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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 25, 2020  
WELL WORK PERMIT  
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC  
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit approval for EDWARD ZATTA BRK 6H  
47-009-00303-00-00

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: EDWARD ZATTA BRK 6H  
Farm Name: COSS ROAD FARM, LLC  
U.S. WELL NUMBER: 47-009-00303-00-00  
Horizontal 6A New Drill  
Date Issued: 2/25/2020

# 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.

API Number:

4700900303

## 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).



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-Brook 01-Buffal 641-Tiltonville/24  
Operator ID County District Quadrangle

2) Operator's Well Number: Edward Zatta BRK 6H Well Pad Name: Edward Zatta BRK

3) Farm Name/Surface Owner: Coss Road Farm Public Road Access: Coss Road

4) Elevation, current ground: 1218' Elevation, proposed post-construction: 1218'

5) Well Type (a) Gas  Oil  Underground Storage   
Other

(b) If Gas Shallow  Deep   
Horizontal

6) Existing Pad: Yes or No Yes

*C. Miller 8-21-19*

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- 5789', Target Base TVD- 5851', Anticipated Thickness- 62', Associated Pressure- 3803

8) Proposed Total Vertical Depth: 5838'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18,236'

11) Proposed Horizontal Leg Length: 10,704.26'

12) Approximate Fresh Water Strata Depths: 276'

13) Method to Determine Fresh Water Depths: WR35 Fresh Water Depth from Zatta 10H (API 47-009-00118)

14) Approximate Saltwater Depths: 565' Zatta 10H (API 47-009-00118) logs and salinity profile analysis

15) Approximate Coal Seam Depths: 244'

16) Approximate Depth to Possible Void (coal mine, karst, other): Possible Void 244'

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. Edward Zatta BRK 6H  
Well Pad Name: Edward Zatta BRK

18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size (in)</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft. (lb/ft)</b>	<b>FOOTAGE: For Drilling (ft)</b>	<b>INTERVALS: Left in Well (ft)</b>	<b>CEMENT: Fill-up (Cu. Ft.)/CTS</b>
Conductor	20"	New	H-40	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	H-40	48#	350'	350'	349 sx/CTS
Coal	See	Surface	Casing				
Intermediate	9 5/8"	New	J-55	36#	1422'	1422'	555 sx/CTS
Production	5 1/2"	New	HCP-110	20#	18,236'	18,236'	lead 818sx/Tail 2936sx/ 100' Inside In
Tubing							
Liners							

<b>TYPE</b>	<b>Size (in)</b>	<b>Wellbore Diameter (in)</b>	<b>Wall Thickness (in)</b>	<b>Burst Pressure (psi)</b>	<b>Anticipated Max. Internal Pressure (psi)</b>	<b>Cement Type</b>	<b>Cement Yield (cu. ft./k)</b>
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:				

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4700-003^3

WW-6B  
(10/14)

API NO. 47-009 -

OPERATOR WELL NO. Edward Zatta BRK 6H

Well Pad Name: Edward Zatta BRK

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

Drill and stimulate any potential zones between and including the Benson to Marcellus. \*\*If we should encounter a void place basket above and below void area- balance cement to bottom of void and grout from basket to surface or run external casing packer/cementing stage tool above void interval and perform 2 stage cementing operation dependent upon depth of void. Run casing not less than 20' below void nor more than 75' below void. (\*If freshwater is encountered deeper than anticipated it must be protected, set casing 50' below and cts.)

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

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 12

22) Area to be disturbed for well pad only, less access road (acres): 9.8

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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\*. - : 8 2019

\*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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**Southwestern Energy Company**

**Proposed Drilling Program**

Well: EDWARD ZATTA BRK 6  
 Field: PANHANDLE FIELD \  
 County: BROOKE  
 SHL: 40.2464 Latitude -80.6325 Longitude  
 BHL: 40.2259 Latitude -80.6231 Longitude  
 KB Elev: 1,244 ft MSL KB: 26 ft AGL GL Elev: 1,218 ft MSL

Re-entry Rig: TBD  
 Prospect: PANHANDLE  
 State: WV



Coal Void at 244' TVD

PROD TOC Lead @ 1,442' MD  
 PROD TOC Tail @ 5,100' MD

*C. Blal*  
*8.21.19*

TUBULAR DETAIL

	Size (in)	Weight	Grade	From	To
Conductor:	20	94.0 #	H-40	0'	100'
Surf./Coal:	13.375	48.0 #	H-40	0'	350'
Intermediate:	9.625	36.0 #	J-55	0'	1,422'
Production:	5.5	20.0 #	HCP-110	0'	18,236'

0' to 370'  
Air / Mist  
 370' to 1,442'  
Air / Mist  
 ↓  
 1,442' to 6,102'  
Air / Mist

CEMENT DETAIL

	Sacks	Class	Density
Conductor	151	A	19.3
Surface	349	A	15.6
Intermediate	555	A	15.6
Production Lead	818	A	15.6
Production Tail	2936	A	15.6

↓  
 Air  
 TD at 6,102'

KOP at 6,102' MD

Freshwater Depth - 276' TVD  
 Coal Void Depth - 244' TVD  
 Saltwater Depth - 565' TVD  
 TVD - 5,838'  
 TMD - 18,236'

6,102' to 7,531'  
12.0 - 12.5 ppg

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5,723' Target Center

TD at 18,236' MD  
 5,838' TVD

EOB at 5,723' TVD  
 SHL Onondaga 5,736' TVD

Onondaga 5,851' TVD

↓  
 7,531' to 18,236'  
12.0 - 12.5 ppg



Edward Zatta BK LUH ADR

API	Operator	Status	Latitude	Longitude	Vertical TD	Producing Formation	Producing Zones Not Perforated
47-009-00118	SWN PRODUCTION COMPANY, LLC	ACTIVE	40.246417	-80.632551	5795'	MARCELLUS	Geneseo, Tully, Hamilton

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WW-9  
(4/16)

API Number 47 - 009 - \_\_\_\_\_  
Operator's Well No. Edward Zatta BRK 6H

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 Tiltonsville/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 Various Approved Facilities )
- 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 recovery and solidification on site)

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

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

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

Additives to be used in drilling medium? Attachment 3B

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

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

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

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

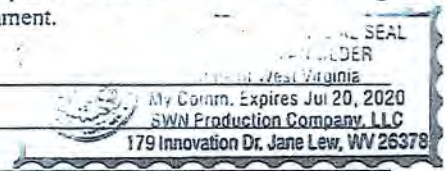
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations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

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

Company Official Signature *Brittany Woody*

Company Official (Typed Name) Brittany Woody

Company Official Title Senior Regulatory Analyst



Subscribed and sworn before me this 6th day of February, 20 20

*Jessica L. VanMilder* Notary Public

My commission expires 7-20-20



**SWN Production Co., LLC**

Proposed Revegetation Treatment: Acres Disturbed 12 Prevegetation pH \_\_\_\_\_

Lime as determined by pH test min.2 Tons/acre or to correct to pH 9.8

Fertilizer type 10-20-20

Fertilizer amount 600 lbs/acre

Mulch Hay/Straw Tons/acre

Seed Mixtures

**Temporary**

**Permanent**

Seed Type lbs/acre

Seed Type lbs/acre

**Attachment 3C**

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:

*[Signature]* 8-21-19

Comments:

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Title: Oil & Gas Inspector

Date: 8-21-19

Field Reviewed?

(  ) Yes

(  ) No

## Attachment 3A

**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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EXAMPLE SCHEMATIC FOR CLOSED LOOP SOLIDS CONTROL SYSTEM

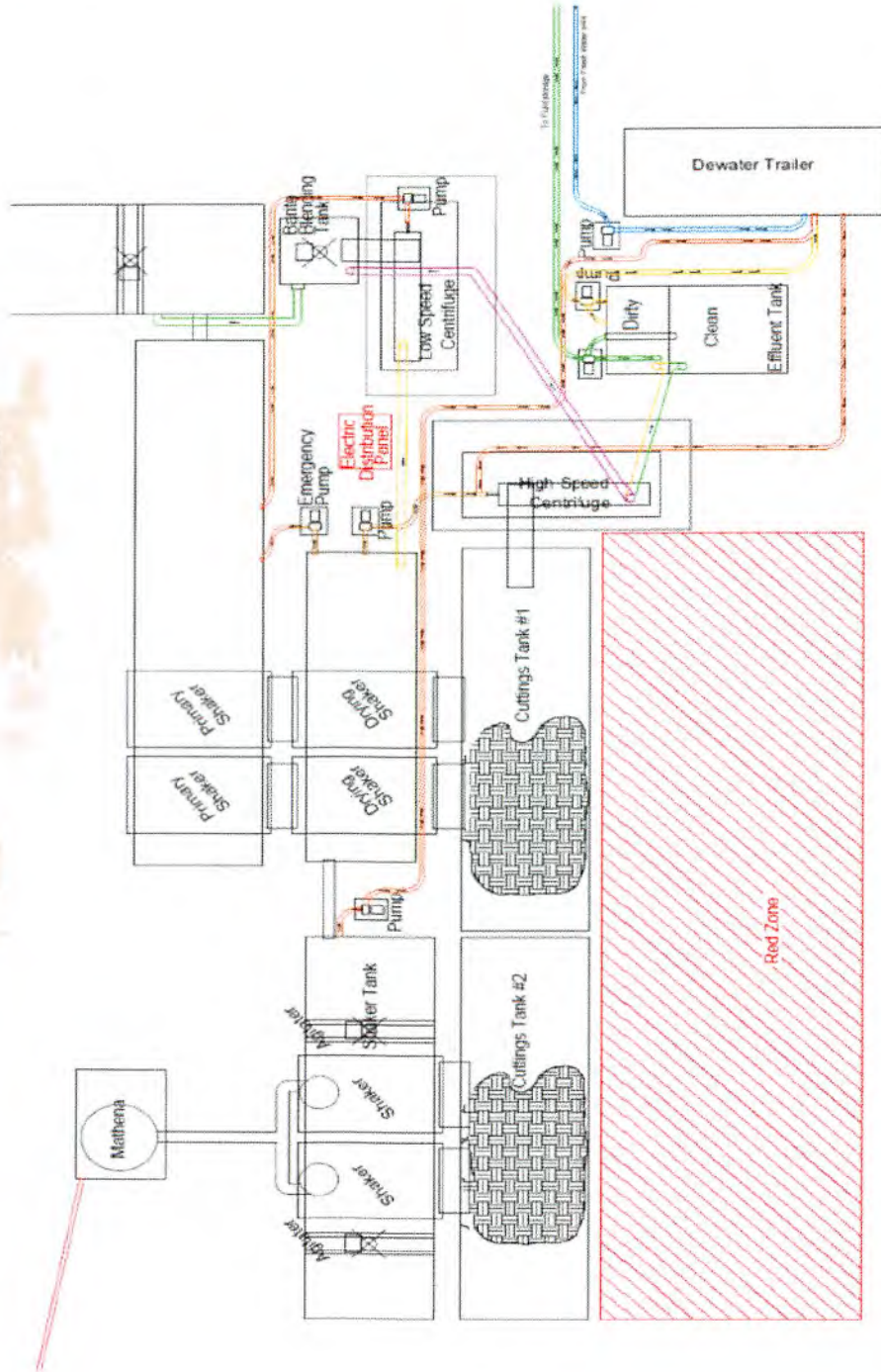


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Solids Control Layout



## **Attachment 3B**

### **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



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

### NON-ORGANIC PROPERTIES

Seed Mixture: ROW Mix	SWN Supplied
Orchardgrass	40%
Timothy	15%
Annual Ryegrass	15%
Brown Top Millet	5%
Red Top	5%
Medium Red Clover	5%
White Clover	5%
Birdfoot Trefoil	5%
Rough Bluegrass	5%

All legumes are innoculated at 5x normal rate

**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	
<b>Seeding Calculation Information:</b>	
1452' of 30' ROW/LOD is One Acre	
871' of 50' ROW/LOD is One Acre	
622' of 70' ROW/LOD is One Acre	
<b>Synopsis:</b>	
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).	
<b>Special Considerations:</b>	
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**

**Apply @ 200lbs per acre Oct. 15th- April 15th**

Organic Fertilizer @ 200lbs per Acre

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**

# MARCELLUS WELL DRILLING PROCEDURES AND WELL SITE SAFETY PLAN



SWN Production Company, LLC  
1300 Fort Pierpont Drive, Suite 201  
Morgantown, West Virginia 26508

