

05/24/2019



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
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 10th 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

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Rhodes, Jacob K

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?

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,

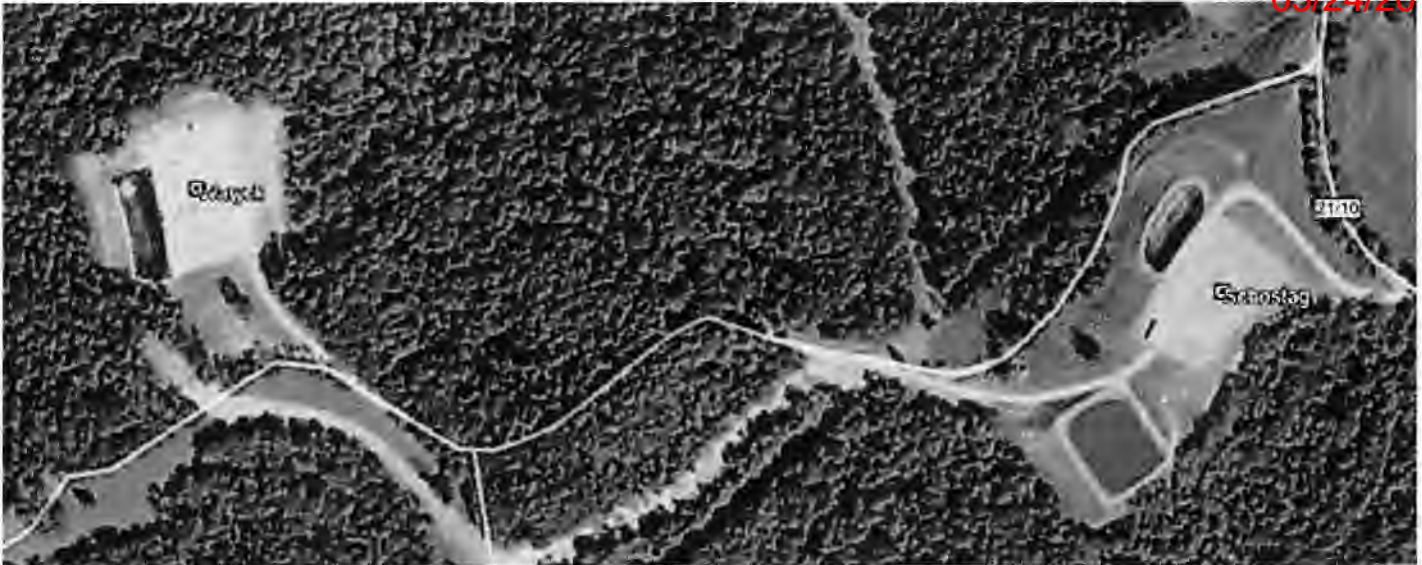
The Office of Oil & Gas on Nov. 16, 2018 sent a response letter to Wayne Goddard who then made copies for the other nearby neighbors who had originally signed the letter and contacted the OOG. They are all potentially affected by the buried drill cuttings which are still on the Davis Pad in Blake Ridge.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

05/24/2019



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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 401H
47-051-02172-00-00

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

A blue ink signature of James A. Martin, written in a cursive style.

Operator's Well Number: ARTHUR WARYCK MSH 401H
Farm Name: A. MICHAEL WARYCK & D
U.S. WELL NUMBER: 47-051-02172-00-00
Horizontal 6A New Drill
Date Issued: 5/22/2019

Promoting a healthy environment.

PERMIT CONDITIONS 4705102177 05/24/2019

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.

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.

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 401H 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

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Up-Dip Well to the North, Target Top TVD- 7093', Target Base TVD- 7133', Anticipated Thickness- 40', Associated Pressure- 4637

8) Proposed Total Vertical Depth: 7117'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17529'

11) Proposed Horizontal Leg Length: 9609.68'

12) Approximate Fresh Water Strata Depths: 558'

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

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(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

WV Department of
Environmental Protection

WW-6B
(10/14)

API NO. 47- 51 -

OPERATOR WELL NO. Arthur Waryck MSH 401H

Well Pad Name: Arthur Waryck MSH PAD

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#	17529'	17529'	Lead 532sx tail 2801sx/100' inside int
Tubing							
Liners							

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:				RECEIVED Office of Oil and Gas
Sizes:				JAN 8 2019
Depths Set:				WV Department of Environmental Protection

WW-6B
(10/14)

API NO. 47- 51 -
OPERATOR WELL NO. Arthur Waryck MSH 401H
Well Pad Name: Arthur Waryck MSH PAD

JW
11/13/18

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 Marcellus. **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 or run external casing packer/cementing stage tool above void interval and perform 2 stage cementing operation dependent upon depth of void. Run casing not less than 20' below void nor more than 75' 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): 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.

Schlumberger Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number
Surface Intermediate	S001	accelerator	calcium chloride up to 3%	10043-52-4
	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	proprietary
formaldehyde (impurity)			proprietary	
Production-Tail	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgate)	8031-18-3
	D167	fluid loss	aliphatic amide polymer	proprietary
			sodium polynaphthalene sulfonate	9008-63-3
	D065	dispersant	sodium sulfate	7757-82-6
			chrystalline silica	14808-60-7
	D201	retarder	metal oxide	proprietary
chrystalline silica			14808-60-7	
D153	anti-settling	chrystalline silica	14808-60-7	

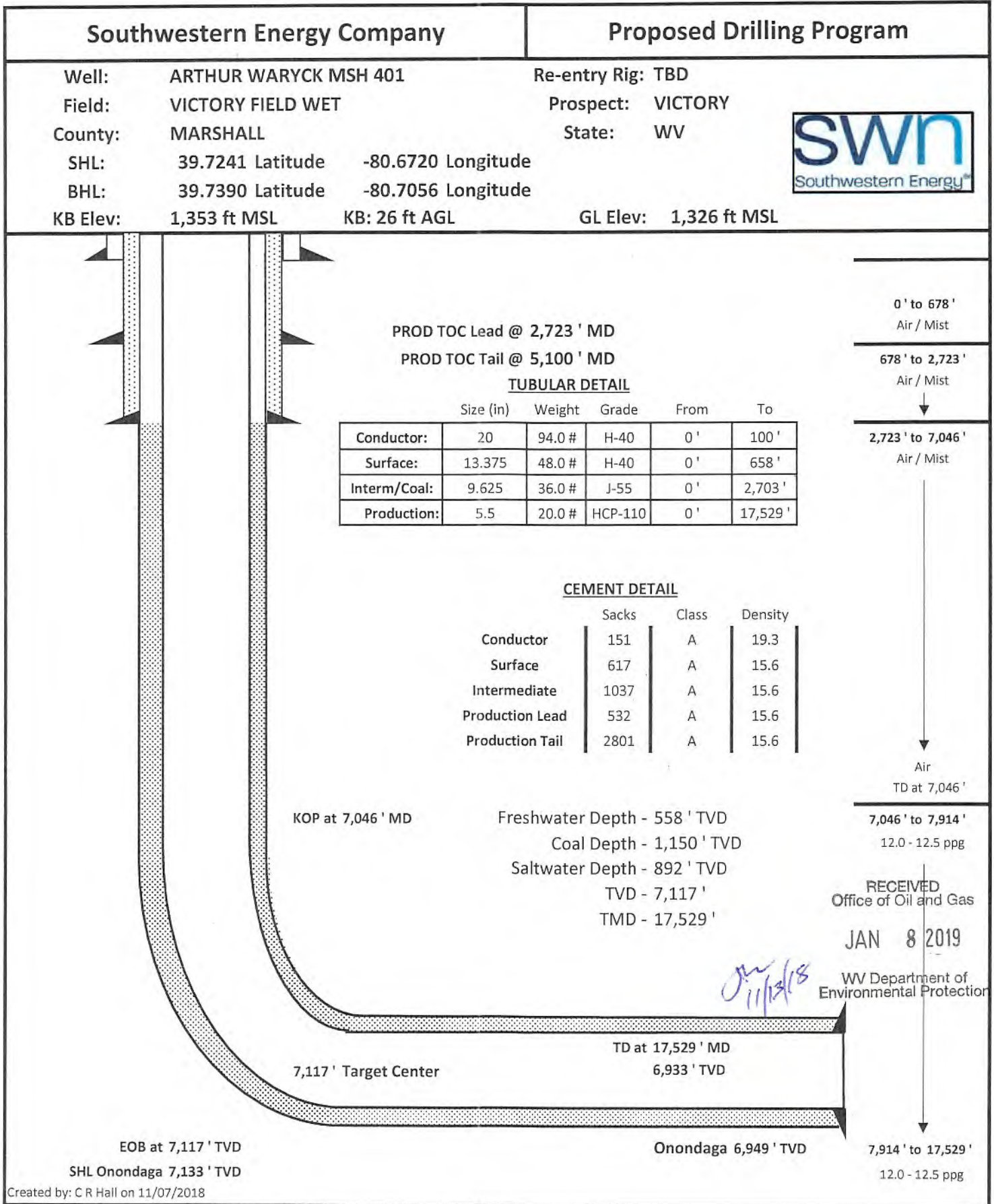
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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

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, 34-119-28776, 34-167-23862, 34-155-23795, 34-121-23996, 34-155-21893)
- 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 SOBMs from KOP to REG **RECEIVED**
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-If oil based, what type? Synthetic, petroleum, etc. Synthetic Oil Base

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Additives to be used in drilling medium? Attachment 3A

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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 12th day of November, 2018

Jessica L Vangilder Notary Public

My commission expires Jul 20, 2020

SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 9.8 Prevegetation pH _____

Lime as determined by pH test min. 2 Tons/acre or to correct to pH 5.2

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

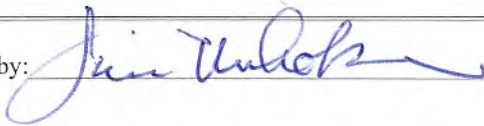
Attachment 3B

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: _____

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Title: Oil & Gas Inspector

Date: 11/13/18

Field Reviewed? () Yes

() No

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



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%	All legumes are innoculated at 5x normal rate
White Clover	5%	
Birdsfoot Trefoil	5%	
Rough Bluegrass	5%	
Apply @ 100lbs per acre April 16th- Oct. 14th		Apply @ 200lbs per acre Oct. 15th- April 15th PLUS 50lbs per acre of Winter Wheat

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.

