



west virginia department of environmental protection

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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Thursday, May 13, 2021
WELL WORK PERMIT
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359
SPRING, TX 773914954

Re: Permit approval for BETTY SCHAFER MSH 405H
47-051-02383-00-00

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.

A blue ink signature of James A. Martin.

James A. Martin
Chief

Operator's Well Number: BETTY SCHAFER MSH 405H
Farm Name: ROY A. SCHAFER JR. & EDVA
U.S. WELL NUMBER: 47-051-02383-00-00
Horizontal 6A New Drill
Date Issued: 5/13/2021

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.

4705102383

API Number: _____

PERMIT CONDITIONS

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

05/14/2021

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 051-Marshall Sand Hill Moundsville
Operator ID County District Quadrangle

2) Operator's Well Number: Betty Schafer MSH 405H Well Pad Name: Betty Schafer MSH Pad

3) Farm Name/Surface Owner: Roy A. Schafer & Edward J. Schafer Public Road Access: Big Wheeling Creek

4) Elevation, current ground: 848.3' Elevation, proposed post-construction: 848.3'

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

(b) If Gas Shallow Deep _____
Horizontal

6) Existing Pad: Yes or No Yes *Bang Stillip 3-30-21*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus, Up-Dip well to the North, Target Top TVD- 5998', Target Base TVD- 6041', Anticipated Thickness- 43', Associated Pressure- 3927'

8) Proposed Total Vertical Depth: 6023'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 20794'

11) Proposed Horizontal Leg Length: 13,167.01'

12) Approximate Fresh Water Strata Depths: 281'

13) Method to Determine Fresh Water Depths: Salinity calculations from Betty Schafer MSH 210H (API 47-051-01777)

14) Approximate Saltwater Depths: 803' Salinity Profile

15) Approximate Coal Seam Depths: 353'

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

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

(a) If Yes, provide Mine Info: Name: Ohio County Mine
Depth: 353'
Seam: Pittsburgh
Owner: American Consolidated Natural Resources

RECEIVED
Office of Oil and Gas
APR 06 2021

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	J-55	94#	126'	126'	CTS
Fresh Water	13 3/8"	New	H-40	48#	351'	351'	355 sx/CTS
Coal	See	Surface	Casing				
Intermediate	9 5/8"	New	J-55	36#	1710'	1710'	795 sx/CTS
Production	5 1/2"	New	P-110 HP	20#	20794'	20794'	Tall 3916sx/ 100' Inside Intermediate
Tubing							
Liners							

Bay Stiles 3-30-21

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	81	Class A	1.20/30% Excess
Fresh Water	13 3/8"	17.5"	0.380	2730	633	Class A	1.20/30% Excess
Coal	See	Surface	Casing				
Intermediate	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/40% Excess
Production	5 1/2"	8 3/4"-8 1/2"	0.361	14360	10500	Class A	1.19/5% Excess
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

WW-6B
(10/14)

API NO. 47- 051 -
OPERATOR WELL NO. Betty Schafer MSH 405H
Well Pad Name: Betty Schafer MSH Pad

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

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

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

Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. In some instances, additional toe prep may be performed by pumping additional water in the toe of the well prior to perforating and pumping Stage 1 to ensure that the toe guns/toe sleeves are fully open prior to pumping stage 1. The well is produced through surface facilities consisting of high pressure production units, 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): 7.82

22) Area to be disturbed for well pad only, less access road (acres): 2.99

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.

RECEIVED
Office of Oil and Gas

APR 06 2021

*Note: Attach additional sheets as needed.

4705102383

CEMENT ADDITIVES

INTERVAL	SCHLUMBERGER PRODUCT NAME	BJ PRODUCT NAME	NEXTIER PRODUCT NAME	PRODUCT USE	CHEMICAL NAME	CAS-Number
SURFACE (FRESHWATER) <i>up to 3%</i>	XXXXXXXXXX	INTEGRA SEAL	CJ600	LOST CIRC MATERIAL	CELLOPHANE FLAKES	9005-81-6
	S001	A-7P	CJ110	ACCELERATOR	CALCIUM CHLORIDE	10043-52-4
COAL PROTECTION <i>up to 3%</i>	XXXXXXXXXX	INTEGRA SEAL	CJ600	LOST CIRC MATERIAL	CELLOPHANE FLAKES	9005-81-6
	S001	A-7P	CJ110	ACCELERATOR	CALCIUM CHLORIDE	10043-52-4
INTERMEDIATE	D020	BENTONITE	CJ020	EXTENDER	BENTONITE	1302-78-9
	D047	FP 28L	XXXXXXXXXX	LIQUID ANTIFOAM AGENT	POLYPROPYLENE GLYCOL	25322-69-4
	XXXXXXXXXX	INTEGRA SEAL	CJ600	LOST CIRC MATERIAL	CELLOPHANE FLAKES	9005-81-6
	CemNet	XXXXXXXXXX	XXXXXXXXXX	LOST CIRC MATERIAL	COATED FIBERGLASS FIBERS	PROPRIETARY
	SUGAR	SUGAR	CJ795	CMT RETARDER	SUCROSE	57-50-1
	S001	A-7P	CJ110	ACCELERATOR	CALCIUM CHLORIDE	10043-52-4
PRODUCTION	XXXXXXXXXX	XXXXXXXXXX	CJ111	ACCELERATOR	SODIUM CHLORIDE	7440-23-5
	XXXXXXXXXX	SS-11W	CJ880	SURFACTANT	NONIONIC SURFACTANT	6540-99-4
	D047	FP 28L	XXXXXXXXXX	LIQUID ANTIFOAM AGENT	POLYPROPYLENE GLYCOL	25322-69-4
	XXXXXXXXXX	XXXXXXXXXX	CJX157011	SOLID ANTIFOAM AGENT	FULLERS EARTH(ATTAPULGITE)	8031-18-3
	XXXXXXXXXX	XXXXXXXXXX	CJ540	HP FLUID LOSS ADDITIVE	ALIPHATIC AMIDE POLYMER	PROPRIETARY
	D255	XXXXXXXXXX	XXXXXXXXXX	MED TEMP FLUID LOSS ADDITIVE	POLYACRILIC POLYMER	PROPRIETARY
	XXXXXXXXXX	XXXXXXXXXX	CJ213	RETARDER	CHRYSTALLINE SILICA	14808-60-7
	XXXXXXXXXX	FL-66	CJ501	LOW TEMP FLUID LOSS ADD	POWDERED POLYSACCHARIDE	PROPRIETARY
	XXXXXXXXXX	BENTONITE	CJ020	EXTENDER	BENTONITE	1302-78-9
	D208	ASA-301	XXXXXXXXXX	VISCOSIFIER/ANTI- SETTLING AGENT	REFINED POLYMER/ CHRYSTALLINE SILICA	PROPRIETARY
	D198	R-3		CEMENT RETARDER	LIGNIN	8068-51-6
SUGAR	SUGAR	CJ795	CEMENT RETARDER	SUCROSE	57-50-1	

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

05/14/2021

4705102383

Southwestern Energy Company

Proposed Drilling Program

Well: BETTY SCHAFER MSH 405 Re-entry Rig: TBD
 Field: PANHANDLE FIELD \ Prospect: Marcellus Shale
 County: MARSHALL State: WV
 SHL: 39.9907 Latitude -80.6353 Longitude
 BHL: 40.0258 Latitude -80.6463 Longitude
 KB Elev: 874 ft MSL KB: 26 ft AGL GL Elev: 848 ft MSL



NO COAL VOID ANTICIPATED

PROD TOC Lead @ 1,910' MD

PROD TOC Tail @ 5,597' MD

TUBULAR DETAIL

Casing String	Casing Size (in)	Weight (Min)	Grade (Min)	Planned Interval	
				From	To
Conductor	20	94.0 #	J-55	0'	126'
Surface/Coal	13.375	48.0 #	H-40	0'	351'
Intermediate	9.625	36.0 #	J-55	0'	1,710'
Production	5.5	20.0 #	P-110 HP	0'	20,794'

CEMENT DETAIL

	Sacks	Class	Density
Conductor:	151	A	19.3
Surface:	355	A	15.6
Intermediate:	795	A	15.6
Production:	3918	A	14.5-15.6

126' to 371'
Air/Mist

371' to 1,730'
Air/Mist

1,730' to 5,797'
Air/Mist

TD at 5,797'

5,797' to 7,449'
11.5-12.7 ppg

7,449' to 20,794'
12.7-12.8 ppg

KOP at 5,797' MD

Freshwater Depth - 281' TVD
 Coal Depth - 353' TVD
 Saltwater Depth - 803' TVD
 TVD - 6,023'
 TMD - 20,794'

