



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Thursday, May 31, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit approval for STATE OF WV DNR B BRK 5H
47-009-00252-00-00

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

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

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

James A. Martin
Chief

A handwritten signature in blue ink, appearing to read 'James A. Martin', is written over a light blue horizontal line.

Operator's Well Number: STATE OF WV DNR B BRK 5H
Farm Name: STATE OF WEST VIRGINIA, B
U.S. WELL NUMBER: 47-009-00252-00-00
Horizontal 6A New Drill
Date Issued: 5/31/2018

PERMIT CONDITIONS**4700300252**

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

CONDITIONS

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

PERMIT CONDITIONS

4700 900252

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.

4700900252

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 Brooke 4-Cross 620-Steubenville
Operator ID County District Quadrangle

2) Operator's Well Number: State of WV DNR B BRK 5H Well Pad Name: State of WV DNR B

3) Farm Name/Surface Owner: State of WV Bureau of Commerce- DNR Public Road Access: Tent Church Road

4) Elevation, current ground: 1201' Elevation, proposed post-construction: 1201'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No yes

[Handwritten Signature] 3-8-18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus, Up-Dip Well to the North, Target Top TVD- 5621, Target Base TVD- 5664', Anticipated Thickness- 43', Associated Pressure- 3654

8) Proposed Total Vertical Depth: 5649'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 15378'

11) Proposed Horizontal Leg Length: 9285.81'

12) Approximate Fresh Water Strata Depths: 543'

13) Method to Determine Fresh Water Depths: Salinity profiles, deeper than nearby water wells.

14) Approximate Saltwater Depths: 691' salinity profile

15) Approximate Coal Seam Depths: 135'

16) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of.

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

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

Depth: _____

Seam: _____

Owner: _____

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WV Department of
Environmental Protection

WW-6B
(04/15)

API NO. 47- 009
 OPERATOR WELL NO. State of WV DNR B BRK SH
 Well Pad Name: State of WV DNR B

4700 00252

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#	643'	643'	603 sx/CTS
Coal							
Intermediate	9 5/8"	New	J-55	36#	1417'	1417'	522 sx/CTS
Production	5 1/2"	New	HCP-110	20#	15378'	15378'	Load 753x/Fa1 2343 sx/100' inside pipe
Tubing							
Liners							

Handwritten: 38-18

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	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	3250	Class A	1.20/50% 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:				

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Environmental Protection

WW-6B
(10/14)

4700300252
API NO. 47- 009 -
OPERATOR WELL NO. State of WV DNR B BRK 5H
Well Pad Name: State of WV DNR B

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): 13.50

22) Area to be disturbed for well pad only, less access road (acres): 9.31

23) Describe centralizer placement for each casing string:

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

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

See Attachment ***

25) Proposed borehole conditioning procedures:

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

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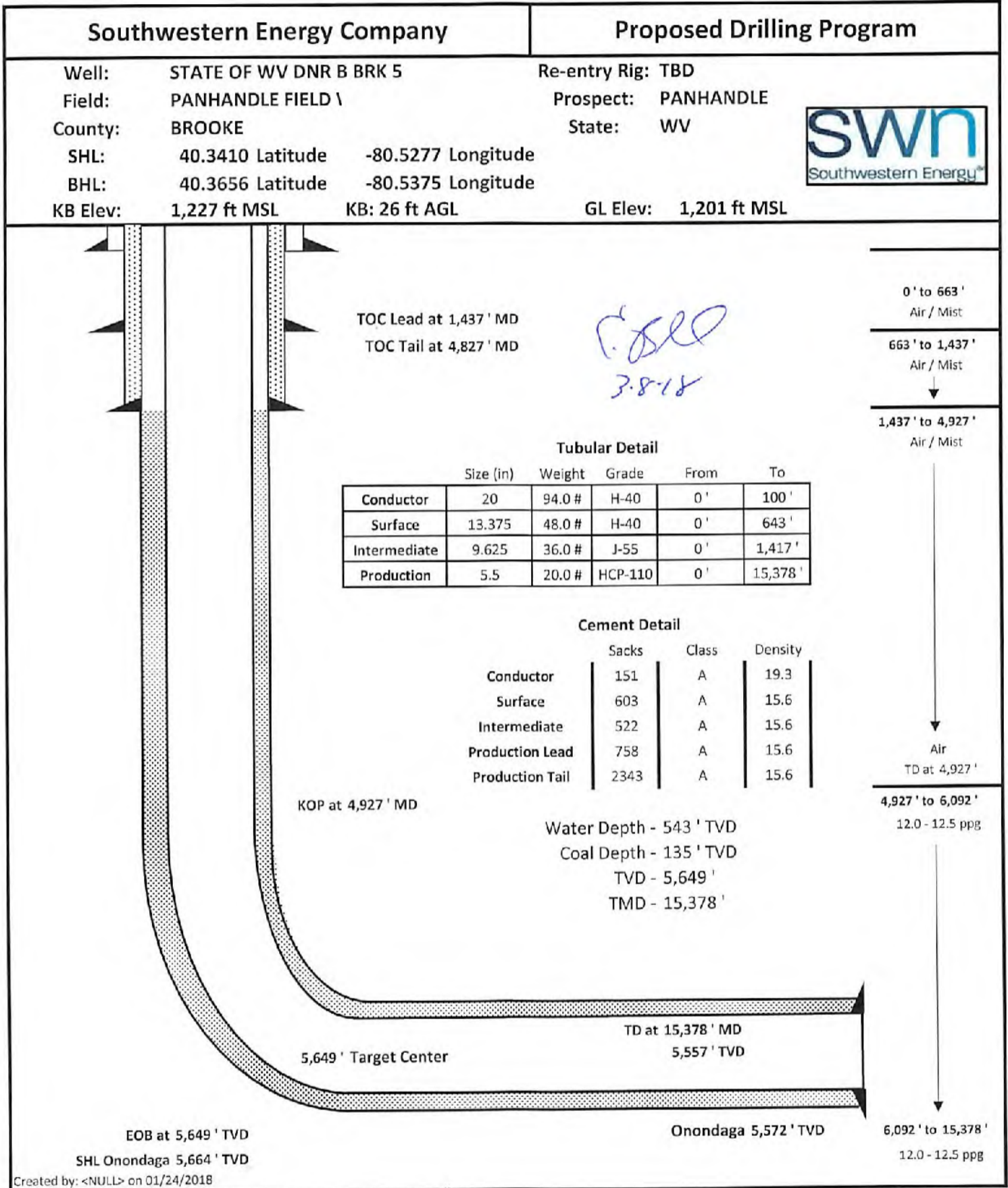
*Note: Attach additional sheets as needed.

Schlumberger Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number
Surface	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-Load	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	suiphonated 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	

4700.00252

4700300252



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January 25, 2018

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

RE: Proposed New Well State of WV DNR B BRK 5H

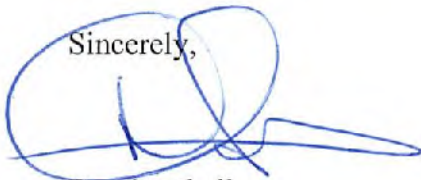
Dear Ms. Adkins

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 State of WV DNR B's property, in Cross Creek District, Brooke County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1614

Thank you.