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%
Apply @ 100lbs per acre April 16th- Oct. 14th	
Organic Fertilizer @ 200lbs per Acre	
Apply @ 200lbs per acre Oct. 15th- April 15th	
Pelletized Lime @ 2 Tons per Acre	

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%
Apply @ 25lbs per acre April 16th- Oct. 14th	
Apply @ 50lbs per acre Oct. 15th- April 15th	
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)

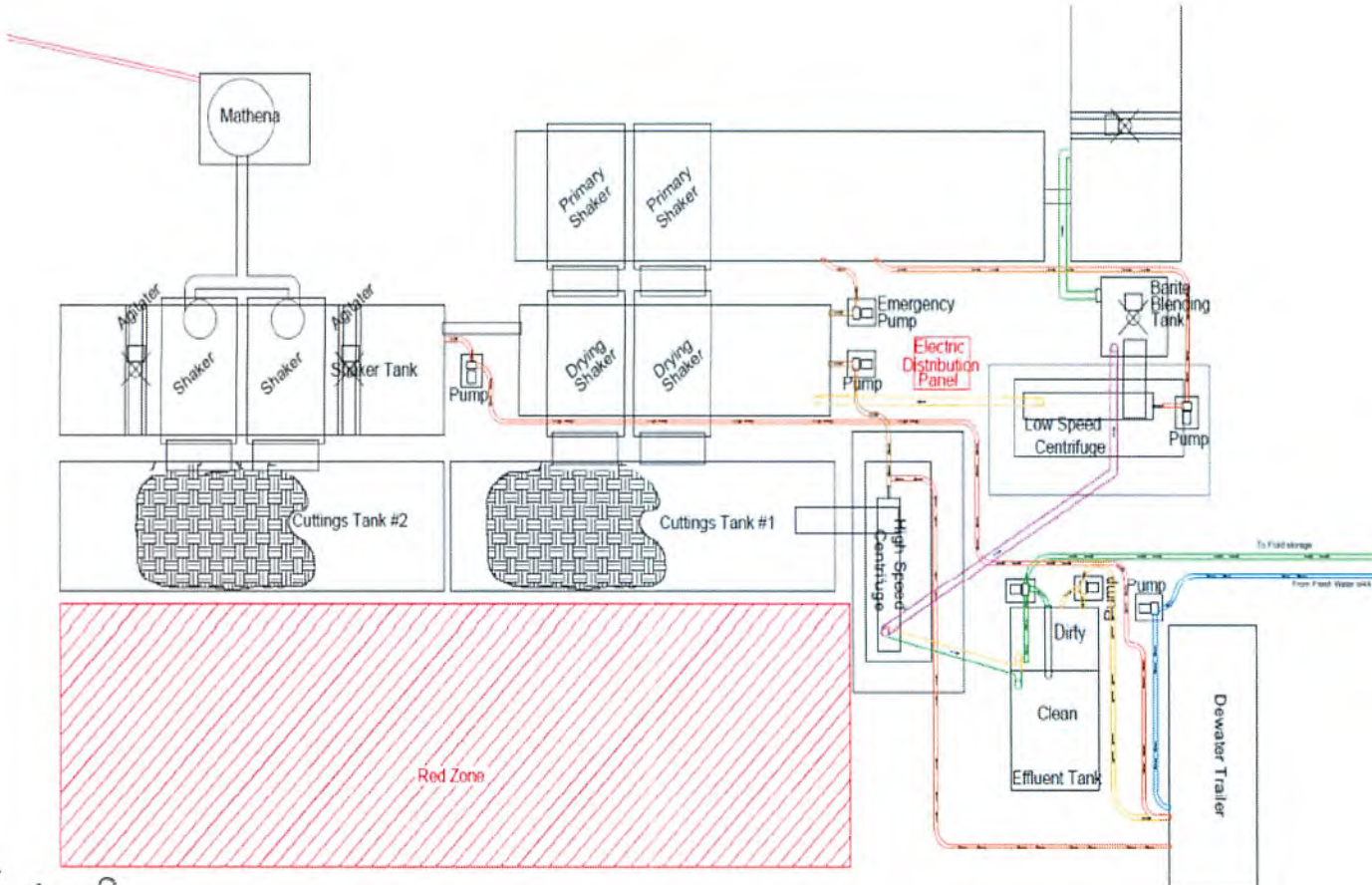
When drilling is converted to liquids drilling, the shale gas separator and associated shaker tank are bypassed, and the liquids system is processed over the primary and drying shaker systems. Cuttings drop into the cuttings tank for additional processing. Any recoverable associated liquids attached 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 401H
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:

James A. ... Date: 11/13/18
Title: Oil & Gas Inspector

Approved by:

_____ Date: _____

Title: _____

SWN PRODUCTION COMPANY, LLC – CONFIDENTIAL

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Attachment IV (g) Reused Frac Water

Area	Pad Name
NORTH VICTORY AREA	CHARLES YOHO-MSH-PAD1
NORTH VICTORY AREA	CRAIG STROPE-MSH-PAD1
NORTH VICTORY AREA	FORK RIDGE-MSH-PAD1
NORTH VICTORY AREA	MARK EDISON-MSH-PAD1
NORTH VICTORY AREA	MICHAEL DUNN-MSH-PAD1
NORTH VICTORY AREA	ROBERT YOUNG-MSH-PAD1
NORTH VICTORY AREA	VAN ASTON-MSH-PAD1
OSAGE AREA	BRYAN NEEL-MRN-PAD1
OSAGE AREA	DANIEL MORRIS-MRN-PAD1
OSAGE AREA	EDWIN BUNNER-MRN-PAD1
OSAGE AREA	QUALITY RECLAMATION-MRN-PAD1
OSAGE AREA	RELIANCE MINERALS-MON-PAD1
OSAGE AREA	WESBANCO BANK-MRN-PAD1
PANHANDLE AREA	ALAN H DEGARMO-BRK-PAD1
PANHANDLE AREA	ALICE EDGE-OHI-PAD1
PANHANDLE AREA	BARRY GREATHOUSE A-BRK-PAD1
PANHANDLE AREA	BARRY GREATHOUSE B-BRK-PAD1
PANHANDLE AREA	BENJAMIN HONECKER-OHI-PAD1
PANHANDLE AREA	BERNARD MCCULLEY-WAS-PAD1
PANHANDLE AREA	BETTY SCHAFFER-MSH-PAD1
PANHANDLE AREA	BRIAN DYTOKO-OHI-PAD1
PANHANDLE AREA	BROOKE COUNTY PARKS-BRK-PAD1
PANHANDLE AREA	CARL ROTTER-OHI-PAD1
PANHANDLE AREA	CHAD GLAUSER-OHI-PAD1
PANHANDLE AREA	CHARLES FRYE-OHI-PAD1
PANHANDLE AREA	CLARENCE FARMER-OHI-PAD1
PANHANDLE AREA	DALLAS HALL-OHI-PAD1
PANHANDLE AREA	DEBORAH CRAIG-OHI-PAD1
PANHANDLE AREA	EDWARD DREMAK-OHI-PAD1
PANHANDLE AREA	EDWARD NICHOLS-OHI-PAD1
PANHANDLE AREA	EDWARD ZATTA-BRK-PAD1
PANHANDLE AREA	ESTHER WEEKS-OHI-PAD1
PANHANDLE AREA	FRED JONES-WAS-PAD1
PANHANDLE AREA	G W RENTALS LLC-OHI-PAD1
PANHANDLE AREA	GARY KESTNER-OHI-PAD1
PANHANDLE AREA	GEORGE GANTZER-OHI-PAD1
PANHANDLE AREA	GERALD GOURLEY-BRK-PAD1
PANHANDLE AREA	GLENN DIDRIKSEN-OHI-PAD1
PANHANDLE AREA	GUY AVOLIO-WAS-PAD1
PANHANDLE AREA	HOWARD SHACKELFORD-OHI-PAD1
PANHANDLE AREA	JAMES BIRD-WAS-PAD1
PANHANDLE AREA	JAMES SEABRIGHT-BRK-PAD1
PANHANDLE AREA	JOHN GOOD JR-BRK-PAD1
PANHANDLE AREA	JOHN HARWATT-BRK-PAD1
PANHANDLE AREA	JOHN HUPP-BRK-PAD1
PANHANDLE AREA	JOHN MCMURRAY-WAS-PAD1

