



west virginia department of environmental protection

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

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

Friday, December 13, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit approval for RUSSELL HERVEY BRK 201H
47-009-00291-00-00

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

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

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

James A. Martin
Chief

A blue ink signature of James A. Martin, written in a cursive style, is positioned to the right of his name and title.

Operator's Well Number: RUSSELL HERVEY BRK 201H
Farm Name: RUSSELL HERVEY
U.S. WELL NUMBER: 47-009-00291-00-00
Horizontal 6A New Drill
Date Issued: 12/13/2019

PERMIT CONDITIONS

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

CONDITIONS

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

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.

4700900291

WW-6B
(04/15)

API NO. 47-009 -
OPERATOR WELL NO. Russell Hervey BRK 201H
Well Pad Name: Russell Hervey BRK

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

1) Well Operator: SWN Production Co., LLC 494512924 009- Brooke 3- Buffalo 620- Steubenville
Operator ID County District Quadrangle

2) Operator's Well Number: Russell Hervey BRK 201H Well Pad Name: Russell Hervey BRK

3) Farm Name/Surface Owner: Russell D. Hervey Public Road Access: Pierce Run Road

4) Elevation, current ground: 1166' Elevation, proposed post-construction: 1166'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

C. Hervey 10-8-19

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- 5841', Target Base TVD- 5898', Anticipated Thickness- 57', Associated Pressure- 3834

8) Proposed Total Vertical Depth: 5878'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18,151'

11) Proposed Horizontal Leg Length: 11406.52'

12) Approximate Fresh Water Strata Depths: 250'

13) Method to Determine Fresh Water Depths: Deepest Nearby Water Well

14) Approximate Saltwater Depths: 404' Salinity Profile Analysis

15) Approximate Coal Seam Depths: 255'

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

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

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

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WW-6B
(04/15)

4700900291
API NO. 47-009
OPERATOR WELL NO. Russell Hervey BRK 201H
Well Pad Name: Russell Hervey BRK

18)

CASING AND TUBING PROGRAM

| TYPE | Size (in) | New or Used | Grade | Weight per ft. (lb/ft) | FOOTAGE: For Drilling (ft) | INTERVALS: Left in Well (ft) | CEMENT: Fill-up (Cu. Ft.)/CTS |
|--------------|------------------|--------------------|--------------|-------------------------------|-----------------------------------|-------------------------------------|---|
| Conductor | 20" | New | H-40 | 94# | 100' | 100' | CTS |
| Fresh Water | 13 3/8" | New | H-40 | 48# | 357' | 357' | 355 sx/CTS |
| Coal | See | Surface | Casing | | | | |
| Intermediate | 9 5/8" | New | J-55 | 36# | 2015' | 2015' | 789 sx/CTS |
| Production | 5 1/2" | New | HCP-110 | 20# | 18,150' | 18,150' | lead 685sx/Tail 2910sx/ 100' Inside Integ |
| Tubing | | | | | | | |
| Liners | | | | | | | |

C. BLO 108-19

| TYPE | Size (in) | Wellbore Diameter (in) | Wall Thickness (in) | Burst Pressure (psi) | Anticipated Max. Internal Pressure (psi) | Cement Type | Cement Yield (cu. ft./k) |
|--------------|------------------|-------------------------------|----------------------------|-----------------------------|---|--------------------|---------------------------------|
| Conductor | 20" | 30" | 0.25 | 2120 | 81 | Class A | 1.19/50% Excess |
| Fresh Water | 13 3/8" | 17.5" | 0.380 | 2740 | 633 | Class A | 1.19/50% Excess |
| Coal | See | Surface | Casing | | | | |
| Intermediate | 9 5/8" | 12 1/4" | 0.395 | 3950 | 1768 | Class A | 1.19/50% Excess |
| Production | 5 1/2" | 8 3/4" | 0.361 | 12360 | 9500 | Class A | 1.20/50% Excess |
| Tubing | | | | | | | |
| Liners | | | | | | | |

PACKERS

| | | | | |
|-------------|--|--|--|--|
| Kind: | | | | |
| Sizes: | | | | |
| Depths Set: | | | | |

WW-6B
(10/14)

API NO. 47- 009 -
OPERATOR WELL NO. Russell Hervey BRK 201H
Well Pad Name: Russell Hervey BRK

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

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

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

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 28.2

22) Area to be disturbed for well pad only, less access road (acres): 10.3

23) Describe centralizer placement for each casing string:

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

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

See Attachment ***

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

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Schlumberger Cement Additives

