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 west virginia department of environmental protection
 

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

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

Tuesday, February 26, 2019  
 WELL WORK PERMIT  
 Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC  
 POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit approval for LINDA GREATHOUSE BRK 8H  
 47-009-00273-00-00

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

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

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
 Chief

Operator's Well Number: LINDA GREATHOUSE BRK 8H  
 Farm Name: LINDA REEVES GREATHOUSE  
 U.S. WELL NUMBER: 47-009-00273-00-00  
 Horizontal 6A New Drill  
 Date Issued: 2/26/2019

# PERMIT CONDITIONS

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.

03/01/2019

API Number: \_\_\_\_\_

## PERMIT CONDITIONS

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

WW-6B  
(04/15)

API NO. 47-009  
OPERATOR WELL NO. Linda Greathouse BRK 8H  
Well Pad Name: Linda Greathouse BRK Pad

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

1) Well Operator: SWN Production Co., LLC 494512924 009-Brooke 3-Buffalo 247- Bethany  
Operator ID County District Quadrangle

2) Operator's Well Number: Linda Greathouse BRK 8H Well Pad Name: Linda Greathouse BRK Pad

3) Farm Name/Surface Owner: Linda Reeves Greathouse & Vicki Lynn Hamilton Public Road Access: Hukill Run Road

4) Elevation, current ground: 1139' Elevation, proposed post-construction: 1139'

5) Well Type (a) Gas  Oil  Underground Storage   
Other   
(b) If Gas Shallow  Deep   
Horizontal

6) Existing Pad: Yes or No Yes *C. 7500 8-27-18*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Target Formation- Marcellus, Down-Dip Well to the South, Target Top TVD- 5934', Target Base TVD- 5975', Anticipated Thickness- 41', Associated Pressure- 3883

8) Proposed Total Vertical Depth: 5961'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 11008'

11) Proposed Horizontal Leg Length: 4769.82'

12) Approximate Fresh Water Strata Depths: 159'

13) Method to Determine Fresh Water Depths: Nearby Spring

14) Approximate Saltwater Depths: 454' Salinity Profile Analysis

15) Approximate Coal Seam Depths: 313'

16) Approximate Depth to Possible Void (coal mine, karst, other): Possible Void 313'

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes  No

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

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WW-6B  
(04/15)

API NO. 47-009 -  
OPERATOR WELL NO. Linda Greathouse BRK 04  
Well Pad Name: Linda Greathouse BRK Pad

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft./CTS)
Conductor	20"	New	H-40	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	H-40	48#	400'	400'	392 sx/CTS
Coal	See	Surface	Casing				
Intermediate	9 5/8"	New	J-55	36#	1667'	1667'	643 sx/CTS
Production	5 1/2"	New	HCP-110	20#	11,008'	11,008'	Lead 1725w/7.41 1325w/ 107 inside 5.0
Tubing							
Liners							

*E. BLO 8-27-18*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	81	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.19/50% Excess
Coal	See	Surface	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	1.20/50% Excess
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

WW-6B  
(10/14)

API NO. 47- 009 -

OPERATOR WELL NO. Linda Greathouse BRK BH

Well Pad Name: Linda Greathouse BRK Pad

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 units, vertical 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): 29.41

22) Area to be disturbed for well pad only, less access road (acres): 9.64

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 \*\*\*

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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.

\*Note: Attach additional sheets as needed.

## Schlumberger Cement Additives

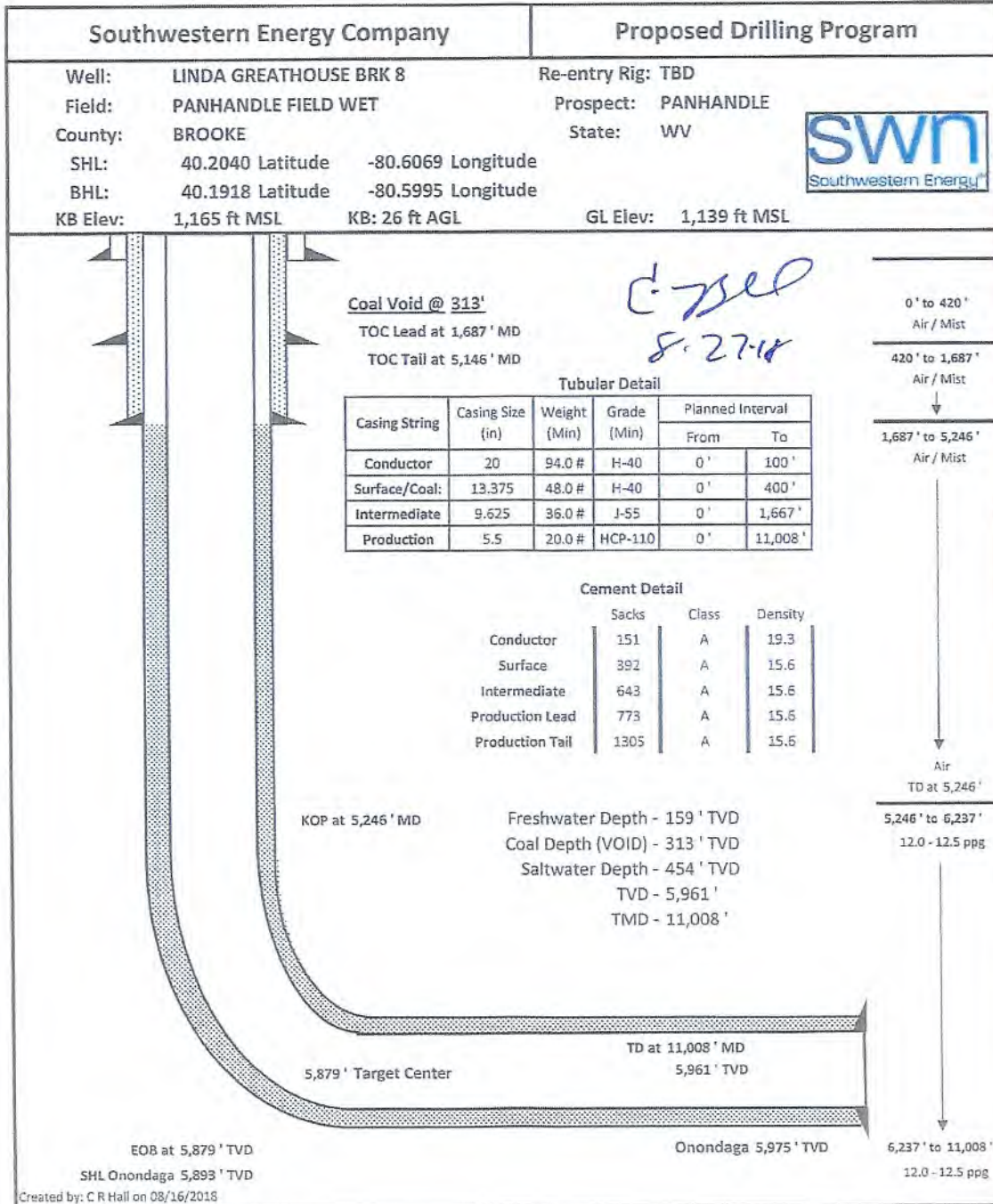
	Product Name	Product Use	Chemical Name	CAS Number
Surface	S001	accelerator	calcium chloride up to 3%	10043-52-4
Intermediate	S001	accelerator	calcium chloride	10043-52-4
Kick Off Plug	D080	dispersant	sodium polynaphthalene sulfonate	9008-63-3
	D801	retarder	aromatic polymer derivative	proprietary
	D047	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
	D065	dispersant	sodium polynaphthalene sulfonate	9008-63-3
			sodium sulfate	7757-82-6
	D201	retarder	chrystalline silica	14808-60-7
metal oxide			proprietary	
D153	anti-settling	chrystalline silica	14808-60-7	

Rev. 5/18/2018

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03/01/2019

October 15, 2018

Ms. Laura Adkins  
Office of Oil & Gas  
601 57<sup>th</sup> Street  
Charleston, WV 25304

**RE:** Proposed New Well Linda Greathouse BRK 8H

Dear Ms. Adkins

SWN has reviewed the area of the above mentioned well and discovered no shallow wells within 500' of the lateral. This well is situated on the Greathouse's property, in Buffalo District, Brooke County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1613

Thank you.