**API NO. 47-XXX-XXXXX**  
**WELL NAME: Edward Zatta BRK 6H**  
**Tiltonsville/Bethany QUAD**  
**Buffalo DISTRICT**  
**BROOKE COUNTY, WEST VIRGINIA**

Submitted by:

Name: Brittany Woody

Date: 6/26/2019

*Brittany Woody*

Title: Senior Regulatory Analyst

SWN Production Co., LLC

Approved by:

Name: *[Signature]*

Date: 8-21-19

Title: Oil & Gas Inspector

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Approved by:

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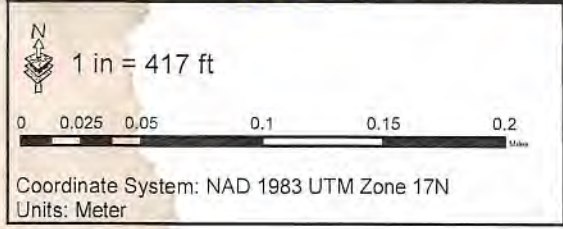
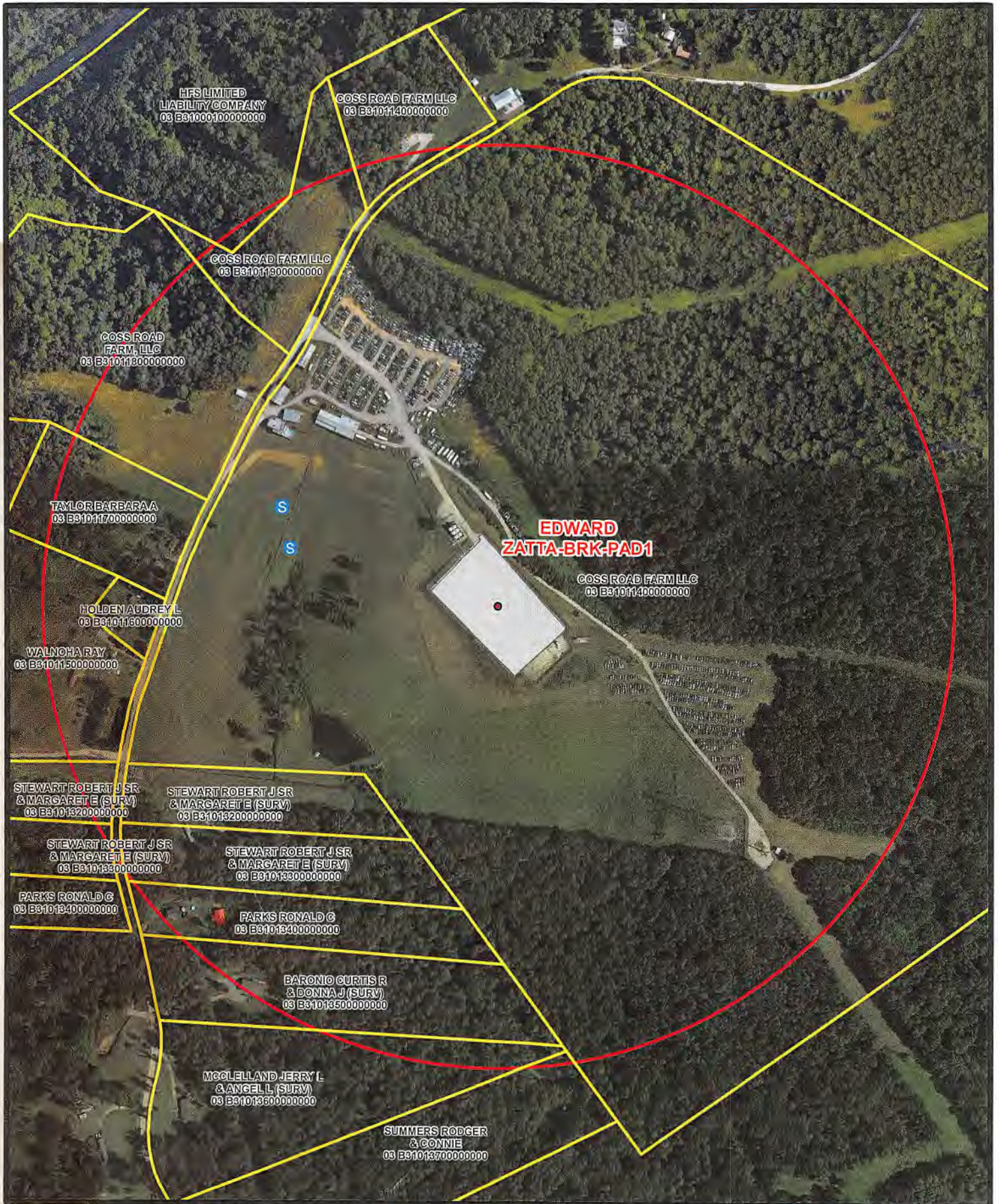
Name: \_\_\_\_\_

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

WV Department of  
Environmental Protection

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





S Spring      Parcel  
 1500' Buffer  
W Water Well      Pond

Coordinates: 40.246326, -80.632459

Water Purvey or Map  
Well Pad: Edward Zatta  
County: BRK

**SWn** *R<sup>+</sup> V<sup>+</sup>*  
Southwestern Energy<sup>®</sup>

Date: 6/10/2019     Author: willisb



LATITUDE: 40°15'00" SURFACE HOLE | 2095'

LATITUDE: 40°15'00" BOTTOM HOLE

11168'

8802'

LONGITUDE: 80°35'00" BOTTOM HOLE

1328'



www.jhacompanies.com

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

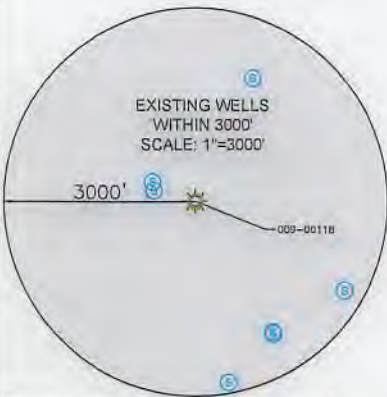
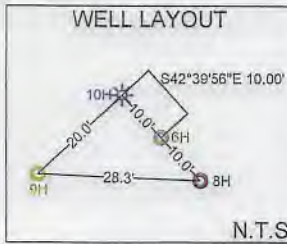
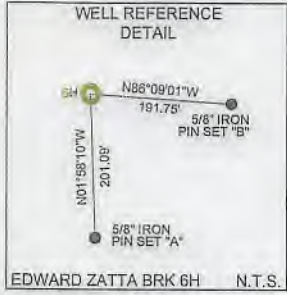
PROPOSED SURFACE HOLE



LINE	BEARING	DISTANCE
L1	N66°04'10"E	1345.40'
L2	N13°48'56"E	841.64'



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



<b>SURFACE HOLE LOCATION (SHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4455170.18 EASTING: 531254.40
<b>LANDING POINT LOCATION (LPL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4455863.71 EASTING: 530710.54
<b>BOTTOM HOLE LOCATION (BHL):</b> UTM (NAD83, ZONE 17, METERS): NORTHING: 4452896.06 EASTING: 532063.24

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



NOTES ON SURVEY

- COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- 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.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS OR BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF THE LIMITS OF DISTURBANCE.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.

2000 0 2000

GRAPHIC SCALE IN FEET

COMPANY:

**SWN** **SWN** *Produced in WV*

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 SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)

EDWARD ZATTA BRK

OPERATOR'S WELL #: 6H

API WELL #: 47 009 00303 H6A

STATE COUNTY PERMIT

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

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1218.2'

DISTRICT: BUFFALO COUNTY: BROOKE QUADRANGLE: TILTONVILLE, OH/BETHANY, WV

SURFACE OWNER: COSS ROAD FARM, LLC ACREAGE: ±183.28

OIL & GAS ROYALTY OWNER: MY THREE SONS HOLDINGS, LP ACREAGE: ±183.28

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: 5,838' TVD 18,236' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: BRITTANY WOODY

ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201 ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201

CITY: MORGANTOWN STATE: WV ZIP CODE: 26508 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

LEGEND:

PROPOSED SURFACE HOLE / BOTTOM HOLE	NATURAL WATERWAY
EXISTING / PRODUCING WELLHEAD	SURVEYED BOUNDARY
LANDING POINT LOCATION	LEASE BOUNDARY
EXISTING WATER WELL	PROPOSED PATH
EXISTING SPRING	PUBLIC ROAD

REVISIONS:	DATE: 08-22-2019
	API NO: 47-009-XXXXX
	DRAWN BY: D. REED
	SCALE: 1" = 2000'
	DRAWING NO: 2019-0789
	WELL LOCATION - OTHER



WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	COSS ROAD FARM, LLC (S) MY THREE SONS HOLDINGS, LP (R)	03-831-114.0
TRACT	SURFACE OWNER	TAX PARCEL
2	COSS ROAD FARM, LLC	03-831-119.0
3	HFS LIMITED LIABILITY COMPANY	03-831-01.0
4	STATE OF WEST VIRGINIA	STATE ROUTE 2
5	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	03-827-11.0
6	HFS LIMITED LIABILITY COMPANY	03-831-02.0
7	STATE OF WEST VIRGINIA	OHIO RIVER
8	HFS LIMITED LIABILITY COMPANY	03-831-04.0
9	COSS ROAD FARM, LLC	03-831-118.0
10	ROBERT J., SR. & MARGARET E. STEWART	03-831-132.0
11	ROBERT J., SR. & MARGARET E. STEWART	03-831-133.0
12	RONALD C. PARKS	03-831-134.0
13	CURTIS R. & DONNA J. BARGON	03-831-135.0
14	JERRY L. & ANGEL L. MCCLELLAND	03-831-136.0
15	RODGER & CONNIE SUMMERS	03-831-137.0
16	THOMAS & PAULINE SALEM	03-831-138.0
17	KEITH R. FRANCIS	03-831-139.0
18	RANDOLPH L. & TAMMY R. CLARK	03-831-140.0
19	RANDOLPH & TAMMY CLARK	03-831-141.0
20	HAROLD STARKEY	03-831-104.0
21	CHERYLL L. STEMPLE	03-831-103.0
22	STEVEN THOMAS	03-831-97.0
23	LONNIE & CARRIE R. BLAKE	03-831-92.0
24	LONNIE BLAKE	03-831-89.0
25	MARILYN LEE BROWN	03-832-152.0
26	MARILYN LEE BROWN	03-836-39.0
27	KEVIN S. WEEKLEY	03-832-151.0
28	JOHN M. & ROBIN L. SNYDER	03-837-08.0
28	CHRISTINE PHILLIPS	03-837-07.0
30	HARLEY J. LEMASTERS	03-837-06.0
31	HARLEY J. LEMASTERS	03-837-21.0

