ET UX	09-18-15
O	ROBERT F. VILLERS	09-18-16
P	ROBERT F. VILLERS & APRIL L. VILLERS	09-18-16.4
Q	VINCENT J. WAYMAN ET UX	09-18-17
R	DOUGLAS J. WAYMAN ET UX	09-18-8
S	MASON DIXON FARMS, LLC	09-21-22

REVISIONS:	COMPANY:	 	
	OPERATOR'S	ARTHUR WARYCK UD MSH	
	WELL #:	2H	
	DISTRICT:	COUNTY:	STATE:
	MEADE	MARSHALL	WV
			DATE: 11-28-2018
			DRAWN BY: N. MANO
			SCALE: N/A
			DRAWING NO:
			WELL LOCATION PLAT 2

WW-6A1  
(5/13)

Operator's Well No. WARYCKMSH 2H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that -

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
See Exhibit "A"				

**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: SWN Production Company, LLC.  
 By: Brandi Williams  
 Its: Staff Landman

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Arthur Waryck 2H  
Marshall and Wetzel County, West Virginia

Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
9-21-10	Charles W. Cain and Pearl Cain, his wife	The Manufacturers Light & Heat Company	12.50%	353/248	0.0000%
	The Manufacturers Light & Heat Company	Columbia Gas Transmission Corporation		422/204	
	Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	
	Columbia Natural Resources, LLC	Chesapeake Appalachia, L.L.C.		650/63	
	Columbia Gas Transmission Corporation	Chesapeake Appalachia, L.L.C.		662/322	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
9-21-5	David A. Mason, single	Mountain Link Associates, Inc.	12.50%	658/626	0.0000%
	Mountain Link Associates, Inc.	Reed Brothers Limited Partnership		19/620	
	Reed Brothers Limited Partnership	Hunt Oil USA		21/132	
	Hunt Oil USA	Chesapeake Appalachia, L.L.C.		21/611	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
9-21-4	ROYALTY OWNER		n/a		18.4250%
	Ocie Neely, divorced	Manufacturers Light and Heat Company	12.50%	342/395	
	The Manufacturers Light & Heat Company	Columbia Gas Transmission Corporation		422/204	
	Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	
	Columbia Natural Resources, LLC	Chesapeake Appalachia, L.L.C.		650/63	
	Columbia Gas Transmission Corporation	Chesapeake Appalachia, L.L.C.		662/322	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Mildred Wayt, aka Mildred Lorainne Wayt aka Mildred Lorainne Wayt, a widow	Chesapeake Appalachia, LLC	12.50%	701/325	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Eugene Young, a married man dealing in his sole and separate property	Chesapeake Appalachia, LLC	18.00%	704/485	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Ronald R. Young	Chesapeake Appalachia, LLC	18.00%	703/527	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Betty Ott, a widow	Chesapeake Appalachia, LLC	18.00%	703/539	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Donald E. Young, a married man dealing in his sole and separate property	Chesapeake Appalachia, LLC	18.00%	703/541	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Alice Winland, aka Alice Fay Winland, a widow	Chesapeake Appalachia, LLC	18.00%	703/543	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Janice K. Roxby, a widow	Chesapeake Appalachia, LLC	18.00%	703/549	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Shirley A. Kootnz, a married woman dealing in her sole and separate property	Chesapeake Appalachia, LLC	18.00%	703/525	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Bryan Christopher Young, single	Chesapeake Appalachia, LLC	18.00%	708/92	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Clara Sue Young, a single woman	Chesapeake Appalachia, LLC	18.00%	707/521	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Chad Allen Young, married dealing in his sole and separate property	Chesapeake Appalachia, LLC	18.00%	708/91	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Margaret Ann Walker, a married woman dealing in her sole and separate property	Chesapeake Appalachia, LLC	18.00%	708/62	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Edith M. Comte Revocable Living Trust	Chesapeake Appalachia, LLC	18.00%	708/262	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Marcus B. Young, aka Marcus Boyd Young, a married man dealing in his sole and separate property	Chesapeake Appalachia, LLC	18.00%	708/98	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Lois E. Wickman, a single woman	Chesapeake Appalachia, LLC	18.00%	708/235	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Neil R. Young, a single man	Chesapeake Appalachia, LLC	18.00%	708/236	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Phyllis E. Young, aka Phyllis Elaine Young, a widow	Chesapeake Appalachia, LLC	18.00%	708/237	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Leland Sinclair Young, a married man dealing in his sole and separate property	Chesapeake Appalachia, LLC	18.00%	955/295	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Frank Crutcher Debolt, Sr., a widower	Chesapeake Appalachia, LLC	17.00%	717/16	

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EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator 05/24/2019