Sincerely,



Brittany Woody  
Regulatory Analyst  
Southwestern Energy Production Company, LLC

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

4700900273

03/01/2019

WW-9  
(2/15)

API Number 47 - 009 -  
Operator's Well No. Linda Greathouse BRK 8H

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) Upper Ohio South Quadrangle Bethany

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, 34-066-44307, 34-110-28776, 34-107-23082, 34-156-23795, 34-121-20895, 34-156-21693 )
- Reuse (at API Number \_\_\_\_\_ at next anticipated well, API# will be included with the WR-34/DDMR &/or permit addendum. \_\_\_\_\_)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain flow back fluids will be put in steel tanks and reused or taken to a permitted disposal facility)

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

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

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

Additives to be used in drilling medium? Attachment 3A

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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) \_\_\_\_\_ WV Department of Environmental Protection

-Landfill or offsite name/permit number? Meadowhill 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 23 day of Oct, 20 18

Elizabeth Blankenship

Notary Public  
Official Seal  
Notary Public, State Of West Virginia  
Elizabeth Blankenship  
211 Simpson Run Road  
Weston WV 26452  
My commission expires June 23, 2024

My commission expires 6/23/2024

Form WW-9

Operator's Well No. Linda Greathouse BRK 8H

SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 29.41 Prevegetation pH \_\_\_\_\_

Lime as determined by pH test min. 2 Tons/acre or to correct to pH 9.64

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.

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Photocopied section of involved 7.5' topographic sheet.

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Plan Approved by:  3-8-18

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Title: Oil & Gas Inspector Date: 3-8-18

Field Reviewed?  Yes  No

## Attachment 3A

### Drilling Mediums

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

Air

Freshwater (if needed based on conditions)

#### 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

Attachment 3B

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*R<sup>+</sup> → V<sup>+</sup>*

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%	
<b>Apply @ 100lbs per acre April 16th- Oct. 14th</b>		<b>Apply @ 200lbs per acre Oct. 15th- April 15th PLUS 50lbs per acre of Winter Wheat</b>

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

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

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

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

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

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

## 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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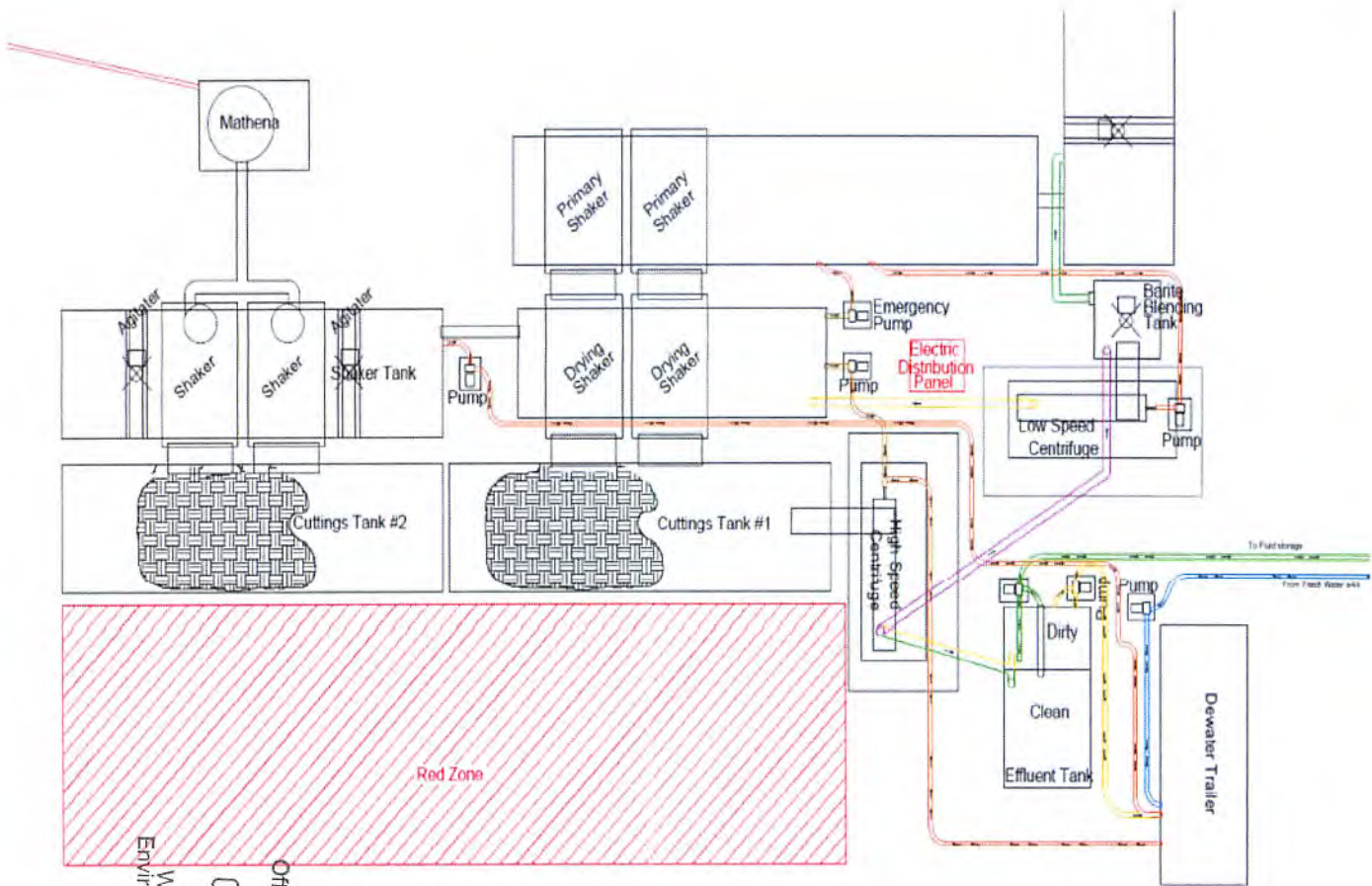
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# Solids Control Layout



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: Linda Greathouse BRK 8H**  
**Bethany QUAD**  
**Buffalo DISTRICT**  
**Brooke COUNTY, WEST VIRGINIA**

Submitted by:

Brittany Woody

3/1/2018

Date:

Title: Regulatory Analyst

SWN Production Co., LLC

Approved by:

Date:

3-8-18

Title: Oil & Gas Inspector

Approved by:

Date:

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

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03/01/2019



GREATHOUSE LINDA REEVES  
HAMILTON VICKI LYNN  
03 B37008700000000

HAZLETT JAMES &  
JO ELLEN (SURV)  
03 B42006000020000

LABELLE FARMS INC  
03 B42006000000000

BASIL ROCCO  
03 B42001900000000

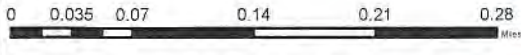
WADE AUSTIN WAYNE &  
JUSTINE ADAH (SURV)  
03 B42006000010000

WADE AUSTIN WAYNE &  
JUSTINE ADAH (SURV)  
03 B42005000000000

MARKER PHYLLIS P  
03 B42005200000000

LINDA  
GREATHOUSE-BRK-PAD1

1 in = 583 ft



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

- S Spring
- W Water Well
- Pond
- 1500' Buffer

Coordinates: 40.203989, -80.606713

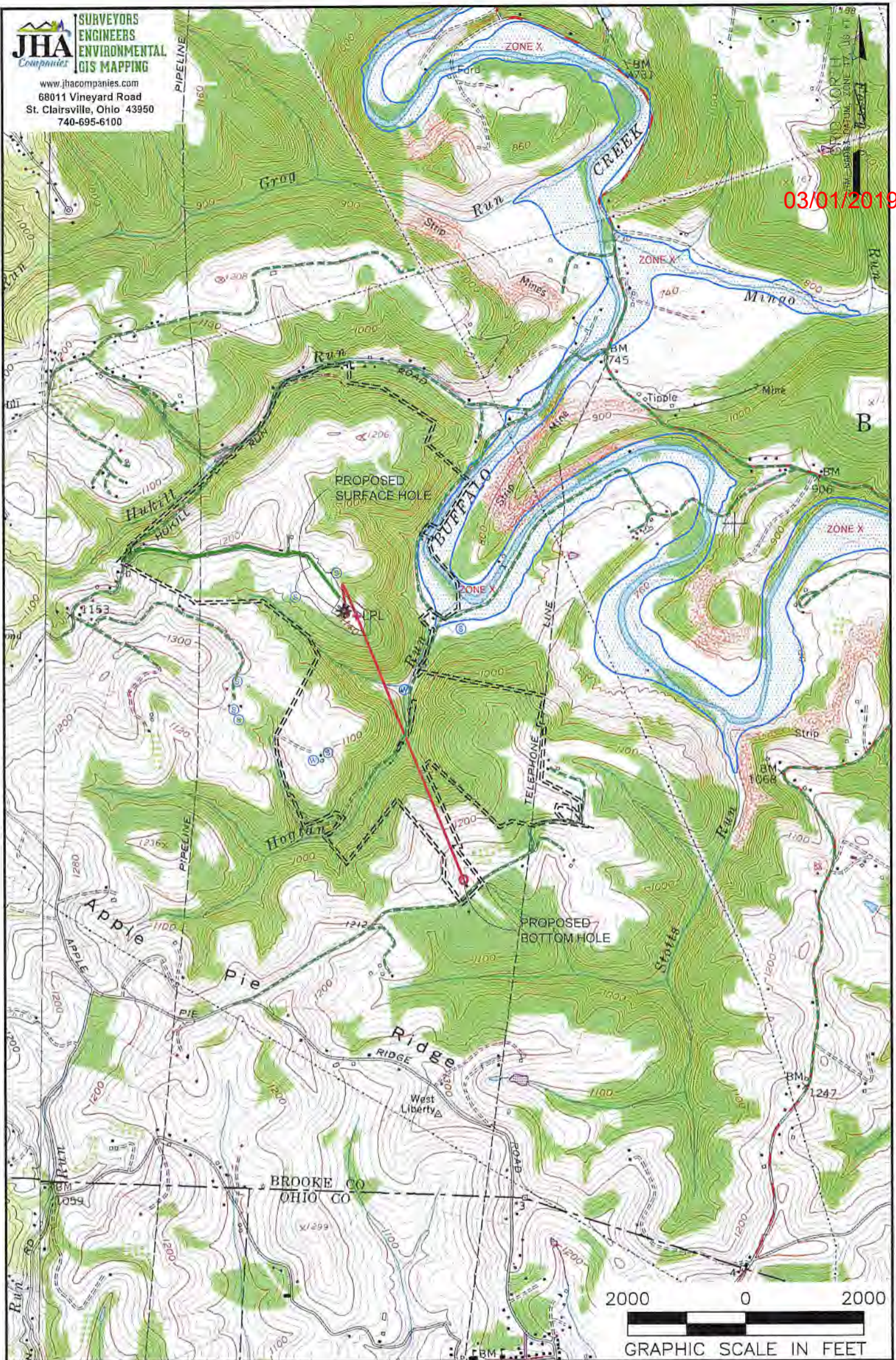
Water Purveyor Map  
Well Pad: Linda Greathouse  
County: BRK



Date: 3/5/2018

Author: willisb

03/01/2019



**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.
3. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

**LEGEND:**

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

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WELL OPERATOR:  
SWN PRODUCTION COMPANY, LLC

OCT 30 2018

ADDRESS:  
P.O. BOX 1300 JANE LEW, WV 26378

SURFACE OWNER:  
LINDA REEVES GREATHOUSE & VICKI LYNN HAMILTON

WV Department of  
Environmental Protection

WELL (FARM) NAME:  
LINDA GREATHOUSE BRK

WELL # SERIAL #  
8H XXXX

COUNTY - CODE DISTRICT;  
BROOKE - 009 BUFFALO

USGS 7 1/2 QUADRANGLE MAP NAME  
BETHANY, WV

LATITUDE: 40°12'30" SURFACE HOLE | 6562'

LATITUDE: 40°12'30" BOTTOM HOLE | 4519'

**JHA** SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
GIS MAPPING  
www.jhacompanies.com  
68011 Vineyard Road  
St. Clairsville, Ohio 43950  
740-695-6100

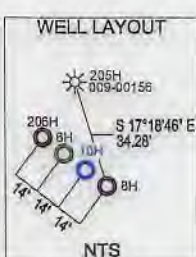
**NOTES ON SURVEY**

1. COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. 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.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO DWELLINGS OR BUILDINGS WITHIN 825 FEET OF PROPOSED CENTER OF PAD
5. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
6. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF THE LIMITS OF DISTURBANCE.
7. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL

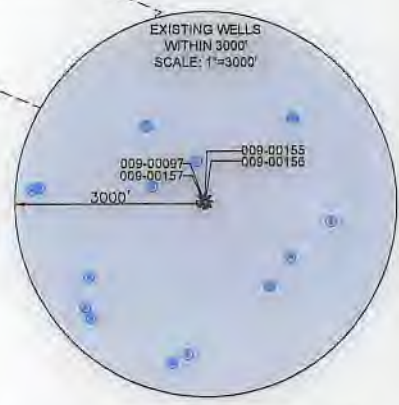
03/01/2019

GRID NORTH  
UTM, NAD83 DATUM, ZONE 17, U.S. FT

S 75°59'21" E  
202.67'



LINE	BEARING	DISTANCE
L1	S 71°48'04" E	3965.53'
L2	S 81°17'06" E	3766.30'



**SURFACE HOLE LOCATION (SHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4450477.01  
EASTING: 533457.75

**LANDING POINT LOCATION (LPL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4450463.07  
EASTING: 533517.90

**BOTTOM HOLE LOCATION (BHL):**  
UTM (NAD83, ZONE 17, METERS):  
NORTHING: 4449125.74  
EASTING: 534086.79



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. 2041 *[Signature]* 4/16/18

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)	OPERATOR'S WELL #: LINDA GREATHOUSE BRK 8H API WELL #: 47 009 00273 STATE COUNTY PERMIT
	WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	WATERSHED: UPPER OHIO SOUTH DISTRICT: BUFFALO COUNTY: BROOKE SURFACE OWNER: LINDA REEVES GREATHOUSE & VICKI LYNN HAMILTON OIL & GAS ROYALTY OWNER: LINDA REEVES GREATHOUSE & VICKI LYNN HAMILTON

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

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 5,961' TVD 11,007.7'TMD

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

<b>LEGEND:</b> ○ PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD LPL * LANDING POINT LOCATION W EXISTING WATER WELL S EXISTING SPRING	SURVEYED BOUNDARY DRILLING UNIT LEASE BOUNDARY PROPOSED PATH	REVISIONS: DATE: 04-16-2018
	DRAWN BY: D. REED SCALE: 1" = 2000' DRAWING NO: 2018-204 WELL LOCATION PLAT	PROPERTY NUMBER 2501162100 PAD ID 3001155488

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	LINDA REEVES GREATHOUSE & VICKI LYNN HAMILTON (S/R)	03-B37-0087.0000
TRACT	SURFACE OWNER	TAX PARCEL
2	JAMES & JO ELLEN HAIZLETT	03-B42-0060.0002
3	AUSTIN WAYNE & JUSTINE ADAH WADE	03-B42-0060.0001
4	AUSTIN WAYNE & JUSTINE ADAH WADE	03-B42-0050.0000
5	PHYLLIS P. MARKER	03-B42-0052.0000
6	WINDSOR POWER HOUSE COAL COMPANY	03-B42-0053.0000
7	WINDSOR POWER HOUSE COAL COMPANY	03-B42-0051.0000
8	WINDSOR POWER HOUSE COAL COMPANY	03-B42-0056.0000
9	JEFFREY S. & DAWNA J. WARD	03-B42-0059.0004
10	WINDSOR POWER HOUSE COAL COMPANY	03-B42-0055.0000
11	RALPH O. & GINA L. SMITH	03-B42-0068.0000
12	RALPH O. & GINA L. SMITH	03-B42-0067.0000