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	MELINDA B. WOOLWINE	03-832-25.0
B	HFS LIMITED LIABILITY COMPANY	03-832-24.0
C	HFS LIMITED LIABILITY COMPANY	03-832-23.0
D	WILLIAM RUSSELL WALNOHA	03-832-22.2
E	GREGORY DEDTCH	03-832-01.0
F	MARY CATHERINE WALNOHA	03-832-18.0
G	ROBERT BLACKBURN & JAMES BLACKBURN	03-832-21.0
H	KEITH R. FRANCIS	03-831-113.0
I	JOSEPH C. & KRISTIE J. GASVOGA	03-831-112.0
J	JOSEPH C. & KRISTIE J. GASVOGA	03-831-111.0
K	MASLO FARMS, LLC (A PENNSYLVANIA LLC)	03-832-20.0
L	STEVEN S. IVERSON & DEBRA L. IVERSON	03-831-101.0
M	STEVEN S. IVERSON & DEBRA L. IVERSON	03-831-102.1
N	CHERYLL L. STEMPLE	03-831-102.0
O	STEVEN L. THOMAS	03-831-98.0
P	JOHN H. BROWN & KIMBERLY A. NEELEY	03-832-154.0
Q	KEVIN R. & SHIRLEY W. FIBER	03-831-93.0
R	KEVIN R. & SHIRLEY W. FIBER	03-832-153.0
S	NILA BOYD, CLINTON MCCORD, JOHN MCCORD, REBA MCCORD & CAROLYN JONES	03-832-146.0
T	HARLEY J. LEMASTERS	03-832-149.0
U	HARLEY J. LEMASTERS	03-832-150.0
V	MICHAELA TAYLOR	03-837-02.0
W	HARLEY J. LEMASTERS	03-837-01.0
X	LAWRENCE D., JR. & TAMMY LYNN CAMPBELL (L/E LAWRENCE & JUDY CAMPBELL)	03-837-03.0
Y	HARLEY J. & LARRY W. LEMASTERS	03-837-04.0
Z	EDWARD MICHAEL EVANKO, SR.	03-837-05.0
AA	HARLEY J. LEMASTERS	03-837-20.0
AB	MICHAEL MCCLOUD	03-837-18.0
AC	MICHAEL A. MCCLOUD	03-837-17.0
AD	THOMAS & CAROLYN CARBASHO	03-837-16.0
AE	SCHAPPA AND COMPANY, INC	03-837-22.0
AF	JAMES W. & LISA GIBSON	03-837-28.0
AG	AARON J. & KATIE M. GIBSON	03-837-28.1
AH	ROBERT W. & BRENDA L. FONNER	03-837-27.0
AI	ROBERT W. & BRENDA L. FONNER	03-837-26.0
AJ	DEAN S. & KELLI M. MILLER	03-837-25.0
AK	KEVIN N. HUFF (T.O.D.: JOHN W. & HELEN L. HUFF)	03-837-24.0
AL	KEVIN N. HUFF	03-836-28.0
AM	CARLOS J. & BILLIE D. O'BRIEN	03-836-28.0
AN	CARLOS J. & BILLIE D. O'BRIEN	03-836-25.0
AO	KENNETH C. LUCAS	03-836-24.0
AP	ROBERT D. & CAROLYN HILDEBRAND	03-831-86.0
AQ	JAMES J. & GERALDINE LONG	03-831-87.0
AR	PERCY E. & DOROTHY J. HUGGINS	03-831-88.0
AS	MICHAEL S. WALNOHA	03-831-78.0
AT	LONNIE V. BLAKE	03-831-90.0
AU	LONNIE BLAKE	03-831-91.0
AV	LONNIE V. BLAKE	03-831-94.0
AW	ARCHIE VERNON LUDWIG	03-831-95.0
AX	ARCHIE VERNON LUDWIG	03-831-95.0
AY	CORY LARKINS	03-831-105.0
AZ	PAULA FAYE HANCHER & TIMOTHY NALE	03-831-106.0
BA	TIMOTHY L., SR. & JANEY L. NOEL	03-831-107.0
BB	ROGER W. & HEATHER N. DOYLE	03-831-108.0
BC	WILLIAM & BEVERLY LOUGH	03-831-110.0
BD	ANDREW ULLOM & JEFFREY H. LYNN	03-831-142.0
BE	DEBBIE STEWARD	03-831-125.0
BF	HARLEY J. LEMASTERS	03-831-126.0
BG	JAMES W. GRIMM	03-831-127.0
BH	JAMES W. & ROBIN LYNN GRIMM	03-831-128.0
BI	JAMES W. GRIMM	03-831-129.0
BJ	MARION WEEKLY & NANCY GROVES	03-831-130.0
BK	WILLIAM E. TORBETT	03-831-131.0
BL	RAY WALNOHA	03-831-06.0
BM	RAY WALNOHA	03-831-05.0
BN	RAY WALNOHA	03-831-115.0
BO	AUDREY L. HOLDEN	03-831-116.0
BP	BARBARA A. TAYLOR	03-831-117.0
BQ	MATTHEW J. & ELIZABETH PADDEN (MAY N. TOUPS TRUST OF 2013)	03-831-14.0
BR	HFS LIMITED LIABILITY COMPANY	03-831-03.0
BS	CAMPBELL TRANSPORTATION COMPANY, INC	03-827-10.0
BT	HFS LIMITED LIABILITY COMPANY	03-827-12.0
BU	JAMES L. & SONDRA K. ELLIOTT	03-831-121.0
BV	EDWARD MACAK	03-831-120.0

REVISIONS:	COMPANY: <b>SWN</b> Production Company, LLC		<b>SWN</b> <sup>R+V+0</sup> Production Company™	
	OPERATOR'S: EDWARD ZATTA BRK		DATE: 08-22-2019	
	WELL #: 6H		API NO: 47-009-XXXXX	
	DISTRICT: BUFFALO		DRAWN BY: D. REED	
	COUNTY: BROOKE		SCALE: N/A	
	STATE: WV		DRAWING NO: 2019-0789	
	WELL LOCATION PLAT			



4700-003 n 3

Edward Zatta  
BRK 6H

WW-6A1  
(5/13)

Operator's Well No. \_\_\_\_\_

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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
----------------------	-----------------------	-----------------------	---------	-----------

See Exhibit A

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

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

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

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

Well Operator: SWN Production Co., LLC  
 By: \_\_\_\_\_  
 Its: Gary Nuckolls, Staff Landman

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EXHIBIT A

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC, as Operator  
 Edward Zatta BRK 6H  
 Brooke County, West Virginia

Tract	Tax Parcel	Lessor	Lessee	Royalty	Book/Page
1	3-B31-114	Edward C and Susan Zatta	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	11/791 30/480
		Susan Zatta, a married woman	Great Lakes Energy Partners, LLC Range Resources-Appalachia, LLC Chesapeake Appalachia, LLC SWN Production Company, LLC	15.5%	9/868 10/159 10/552 30/480
2	3-B31-119	Susan Zatta	Great Lakes Energy Partners, LLC Range Resources-Appalachia, LLC Chesapeake Appalachia, LLC SWN Production Company, LLC	15.5%	9/868 10/159 10/552 30/480
		Edward C. Zatta and Susan Zatta	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	12/7 30/480
3	3-B31-1	HFS Limited Liability Company	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	15/264 30/480
		SWN Production Company, LLC (Company owned minerals)			396/555
4	State Route 2	RIGHT OF WAY ONLY			
5	3-B27-11	HFS Limited Liability Company	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	15/264 30/480
		SWN Production Company, LLC (Company owned minerals)			396/555
6	3-B31-2	HFS Limited Liability Company	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	15/264 30/480
7	Ohio River	State of West Virginia, Department of Commerce, Division of Natural Resources	SWN Production Company, LLC	20%	See Attached Lease
8	3-B31-4	HFS Limited Liability Company	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	15/394 30/480
9	3-B31-118	Russell Greathouse & Linda Greathouse	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	25/306 30/480
10	3-B31-132	Chad Lizon	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	11/727 30/480
11	3-B31-133	Chad Lizon	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	12/115 30/480
12	3-B31-134	Ronald C. Parks	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	22/592 30/480

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## EXHIBIT A

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC, as Operator  
Edward Zatta BRK 6H  
Brooke County, West Virginia

13	3-B31-135	SWN Production Company, LLC (Company owned minerals)			396/555
14	3-B31-136	Jerry McClelland & Angel McClelland	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	23/236 30/480
15	3-B31-137	Rodger Summers & Connie Summers	Chesapeake Appalachia, LLC SWN Production Company, LLC	14%	24/668 30/480
16	3-B31-138	Thomas Salem & Pauline Salem	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	18/519 30/480
17	3-B31-139	Keith Francis	Range Resources-Appalachia, LLC Chesapeake Appalachia, LLC SWN Production Company, LLC	12.5%	10/286 10/552 30/480
18	3-B31-140	Randolph Clark & Tammy Clark	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	19/68 30/480
19	3-B31-141	Judith K. Anderson	Great Lakes Energy Partners, LLC Range Resources-Appalachia, LLC Chesapeake Appalachia, LLC SWN Production Company, LLC	12.5%	9/879 20/733 10/552 30/480
20	3-B31-104	Harold Starkey & Bonnie Starkey	Range Resources-Appalachia, LLC Chesapeake Appalachia, LLC SWN Production Company, LLC	12.5%	10/295 10/552 30/480
21	3-B31-103	Cheryll Stemple	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	22/211 30/480
22	3-B31-97	Steven Thomas	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	18/118 30/480
23	3-B31-92	Lonnie Blake & Carrie Blake	SWN Production Company, LLC	18%	36/601
24	3-B31-89	Lonnie Blake & Carrie Blake The Smithfield Presbyterian Church The Smithfield Evangelical Friends Church	SWN Production Company, LLC	18%	36/601 18% 42/462 18% 42/457
25	3-B32-152	John Brown & Marilyn Brown	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	17/377 30/480
26	3-B36-39	John Brown & Marilyn Brown	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	17/377 30/480
27	3-B32-151	Kevin Weekley	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	14/184 30/480
28	3-B37-8	John Snyder & Robin Snyder	Chesapeake Appalachia, LLC SWN Production Company, LLC	18%	27/433 30/480
29	3-B37-7	Christine Phillips	SWN Production Company, LLC	18%	37/118
30	3-B37-6	Harley Lemasters & Rebecca Lemasters	SWN Production Company, LLC	18%	13/286
31	3-B37-21	Harley Lemasters & Rebecca Lemasters	SWN Production Company, LLC	18%	13/286

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Tract Area/Acreage:	<u>Ohio River and Cross, Short and Buffalo Creeks – 463.4 acres (MM 74-77)</u>
Well/Tract Name:	<u>Robert Bone BRK 205H, et al</u>
District/County:	<u>Cross Creek and Buffalo Districts, Brooke County; and Richland District, Ohio County</u>
Lease Number:	<u>OG-19-I/05-1960</u>

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**THE STATE OF WEST VIRGINIA OIL AND GAS LEASE**  
**NO SURFACE USE**  
**(4 YEAR PAID UP LEASE)**

---

This Oil and Gas Lease Agreement dated and effective the 4<sup>th</sup> day of November, 2019, by and between the **STATE OF WEST VIRGINIA, DEPARTMENT OF COMMERCE, DIVISION OF NATURAL RESOURCES**, 324 Fourth Avenue, South Charleston, West Virginia, 25303, **Lessor**, and **SWN PRODUCTION COMPANY, LLC**, a Texas limited liability company, 10000 Energy Drive, Spring, Texas 77389, **Lessee**.

UNDER AND PURSUANT TO THE PROVISIONS OF THE CONSTITUTION AND LAWS OF THE STATE OF WEST VIRGINIA RELATING TO LEASING PUBLIC LANDS BELONGING TO THE STATE OF WEST VIRGINIA, **WITNESSETH:**

1. **Grant of Lease.** That for and in consideration of **One Million One Hundred Fifty-Eight Thousand Five Hundred Dollars (\$1,158,500.00)** [being the bonus of Two Thousand Five Hundred Dollars (\$2,500.00) per acre (463.4 acres)] paid by Lessee to Lessor, the receipt of which is hereby acknowledged, the royalties to be paid, and the covenants, obligation, stipulations and conditions to be observed and performed as herein set forth, Lessor does hereby demise, lease and let unto the Lessee the following described tracts or parcels of land for the sole purpose and with the exclusive right of exploring, drilling, completing, operating for, and producing oil, gas and other liquid or gaseous hydrocarbons, including, but not limited to, any and all natural gas liquids such as butane, ethane, isobutane, natural gasolines, pentanes, propane, and similar liquids or byproducts produced in association with the oil or gas (the "Granted Minerals") in or underlying the Leased Premises, situate in Richland District, Ohio County, and Cross Creek District and Buffalo District, Brooke County, West Virginia, and being more particularly described as follows:

**Tract 1:** The minerals underlying that portion of the Ohio River from the ordinary low water mark on each side of the said river, starting at Latitude 40.2710991, Longitude -80.6179962 and ending at Latitude 40.2406006, Longitude -80.6517029, and being a point within Mile Marker 74 to a point within Mile Marker 77, as more fully shown on Exhibit "A" attached hereto, and containing **433 acres**, more or less.

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**Tract 2:** The minerals underlying that portion of Cross Creek from the ordinary low water mark on each side of the said creek, starting at Latitude 40.3073006, Latitude -80.6000977 and ending at Latitude 40.3055992, Longitude -80.5948029, as more fully shown on Exhibit "A" attached hereto, and containing **6.4 acres**, more or less.

**Tract 3:** The minerals underlying that portion of Buffalo Creek from the ordinary low water mark on each side of the said creek, starting at Latitude 40.2644997, Latitude -80.6154022 and ending at Latitude 40.2571983, Longitude -80.5997009, as more fully shown on Exhibit "A" attached hereto, and containing **19 acres**, more or less.

**Tract 4:** The minerals underlying that portion of Short Creek from the ordinary low water mark on each side of the said creek, starting at Latitude 40.1833, Latitude -80.6772995 and ending at Latitude 40.1834984, Longitude -80.6692963, as more fully shown on Exhibit "A" attached hereto, and containing **5 acres**, more or less.