Arthur Waryck 2H

Marshall and Wetzel County, West Virginia

Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Barbara Pocha, fka Barbara Wayt, a widow	Chesapeake Appalachia, LLC	17.00%	719/55	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Ronald Britton, a married man dealing in his sole and separate property	Chesapeake Appalachia, LLC	17.00%	719/60	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Patricia Albanese, a married woman dealing in her sole and separate property	Chesapeake Appalachia, LLC	12.50%	725/645	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Ronald Wayt, a widower	Chesapeake Appalachia, LLC	17.00%	726/129	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Robert W. King, a married man dealing in his sole and separate property	Chesapeake Appalachia, LLC	18.00%	724/464	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Harold E. Wayt, a/k/a Pete Wayt, and Joyce Wayt, his wife	Chesapeake Appalachia, LLC	17.00%	723/237	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Raymond P. King aka Paul King and Susan M. King, (h/w)	Chesapeake Appalachia, LLC	18.00%	723/242	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Carrie Marie Young, a married woman dealing in her sole and separate property	Chesapeake Appalachia, LLC	18.00%	724/478	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	James Britton	Chesapeake Appalachia, LLC	17.00%	724/512	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Charles T. Wayt and Mary K. Wayt, his wife	Chesapeake Appalachia, LLC	17.00%	725/441	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Peter M. Herrick and Darla Herrick, husband and wife	Chesapeake Appalachia, LLC	17.00%	752/573	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
9-21-3	David A. Mason, single	Mountain Link Associates, Inc.	12.50%	658/625	0.0000%
	Mountain Link Associates, Inc.	Reed Brothers Limited Partnership		19/620	
	Reed Brothers Limited Partnership	Hunt Oil USA		21/132	
	Hunt Oil USA	Chesapeake Appalachia, L.L.C.		21/611	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
9-21-2	ROYALTY OWNER		n/a		1.4583%
	Raymond G. Blatt, a single man, by his Attorney-in-Fact, William T. Bonar	Chesapeake Appalachia, L.L.C.	12.50%	678/637	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Anthony C. Blatt, a married man dealing in his sole and separate property	Chesapeake Appalachia, L.L.C.	12.50%	678/643	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Monica C. Bonar, a/k/a Monica Blatt Bonar, a married woman dealing in her sole and separate property	Chesapeake Appalachia, L.L.C.	12.50%	678/646	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Michael William Young, single	Chesapeake Appalachia, L.L.C.	12.50%	679/522	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Patricia Shuttler a married woman dealing in her sole and separate property	Chesapeake Appalachia, L.L.C.	12.50%	679/609	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Lawrence E. Blatt, a married man dealing in his sole and separate property	Chesapeake Appalachia, L.L.C.	12.50%	679/615	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Edna McCombs, a widow	Chesapeake Appalachia, L.L.C.	12.50%	680/624	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Dorothy L. Wilson, a widow	Chesapeake Appalachia, L.L.C.	12.50%	680/596	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Christine R. Lowe, a/k/a Christine Rae Lowe, a widow	Chesapeake Appalachia, L.L.C.	12.50%	682/252	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	John G. Weigand and Marilyn S. Weigand, his wife	Chesapeake Appalachia, L.L.C.	15.00%	685/610	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Mary Ann Goddard and Wayne E. Goddard, her husband	Chesapeake Appalachia, L.L.C.	15.00%	685/607	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	David Paul Weigand, a single man	Chesapeake Appalachia, L.L.C.	15.00%	685/608	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Rose Marie Ebert and Carl J. Ebert, her husband	Chesapeake Appalachia, L.L.C.	12.50%	684/98	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Harold H. Miller, a widower	Chesapeake Appalachia, L.L.C.	12.50%	684/101	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Eleanor T. Miller, a/k/a Eleanor Miller, a single woman	Chesapeake Appalachia, L.L.C.	12.50%	686/253	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	James B. Miller, a/k/a James Miller and Helen M. Miller, his	Chesapeake Appalachia, L.L.C.	12.50%	686/209	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Mary Ann Hedderly and Russel L. Hedderly Sr., her husband	Chesapeake Appalachia, L.L.C.	12.50%	690/195	

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EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator **05/24/2019**

Arthur Waryck 2H  
Marshall and Wetzel County, West Virginia

Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Laura Marie Dolan and Stephen M. Dolan, wife and husband	Chesapeake Appalachia, L.L.C.	12.50%	697/109	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Michael P. Yeager & Nancy K. Yeager/w	Chesapeake Appalachia, L.L.C.	12.50%	697/105	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Robert F. Yeager and Rae E. Yeager, husband and wife	Chesapeake Appalachia, L.L.C.	12.50%	698/202	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Robert L. Wiegand and Ruth E. Wiegand, his wife	Chesapeake Appalachia, L.L.C.	18.75%	704/431	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	William A. Hall and Lori A. Hall, his wife	Chesapeake Appalachia, L.L.C.	18.75%	704/447	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Anthony G. Hall and Paula S. Hall, his wife	Chesapeake Appalachia, L.L.C.	18.75%	704/445	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Robert H. Hall and Jennifer D. Hall, his wife	Chesapeake Appalachia, L.L.C.	18.75%	704/467	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Charles A. Wiegand, a married man dealing in his sole and separate property	Chesapeake Appalachia, L.L.C.	18.75%	708/143	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Trudy A. Lucas, a widow	Chesapeake Appalachia, L.L.C.	18.75%	705/589	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Elby J. Lephew, a widower	Chesapeake Appalachia, L.L.C.	18.75%	705/591	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Kenneth A. Wiegand and Ardie M. Wiegand, his	Chesapeake Appalachia, L.L.C.	18.75%	708/258	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Leonard L. Wiegand and Nancy E. Wiegand, his	Chesapeake Appalachia, L.L.C.	18.75%	708/55	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Margaret Wilson, a single woman	Chesapeake Appalachia, L.L.C.	18.75%	715/428	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Willy Lephew, a married man dealing in his sole and separate property	Chesapeake Appalachia, L.L.C.	18.75%	715/430	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Claude R. Wiegand and Sylvia I. Wiegand, his wife	Chesapeake Appalachia, L.L.C.	18.75%	715/443	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Lori Ann Thompson, a/k/a Lori Ann Hall, a single woman	Chesapeake Appalachia, L.L.C.	17.00%	725/416	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Barbara L. and William R. Pancake, husband and	Stone Energy Corporation	19.00%	851/460	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/444	
	Patrick A. & Lisa A. Frohnapfel, husband and wife	Stone Energy Corporation	19.00%	851/452	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/444	
	David P. and Lynn E. Frohnapfel, husband and wife	Stone Energy Corporation	19.00%	851/458	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/444	
	Christina M. Frohnapfel	Stone Energy Corporation	19.00%	851/456	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/444	
	Helen B. Shutler	Stone Energy Corporation	19.00%	851/462	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/444	
	Robert F. Villers, a/k/a Robert Francis Villers and April L. Villers, his wife	TH Exploration, LLC	18.00%	885/47	
	TH Exploration, LLC	SWN Production Company, LLC		41/299	
	Mary Josephine Nice and Jacob Woodrow Nice, her husband	TH Exploration, LLC	18.00%	876/161	
	TH Exploration, LLC	SWN Production Company, LLC		41/299	
	Mary Margaret Stine and David Stine, her husband	TH Exploration, LLC	18.00%	885/44	
	TH Exploration, LLC	SWN Production Company, LLC		41/299	
	William B. Klug, and Bertha L. Klug/w	TH Exploration, LLC	18.00%	885/41	
	TH Exploration, LLC	SWN Production Company, LLC		41/299	
	Family Tree Corporation	SWN Production Company, LLC	18.00%	915/401	
	Constance S. Miller and Charles Allen Miller, Sr., her husband	SWN Production Company, LLC	18.00%	920/146	
	Teresa Church, married dealing with her sole and separate property	SWN Production Company, LLC	18.00%	926/303	
	Mineral Acquisition Company I, LP.	SWN Production Company, LLC	18.00%	932/621	
	Frances J. Pucharich, a/k/a Frances Jo Pucharich	SWN Production Company, LLC	16.00%	915/414	
	Lynn E. Cook, a/k/a Lynn Ellen Cook	SWN Production Company, LLC	16.00%	915/404	
	Amy C. Murray, a/k/a Amy Christine Murray	SWN Production Company, LLC	16.00%	915/422	