03/01/2019

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	DEBRA F. CYPHERT (½), MATTHEW H. FAIR (½) & ET AL	03-B37-0091.0000
B	ROBERT BONE	03-B37-0090.0000
C	ROBERT BONE	03-B37-0089.0000
D	ROBERT BONE	03-B37-0090.0001
E	DEBRA F. CYPHERT (½), MATTHEW H. FAIR (½) & ET AL	03-B37-0088.0000
F	CARL R. & SANDRA S. CLARK	03-B37-0086.0000
G	BRIAN K. & GINA M. HANEY	03-B37-0077.0000
H	LPS INVESTMENT PARTNERSHIP	03-B37-0066.0000
I	EDGAR S. & CECELIA M. ERDMAN	03-B42-0049.0000
J	ELLEN B. SANFORD	03-B37-0076.0000
K	WILLIAM A. & LYNETTE G. HAIZLETT	03-B42-0060.0003
L	THURMAN O. SPEECE, JR. & GOLDIE M. STANLEY	03-B42-0046.0000
M	TRUMAN A. & MARY V. SPEECE	03-B42-0059.0001
N	THURMAN O. SPEECE, JR. & GOLDIE M. STANLEY	03-B42-0042.0000
O	THURMAN O. SPEECE, JR. & GOLDIE M. STANLEY	03-B42-0059.0003
P	THURMAN O. SPEECE, JR. & GOLDIE M. STANLEY	03-B42-0059.0002
Q	RALPH O. & GINA L. SMITH	03-B42-0039.0000
R	RALPH O. & GINA L. SMITH	03-B42-0070.0000
S	RALPH O. & GINA L. SMITH	03-B42-0069.0000
T	RALPH O. & GINA L. SMITH	03-B42-0066.0000
U	RALPH & GINA SMITH	03-B42-0065.0000
V	RALPH O. & GINA L. SMITH	03-B42-0064.0000
W	MIKE RYNIWEC	03-B42-0033.0000
X	JAMES L. BONAR & ET AL	03-B42-0054.0000
Y	HENRY HEINZROTH	03-B42-0032.0000
Z	ROCCO BASIL	03-B42-0019.0000
AA	RICKEY & DEBRA CONLEY	03-B42-0018.0000
AB	EDWARD E. & NANCY J. CONLEY	03-B42-0016.0000
AC	EDWARD E. & NANCY J. CONLEY	03-B42-0015.0000
AD	DANIEL R. GORBY	03-B42-0026.0000
AE	DANIEL R. GORBY	03-B42-0003.0000
AF	ELLEN M. STANLEY, ET AL	03-B42-0001.0000
AG	VICTOR CHARLES SMITH	03-B37-0130.0000
AH	CHRISTOPHER SCOTT MILLER	03-B37-0094.0000
AI	KEVIN CHUMNEY	03-B37-0093.0000
AJ	TRUMAN A. SPEECE (½), MARY SPEECE (½) & THURMAN SPEECE, JR. (½)	03-B42-0058.0000
AK	WINDSOR POWER HOUSE COAL COMPANY	03-B42-0057.0000



REVISIONS:	COMPANY:		 	
	OPERATOR'S		DATE: 04-16-2018	
	WELL #:		DRAWN BY: D. REED	
	DISTRICT:		SCALE: N/A	
	BUFFALO	COUNTY:	STATE:	DRAWING NO: 2018-204
		BROOKE	WV	WELL LOCATION PLAT



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, LLC, Operator  
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 Brooke County, West Virginia

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#	TMP	SURFACE OWNER	LESSOR	LESSEE	ROYALTY	BK/PG
✓ 1)	03-0B37-0087-0000-0000	Linda Reeves Greathouse and Vicki Lynn Hamilton	Linda Reeves Greathouse, a married woman dealing in her sole and separate property and Lynn Greathouse Hamilton, a married woman dealing in her sole and separate property	Chesapeake Appalachia, LLC  SWN Production Company, LLC ✓	18.00%	11/162  30/480 ✓
2)	03-0B42-0060-0002-0000	James Haizlett and Jo Ellen Haizlett	Bounty Minerals LLC	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	29/58 30/480 ✓
3)	03-0B42-0060-0001-0000	Austin Wayne Wade and Justine Adah Wade	Bounty Minerals LLC	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	29/58 30/480 ✓
4)	03-0B42-0050-0000-0000	Austin Wayne Wade	Shirley Buckhannon	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/302 30/480
			Craig Lee Bowers and Patricia E Bowers	Chesapeake Appalachia, LLC	18.00%	30/100
				SWN Production Company, LLC		31/288
			Carol Sue Cirola and James Vincent Cirola	Chesapeake Appalachia, LLC	18.00%	27/580
				SWN Production Company, LLC		30/480
			Sherry Morris Clary and Clinton Clary	Chesapeake Appalachia, LLC	18.00%	17/673
				SWN Production Company, LLC		30/480
			Debra A. Conley and Rickey Conley	Chesapeake Appalachia, LLC	18.00%	17/327
				SWN Production Company, LLC		30/480
			E. Jean Cross	Chesapeake Appalachia, LLC	18.00%	17/333
				SWN Production Company, LLC		30/480
			Daniel Gorby	Chesapeake Appalachia, LLC	18.00%	18/281
				SWN Production Company, LLC		30/480
			William F. Harr, Jr and Dorothy Harr	Chesapeake Appalachia, LLC	18.00%	27/287
				SWN Production Company, LLC		30/480
			Shirley A. Kokiko and Charles Kokiko	Chesapeake Appalachia, LLC	18.00%	27/78
				SWN Production Company, LLC		30/480
			Jenny M. Miller	Chesapeake Appalachia, LLC	18.00%	17/192
				SWN Production Company, LLC		30/480
			Deborah Moreira	Chesapeake Appalachia, LLC	18.00%	17/339
				SWN Production Company, LLC		30/480
			Gary Morris and Jackie Morris	Chesapeake Appalachia, LLC	18.00%	17/186
				SWN Production Company, LLC		30/480
			Lori Ann Morris	Chesapeake Appalachia, LLC	18.00%	17/351
				SWN Production Company, LLC		30/480

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 Linda Greathouse BRK 8H  
 Brooke County, West Virginia

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		Robyn Nicholson	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/679 30/480	
		Barbara Clower	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	27/92 30/480	
		Phive Starr Properties, LP	SWN Production Company, LLC	18.00%	48/442	
		AOYS Investments LLC	SWN Production Company, LLC	18.00%	48/448	
		Alice Faye Newton	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/315 30/480	
		Sharon M Smith	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/309 30/480	
		William Sterling and Gloria Jean Sterling	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	27/73 30/480	
		Nancy Lee Vargo and Andrew John Vargo, Jr	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/321 30/480	
		James Keith Wilkin	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/345 30/480	
		Mark Thomas Wilkin	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/685 30/480	
5)	03-0B42-0052-0000-0000	Phyllis P. Marker	Shirley Buckhannon	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/302 30/480
			Craig Lee Bowers and Patricia E Bowers	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	30/100 31/288
			Carol Sue Cirola and James Vincent Cirola	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	26/441 30/480
			Sherry Morris Clary and Clinton Clary	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	17/673 30/480
			Debra A. Conley and Rickey Conley	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	16/462 30/480
			E. Jean Cross	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	16/480 30/480
			Genelda M. Hardman	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	28/37 30/480
			Daniel Gorby	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	16/486 30/480
			William F. Harr, Jr and Dorothy Harr	Chesapeake Appalachia, LLC SWN Production Company, LLC	18.00%	25/754 30/480
			Shirley A. Kokiko and Charles Kokiko	Chesapeake Appalachia, LLC	18.00%	25/759