The total Leased Premises (Tracts 1, 2, 3 and 4) being **463.4 acres**, more or less.

Lessor Represents and warrants to Lessee that the West Virginia Division of Natural Resources is the proper agency or instrumentality of the State of West Virginia to enter into this Lease for the purpose of leasing the Granted Minerals and the Leased Premises to Lessee on the terms set forth herein, and that the Director of the West Virginia Division of Natural Resources is vested with the full legal authority and is duly authorized to execute this Lease on behalf of the Lessor and the State of West Virginia.

## **2. Limitations on the Grant of Lease.**

(a) **Surface Activities Prohibited.** This Lease does not include, and specifically prohibits and excludes, the right to enter upon the surface of the lands set out herein, if any, to conduct exploration for drilling, and production and marketing activities of any kind associated with the Granted Minerals, and any other activities by Lessee, its representatives, employees, contractors, agents, and affiliates, including, but not limited to, the construction of pits, impoundments, and/or pipelines or gathering lines on the Leased Premises.

(b) **No Storage.** Lessee may not use the Leased Premises, or any part thereof, for gas, oil, hydrocarbons, or brine storage purposes.

(c) **Use of Surface or Subsurface Water.** Lessee shall not use the surface waters or the groundwaters located within the Leased Premises and shall not diminish or impair the riparian rights, consumptive or non-consumptive water rights or groundwater of the State of West Virginia within or adjoining the Leased Premises, or any private riparian landowner adjoining the Leased Premises within said State.



(d) **Navigational Servitude.** Lessee shall not perform any work, construction, production or other related activities on the bed, banks or shores of the Ohio River and/or any other waterway of the state below the high-water mark thereof. Lessee shall not in any way hinder or impair the navigational servitude of the United States of America or the public rights of navigation or floatage on the Ohio River and/or any other navigable or floatable waterway of the state.

(e) **Reserved Rights of Lessor.** Lessor reserves all rights not granted in this Lease, and specifically excepts all minerals, other than the Granted Minerals, including, but not limited to, geothermal energy, salt, brine, coal and coalbed methane.

3. **Term.** (a) This Lease shall remain in force for a term of **Four (4) years** from the date hereof ("Primary Term"), and as long thereafter as Granted Minerals are produced from the Leased Premises or on acreage pooled therewith, or drilling operations are continued as hereinafter provided.

(b) If, at the expiration of the Primary Term of this Lease, Granted Minerals are not being produced on the Leased Premises or on acreage pooled therewith, but Lessee is then engaged in drilling or re-working operations thereon, then this Lease shall continue in force for so long as operations are being continuously prosecuted on the Leased Premises or on acreage pooled therewith ("Operations"). Operations shall be considered to be continuously prosecuted if not more than One Hundred Twenty (120) consecutive days shall elapse between the completion or abandonment of one well and the beginning of operations for the drilling of a subsequent well.

(c) If, after discovery of Granted Minerals on the Leased Premises or on acreage pooled therewith, the production thereof should cease for any reason after the Primary Term, this Lease shall not terminate if Lessee commences additional drilling or re-working operations within One Hundred Twenty (120) days from the date of cessation of production or from the date of completion of a dry hole.

(d) If Granted Minerals shall be discovered and produced as a result of such operations set out above on or after the expiration of the Primary Term of this Lease, then this Lease shall continue in force and effect for so long as Granted Minerals are produced from the Leased Premises or on acreage pooled therewith.

**4. Facilities Development.**

(a) All development and production activities and facilities shall be constructed on adjoining and/or other lands, and not on the Leased Premises or islands within the Ohio River and other state waterways, except to the extent that horizontal well laterals are located underneath the bed, banks and shores of the same. Such development and production activities and facilities shall be above and outside the high-water mark of the Ohio River and other state waterways.

(b) Notwithstanding any other provision set forth in this Lease Agreement, including without limitation the provisions of paragraph 2 and 4(a) above, this Lease Agreement does not prohibit Lessee, its representatives, employees, contractors, agents and affiliates from constructing and operating an intake to withdraw water pursuant to authorization from a riparian landowner and in compliance with any applicable regulatory requirements.

5. **Unitization.** Lessee may pool, consolidate, or unitize portions of the Leased Premises, as to hydrocarbon bearing geologic formations, in order to constitute a unit for the purpose of exploring for and producing Granted Minerals. The unit shall:

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(a) Be comprised of lands contiguous to the Leased Premises and/or lands in the immediate vicinity of the Leased Premises; and

(b) Not exceed Six Hundred Forty (640) acres: Provided, that the unit may, with the written consent of Lessor, be larger, but no greater than One Thousand Two Hundred and Eighty (1,280) acres, which consent of Lessor shall not be unreasonably withheld, if the unit, in comparison to a unit of Six Hundred Forty (640) acres, shall provide for the greater development of the Granted Minerals in compliance with the diligent development and protection from drainage requirements of this Lease.

Once a unit is formed, the unit may not be reformed, re-pooled, altered, amended or changed in any manner without the prior written consent of Lessor, which consent shall not be unreasonably withheld.

**6. Pugh Clause-Horizontal and Vertical.** As to acreage of the Leased Premises which is not in production in paying quantities and is not included within a properly constituted and publicly recorded production unit at the expiration of the Primary Term, as extended hereunder, this Lease shall automatically terminate, and be of no further force or effect.

Further, and to the extent Lessee has established production in paying quantities beyond the expiration of the Primary Term on the Leased Premises or lands pooled or unitized therewith, the Lease shall terminate, on a production unit-by-production unit basis, as to all depths, formations, horizons and zones lying at least One Hundred (100') feet below the deepest producing formation or horizon on the Leased Premises or any lands pooled therewith, as determined by reference to the deepest producing formation or horizon in each respective production unit.

Thereafter, this Lease shall continue in full force and effect for all depths, formations, horizons and zones lying above the depth of One Hundred (100') feet below the deepest producing formation or horizon of a particular production unit as to all acreage located within that particular production unit.

Upon the drilling and completion of a well within a production unit containing at least a portion of the Leased Premises, Lessee shall file a declaration of pooling and unitization within a reasonable time in the records of the Office of the Clerk of the County Commission of the county in which the applicable Granted Minerals are situated.

**7. Royalty.**

(a) **Delivery and Payment.** Lessee shall pay and deliver or cause to be delivered to the Lessor, or its successors, nominees, agents, or assigns, at no cost to Lessor, a royalty equal to **Twenty Percent (20%) or One-Fifth of Eight Eighths (1/5th of 8/8ths)** of the Gross Proceeds realized by Lessee, or any Affiliate of Lessee, from the sale of the Granted Minerals, produced and sold from the Leased Premises.

i. **Gross Proceeds.** "Gross Proceeds" means the total monies and other consideration accruing to Lessee for the disposition of the Granted Minerals and/or any other marketable by-products, including condensate, produced from the Leased Premises. Gross Proceeds shall be calculated based on the total gross volume of Granted Minerals produced and sold, exclusive of production and post-production costs and severance taxes or other taxes of any nature.

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ii. **Affiliate of Lessee.** "Affiliate of Lessee" means any person, corporation, firm, or other entity in which Lessee, or any parent company, subsidiary or affiliate of Lessee, owns an interest of Five Percent (5%) or more, whether by stock ownership, or otherwise, or over which Lessee, or any parent company of affiliate of Lessee, exercises any degree of control, directly or indirectly, by ownership, interlocking directorate, or in any other manner, and any corporation, firm or other entity which owns any interest in Lessee, whether by stock ownership or otherwise, or which exercises any degree of control directly or indirectly, over Lessee, by stock ownership, interlocking directorate, or any other manner.

(b) **Due Dates of Royalty.** Lessee shall pay Lessor all royalties that become due under this Lease within One Hundred Twenty (120) days after the first day of the month following the month during which a well commences production into a pipeline for sale of such production. Thereafter, all royalties shall be paid to Lessor on or before the last day of the third month following the month of production or within Ninety (90) days after the first day of the month following, whichever is longer.

(c) **Automatic Termination for Non-Payment of Royalty.** If the royalty payments are not paid within the time prescribed in paragraph 7(b) of this Lease, then Lessor will provide Lessee written notice of nonpayment of royalty in accordance with this Lease. If Lessee fails to pay Lessor the royalty due and owing to Lessor within Thirty (30) days from Lessee's receipt of such notice, then this Lease will automatically terminate. Inaccurate royalty payments shall not be governed by the provisions of paragraph 7 of this Lease, but shall be resolved in good faith between Lessor and Lessee in a timely manner.

(d) **Production & Post-Production Costs.** Neither Lessee, nor any Affiliate of Lessee, may reduce Lessor's royalty for any post-production expense, including, but not limited to, pipelines, surface facilities, telemetry, gathering, dehydration, transportation, fractionation, compression, manufacturing, processing, treating, or marketing of the Granted Minerals, or any severance or other taxes of any nature paid on the production thereof. Royalties under this Lease shall be based on the total proceeds of sale of the Granted Minerals, exclusive of any and all production and/or post-production costs.

**8. Method of Payment.** All rents, royalties, bonuses, or other payments accruing and/or owing from Lessee to Lessor under this Lease shall be made or tendered as follows:

- (a) By certified or cashier check delivered in accordance with this Lease; or
- (b) By direct deposit or wire transfer to the credit of Lessor, as provided in writing by Lessor to Lessee by a separate instrument delivered contemporaneously with this Lease.

**9. Information, Metering, Lessor's Rights to Audit.** Upon request, Lessee shall furnish to Lessor copies of title opinions covering the Leased Premises; copies of filings made by Lessee with the Department of Environmental Protection related to the Leased Premises; copies of daily drilling reports, gauge tickets, sales receipts, division orders, or amounts of gross production; copies of gas contracts or any other agreements pursuant to which Lessee will sell, use, transfer, process, or dispose of the Granted Minerals produced from the Leased Premises; and/or any other information related to the production and sales of the Granted Minerals.

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Lessee shall meter gas deriving from the Leased Premises at the wellhead in accordance with West Virginia law. Lessor shall, on an annual basis, upon reasonable prior written notice to Lessee, have the right to audit the books, accounts, contracts, records and data of Lessee pertaining to the development and sale of the Granted Minerals.

**10. Annual Report, Quarterly Royalty Statement.** Lessee shall give Lessor an annual report on production volumes and sales prices on the anniversary date of this Lease, unless otherwise requested by Lessor.

Lessee shall give Lessor a quarterly report, either on the check stub of a royalty payment or on an attachment to or enclosure with a royalty payment, that includes:

- (a) The lease, property, or well names and the well identification numbers on which royalties are being paid;
- (b) The month and year during which the sales occurred for which payment is being made;
- (c) The total production from the well or wells expressed as the number of barrels of oil or the total amount of gas in million cubic feet (MCF) and the volume of any other Granted Minerals, condensate, or other constituents therein which were sold;
- (d) The price per barrel of oil and per MCF of gas sold; and
- (e) The name, address, and telephone number of a contact person where the Lessor may obtain information about royalty payments made by the Lessee hereunder.

**11. Shut-In Royalty.** If a well has been completed that is capable of production in paying quantities and has been temporarily shut-in for lack of a market, then Lessee shall pay Lessor annually, on or before Ninety (90) days of such shut-in event, the sum of One Hundred (\$100.00) Dollars per acre for the first year, and Two Hundred Fifty (\$250.00) Dollars per acre for the year thereafter on the ensuing anniversary.

In no event may Lessee maintain this Lease by payment of shut-in royalties beyond a continuous two-year period. This Lease shall terminate automatically on the first day following the second anniversary date of the initial shut-in royalty payment.

Additionally, in no event may Lessee maintain this Lease by payment of shut-in royalties beyond a cumulative three-year period during which all production of Granted Minerals was shut-in. This Lease shall terminate automatically on the first day following the date that all production of Granted Minerals has been shut-in for a cumulative period of Three (3) years.

**12. Notice of Intent to Drill and Complete.** Lessee shall supply Lessor prior written notice of Lessee's intention to drill at least Fourteen (14) calendar days prior to the spudding of a well associated with producing the Granted Minerals. Lessee shall also supply Lessor with a copy of Lessee's completion report of such well or wells within Thirty (30) days of completion.

**13. Diligence, Duty to Drill Offset Wells.** Lessee shall conduct its drilling operations hereunder utilizing best industry practices in existence at the time of such drilling, and shall otherwise conduct its operations in a good and workmanlike manner as a reasonably prudent operator would under the same or similar circumstances until all drilling and producing operations are completed, or until such time as the final well is plugged and abandoned.