Bony Slips 3-30-21

TD at 20,794' MD
5,843' TVD

6,023' Target Center

EOB at 7,449' MD

SHL Onondaga 6,041' TVD

Onondaga 5,861' TVD

RECEIVED
Office of Oil and Gas

Created by: Matt Weems on 03/29/2021

APR 06 2021

05/14/2021

Betty Schafer MSH 405H AOR

API	Operator	Status	Latitude	Longitude	Vertical TD	Producing Formation	Producing Zones Not Perforated
70070	Unknown	Unknown	***	***	1,962'	Unknown	
90002	Unknown	Unknown	***	***	Unknown	Unknown	

4705102383

4705102383

WW-9
(4/16)

API Number 47 - 051 -
Operator's Well No. Betty Schafer MSH 405H

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) Wheeling Creek Quadrangle Moundsville

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 the next anticipated well)
- 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

Apex Sanitary Landfill 06-08438, Brooke Co SWF-1013,

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

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

Subscribed and sworn before me this 19 day of March, 2021

Elizabeth Blankenship

Notary

My commission expires 6/23/24



SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 7.82 Prevegetation pH _____

Lime as determined by pH test min.2 Tons/acre or to correct to pH 2.99

Fertilizer type 10-20-20

Fertilizer amount 600/500 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: Bary Shlep

Comments: _____

Title: Oil & Gas Inspector

Date: 3-9-21

Field Reviewed? () Yes () No

RECEIVED
Office of Oil and Gas
APR 06 2021
WV Department of
Environmental Protection

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.

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

05/14/2021

Attachment 3B

4705102383

Drilling Mediums

Surface/Coal(if present)/Freshwater Intervals:

Air

Freshwater (if needed based on conditions)

Intermediate/Coal (if present):

Air

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

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection
05/14/2021



WVD Seeding Specification

R⁺
A → V⁺

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

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

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

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

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

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

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

4705102385

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: Betty Schafer MSH 405H
Moundsville QUAD
Sand Hill DISTRICT
MARSHALL COUNTY, WEST VIRGINIA

Submitted by:

Name: Brittany Woody

Date: 3/3/2021

Brittany Woody

Title: Senior Regulatory Analyst

SWN Production Co., LLC

Approved by:

Name: Bamy Stiller

Date: 3-9-21

Title: inspector

Approved by:

Name: _____

Date: _____

Title: _____

SWN PRODUCTION COMPANY, LLC – CONFIDENTIAL

RECEIVED
Office of Oil and Gas

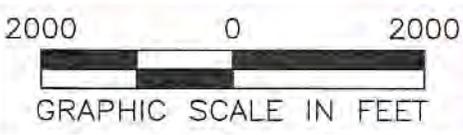
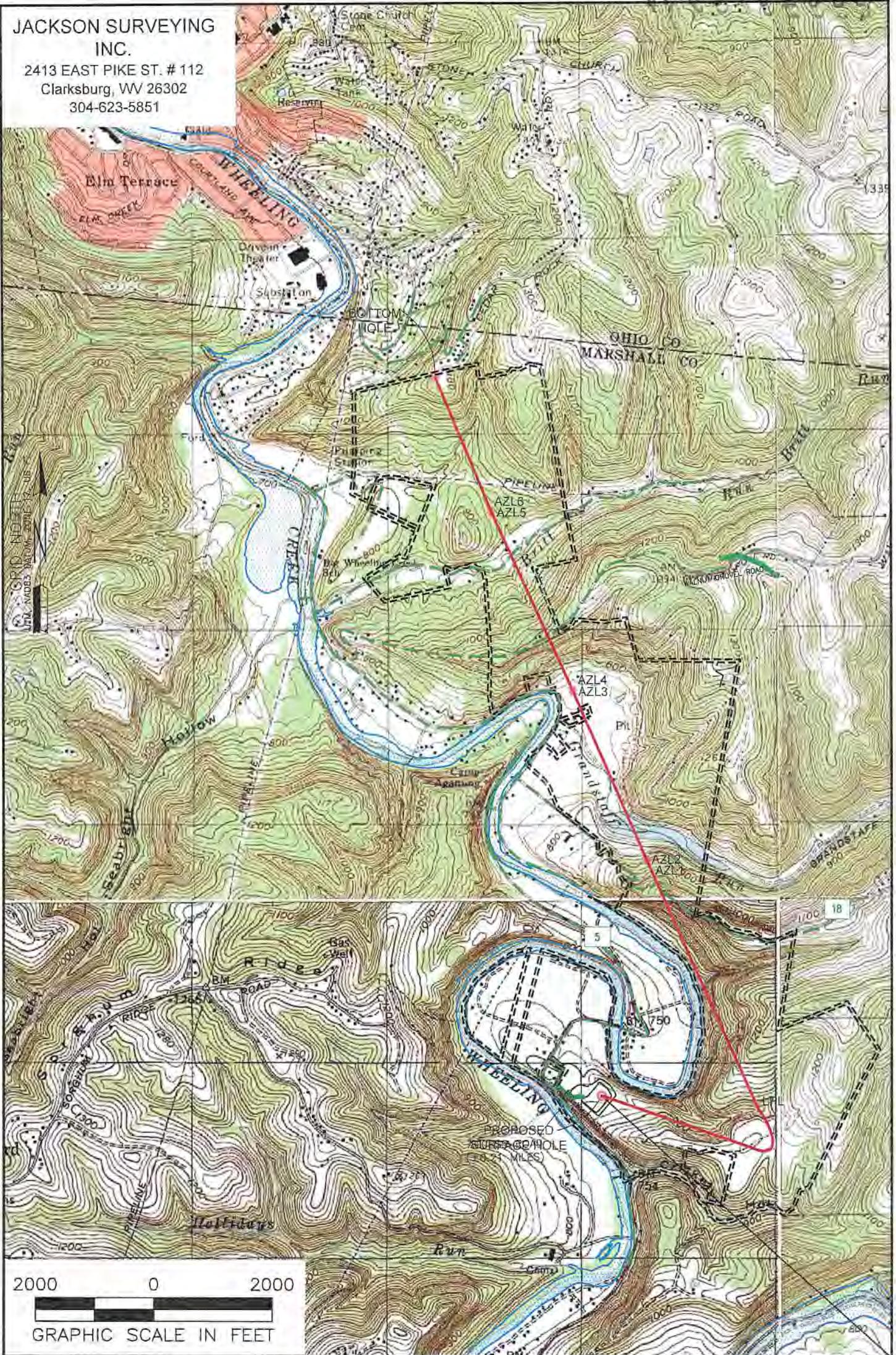
APR 06 2021

WV Department of
Environmental Protection

05/14/2021

47-051-02383

JACKSON SURVEYING
INC.
2413 EAST PIKE ST. # 112
Clarksburg, WV 26302
304-623-5851



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.

RECEIVED
Office of Oil and Gas
APR 06 2021

LEGEND:

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

05/14/2021

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	WV Department of Environmental Protection	WELL (FARM) NAME: BETTY SCHAFER MSH	WELL # 405H	SERIAL #
ADDRESS: 1300 FORT PIERPONT ROAD, SUITE 200 MORGANTOWN, WV 26508		COUNTY - CODE MARSHALL - 051	DISTRICT; SAND HILL	
SURFACE OWNER: ROY A. SCHAFER JR. & EDWARD J. SCHAFER		USGS 7 1/2 QUADRANGLE MAP NAME MOUNDSVILLE, WV	API # 47-051-	

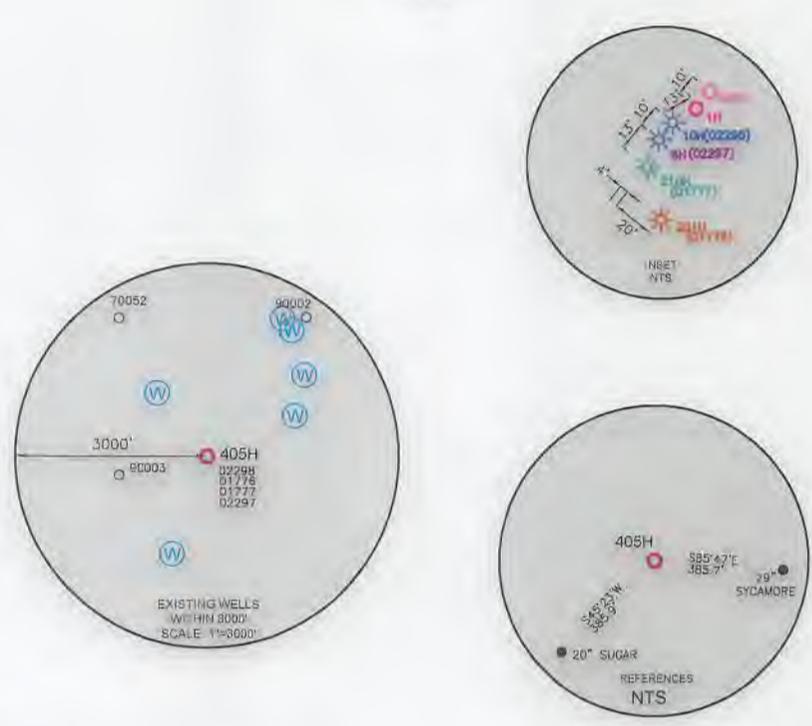
Latitude: 40°00'00" SURFACE HOLE 2954'
 Latitude: 40°02'30" BOTTOM HOLE 5700'