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			SWN Production Company, LLC		30/480			
	Jenny M. Miller		Chesapeake Appalachia, LLC	18.00%	16/702			
			SWN Production Company, LLC		30/480			
	Deborah Moreira		Chesapeake Appalachia, LLC	18.00%	17/339			
			SWN Production Company, LLC		30/480			
	Gary Morris and Jackie Morris		Chesapeake Appalachia, LLC	18.00%	17/186			
			SWN Production Company, LLC		30/480			
	Lori Ann Morris		Chesapeake Appalachia, LLC	18.00%	17/351			
			SWN Production Company, LLC		30/480			
	Robyn Nicholson		Chesapeake Appalachia, LLC	18.00%	17/679			
			SWN Production Company, LLC		30/480			
	Barbara Clower		Chesapeake Appalachia, LLC	18.00%	26/317			
			SWN Production Company, LLC		30/480			
	Phive Starr Properties, LP		SWN Production Company, LLC	18.00%	48/442			
	AOYS Investments LLC		SWN Production Company, LLC	18.00%	48/448			
	Alice Faye Newton		Chesapeake Appalachia, LLC	18.00%	16/474			
			SWN Production Company, LLC		30/480			
	Sharon M Smith		Chesapeake Appalachia, LLC	18.00%	16/708			
			SWN Production Company, LLC		30/480			
	William Sterling and Gloria Jean Sterling		Chesapeake Appalachia, LLC	18.00%	25/764			
			SWN Production Company, LLC		30/480			
	Nancy Lee Vargo and Andrew John Vargo, Jr		Chesapeake Appalachia, LLC	18.00%	16/468			
			SWN Production Company, LLC		30/480			
	James Keith Wilkin		Chesapeake Appalachia, LLC	18.00%	17/345			
			SWN Production Company, LLC		30/480			
	Mark Thomas Wilkin		Chesapeake Appalachia, LLC	18.00%	17/685			
			SWN Production Company, LLC		30/480			
6)	03-0B42-0053-0000-0000	Windsor Power House Coal Company c/o CNX Land Resources Inc. Property Tax	Shirley Buckhannon	Chesapeake Appalachia, LLC	18.00%	18/673		
						SWN Production Company, LLC		30/480
			Craig Lee Bowers and Patricia E Bowers	Chesapeake Appalachia, LLC	18.00%	30/100		
						SWN Production Company, LLC		31/288
			Carol Sue Cirolì and James Vincent Cirolì	SWN Production Company, LLC	18.00%	34/169		
			Sherry Morris Clary and Clinton Clary	Chesapeake Appalachia, LLC	18.00%	19/449		
						SWN Production Company, LLC		30/480
			Debra A. Conley and Rickey Conley	Chesapeake Appalachia, LLC	18.00%	20/323		
						SWN Production Company, LLC		30/480
			E. Jean Cross	Chesapeake Appalachia, LLC	18.00%	20/493		



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Brooke County, West Virginia

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			SWN Production Company, LLC			
		Genelda M. Hardman	Chesapeake Appalachia, LLC	18.00%	28/348	
			SWN Production Company, LLC		30/480	
		Daniel Gorby	Chesapeake Appalachia, LLC	18.00%	15/486	
			SWN Production Company, LLC		30/480	
		William F. Harr, Jr and Dorothy Harr	SWN Production Company, LLC	18.00%	30/671	
		Shirley A. Kokiko and Charles Kokiko	SWN Production Company, LLC	18.00%	30/677	
		Jenny M. Miller	Chesapeake Appalachia, LLC	18.00%	18/180	
			SWN Production Company, LLC		30/480	
		Deborah Moreira	Chesapeake Appalachia, LLC	18.00%	18/691	
			SWN Production Company, LLC		30/480	
		Gary Morris and Jackie Morris	Chesapeake Appalachia, LLC	18.00%	19/26	
			SWN Production Company, LLC		30/480	
		Lori Ann Morris	Chesapeake Appalachia, LLC	18.00%	18/561	
			SWN Production Company, LLC		30/480	
		Robyn Nicholson	Chesapeake Appalachia, LLC	18.00%	18/679	
			SWN Production Company, LLC		30/480	
		Alice Faye Newton	Chesapeake Appalachia, LLC	18.00%	18/186	
			SWN Production Company, LLC		30/480	
		Sharon M Smith	Chesapeake Appalachia, LLC	18.00%	18/685	
			SWN Production Company, LLC		30/480	
		William Sterling and Gloria Jean Sterling	SWN Production Company, LLC	18.00%	30/659	
		Nancy Lee Vargo and Andrew John Vargo, Jr	Chesapeake Appalachia, LLC	18.00%	18/192	
			SWN Production Company, LLC		30/480	
		Phive Starr	SWN Production Company, LLC	18.00%	34/164	
		Utica Shale Mineral Partners, LLC	SWN Production Company, LLC	18.00%	34/159	
		James Keith Wilkin	Chesapeake Appalachia, LLC	18.00%	19/167	
			SWN Production Company, LLC		30/480	
		Mark Thomas Wilkin	Chesapeake Appalachia, LLC	18.00%	30/671	
			SWN Production Company, LLC		30/480	
7)	03-0B42-0051-0000-0000	Windsor Power House Coal Company c/o CNX Land Resources Inc. Property Tax	Shirley Buckhannon	Chesapeake Appalachia, LLC	18.00%	17/302
				SWN Production Company, LLC		30/480
			Craig Lee Bowers and Patricia E Bowers	Chesapeake Appalachia, LLC	18.00%	30/100
				SWN Production Company, LLC		31/288
			Carol Sue Cirolli and James Vincent Cirolli	Chesapeake Appalachia, LLC	18.00%	27/580
				SWN Production Company, LLC		30/480

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Sherry Morris Clary and Clinton Clary	Chesapeake Appalachia, LLC	18.00%	17/673
	SWN Production Company, LLC		30/480
Debra A. Conley and Rickey Conley	Chesapeake Appalachia, LLC	18.00%	17/327
	SWN Production Company, LLC		30/480
E. Jean Cross	Chesapeake Appalachia, LLC	18.00%	17/333
	SWN Production Company, LLC		30/480
Daniel Gorby	Chesapeake Appalachia, LLC	18.00%	18/281
	SWN Production Company, LLC		30/480
William F. Harr, Jr and Dorothy Harr	Chesapeake Appalachia, LLC	18.00%	27/287
	SWN Production Company, LLC		30/480
Shirley A. Kokiko and Charles Kokiko	Chesapeake Appalachia, LLC	18.00%	27/78
	SWN Production Company, LLC		30/480
Jenny M. Miller	Chesapeake Appalachia, LLC	18.00%	17/192
	SWN Production Company, LLC		30/480
Deborah Moreira	Chesapeake Appalachia, LLC	18.00%	17/339
	SWN Production Company, LLC		30/480
Gary Morris and Jackie Morris	Chesapeake Appalachia, LLC	18.00%	17/186
	SWN Production Company, LLC		30/480
Lori Ann Morris	Chesapeake Appalachia, LLC	18.00%	17/351
	SWN Production Company, LLC		30/480
Robyn Nicholson	Chesapeake Appalachia, LLC	18.00%	17/679
	SWN Production Company, LLC		30/480
Barbara Clower	Chesapeake Appalachia, LLC	18.00%	27/92
	SWN Production Company, LLC		30/480
Phive Starr Properties, LP	SWN Production Company, LLC	18.00%	48/442
AOYS Investments LLC	SWN Production Company, LLC	18.00%	48/448
Alice Faye Newton	Chesapeake Appalachia, LLC	18.00%	17/315
	SWN Production Company, LLC		30/480
Sharon M Smith	Chesapeake Appalachia, LLC	18.00%	17/309
	SWN Production Company, LLC		30/480
William Sterling and Gloria Jean Sterling	Chesapeake Appalachia, LLC	18.00%	27/73
	SWN Production Company, LLC		30/480
Nancy Lee Vargo and Andrew John Vargo, Jr	Chesapeake Appalachia, LLC	18.00%	17/321
	SWN Production Company, LLC		30/480
James Keith Wilkin	Chesapeake Appalachia, LLC	18.00%	17/345
	SWN Production Company, LLC		30/480
Mark Thomas Wilkin	Chesapeake Appalachia, LLC	18.00%	17/685
	SWN Production Company, LLC		30/480 ✓