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Additionally, if Granted Minerals are discovered on or in the Leased Premises, the Lessee shall further develop and produce the Leased Premises as a reasonable and prudent operator would and exercise all due diligence in drilling additional well(s) as may be necessary to fully develop the Leased Premises. Lessee shall protect the Granted Minerals in and under the Leased Premises from drainage by wells on adjoining or nearby tracts or lease, including those held by Lessee or any Affiliate of Lessee.

Neither the rentals, royalties, nor any other consideration set forth under this Lease shall relieve Lessee of its obligation to reasonably develop and produce the Leased Premises and to reasonably protect the Granted Minerals in and under the Leased Premises from drainage or other damage.

**14. Waste Prohibited, Damage.** Lessee shall not commit, or cause to be committed, waste, damage, or pollution to the Leased Premises. Lessee shall take all reasonable steps to prevent its Operations from causing or contributing to soil erosion, or to the injury of terraces, grades, embankments, other soil or structures on the Leased Premises. Lessee shall not pollute the surface or subterranean waters of the Leased Premises, or any reservoirs, springs, streams, irrigation ditches, stock ponds or other wells on the Leased Premises. Lessee shall not decrease the fertility of the soil, damage any crops, grasses, timber or pastures on the Leased Premises, and shall not harm or injure any animals, fish or livestock on or in the Leased Premises. Lessee shall not damage any buildings, roads, structures or other improvements on the Leased Premises. Lessee shall preserve the Leased Premises, and upon the termination of this Lease, promptly surrender and return the Leased Premises to the Lessor in the same condition, or substantially similar condition, as the Leased Premises were in prior to Lessee taking possession of the Leased Premises. Lessee shall compensate Lessor, its successors or assigns, for damages caused by Lessee to any being or thing which is the subject of this provision.

**15. Well Plugging.** Before abandoning a well associated with this Lease, Lessee shall securely plug and abandon such well in accordance with the rules and regulations of the West Virginia Department of Environmental Protection, and the laws of the State of West Virginia and any other governmental agency having jurisdiction.

**16. Record Management.** The Lessee shall keep an accurate record of all drilling operations that include the Leased Premises, including, but not limited to the following: a log of each well drilled as duly sworn to by the contractor or driller; original gas sales contracts with amendments; gas balancing agreements and schedules; information concerning litigation, settlement agreements or other agreements relating to sales and pricing of the Granted Minerals.

**17. Ratification.** No instrument executed by Lessor shall be effective to constitute a ratification, renewal, extension or amendment of this Lease unless such instrument is clearly titled to indicate its purpose and intent.

**18. Compliance with Applicable Law.** This Lease shall be subject to the Constitution and laws of the State of West Virginia, and the rules and regulations of the West Virginia Division of Natural Resources and the West Virginia Department of Environmental Protection now or hereafter in force, all of which are made a part and condition of this Lease: Provided, that no law, rule or regulation enacted, passed or made after the execution of this Lease that affects the lease

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term, the royalty rate or payment, or the assignment of Lease, shall operate to alter the terms and conditions of this Lease. Lessee agrees to comply in all respects with the laws, rules and regulations of the State of West Virginia and the United States of America.

**19. Insurance.** A company licensed by the West Virginia Insurance Commission to do business in the state of West Virginia shall underwrite all policies required by this Lease.

Lessee and/or any person or entity acting on Lessee's behalf under this Lease, shall maintain at all times during which this Lease remains in force and effect, workers compensation and employer's liability insurance, commercial general liability and umbrella liability insurance, business, auto and umbrella liability insurance, and environmental liability insurance in the amount of at least Twenty-Five Million Dollars (\$25,000,000.00), combined single limit. The insurance policies, except workers compensation and employer's liability insurance, shall name Lessor as an additional insured with regard to the Leased Premises, and shall reflect that the insurer has waived any right of subrogation against the Lessor.

The policies, declaration pages and certificates of insurance shall be delivered to Lessor within Thirty (30) days of the execution of this Lease, and upon each renewal of said insurance policies.

**20. Bonding.** Within Thirty (30) days of the execution of this Lease, Lessee shall post a surety bond in favor of the Lessor in an amount of Two Hundred Thousand Dollars (\$200,000.00) to secure the payment of all sums due and performance of all obligations arising under this Lease.

**21. Assignment.** The rights and estate of Lessee, or any permitted assignee or transferee of Lessee hereunder, may not be assigned or otherwise transferred, in whole or in part, without the prior written consent of Lessor, which consent shall not be unreasonably withheld.

In the event Lessee proposes to assign or transfer this Lease, the Lessee shall give Lessor written notice of its intent to assign or transfer its interest in the Lease, and shall specify the type of assignment or transfer contemplated, the identity and contact information of the proposed assignee or transferee, and the timeframe of the proposed assignment or transfer ("Transfer Notice").

Upon delivery of a Transfer Notice to the Lessor, Lessor shall have Fifteen (15) days to either: (a) consent to the proposed assignment or transfer by delivering its written consent to Lessee; or (b) in its reasonable discretion, withhold its consent to the proposed assignment or transfer by delivering written notice to Lessee that it is withholding its consent and specifying the reasons therefor.

If Lessor fails to respond to a Transfer Notice within the Fifteen (15) day period, then Lessor shall be deemed to have approved the assignment or transfer outlined in the Transfer Notice, and to have consented to such assignment or transfer in the same manner as if it would have delivered its written consent to Lessee.

**22. Default.** Any of the following shall be deemed a default of this Lease:

(a) Failure of Lessee to timely make royalty payments or any other required payments to Lessor under this Lease.

(b) If a creditor of Lessee, its agents and/or assigns, takes action to execute, garnish or attach Lessee's assets that include the Leased Premises: Provided, that this provision does not impair Lessee's ability to mortgage its interests in the Granted Minerals or the Leased Premises.

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- (c) Failure of the Lessee to obtain any requisite "prior written consent" as set forth in this Lease.
- (d) Failure of Lessee to maintain insurance and be bonded as set forth in this Lease.
- (e) Shut-in of well exceeding the period set forth in this Lease.

**23. Notice of Default or Breach.** If Lessor considers that Lessee has failed to comply with its obligations under this Lease, whether expressed or implied, Lessor shall notify Lessee in writing stating the reasons Lessee has breached this Lease. Lessee shall have Thirty (30) days, after receipt of the notice, to cure the assertions by Lessor. If it is not practical to cure within the Thirty (30) days, then Lessee shall have Thirty (30) more days to commence curing, and shall diligently and continuously pursue to complete such cure.

If Lessee fails or refuses to cure the assertions by Lessor, or fails to respond in a meaningful fashion to Lessor's notice within the timeframes set forth above, or within a longer period of time if Lessee is in good faith continuously effectuating a cure, then this Lease shall automatically cease and terminate.

Upon such termination pursuant to this paragraph, Lessee agrees to:

- (a) Immediately and unconditionally surrender possession of the Leased Premises, or that portion of the Leased Premises included in the notice; and
- (b) Plug and abandon any producing or non-producing well(s).

**24. Remedies for Default or Breach.** Upon Lessee's failure to remedy any alleged breach of this Lease within the applicable cure period, Lessor shall be entitled to recover from Lessee any and all royalties, charges or claims of every kind and nature due, owing and/or arising out of this Lease, and to take immediate possession of the Leased Premises. If Lessor institutes proceedings to clear title or take possession of the Leased Premises, then Lessor shall be entitled to recover from Lessee its reasonable attorney fees, investigation costs, expert fees and any other reasonable costs or expenses related to such proceedings.

**25. Surrender of Lease.** If Lessee is not in default of any obligation due under this Lease, then Lessee may surrender the Leased Premises or any part thereof upon payment of all liabilities then accrued and due. Lessee must provide written notice delivered to Lessor Thirty (30) days prior to the effective date of the surrender. Lessee shall deliver to Lessor a recorded release of the surrendered area describing all depths, formations and horizons in and under the Leased Premises so released.

Lessee may not release any portion of the Leased Premises that is included in a pool or unit on which operations are being conducted.

**26. No Warranty of Title.**

(a) Lessor makes no representation of title or ownership, either expressed or implied, and further makes no warranty as to the actual or potential presence of Granted Minerals. Lessee represents it has performed all necessary due diligence regarding the title or ownership of the Granted Minerals and agrees to be bound by the quantum of acreage as set forth in the Legal Description set out herein.

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(b) Lessee shall notify Lessor of any adverse claim to the Leased Premises affecting title to all or a portion of the rights to develop the Granted Minerals, and Lessor may, with the approval of the Attorney General, enter into an escrow arrangement for the future rents and royalties accruing to such disputed portion of the Leased Premises under terms and conditions that the Attorney General feels proper to safeguard the rights and interest of the State of West Virginia.

(c) If an adverse claimant files suit against the State of West Virginia or against Lessee claiming title to all or a portion of the Granted Minerals, or if Lessee, after receiving notice of an adverse claim, institutes litigation in a court of competent jurisdiction to adjudicate the validity of the claim, the rents and royalties accruing to the litigated portion shall be placed in an escrow account until such time as the ownership of the disputed interest is determined by a court of competent jurisdiction.

(d) If a court of competent jurisdiction determines that Lessor does not have title to all or part of the Granted Minerals in the Leased Premises, the rentals, royalties and bonus thereafter accruing from any part as to which this Lease covers less than the full interest in such Granted Minerals, shall thereafter be paid only in the proportion which the interest therein, if any, covered by this Lease bears to the whole and undivided fee simple estate therein. Any sums of money paid pursuant to this Lease are not reimbursable to Lessee.

**27. Indemnity.** Unless caused by the negligence of Lessor, or any agent, servant, or employee of Lessor, Lessee shall defend, indemnify, protect and hold harmless Lessor and Lessor's heirs, successors, representatives, agents and/or assigns from and against any and all claims, demands, causes of action, liability, loss, damage or expense of any and every kind and nature, including without limitation costs, expenses, and attorneys' fees, for injury and death, or damage to persons or property, environmental damage to the surface, waterways, or subsurface estates of any person, firm, corporation or other entity arising out of, incidental to, or resulting from: (a) the operations or activities of Lessee or Lessee's servants, agents, employees, guests, licensees, invitees or independent contractors on or in the Leased Premises; (b) the exercise of any right granted under this Lease, and/or; (c) any obligations imposed under this Lease.

Any successor in interest of any rights of Lessee in this Lease shall likewise be obligated to defend and indemnify Lessor and Lessor's heirs, successors, representatives, agents and assigns in the same manner as the original Lessee.

**28. Limitations on Drilling.** From and after the effective date of this Lease, Lessee shall not commence construction of any new well pad that is intended to produce the Granted Minerals from the Leased Premises if such well pad would be located within Five Hundred Fifty feet (550') of any outside boundary of the tracts comprising the Leased Premises measured linearly from any point along said tract boundary to the midpoint of the secondary containment berm of a particular well pad.

Lessor and Lessee agree that the limitation on well pad construction and/or location set forth in this paragraph is intended to reduce any long-term, substantial interference with the public's use of the Leased Premises as it exists on the date of the Lease. Further, if Lessor determines, in its reasonable discretion after conducting a proper investigation, that the drilling activities of Lessee related to the production of the Granted Minerals from the Leased Premises have created a long-term, substantial interference with the public's use of the Leased Premises as aforesaid, then Lessor shall have the right to seek from Lessee additional measures or controls to mitigate such long-term substantial impairment caused by Lessee's drilling activities.

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29. **Force Majeure.** If Lessee is prevented from complying with its obligations under this Lease, either expressed or implied, except payment of money, due to scarcity of or inability to obtain or use equipment or material, or by operations of Force Majeure, or any federal or state law, or any order, rule or regulation, then, while so prevented, Lessee's obligation to comply with this Lease shall be temporarily suspended, and Lessee shall not be liable in damages. This Lease shall be extended only so long as Lessee is prevented by any such cause from conducting operations on or in the Leased Premises: Provided, that in no event shall Lessee's performance be suspended as a result of Force Majeure, federal or state law, or any rule or regulation for a period in excess of two (2) consecutive years.

As used herein, "Force Majeure" means an act of god such as flood, fire, adverse weather conditions, war, sabotage, rebellion, insurrection, riot, strike or labor disputes, or such other causes not within Lessee's control. "Force Majeure" shall specifically exclude scarcity, cost or inability to obtain or use equipment, contracts, personnel, water or other materials.