| | Product Name | Product Use | Chemical Name | CAS Number |
|-------------------------|---------------|---------------------|----------------------------------|-------------|
| Surface Intermediate | S001 | accelerator | calcium chloride up to 3% | 10043-52-4 |
| | S001 | accelerator | calcium chloride | 10043-52-4 |
| Kick Off Plug | D080 | dispersant | sodium polynaphthalene sulfonate | 9008-63-3 |
| | D801 | retarder | aromatic polymer derivative | proprietary |
| | D047 | antifoam | polypropylene glycol | 25322-69-4 |
| Production-Lead | D167 | fluid loss | aliphatic amide polymer | proprietary |
| | D154 | extender | non-crystalline silica | 7631-86-9 |
| | D400 | gas migration | boric acid | 10043-35-3 |
| | D046 | antifoam | polypropylene glycol | 25322-69-4 |
| | | | fullers earth (attapulgate) | 8031-18-3 |
| | D201 | retarder | chrystalline silica | 14808-60-7 |
| | | | metal oxide | proprietary |
| | D202 | dispersant | sulphonated synthetic polymer | proprietary |
| formaldehyde (impurity) | | | proprietary | |
| Production-Tail | D046 | antifoam | polypropylene glycol | 25322-69-4 |
| | | | fullers earth (attapulgate) | 8031-18-3 |
| | D167 | fluid loss | aliphatic amide polymer | proprietary |
| | | | sodium polynaphthalene sulfonate | 9008-63-3 |
| | D065 | dispersant | sodium sulfate | 7757-82-6 |
| | | | chrystalline silica | 14808-60-7 |
| D201 | retarder | metal oxide | proprietary | |
| D153 | anti-settling | chrystalline silica | 14808-60-7 | |

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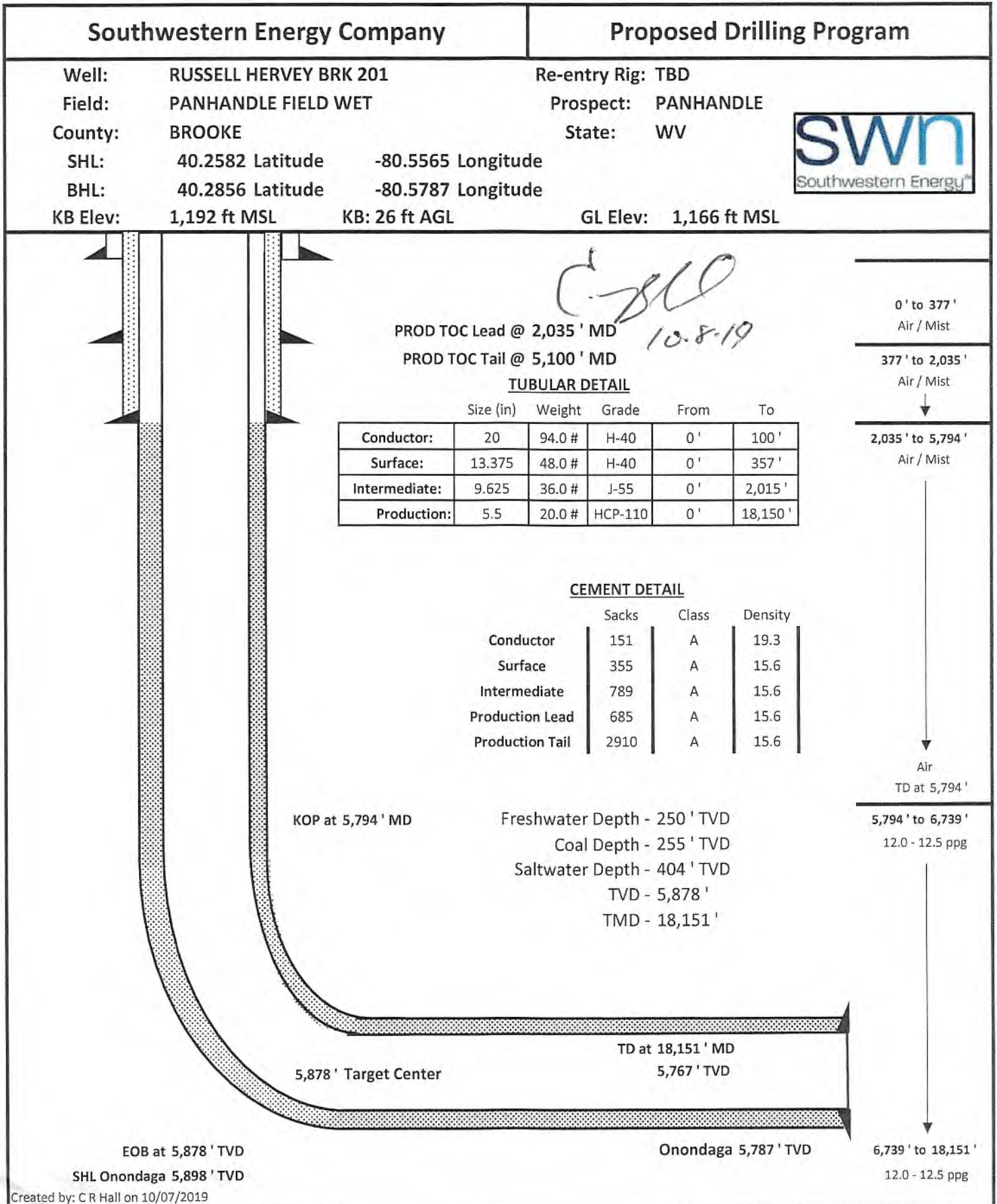
| API | Operator | Status | Latitude | Longitude | Vertical TD | Producing Formation | Producing Zones Not Perforated |
|------------|----------------------------|-----------|-----------|------------|---------------|---------------------|--------------------------------|
| 4700900136 | SWN PRODUCTION COMPANY,LLC | COMPLETED | 40.258113 | -80.556679 | 5959 | MARCELLUS SHALE | Not Available |
| 4700900144 | SWN PRODUCTION COMPANY,LLC | COMPLETED | 40.258127 | -80.556723 | 5869 | MARCELLUS SHALE | Not Available |
| 4700900170 | SWN PRODUCTION COMPANY,LLC | COMPLETED | 40.258121 | -80.55651 | 5875 | MARCELLUS SHALE | Not Available |
| 4700900172 | SWN PRODUCTION COMPANY,LLC | COMPLETED | 40.258121 | -80.55651 | 5878 | MARCELLUS SHALE | Not Available |
| 4700900178 | SWN PRODUCTION COMPANY,LLC | COMPLETED | 40.258164 | -80.55665 | 5855 | MARCELLUS SHALE | Not Available |
| 4700900179 | SWN PRODUCTION COMPANY,LLC | COMPLETED | 40.25815 | -80.556604 | 5881 | MARCELLUS SHALE | Not Available |
| 4700930008 | STANDARD PIPE & OIL CO | PLUGED | 40.275498 | -80.580456 | Not Available | Not Available | Not Available |