Sincerely,



Dee Southall
Senior Regulatory Analyst
Southwestern Energy Production Company, LLC

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Environmental Protection

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WW-9
(4/16)

API Number 47 - 009 - _____
Operator's Well No. State of WV DNR B BRK 5H

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

47 00 002 52

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name SWN Production Co., LLC OP Code 494512924

Watershed (HUC 10) Upper Ohio North Quadrangle Steubenville East

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, 34-056-24097, 34-119-28776, 34-167-23822, 34-155-23795, 34-121-23095, 34-155-21893)
- Reuse (at API Number at next anticipated well, API# will be included with the WR-34/DDMR &/or permit addendum.)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain flow back fluids will be put in steel tanks and reused or taken to a permitted disposal facility)

Will closed loop system be used? If so, describe: Yes

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

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

Additives to be used in drilling medium? Attachment 3A

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

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

-Landfill or offsite name/permit number? Meadowfill SWF- 1032, Short Creek SWF-1034, Carbon Limestone MSWL018781, Wetzel County 1021 Arden Landfill 10072, Apex Sanitary Landfill 06-08438, Brooke Co SWF-1013, Valley 100280

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

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

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

Company Official Signature [Signature]

Company Official (Typed Name) Dee Southall

Company Official Title Senior Regulatory Analyst



Subscribed and sworn before me this 25th day of January, 20 18

[Signature]
My commission expires 11/21/18

Notary Public

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SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 13.50 Prevegetation pH _____

Lime as determined by pH test min 2 Tons/acre or to correct to pH 9.31

Fertilizer type 10-20-20

Fertilizer amount 600 lbs/acre

Mulch Hay/Straw 2.5 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type lbs/acre


Seed Type lbs/acre

Attachment 3B

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by:  3-8-18

Comments: _____

Title: Oil & Gas Inspector

Date: 3-8-18

Field Reviewed? Yes No

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Attachment 3A
Drilling Mediums

Synthetic Oil

Brine

Barite

Calcium Chloride

Lime

Organophilic Bentonite

Primary and Secondary Emulsifiers

Gilsonite

Calcium Carbonate

Friction Reducers

4700300252



WVD Seeding Specification

Attachment 3B

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RL
A → V+

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

NON-ORGANIC PROPERTIES		
Seed Mixture: ROW Mix	SWN Supplied	
Orchardgrass	40%	
Timothy	15%	
Annual Ryegrass	15%	
Brown Top Millet	5%	
Red Top	5%	
Medium Red Clover	5%	All legumes are innoculated at 5x normal rate
White Clover	5%	
Birdsfoot Trefoil	5%	
Rough Bluegrass	5%	
Apply @ 100lbs per acre April 16th- Oct. 14th		Apply @ 200lbs per acre Oct. 15th- April 15th PLUS 50lbs per acre of Winter Wheat

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

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

Synopsis:

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

Special Considerations:

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

ORGANIC PROPERTIES	
Seed Mixture: SWN Production Organic Mix	SWN Supplied
Organic Timothy	50%
Organic Red or White Clover	50%
OR	
Organic Perennial Ryegrass	50%
Organic Red or White Clover	50%
Apply @ 100lbs per acre April 16th- Oct. 14th	
Organic Fertilizer @ 200lbs per Acre	
Apply @ 200lbs per acre Oct. 15th- April 15th	
Pelletized Lime @ 2 Tons per Acre	

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

4700300252

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: State of WV DNR B BRK 5H
Steubenville East, QUAD
Cross Creek DISTRICT
Brooke COUNTY, WEST VIRGINIA

Submitted by:


Dee Southall

1/25/2018

Date: _____

Senior Regulatory

Title: Analyst

SWN Production Co., LLC

Approved by:


Title: Dirt Gas Inspector

Date: 3.8.18

Approved by:

Date: _____

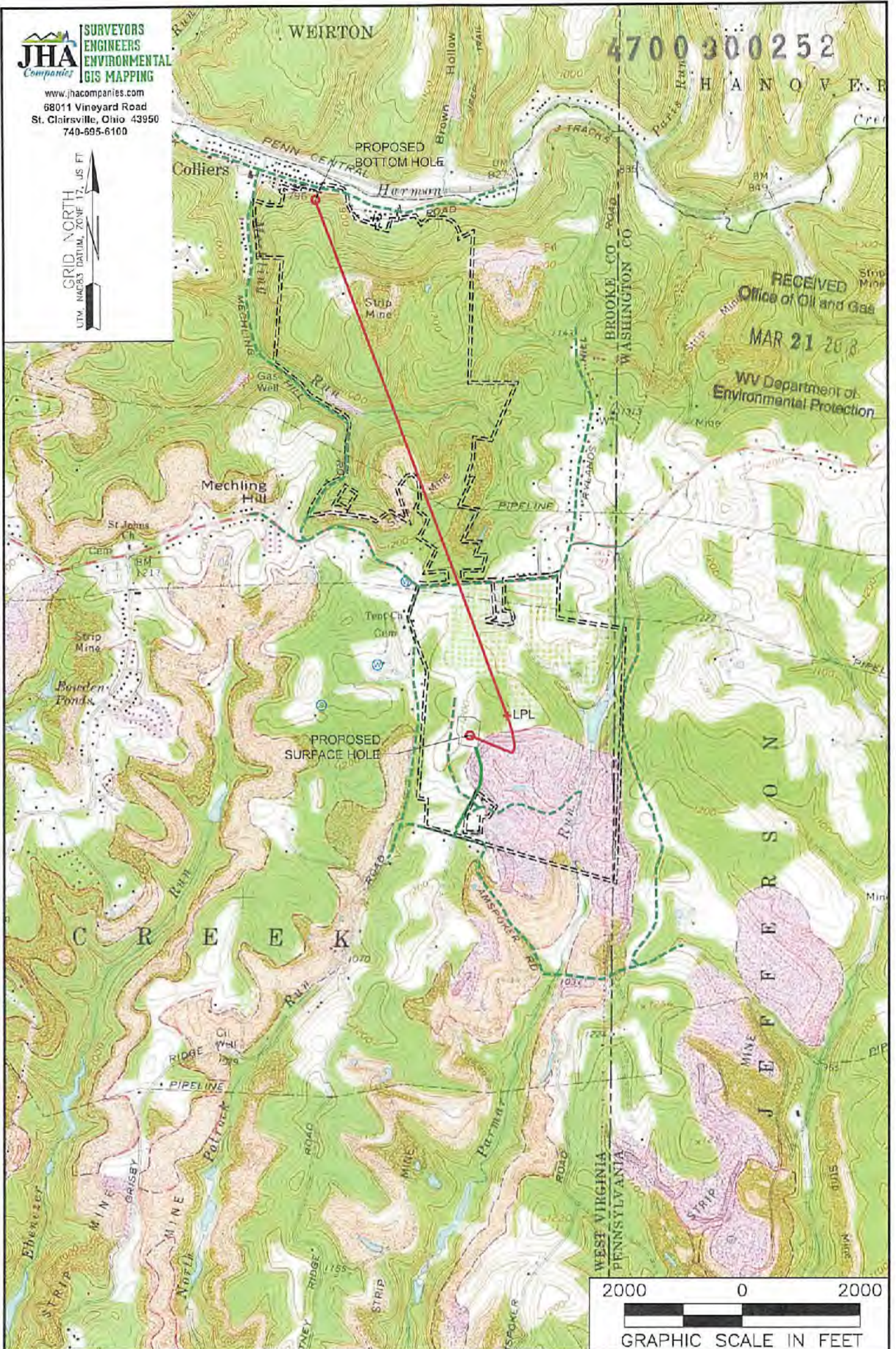
Title: _____

SWN PRODUCTION COMPANY, LLC – CONFIDENTIAL

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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
- LPL*
- FLOOD PLAN
- ACCESS ROAD
- PUBLIC ROAD
- ACCESS ROAD TO PREV. SITE
- LEASE BOUNDARY
- PROPOSED PATH

WELL OPERATOR:
SWN PRODUCTION COMPANY, LLC

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

SURFACE OWNER:
STATE OF WEST VIRGINIA, BUREAU OF COMMERCE, DNR

WELL (FARM) NAME:
STATE OF WV DNR B

COUNTY - CODE
BROOKE - 009

USGS 7 1/2 QUADRANGLE MAP NAME
STEUBENVILLE EAST

WELL # SERIAL #
5H XXXX

DISTRICT;
CROSS CREEK

LATITUDE: 40°22'30" BOTTOM HOLE

10498'

LATITUDE: 40°22'30" SURFACE HOLE

7785'

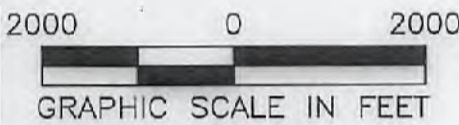
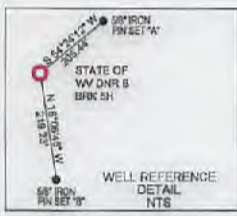


www.jhacompanies.com
68011 Vineyard Road
St. Clairsville, Ohio 43950
740-695-6100

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 525 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.