**JACKSON SURVEYING
 INC.**
 2413 EAST PIKE ST. # 112
 Clarksburg, WV 26302
 304-623-5851

SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,426,821.363 EASTING: 531,114.130	
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,426,779.411 EASTING: 531,906.965	
AZIMUTH POINT LOCATION-1 (AZL1):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,428,016.548 EASTING: 531,348.021	
AZIMUTH POINT LOCATION-2 (AZL2):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,428,026.445 EASTING: 531,343.623	
AZIMUTH POINT LOCATION-3 (AZL3):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,428,882.837 EASTING: 530,969.428	
AZIMUTH POINT LOCATION-4 (AZL4):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,428,894.858 EASTING: 530,964.070	
AZIMUTH POINT LOCATION-5 (AZL5):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,429,799.479 EASTING: 530,552.446	
AZIMUTH POINT LOCATION-6 (AZL6):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,429,825.301 EASTING: 530,541.193	
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,430,496.695 EASTING: 530,261.483	

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

LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 76°05'34" W	813.87'	SHL TO LANDMARK	FD. 5/8" REBAR
L2	S 57°18'27" E	1708.06'	SHL TO LANDMARK	FD. 5/8" REBAR
LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L3	S 86°58'16" E	2604.80'	3840.26'	SHL TO LPL
L4	N 23°57'39" W	35.53'	35.53'	AZL1 TO AZL2
L5	N 24°01'28" W	43.18'	43.18'	AZL2 TO AZL4
L6	N 23°32'49" W	92.42'	92.42'	AZL5 TO AZL6



WELL RESTRICTIONS

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

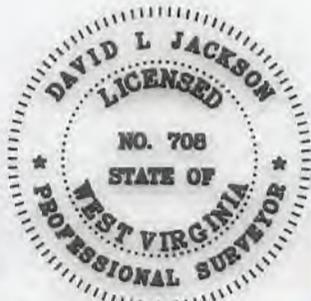
NOTES ON SURVEY

1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
3. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 708

David L Jackson



COMPANY:
SWN **SWN** *RT-V+*
 Production Company, LLC Production Company™

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200
 PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

BETTY SCHAFER MSH
 OPERATOR'S WELL #: 405H
 API WELL #: 47 STATE 051 COUNTY PERMIT 02383

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

WATERSHED: WHEELING CREEK (HUC-10) ELEVATION: 848.3' STAKED

DISTRICT: SAND HILL COUNTY: MARSHALL QUADRANGLE: MOUNDSVILLE, WV

SURFACE OWNER: ROY A. SCHAFER JR. & EDWARD J. SCHAFER ACREAGE: ±205.06

OIL & GAS ROYALTY OWNER: ROY A. SCHAFER JR. & EDWARD J. SCHAFER ACREAGE: ±205.06

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

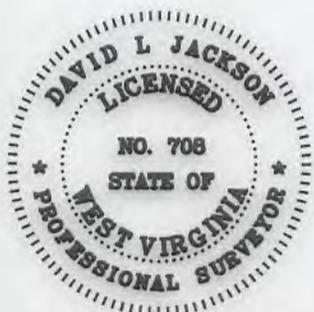
CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) **05/14/2021**

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,023 TVD 20,794 TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: BRITTANY WOODY
 ADDRESS: 1300 FORT PIERPONT ROAD, SUITE 200 ADDRESS: 1300 FORT PIERPONT ROAD, SUITE 200
 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

LEGEND:	○ PROPOSED SURFACE HOLE / BOTTOM HOLE	— SURVEYED BOUNDARY	REVISIONS:	DATE: 03-29-2021
⊗ EXISTING / PRODUCING WELLHEAD	— DRILLING UNIT	— LEASE BOUNDARY	△ ADDED SIGNATURE AND STAMP 04-30-2021	
LPL* LANDING POINT LOCATION	— ASDRILLED PATH	— PROPOSED PATH		DRAWN BY: N. MANO
⊕ EXISTING WATER WELL				SCALE: 1" = 2000'
⊙ EXISTING SPRING				DRAWING NO:
				WELL LOCATION PLAT

JACKSON SURVEYING
 INC.
 2413 EAST PIKE ST. # 112
 Clarksburg, WV 26302
 304-623-5851



I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 708

David L. Jackson

05/14/2021

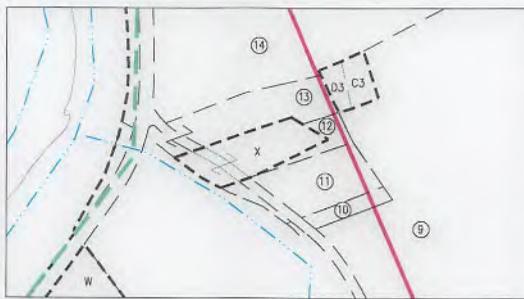
REVISIONS: ▲ ADDED SIGNATURE AND STAMP 04-30-2021	COMPANY:
OPERATOR'S BETTY SCHAFER MSH	API # HWA 47-051- 02383
WELL #: 405H	DATE: 03-29-2021
DISTRICT: SAND HILL	COUNTY: MARSHALL
STATE: WV	DRAWN BY: N. MANO SCALE: 1" = 2000' DRAWING NO: WELL LOCATION PLAT 2

JACKSON SURVEYING
 INC.
 2413 EAST PIKE ST. # 112
 Clarksburg, WV 26302
 304-623-5851

DETAIL "B"



DETAIL "A"



05/14/2021

REVISIONS:	COMPANY:			 
▲ ADDED SIGNATURE AND STAMP 04-30-2021				
	OPERATOR'S	BETTY SCHAFER MSH	API #	DATE: 03-29-2021
	WELL #:	405H	47-051- 02353	DRAWN BY: N. MANO
	DISTRICT:	SAND HILL	COUNTY:	SCALE: N/A
			STATE:	DRAWING NO:
			WV	WELL LOCATION PLAT 3

**JACKSON SURVEYING
INC.**

2413 EAST PIKE ST. # 112
Clarksburg, WV 26302
304-623-5851

WELL BORE TRACTS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	SCHAFER ROY A JR & SCHAFER EDWARD J (S/R)	12-0009-22
TRACT	SURFACE OWNER (S)	TAX PARCEL
2	FISHER CHARLES B & CARLA S (S)	12-0009-20
3	GRAY JOHN ALVIN (S)	12-0009-21
4	PIKEWOOD ENERGY CORP (S)	12-0009-10
5	STEADMAN FRANKLIN L ET UX (S)	12-0009-5.1
6	DYE WILLIAM R ET AL (S)	12-0009-6
7	WHEELING CREEK WATERSHED COMM (S)	12-0009-6.1
8	HADSELL SANDRA L (S)	12-0001-20
9	FOLMAR EDITH A, AS TRUSTEE OF THE EDITH A FOLMAR TRUST AGREEMENT DATED THE 23RD DAY OF MAY 2019 (S)	12-0001-19
10	DUFF JAMES E & CAPP BROOKE L (S)	12-0001-22.1
11	DUFF JAMES E & CAPP BROOKE L(S)	12-0001-22
12	FRAZIER GREGORY SCOTT (S)	12-0001-23
13	PALMER ADAM R (S)	12-0001-26
14	ADASE GEORGE & LAURIE (S)	12-0001-28
15	ALLEN MARK G & CHERYL L (S)	12-0001-28.1
16	GRAY JOHN A ET UX (S)	12-0001-28.2
17	ADASE GEORGE & LAURIE (S)	12-0001-29
18	KUNTZ JOHN H (S)	12-0001-31
19	COFFIELD MICHAEL L & TYLENE R (S)	12-0001-10
20	HAMILTON MARY SCHENK & GARY P (S)	12-0001-5.1