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WW-9
(4/16)

API Number 47 - 009 - _____
Operator's Well No. Russell Hervey BRK 201H

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) Buffalo Creek Quadrangle Steubenville East

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: _____

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____ at next anticipated well, API# will be included with the WR-34/DDMR &/or permit addendum. _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain flow back fluids will be put in steel tanks and reused or taken to a permitted disposal facility)

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

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

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

Additives to be used in drilling medium? Attachment 3B

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

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

-Landfill or offsite name/permit number? Meadowfill SWF- 1032, Short Creek SWF-1034, Carbon Limestone MSWL018781, Wetzel County 1021

Arden Landfill 10072, Apex Sanitary Landfill 06-08438, Brooke Co SWF-1013, Valley 100280
Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

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

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

Company Official Signature Brittany Woody
Company Official (Typed Name) Brittany Woody
Company Official Title Senior Regulatory Analyst



Subscribed and sworn before me this 3rd day of September, 2019
Jessica L. Vangilder Notary Public
My commission expires 7-20-20

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SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 28.2 Prevegetation pH _____

Lime as determined by pH test min.2 Tons/acre or to correct to pH 10.3

Fertilizer type 10-20-20

Fertilizer amount 600 lbs/acre

Mulch Hay/Straw Tons/acre

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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: _____

C. [Signature] 10-8-19

Comments: _____

Title: Oil & Gas Inspector

Date: 10-8-19

Field Reviewed?

Yes

No

Attachment 3A

CLOSED LOOP SYSTEM

The closed loop system is designed to eliminate the use of reserve pits by providing a higher level of solids control processing and using steel pits for capture of drill cuttings. The cuttings are then processed to achieve landfill requirements before hauling to approved landfills. The liquids are processed to recycle into the active mud system or to transfer to onsite temporary storage as needed.

The closed loop system consists of several sets of a shale gas separator (often called a 'methana'), several banks of solids shakers, high speed centrifuges (1 or 2) used to process the fluid portion of the mud system to remove low gravity solids, low speed centrifuge used for barite recovery in high weight liquid drilling systems, a dewatering system (for air intervals and if freshwater mud systems are in use) used to further clean liquids by flocculation and additional mechanical separation, associated open top tanks for processing liquids and capturing solids for disposal, and transfer pumps to move fluids through the processes. There is an area adjacent to the cuttings tanks (Red Zone) where a track hole is utilized to recover the processed cuttings for loading into containers for hauloff. (See attached schematic of a generic closed loop system layout)

Below are discussions of the processes used when drilling the air interval or liquids interval.

AIR DRILLING INTERVALS

During air drilling operations, flow from the rig will pass down the flowline to the Shale Gas Separator (sometimes called a methane) where gas and liquids/solids are separated. Gas is sent to the flare scrubber tank and is flared at the flare stack. Solids and fluids pass across a shaker system to separate solids from liquids. Solids pass into the cuttings tanks where they are captured for drying and hauloff to an approved landfill site. Liquids fall into a shaker tank and are collected by a centrifugal pump to be processed by the high speed centrifuge to further separate liquids and solids. Solids are then dumped into the cuttings tank for drying and hauloff. Liquids are further processed to remove additional low gravity solids before being reused or transferred to onsite storage.

LIQUIDS DRILLING (FRESHWATER, BRINE, SOBM)

When drilling is converted to liquids drilling, the shale gas separator and associated shaker tank are bypassed, and the liquids system is processed over the primary and drying shaker systems. Cuttings drop into the cuttings tank for additional processing. Any recoverable associated liquids attached to the cutting are recovered out the tank and processed through the low gravity (high speed) and barite recovery centrifuges (low speed) to further remove low gravity solids and to recover barite for reuse in the mud systems.