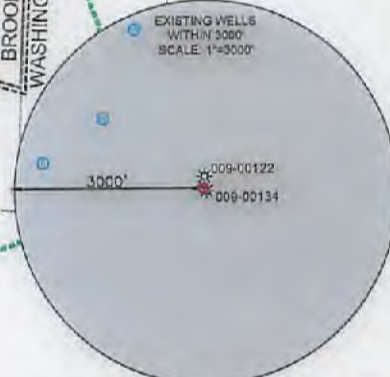
LINE	BEARING	DISTANCE
L1	S 07°40'58" W	690.57'
L2	S 34°04'59" E	1255.73'



SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4465699.981 EASTING: 540102.196
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4455803.768 EASTING: 540293.724
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4468438.905 EASTING: 539264.008

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



SWN SWN
Production Company, LLC Production Company™

(+) 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)	STATE OF WV DNR B OPERATOR'S WELL #: BRK 5H API WELL #: 47 009 00252 STATE COUNTY PERMIT
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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 NORTH DISTRICT: CROSS CREEK COUNTY: BROOKE SURFACE OWNER: STATE OF WEST VIRGINIA, BUREAU OF COMMERCE, DNR OIL & GAS ROYALTY OWNER: STATE OF WEST VIRGINIA, BUREAU OF COMMERCE, DNR	ELEVATION: 1201.01' QUADRANGLE: STEUBENVILLE EAST ACREAGE: ±169.43 ACREAGE: ±169.43
DRILL <input checked="" type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/> CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input type="checkbox"/> (SPECIFY) _____	TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 5,649' TVD 15,378.3'TMD	

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378	DESIGNATED AGENT: DEE SOUTHALL ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378	REVISIONS: DATE: 03-16-2018 DRAWN BY: H. KEMP SCALE: 1" = 2000' DRAWING NO: 2017-541 WELL LOCATION PLAT
--	--	--

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS			
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	STATE OF WEST VIRGINIA, BUREAU OF COMMERCE, DIVISION OF NATURAL RESOURCES, PUBLIC LAND CORPORATION FOR THE USE AND BENEFIT OF THE WILDLIFE RESOURCES SECTION (S/R)	04-CC16-019.0000	169.43
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
2	DEBORAH JANE HAMILTON	04-C12K-078.0000	109.82
3	MARGARET FRESHWATER	04-C12K-080.0000	36.01
4	BRYAN W. BRADLEY & BRADLEY AND SHARON R. REED	04-C12K-014.0000	1.11
5	PHILIP D. & TRACY MASSIMI	04-C12K-017.0000	4.28
6	PHILIP D. & TRACY MASSIMI	04-C12K-011.0000	1.26
7	BONNIE A. BULLOCK	04-C12K-010.0000	6.64
8	BONNIE A. BULLOCK	04-C12K-080.0001	0.95
9	JAMES K. & BARBARA MCWICKER II	04-C12K-006.0000	1.70
10	SANDRA ELAINE SUMMERS	04-C12K-005.0000	1.30
11	BONNIE A. BULLOCK	04-C12K-004.0000	0.15
12	PATRICK J. & VIVIAN L. HARVEY	04-C12K-003.0000	4.08
13	FREDERICK D. & RHONDA J. BOLEY	04-C12K-002.0000	2.09
14	KRISTOPHER J. MOFFIT	04-C12K-081.0000	4.014
15	THOMAS E. & MADOLINE K. MOFFITT	04-C12J-017.0000	95.59
16	PEARL ARIA	04-CC12-012.0000	72.14
17	PEARL ARIA	04-CC12-011.0000	72.14
18	DONNA MERRIFIELD & ROXANN L. ROBINSON	04-CCBN-078.0800	116.02

ADJOINING OWNERS TABLE			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
A	STATE OF WEST VIRGINIA, BUREAU OF COMMERCE, DIVISION OF NATURAL RESOURCES, PUBLIC LAND CORPORATION FOR THE USE AND BENEFIT OF THE WILDLIFE RESOURCES SECTION	04-CC16-0022.0000	74.032
B	WEST VIRGINIA ST OF BUREAU OF COMM DIV OF NAT RES PB LD CORP	04-CC16-0020.0000	1.81
C	STATE OF WEST VIRGINIA, BUREAU OF COMMERCE, DIVISION OF NATURAL RESOURCES, PUBLIC LAND CORPORATION FOR THE USE AND BENEFIT OF THE WILDLIFE RESOURCES SECTION	04-CC16-0021.0000	0.19
D	STATE OF WEST VIRGINIA, BUREAU OF COMMERCE, DIVISION OF NATURAL RESOURCES, PUBLIC LAND CORPORATION FOR THE USE AND BENEFIT OF THE WILDLIFE RESOURCES SECTION	04-CC16-017.0000	1.19
E	WEST VIRGINIA ST OF BUREAU OF COMM DIV OF NAT RES PB LD CORP	04-CC16-0018.0000	2.16
F	WEST VIRGINIA ST OF BUREAU OF COMM DIV OF NAT RES PB LD CORP	04-CC16-0023.0001	117.72
G	WEST VIRGINIA ST OF BUREAU DIV OF COMM DIV OF NAT RES PB LD	04-CC16-0011.0000	77.88
H	TIMOTHY BRIAN CUNNINGHAM	04-CC16-0015.0000	1.22
I	DANNY D. TICE & MARGIA TICE	04-CC16-018.0000	5.24
J	DAVID A. & GERALDINE DODD	04-CC12-0041.0000	0.47
K	JOHN D. & KAREN DUFFIELD	04-CC12-0040.0000	0.417
L	JOHN D. & KAREN DUFFIELD	04-CC12-0039.0000	0.486
M	LARRY C., SR. & NORA LOU DODD	04-CC12-0038.0000	1.73
N	RITA K. THOMAS	04-CC12-0055.0000	10.50
O	ALLEN & JENNIFER MONROE	04-CC12-0037.0000	1.797
P	GRACE A. & ELAINE M. MORRIS	04-CC12-0056.0000	3.57
Q	CROSS CREEK TENT CEMETERY ASSOCIATION	04-CC12-0057.0001	0.43
R	UNITED PRESBYTERIAN CHURCH	04-CC12-0057.0000	2.95
S	JOSEPH JOHN & FRANCIS ANN OLENICK	04-CC12-0058.0000	2.03
T	LANTZ KEYSTONE TRUST	04-C12J-0025.0000	5.81
U	JOANNE E. DOBRZANSKI	04-C12K-0012.0000	0.83
V	MARK J. IRVIN	04-C12K-0013.0000	1.11
W	CHARLOTTE A. VILGA	04-C12J-0023.0000	0.831
X	DONALD L. & LISA J. COZAD JR.	04-C12J-0022.0000	0.820
Y	WILLIAM WILLIS	04-C12K-0009.0000	0.80
Z	JAMES MICHAEL & HEATHER MARIE VOJVOVICH	04-C12K-0008.0000	0.65
AA	KATHRYN J. FELICI	04-C12K-0001.0000	5.00
AB	THOMAS E. & MADELINE MOFFIT	04-C12J-0017.0000	5.009
AC	DIANE A. HOWELL & JEAN L. WALDEN	04-C12J-0018.0000	1.52
AD	JACK L. & MARJORIE C. COPENHAVER	04-C12J-0060.0000	1.50
AE	ALBERT VUILLER & SANDRA L. LABUTE	04-C12J-0015.0000	2.34
AF	JACK L. & MARJORIE C. COPENHAVER	04-C12J-0059.0000	4.03
AG	NANCY PETREL	04-C12J-0011.0000	1.734
AH	MICHAEL D. & LIANNA L. WADE	04-C12J-0015.0000	0.0154
AI	WILLIAM COLUMBO	04-C12J-0008.0000	0.95
AJ	SHAUM M. WELSHANS	04-C12J-0008.0000	0.23
AK	WILLIAM COLUMBO	04-C12J-0007.0000	0.54
AL	WILLIAM L. & CHRISTINE M. MITCHELL	04-CC12-0003.0000	3.51
AM	SHARON LYNN DAVIS & MICHELLE RENEA	04-CC12-0004.0000	0.78
AN	GEORGE SCOTT RICE & AMY JOY MCGARY	04-CC12-0059.0000	3.44
AO	THOMAS J. & PAMELA K. SZYMANEK	04-CC12-0051.0000	13.879
AP	DORIS D. JONES	04-CC11-0078.0000	41.30
AQ	DONNA MERRIFIELD & ROXANN L. ROBINSON	04-CC12-0010.0000	12.60
AR	WEST VIRGINIA DEPT. OF HIGHWAYS	04-CCBN-0106.0000	0.76