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Area	Pad Name
PANHANDLE AREA	JOSEPH POWERS-WAS-PAD1
PANHANDLE AREA	KATHY MAYHEW-BRK-PAD1
PANHANDLE AREA	LARRY BALL-OHI-PAD1
PANHANDLE AREA	LINDA GREATHOUSE-BRK-PAD1
PANHANDLE AREA	MARGARET CORBIN-BRK-PAD1
PANHANDLE AREA	MARK HICKMAN-OHI-PAD1
PANHANDLE AREA	MARK OWEN-BRK-PAD1
PANHANDLE AREA	MARLIN FUNKA-WAS-PAD1
PANHANDLE AREA	MASON COTTRELL-OHI-PAD1
PANHANDLE AREA	MELVIN KAHLE-OHI-PAD1
PANHANDLE AREA	MICHAEL RATCLIFFE-OHI-PAD1
PANHANDLE AREA	MICHAEL SOUTHWORTH-MSH-PAD1
PANHANDLE AREA	MIKE RYNIAWEC-BRK-PAD1
PANHANDLE AREA	MILDRED MANI-BRK-PAD1
PANHANDLE AREA	NICK BALLATO-BRK-PAD1
PANHANDLE AREA	OCC A-OHI-PAD1
PANHANDLE AREA	OV ROYALTY TRUST LLC-BRK-PAD1
PANHANDLE AREA	PAUL SCHILINSKI-WAS-PAD1
PANHANDLE AREA	RAYLE COAL-OHI-PAD1
PANHANDLE AREA	ROBERT BONE-BRK-PAD1
PANHANDLE AREA	ROBERT SHORTS-WAS-PAD1
PANHANDLE AREA	ROY FERRELL-OHI-PAD1
PANHANDLE AREA	ROY RIGGLE-OHI-PAD1
PANHANDLE AREA	RUSSELL HERVEY-BRK-PAD1
PANHANDLE AREA	SAMUEL HUBBARD-BRK-PAD1
PANHANDLE AREA	SANDRA PARR-BRK-PAD1
PANHANDLE AREA	SHAWN COUCH-OHI-PAD1
PANHANDLE AREA	STATE OF WV DNR A-BRK-PAD1
PANHANDLE AREA	STATE OF WV DNR B-BRK-PAD1
PANHANDLE AREA	SUSAN SCOFIELD-WAS-PAD1
PANHANDLE AREA	THELMA HAYS-OHI-PAD1
PANHANDLE AREA	THOMAS PARKINSON-BRK-PAD1
PANHANDLE AREA	THURMAN SPEECE-BRK-PAD1
PANHANDLE AREA	TIMMY MINCH-OHI-PAD1
PANHANDLE AREA	VIOLET COSS-BRK 8-PAD1
PANHANDLE AREA	WILLIAM RODGERS-OHI-PAD1
PANHANDLE AREA	WORTHLEY-BRK-PAD1
VICTORY AREA	ALBERT-MARY HOHMAN-WTZ 1-PAD1
VICTORY AREA	ALTMAN 1 ST 1-MSH-PAD1
VICTORY AREA	ALTON STERN ETUX-MSH-PAD1
VICTORY AREA	ARTHUR WARYCK-MSH-PAD1
VICTORY AREA	BLATT-WTZ-PAD1
VICTORY AREA	BONNETTE-MSH-PAD1
VICTORY AREA	BRETT BERISFORD-WTZ-PAD1
VICTORY AREA	CHK APP A-WTZ-PAD1
VICTORY AREA	TCO-MSH-PAD1

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Attachment IV (g) Reused Frac Water

Area	Pad Name
VICTORY AREA	CONSTANCE TAYLOR-WTZ-PAD1
VICTORY AREA	DANIEL DURIG A-WTZ-PAD1
VICTORY AREA	DAVID DURIG ETUX-LUCKY D-WTZ-PAD1
VICTORY AREA	ELLSWORTH DAVIS ESTATE-WTZ-PAD1
VICTORY AREA	FLOYD JOHNSON-WTZ-PAD1
VICTORY AREA	GLADYS BRIGGS-MSH-PAD1
VICTORY AREA	GORDON STANSBERRY-WTZ-PAD1
VICTORY AREA	HAMMERS-MSH-PAD1
VICTORY AREA	HOHMAN HBP S-WTZ-PAD1
VICTORY AREA	JAMES MESSENGER ETUX-WTZ-PAD1
VICTORY AREA	MARGARET SUE KELLEY-WTZ-PAD1
VICTORY AREA	MARTIN R WHITEMAN-WTZ-PAD1
VICTORY AREA	MASON DIXON FARMS LLC-MSH-PAD1
VICTORY AREA	O E BURGE-MSH-PAD1
VICTORY AREA	RANDY MCDOWELL A-MSH-PAD1
VICTORY AREA	RANDY MCDOWELL B-MSH-PAD1
VICTORY AREA	RAY BAKER-MSH-PAD1
VICTORY AREA	RIDGETOP LAND VENTURES-WTZ-PAD1
VICTORY AREA	RINE-WTZ-PAD1
VICTORY AREA	ROBERT BAXTER-WTZ-PAD1
VICTORY AREA	SABER-WTZ-PAD1
VICTORY AREA	SCHOSTAG-MSH-PAD1
VICTORY AREA	SHAWN HARLAN-MSH-PAD1
VICTORY AREA	VERNON JOHNSON-WTZ-PAD1
VICTORY AREA	WILLIAM RITCHEA-WTZ-PAD1