05/14/2021

REVISIONS:	COMPANY:			 	
△ ADDED SIGNATURE AND STAMP 04-30-2021	OPERATOR'S		BETTY SCHAFER MSH	API #	DATE: 03-29-2021
	WELL #:		405H	47-051- 01383	DRAWN BY: N. MANO
	DISTRICT:	COUNTY:	STATE:	WV	SCALE: N/A
	SAND HILL	MARSHALL			DRAWING NO:
					WELL LOCATION PLAT 4

JACKSON SURVEYING
 INC.
 2413 EAST PIKE ST. # 112
 Clarksburg, WV 26302
 304-623-5851

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	SCHAFFER ROY A JR & SCHAFFER EDWARD J	12-0009-23
B	SCHAFFER ROY A JR & SCHAFFER EDWARD J	12-0009-22.1
C	CONSOLIDATION COAL COMPANY;MURRAY ENERGY C/O LAND DEPT	12-0009-22.2
D	MERINAR CALVIN C - LIFE	12-0009-19
E	FISH PATRICIA A & FREDERICK W	12-0010-1.2
F	ROMAN JEWELL L	12-0010-01
G	HOGG THOMAS D & DONN W ET AL	13-0008-3
H	HOGG THOMAS D & DONN W ET AL	13-0008-4
I	SCHAFFER ROY A JR & SCHAFFER EDWARD J	12-0009-24
J	HART JOHN J & RENEE A	13-0008-2.1
K	GRAY JOHN ALVIN	13-0003-14
L	GRAY JOHN ALVIN	13-0003-13
M	JESTERS COURT 13 INC	13-0003-14.1
N	JESTERS COURT 13 INC	13-0003-14.2
O	JESTERS COURT 13 INC	13-0003-14.3
P	SHEPHERD TIMOTHY & DEBORAH L	13-0003-14.4
Q	PROVANCE FRANK J ET AL	13-0003-14.5
R	SMITH BEVERLY JILL ANITA	12-0009-5.5
S	MANNERS DANIEL J ET UX	12-0009-5
T	TEACOACH JAY M ET UX	12-0009-5.3
U	DYE WILLIAM R	12-0009-1
V	MAAS BRIAN J & AMY C - TRUST	13-0003-10
W	MERINAR JUSTIN K	12-0001-21
X	FRAZIER GREGORY SCOTT	12-0001-24
Y	SAVAGE CHARLES JACKSON	12-0001-29.1
Z	WHARTON PETER R ET AL	12-0001-34
A2	ESTEP DOUGLAS J & LINDA R	12-0001-33.1
B2	MERCER DARICK B & RENEE A	12-0001-32
C2	CONSOLIDATION COAL COMPANY; MURRAY ENERGY C/O LAND DEPT	12-0001-10.2
D2	MARPLE JEFFREY J & BARBARA J	12-0001-32.1
E2	HIGGINS CONSTANCE L - LIFE	12-0001-7.3
F2	RUNKLE RICHARD T & MICHELL L	12-0001-7.2
G2	SLIGAR KAREN SCHENK & TERRY B	12-0001-5.2
H2	SLIGAR KAREN SCHENK	12-0001-5
I2	REARDON SHELLY S	12-0001-5.6
J2	HAMILTON MARY SCHENK & GARY P	12-0001-5.4
K2	WETMORE BROOKE L & BRIAN B	12-0001-5.5
L2	ENGINEERED FOUNDATION SOLUTIONS, PLLS	12-001A-94
M2	SNYDER JOHN J ET UX	12-001A-85
N2	SNYDER JOHN J ET UX	12-001A-84
O2	ZDONCZYK ROBIN G	12-001A-83.1
P2	SNYDER LONNIE A	12-001A-83
Q2	HARTMAN WALTER L ET UX	12-0001-10.1
R2	BARTOLOVICH STEPHEN M ET AL	12-0001-47
S2	BARTOLOVICH STEPHEN M	12-0001-11
T2	BROCK BERNICE VIRGINIA ET AL	12-0001-30
U2	SHELLHASE MARK A ET UX	12-0001-18
V2	SHELLHASE MARK A & ANDREA K	12-0001-15.4
W2	WHEELING POWER COMPANY	12-0009-8.1
X2	EDGE WILLIAM F JR & BARBARA ANN ET AL	12-0009-8
Y2	ISALY ROBERT A SR EST	12-0009-9
Z2	GRAY JOHN ALVIN	12-0009-11
A3	MERINAR JAMES MARTIN ET UX	12-0009-15.1
B3	MERINAR CALVIN C - LIFE	12-0009-15
C3	PALMER ADAM R	12-0001-27.2
D3	FRAZIER GREGORY SCOTT	12-0001-27.1

05/14/2021

REVISIONS:	COMPANY:		
▲ ADDED SIGNATURE AND STAMP 04-30-2021			
	OPERATOR'S	BETTY SCHAFFER MSH	API #
	WELL #:	405H	47-051- 02283
	DISTRICT:	COUNTY:	STATE:
	SAND HILL	MARSHALL	WV
			DATE: 03-29-2021
			DRAWN BY: N. MANO
			SCALE: N/A
			DRAWING NO:
			WELL LOCATION PLAT 5

WW-6A1
(5/13)

Operator's Well No. Betty Schafer MSH 405H

**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

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

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

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

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

Well Operator: SWN Production Company, LLC.

By:

[Signature]
Staff Landman

RECEIVED
Office of Oil and Gas

Page 1 of 1
APR 06 2021

WV Department of
Environmental Protection

05/14/2021

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Betty Schafer Southeast 405H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG	
1	12-09-22	733731-000	Betty Jane Schafer, a widow (Life Estate Interest); Roy Alvin Schafer (Remainderman); and Edward J. Schafer (Remainderman)	TriEnergy Holdings, LLC	18.00%	722/505	
			TriEnergy Holdings, LLC	NPAR, LLC		24/199	
			NPAR, LLC	Chevron U.S.A. Inc.		756/332	
			Chevron U.S.A. Inc.	Statoil USA Onshore Properties Inc.		30/494	
			Chevron U.S.A. Inc.	Chesapeake Appalachia, L.L.C.		30/532	
			Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
			Statoil USA Onshore Properties Inc.	SWN Production Company, LLC		33/424	
			Pending	Roy Alvin Schafer, Jr., a married man	SWN Production Company, LLC	18.00%	1077/97
			Pending	Edward John Schafer, a married man	SWN Production Company, LLC	18.00%	1077/102
2	12-09-20	733654-001	Charles A. Fisher and Carla S. Fisher, his wife	TriEnergy, Inc.	12.50%	655/559	
			TriEnergy	AB Resources		19/623	
			AB Resources	Chevron U.S.A. Inc.		756/397	
			Chevron U.S.A. Inc.	Statoil USA Onshore Properties Inc.		30/494	
			Chevron U.S.A. Inc.	Chesapeake Appalachia, L.L.C.		30/532	
			Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
			Statoil USA Onshore Properties Inc.	SWN Production Company, LLC		33/424	
			3	12-09-21	735396-000	John Alvin Gray and Judy C. Gray. his wife	Chesapeake Appalachia, L.L.C.
Chesapeake Appalachia, L.L.C.	Statoil USA Onshore Properties Inc.					33/47	
Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC					33/110	
Statoil USA Onshore Properties Inc.	SWN Production Company, LLC					33/424	

RECEIVED
 Office of Oil and Gas
 MAY 12 2021
 WV Department of
 Environmental Protection

4705102383

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Betty Schafer Southeast 405H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG
4	12-09-10	Pending	Golden Eagle Resources II, LLC, a Delaware limited liability company	American Petroleum Partners Operating, LLC	19.00%	965/370
			American Petroleum Partners Operating, LLC	SWN Production Company, LLC		45/381
		Pending	Joan Hindman Hutcherson, a widow	TH Exploration, LLC	15.00%	898/593
			TH Exploration, LLC	American Petroleum Partners Operating, LLC		43/497
			American Petroleum Partners Operating, LLC	SWN Production Company, LLC		45/381
		Pending	George Leslie Kersey, a single person	SWN Production Company, L.L.C.	18.00%	881/41
		Pending	SWN Production Company, LLC Dennis Mitchell Kersey, a single person	Statoil USA Onshore Properties Inc. SWN Production Company, L.L.C.	18.00%	36/239 883/475
		Pending	SWN Production Company, LLC Tiffany Ann Kersey, a single person	Statoil USA Onshore Properties Inc. SWN Production Company, L.L.C.	18.00%	36/239 886/366
		Pending	SWN Production Company, LLC Geana Kay Kersey, a single person	Statoil USA Onshore Properties Inc. SWN Production Company, L.L.C.	18.00%	36/239 881/46
		Pending	SWN Production Company, LLC Gregory Keith Kersey, Jr., a single man	Statoil USA Onshore Properties Inc. SWN Production Company, LLC	18.00%	36/239 988/141
5	12-09-05.01	Pending	Franklin L. Steadman, a married man dealing in his sole and separate property	American Petroleum Partners Operating, LLC	18.00%	1033/545
			American Petroleum Partners Operating,	SWN Production Company, LLC		45/381