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Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator **05/24/2019**

Arthur Waryck 2H  
Marshall and Wetzel County, West Virginia

Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
	Mary K. McKeets, a/k/a Mary Katherine Schoene, a/k/a Mary K. McKets	SWN Production Company, LLC	16.00%	915/426	
	Suzanne Thompson	SWN Production Company, LLC	16.00%	915/418	
	Albert L. Hohman and Mary Louise Hohman, Trustees of the Hohman Revocable Trust dated August 8, 2014	SWN Production Company, LLC	18.75%	926/299	
	Mark H.J. Miller and Cheryl Miller, his wife	SWN Production Company, LLC	17.00%	916/155	
	Mary C. Wright, a single woman	SWN Production Company, LLC	17.00%	915/397	
	Margaret J. Miller, a/k/a Margaret Julia Agnes Miller, a/k/a Meg J. Dolin, a single woman	SWN Production Company, LLC	17.00%	916/159	
	Rosemary Lewis, a single woman	SWN Production Company, LLC	17.00%	885/111	
	Judy Weigand, a single woman	SWN Production Company, LLC	17.00%	885/113	
	Nancy Lipscomb fka Nancy Weigand & Randall Lipscomb	SWN Production Company, LLC	17.00%	885/115	
	Catherine Laier fka Catherine Weigand & Phillip Laier	SWN Production Company, LLC	17.00%	885/117	
	Agnes Haskins, f/k/a Agnes Weigand, a married woman dealing in her sole and separate property	SWN Production Company, LLC	17.00%	885/119	
	Jeffrey W. Silchuk, a single man	SWN Production Company, LLC	17.00%	885/121	
	Abigail I. Burkey & Zachary Burkey, her husband	SWN Production Company, LLC	17.00%	885/109	
	Kevin Cecil, Sheriff of Marshall County, as Conservator of Brenda Garcia	SWN Production Company, LLC	18.00%	962/113	
	AMP Fund II LP, a Delaware Limited Partnership	American Petroleum Partners Operating, LLC	18.00%	919/380	
	American Petroleum Partners Operating, LLC	SWN Production Company, LLC		42/305	
9-20-11	Maggie Breiding	L. L. Thomas	12.50%	63/329	0.0000%
	South Penn Oil Company South Penn Natural Gas Company	South Penn Natural Gas Company Dallis Snyder and Sam Beren, partners, trading and doing business as Snyder and Beren		209/552 239/81	
	Dallis Snyder and Sam Beren, partners, trading and doing business as Snyder and Beren	John H. Robinson and George F. Eagon		1/443	
	John H. Robinson and Blanche Eagon, as Executrix of the Estate of George F. Eagon, deceased, Blanche Eagon, in her own right, Mildred M. Lartigue and Carl L. Eagon, by Paul J. Shiben and Joseph V. DeMarco, Jr., their Attorneys In Fact, and Elva Robinson, Executrix of the Estate of the said John H. Robinson, now deceased, Elva Robinson and Mary Ellen Davis	Elva Robinson and Mary Ellen Davis		3/495	
	Elva Robinson and Mary Ellen Davis	Andrew L. Henry, Charles E. Reed and Harry R. Cronin, Jr.		4/35	
	Katherine A. Henry and Harry R. Cronin, Jr.	Charles E. Reed and Kathryn C. Reed, husband and wife		397/495	
	Kathryn C. Reed, a widow and unmarried	Carl Perkins		434/441	
	Carl Perkins and Dorothy Louise Perkins, husband and wife	Perkins Oil and Gas, Inc.		17/593	
	Perkins Oil and Gas, Inc.	Stone Energy Corporation		26/322	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/638	
	John F. Fox and Lizzie Fox, husband and wife	L. L. Thomas	12.50%	63/332	0.0000%
	South Penn Oil Company South Penn Natural Gas Company	South Penn Natural Gas Company Dallis Snyder and Sam Beren, partners, trading and doing business as Snyder and Beren		209/552 239/81	
	Dallis Snyder and Sam Beren, partners, trading and doing business as Snyder and Beren	John H. Robinson and George F. Eagon		1/443	