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8)	03-0B42-0056-0000-0000	Windsor Power House Coal Company	Sandra M. Bassett	SWN Production Company, LLC	17.00%	33/486
			H3 LLC	SWN Production Company, LLC	17.00%	33/280
			Donna Jolene Gretz	SWN Production Company, LLC	17.00%	33/489
			Deborah (Hanson) Niblock	SWN Production Company, LLC	17.00%	33/283
			Catherine (a/k/a Tina) (Crouch) Schmitz	SWN Production Company, LLC	17.00%	33/376
			Geraldine T. Schulert	SWN Production Company, LLC	17.00%	33/483
			David William Teague	SWN Production Company, LLC	17.00%	33/528
			9)	03-0B42-0059-0004-0000	Jeffrey S. Ward Dawna J. Ward	Sandra M. Bassett
			H3 LLC	SWN Production Company, LLC	17.00%	33/280
			Deborah (Hanson) Niblock	SWN Production Company, LLC	17.00%	33/283
			Catherine (a/k/a Tina) (Crouch) Schmitz	SWN Production Company, LLC	17.00%	33/376
			Geraldine T. Schulert	SWN Production Company, LLC	17.00%	33/483
			David William Teague	SWN Production Company, LLC	17.00%	33/528
			Donna Jolene Gretz	SWN Production Company, LLC	17.00%	33/489
10)	03-0B42-0055-0000-0000	Windsor Power House Coal Company	Beth Ann Hood	Chesapeake Appalachia, LLC	18.00%	18/707
				SWN Production Company, LLC		30/480
			Mark William Wilson	Chesapeake Appalachia, LLC	18.00%	18/712
				SWN Production Company, LLC		30/480
			Carol Shain f/k/a/ Carol Sue Fluharty	Chesapeake Appalachia, LLC	18.00%	18/717
				SWN Production Company, LLC		30/480
			John R. Wilson	Chesapeake Appalachia, LLC	18.00%	21/101
				SWN Production Company, LLC		30/480
11)	03-0B42-0068-0000-0000	Ralph O. Smith and Gina L. Smith	Ralph O. Smith and Gina L. Smith	Great Lakes Energy Partners, L.L.C.	12.50%	10/76
				SWN Production Company, LLC		30/480
			Ralph O. Smith and Gina L. Smith	Chesapeake Appalachia, L.L.C.	18.00%	18/524
				SWN Production Company, LLC		30/480
			Patricia Cumberledge and George Cumberledge, wife and husband	Chesapeake Appalachia, L.L.C.	18.00%	27/390
				SWN Production Company, LLC		30/480
			Patricia Cumberledge and George Cumberledge, wife and husband	Chesapeake Appalachia, L.L.C.	18.00%	27/395
				SWN Production Company, LLC		30/480
			Walter E. Masters, Jr. and Madge Masters	Chesapeake Appalachia, L.L.C.	18.00%	28/44
				SWN Production Company, LLC		30/480
			Carol J. Silaghi	Chesapeake Appalachia, L.L.C.	18.00%	27/737
				SWN Production Company, LLC		30/480
			Eileen L. McMahon	Chesapeake Appalachia, L.L.C.	18.00%	27/585
				SWN Production Company, LLC		30/480
			Bruce W. Jackson and Ruth L. Jackson	Chesapeake Appalachia, L.L.C.	18.00%	27/725

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, LLC, Operator  
 Linda Greathouse BRK 8H  
 Brooke County, West Virginia

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		SWN Production Company, LLC		30/480
	Family Tree Corporation	Chesapeake Appalachia, L.L.C.	18.00%	27/731
		SWN Production Company, LLC		30/480
	Kenneth Noble and Marjory J. Noble	Chesapeake Appalachia, L.L.C.	18.00%	28/363
		SWN Production Company, LLC		30/480
	Barbara E. Miller	Chesapeake Appalachia, L.L.C.	18.00%	28/369
		SWN Production Company, LLC		30/480
	Franklin D. Dollarhide and Marilyn Stewart Dollarhide	Chesapeake Appalachia, L.L.C.	18.00%	28/447
		SWN Production Company, LLC		30/480
	Douglas E. Stewart and Mary Stewart	Chesapeake Appalachia, L.L.C.	18.00%	28/342
		SWN Production Company, LLC		30/480
	Kenneth L. Miller	Chesapeake Appalachia, L.L.C.	18.00%	28/321
		SWN Production Company, LLC		30/480
	Kathryn L. Miller	Chesapeake Appalachia, L.L.C.	18.00%	28/326
		SWN Production Company, LLC		30/480
	Richard E. Miller and Tambre Miller	Chesapeake Appalachia, L.L.C.	18.00%	28/459
		SWN Production Company, LLC		30/480
	Joseph E. Masters	Chesapeake Appalachia, L.L.C.	18.00%	29/435
		SWN Production Company, LLC		30/480
	Craig A. Yoho and Donna K. Yoho	Chesapeake Appalachia, L.L.C.	18.00%	29/442
		SWN Production Company, LLC		30/480
	Jeffery Paul Stewart	SWN Production Company, LLC	18.00%	35/685
	Melanie Diane Stewart	SWN Production Company, LLC	18.00%	38/53
	Thomas Maurice Stewart	SWN Production Company, LLC	18.00%	35/679
	Walter Keith Stewart	SWN Production Company, LLC	18.00%	43/154
	William Harry Stewart III	SWN Production Company, LLC	18.00%	46/146 ✓
12)	03-0B42-0067-0000-0000	Ralph O. Smith and Gina L. Smith		
		Ralph O. Smith and Gina L. Smith	Great Lakes Energy Partners, L.L.C.	12.50%
			SWN Production Company, LLC	10/76
		Ralph O. Smith and Gina L. Smith	Chesapeake Appalachia, L.L.C.	18.00%
			SWN Production Company, LLC	18/524
		Patricia Cumberledge and George Cumberledge, wife and husband	Chesapeake Appalachia, L.L.C.	18.00%
			SWN Production Company, LLC	27/390
		Patricia Cumberledge and George Cumberledge, wife and husband	Chesapeake Appalachia, L.L.C.	18.00%
			SWN Production Company, LLC	27/395
		Walter E. Masters, Jr. and Madge Masters	Chesapeake Appalachia, L.L.C.	18.00%
			SWN Production Company, LLC	30/480
		Carol J. Silaghi	Chesapeake Appalachia, L.L.C.	18.00%
			SWN Production Company, LLC	28/44
			SWN Production Company, LLC	30/480
			Chesapeake Appalachia, L.L.C.	27/737
			SWN Production Company, LLC	30/480

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, LLC, Operator  
 Linda Greathouse BRK 8H  
 Brooke County, West Virginia

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Eileen L. McMahon	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	27/725 30/480
Bruce W. Jackson and Ruth L. Jackson	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	27/725 30/480
Family Tree Corporation	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	27/731 30/480
Kenneth Noble and Marjory J. Noble	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	28/363 30/480
Barbara E. Miller	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	28/369 30/480
Franklin D. Dollarhide and Marilyn Stewart Dollarhide	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	28/447 30/480
Douglas E. Stewart and Mary Stewart	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	28/342 30/480
Kenneth L. Miller	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	28/321 30/480
Kathryn L. Miller	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	28/326 30/480
Richard E. Miller and Tambre Miller	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	28/459 30/480
Joseph E. Masters	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	29/435 30/480
Craig A. Yoho and Donna K. Yoho	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	29/442 30/480
Jeffery Paul Stewart	SWN Production Company, LLC	18.00%	35/685
Melanie Diane Stewart	SWN Production Company, LLC	18.00%	38/53
Thomas Maurice Stewart	SWN Production Company, LLC	18.00%	35/679
Walter Keith Stewart	SWN Production Company, LLC	18.00%	43/154
William Harry Stewart III	SWN Production Company, LLC	18.00%	46/146 ✓



4700900273  
03/01/2019

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

October 11, 2018

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

**RE:** SWN's proposed New Well: Linda Greathouse BRK 8H in Brooke County, West Virginia, Drilling under Hogtan Run Road.