ADJOINING OWNERS TABLE			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
AS	CHRISTOPHER S. & SARAH E. BAYARDI	04-CCBN-0079.0000	3.46
AT	RICHARD A. BAILEY	04-CCBN-0079.0006	0.34
AU	JOHN W. FOX	04-CCBN-0092.0000	0.28
AV	JOHN W. FOX	04-CCBN-0091.0000	0.024
AW	COLLIERS METHODIST CHURCH	04-CCBN-0090.0000	0.11
AX	UNITED METHODIST CHURCH	04-CCBN-0089.0000	0.11
AY	UNITED METHODIST CHURCH	04-CCBN-0088.0000	0.11
AZ	COLLIERS UNITED METHODIST CHURCH	04-CCBN-0079.0005	0.39
BA	MEIR DADOUSH	04-CCBN-0083.0000	0.07
BB	CHRISTINE SIMMONS	04-CCBN-0082.0000	0.16
BC	CHRISTINE SIMMONS	04-CCBN-0081.0000	0.11
BD	COLLIERS VOLUNTEER FIRE DEPARTMENT	04-CCBN-0080.0000	0.16
BE	COLLIERS VOLUNTEER FIRE DEPARTMENT	04-CCBN-0079.0002	0.20
BF	COLUMBIA GAS	04-CCBN-0041.0000	0.09
BG	COLLIERS VOLUNTEER FIRE DEPARTMENT	04-CCBN-0042.0000	0.12
BH	COLLIERS VOLUNTEER FIRE DEPARTMENT	04-CCBN-0079.0001	0.317
BI	GEORGE M. ATEN	04-CCBN-0043.0000	0.841
BJ	GEORGE M. ATEN	04-CCBN-0078.0000	1.848
BK	PATRICK & NORA K. BOYLES	04-CCBN-0072.0000	0.24
BL	ETHAN R. HARRIS	04-CCBN-0072.0001	0.416
BM	DEBRA LYNN ROCCHIO	04-CCBN-0068.0000	0.192
BN	MARK FORRESTER	04-CCBN-0053.0000	0.48
BO	JAMES R. BINGEL	04-CCBN-0064.0000	0.557
BP	JAMES R. BINGEL	04-CCBN-0063.0000	0.15
BQ	MICHAEL E. & HEATHER S. BAGGUS	04-CCBN-0054.0000	0.23
BR	ERIC J. & LORI A. ROBEY	04-CCBN-0051.0000	0.26
BS	JOANNA MARLEEN AYERS	04-CCBN-0047.0000	0.04
BT	JOANNA MARLEEN AYERS	04-CCBN-0048.0000	0.89
BU	PEARL ARIA	04-CCBN-0002.0000	77.0
BV	HARLEY WARRICK	04-C12F-0014.0000	20.08
BW	BONNIE A. BULLOCK	04-C12F-0018.0000	5.90
BX	BONNIE A. BULLOCK	04-C12F-0019.0000	2.58
BY	FRED WELSHANS JR. & CHRIS E. WELSHANS	04-C12K-0025.0000	7.388
BZ	CHARLES LEROY & MARCIA JOAN RICHTER	04-C12K-0024.0000	2.04
CA	WARREN RAY & CHERYL L. JOHNSON	04-C12K-0018.0000	2.78
CB	WARREN RAY & CHERYL L. JOHNSON	04-C12K-0015.0000	1.45
CC	JAMIE LEE & DANNALYN VAN HORN	04-C12K-0015.0000	1.11
CD	ROBERT C. & BARBARA A. HASPEL	04-C12K-0019.0000	0.81
CE	FRED WELSHANS JR. & CHRIS E. WELSHANS	04-C12K-0030.0000	0.87
CF	KEITH L. & FRANCES RICE	04-C12K-0031.0000	0.13
CG	KEITH L. & FRANCES RICE	04-C12K-0032.0000	1.00
CH	ALLEN JOHNSON & CHARLES WARREN ETAL	04-C12K-0033.0000	0.67
CI	CHARLES & LINDA SCOPEL	04-C12K-0034.0000	0.66
CJ	TERRY L. & SUSAN F. WELCH	04-C12K-0041.0000	1.00
CK	RICHIE W. & THELMA A. MILLS	04-C12K-0042.0000	1.00
CL	RICHARD ALVIN ZAMBARDIA	04-C12K-0043.0000	0.33
CM	MARGARET FRESHWATER	04-C12K-0075.0000	20.54
CN	KEITH E. & JODY L. CARPENTER	04-C12K-0077.0000	1.55
CO	GOULD FAMILY TRUST OF 2013	38-0008-0016.0000	189.3
CP	ARTHUR C. MODERMIT	38-0008-0007.0001	206.93

REVISIONS:

COMPANY:

SWN
Production Company, LLC

OPERATOR'S STATE OF WV DNR B
WELL #: BRK 5H

DATE: 03-16-2018

DISTRICT:
CROSS CREEK

COUNTY:
BROOKE

STATE:
WV

DRAWN BY: H. KEMP
SCALE: N/A
DRAWING NO: 2017-541
WELL LOCATION PLAT

WW-6A1
(5/13)

Operator's Well No. STATE OF WV DNR B BRK 5H

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

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

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

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

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

WV Department of
Environmental Protection

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

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

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

Well Operator: SWN Production Company, L.L.C.

By: _____

Its: _____

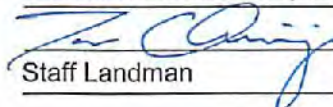

Staff Landman

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW6A1, by SWN Production Company, LLC., Operator
 State of WV DNR B BRK 5H
 Brooke County, West Virginia

#	TMP	LESSOR	LESSEE	ROYALTY	BK/PG
1)	4-CC16-019.00	Starvaggi Industries, Incorporated	Fortuna Energy, Inc. Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	12.50%	9/532 10/541 30/480
2)	4-C12K-078.00	Hamilton, Deborah Jane	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	18.00%	21/626 30/480
3)	4-C12K-080.00	Freshwater, Margaret	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	12/96 30/480
4)	4-C12K-014.00	Reed, Sharon R., a widow Reed, Bryan and Chantelle, husband and wife Reed, Bradley and Elaine, husband and wife	SWN Production Company, L.L.C.	16.00%	33/754 33/748 33/736
5)	4-C12K-017.00	Massimi, Philip D. and Tracy, husband and wife	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	18.00%	28/649 30/480
6)	4-C12K-011.00	Massimi, Philip D. and Tracy, husband and wife	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	18.00%	28/649 30/480
7)	4-C12K-010.00	Bullock, Bonnie A., a widow	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	21/360 30/480
8)	4-C12K-080.01	Bullock, Bonnie A., a widow	SWN Production Company, LLC	17.00%	34/705
		Gossett, Wilda Grace F. , a widow	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	18.00%	28/177 30/480
		Whitehead, Karen Shay and Richard T., wife and husband	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	18.00%	28/172 30/480
		Polley, Linda Kay fka Guzzo, Linda Kay	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	18.00%	28/480 30/480