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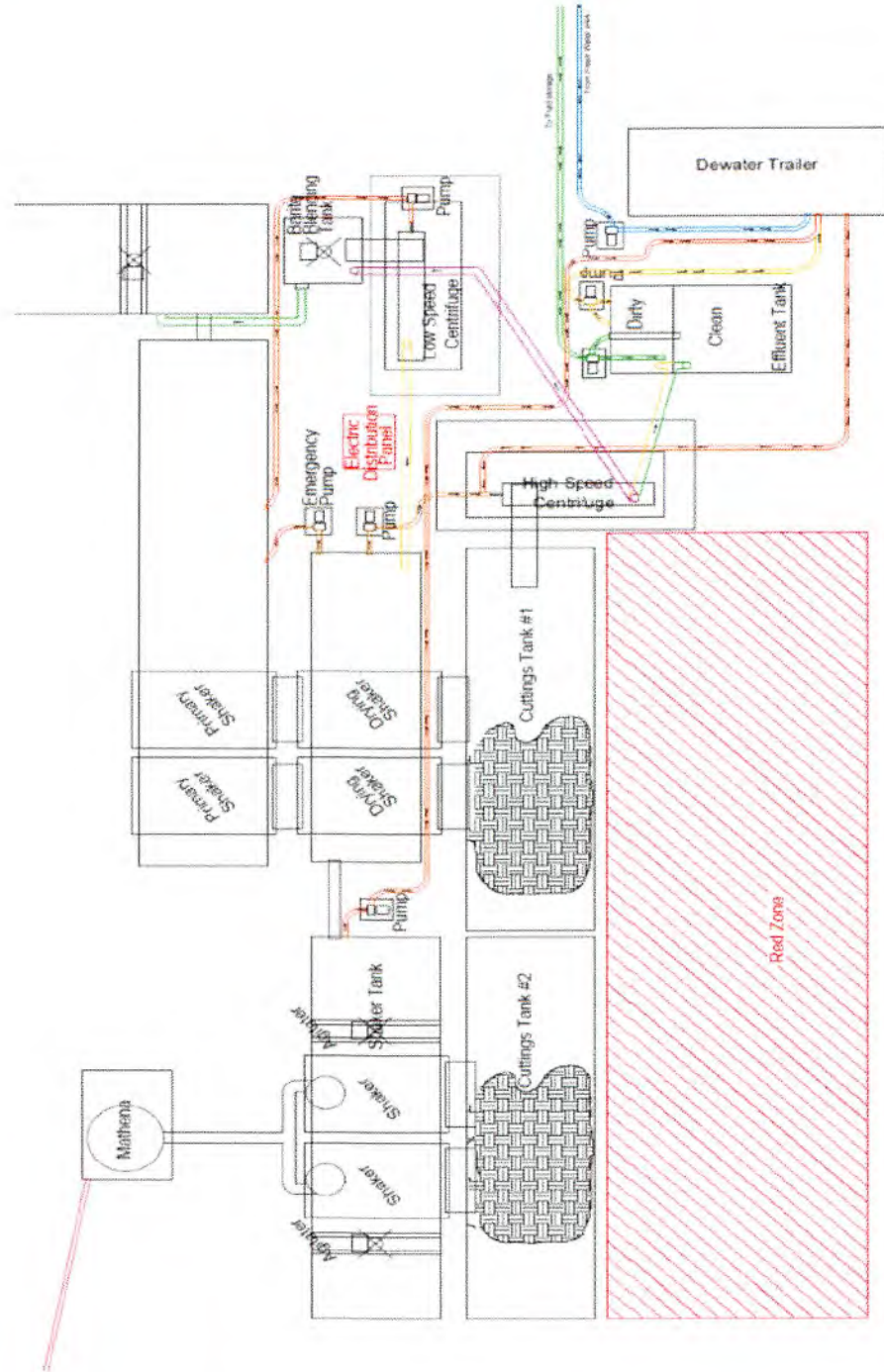
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EXAMPLE SCHEMATIC FOR CLOSED LOOP SOLIDS CONTROL SYSTEM



Solids Control Layout



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Attachment 3B
Drilling Mediums

Surface/Coal(if present)/Freshwater Intervals:

Air

Freshwater (if needed based on conditions)

Intermediate/Coal (if present):

Air

Brine (In Gas Storage areas)

Organophilic Bentonite

Production Hole:

Air

Synthetic Oil (Base Fluid for mud system)

Barite

Calcium Chloride

Lime

Organophilic Bentonite

Primary and Secondary Emulsifiers

Gilsonite

Calcium Carbonate

Friction Reducers

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WVD Seeding Specification



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

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

| ORGANIC PROPERTIES | |
|---|---|
| Seed Mixture: SWN Production Organic Mix | SWN Supplied |
| Organic Timothy | 50% |
| Organic Red or White Clover OR | 50% |
| 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 | Pelleted Lime @ 2 Tons per Acre |

| SOIL AMENDMENTS | |
|---|--------------------------|
| 10-20-20 Fertilizer | *Apply @ 500lbs per Acre |
| Pelleted Lime | Apply @ 2 Tons per Acre |
| *unless otherwise dictated by soil test results | |
| Seeding Calculation Information: | |
| 1452' of 30' ROW/LOD is One Acre | |
| 871' of 50' ROW/LOD is One Acre | |
| 622' of 70' ROW/LOD is One Acre | |
| Synopsis: | |
| Every 622 linear feet in a 70' ROW/LOD, you should be using (2) 50lb bags of seed, (4) 50lb bags of fertilizer and (80) 50lb bags of Lime (2x seed in winter months + 50lb Winter Wheat/ac). | |
| Special Considerations: | |
| Landowner Special Considerations including CREP program participants require additional guidance that is not given here. Discuss these requirements with SWN supervision at the beginning of the project to allow time for special seed delivery. | |