30. **Further Assurances.** Each of the parties hereto shall, and shall cause its respective affiliates to, from time to time at the request of the other party, without any additional consideration, furnish the other party such further information or assurances, execute and deliver such additional documents, instruments and conveyances, and take such other actions and do such other things, as may be reasonably necessary in the opinion of counsel to the requesting party to carry out the provisions of this Lease.

In the event that Lessor is not the proper agency or instrumentality of the State of West Virginia to enter into this Lease, then Lessor shall cause all of the proper agencies or instrumentalities of the State of West Virginia, without any additional consideration, to join in this Lease, as Lessor, upon the same terms provided herein.

31. **Governing Law.** This Lease shall be governed by the laws of the State of West Virginia and any dispute arising out of this Lease shall be resolved in a West Virginia court of law having jurisdiction thereof.

32. **Notices and Payments.** All notices and payments which are permitted or required under this Lease shall be in writing and shall be deemed valid and received if delivered personally, or by registered or certified mail, return receipt requested, or by special carrier with signature required, to the Lessor and/or Lessee at the following addresses, unless otherwise agreed by the parties in a signed writing:

(a) **To Lessor:**  
West Virginia Division of Natural Resources  
Attn: Office of Land and Streams  
324 Fourth Avenue, Room 200  
South Charleston, West Virginia 25303

(b) **To Lessee:**  
SWN Production Company, LLC  
10000 Energy Drive  
Spring, Texas 77389

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33. **Successors in Interest.** The Terms, conditions, covenants, obligations, considerations, or requirements of this Lease shall extend to and be binding upon the parties hereto, their heirs, successors, executors, administrators, and assigns, all of whom shall be jointly and severally liable.

34. **Severability.** Should any one or more of the provisions in this Lease become or be determined to be void or invalid, in whole or in part, the remainder of this Lease shall remain in full force and effect.

35. **Counterparts.** This Lease may be executed in any number of counterparts, and by different parties in separate counterparts, all of which shall be identical. Each such counterpart shall be deemed to be an original instrument, but all such counterparts together shall constitute one instrument.

WITNESS the following signatures and seals:

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STATE OF WEST VIRGINIA  
DEPARTMENT OF COMMERCE  
DIVISION OF NATURAL RESOURCES

By: [Signature]  
Director

STATE OF WEST VIRGINIA  
COUNTY OF <sup>Tucker</sup> ~~KANAWHA~~, To-wit:

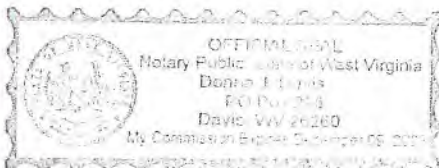
I, Donna J Davis, a Notary Public in and for said County and State, do hereby certify that Stephen S. McDaniel, Director, who signed the writing hereto annexed, for the State of West Virginia, Department of Commerce, Division of Natural Resources, bearing date the 22<sup>nd</sup> day of November, 2019, has this day acknowledged the same before me in my said county to be the act and deed of said Division.

Given under my hand this 22 day of November, 2019.

My commission expires Dec 09, 2023.

[Seal]

[Signature]  
Notary Public





SWN PRODUCTION COMPANY, LLC

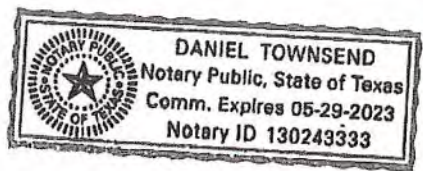
By: [Signature]  
Brett Massad  
Land Director GN  
p.w.b

STATE OF Texas  
COUNTY OF Harris, To-Wit:

I, Daniel Townsend, a Notary Public in and for said County and State,  
do hereby certify that Brett Massad, its Land Director,  
who signed the writing hereto annexed, for SWN PRODUCTION COMPANY, LLC, bearing date  
the 4th day of November, 2019, has this day acknowledged the same before  
me in my said county to be the act and deed of said Company.

Given under my hand this 4th day of November, 2019.  
My commission expires May 29, 2023.

[Seal]



[Signature]  
Notary Public

Approved as to form this 21st day of  
November, 2019.

Patrick Morrissey, Attorney General  
By: [Signature]

Prepared by: Office of Land & Streams  
Division of Natural Resources  
324 Fourth Avenue, Room 200  
South Charleston, WV 25303

Using a form prepared by:  
Larry W. George, Esq.  
Special Assistant Attorney General  
West Virginia Department of Commerce

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Exhibit A

Ohio River And Navigable Creek Leasing

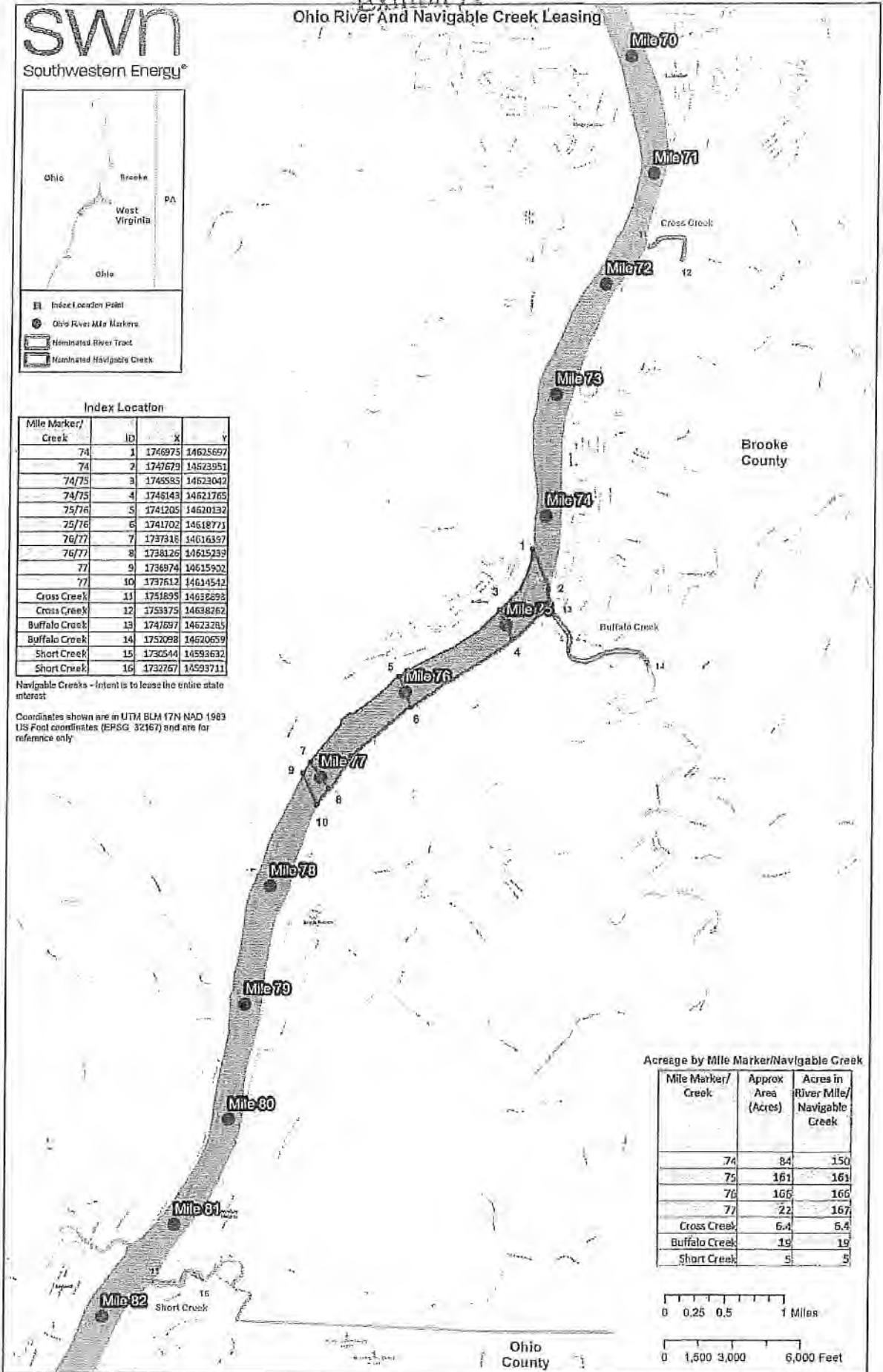


Index Location

Mile Marker/ Creek	ID	X	Y
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74/75	3	1746585	14623042
74/75	4	1746143	14621765
75/76	5	1741205	14620132
75/76	6	1741702	14618771
76/77	7	1737318	14616397
76/77	8	1738126	14615239
77	9	1736974	14615902
77	10	1737612	14614542
Cross Creek	11	1751895	14636598
Cross Creek	12	1753375	14638262
Buffalo Creek	13	1747697	14623285
Buffalo Creek	14	1752098	14620659
Short Creek	15	1730544	14593632
Short Creek	16	1732767	14593711

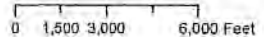
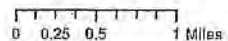
Navigable Creeks - Intent is to lease the entire state interest

Coordinates shown are in UTM BLN 17N NAD 1983 US Foot coordinates (EPSG: 32167) and are for reference only



Acres by Mile Marker/Navigable Creek

Mile Marker/ Creek	Approx Area (Acres)	Acres in River Mile/ Navigable Creek
74	84	150
75	161	161
76	166	166
77	22	167
Cross Creek	6.4	5.4
Buffalo Creek	19	19
Short Creek	5	5



December 16, 2019

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

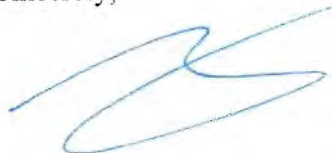
**RE:** SWN's proposed well: Edward Zatta BRK 6H & Edward Zatta BRK 8H in Brooke County, West Virginia, Drilling under WV-2, Coss Road, Green Run Road, and McCord Hill Road.

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 WV-2, Coss Road, Green Run Road, and McCord Hill 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

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Environmental Protection



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





**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>1300 Fort Pierpont Dr., Suite 201</u>
By:	<u>Brittany Woody</u>		<u>Morgantown, WV 26508</u>
Its:	<u>Senior 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 27<sup>th</sup> day of June, 2019  
Jessica L. VanSilder Notary Public  
 My Commission Expires 7-20-20

**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:** 12/14/19 **Date Permit Application Filed:** 12/14/19

**Notice of:**

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

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

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

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

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

SURFACE OWNER(s)  
 Name: Coss Road Farm, LLC  
 Address: 218 Charles Street  
Wellsburg, WV 26070  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

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

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

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

SURFACE OWNER(s) (Impoundments or Pits)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

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

\*Please attach additional forms if necessary



1700 00305

ATTACHMENT 13

PARID	NAME ALL	OWNER ADDR	CITY	STATE	ZIP	WATER SOURCES
03 B31011400000000	COSS ROAD FARM LLC	218 CHARLES ST	WELLSBURG	WV	26070	2

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Environmental Protection

**Notice is hereby given:**

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

**This Notice Shall Include:**

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

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

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

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

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

**Well Location Restrictions**

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

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

**Water Well Testing:**

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

**Water Testing Laboratories:**

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

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

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

**Written Comment:**

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

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

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

WV Department of  
Environmental Protection



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

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

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

**Comment Requirements**

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

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

**Permit Denial or Condition**

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

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

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

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

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WW-6A  
(8-13)

API NO. 47-009 - 1700-003-3  
OPERATOR WELL NO. Edward Zatta BRK 6H  
Well Pad Name: Edward Zatta BRK

**Notice is hereby given by:**

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

*Brittany Woody*

Address: 1300 Fort Pierpont Dr., Suite 201  
Morgantown, WV 26508  
Facsimile: 304-884-1690