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Attachment V Disposal Wells

API #	COMPANY	WELL NAME	COUNTY	TOWNSHIP	LAT83	LONG83
34031271770000	BUCKEYE BRINE LLC	ADAMS (SWIW #10)	COSHOCTON	KEENE	40.3009009	-81.8480344
34031271780000	BUCKEYE BRINE LLC	ADAMS (SWIW #11)	COSHOCTON	KEENE	40.3025373	-81.84619
34059240670000	DAVID R HILL INC	DEVCO UNIT(SWIW #11)	GUERNSEY	WESTLAND	39.9413568	-81.6736408
34167295770000	FQ ENERGY SERVICES LLC	HALL HELEN F	WASHINGTON	LAWRENCE	39.4349005	-81.312012
34121239950000	FQ ENERGY SERVICES LLC	WARREN DRILLING CO (SWIW #6)	NOBLE	JACKSON	39.6538815	-81.4751572
34151234200000	HECKMAN WATER RES(CVR)INC. O&G	BELDEN & BLAKE CORP	STARK	MARLBORO	40.9503096	-81.2486807
34133205250000	HECKMAN WATER RES(CVR)INC. O&G	BLAZEK JOHN & DELORES	PORTAGE	HIRAM	41.3312592	-81.184054
34155224030000	HECKMAN WATER RES(CVR)INC. O&G	EASTERN PETROLEUM SERVICES INC	TRUMBULL	FOWLER	41.3156164	-80.6181863
34119287760000	HECKMAN WATER RES(CVR)INC. O&G	GOFF SWD (SWIW #27)	MUSKINGUM	UNION	39.9774398	-81.8067532
34151211980000	HECKMAN WATER RES(CVR)INC. O&G	LYONS ED	STARK	OSNABURG	40.7773477	-81.2622223
34167238620000	HECKMAN WATER RES(CVR)INC. O&G	NICHOLS (SWIW #13)	WASHINGTON	DUNHAM	39.347944	-81.5905304
34155237950000	HECKMAN WATER RES(CVR)INC. O&G	PANDER R & P (SWIW #15)	TRUMBULL	NEWTON	41.2004418	-80.9916023
34155237940000	HECKMAN WATER RES(CVR)INC. O&G	PANDER R & P (SWIW #16)	TRUMBULL	NEWTON	41.1988246	-80.9938928
34133236140000	HECKMAN WATER RES(CVR)INC. O&G	PLUM CREEK	PORTAGE	BRIMFIELD	41.1051428	-81.3582228
34155218940000	HECKMAN WATER RES(CVR)INC. O&G	WOLF	TRUMBULL	NEWTON	41.1983311	-81.0002644
34155232030000	HECKMAN WATER RES(CVR)INC. O&G	WOLF EVA JEAN ROOT	TRUMBULL	NEWTON	41.2022951	-81.0021733
34155218930000	HECKMAN WATER RES(CVR)INC. O&G	WOLF EVA JEAN ROOT	TRUMBULL	NEWTON	41.2012178	-80.9984904
34075245270000	OOGC DISPOSAL COMPANY 1 LLC	KILLBUCK TEST WELL	HOLMES	KILLBUCK	40.4846165	-81.9937139
34167296580000	OOGC DISPOSAL COMPANY 1 LLC	LONG RUN DISPOSAL WELL(SWIW #8)	WASHINGTON	NEWPORT	39.3918899	-81.3171291
34089247920000	OOGC DISPOSAL COMPANY 1 LLC	MORAN RONALD F	LICKING	PERRY	40.1393401	-82.2142874
34167296850000	OOGC DISPOSAL COMPANY 1 LLC	NEWELL RUN DISPOSAL WELL(SWIW #10)	WASHINGTON	NEWPORT	39.4000217	-81.2729613
34167293950000	OOGC DISPOSAL COMPANY 1 LLC	OHIO OIL GATHERING CORP II (SWIW #6)	WASHINGTON	NEWPORT	39.3789386	-81.2894287
34133240960000	STALLION SWD LP	GROSELLE # 2	PORTAGE	NELSON	41.3459305	-81.0896011
34133210760000	STALLION SWD LP	MYERS	PORTAGE	EDINBURG	41.076275	-81.1390767
34133241890000	STALLION SWD LP	MYERS (SWIW #33)	PORTAGE	EDINBURG	41.0755781	-81.1428275
34133201140000	STALLION SWD LP	WILCOX	PORTAGE	ROOTSTOWN	41.0960848	-81.1993586
34115218960000	STONEBRIDGE OPERATING CO	KORTING WILLIAM F	MORGAN	WINDSOR	39.5427902	-81.8059998
34031272410000	BUCKEYE BRINE LLC	ADAMS (SWIW #12)	COSHOCTON	KEENE	40.3021498	-81.8509048
34059241880000	DAVID R HILL INC	MITCHELL (SWIW #13)	GUERNSEY	WESTLAND	39.9460182	-81.6650964
34083241370000	ELKHEAD GAS & OIL CO	CHAPIN D M(SWIW #8)	KNOX	BUTLER	40.3578691	-82.244625
34157255110000	ELKHEAD GAS & OIL CO	MOZENA (SWIW #13)	TUSCARAWAS	OXFORD	40.283363	-81.5779098
34167296180000	FQ ENERGY SERVICES LLC	GREENWOOD UNIT (SWIW #15)	WASHINGTON	NEWPORT	39.3921854	-81.2357682
34121240860000	FQ ENERGY SERVICES LLC	TRAVIS UNIT(SWIW #7)	NOBLE	JACKSON	39.6568592	-81.4806548
34167294450000	HEINRICH ENT INC/WASHINGTON OP	HEINRICH UNIT	WASHINGTON	WARREN	39.4299412	-81.5108658
34167294640000	HEINRICH ENT INC/WASHINGTON OP	HEINRICH UNIT	WASHINGTON	WARREN	39.4252469	-81.5077458
34167295430000	HEINRICH ENT INC/WASHINGTON OP	VOCATIONAL SCHOOL UNIT	WASHINGTON	WARREN	39.4263529	-81.5022248
34167297190000	OOGC DISPOSAL COMPANY 1 LLC	SAWMILL RUN DISPOSAL WELL (SWIW #16)	WASHINGTON	NEWPORT	39.4072859	-81.2230261
34009238230000	K & H PARTNERS LLC	K & H PARTNERS LLC (SWIW #10)	ATHENS	TROY	39.2348911	-81.757021
34009238210000	K & H PARTNERS LLC	K & H PARTNERS LLC (SWIW #8)	ATHENS	TROY	39.226151	-81.7612578
34105236190000	ROSCOE MILLS JR TRUST	ROSCOE MILLS (SWIW #19)	MEIGS	LEBANON	38.9406031	-81.7875615
34059242020000	SILCOR OILFIELD SERVICES INC	SOS-D (SWIW #12)	GUERNSEY	CAMBRIDGE	39.9936869	-81.5728185
34009218990000	STONEBRIDGE OPERATING CO	HAHN PAUL	ATHENS	ROME	39.2970778	-81.8962423

The wells listed in Section V is just one possibility where flowback/produced water could be reused. The disposal wells listed in Attachment V are all possibilities where flowback/produced water could be disposed. It is possible water could be disposed at an approved facility not included on the list.

As of 07/16/18

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Attachment VI Frac Additives

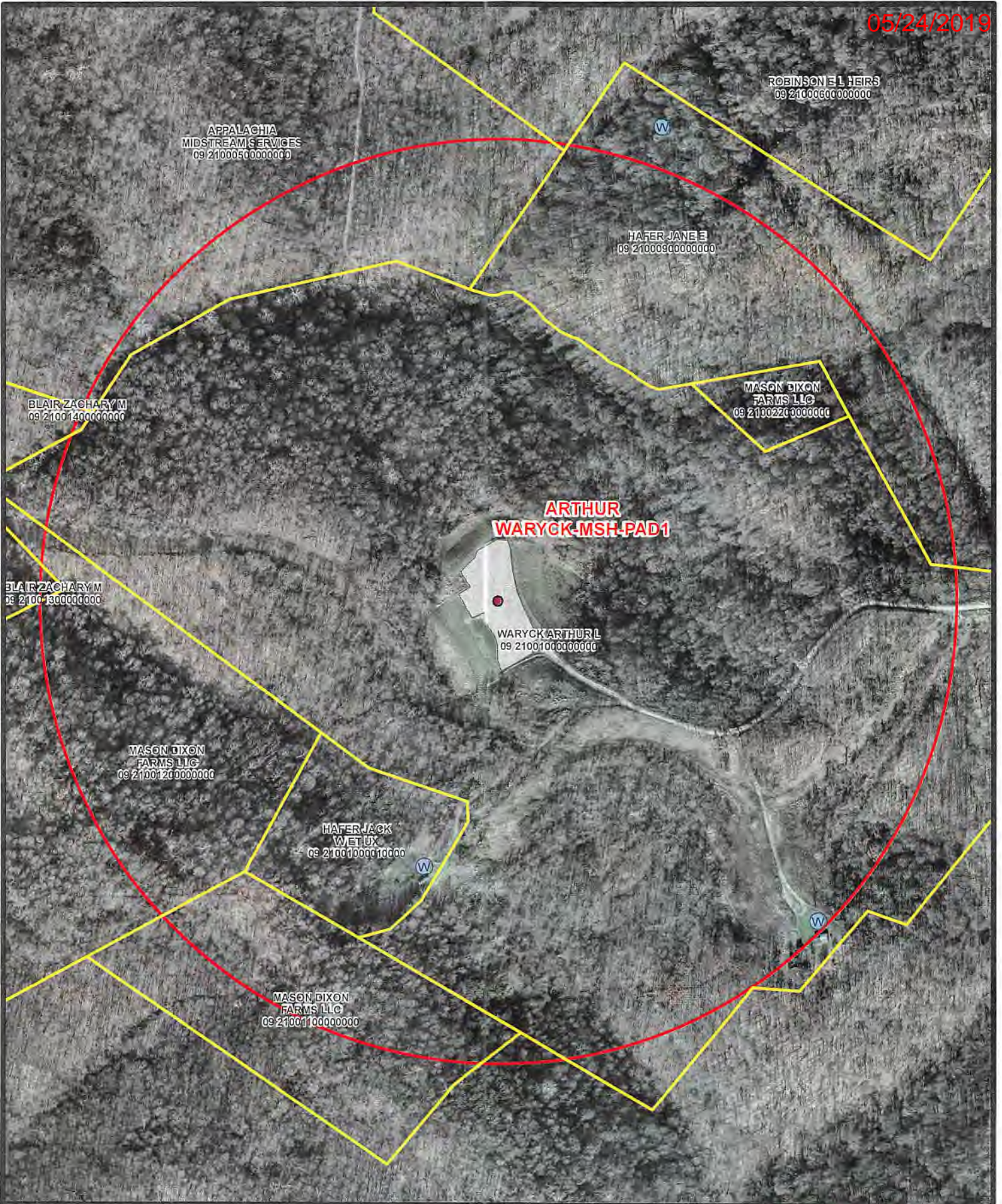
Product Name	Product Use	Chemical Name	CAS Number
EC6734A (Champion Technologies)	Biocide	Hydrogen Peroxide	7722-84-1
		Acetic Acid	64-19-7
		Peroxyacetic Acid	79-21-0
GYPTRON T-390 (Champion Technologies)	Scale Inhibitor	Methanol	67-56-1
		Nonylphenol Ethoxylate	Proprietary
Bactron K-139 (Champion Technologies)	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)	Hydrocholic 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
FR-76 (Halliburton)	Friction Reducer	Water	7732-18-5
		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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ROBINSON E L HEIRS
09 2100600000000

APPALACHIA
MIDSTREAM SERVICES
09 2100050000000

HAFER JANE E
09 2100090000000

BLAIR ZACHARY M
09 2100140000000

MASON DIXON
FARMS LLC
09 2100220000000

BLAIR ZACHARY M
09 2100130000000

**ARTHUR
WARYCK-MSH-PAD1**

WARYCK ARTHUR L
09 2100100000000

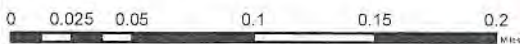
MASON DIXON
FARMS LLC
09 2100120000000

HAFER JACK
WETUX
09 2100100001000

MASON DIXON
FARMS LLC
09 2100110000000



1 in = 417 ft



Coordinate System: NAD 1983 UTM Zone 17N
Units: Meter

- Spring
- Water Well
- Pond
- 1500' Buffer

Coordinates: 39.724222, -80.671936

Water Purveyor Map
Well Pad: Arthur Waryck
County: MSH



Southwestern Energy®

Date: 9/26/2018

Author: willisb

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Latitude: 39°45'00"(SH)

SURFACE HOLE 1,513'

Latitude: 39°45'00"(BH)

BOTTOM HOLE 10,941'

JACKSON SURVEYING INC.