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Arthur Waryck 2H  
Marshall and Wetzel County, West Virginia

Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
	John H. Robinson and Blanche Eagon, as Executrix of the Estate of George F. Eagon, deceased, Blanche Eagon, in her own right, Mildred M. Lartigue and Carl L. Eagon, by Paul J. Shiben and Joseph V. DeMarco, Jr., their Attorneys In Fact, and Elva Robinson, Executrix of the Estate of the said John H. Robinson, now deceased, Elva Robinson and Mary Ellen Davis	Elva Robinson and Mary Ellen Davis		3/495	
	Elva Robinson and Mary Ellen Davis	Andrew L. Henry, Charles E. Reed and Harry R. Cronin, Jr.		4/35	
	Katherine A. Henry and Harry R. Cronin, Jr.	Charles E. Reed and Kathryn C. Reed, husband and wife		397/495	
	Kathryn C. Reed, a widow and unmarried	Carl Perkins		434/441	
	Carl Perkins and Dorothy Louise Perkins, husband and wife	Perkins Oil and Gas, Inc.		17/593	
	Perkins Oil and Gas, Inc.	Stone Energy Corporation		26/322	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/638	
	Barbara Wayman, Michael Wayman, Annie Wayman, Amelia Basehart, John Basehart, Katie Herman and Wendall Herman	South Penn Oil Company	12.50%	74/492	0.0000%
	South Penn Oil Company	South Penn Natural Gas Company		209/552	
	South Penn Natural Gas Company	Dallis Snyder and Sam Beren, partners, trading and doing business as Snyder and Beren		239/81	
	Dallis Snyder and Sam Beren, partners, trading and doing business as Snyder and Beren	John H. Robinson and George F. Eagon		1/443	
	John H. Robinson and Blanche Eagon, as Executrix of the Estate of George F. Eagon, deceased, Blanche Eagon, in her own right, Mildred M. Lartigue and Carl L. Eagon, by Paul J. Shiben and Joseph V. DeMarco, Jr., their Attorneys In Fact, and Elva Robinson, Executrix of the Estate of the said John H. Robinson, now deceased, Elva Robinson and Mary Ellen Davis	Elva Robinson and Mary Ellen Davis		3/495	
	Elva Robinson and Mary Ellen Davis	Andrew L. Henry, Charles E. Reed and Harry R. Cronin, Jr.		4/35	
	Katherine A. Henry and Harry R. Cronin, Jr.	Charles E. Reed and Kathryn C. Reed, husband and wife		397/495	
	Kathryn C. Reed, a widow and unmarried	Carl Perkins		434/441	
	Carl Perkins and Dorothy Louise Perkins, husband and wife	Perkins Oil and Gas, Inc.		17/593	
	Perkins Oil and Gas, Inc.	Stone Energy Corporation		26/322	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/638	
9-18-13	ROYALTY OWNER		n/a		18.2857%
	Texyn L. Miller, married	Chesapeake Appalachia, L.L.C.	12.50%	679/636	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Anita Rae Miller, widow	Chesapeake Appalachia, L.L.C.	12.50%	680/578	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Gerald R. Miller, married	Chesapeake Appalachia, L.L.C.	12.50%	680/358	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Jessie Wheaton, single	Chesapeake Appalachia, L.L.C.	12.50%	680/611	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Bonnie Grisell, a/k/a Bonnie Mason, a/k/a Bonnie Herron, a married woman dealing in her sole and separate property	Chesapeake Appalachia, L.L.C.	12.50%	680/575	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Clarence W. Emery, single	Chesapeake Appalachia, L.L.C.	12.50%	680/563	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Garret E. Emery, single	Chesapeake Appalachia, L.L.C.	12.50%	680/572	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Joseph Michael Emery, single	Chesapeake Appalachia, L.L.C.	12.50%	680/569	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Helen V. McMasters, a/k/a Helen V. Emery, married	Chesapeake Appalachia, L.L.C.	12.50%	680/566	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	George R. Finnegan	Chesapeake Appalachia, L.L.C.	12.50%	680/590	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Karen S. Gibson, married	Chesapeake Appalachia, L.L.C.	12.50%	680/374	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	

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 Marshall and Wetzel County, West Virginia

Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
	Tom A. Finnegan a/k/a Tom Allen Finnegan, single	Chesapeake Appalachia, L.L.C.	12.50%	680/350	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Gerald Allen Ebert, single	Chesapeake Appalachia, L.L.C.	12.50%	680/617	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Gerald Arthur Ebert, widower	Chesapeake Appalachia, L.L.C.	12.50%	680/558	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Karen K. Williams, married	Chesapeake Appalachia, L.L.C.	12.50%	680/614	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Jennifer Wheaton, married	Chesapeake Appalachia, L.L.C.	12.50%	681/398	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	LuAnne Bonar, married	Chesapeake Appalachia, L.L.C.	12.50%	681/259	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	David McDowell, married	Chesapeake Appalachia, L.L.C.	12.50%	681/392	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Garen P. McDowell, a/k/a Garen McDowell, married	Chesapeake Appalachia, L.L.C.	12.50%	682/281	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Timothy McDowell, married	Chesapeake Appalachia, L.L.C.	12.50%	681/389	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Lisa Ann McDowell, a/k/a Lisa Ann Lydick, single	Chesapeake Appalachia, L.L.C.	12.50%	682/275	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Karen Cecil, a/k/a Karen McDowell, married	Chesapeake Appalachia, L.L.C.	12.50%	682/225	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Winona V. Riddle, widow	Chesapeake Appalachia, L.L.C.	12.50%	682/524	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Dorotha I. Mason Estate, by Carol Gongola, acting Executrix	Chesapeake Appalachia, L.L.C.	12.50%	683/48	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Barbara K. Burley, married	Chesapeake Appalachia, L.L.C.	12.50%	683/393	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Dale Mason, a/k/a Marion Dale Mason, married by his Attorney-in-Fact, Lynn Hellstern	Chesapeake Appalachia, L.L.C.	12.50%	684/20	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Lois Habecker, widow	Chesapeake Appalachia, L.L.C.	12.50%	686/308	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Joan Loraine Swift, a/k/a Joan Loraine Mason, single by her Attorney-in-Fact, Bryant R. Swift, a/k/a Bryant Randall	Chesapeake Appalachia, L.L.C.	12.50%	685/104	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Dale E. Berisford, single	Chesapeake Appalachia, L.L.C.	12.50%	692/278	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Helen Stewart, widow	Chesapeake Appalachia, L.L.C.	12.50%	692/580	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Janice Stewart, married	Chesapeake Appalachia, L.L.C.	12.50%	692/276	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	James Paul Bonar, married	Chesapeake Appalachia, L.L.C.	12.50%	696/617	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Grace A. Bonar, married	Chesapeake Appalachia, L.L.C.	12.50%	696/619	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Stephen Scott Mason, married	Chesapeake Appalachia, L.L.C.	12.50%	708/133	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Mary Theresa Soleau, married	Chesapeake Appalachia, L.L.C.	12.50%	698/607	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	James R. Wells, married	Chesapeake Appalachia, L.L.C.	12.50%	698/605	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Rae Ellen Floyd, married	Chesapeake Appalachia, L.L.C.	12.50%	698/603	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Elizabeth Jane Keller, a/k/a Elizabeth Jane Benner, single	Chesapeake Appalachia, L.L.C.	12.50%	698/601	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	John C. Ferrari and Jacqueline S. Ferrari, husband and wife	Chesapeake Appalachia, L.L.C.	12.50%	699/250	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	John M. Bonar, widower	Chesapeake Appalachia, L.L.C.	12.50%	704/465	
	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
	Debra L. Daniel, a married woman, dealing in her sole and separate property	SWN Production Company, LLC	18% - Gas 12.5% - Oil	987/550	
	Donna Kay Allen, married	SWN Production Company, LLC	18% - Gas 12.5% - Oil	962/400	
	Mary Lou Kittelberger, married	SWN Production Company, LLC	18% - Gas 12.5% - Oil	962/406	
	Carolyn Lee Furey, married	SWN Production Company, LLC	18% - Gas 12.5% - Oil	963/175	

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EXHIBIT "A"

4705102182  
05/24/2019

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator

Arthur Waryck 2H

Marshall and Wetzel County, West Virginia

Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
	Pam B. Turner, a married woman, dealing in her sole and separate property	SWN Production Company, LLC	18% - Gas 12.5% - Oil	987/538	
	Robert L. Berisford	SWN Production Company, LLC	18% - Gas 12.5% - Oil	987/544	
	Anita Mae Mason	Stone Energy Corporation	16.00%	833/532	
	Stone Energy Corporation	EQT Production Company		38/75	
	EQT Production Company	SWN Production Company, LLC		42/444	

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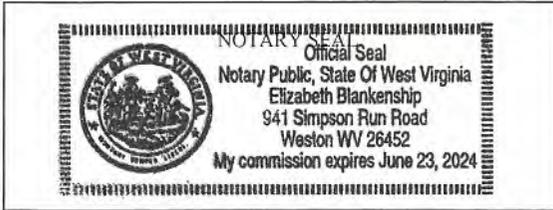


**Certification of Notice is hereby given:**

THEREFORE, I Brittany Woody, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>SWN Production Co., LLC</u>	Address:	<u>P.O. Box 1300</u>
By:	<u>Brittany Woody</u>		<u>Jane Lew, WV 26378</u>
Its:	<u>Regulatory Analyst</u>	Facsimile:	<u>304-884-1690</u>
Telephone:	<u>832-796-1610</u>	Email:	<u>Brittany_Woody@swn.com</u>

*Brittany Woody*



Subscribed and sworn before me this 6 day of Nov 2018.