RECEIVED
 Office of Oil and Gas
 MAY 12 2021
 WV Department of
 Environmental Protection

4705102383

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Betty Schafer Southeast 405H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG
6	12-09-06	Pending	William R. Dye, a married man dealing in his sole and separate property	SWN Production Company, LLC	15.00%	1073/217
		Pending	Richard D. Dye, a/k/a Richard Douglas Dye, a married man dealing in his sole and separate property	SWN Production Company, LLC	15.00%	1073/577
		Pending	Kimberly D. Schoger, a/k/a Kimberly Dye-Schoger, and Matthias D. Schoger, wife and husband	SWN Production Company, LLC	15.00%	1073/501
		Pending	Mark M. Dye, a/k/a Mark Montgomery Dye, and Tania L. Dye, husband and wife	SWN Production Company, LLC	15.00%	1073/601
7	12-09-06.01	Pending	Wheeling Creek Watershed Protection and Flood Prevention Commission, a West Virginia Corporation, d/b/a Wheeling Creek Watershed Corporation	SWN Production Company, LLC	18.00%	1095/333
8	12-01-20	Pending	Sandra L. Hadsell and William R. Hadsell, wife and husband	SWN Production Company, LLC	18.00%	1100/149
9	12-01-19	746901-000	Edith Adell Folmar, a widow	SWN Production Company, L.L.C.	18.00%	932/525

RECEIVED
 Office of Oil and Gas
 MAY 12 2021
 WV Department of
 Environmental Protection

4705102383

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Betty Schafer Southeast 405H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG
10	12-01-22.01	Pending	Jacqueline N. Kennedy, a single woman	SWN Production Company, LLC	17.00%	1098/474
		Pending	Janine N. Pietras, f/k/a Janine N. Kennedy, a married woman dealing in her sole and separate property	SWN Production Company, LLC	17.00%	1098/480
11	12-01-22	Pending	Jacqueline N. Kennedy, a single woman	SWN Production Company, LLC	17.00%	1098/474
		Pending	Janine N. Pietras, f/k/a Janine N. Kennedy, a married woman dealing in her sole and separate property	SWN Production Company, LLC	17.00%	1098/480
12	12-01-23	Pending	Gregory Scott Frazier, a divorced man and not remarried	SWN Production Company, LLC	17.00%	1103/272
13	12-01-26	Pending	Adam R. Palmer, a single man	SWN Production Company, LLC	15.00%	1102/283
14	12-01-28	733681-001	George R. Adase and Laurie Adase, his wife	TriEnergy Holdings, LLC	17.00%	696/206
			TriEnergy Holdings, LLC	TriEnergy Holdings, LLC	24/180	
			NPAR, LLC	NPAR, LLC	756/332	
			Chevron U.S.A. Inc.	Chevron U.S.A. Inc.	30/494	
			Chevron U.S.A. Inc.	Statoil USA Onshore Properties Inc.	30/532	
			Chesapeake Appalachia, L.L.C.	Chesapeake Appalachia, L.L.C.	33/110	
Statoil USA Onshore Properties Inc.	Statoil USA Onshore Properties Inc.	33/424				

RECEIVED
 Office of Oil and Gas
 MAY 12 2021
 WV Department of
 Environmental Protection

4705102383

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Betty Schafer Southeast 405H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG
15	12-01-28.01	Pending	Mark G. Allen and Sheri L. Allen, husband and wife	SWN Production Company, LLC	17.00%	1071/621
16	12-01-28.02	744835-001	American Foundation for the Blind, Inc., a New York corporation, by Rick Bozeman, Assistant Treasurer	Chesapeake Appalachia, L.L.C.	18.00%	846/518
		744445-001	Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		35/32
		Pending	Children's Hospital and Healthcare Services	SWN Production Company, L.L.C.	18.00%	866/590
17	12-01-29	733681-001	George R. Adase and Laurie Adase, his wife	TriEnergy Holdings, LLC	17.00%	696/206
			TriEnergy Holdings, LLC	NPAR, LLC		24/180
			NPAR, LLC	Chevron U.S.A. Inc.		756/332
			Chevron U.S.A. Inc.	Statoil USA Onshore Properties Inc.		30/494
			Chevron U.S.A. Inc.	Chesapeake Appalachia, L.L.C.		30/532
			Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110
		744835-001	Statoil USA Onshore Properties Inc.	SWN Production Company, LLC		33/424
		744445-001	American Foundation for the Blind, Inc., a	Chesapeake Appalachia, L.L.C.	18.00%	846/518
			Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		35/32
Children's Hospital and Healthcare Services	SWN Production Company, L.L.C.		18.00%	866/590		
18	12-01-31	Pending	John H. Kuntz, a single man	SWN Production Company, LLC	18.00%	1078/370
19	12-01-10	745543-006	Michael L. Coffield and Tylene R. Coffield, husband and wife	TH Exploration, LLC	18.00%	851/261
			TH Exploration, LLC	SWN Production Company, LLC		36/488

RECEIVED
 Office of Oil and Gas
 MAY 12 2021
 WV Department of
 Environmental Protection

4705102383

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Betty Schafer Southeast 405H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG
20	12-01-05.01	733002-000	Mary Schenk Hamilton and Gary P. Hamilton, wife and husband	Chesapeake Appalachia, L.L.C.	18.75%	767/512
			Chesapeake Appalachia, L.L.C.	Statoil USA Onshore Properties Inc.		31/246
			Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110
			Statoil USA Onshore Properties Inc.	SWN Production Company, LLC		33/424
		Pending	Mary Schenk Hamilton and Gary P. Hamilton, wife and husband, as joint	SWN Production Company, LLC	18.75%	1078/375

RECEIVED
 Office of Oil and Gas
 MAY 12 2021
 WV Department of
 Environmental Protection

4705102383

4705102383



SWN Production Company, LLC
1300 Fort Pierpont Dr, Ste 201
Morgantown, WV 26508
Tel: 304 884 1610
Fax: 304 471 2497
www.swn.com

March 15, 2021

Taylor Brewer
WV DEP Office of Oil & Gas
601 57th St., SE
Charleston, WV 25304

RE: SWN's proposed New Well: Betty Schafer MSH 405H in Marshall County, West Virginia, Drilling under Creek Rock Road, Miller Hill Road, and Britt Run Road.

Dear Ms. Adkins:

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

Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Des Lynch", written over the word "Sincerely,".

Des Lynch
Staff Landma
SWN Production Company, LLC

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

Red handwritten initials, possibly "R/A" or "R/V", with a plus sign and a degree symbol.

The Right People doing the Right Things,
wisely investing the cash flow from our
underlying Assets, will create value.

05/14/2021

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

Date of Notice Certification: 4/5

API No. 47- 051 - _____
Operator's Well No. Betty Schafer MSH 405H
Well Pad Name: Betty Schafer MSH Pad

Notice has been given:

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

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>531,114.130</u>
County: <u>051-Marshall</u>	UTM NAD 83 Northing: <u>4,426,821.363</u>
District: <u>Sand Hill</u>	Public Road Access: <u>Big Wheeling Creek</u>
Quadrangle: <u>Moundsville</u>	Generally used farm name: <u>Betty Schafer</u>
Watershed: <u>Wheeling Creek</u>	

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
--	---

Required Attachments:

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

Office of Oil and Gas

APR 06 2021

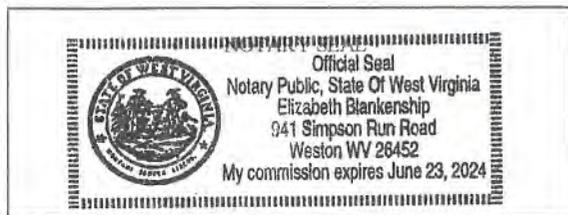
05/14/2021

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 19 day of March 2021
Elizabeth Blankenship Notary Public
 My Commission Expires 6/23/2024

Oil and Gas Privacy Notice:

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

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

05/14/2021

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: 4/5 Date Permit Application Filed: 4/5