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

SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,397,191.815
EASTING: 528,106.241

LANDING POINT (LPL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,396,866.788
EASTING: 527,401.524

BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,398,829.320
EASTING: 525,227.192

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS
TRACT SURFACE OWNER (S) / ROYALTY OWNER (R) TAX PARCEL
1 A. MICHAEL WARYCK & DEBORAH B. ELLEN WARYCK (S) / CHARLES W. CAIN & PEARL CAIN (R) 09-21-10

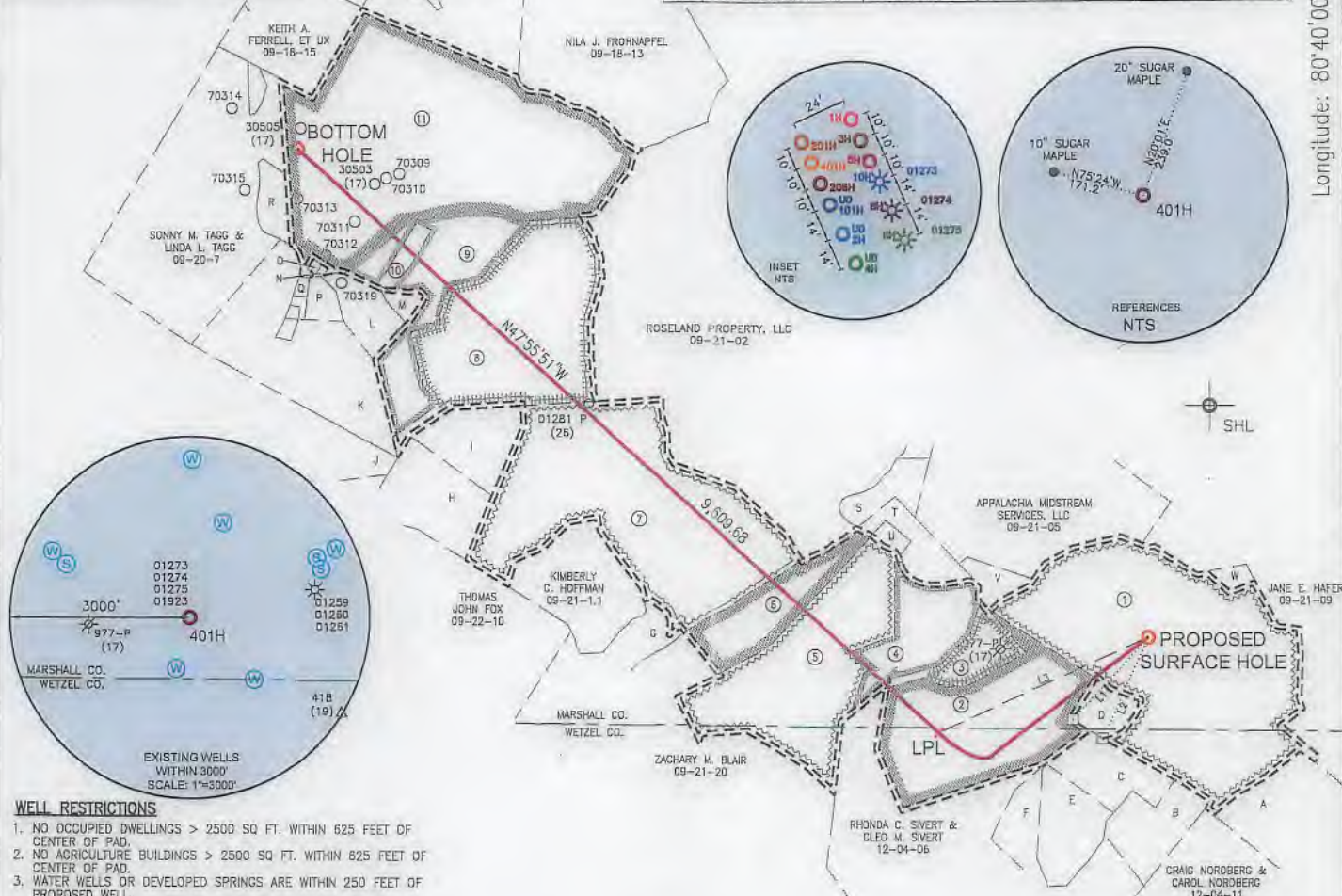
LINE BEARING DISTANCE DESCRIPTION MONUMENT
L1 S 42°58'23" W 1235.35' SHL TO LANDMARK FOUND STONE
L2 S 24°42'35" W 1226.73' SHL TO LANDMARK FENCE CORNER
L3 S 65°14'24" W 2546.12' 2824.16' SHL TO LP

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

05/24/2019

Longitude: 80°40'00"(BH)

Longitude: 80°40'00"(SH)



WELL RESTRICTIONS

- 1. NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
2. NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 825 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.

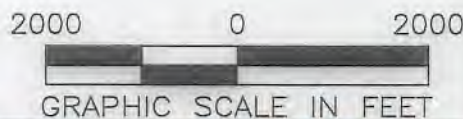
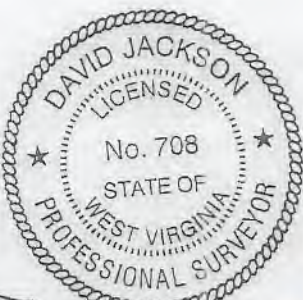
NOTES ON SURVEY

- 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.
4. 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 SWN
Production Company, LLC Production Company™

Table with well details: (+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS, WVDEP OFFICE OF OIL & GAS, MINIMUM DEGREE OF ACCURACY: 1/200, PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT), OPERATOR'S WELL #: 401H, API WELL #: 47 051 02172



WELL TYPE: OIL [] WASTE DISPOSAL [] PRODUCTION [x] DEEP [] GAS [x] LIQUID INJECTION [] STORAGE [] SHALLOW [x]
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 [x] DRILL DEEPER [] REDRILL [] FRACTURE OR STIMULATE [x] PLUG OFF OLD FORMATION [] PERFORATE NEW FORMATION []
CONVERT [] PLUG & ABANDON [] CLEAN OUT & REPLUG [] OTHER CHANGE [] (SPECIFY)
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,117 TVD 17,529 TMD

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

LEGEND: PROPOSED SURFACE HOLE / BOTTOM HOLE, EXISTING / PRODUCING WELLHEAD, LPL x LANDING POINT LOCATION, EXISTING WATER WELL, EXISTING SPRING, SURVEYED BOUNDARY, DRILLING UNIT, LEASE BOUNDARY, PROPOSED PATH, REVISIONS: REVISED TVD & TMD 11-12-2018, DATE: 11-08-2018, DRAWN BY: N. MANO, SCALE: 1" = 2000', DRAWING NO., WELL LOCATION PLAT

05/24/2019

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	CRAIG NORDBERG & CAROL NORDBERG	12-05-01
B	PHILLIP WILEY	12-04-09
C	MASON DIXON FARMS, LLC	09-21-11
D	ANORAH C. SCHOSTAG & RYAN U. SCHOSTAG	09-21-10.1
E	SARAH V. RICHMOND	12-04-08
F	RHODA C. SIVERT & CLEO M. SIVERT	12-04-07
G	KIMBERLY C. HOFFMAN & PAUL G. FOX	09-21-21
H	ELEANOR T. MILLER & JAMES B. MILLER	09-20-16
I	DAVID PAUL WEIGAND	09-20-15
J	DAVID P. WEIGAND	09-20-17.5
K	DAVID PAUL WEIGAND	09-20-09
L	ELEANOR T. MILLER & JAMES B. MILLER	09-20-08
M	JOHN G. WEIGAND JR. & MARILYN S. WEIGAND	09-20-12.2
N	ELEANOR T. MILLER & JAMES B. MILLER	09-20-9.2
O	ELEANOR T. MILLER & JAMES B. MILLER	09-20-9.1
P	JAMES MILLER, ET UX	09-20-9.6
Q	JAMES MILLER, ET UX	09-20-9.5
R	DAVID PAUL FROHNAPFEL	09-20-7.1
S	ZACHARY M. BLAIR	09-21-04
T	ZACHARY M. BLAIR	09-21-16
U	ZACHARY M. BLAIR	09-21-17
V	ZACHARY M. BLAIR	09-21-14
W	MASON DIXON FARMS, LLC	09-21-22

REVISIONS:	COMPANY:			 
△ REVISED TVD & TMD 11-12-2018				
	OPERATOR'S	ARTHUR WARYCK MSH		DATE: 11-08-2018
	WELL #:	401H		DRAWN BY: N. MANO
	DISTRICT:	COUNTY:	STATE:	SCALE: N/A
	MEADE	MARSHALL	WV	DRAWING NO:
				WELL LOCATION PLAT 2