Elizabeth Blankenship Notary Public

My Commission Expires 6/23/2024

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION**

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 1/31/19 **Date Permit Application Filed:** 1/31/19

**Notice of:**

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

**Delivery method pursuant to West Virginia Code § 22-6A-10(b)**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice  WSSP Notice  E&S Plan Notice  Well Plat Notice is hereby provided to:

SURFACE OWNER(s)  
 Name: A. Michael Waryck & Deborah Ellen Waryck  
 Address: 910 Tomlinson Ave  
Glen Dale, WV 26038

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
 Name: C/O Leatherwood, Inc. Attn: Casey Saunders  
 Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

COAL OPERATOR  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)  
 Name: See Attachment #13  
 Address: \_\_\_\_\_

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

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\*Please attach additional forms if necessary

4705102182  
05/24/2019

ATTACHMENT 13

PARCELID	OWNER	ADDRESS	CITY STATE ZIP	WATERSOURCES
09 21001000000000	WARYCK ARTHUR L	606 WOODRIDGE AVE	GLEN DALE, WV 26038	1 ✓
09 21001000010000	HAFER JACK W ET UX	660 4TH ST	NEW MARTINSVILL, WV 26155	1 ✓

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**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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API NO. 47-51 **4705102182**  
OPERATOR WELL NO. **05/24/2019**  
Well Pad Name: Arthur Waryck MSH PAD

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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(8-13)

API NO. 47-51 **4705102182**  
OPERATOR WELL NO. **05/24/2019**  
Well Pad Name: Arthur Waryck MSH PAD

**Notice is hereby given by:**

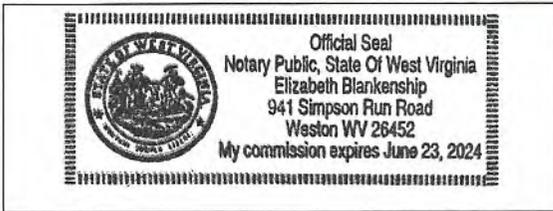
Well Operator: SWN Production Co., LLC  
Telephone: 304-884-1610  
Email: Brittany\_Woody@swn.com

*Brittany  
Woody*

Address: P.O. Box 1300  
Jane Lew, WV 26378  
Facsimile: 304-884-1690

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).



Subscribed and sworn before me this 6 day of Nov, 2018.  
Elizabeth Blankenship Notary Public  
My Commission Expires 6/23/2024

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STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

**Notice Time Requirement:** Notice shall be provided at least TEN (10) days prior to filing a permit application.

**Date of Notice:** 11/13/2018 **Date Permit Application Filed:** 11/3/19

**Delivery method pursuant to West Virginia Code § 22-6A-16(b)**

- HAND DELIVERY
- CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner; *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

**Notice is hereby provided to the SURFACE OWNER(s):**

Name: <u>Michael A. &amp; Deborah E. Waryck</u>	Name: _____
Address: <u>910 Tomlinson Ave</u> <u>Glen Dale, WV 26038</u>	Address: _____

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>528,110.454</u>
County: <u>Marshall</u>	Northing: <u>4,397,182.360</u>
District: <u>Meade</u>	Public Road Access: <u>Pleasant Ridge</u>
Quadrangle: <u>Wileyville, WV</u>	Generally used farm name: <u>Arthur Waryck MSH</u>
Watershed: <u>Lynn Camp Run Of Fish Creek (HUC-10)</u>	

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: <u>SWN Production Company, LLC</u>	Authorized Representative: <u>Justin Booth</u>
Address: <u>PO Box 1300, 179 Innovation Drive</u> <u>Jane Lew, WV 26378</u>	Address: <u>PO Box 1300, 179 Innovation Drive</u> <u>Jane Lew, WV 26378</u>
Telephone: <u>304-997-9816</u>	Telephone: <u>304-997-9816</u>
Email: <u>Justin_Booth@SWN.com</u>	Email: <u>Justin_Booth@SWN.com</u>
Facsimile: <u>304-884-1691</u>	Facsimile: <u>304-884-1691</u>

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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WW-6A5  
(1/12)

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF PLANNED OPERATION**

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 11/13/2018      **Date Permit Application Filed:** 7/31/19

**Delivery method pursuant to West Virginia Code § 22-6A-16(c)**

CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

**Notice is hereby provided to the SURFACE OWNER(s)**

(at the address listed in the records of the sheriff at the time of notice):

Name: Michael A. & Deborah E. Waryck  
Address: 910 Tomlinson Ave  
Glen Dale, WV 26038

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>528,110.454</u>
County:	<u>Marshall</u>		Northing:	<u>4,397,182.360</u>
District:	<u>Meade</u>	Public Road Access:	<u>Pleasant Ridge</u>	
Quadrangle:	<u>Wileyville, WV</u>	Generally used farm name:	<u>Arthur Waryck MSH</u>	
Watershed:	<u>Lynn Camp Run of Fish Creek (HUC-10)</u>			

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: SWN Production Company, LLC  
Telephone: 304-997-9816  
Email: Justin\_Booth@SWN.com

Address: PO Box 1300, 179 Innovation Drive  
Jane Lew, WV 26378  
Facsimile: 304-884-1891

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Office of Oil and Gas  
**FEB - 6 2019**  
WV Department of  
Environmental Protection

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

05/24/2019



## WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

## Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110  
Charleston, West Virginia 25305-0430 • (304) 558-3505

Thomas J. Smith, P. E.  
Secretary of Transportation/  
Commissioner of Highways

September 26, 2018

Jill M. Newman  
Deputy Commissioner

James A. Martin, Chief  
Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

Subject: DOH Permit for the Arthur Waryck Pad, Marshall County

Arthur Waryck MSH UD 2H

Dear Mr. Martin,

The West Virginia Division of Highways has assigned Permit #06-2009-0049 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Marshall County Route 21/10 SLS.