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 Hotgan Run Road. 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,

Gary Nuckolls  
Staff Landman  
SWN Production Company, LLC  
PO Box 12359  
Spring, TX 77391-2359

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The Right People doing the Right Things,  
wisely investing the cash flow from our  
underlying Assets, will create Value+<sup>®</sup>

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

Date of Notice Certification: 10/29/18

API No. 47- 009 -  
Operator's Well No. Linda Greathouse BRK 8H  
Well Pad Name: Linda Greathouse BRK 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>West Virginia</u>	UTM NAD 83	Easting:	<u>533457.75</u>
County:	<u>009-Brooke</u>		Northing:	<u>4450477.01</u>
District:	<u>Buffalo</u>	Public Road Access:	<u>Hukill Run Road</u>	
Quadrangle:	<u>Bethany</u>	Generally used farm name:	<u>Linda Greathouse</u>	
Watershed:	<u>Upper Ohio South</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 checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input 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 style="padding-left: 40px;"><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 style="text-align: center;"><b>OOG OFFICE USE ONLY</b></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 style="text-align: center;">RECEIVED Office of Oil and Gas OCT 30 2018</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.

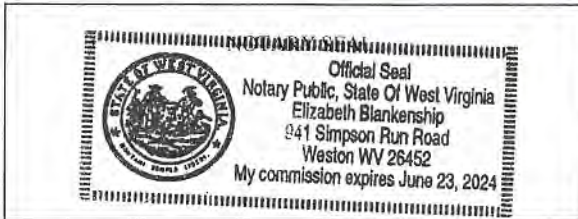
WV Department of Environmental Protection

**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>304-884-1610</u>	Email:	<u>Brittany_Woody@swn.com</u>

*Brittany Woody*



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

**Oil and Gas Privacy Notice:**

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

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

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

**Date of Notice:** 10/29/18 **Date Permit Application Filed:** 10/29/18

**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: Linda Greathouse & Vicki Hamilton

Address: 750 Mountainview Drive

Bethany, WV 26032

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

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

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

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

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

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

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

SURFACE OWNER(s) (Impoundments or Pits)

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

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

COAL OWNER OR LESSEE

Name: Consol F/K/A Windsor Coal Company

Address: 1000 Consol Energy Drive

Canonsburg, PA 15317

COAL OPERATOR

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

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

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: See Attachment #13

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

OPERATOR OF ANY NATURAL GAS STORAGE

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

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

\*Please attach additional forms if necessary.

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Attachment 13

PARCEL_ID	OWNER	ADDRESS	CITY	STATE	ZIP	WATERSOURCES
03 B37008700000000	GREATHOUSE LINDA REEVES HAMILTON VICKI LYNN	750 MOUNTAINVIEW DR	BETHANY	WV	26032	2
03 B42006000000000	LABELLE FARMS INC	1064 LABELLE FARM LN	WELLSBURG	WV	26070	1

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**Notice is hereby given:**

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

**This Notice Shall Include:**

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

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

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

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

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/office-and-gas/pages/default.aspx](http://www.dep.wv.gov/office-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 three hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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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 with the secretary as to the location or construction of the applicant's proposed well work to the Secretary at:

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

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

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

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

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

**Comment Requirements**

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

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

**Permit Denial or Condition**

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

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

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

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

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**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 [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).



Subscribed and sworn before me this 23 day of Oct, 2018.

*Elizabeth Blankenship* Notary Public

My Commission Expires 6/23/2024

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**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF ENTRY FOR PLAT SURVEY**

**Notice Time Requirement:** Notice shall be provided at least SEVEN (7) days but no more than FORTY-FIVE (45) days prior to entry

**Date of Notice:** 2/12/2018      **Date of Planned Entry:** 2/19/2018

**Delivery method pursuant to West Virginia Code § 22-6A-10a**

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

**Notice is hereby provided to:**

SURFACE OWNER(s)

Name: Vicki Hamilton  
Address: 279 Mountainview Drive  
Bethany, WV 26032  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: Vicki Hamilton  
Address: 279 Mountainview Drive  
Bethany, WV 26032

MINERAL OWNER(s)

Name: Vicki Hamilton  
Address: 279 Mountainview Drive  
Bethany, WV 26032

\*please attach additional forms if necessary

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>403203952, -80.606638</u>
County: <u>Brooke</u>	Public Road Access: <u>Hukill Run Road</u>
District: <u>Buffalo</u>	Watershed: <u>Middle Buffalo Creek</u>
Quadrangle: <u>Bethany</u>	Generally used farm name: <u>Linda Greathouse</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: SWN PRODUCTION COMPANY, LLC  
Telephone: 304-884-1610  
Email: dee\_southall@swn.com or brittany\_woody@swn.com

Address: PO BOX 1300  
JANE LEW, WV 26378  
Facsimile: 304-884-1690

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**OCT 30 2018**  
WV Department of  
Environmental Protection

**Oil and Gas Privacy Notice:**

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

WW-6A3  
(1/12)

Operator Well No. Linda Greathouse 49K **03/01/2019**

**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF ENTRY FOR PLAT SURVEY**

**Notice Time Requirement:** Notice shall be provided at least SEVEN (7) days but no more than FORTY-FIVE (45) days prior to entry

**Date of Notice:** 2/12/2018      **Date of Planned Entry:** 2/16/2018

**Delivery method pursuant to West Virginia Code § 22-6A-10a**

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

**Notice is hereby provided to:**

SURFACE OWNER(s)  
 Name: Linda Greathouse  
 Address: 750 Mountainview Drive  
Bethany, WV 26032  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
 Name: Linda Greathouse  
 Address: 750 Mountainview Drive  
Bethany, WV 26032  
 MINERAL OWNER(s)  
 Name: Linda Greathouse  
 Address: 750 Mountainview Drive  
Bethany, WV 26032  
 \*please attach additional forms if necessary

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>403203952, -80.606638</u>
County: <u>Brooke</u>	Public Road Access: <u>Hukill Run Road</u>
District: <u>Buffalo</u>	Watershed: <u>Middle Buffalo Creek</u>
Quadrangle: <u>Bethany</u>	Generally used farm name: <u>Linda Greathouse</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: SWN PRODUCTION COMPANY, LLC  
 Telephone: 304-884-1610  
 Email: dee\_southall@swn.com or brittany\_woody@swn.com

Address: PO BOX 1300  
JANE LEW, WV 26378  
 Facsimile: 304-884-1690

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



**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF ENTRY FOR PLAT SURVEY**

**Notice Time Requirement:** Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

**Date of Notice:** 2/12/2018      **Date of Planned Entry:** 2/19/2018

**Delivery method pursuant to West Virginia Code § 22-6A-10a**

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

**Notice is hereby provided to:**

SURFACE OWNER(s)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_

COAL OWNER OR LESSEE  
 Name: Consol F/K/A Windsor Coal Company  
 Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

MINERAL OWNER(s)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_

\*please attach additional forms if necessary

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: West Virginia  
 County: Brooke  
 District: Buffalo  
 Quadrangle: Bethany

Approx. Latitude & Longitude: 403203952, -80.606638  
 Public Road Access: Hukill Run Road  
 Watershed: Middle Buffalo Creek  
 Generally used farm name: Linda Greathouse

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: SWN PRODUCTION COMPANY, LLC  
 Telephone: 304-884-1610  
 Email: dee\_southall@swn.com or brittany\_woody@swn.com

Address: PO BOX 1300  
JANE LEW, WV 26378  
 Facsimile: 304-884-1690

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**Oil and Gas Privacy Notice:**