**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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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 401H, Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	Book/Page	Interest Not Leased by Southwestern Production Company, LLC
1	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	
2	9-21-12	Mason Dixon Farms, LLC	Chesapeake Appalachia, L.L.C.	16.00%	695/219	0.0000%
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		Mason Dixon Farms, LLC	SWN Production Company, LLC		18.00%	
3	9-21-13	Ocie Neely, divorced	Manufacturers Light and Heat Company	12.50%	342/395	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	
4	9-21-15	Ocie Neely, divorced	Manufacturers Light and Heat Company	12.50%	342/395	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	
5	9-21-19	Ocie Neely, divorced	Manufacturers Light and Heat Company	12.50%	342/395	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	
6	9-21-18	Ocie Neely, divorced	Manufacturers Light and Heat Company	12.50%	342/395	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	
7	9-21-01	Hayhurst Company, a Florida Partnership	Chesapeake Appalachia, L.L.C.	16.67%	674/121	0.0000%
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		Robert Francis Villers and April L. Villers, his wife	Chesapeake Appalachia, L.L.C.		15.00%	
8	9-20-13	ROYALTY OWNER		<i>n/a</i>		2.9167%
		Michael William Young, single	Chesapeake Appalachia, L.L.C.	12.50%	678/115	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		Christina Rae Lowe, a widow	Chesapeake Appalachia, L.L.C.	12.50%	680/417	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		Mary C. Wright, a single woman	SWN Production Company, LLC	17.00%	915/397	
		Albert L. Hohman and Mary Louise Hohman, Trustees of the Hohman Revocable Trust dated August 8, 2014	SWN Production Company, LLC	18.00%	926/299	
		Mark H.J. Miller and Cheryl Miller, his wife	SWN Production Company, LLC	17.00%	916/155	
		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	

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05/24/2019

Arthur Waryck 401H, Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	Book/Page	Interest Not Leased by Southwestern Production Company, LLC
		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	
		Donna K. Yoho, widow	SWN Production Company, LLC	12.50%	956/238	
		Joseph E. Masters, a single man	SWN Production Company, LLC	12.50%	961/225	
		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	
		Mary K. McKeets, a/k/a Mary Katherine Schoene, a/k/a Mary K. McKeets	SWN Production Company, LLC	16.00%	915/426	
		Suzanne Thompson	SWN Production Company, LLC	16.00%	915/418	
		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%	851/455	
		Stone Energy Corporation	EQT Production Company		38/75	
		EQT Production Company	SWN Production Company, LLC		42/444	
		Barbara L. and William R. Pancake, husband and wife	Stone Energy Corporation	19.00%	851/460	
		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	
		Mary Josephine Nice and Jacob Woodrow Nice, husband and wife	Fossil Creek Ohio, LLC	18.00%	827/148	
		Fossil Creek Ohio, LLC	Gulfport Energy Corporation		34/410	
		Gulfport Energy Corporation and Fossil Creek Ohio, LLC	American Petroleum Partners Operating, LLC		36/588	
		American Petroleum Partners Operating, LLC	SWN Production Company, LLC		42/581	
		Vivian Shutler, a widow	American Petroleum Partners Operating, LLC	18.50%	916/642	
		American Petroleum Partners	SWN Production Company, LLC		42/567	
9	9-20-12.1	ROYALTY OWNER		n/a		3.9063%
		Michael William Young, single	Chesapeake Appalachia, L.L.C.	12.50%	682/508	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		Christine Rae Lowe, a widow	Chesapeake Appalachia, L.L.C.	12.50%	682/520	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		David Paul Weigand, single	Chesapeake Appalachia, L.L.C.	15.00%	685/247	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		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 C. Wright, a single woman	SWN Production Company, LLC	17.00%	915/397	
		Albert L. Hohman and Mary Louise Hohman, Trustees of the Hohman Revocable Trust dated August 8, 2014	SWN Production Company, LLC	18.00%	926/299	
		Mark H.J. Miller and Cheryl Miller, his wife	SWN Production Company, LLC	17.00%	916/155	
		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	
		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	
		Donna K. Yoho, widow	SWN Production Company, LLC	12.50%	956/238	
		Joseph E. Masters, a single man	SWN Production Company, LLC	12.50%	961/225	
		Frances J. Pucharich, a/k/a Frances Jo Pucharich	SWN Production Company, LLC	16.00%	915/414	

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Arthur Waryck 401H, Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	Book/Page	Interest Not Leased by Southwestern Production Company, LLC
		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	
		Mary K. McKeets, a/k/a Mary Katherine Schoene, a/k/a Mary K. McKeets	SWN Production Company, LLC	16.00%	915/426	
		Suzanne Thompson	SWN Production Company, LLC	16.00%	915/418	
		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	
		Barbara L. and William R. Pancake, husband and wife	Stone Energy Corporation	19.00%	851/460	
		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	
		Vivian Shutler, a widow	American Petroleum Partners Operating, LLC	18.50%	916/642	
		American Petroleum Partners	SWN Production Company, LLC		42/567	
10	9-20-12	ROYALTY OWNER		n/a		5.9063%
		Michael William Young, single	Chesapeake Appalachia, L.L.C.	12.50%	682/508	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		Christine Rae Lowe, a widow	Chesapeake Appalachia, L.L.C.	12.50%	682/520	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
		David Paul Weigand, single	Chesapeake Appalachia, L.L.C.	15.00%	685/247	
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		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 C. Wright, a single woman	SWN Production Company, LLC	17.00%	915/397	
		Albert L. Hohman and Mary Louise Hohman, Trustees of the Hohman Revocable Trust dated August 8, 2014	SWN Production Company, LLC	18.00%	926/299	
		Mark H.J. Miller and Cheryl Miller, his wife	SWN Production Company, LLC	17.00%	916/155	
		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	
		Constance S. Miller and Charles Allen Miller, Sr., her husband	SWN Production Company, LLC	18.00%	920/146	
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		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	
		Mary K. McKeets, a/k/a Mary Katherine Schoene, a/k/a Mary K. McKeets	SWN Production Company, LLC	16.00%	915/426	
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		Patrick A. & Lisa A. Frohnapfel, husband and wife	Stone Energy Corporation	19.00%	851/452	
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		David P. and Lynn E. Frohnapfel, husband and wife	Stone Energy Corporation	19.00%	851/458	
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Tract #	Tax Parcel	Lessor	Lessee	Royalty	Book/Page	Interest Not Leased by Southwestern Production Company, LLC
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		Helen B. Shutler Stone Energy Corporation EQT Production Company	Stone Energy Corporation EQT Production Company SWN Production Company, LLC	19.00%	851/462 38/75 42/444	
		Vivian Shutler, a widow American Petroleum Partners	American Petroleum Partners Operating, LLC SWN Production Company, LLC	18.50%	916/642 42/567	
11	9-20-11	Maggie Breiding	L. L. Thomas	12.50%	63/329	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 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 Marv Ellen Davis	John H. Robinson and George F. Eagon Elva Robinson and Mary Ellen Davis		1/443 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. Kathryn C. Reed, a widow and unmarried	Charles E. Reed and Kathryn C. Reed, husband and wife Carl Perkins		397/495 434/441	
		Carl Perkins and Dorothy Louise Perkins, husband and wife	Perkins Oil and Gas, Inc.		17/593	
		Perkins Oil and Gas, Inc. Stone Energy Corporation EQT Production Company	Stone Energy Corporation EQT Production Company SWN Production Company, LLC		26/322 38/75 42/638	
		John F. Fox and Lizzie Fox, husband and wife	L. L. Thomas	12.50%	63/332	
		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 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 Marv Ellen Davis	John H. Robinson and George F. Eagon Elva Robinson and Mary Ellen Davis		1/443 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. Kathryn C. Reed, a widow and unmarried	Charles E. Reed and Kathryn C. Reed, husband and wife Carl Perkins		397/495 434/441	
		Carl Perkins and Dorothy Louise Perkins, husband and wife	Perkins Oil and Gas, Inc.		17/593	

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		Perkins Oil and Gas, Inc. Stone Energy Corporation EQT Production Company	Stone Energy Corporation EQT Production Company SWN Production Company, LLC		26/322 38/75 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	
		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 EQT Production Company	Stone Energy Corporation EQT Production Company SWN Production Company, LLC		26/322 38/75 42/638	

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Environmental Protection

05/24/2019



SWN Production Company, LLC
179 Innovation Drive
Jane Lew, WV 26378
Tel: 304 884 1610
Fax: 304 471 2497
www.swn.com

December 27, 2018

Ms. Laura Adkins
WV DEP Office of Oil & Gas
601 57th St., SE
Charleston, WV 25304

RE: SWN's proposed well: Arthur Waryck UD MSH 101H & Arthur Waryck MSH 201H in Marshall County, West Virginia, Drilling under Co Rd 21/15.

Dear Ms. Adkins:

SWN Production Company, LLC ("SWN") is applying for a drilling permit for the above referenced well. The State of West Virginia has raised some concern as to SWN's right to drill under Co Rd 21/15. Please be advised that SWN has leased all mineral owners under said route as it relates to the above-referenced well and unit.

Thank you.