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: Roy Schafer Jr.
Address: 3809 Big Wheeling Creek Road
Wheeling, WV 26003

Name: Edward Schafer
Address: 871 Big wheeling Creek Road
Wheeling, WV 26003

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

Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: American Consolidated Natural Resources attn: Mason Smith
Address: 46226 National Road
St. Clairsville, OH 43950

COAL OPERATOR

Name: _____
Address: _____

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

Name: See Attachment 13A
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: Columbia Gas Transmission, LLC Attn: John Shelton
Address: 1700 MacCorkle Ave SE/PO Box 1273
Charleston, WV 25325

*Please attach additional forms if necessary

RECEIVED
Office of Oil and Gas

APR 06 2021

WW-6A
(9-13)

API NO. 47- 051 -
OPERATOR WELL NO. Betty Schafer MSH 405H
Well Pad Name: Betty Schafer MSH

**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: 4/5 Date Permit Application Filed: 4/5
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: _____
Address: _____

Name: _____
Address: _____

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

Name: _____
Address: _____

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

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

COAL OPERATOR
Name: _____
Address: _____

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

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

*Please attach additional forms if necessary
RECEIVED
Office of Oil and Gas

APR 06 2021

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

4705102383

API NO. 47-051 -

OPERATOR WELL NO. Betty Schafer MSH 405H

Well Pad Name: Betty Schafer MSH Pad

WW-6A
(8-13)

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of Environmental Protection 05/14/2021

4705102385

WW-6A
(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Betty Schafer MSH 405H
Well Pad Name: Betty Schafer MSH Pad

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.

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

05/14/2021

WW-6A
(8-13)

4705102385
API NO. 47-051 -
OPERATOR WELL NO. Betty Schafer MSH 405H
Well Pad Name: Betty Schafer MSH Pad

Notice is hereby given by:

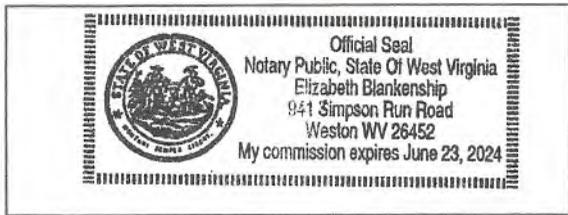
Well Operator: SWN Production Co., LLC
Telephone: 304-884-1610
Email: Brittany_Woody@swn.com

Brittany Woody

Address: 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.



Subscribed and sworn before me this 19 day of March 2021.

Elizabeth Blankenship

Notary Public

My Commission Expires 6/23/2024

RECEIVED
Office of Oil and Gas
APR 06 2021
WV Department of
Environmental Protection

05/14/2021

4705102383

ATTACHMENT 13

PARCELID	OWNER	ADDRESS	CITY STATE ZIP	WATERSOURCE
12 9002200000000	SCHAFFER BETTY JANE - LIFE	RR 6 BOX 285	WHEELING, WV 26003	1

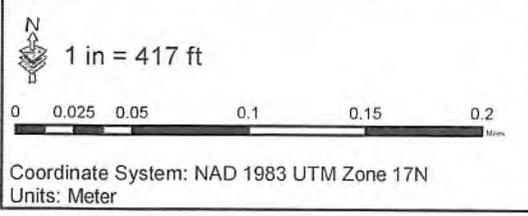
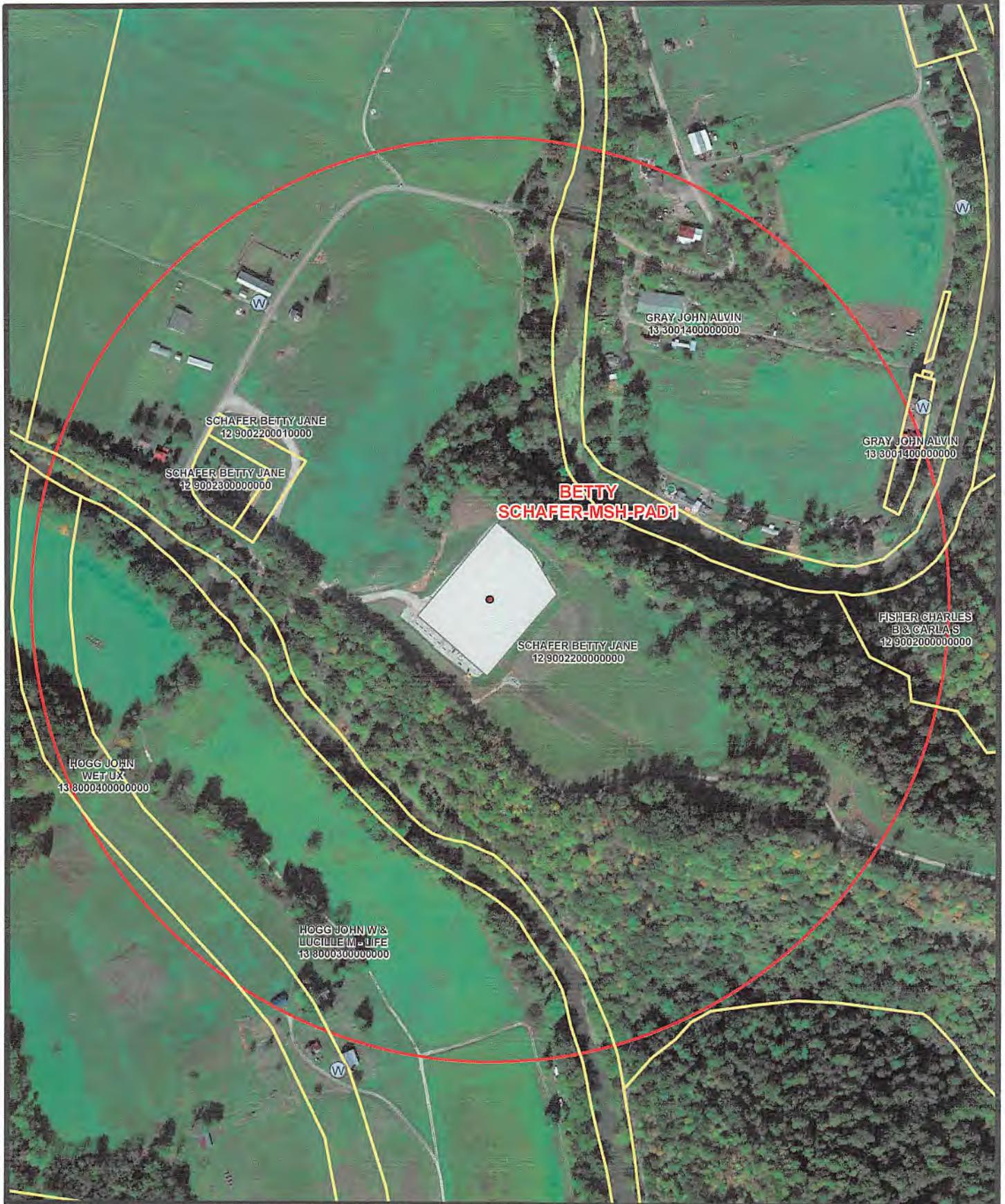
RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

05/14/2021

4705102383



Spring	Parcel
Water Well	1500' Buffer
Pond	

Coordinates: 39.990978, -80.63567

Water Purveyor Map
Well Pad: Betty Shafer
County: MSH

SWN *R² A⁺ V⁺*
Southwestern Energy® **05/14/2021**

Date: 11/5/2019	Author: willisb
-----------------	-----------------

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of
Environmental Protection

**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: 03/09/2021 **Date Permit Application Filed:** 4/5

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: Roy Schafer, Jr.
Address: 3609 Big Wheeling Creek Road
Wheeling, WV 26003

Name: _____
Address: _____

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 531,114.130
County: Marshall Northing: 4,426,821.363
District: Sand Hill Public Road Access: Big Wheeling Creek Road
Quadrangle: Moundsville, WV Generally used farm name: Betty Schafer MSH
Watershed: Wheeling Creek (HUC-10)

This Notice Shall Include:

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

Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: 1300 Fort Pierpont Dr., Suite 200
Morgantown, WV 26508
Telephone: 304-997-9816
Email: Justin_Booth@SWN.com
Facsimile: 304-884-1691

Authorized Representative: Justin Booth
Address: 1300 Fort Pierpont Dr., Suite 200
Morgantown, WV 26508
Telephone: 304-997-9816
Email: Justin_Booth@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 depprivacvofficer@wv.gov.