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

MARCELLUS WELL DRILLING PROCEDURES AND WELL SITE SAFETY PLAN

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

API NO. 47-XXX-XXXXX
WELL NAME: Russell Hervey BRK 201H
Steubenville East QUAD
Buffalo DISTRICT
Brooke COUNTY, WEST VIRGINIA

Submitted by:

Name: Brittany Woody

Date: 8/26/2019

Brittany Woody

Title: Senior Regulatory Analyst

SWN Production Co., LLC

Approved by:

Name: *C. R. O.*

Date: 10-8-19

Title: *Oil and Gas Inspector*

Approved by:

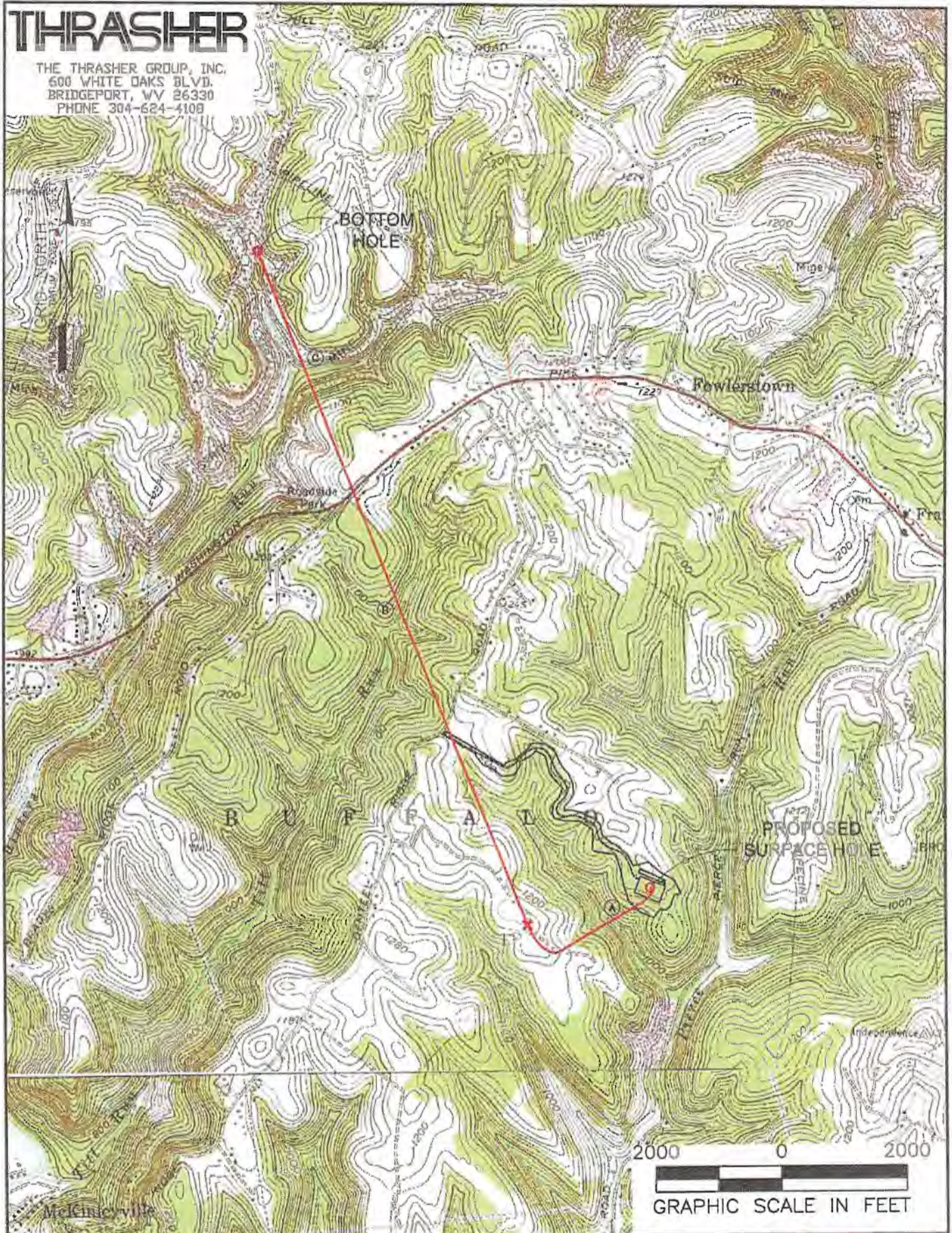
Name: _____












Date: _____

Title: _____

THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4100



| | | | | | | | |
|---|--|--|--|---|--|--|--|
| NAME AND DISTANCE TO THE NEAREST STREAM: AN UN-NAMED TRIBUTARY TO PIERCE RUN IS LOCATED ±0.16 MILES SOUTHWEST OF THE CENTER OF THE DRILL PAD. | | STREAM CROSSING COORDINATES (NAD 83): A) LAT: 40.25666784° LONG: -80.55876917° B) LAT: 40.27006812° LONG: -80.57057810° C) LAT: 40.28044610° LONG: -80.57601764° | | COMPANY:   | | | |
| WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET | | OPERATOR'S RUSSELL HERVEY BRK WELL #: 201H | | LOCATION: BUFFALO DISTRICT, BROOKE COUNTY, WEST VIRGINIA | | | |
| FEMA FLOOD INFORMATION: NO FLOOD ZONES. | | SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.25810725° LONGITUDE: -80.55646372° | | BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.28560758° LONGITUDE: -80.57872133° | | | |
| LEGEND:  PROPOSED SURFACE HOLE / BOTTOM HOLE  EXISTING / PRODUCING WELLHEAD  LANDING POINT LOCATION  FLOOD PLAIN | |  ACCESS ROAD  PUBLIC ROAD  ACCESS ROAD TO PREV. SITE  LEASE BOUNDARY  PROPOSED PATH | | REVISIONS: _____ _____ _____ | | DATE: 10-21-2019 DRAWN BY: K. POTH SCALE: 1" = 2000' DRAWING NO: 050-5495 TOPOGRAPHIC MAP | |

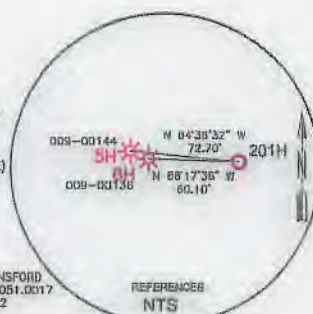
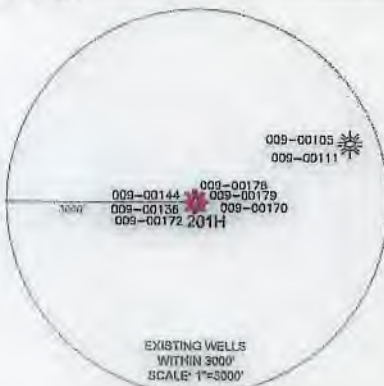
THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

NOTES ON SURVEY

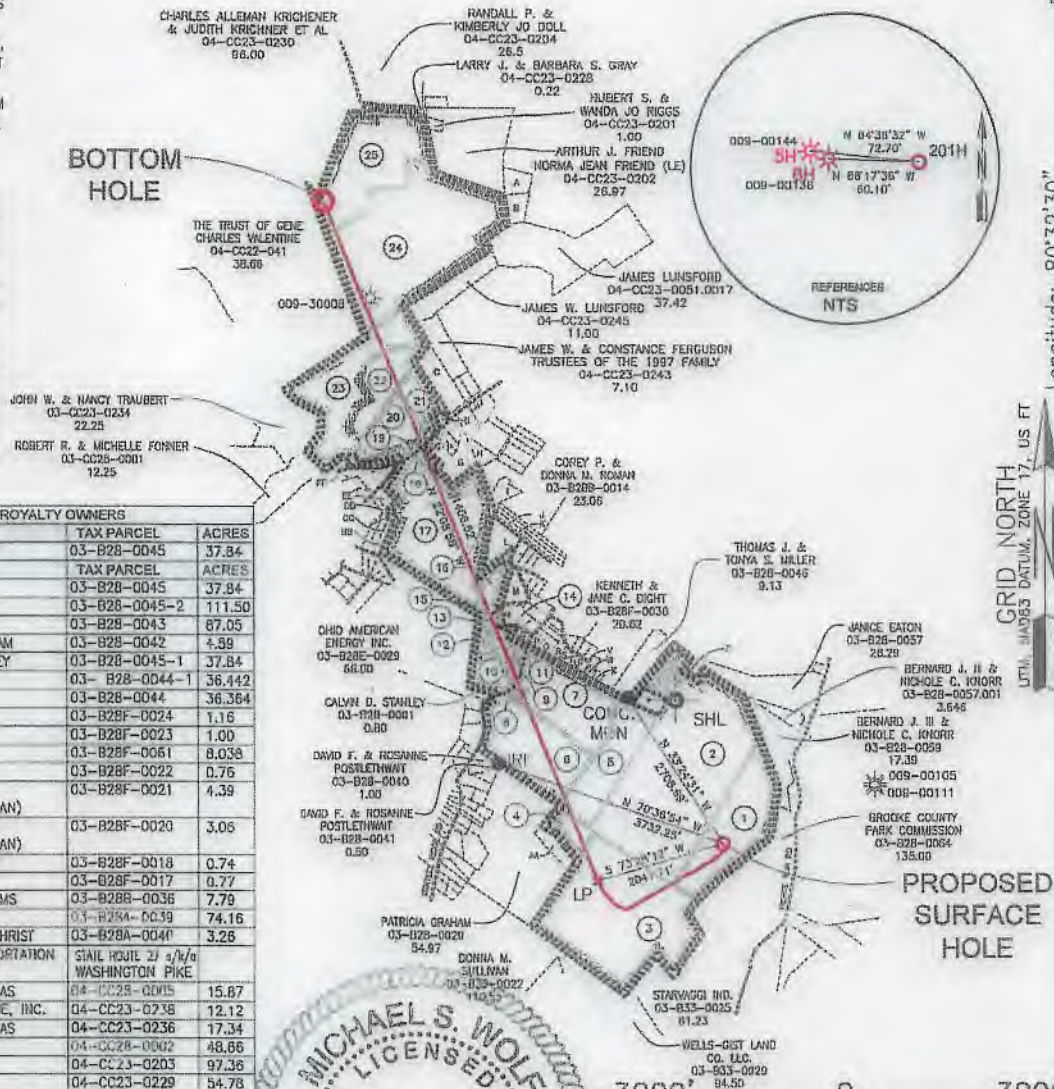
- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