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		Bycott, Darla Bane	SWN Production Company, L.L.C.	18.00%	40/768
		Bane, Clayton M.	SWN Production Company, L.L.C.	18.00%	41/8
		Jordan, Richard J.	SWN Production Company, L.L.C.	18.00%	42/159
		Marchant, Marlene K.	SWN Production Company, L.L.C.	18.00%	40/793
9)	4-C12K-006.00	Worthley, Kimberly Carman, fka Kimberly Jo (Kim) Carman, a married woman	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	15/106 30/480
10)	4-C12K-005.00	Worthley, Kimberly Carman, fka Kimberly Jo (Kim) Carman, a married woman	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	15/106 30/480
11)	4-C12K-004.00	Worthley, Kimberly Carman, fka Kimberly Jo (Kim) Carman, a married woman	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	15/106 30/480
12)	4-C12K-003.00	Worthley, Kimberly Carman, fka Kimberly Jo (Kim) Carman, a married woman	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	15/10 30/480
13)	4-C12K-002.00	Worthley, Kimberly Carman, fka Kimberly Jo (Kim) Carman, a married woman	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	15/96 30/480
14)	4-C12K-081.00	Worthley, Kimberly Carman, fka Kimberly Jo (Kim) Carman, a married woman	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	15/10 30/480
15)	4-C12J-017.00	Worthley, Kimberly Carman, fka Kimberly Jo (Kim) Carman, a married woman	Chesapeake Appalachia, LLC SWN Production Company, L.L.C.	14.00%	13/743 30/480
16)	4-CC12-012.00	Robinson, Karen	SWN Production Company, L.L.C.	16.00%	38/297
		Lyons, Elaine K.	SWN Production Company, L.L.C.	16.00%	38/333
		Lamb, Velma R. Trust	SWN Production Company, L.L.C.	16.00%	38/324
		Robinson, Jane Rita	SWN Production Company, L.L.C.	16.00%	36/501
		Crosby, Charlotte R.	SWN Production Company, L.L.C.	16.00%	38/315
		Robinson, James Kinney	SWN Production Company, L.L.C.	16.00%	38/306
		Robinson, Charles Wesley, Jr	SWN Production Company, L.L.C.	16.00%	38/342
		Aria, Patsy Samuel	SWN Production Company, L.L.C.	17.00%	42/196
		Aria, Suzanne Chris fka Suzanna Chris Stevens	SWN Production Company, L.L.C.	17.00%	42/206
		Merenda, Charles	SWN Production Company, L.L.C.	17.00%	42/216
		Merenda, John	SWN Production Company, L.L.C.	17.00%	42/186

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	Jacobs, Gerald	SWN Production Company, L.L.C.	17.00%	42/176
17) 4-CC12-011.00	Robinson, Karen	SWN Production Company, L.L.C.	16.00%	38/297
	Lyons, Elaine K.	SWN Production Company, L.L.C.	16.00%	38/333
	Lamb, Velma R. Trust	SWN Production Company, L.L.C.	16.00%	38/324
	Robinson, Jane Rita	SWN Production Company, L.L.C.	16.00%	36/501
	Crosby, Charlotte R.	SWN Production Company, L.L.C.	16.00%	38/315
	Robinson, James Kinney	SWN Production Company, L.L.C.	16.00%	38/306
	Robinson, Charles Wesley, Jr	SWN Production Company, L.L.C.	16.00%	38/342
	Aria, Patsy Samuel	SWN Production Company, L.L.C.	17.00%	42/196
	Aria, Suzanne Chris fka Suzanna Chris Stevens	SWN Production Company, L.L.C.	17.00%	42/206
	Merenda, Charles	SWN Production Company, L.L.C.	17.00%	42/216
	Merenda, John	SWN Production Company, L.L.C.	17.00%	42/186
	Jacobs, Gerald	SWN Production Company, L.L.C.	17.00%	42/176
18) 4-CC8N-079.08	Merrifield, Kenneth B. and Donna R., husband and wife	SWN Production Company, L.L.C.	16.00%	35/607
	Lind, Michael E. and Robinson, Roxann L., husband and wife	SWN Production Company, L.L.C.	16.00%	36/146

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

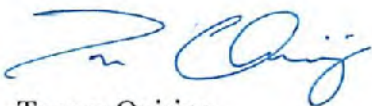
RE: SWN's proposed New Well: State of WV DNR B BRK 5H in Brooke County, West Virginia,
Drilling under 58-64 WV-27 ALT.

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 58-64 WV-27 ALT. 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,



Tanner Quiring
Staff Landman – SW Appalachia
SWN Production Company, LLC
PO Box 12359
Spring, TX 77391-2359

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MAR 21 2018

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

WV Department of
Environmental Protection

Date of Notice Certification: 3/19/18

API No. 47- 009 - _____

Operator's Well No. State of WV DNR B BRK 5H

Well Pad Name: State of WV DNR B

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>540102.196</u>
County:	<u>Brooke</u>		Northing:	<u>4465699.981</u>
District:	<u>Cross Creek</u>	Public Road Access:	<u>Tent Church Road</u>	
Quadrangle:	<u>Steubenville East</u>	Generally used farm name:	<u>State of WV DNR B BRK</u>	
Watershed:	<u>Upper Ohio North</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.

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: *PLEASE CHECK ALL THAT APPLY <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <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 <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED <input checked="" type="checkbox"/> RECEIVED <input checked="" type="checkbox"/> RECEIVED <input checked="" type="checkbox"/> RECEIVED
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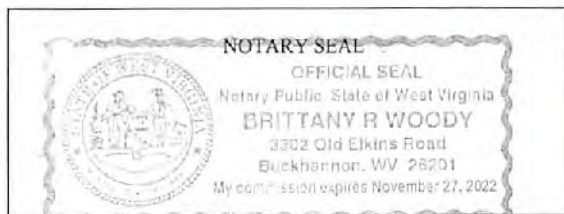
Required Attachments:

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.

Certification of Notice is hereby given:

THEREFORE, I Dee Southall, 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>Dee Southall</u>		<u>Jane Lew, WV 26378</u>
Its:	<u>Senior Regulatory Analyst</u>	Facsimile:	<u>304-884-1690</u>
Telephone:	<u>304-884-1610</u>	Email:	<u>Dee_Southall@swn.com</u>



Subscribed and sworn before me this 25th day of January 2018
Brittany R. Woody Notary Public
 My Commission Expires 11/27/2022

Oil and Gas Privacy Notice:

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

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 Office of Oil and Gas
 MAR 21 2018
 WV Department of
 Environmental Protection

WW-6A
(9-13)

4700900252
API NO. 47-009
OPERATOR WELL NO. State of WV DNR B BRK SH
Well Pad Name: State of WV DNR B

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: 3/19/18 Date Permit Application Filed: 3/19/18

Notice of:

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

RECEIVED
Office of Oil and Gas
MAR 21 2018
WV Department of
Environmental Protection

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: State of WV Dept of Commerce- DNR
Address: 324 4th Ave, RM 200
Charleston, WV 25303

COAL OWNER OR LESSEE
Name: Starvaggi Industries, INC.
Address: 401 Pennsylvania Ave
Weirton, WV 26062

Name: _____
Address: _____

COAL OPERATOR
Name: _____
Address: _____

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

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: None
Address: _____

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

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

*Please attach additional forms if necessary

4700300252
API NO. 47-009 -
OPERATOR WELL NO. State of WV
Well Pad Name: State of WV DNR B
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Office of Oil and Gas
MAR 21 2013
WV Department of
Environmental Protection

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

WW-6A
(8-13)

4700200252
API NO. 47-009 -
OPERATOR WELL NO. State of WV DNR B BRK 5H
Well Pad Name: State of WV DNR B

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

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Office of Oil and Gas

MAR 21 2018

WV Department of
Environmental Protection

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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MAR 21 2018

WV Department of
Environmental Protection

WW-6A
(8-13)

4700900252

API NO. 47- 009 -
OPERATOR WELL NO. State of WV DNR B BRK 5H
Well Pad Name: State of WV DNR B

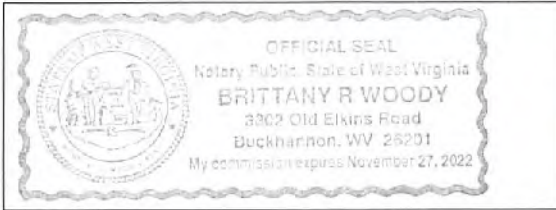
Notice is hereby given by:

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

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

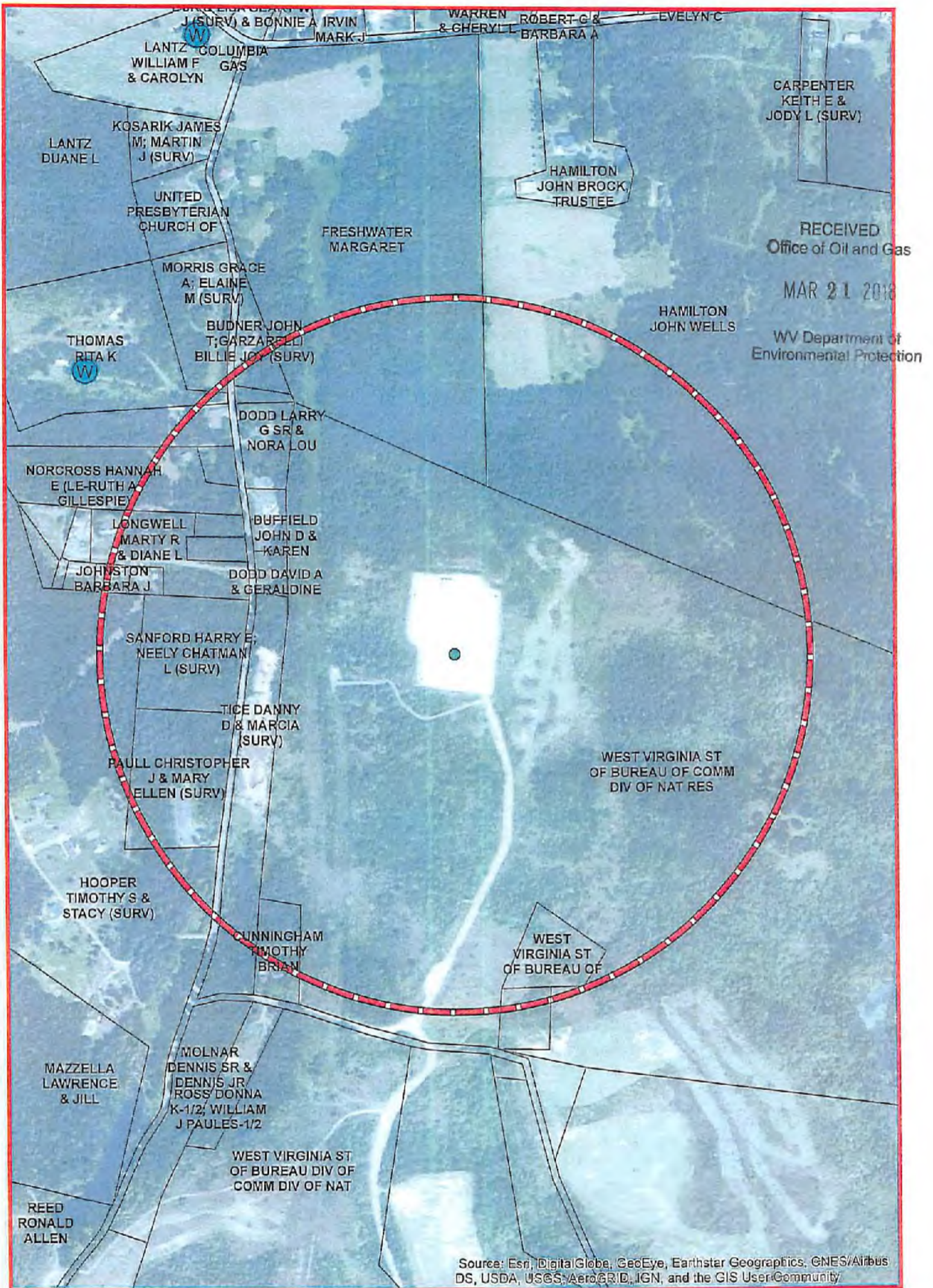
Oil and Gas Privacy Notice:

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.



Subscribed and sworn before me this 25th day of January 2018
Brittany R Woody Notary Public
My Commission Expires 11/27/22

RECEIVED
Office of Oil and Gas
MAR 21 2018
WV Department of
Environmental Protection



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

The intent of this map is for general reference only. Information on this map was created using the best available data at the time but is not guaranteed accurate.

Water Purveyor Map			Well Pad: State of WV DNR B BRK Pad	County: BROOKE
Map by: speart	Date: 8/14/2017	State of WV DNR B BRK Coordinates: 40.340808, -80.527963		
NAD 1983 BLM Zone 17N ftUS				
0 250 500 1,000 1,500 2,000 Feet				

4700000252

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: 01/26/2018 **Date Permit Application Filed:** 3/19/18 **RECEIVED**
Office of Oil and Gas

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

MAR 21 2018

HAND DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

WV Department of
Environmental Protection

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: ST of WV Dept of Commerce Div of Natural Resources
Address: 324 4th Ave, Rm 200
Charleston, WV 25303

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>540102.196</u>
County:	<u>Brooke</u>		Northing:	<u>4485699.981</u>
District:	<u>Cross Creek</u>	Public Road Access:		<u>Tent Church Road</u>
Quadrangle:	<u>Steubenville East</u>	Generally used farm name:		<u>State of WV DNR B BRK</u>
Watershed:	<u>Upper Ohio North</u>			

This Notice Shall Include:

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

Notice is hereby given by:

Well Operator: SWN Production Co., LLC
Address: P.O. Box 1300
Jane Lew, WV 26378
Telephone: 304-517-6603
Email: Michael_Yates@swn.com
Facsimile: 304-884-1691

Authorized Representative: Mike Yates
Address: P.O. Box 1300
Jane Lew, Wv
Telephone: 304-517-6609
Email: Michael_Yates@swn.com
Facsimile: 304-884-1691

Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 01/26/2018 **Date Permit Application Filed:** 3/19/18

RECEIVED
Office of Oil and Gas

MAR 21 2018

WV Department of
Environmental Protection

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

- CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: St of WV Dept Of Commerce Div of Natural Resources
Address: 324 4th Ave, Rm 200
Charleston, WV 25303

Name: _____
Address: _____

Notice is hereby given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>540102.196</u>
County:	<u>Brooke</u>		Northing:	<u>4465699.981</u>
District:	<u>Cross Creek</u>	Public Road Access:	<u>Tent Church Road</u>	
Quadrangle:	<u>Steubenville East</u>	Generally used farm name:	<u>State of WV DNR B BRK</u>	
Watershed:	<u>Upper Ohio North</u>			

This Notice Shall Include:

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

Well Operator: SWN Production Co., LLC
Telephone: 304-517-6603
Email: Michael_Yates@swn.com

Address: P.O. Box 1300
Jane Lew, WV 26378
Facsimile: 304 884 1891

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.

4700900252



RECEIVED
Office of Oil and Gas

MAR 21 2018

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION WV Department of
Environmental Protection
Division of Highways

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

Jim Justice
Governor

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

January 25, 2018

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

Subject: DOH Permit for the State of WV DNR B Pad, Brooke County
State of WV DNR B BRK 5H

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2012-0103 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Ohio County Route 7/4 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,

A handwritten signature in blue ink that reads "Gary K. Clayton".

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

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

FRAC ADDITIVES

Product Name	Product Use	Chemical Name	CAS Number
EC6734A (Champion Technologies)	Biocide	Hydrogen Peroxide	7722-84-1
		Acetic Acid	64-19-7
		Peroxyacetic Acid	79-21-0
GYPTRON T-390 (Champion Technologies)	Scale Inhibitor	Methanol	67-56-1
		Nonylphenol Ethoxylate	Proprietary
Bactron K-139 (Champion Technologies)	Biocide	Glutaraldehyde	111-30-8
		Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1
		Ethanol	64-17-5
Bactron K-219 (Champion Technologies)	Biocide	Methanol	67-56-1
		Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1
EC6486A (Nalco Champion)	Scale Inhibitor	Amine Triphosphate	Proprietary
		Ethylene Glycol	107-21-1
WFRA-2000 (U.S. Well Services)	Anionic Friction Reducer	Hydrotreated light distillate (petroleum)	64742-47-8
		Propenoic acid, polymer with propenamide	9003-06 9
AI-303 (U.S. Well Services)	Mixture	Ethylene glycol	107-21 1
		Cinnamaldehyde	104-55 2
		Butyl cellosolve	111-76 2
		Formic acid	64-18 6
		Polyether	Proprietary
		Acetophenone, thiourea, formaldehyde polymer	68527-49 1
AP ONE (U.S. Well Services)	Breaker	Ammonium persulfate	7727-54-0
OPTI-FLEX (U.S. Well Services)	Viscosifying Agent	Distillates, petroleum, hydrotreated light	64742-47-8
Econo-CI200 (SWN Well Services)	Corrosion Inhibitor	Methanol	67-56-1
		Oxyalkylated fatty acid	68951-67-7
		Fatty acids	61790-12-3
		Modified thiourea polymer	68527-49-1
		Water	7732-18-5
		Hydrochloric acid	7647-01-0
		Potassium acetate	127-08-2
		Formaldehyde	50-00-0
Ecopol-FEAC (SWN Well Services)	Iron Control	Acetic Acid	64-19-7
		Citric Acid	77-92-9
		Water	7732-18-5
HCL (SWN Well Services)	Hydrocholic Acid	Hydrochloric Acid	7647-01-0
		Water	7732-18-5
FLOJET DRP 1130X (SWN Well Services)	Friction Reducer	Proprietary	Proprietary
FLOJET DR900 LPP (SWN Well Services)	Friction Reducer	Distillates (petroleum) hydrotreated light	64674-47-8
		Ethylene Glycol	107-21-1
		Alcohols, C12-16, Exoxylated propoxylated	68213-24-1
		Fatty Alcohols ethoxylated	Proprietary
		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	12125-06-9
Zero Wash Tracer	Tracer	Ceramic Proppant	Proprietary