The operator has signed an OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton, P.E.  
Regional Maintenance Engineer  
Central Office Oil & Gas Coordinator

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FEB - 6 2019  
WV Department of  
Environmental Protection

Cc: Brittany Woody  
Southwestern Energy  
CH, OM, D-6  
File

Rev 6/21/2018

Product Name	Product Use	Chemical Name	CAS Number
EC6734A (Champion Technologies)	Biocide	Hydrogen Peroxide	7722-84-1
		Acetic Acid	64-19-7
		Peroxyacetic Acid	79-21-0
GYPTRON T-390 (Champion Technologies)	Scale Inhibitor	Methanol	67-56-1 05/24/2019
		Nonylphenol Ethoxylate	Proprietary
Bactron K-139 (Champion Technologies)	Biocide	Glutaraldehyde	111-30-8
		Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1
		Ethanol	64-17-5
Bactron K-219 (Champion Technologies)	Biocide	Methanol	67-56-1
		Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1
EC6486A (Nalco Champion)	Scale Inhibitor	Amine Triphosphate	Proprietary
		Ethylene Glycol	107-21-1
WFRA-2000 (U.S. Well Services)	Anionic Friction Reducer	Hydrotreated light distillate (petroleum)	64742-47-8
		Propenoic acid, polymer with propenamide	9003-06 9
AI-303 (U.S. Well Services)	Mixture	Ethylene glycol	107-21 1
		Cinnamaldehyde	104-55 2
		Butyl cellosolve	111-76 2
		Formic acid	64-18 6
		Polyether	Proprietary
		Acetophenone, thiourea, formaldehyde polymer	68527-49 1
AP ONE (U.S. Well Services)	Breaker	Ammonium persulfate	7727-54-0
OPTI-FLEX (U.S. Well Services)	Viscosifying Agent	Distillates, petroleum, hydrotreated light	64742-47-8
Econo-CI200 (SWN Well Services)	Corrosion Inhibitor	Methanol	67-56-1
		Oxyalkylated fatty acid	68951-67-7
		Fatty acids	61790-12-3
		Modified thiourea polymer	68527-49-1
		Water	7732-18-5
		Hydrochloric acid	7647-01-0
		Potassium acetate	127-08-2
		Formaldehyde	50-00-0
Ecopol-FEAC (SWN Well Services)	Iron Control	Acetic Acid	64-19-7
		Citric Acid	77-92-9
		Water	7732-18-5
HCL (SWN Well Services)	Hydrochloric Acid	Hydrochloric Acid	7647-01-0
		Water	7732-18-5
FLOJET DRP 1130X (SWN Well Services)	Friction Reducer	Proprietary	Proprietary
FLOJET DR900 LPP (SWN Well Services)	Friction Reducer	Distillates (petroleum) hydrotreated light	64674-47-8
		Ethylene Glycol	107-21-1
		Alcohols, C12-16, Exoxylated propoxylated	68213-24-1
		Fatty Alcohols ethoxylated	Proprietary
		Water	7732-18-5
FR-76 (Halliburton)	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8
		Inorganic Salt	Proprietary
HAI-150E (Halliburton)	Corrosion Inhibitor	No hazardous substance	N/A
FDP-S1176-15 (Halliburton)	Friction Reducer	Polyacrylate	Proprietary
		Hydrotreated light petroleum distillate	64742-47-8
LP-65 MC (Halliburton)	Scale Inhibitor	Organic phosphonate	Proprietary
		Ammonium Chloride	12125-02-9
CarboNRT	Tracer	Ceramic Proppant	66402-68-4

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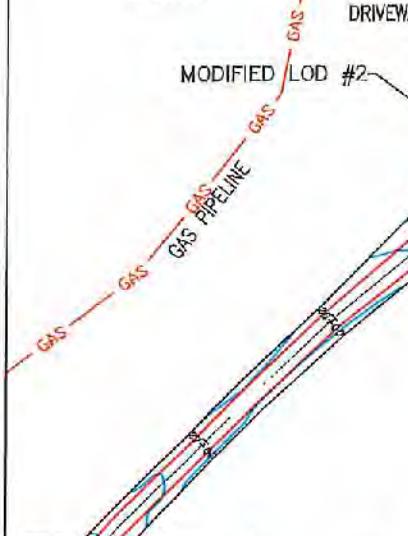
WV Department of  
Environmental Protection