RECEIVED
Office of Oil and Gas

APR 06 2021

05/14/2021

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: 03/09/2021 **Date Permit Application Filed:** 9/5

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: <u>Roy Schafer, Jr.</u>	Name: _____
Address: <u>3609 Big Wheeling Creek Road</u>	Address: _____
<u>Wheeling, WV 26003</u>	_____

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>531,114.130</u>
County: <u>Marshall</u>	Northing: <u>4,426,821.363</u>
District: <u>Sand Hill</u>	Public Road Access: <u>Big Wheeling Creek Rd</u>
Quadrangle: <u>Moundsville, WV</u>	Generally used farm name: <u>Betty Schafer MSH</u>
Watershed: <u>Wheeling Creek (HUC-10)</u>	

This Notice Shall Include:

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

Well Operator: <u>SWN Production Company, LLC</u>	Address: <u>1300 Fort Pierpont Dr., Suite 201</u>
Telephone: <u>304-884-1675</u>	<u>Morgantown, WV 26508</u>
Email: <u>Justin_Booth@SWN.com</u>	Facsimile: <u>304-884-1691</u>

Oil and Gas Privacy Notice:

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

RECEIVED
Office of Oil and Gas

APR 06 2021

05/14/2021

4705102383



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/
Commissioner of Highways

February 24, 2021

Jimmy Wriston, P. E.
Deputy Secretary/
Deputy Commissioner

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

Subject: DOH Permit for the Betty Schafer Pad, Marshall County
Betty Schafer MSH 405H Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2014-0640 which has been issued to Southwestern Energy for access to the State Road for a well site located off Marshall County Route 5 SLS MP 3.82.

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. This letter is valid for permitting purposes for one year from the date of this letter.

Very Truly Yours,

A handwritten signature in cursive script that reads "Gary K. Clayton".

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

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

RECEIVED
Office of Oil and Gas

APR 06 2021

WV Department of Environmental Protection 05/14/2021

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-Cl200 (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, Exocylated 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-propenamamide	Proprietary
		Hydrotreated Distillate	64742-47-8
		Sodium Chloride	7647-14-5
		Alcohols, C12-16, Exoxylated	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, Exoxylated	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 propenamamide	9003-06-9
Plexaid 655 NM	Scale Inhibitor	Diethylenetriamine penta (methylene phosphonic acid)	15827-30-8
Plexslick 922	no data available	Copolymer of 2-propenamamide	69418-26-4
		Distillates (petroleum), hydrotreated light	64742-47-8
		Ammonium chloride ((NH4)Cl)	12125-02-9
		Oleic Acid Diethanolamide	93-83-4
Tolcide P550A	Biocidal product	Tetakis (hydroxymethyl) phosphonium sulphate	55566-30-8
		Acrylic acid terpolymer containing carboxylate phosphonate and sulfonate groups	397256-50-7
LD-2950	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8
		Ethoxylated alcohol	Proprietary
Legend LD-7750W	Scale Control	Poly (oxy-1,2-ethanediyl) alpha.-tridecyl-omega.-hydroxy-, branched	69011-36-6
		Methanol	67-56-1
MC MX 8-4743	Specialty Product	Phosphonic Acid Salt	Proprietary
		Sodium Nitrate	7631-99-4

RECEIVED
Office of Air Quality
APR 06 2021
WV Dept of Environmental Protection
05/14/2021

WW-6A7
(6-12)

OPERATOR: SWN Production Co., LLC

WELL NO: Betty Schafer MSH 405H

PAD NAME: Betty Schafer MSH Pad

REVIEWED BY: _____

SIGNATURE: *Brittany Nbody*

WELL RESTRICTIONS CHECKLIST

HORIZONTAL 6A WELL

**Pad Built 12/1/14*

Well Restrictions

- At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland; OR
 - DEP Waiver and Permit Conditions
- At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream; OR
 - DEP Waiver and Permit Conditions
- At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply; OR
 - DEP Waiver and Permit Conditions
- At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled; OR
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions
- At Least 625 Feet from an Occupied Dwelling Structure to Center of the Pad; OR
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions
- At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad; OR
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions

RECEIVED
Office of Oil and Gas

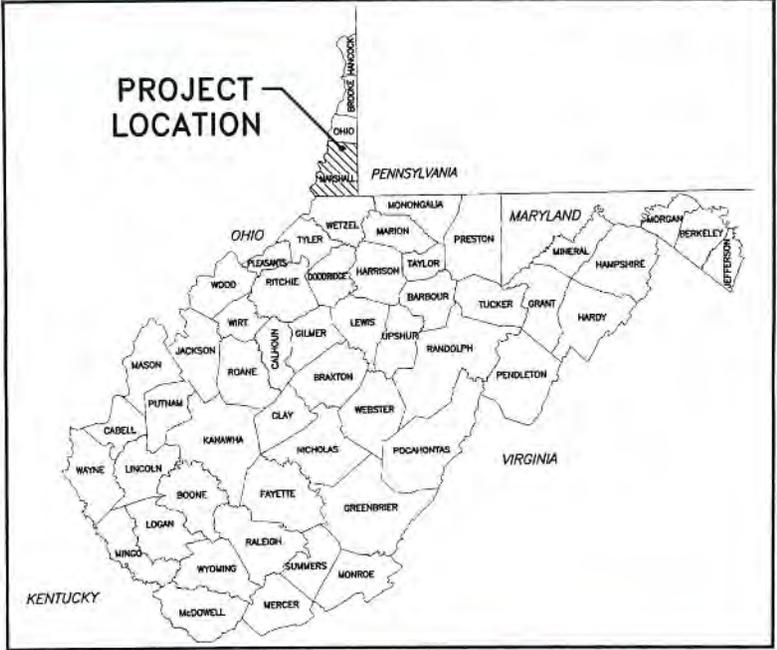
APR 06 2021

**WVDEP OOG
ACCEPTED AS-BUILT**
12/20/2019

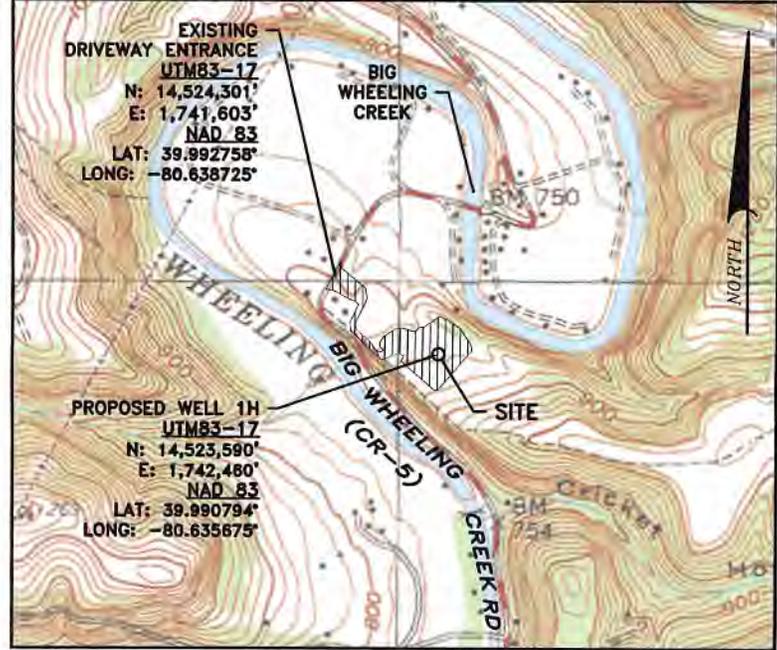
AS-BUILT SITE PLAN FOR BETTY SCHAFER MSH PAD SAND HILL DISTRICT, MARSHALL COUNTY, WV



DRAWN BY: JAR
DATE: 12/18/2109
SCALE: AS SHOWN
DWG. NO.: 087569000



COUNTY MAP
N.T.S.