**Oil and Gas Privacy Notice:**

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



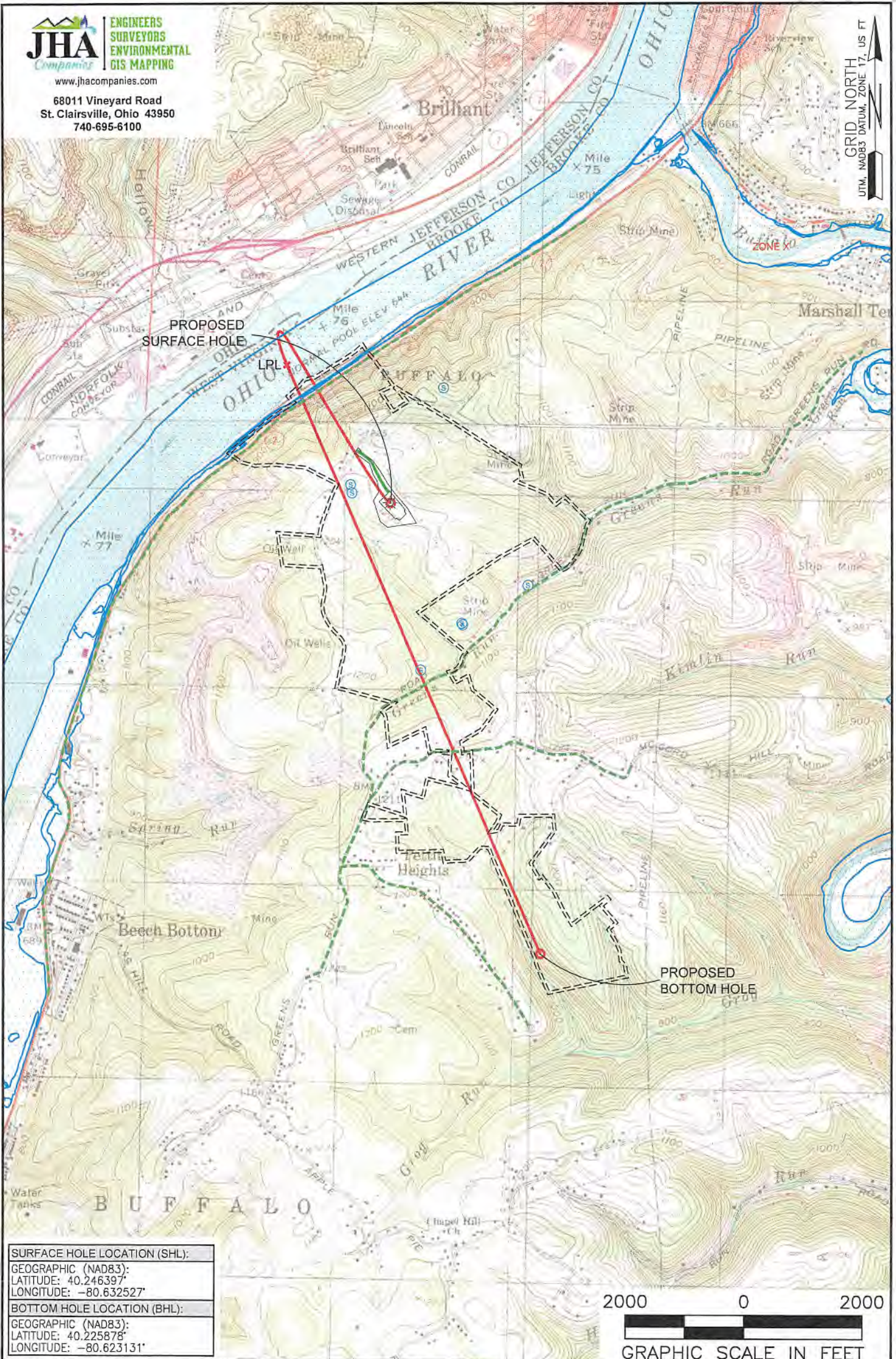
Subscribed and sworn before me this 27th day of June, 2019.  
Jessica L. Vangilder Notary Public  
My Commission Expires 7-20-20

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<b>SURFACE HOLE LOCATION (SHL):</b>
GEOGRAPHIC (NAD83):
LATITUDE: 40.246397°
LONGITUDE: -80.632527°
<b>BOTTOM HOLE LOCATION (BHL):</b>
GEOGRAPHIC (NAD83):
LATITUDE: 40.225876°
LONGITUDE: -80.623131°

**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\* LANDING POINT LOCATION
- FLOOD PLAIN
- NATURAL WATERWAY
- ACCESS ROAD
- PUBLIC ROAD
- ACCESS ROAD TO PREV. SITE
- LEASE BOUNDARY
- PROPOSED PATH

<b>WELL OPERATOR:</b> SWN PRODUCTION COMPANY, LLC		<b>WELL (FARM) NAME:</b> EDWARD ZATTA BRK		<b>WELL #</b> 6H	<b>SERIAL #</b> XXXX
<b>ADDRESS:</b> 1300 FORT PIERPONT DRIVE, SUITE 201, MORGANTOWN, WV 26508		<b>COUNTY:</b> BROOKE	<b>CODE:</b> 009	<b>DISTRICT:</b> BUFFALO	<b>API #</b> 47-009-XXXX
<b>SURFACE OWNER:</b> COSS ROAD FARM, LLC		<b>USGS 7 1/2 QUADRANGLE MAP NAME:</b> TILTONSVILLE, OH & BETHANY, WV			



**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:** 6/3/2019      **Date of Planned Entry:** 6/10/2019

**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: Edward C. Zatta, ETAL  
Address: 218 Charles Street  
Wellsburg, WV 26070

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

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

COAL OWNER OR LESSEE

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

MINERAL OWNER(s)

Name: My Three Sons Holdings, LP  
Address: 218 Charles Street  
Wellsburg, WV 26070

\*please attach additional forms if necessary

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WV Department of  
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**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>WV</u>	Approx. Latitude & Longitude: <u>40.246315, -80.632418</u>
County: <u>Brooke</u>	Public Road Access: <u>Coss Road</u>
District: <u>Buffalo</u>	Watershed: <u>Lower Buffalo Creek</u>
Quadrangle: <u>Tiltonsville</u>	Generally used farm name: <u>Edward Zatta</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: Brittany\_Woody@swn.com

Address: 1300 Fort Pierpont Dr., Suite 201  
Morgantown, WV 26508  
Facsimile: 304-884-1690

**Oil and Gas Privacy Notice:**

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



**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:** 07/02/2019      **Date Permit Application Filed:** 12/18/2019

**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: C/O Leatherwood, Inc. - ATTN: Casey Saunders  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

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

ENVIRONMENTAL PROTECTION  
WV DEPARTMENT OF  
DEC 18 2019

**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>531,254.40</u>
County:	<u>Brooke</u>		Northing:	<u>4,455,170.18</u>
District:	<u>Buffalo</u>	Public Road Access:		<u>Coss Road</u>
Quadrangle:	<u>Tiltonville, OH/ Bethany, WV</u>	Generally used farm name:		<u>Edward Zatta BRK</u>
Watershed:	<u>Upper Ohio South</u>			

OFFICE OF OIL AND GAS  
RECEIVED

**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: 1300 Fort Pierpont Dr., Suite 201  
Morgantown, WV 26508  
Telephone: 304-517-6603  
Email: Michael\_Yates@swn.com  
Facsimile: 304-884-1691

Authorized Representative: Mike Yates  
Address: 1300 Fort Pierpont Dr., Suite 201  
Morgantown, WV 26508  
Telephone: 304-517-6603  
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](mailto: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:** 07/02/2019      **Date Permit Application Filed:** 12/18/19

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

- CERTIFIED MAIL                                       HAND
- RETURN RECEIPT REQUESTED                                      DELIVERY

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

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

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

Name: C/O Leatherwood, Inc. - ATTN: Casey Saunders  
Address: 1000 Consol Energy Drive  
Canonsburg, PA15317

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>531,254.40</u>
County: <u>Brooke</u>		Northing: <u>4,455,170.18</u>
District: <u>Buffalo</u>	Public Road Access: <u>Coss Road</u>	
Quadrangle: <u>Tiltontsville, OH/Bethany, WV</u>	Generally used farm name: <u>Edward Zatta BRK</u>	
Watershed: <u>Upper Ohio South</u>		

**This Notice Shall Include:**

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

Well Operator: SWN Production Company, LLC  
Telephone: 304-517-6603  
Email: Michael\_Yates@swn.com

Address: 1300 Fort Pierpont Dr., Suite 201  
Morgantown, WV 26508  
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](mailto:depprivacyofficer@wv.gov).

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Office of Oil and Gas  
DEC 18 2019  
WV Department of  
Environmental Protection



**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:** 07/01/2019      **Date Permit Application Filed:** 12/11/19

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

- |  |                               |
|--|-------------------------------|
| <input checked="" type="checkbox"/> CERTIFIED MAIL | <input type="checkbox"/> 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: Coss Road Farm, LLC  
Address: 218 Charles St.  
Wellsburg, WV 26070

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>531,254.40</u>
County: <u>Brooke</u>		Northing: <u>4,455,170.18</u>
District: <u>Buffalo</u>	Public Road Access: <u>Coss Road</u>	
Quadrangle: <u>Tiltonsville, OH/Bethany, WV</u>	Generally used farm name: <u>Edward Zalta BRK</u>	
Watershed: <u>Upper Ohio South</u>		

**This Notice Shall Include:**

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

Well Operator: SWN Production Company, LLC  
Telephone: 304-517-6803  
Email: Michael\_Yates@swn.com

Address: 1300 Fort Pierpont Dr., Suite 201  
Morgantown, WV 26508  
Facsimile: 304-884-1691

**Oil and Gas Privacy Notice:**

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DEC 18 2019  
WV Department of  
Environmental Protection



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

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

Byrd E. White, III  
Secretary of Transportation

August 19, 2019

Jimmy Wriston, P. E.  
Deputy Secretary/  
Acting 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 Edward Zatta Pad, Brooke County  
Edward Zatta BRK 6H Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2011-0599 issued to Southwestern Energy for access to the State Road for a well site located off Brooke County Route 67/7 SLS.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE 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 October 1, 2018.

RECEIVED  
Office of Oil and Gas

DEC 18 2019

WV Department of  
Environmental Protection

Very Truly Yours,

Gary K. Clayton, P.E.  
Regional Maintenance Engineer  
Central Office O&G Coordinator

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



## Attachment VI Frac Additives

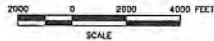
Product Name	Product Use	Chemical Name	CAS Number
AI-303 (U.S. Well Services)	Mixture	Ethylene glycol	107-21-1
		Cinnamaldehyde	104-55-2
		Butyl cellosolve	111-76-2
		Formic acid	64-18-6
		Polyether	Proprietary
		Acetophenone, thiourea, formaldehyde polymer	68527-49-1
AP ONE (U.S. Well Services)	Breaker	Ammonium persulfate	7727-54-0
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
CarboNRT	Tracer	Ceramic Proppant	66402-68-4
EC6486A (Nalco Champion)	Scale Inhibitor	Amine Triphosphate	Proprietary
		Ethylene Glycol	107-21-1
EC6734A (Champion Technologies)	Biocide	Hydrogen Peroxide	7722-84-1
		Acetic Acid	64-19-7
		Peroxyacetic Acid	79-21-0
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
FDP-S1176-15 (Halliburton)	Friction Reducer	Polyacrylate	Proprietary
		Hydrotreated light petroleum distillate	64742-47-8
FLOJET DR900 LPP (SWN Well Services)	Friction Reducer	Distillates (petroleum) hydrotreated light	64674-47-8
		Ethylene Glycol	107-21-1
		Alcohols, C12-16, Exoalkylated propoxylated	68213-24-1
		Fatty Alcohols ethoxylated	Proprietary
		Water	7732-18-5
FLOJET DRP 1130X (SWN Well Services)	Friction Reducer	Proprietary	Proprietary
FR-76 (Halliburton)	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8
		Inorganic Salt	Proprietary
GYPTRON T-390 (Champion Technologies)	Scale Inhibitor	Methanol	67-56-1
		Nonylphenol Ethoxylate	Proprietary
HAI-150E (Halliburton)	Corrosion Inhibitor	No hazardous substance	N/A
HCL (SWN Well Services)	Hydrochloric Acid	Hydrochloric Acid	7647-01-0
		Water	7732-18-5
LP-65 MC (Halliburton)	Scale Inhibitor	Organic phosphonate	Proprietary
		Ammonium Chloride	12125-02-9
OPTI-FLEX (U.S. Well Services)	Viscosifying Agent	Distillates, petroleum, hydrotreated light	64742-47-8
Plexslick 930	Friction Reducer	Copolymer of 2-propenamide	Proprietary
		Hydrotreated Distillate	64742-47-8
		Sodium Chloride	7647-14-5
		Alcohols, C12-16, Exoalkylated	68551-12-2
		Oleic Acid Diethanolamide	93-83-4
		Ammonium Chloride	12125-02-9
Plexslick 953	Friction Reducer	Petroleum Distillate	64742-47-8
		Sodium Chloride	7647-14-5
		Ammonium Chloride	12125-02-9
		N,N-bis (2-hydroxyethyl) oleamide	93-83-4
Plexslick 957	Friction Reducer	Petroleum Distillate	64742-47-8
		Ammonium Chloride	12125-02-9
		Oleic Acid Diethanolamide	93-83-4
		Alcohols, C12-16, Exoalkylated	68551-12-2
		Water	7732-15-5
WFRA-2000 (U.S. Well Services)	Anionic Friction Reducer	Hydrotreated light distillate (petroleum)	64742-47-8
		Propenoic acid, polymer with propenamide	9003-06-9
Plexaid 655 NM	Scale Inhibitor	Diethylenetriamine penta (methylene phosphonic acid)	15827-30-8
Plexslick 922	no data available	Copolymer of 2-propenamide	69418-26-4
		Distillates (petroleum), hydrotreated light	64742-47-8
		Ammonium chloride ((NH4)Cl)	12125-02-9
		Oleic Acid Diethanolamide	93-83-4
Tolcide PS50A	Biocidal product	Tetrakis (hydroxymethyl) phosphonium sulphate	55566-30-8
		Acrylic acid terpolymer containing carboxylate phosphonate and sulfonate groups	397256-50-7