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

WW-6A4  
(1/12)Operator Well No. 03/01/2019

**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:** 10/16/2018 **Date Permit Application Filed:** 10/29/18

**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: Linda Reeves Greathouse & Vicki Lynn Hamilton  
Address: 750 Mountainview Dr.  
Bethany, WV 26032

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

**Notice is hereby given:**

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

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>533,450.83</u>
County: <u>Brooke</u>		Northing: <u>4,450,481.99</u>
District: <u>Buffalo</u>	Public Road Access: <u>Hukill Run Rd</u>	
Quadrangle: <u>Bethany</u>	Generally used farm name: <u>Linda Greathouse BRK</u>	
Watershed: <u>Upper Ohio South</u>		

**This Notice Shall Include:**

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

**Notice is hereby given by:**

Well Operator: SWN Production Company, LLC  
Address: PO Box 1300, 179 Innovation Drive  
Jane Lew, WV 26378  
Telephone: 304-517-6603  
Email: Michael\_Yates@swn.com  
Facsimile: 304-471-2497

Authorized Representative: Mike Yates  
Address: PO Box 1300, 179 Innovation Drive  
Jane Lew, WV 26378  
Telephone: 304-517-6603  
Email: Michael\_Yates@swn.com  
Facsimile: 304-471-2497

**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 of your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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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

March 2, 2018

Jill M. Newman  
Deputy Commissioner

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

Subject: DOH Permit for the Linda Greathouse Pad, Brooke County  
Linda Greathouse BRK 8H

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2011-0232 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Brooke County Route 30 SLS.

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

Very Truly Yours,

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

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WV Department of  
Environmental Protection

Cc: Dee Southall  
Southwestern Energy  
CH, OM, D-6  
File

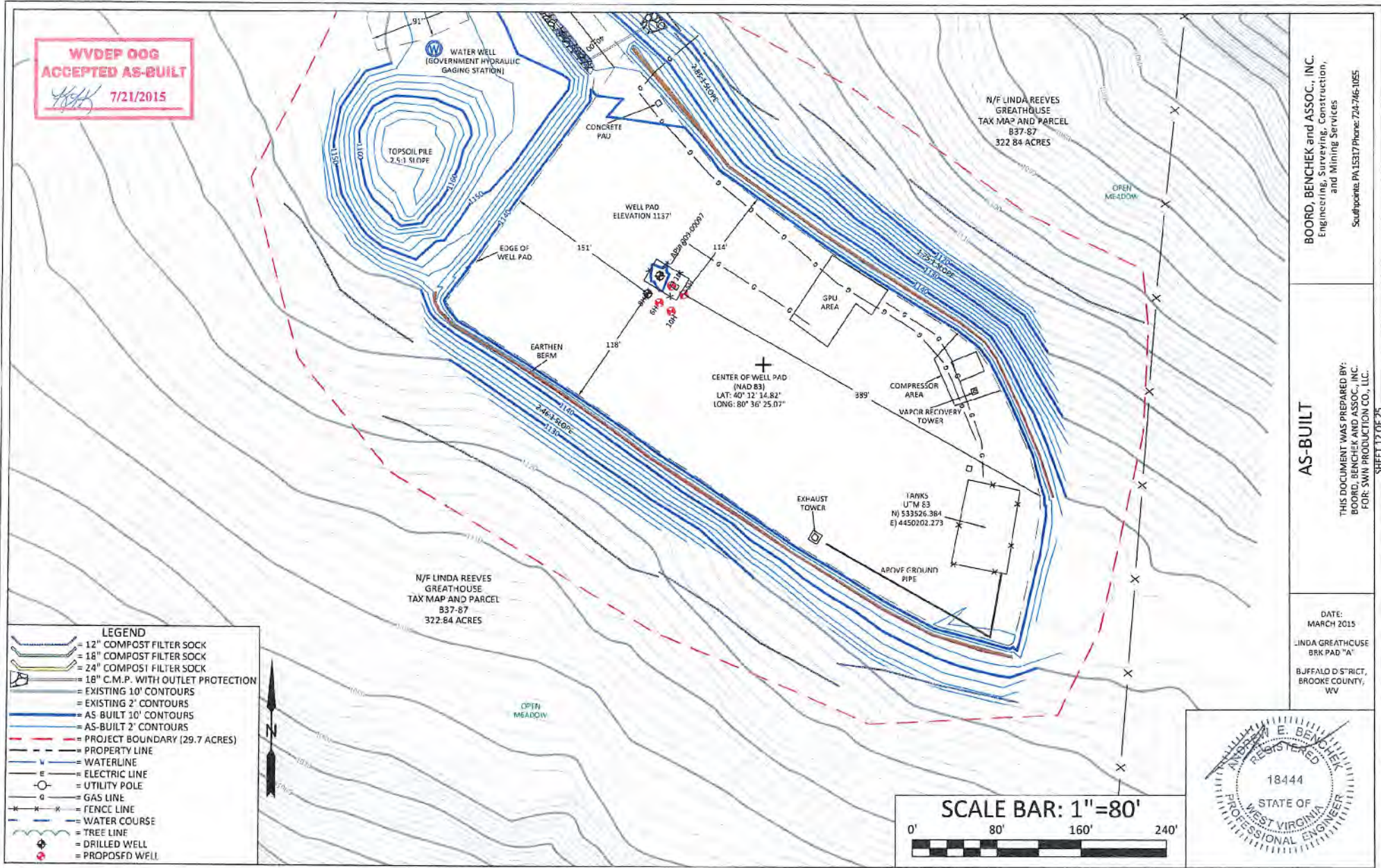
Product Name	Product Use	Chemical Name	CAS Number
EC6734A (Champion Technologies)	Biocide	Hydrogen Peroxide	7722-84-1
		Acetic Acid	64-19-7
		Peroxyacetic Acid	79-21-0
GYPTRON T-390 (Champion Technologies)	Scale Inhibitor	Methanol	03/01/2019 67-56-1
		Nonylphenol Ethoxylate	Proprietary
Bactron K-139 (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

RECEIVED  
Office of Oil and Gas  
OCT 30 2018  
WV Department of  
Environmental Protection



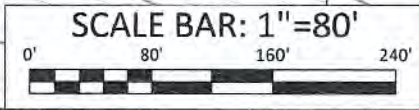
**WVDEP OOG  
ACCEPTED AS-BUILT**

7/21/2015



**LEGEND**

- = 12" COMPOST FILTER SOCK
- = 18" COMPOST FILTER SOCK
- = 24" COMPOST FILTER SOCK
- = 18" C.M.P. WITH OUTLET PROTECTION
- = EXISTING 10' CONTOURS
- = EXISTING 2' CONTOURS
- = AS BUILT 10' CONTOURS
- = AS-BUILT 2' CONTOURS
- = PROJECT BOUNDARY (29.7 ACRES)
- = PROPERTY LINE
- = WATERLINE
- = ELECTRIC LINE
- = UTILITY POLE
- = GAS LINE
- = FENCE LINE
- = WATER COURSE
- = TREE LINE
- = DRILLED WELL
- = PROPOSED WELL



**BOORD, BENCHEK and ASSOC., INC.**  
Engineering, Surveying, Construction,  
and Mining Services  
Southpointe, PA 15317 Phone: 724-746-1055

**AS-BUILT**

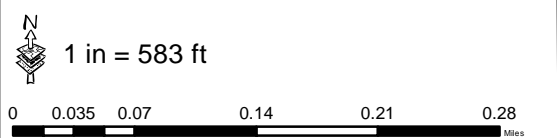
THIS DOCUMENT WAS PREPARED BY:  
BOORD, BENCHEK AND ASSOC., INC.  
FOR: SWN PRODUCTION CO., LLC.

DATE:  
MARCH 2015

LINDA GREATHOUSE  
BRK PAD "A"

BJFFALO DISTRICT,  
BROOKE COUNTY,  
WV

SHEET 12 OF 25



- S Spring
- W Water Well
- Pond
- 1500' Buffer

**Water Purveyor Map**  
Well Pad: Linda Greathouse  
County: BRK



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

**Coordinates: 40.203989, -80.606713**

Date: 3/5/2018 Author: willisb