4700300252

RECEIVED
 State of West Virginia
 Department of Environmental Protection
 MAR 22 2018

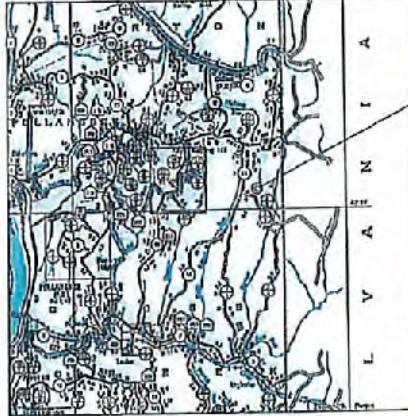
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RECEIVED
Office of Oil and Gas

MAR 21 2018

WV Department of
Environmental Protection

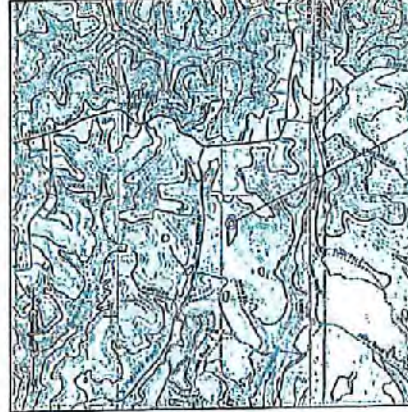
BROOKE COUNTY, WV HIGHWAY MAP



HIGHWAY MAP SCALE
1 MILE 0 1 MILE 2 MILES

PROJECT LOCATION

STRUBENVILLE EAST OHIO QUAD MAP



VICINITY MAP SCALE
2000' 0 2000' 4000'

PROJECT LOCATION

SWN PRODUCTION COMPANY, LLC

AS-BUILT PLANS FOR THE WV DNR BRK PAD "B" BROOKE COUNTY, WV

JUNE 2017

SWN
Production Company™
SWN PRODUCTION COMPANY, LLC
179 Innovation Drive
Juno Lake, WV 26378
(304) 884-1610

PROJECT COORDINATES

AS-BUILT ACCESS ROAD BEGINNING
NAD83-N Latitude = N 40.335534°
NAD83-N Longitude = W 80.528459°
UTM 83-47 Northing = 14519832.5537 ft.
UTM 83-47 Easting = 1771965.0367 ft.

DISTURBANCE SUMMARY

Disturbance Location	Total Disturbance (Acres)
Access Road	4.38
Well Pad	0.95
Total Disturbance	5.33

AS-BUILT CENTER OF WELL PAD
NAD83-N Latitude = N 40.340832°
NAD83-N Longitude = W 80.527805°
UTM 83-47 Northing = 14521108.7921 ft.
UTM 83-47 Easting = 1771955.8158 ft.

WV DNR BRK PAD "B"

REG. AP# 47-009-08124
REG. AP# 47-009-08122

**WVDEP OOG
ACCEPTED AS-BUILT**
VAD 10/10/2017

SHEET INDEX

SHEET	DESCRIPTION
1	TITLE SHEET
2-3	EVACUATION PLAN & PREVAILING WINDS
4	AS-BUILT OVERVIEW
5-7	AS-BUILT ACCESS ROAD PLAN & PROFILE
8	AS-BUILT WELL PAD PLAN
9	AS-BUILT WELL PAD PROFILE & SECTIONS
10	RECLAMATION PLAN
11	GENERAL NOTES
12-14	DETAILS

NOTES

- PORTIONS OF THE ORIGINAL AS-BUILT SURVEY OF THIS SITE PROVIDED BY BOORD, BENCHICK & ASSOCIATES, INC. (OIA) TO CHESAPEAKE APPALACHIA, LLC. IN SEPTEMBER 2012 HAVE BEEN INCORPORATED INTO THESE PLANS. THE BBA AS-BUILT SURVEY WAS PROVIDED TO THRASHER BY SWN PRODUCTION COMPANY, LLC IN MAY 2017 AND INCLUDED CONTOURS, ROAD EDGES, WELL HEAD LOCATIONS, BROSION AND SEDIMENT CONTROLS, ETC.
- EXISTING ROAD EDGES, WELL PAD EDGE, GAS PRODUCTION EQUIPMENT, ABOVE GROUND PIPING, STORM WATER FEATURES, ETC. WERE VERIFIED AND AS-BUILT BY THRASHER MAY 2017.
- THE COORDINATE SYSTEM USED FOR THIS PROJECT IS UTM WITH NAD83 DATUM, ZONE 17, US FOOT, CENTRAL MERIDIAN 81W.