Sincerely,

Brandi Williams
Staff Landman
SWN Production Company, LLC

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The Right People Doing the Right Things
wisely investing the cash flow from our
underlying Assets, will create Value+[®]

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

Date of Notice Certification: 1/7/19

API No. 47- 51 -
Operator's Well No. Arthur Waryck MSH 401H
Well Pad Name: Arthur Waryck MSH PAD

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	<u>WV</u>	UTM NAD 83	Easting:	<u>528,106.241</u>
County:	<u>51-Marshall</u>		Northing:	<u>4,397,191.815</u>
District:	<u>Meade</u>	Public Road Access:	<u>Pleasant Ridge Road</u>	
Quadrangle:	<u>Wileyville</u>	Generally used farm name:	<u>Arthur Waryck</u>	
Watershed:	<u>Lynn Camp Run of Fish Creek</u>			

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p>RECEIVED Oil and Gas JAN 8 2019</p>
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Required Attachments:

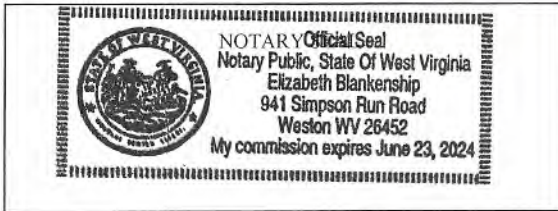
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

WV Department of Environmental Protection

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>



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

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.

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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: 1/7/19 **Date Permit Application Filed:** 1/7/19

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: _____

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(s) (Road and/or Other Disturbance)
 Name: _____
 Address: _____
 Name: _____
 Address: _____

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

SURFACE OWNER(s) (Impoundments or Pits)
 Name: _____
 Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
 Name: _____
 Address: _____

*Please attach additional forms if necessary

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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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WV Department of
Environmental Protection

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 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting 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 issues

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 57th St. SE
Charleston, WV 25304
(304) 926-0450

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.**

Office of Oil and Gas

JAN 8 2019

WV Department of
Environmental Protection

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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WW-6A
(8-13)

API NO. 47- 51 - **05/24/2019**
OPERATOR WELL NO. Arthur Waryck MSH 401H
Well Pad Name: Arthur Waryck MSH PAD

Notice is hereby given by:

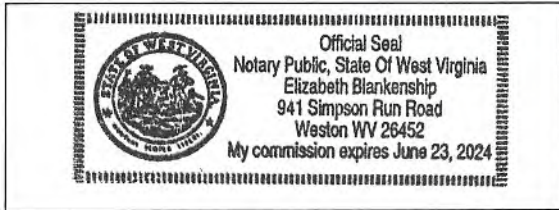
Well Operator: SWN Production Co., LLC
Telephone: 304-884-1610
Email: Brittany_Woody@swn.com

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.



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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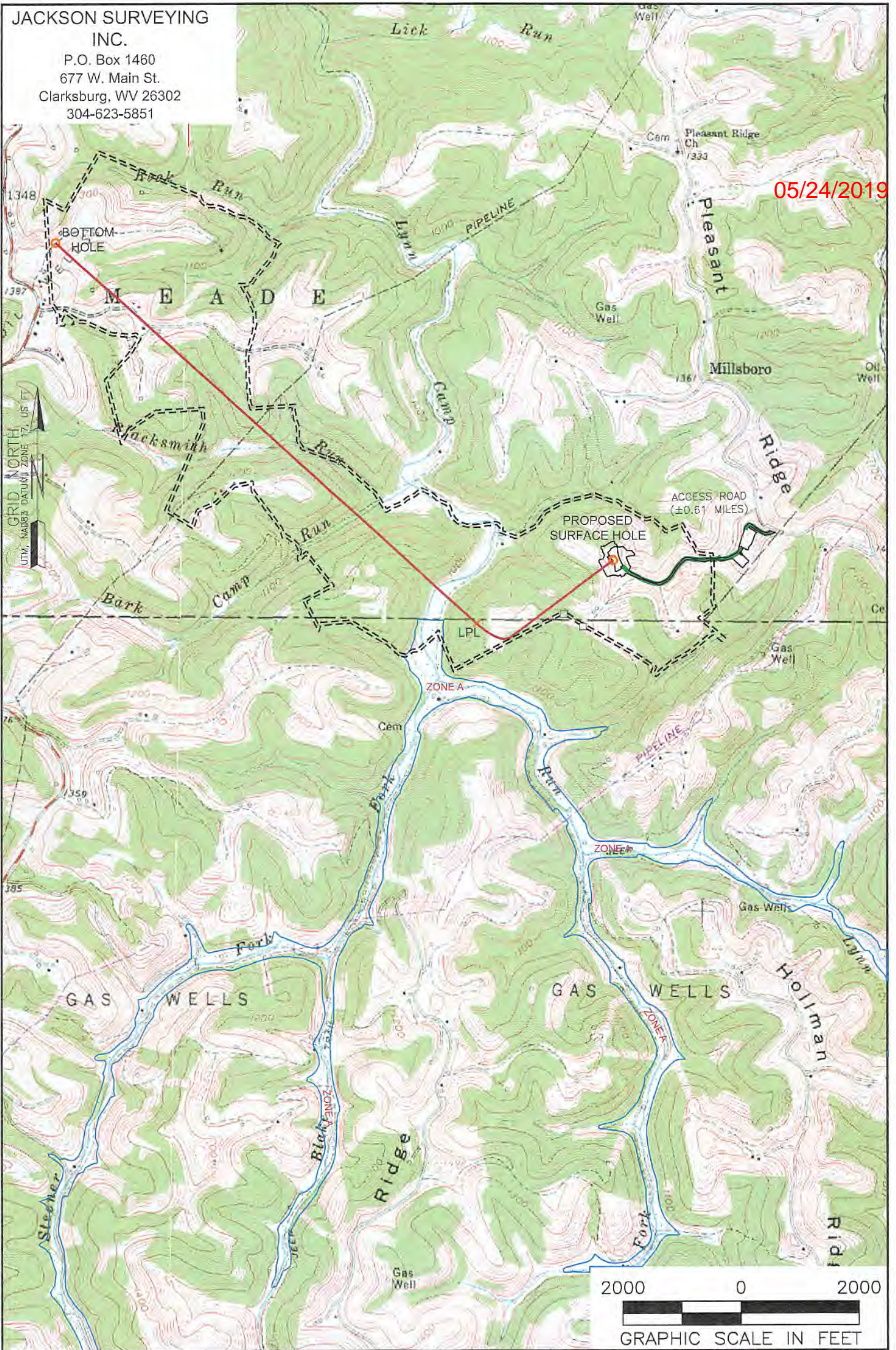
JAN 8 2019

WV Department of
Environmental Protection

**JACKSON SURVEYING
INC.**

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

05/24/2019



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.
4. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- LPL LANDING POINT LOCATION
- FLOOD PLAIN
- ACCESS ROAD
- PUBLIC ROAD
- ACCESS ROAD TO PREV. SITE
- LEASE BOUNDARY
- PROPOSED PATH

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	WELL (FARM) NAME: ARTHUR WARYCK MSH	WELL # REC SERIAL # 4011 of Oil and Gas
ADDRESS: P.O. BOX 1300 JANE LEW, WV 26378	COUNTY - CODE MARSHALL - 051	DISTRICT; MEADE JAN 8 2019
SURFACE OWNER: A. MICHAEL WARYCK & DEBORAH ELLEN WARYCK	USGS 7 1/2 QUADRANGLE MAP NAME WILEYVILLE, WV	WV Department of Economic Development

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:** 11/19

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

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>528,106.241</u>
County:	<u>Marshall</u>		Northing:	<u>4,397,191.815</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 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

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

Authorized Representative: Justin Booth
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-997-9816
Email: Justin_Booth@SWN.com
Facsimile: 304-884-1691

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Office of Oil and Gas
JAN 8 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.

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:** 1/19

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>528,106.241</u>
County:	<u>Marshall</u>		Northing:	<u>4,397,191.815</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 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting 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: 304-884-1691

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Office of Oil and Gas
JAN 8 2019

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.