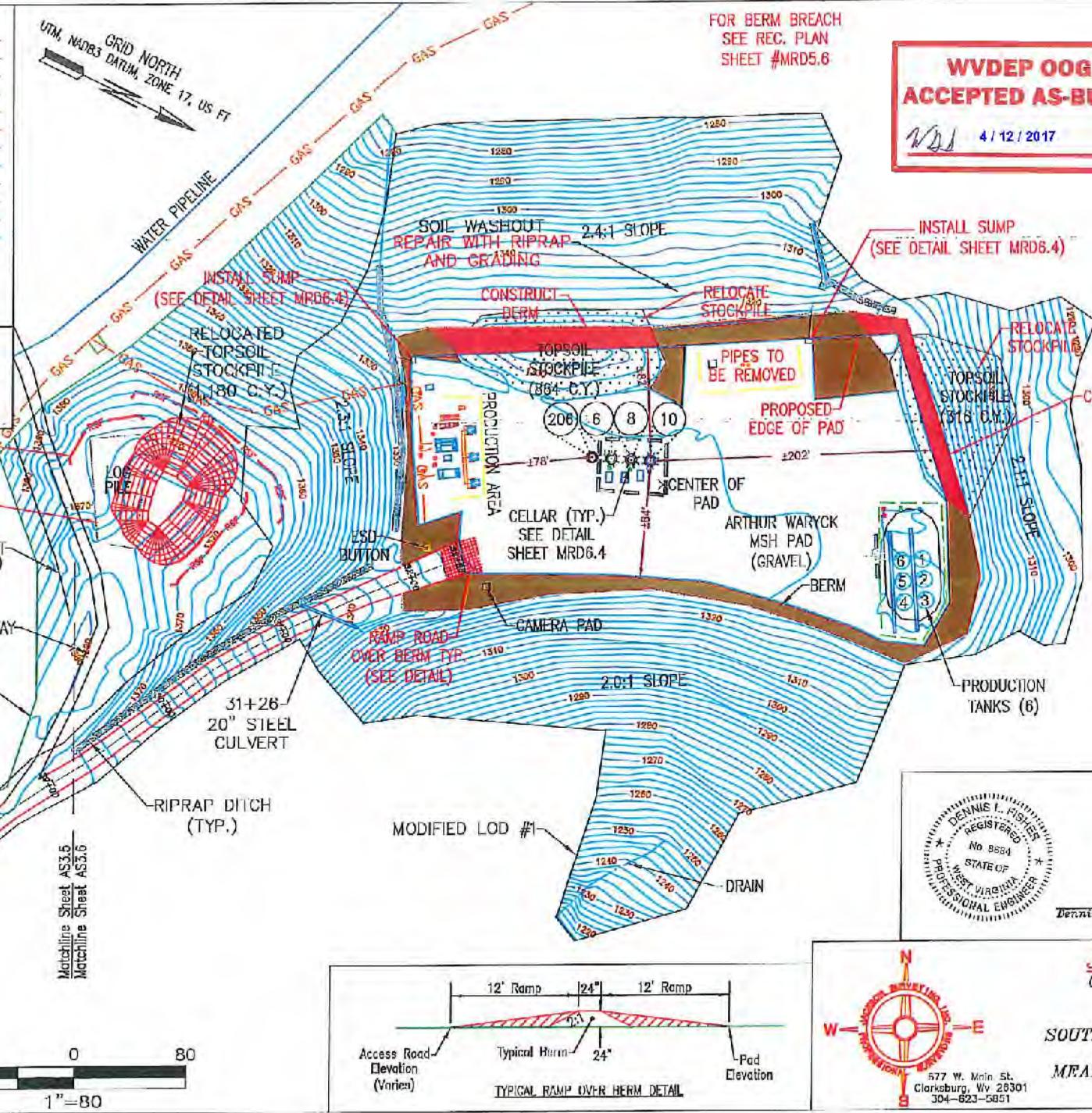
- LEGEND -**
- EDGE ACCESS ROAD
  - PUBLIC/PRIVATE ROAD
  - LOD MODIFIED #1
  - LOD MODIFIED #2
  - CHAIN LINK FENCE
  - BARBED WIRE FENCE
  - WOVEN WIRE FENCE
  - DITCH/DRAIN
  - PROPERTY LINES
  - CL ACCESS ROAD
  - CONTOUR MAJOR ASBUILT
  - CONTOUR MINOR ASBUILT
  - SPRING
  - WATER WELL
- RED TEXT INDICATES ITEMS TO BE CONSTRUCTED PRIOR TO DRILLING ACTIVITY.

REVISION	DATE
ADDED LOD AREA BY PAD	12-16-2016
RELOCATED TOPSOIL PILES	01-26-2017

A. MICHAEL & DEBORAH ELLEN WARYCK  
D.B. 87074  
T.M. 21/10  
125.39 Ac.



**SWN**  
Production Company™



FOR BERM BREACH  
SEE REC. PLAN  
SHEET #MRD5.6

**WVDEP OOG  
ACCEPTED AS-BUILT**

WJ 4/12/2017

**COORDINATES:**  
SITE ENTRANCE (NAD83)  
LAT: 39.725435  
LONG: 80.862369

AT WARYCK PAD (NAD83)  
LAT: 39.723874  
LONG: 80.871505

CENTER OF PAD (NAD83)  
LAT: 39.724163  
LONG: 80.871900

GATHERING AREA (NAD83)  
LAT: 39.724786  
LONG: 80.864160

**EXISTING WELLS:**  
WARYCK MSH 6H  
API:47-051-01275H  
(NAD83)  
LAT: 39.724048  
LONG: 80.871901

WARYCK MSH 8H  
API:47-051-01274H  
(NAD83)  
LAT: 39.724084  
LONG: 80.871921

WARYCK MSH 10H  
API:47-051-01273H  
(NAD83)  
LAT: 39.724119  
LONG: 80.871940

**PROPOSED WELLS:**  
WARYCK MSH 20GH  
(NAD83)  
LAT: 39.724013  
LONG: 80.871882

A. MICHAEL & DEBORAH ELLEN WARYCK  
D.B. 87074  
T.M. 21/10  
125.39 Ac.

**PRODUCTION TANKS (UTM METERS)**

	Northing	Eastng
#1	4,397,252.356	528,108.162
#2	4,397,254.739	528,111.976
#3	4,397,257.131	528,115.916
#4	4,397,253.219	528,118.336
#5	4,397,250.814	528,114.410
#6	4,397,248.441	528,110.536



Dennis L. Fisher 10/5 0884: *Dennis L. Fisher* 01-26-2017 Date:

**Jackson Surveying Inc.**  
CONSTRUCTION AND RECLAMATION  
ASBUILT  
AS3.6  
SOUTHWESTERN PRODUCTION COMPANY LLC  
ARTHUR WARYCK MSH PAD  
MEADE DISTRICT, MARSHALL COUNTY, WV  
NOVEMBER 08, 2016