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Office of Oil and Gas  
DEC 18 2019  
WV Department of  
Environmental Protection





USGS 7.5 TILTONVILLE/ BETHANY QUAD MAPS



**LOCATION COORDINATES:**

ACCESS ROAD ENTRANCE  
 LATITUDE: 40.248784 LONGITUDE: -80.534612 (NAD-83)  
 N 4455435.5 E 531076.0 (UTM ZONE 17 METERS)

WELL PAD CENTER  
 LATITUDE: 40.246295 LONGITUDE: -80.532386 (NAD-83)  
 N 4455159.9 E 531265.4 (UTM ZONE 17 METERS)

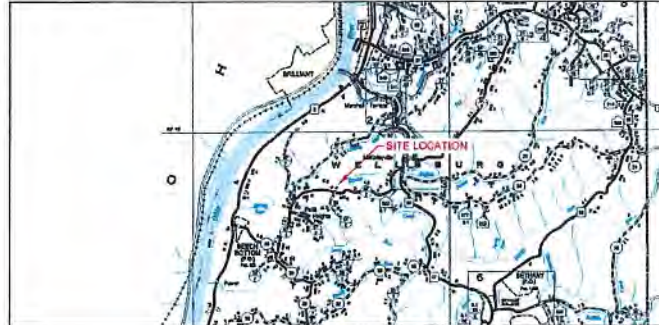
**NOTES:**

1. THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE DISTURBED AREA AS OF JULY 24, 2019. LARSON DESIGN GROUP IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATE.
2. PROPERTY INFORMATION SHOWN HEREON WAS PROVIDED BY SOUTHWESTERN ENERGY AND MAY NOT REFLECT CURRENT BOUNDARY LOCATION.

TOTAL DISTURBED AREA: 12.0 ACRES  
 ROAD DISTURBED AREA: 2.2 ACRES  
 PAD DISTURBED AREA: 9.8 ACRES

# EDWARD ZATTA BRK WELL PAD CONSTRUCTION AS-BUILT & RECLAMATION PLAN

BUFFALO DISTRICT, BROOKE COUNTY, WV  
 AUGUST 2017



WEST VIRGINIA DIVISION OF HIGHWAYS COUNTY ROAD MAP



WELL NAMES	WV NORTH NAD 83	WV NORTH NAD 83	UTM (METERS) ZONE 17	ROAD #3 LAT & LONG	ELEVATION (FEET)
AS-BUILT COORDINATES					
EDWARD ZATTA BRK BRK (NO) (DRILED) ANY 41-000-00116	N 435039.01 E 1403779.34	N 630176.01 E 1402344.43	N 4405179.52 E 531049.80	LAT 40.248784 LONG -80.534612	1218.10'
EDWARD ZATTA BRK 106 (DRILED) ANY 41-000-00116	N 435075.42 E 1403788.10	N 630112.47 E 1402353.19	N 4405172.43 E 531052.34	LAT 40.246295 LONG -80.532386	1217.80'

**SHEET INDEX**

- 1 COVER SHEET
- 2-3 EVACUATION ROUTE/PREVALING WINDS
- 4 AS-BUILT OVERALL PLAN SHEET INDEX
- 5 ACCESS ROAD AS-BUILT PLAN
- 6 WELL PAD AS-BUILT PLAN
- 7 ACCESS ROAD AS-BUILT PROFILE
- 8 WELL PAD AS-BUILT PROFILE
- 9 AS-BUILT RECLAMATION PLAN OVERALL PLAN SHEET INDEX
- 10 AS-BUILT ACCESS ROAD RECLAMATION PLAN
- 11 AS-BUILT WELL PAD RECLAMATION PLAN
- 12 GENERAL NOTES AND DETAILS
- 13-14 DETAILS

**WVDEP OOG  
 ACCEPTED AS-BUILT**  
*WJL* 1/24/2020

**ENGINEERING ESTIMATE OF QUANTITIES**

WELL SITE PAD DATA (DRILLING)		
INSTALL MOUNTABLE BERM	33	CY
18" COMPOST SOCK	315	LF
INSTALL SUMPS	2	EA
RIP-RAP AT SUMP DISCHARGE	16	CY
SEED AND MULCH DISTURBED AREAS	150	SY
STONE FOR PAD SURFACE		
REPAIR AND MOUNTABLE BERM STONE SURFACING	37	CY
WELL SITE PAD DATA (RECLAMATION)		
REMOVE SUMP	2	EA
BREACH BERM	2	EA
10' WIDE RIP-RAP DISCHARGE APRON	35	CY

*C. Hall 8.21.19*



WEST VIRGINIA COUNTY MAP  
 NOT TO SCALE

**AS-BUILT CERTIFICATION**

THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS CSR 35-8.



MISS Utility of West Virginia  
 1-800-245-4848  
 West Virginia State Law  
 (Section XIV, Chapter 24-C)  
 Requires that you call two  
 business days before you dig in  
 the state of West Virginia.  
 IT'S THE LAW!



ORIGINAL SHEET SIZE:  
 ANSI FULL BLEED D  
 (22.00 x 34.00 INCHES)  
 SHEET NO.:  
 1 OF 14  
 PROJECT NO.:  
 7688-016-004



NO.	DATE	BY	CHK	REVISIONS
1	10/5/2017			FINAL AS-BUILT PLAN
2	9/7/2017			DRAFT AS-BUILT PLAN
				COMMENTS
				ISSUE / REVISIONS

**EDWARD ZATTA BRK WELL PAD**  
 BUFFALO DISTRICT, BROOKE COUNTY, WEST VIRGINIA

Larson Design Group • Licensed Engineers Surveyors  
 2502 Cranberry Square  
 Morgantown, WV 26508  
 PHONE 304-777-2940 TOLL FREE 877-323-6803  
 FAX 370-323-9902 • www.larsondesigngroup.com

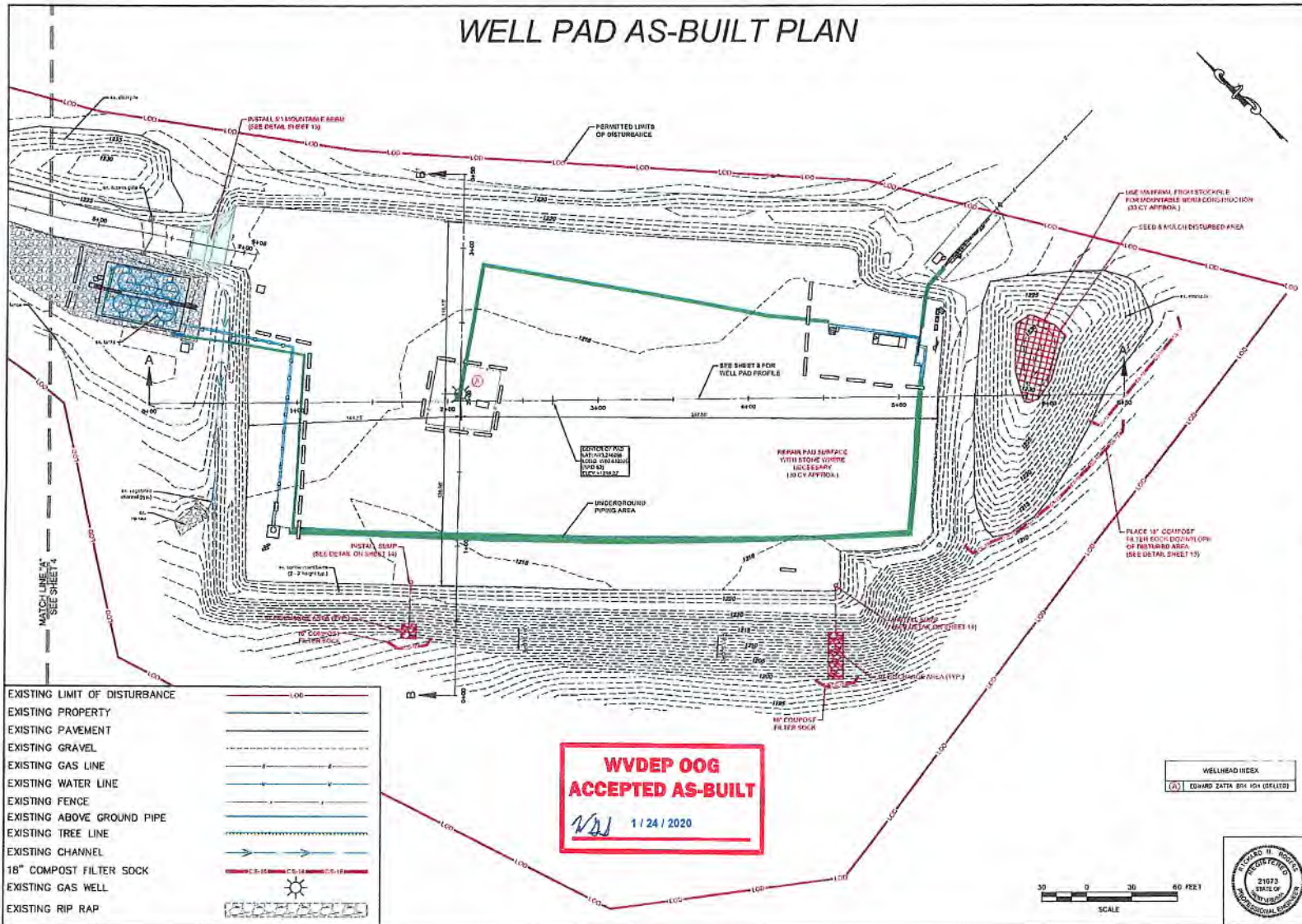
SWN Production Company, LLC  
 179 Innovation Drive  
 Jane Lee, WV 26378  
 PHONE 304-884-1622



# WELL PAD AS-BUILT PLAN



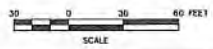
Larson Design Group



EXISTING LIMIT OF DISTURBANCE	---
EXISTING PROPERTY	---
EXISTING PAVEMENT	---
EXISTING GRAVEL	---
EXISTING GAS LINE	---
EXISTING WATER LINE	---
EXISTING FENCE	---
EXISTING ABOVE GROUND PIPE	---
EXISTING TREE LINE	---
EXISTING CHANNEL	---
18" COMPOST FILTER SOCK	---
EXISTING GAS WELL	---
EXISTING RIP RAP	---

**WVDEP OOG  
ACCEPTED AS-BUILT**  
*WJ* 1/24/2020

WELLHEAD INDEX
(25) EDWARD ZATTA BRK 101 (DELETED)



NO.	DATE	ISSUE / REVISIONS
1	10/29/2017	FINAL AS-BUILT PLAN
2	8/1/2017	DRAFT AS-BUILT PLAN
		COMMENTS
		BY

**WELL PAD AS-BUILT PLAN**  
**EDWARD ZATTA BRK WELL PAD**  
 BUFFALO DISTRICT, BROCKTON COUNTY, WEST VIRGINIA  
 Larson Design Group • Architects Engineers Surveyors  
 2502 Crocker Street  
 Morgantown, WV 26506  
 PHONE 304.777.2840 TOLL FREE 877.323.6903  
 FAX 570.323.9902 • www.larsondesigngroup.com

SWN Production Company, LLC  
 178 Innovation Drive  
 Jane Lew, WV 26378  
 PHONE 304.884.1822

ORIGINAL SHEET SIZE:  
 ANSI FULL BLEED D  
 (22.00 X 34.00 INCHES)  
 SHEET NO.:  
**6 OF 14**  
 PROJECT NO.:  
 7688-016-004