REVISION NUMBER	REVISED SHEETS	BY	DATE	DESCRIPTION
1	1 & D	BU	02/24/17	CORRECTED SH & SH AP# ERRORS

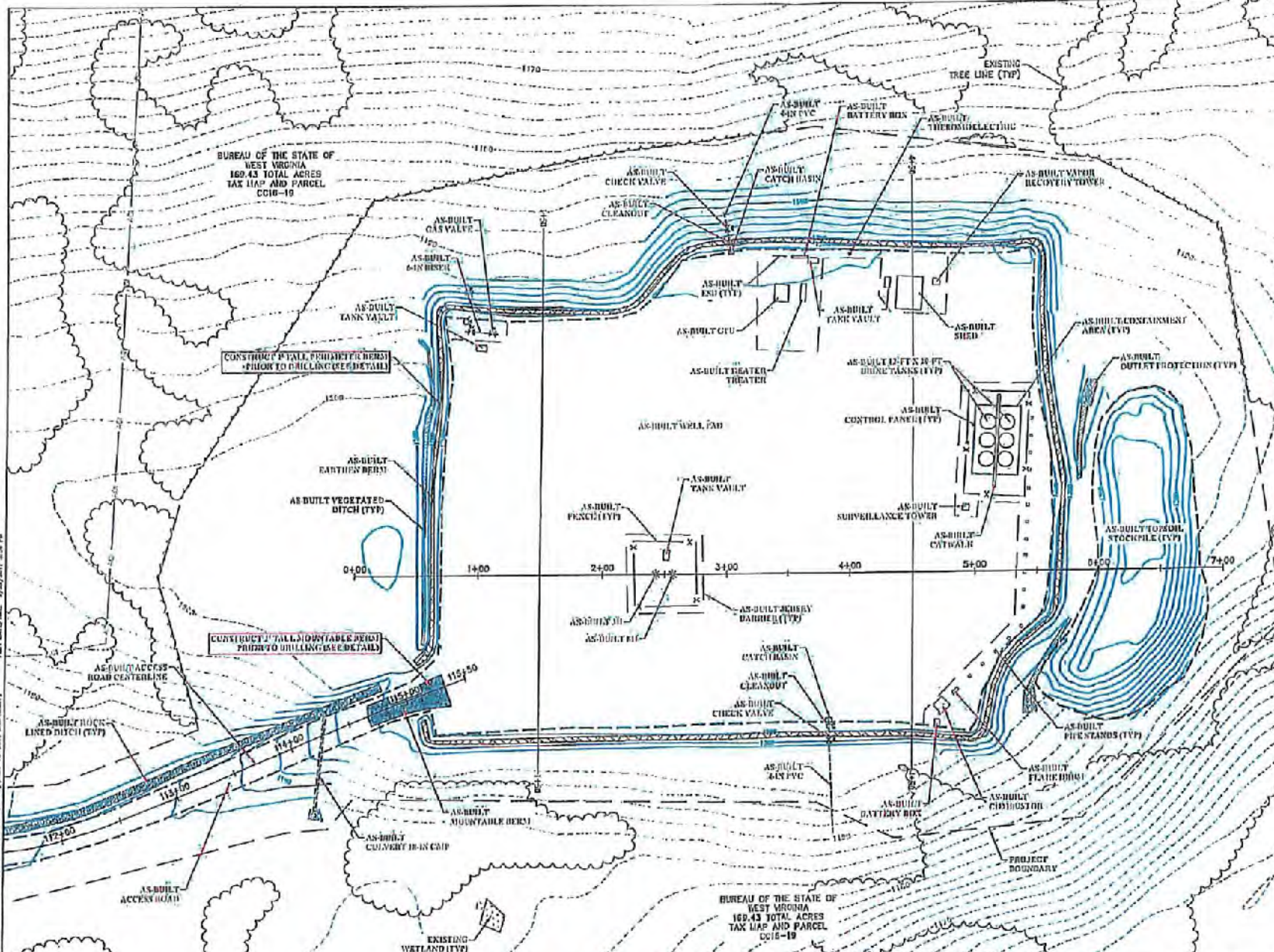
ONE CALL UTILITY SYSTEM CONTACT INFO



CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE INTERDUG EXCAVATION OR DEMOLITION NOT LESS THAN FORTY EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL FEDERAL OR STATE HOLIDAYS, NOR MORE THAN TEN (10) WORK DAYS PRIOR TO THE BEGINNING OF SUCH WORK.

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THRASHER
THE THRASHER GROUP, INC.
600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330
PHONE (304) 624-4108 • FAX (304) 624-2831



PLAN LEGEND

- TO BE CONSTRUCTION CONTOURS
- AS-BUILT CONTOURS
- AS-BUILT PROJECT BOUNDARY
- AS-BUILT TO PROTECT ROCKLE EDGE
- AS-BUILT ENVIRONMENTAL AREA OF INTEREST
- AS-BUILT OVERHEAD UTILITY LINE AND POL
- TO BE BUILT ROAD EDGE
- TO BE BUILT DRAINAGE/ROCKLE EDGE
- TO BE BUILT PAD EDGE
- TO BE BUILT FENCE
- TO BE BUILT ROCKLAND DITCH
- TO BE BUILT CURB/STY
- TO BE BUILT CONTAINMENT AREA
- TO BE BUILT PRODUCTION EQUIPMENT
- AS-BUILT
- AS-BUILT

WV DNR BRK PAD "B" WELLS

WELL NAME	API NUMBER	CELLAR DEPTH	CELLAR DIAMETER	CELLAR MATERIAL
AS-BUILT #1	47-095-00184	8-FT	8-FT	CMF*
AS-BUILT #2	47-095-00122	8-FT	8-FT	CMF*

NOTES
* CMF = CORRUGATED METAL PIPE

- WELL PAD NOTES**
1. PRIOR TO DRILLING A 2 FT TALL (MINIMUM) BARTHEN BERM SHALL BE CONSTRUCTED AROUND ENTIRE PERIMETER OF WELL PAD.
 2. PRIOR TO DRILLING A 2 FT TALL (MINIMUM) MOUNTABLE BERM SHALL BE CONSTRUCTED AND SHALL BE THE FULL WIDTH OF THE ACCESS ROAD AT THE WELL PAD ENTRANCE.
 3. PERIMETER AND MOUNTABLE BERMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS AND NOTES CONTAINED WITHIN THESE PLANS.
 4. PERIMETER AND MOUNTABLE BERMS SHALL BE INSTALLED AND STABILIZED PRIOR TO INITIATING DRILLING OPERATIONS.
 5. PERIMETER AND MOUNTABLE BERMS SHALL BE MAINTAINED AND REPAIRS MADE AT ALL TIMES DURING OPERATIONS ON THIS WELL PAD.

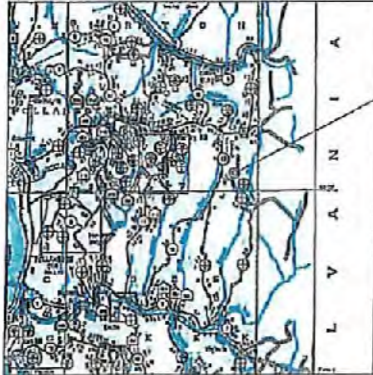
**WVDEP OOG
ACCEPTED AS-BUILT**
VBJ 10/10/2017



VERTICAL CURVATURE CORRECTION APPLIED TO ALL ELEVATIONS
 DATE: 02/20/17 BY: S.W. MURPHY
 PROJECT: STATE OF WV DNR BRK PAD "B"

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	APPROVED FOR PLANS DATE APPROVED FOR JOB DATE APPROVED FOR CONSTRUCTION DATE PROJECT LINK: 661-670-3533	THE THRASHER GROUP, INC. 800 WHITE OAKS CHALLENGER, HUNTSVILLE, WV 25830 PHONE (304) 824-1100 FAX (304) 824-7631		APPROVED FOR PLANS DATE APPROVED FOR JOB DATE APPROVED FOR CONSTRUCTION DATE	

BROOKE COUNTY, WV HIGHWAY MAP



PROJECT LOCATION

1 MILE 0 1 MILE 2 MILES
HIGHWAY MAP SCALE

STUBBINSVILLE EAST OINO QUAD MAP



PROJECT LOCATION

2000' 0 2000' 4000'
VICINITY MAP SCALE

SWN PRODUCTION COMPANY, LLC

AS-BUILT PLANS FOR THE WV DNR BRK PAD "B"

BROOKE COUNTY, WV

JUNE 2017



SWN PRODUCTION COMPANY, LLC
179 Innisville Drive
Jane Lew, WV 26378
(304) 834-1610

SHEET INDEX

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10	RECLAMATION PLAN
11	GENERAL NOTES
12-14	DETAILS

PROJECT COORDINATES

AS-BUILT ACCESS ROAD BEGINNING
NAD83 N. Latitude = 37.0211537
NAD83 E. Longitude = W 88.121259°
UTM 18-17 Northing = 4484903.5537 N.
UTM 18-17 Easting = 771766.0947 E.

DISTURBANCE BOUNDARY

Disturbance Location	Total Disturbance (Acres)
Access Road	4.55
Well Pad	0.81
Total Disturbance	5.36

AS-BUILT CENTER OF WELL PAD

NAD83 N. Latitude = N 48.349823°
NAD83 E. Longitude = W 88.221259°
UTM 18-17 Northing = 4651192.7901 N.
UTM 18-17 Easting = 771955.8121 E.

WV DNR BRK PAD "B"

REG. APP# 47-009-00847
REG. APP# 47-009-00825

C. BLO
8.15.17



NOTES

- PORTIONS OF THE ORIGINAL AS-BUILT SURVEY OF THIS SITE PROVIDED BY BOGGS, HENNECK & ASSOCIATES, INC. (D/A) TO CHESTNUT APPLAUNCH, LLC BY SEPTEMBER 2013 HAVE BEEN INCORPORATED INTO THESE PLANS. THE DINA AS-BUILT SURVEY WAS PROVIDED TO THRASHER BY SWN PRODUCTION COMPANY, LLC IN MAY 2017 AND INCLUDED CONTOURS, ROAD EDGES, WELL HEAD LOCATIONS, LAGGERS AND SEDIMENT COVERS, ETC.
- EXISTING ROAD EDGES, WELL PAD EDGE, GAS PRODUCTION EQUIPMENT, ABOVE GROUND PIPING, STREAM WATER FEATURES, ETC. WERE VERIFIED AND AS-BUILT BY THE ASHER MAY 2017.
- THE COORDINATE SYSTEM USED FOR THIS PROJECT IS UTM WITH NAD83 DATUM, ZONE 17, UTM 009, CENTRAL MERIDIAN 81W.



REVISION NUMBER	REVISED SHEETS	BY	DATE	DESCRIPTION

ONE CALL UTILITY SYSTEM CONTACT INFO



CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE PROJECTED EXCAVATION OR DEMOLITION NOT LESS THAN FORTY-EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LOCAL FEDERAL OR STATE HOLIDAYS, NOR MORE THAN 72 HOURS TO ALLOW TIME TO THE PROVIDER OF SUCH WORK.

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THE THRASHER GROUP, INC.
600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330
PHONE (304) 624-4100 • FAX (304) 624-7031