WV Department of
Environmental Protection



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 57th Street, SE
Charleston, WV 25304

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

Arthur Waryck MSH 401H

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

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

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WV Department of
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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
		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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Office of Oil and Gas

JAN 8 2019

WV Department of
Environmental Protection



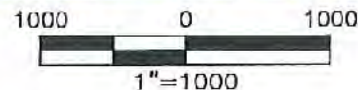
ARTHUR WARYCK MSH PAD CONSTRUCTION AND RECLAMATION PLAN AS-BUILT MEADE DISTRICT, MARSHALL COUNTY, WV NOVEMBER 2016

**WVDEP OOG
ACCEPTED AS-BUILT**

WJL 4 / 12 / 2017

SHEET INDEX

- TS1. TITLE SHEET
- EP2.1 EVACUATION ROUTE/ PREVAILING WIND
- EP2.2 EVACUATION ROUTE/ PREVAILING WIND
- AS3.1 ASBUILT OVERVIEW
- AS3.2 ASBUILT
- AS3.3 ASBUILT
- AS3.4 ASBUILT
- AS3.5 ASBUILT
- AS3.6 ASBUILT
- ASR4.1 CONSTRUCTION AND RECLAMATION ACCESS ROAD PROFILE
- MRD5.1 RECLAMATION PLAN OVERVIEW
- MRD5.2 RECLAMATION PLAN
- MRD5.3 RECLAMATION PLAN
- MRD5.4 RECLAMATION PLAN
- MRD5.5 RECLAMATION PLAN
- MRD5.6 RECLAMATION PLAN
- MRD6.3 DETAILS
- MRD6.4 DETAILS



MODIFIED LOD #1

TOTAL DISTURBED AREA: 9.8 ACRES
ROAD DISTURBED AREA: 4.6 ACRES
PAD DISTURBED AREA: 5.2 ACRES

MODIFIED LOD #2

TOTAL DISTURBED AREA: 11.0 ACRES
ROAD DISTURBED AREA: 4.6 ACRES
PAD DISTURBED AREA: 6.4 ACRES

**COORDINATES:
SITE ENTRANCE**
(NAD83)
LAT: 39.725435
LONG: 80.662369

AT WARYCK PAD
(NAD83)
LAT: 39.723874
LONG: 80.671505

CENTER OF PAD
(NAD83)
LAT: 39.724163
LONG: 80.671900

GATHERING AREA
(NAD83)
LAT: 39.724786
LONG: 80.664160

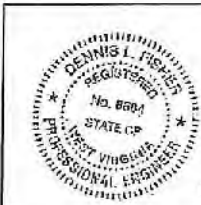
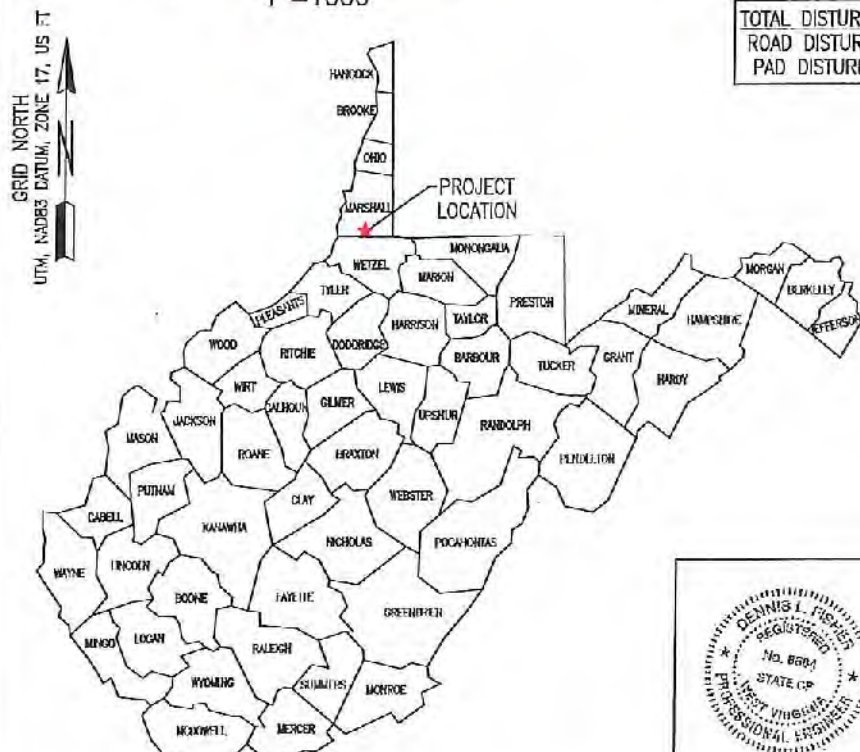
**EXISTING WELLS:
WARYCK MSH 6H**
API:47-051-01275H
(NAD83)
LAT: 39.724048
LONG: 80.671901

WARYCK MSH 8H
API:47-051-01274H
(NAD83)
LAT: 39.724084
LONG: 80.671921

WARYCK MSH 10H
API:47-051-01273H
(NAD83)
LAT: 39.724119
LONG: 80.671940

**PROPOSED WELLS:
WARYCK MSH 206H**
(NAD83)
LAT: 39.724013
LONG: 80.671882

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



Dennis L. Fisher
Dennis L. Fisher RPE 8684 Date: 01-26-2017



Jackson Surveying Inc.
TITLE SHEET
TS.1
SOUTHWESTERN PRODUCTION COMPANY LLC
ARTHUR WARYCK MSH PAD
MEADE DISTRICT, MARSHALL COUNTY, WV
NOVEMBER 08, 2016

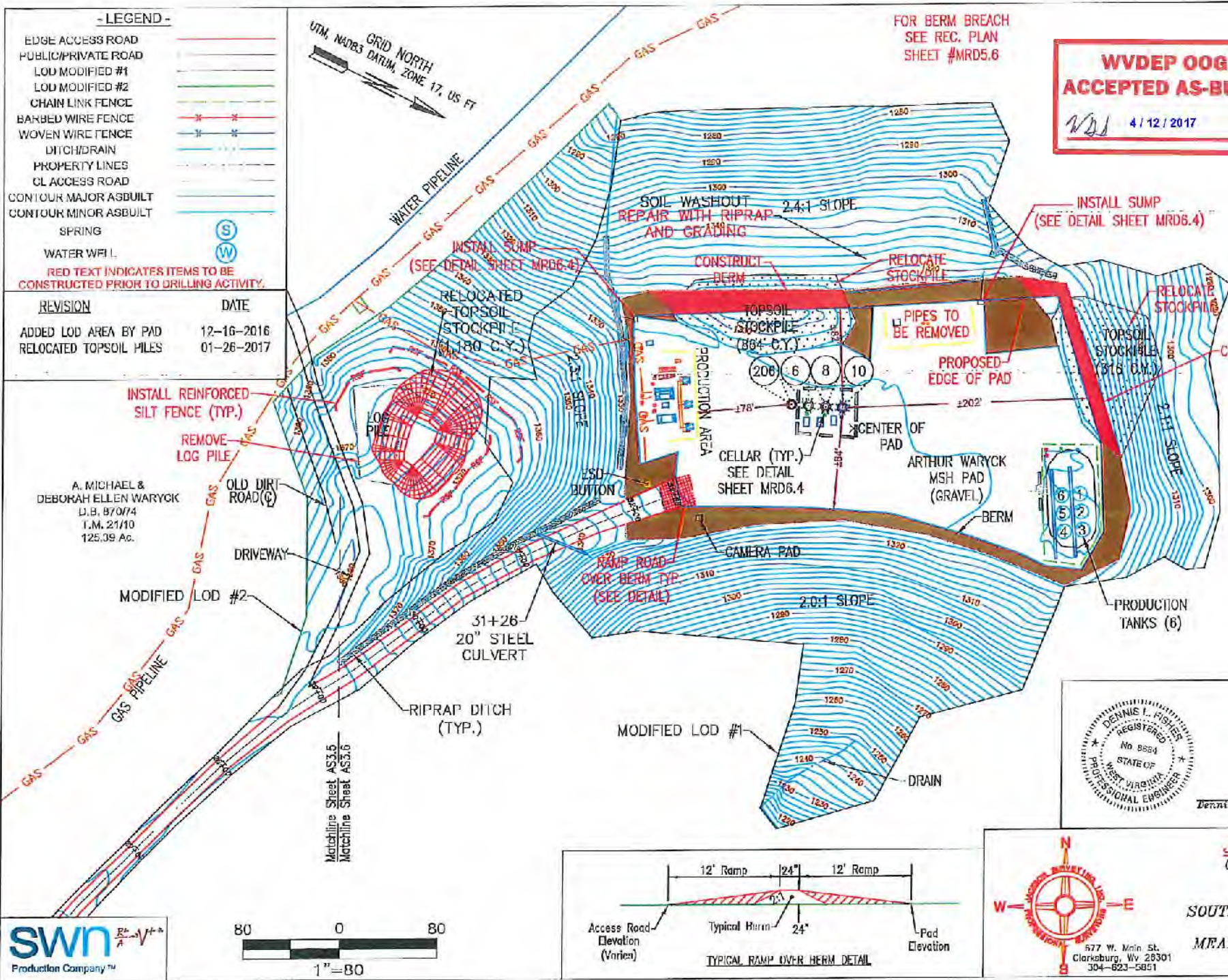
677 W. Main St.
Clarksburg, Wv 26301
304-623-9851

- 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

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.



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
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LAT: 39.723874
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LONG: 80.871900

GATHERING AREA
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LONG: 80.864160

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LONG: 80.871901

WARYCK MSH 8H
API:47-051-01274H
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LAT: 39.724084
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WARYCK MSH 10H
API:47-051-01273H
(NAD83)
LAT: 39.724119
LONG: 80.871940

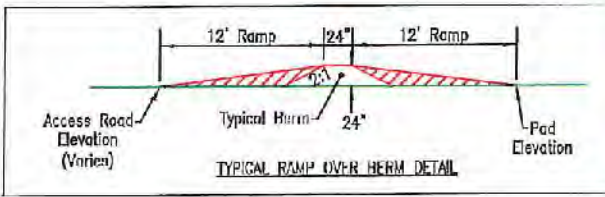
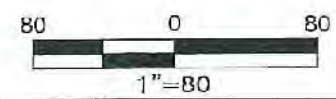
PROPOSED WELLS:
WARYCK MSH 20GH
(NAD83)
LAT: 39.724013
LONG: 80.871882

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

	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