LOCATION MAP
SCALE - 1"=1000'

WEST VIRGINIA 811
CALL BEFORE YOU DIG!
Dial 811 or 800.248.4848

SWN
Southwestern Energy[®]

SITE DATA

TOTAL DISTURBED AREA: 7.82 ACRES
ROAD DISTURBED AREA: 0.73 ACRES
PAD DISTURBED AREA: 2.99 ACRES
ACCESS ROAD LENGTH: 1,118'
ACCESS ROAD AVERAGE WIDTH: 28'
WELL PAD ELEVATION: 849.1'

LIST OF DRAWINGS

TS1.1	COVER SHEET	MRD6.4	DETAILS
EP2.1	EVACUATION ROUTE/ PREVAILING WINDS	MRD6.5	DETAILS
EP2.2	EVACUATION ROUTE/ PREVAILING WINDS	MRD6.6	DETAILS
AS3.1	AS-BUILT OVERALL SITE PLAN	MRD6.7	DETAILS
AS3.2	AS-BUILT SITE PLAN	MRD6.8	DETAILS
AS3.3	AS-BUILT SITE PLAN	MRD6.9	DETAILS
CRA4.1	ACCESS ROAD PROFILE		
CRA4.2	WELL PAD CROSS SECTIONS		
MRP5.1	RECLAMATION PLAN		
MRD6.1	DETAILS		
MRD6.2	DETAILS		
MRD6.3	DETAILS		

WELL API NUMBERS

201H API 051-01776
210H API 051-01777

OPERATOR

SWN PRODUCTION CO., LLC
ATTN: DEE SOUTHALL
P.O. BOX 1300
JANE LEW, WV 26378
(832) 796-1614

AT LEAST 48 HOURS, BUT NOT MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS), PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL CONTACT MISS UTILITY OF WEST VIRGINIA AT 811 OR 1-800-245-4848.



BETTEW Associates, Inc.
3475 Forest Lake Dr., Suite 100, Uniontown, OH 44685
Phone: (330) 818-9770 Fax: (330) 818-9780
Inquiries • Requests • Surveys • Landmarks Activities
Environmental Consultants

COVER SHEET FOR
BETTY SCHAFER MSH PAD
SAND HILL DISTRICT MARSHALL COUNTY, WV

TS1.1

4705102383

AS-BUILT SITE PLAN FOR BETTY SCHAFER MSH PAD SAND HILL DISTRICT, MARSHALL COUNTY, WV

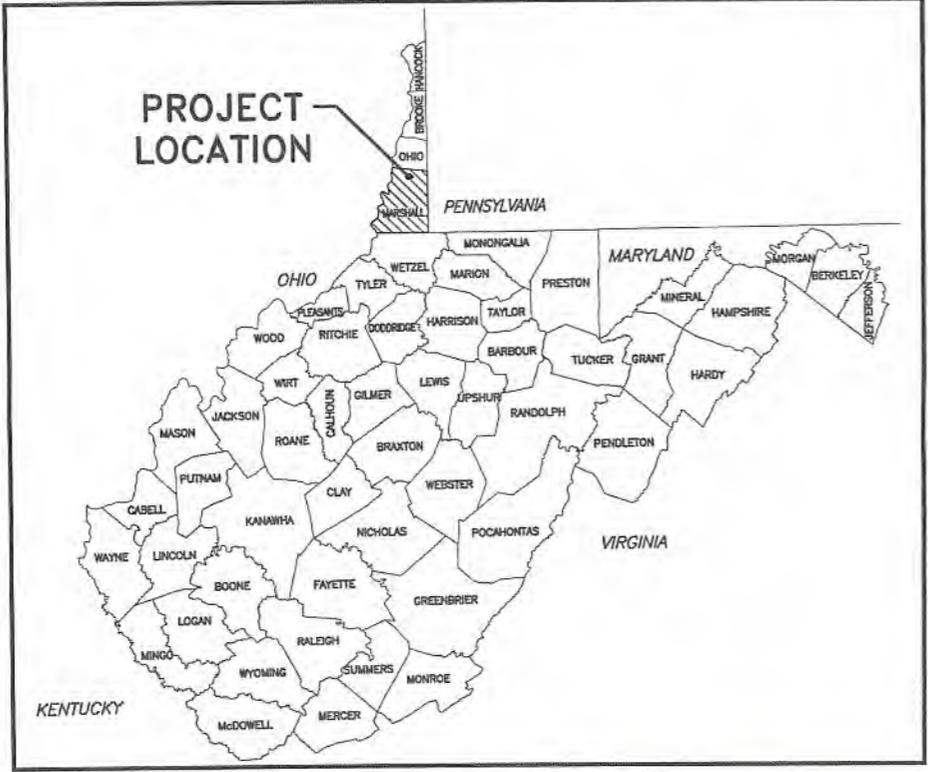


DRAWN BY: JAR
DATE: 10/21/2015
SCALE: AS SHOWN
RECEIVED: 087569000
DWC. NO.

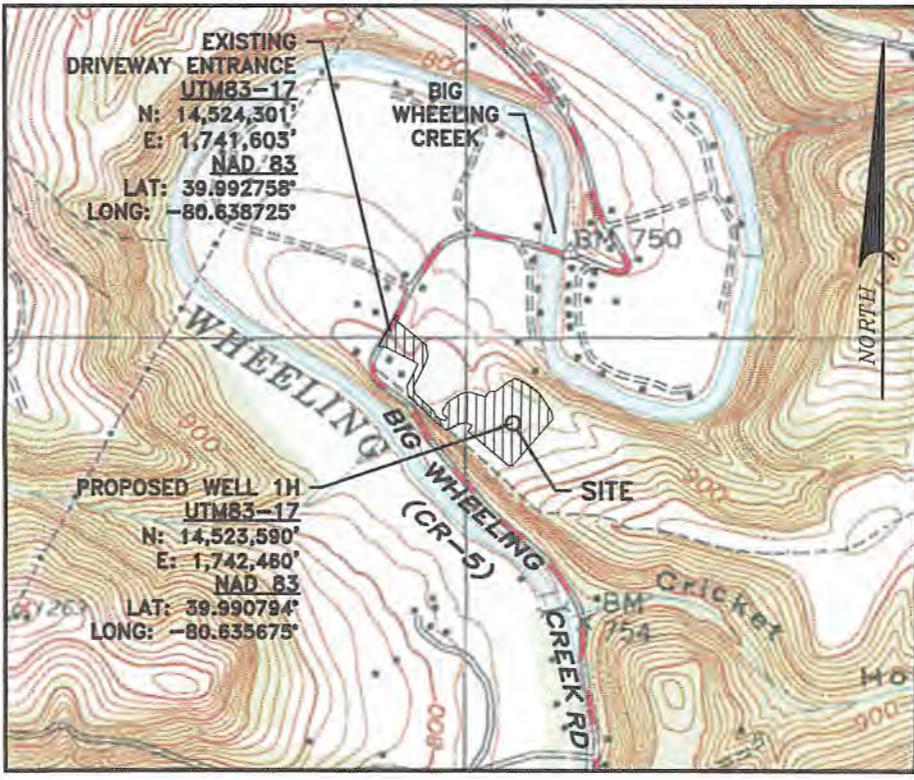
Office of Oil and Gas

APR 06 2021

WV Department of Environmental Protection



COUNTY MAP
N.T.S.



LOCATION MAP
SCALE - 1"=1000'

Bany Hill 3-9-21



RETTEW Associates, Inc.
5143 Stonetown Rd, Sta 100, North Canton, OH 44720
Phone (330) 818-9770 Fax (717) 697-8953
Engineers • Planners • Landscape Architects
Environmental Consultants

WEST VIRGINIA 811
CALL BEFORE YOU DIG! Dial 811 or 800.245.4848
Miss Utility of West Virginia

AT LEAST 48 HOURS, BUT NOT MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS), PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL CONTACT MISS UTILITY OF WEST VIRGINIA AT 811 OR 1-800-245-4848.

SWN
Southwestern Energy®

OPERATOR
SWN PRODUCTION CO., LLC
ATTN: DEE SOUTHALL
P.O. BOX 1300
JANE LEW, WV 26378
(832) 796-1614

SITE DATA

TOTAL DISTURBED AREA: 7.82 ACRES
ROAD DISTURBED AREA: 0.73 ACRES
PAD DISTURBED ACRES: 2.99 ACRES
ACCESS ROAD LENGTH: 1,118'
ACCESS ROAD AVERAGE WIDTH: 28'
WELL PAD ELEVATION: 849.1'

LIST OF DRAWINGS

- TS1.1 COVER SHEET
- EP2.1 EVACUATION ROUTE/ PREVAILING WINDS
- EP2.2 EVACUATION ROUTE/ PREVAILING WINDS
- AS3.1 AS-BUILT OVERALL SITE PLAN
- AS3.2 AS-BUILT SITE PLAN
- AS3.3 AS-BUILT SITE PLAN
- CRA4.1 ACCESS ROAD PROFILE
- CRA4.2 WELL PAD CROSS SECTIONS
- MRP5.1 RECLAMATION PLAN
- MRD6.1 DETAILS
- MRD6.2 DETAILS
- MRD6.3 DETAILS

WELL API NUMBERS

201H API 051-01776
210H API 051-01777

COVER SHEET FOR

BETTY SCHAFER MSH PAD

SAND HILL DISTRICT MARSHALL COUNTY, WV

TS1.1