Latitude: 40°17'30" SURFACE HOLE 4,198'
BOTTOM HOLE 7,047'



| SURFACE HOLE LOCATION (SHL): | |
|-------------------------------|--|
| UTM (NAD83, ZONE 17, METERS): | |
| NORTHING: 4,456,499.58 | |
| EASTING: 537,717.25 | |
| LANDING POINT LOCATION (LPL): | |
| UTM (NAD83, ZONE 17, METERS): | |
| NORTHING: 4,456,322.52 | |
| EASTING: 537,120.66 | |
| BOTTOM HOLE LOCATION (BHL): | |
| UTM (NAD83, ZONE 17, METERS): | |
| NORTHING: 4,459,542.78 | |
| EASTING: 535,810.01 | |

| WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS | | | |
|--|---|--|--------|
| TRACT | ROYALTY OWNER | TAX PARCEL | ACRES |
| 1 | RUSSELL D. & LISA K. HERVEY | 03-B28-0045 | 37.84 |
| 1 | RUSSELL D. HERVEY | 03-B28-0045 | 37.84 |
| 2 | WILLIAM JUDSON HERVEY III | 03-B28-0045-2 | 111.50 |
| 3 | PATRICIA GRAHAM | 03-B28-0043 | 87.05 |
| 4 | RANDY GRAHAM & PATRICIA GRAHAM | 03-B28-0042 | 4.89 |
| 5 | FREDERICK L. & CATHY JO HERVEY | 03-B28-0045-1 | 37.84 |
| 6 | DEWITT STANLEY | 03-B28-0044-1 | 36.442 |
| 7 | ROBERT C. STANLEY | 03-B28-0044 | 36.364 |
| 8 | ELLEN STANLEY | 03-B28F-0024 | 1.16 |
| 9 | MARtha HALL ET AL | 03-B28F-0023 | 1.00 |
| 10 | DEWITT STANLEY | 03-B28F-0061 | 8.038 |
| 11 | MELISSA RICHARDSON | 03-B28F-0022 | 0.76 |
| 12 | CHARLES G. THORNE (LE), THERESA ANN LYNCH (REMAINDERMAN) | 03-B28F-0021 | 4.39 |
| 13 | CHARLES G. THORNE (LE), THERESA ANN LYNCH (REMAINDERMAN) | 03-B28F-0020 | 3.06 |
| 14 | JOHN & NANCY BAUMBARTNER | 03-B28F-0018 | 0.74 |
| 15 | DAVID A. SESLER | 03-B28F-0017 | 0.77 |
| 16 | RICHARD IRVIN & PATRICIA ANN SIMS | 03-B28B-0036 | 7.79 |
| 17 | FOUR SWANS LP | 03-B28A-0039 | 74.16 |
| 18 | DANIEL L. GILCHRIST & JO ANN GILCHRIST | 03-B28A-0040 | 3.28 |
| 19 | WEST VIRGINIA DEPARTMENT OF TRANSPORTATION | STATE ROUTE 21 s/w of WASHINGTON PIKE | |
| 20 | WILLIAM R. & MARGARET L. AFTANAS | 04-CC28-0015 | 15.87 |
| 21 | WELL SEBURG CHURCH OF THE NAZARENE, INC. | 04-CC23-0238 | 12.12 |
| 22 | WILLIAM R. & MARGARET L. AFTANAS | 04-CC23-0236 | 17.34 |
| 23 | SCHAFPA & COMPANY INC | 04-CC28-0002 | 48.86 |
| 24 | JAMES LUNSFORD | 04-CC23-0203 | 97.36 |
| 25 | DONNA KATHRYN HALL | 04-CC23-0229 | 54.78 |



GRAPHIC SCALE IN FEET

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. 2270

Michael S. Wolf 10/21/19

| | | |
|---|---|---|
| <p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p> | <p>MINIMUM DEGREE OF ACCURACY: 1/200</p> <p>PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)</p> | <p>OPERATOR'S WELL #: 201H</p> <p>API WELL #: 47 009 00291</p> <p>STATE COUNTY PERMIT</p> |
| | <p>WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/></p> <p>WATERSHED: BUFFALO CREEK</p> <p>DISTRICT: BUFFALO COUNTY: BROOKE</p> <p>SURFACE OWNER: RUSSELL D. HERVEY</p> <p>OIL & GAS ROYALTY OWNER: RUSSELL D. HERVEY & LISA K. HERVEY</p> <p>DRILL <input checked="" type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION</p> <p>CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input type="checkbox"/> (SPECIFY)</p> <p>TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 5,878' TVD 18,151' TMD</p> | <p>WELL OPERATOR: SWN PRODUCTION COMPANY, LLC</p> <p>ADDRESS: 1300 FORT PIERPONT DRIVE SUITE 201</p> <p>CITY: MORGANTOWN STATE: WV ZIP CODE: 26508</p> <p>DESIGNATED AGENT: BRITTANY WOODY</p> <p>ADDRESS: 1300 FORT PIERPONT DRIVE SUITE 201</p> <p>CITY: MORGANTOWN STATE: WV ZIP CODE: 26508</p> |
| <p>REVISIONS:</p> | | <p>DATE: 10-21-2019</p> <p>DRAWN BY: K. POTH</p> <p>SCALE: 1" = 3000'</p> <p>DRAWING NO: 050-5495</p> <p>WELL LOCATION PLAT</p> |

THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

| ADJOINING OWNERS TABLE | | | |
|------------------------|--|---------------|-------|
| TRACT | SURFACE OWNER | TAX PARCEL | ACRES |
| A | MICHAEL J. COEN | 04-CC23-0172 | 3.20 |
| B | KEITH M. & CHRISTOL A. MOORE | 04-CC23-0171 | 3.55 |
| C | EDITH E. McCOMBS | 04-CC23-0239 | 7.00 |
| D | NAZARENE CHURCH | 04-CC23-0237 | 0.67 |
| E | W. GEORGE JR. & MARGARET SHEPERD | 03-B23P-0001 | 0.77 |
| F | W. GEORGE JR. & MARGARET JEANE SHEPERD | 03-B28B-0001 | 0.67 |
| G | DANIEL L. & JOANNE GILCHRIST | 03-B28B-0056 | 5.74 |
| H | WILLIAM L. CONLEY | 03-B28B-0002 | 2.13 |
| I | RICHARD A. & CINDY A. CHAMP | 03-B28B-0015 | 2.73 |
| J | MARILYN TAYLOR | 03-B28B-0029 | 1.98 |
| K | MARILYN TAYLOR | 03-B28B-0030 | 1.46 |
| L | DOROTHY M. COX | 03-B28B-0035 | 5.20 |
| M | JEFFREY W. DORRANCE JR. | 03-B28F-0010 | 2.609 |
| N | DAVID A. SESLER SR. | 03-B28F-0016 | 0.75 |
| O | WALTER E. JR. & RHONDA L. MARTINDILL | 03-B28F-0019 | 0.86 |
| P | BRIAN SOLY & KELLY HORVATH | 03-B28F-0026 | 0.84 |
| Q | THOMAS R. BLOOM | 03-B28F-0027 | 0.86 |
| R | TIMOTHY J. STANLEY | 03-B28F-0028 | 1.04 |
| S | BRIAN E. & MARANDA S. JOHNSON | 03-B28F-0029 | 0.74 |
| T | JAMES LANDWEHR SR. | 03-B28F-0030 | 0.56 |
| U | GEORGE WILLIAM & ROSEANNE BUXTON | 03-B28F-0031 | 0.60 |
| V | JAMES L. & DIANNE L. STOCK | 03-B28F-0032 | 0.62 |
| W | MICHAEL E. & DIANE M. DIGHT | 03-B28F-0033 | 0.37 |
| X | DAVID & DIANA PERINE | 03-B28F-0035 | 0.50 |
| Y | CHARLIE D. & BRITNEY L. FARRIS | 03-B28-0045-4 | 3.26 |
| Z | JAMES ROBERT & KAREN L. HERVEY | 03-B28-0045-3 | 1.01 |
| AA | RANDY & PATRICIA GRAHAM | 03-B28-0029-1 | 3.39 |
| BB | MARTHA L. DIAMOND | 03-B28A-0028 | 1.33 |
| CC | GERALD W. SMITH | 03-B28A-0029 | 1.26 |
| DD | SANDRA K. BEAVER | 03-B28A-0037 | 0.82 |
| EE | MATTHEW JAMES RHODES | 03-B28A-0038 | 1.51 |
| FF | WILLIAM R. & MARGARET L. AFTANAS | 04-CC28-0003 | 0.93 |
| GG | RICKY L. JR. & THERESA JO TAYLOR | 03-B28A-0041 | 1.11 |

COMPANY: **SWN** 
Production Company, LLC Production Company™

| | |
|------------|----------------------|
| REVISIONS: | DATE: 10-21-2019 |
| | SHEET 2 OF 2 |
| | DRAWN BY: K. POTH |
| | SCALE: NOT TO SCALE |
| | DRAWING NO: 050-5495 |
| | WELL LOCATION PLAT |

WW-6A1
(5/13)

Operator's Well No. Russell Hervey BRK 201H

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

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

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

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

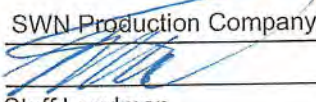
See Attached Exhibit "A"

**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: 
 Its: Staff Landman

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EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC., Operator
 Russell Hervey BRK 201H
 Brooke County, West Virginia

| # | TMP | LESSOR | LESSEE | ROYALTY | BK/PG |
|----|---------------------------|--|---|----------|---|
| 1) | 03-0B28-0045-0000-0000 ✓ | Russell D. Hervey and Lisa K. Hervey, husband and wife | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.00% | 17/89 30/480 |
| 2) | 03-0B28-0045-0002-0000 ✓ | William Judson Hervey III and Theresa J. Hervey, husband and wife | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.00% | 20/439 30/480 |
| 3) | 03-0B28-0043-0000-0000 ✓ | Patricia Graham | SWN Production Company, LLC | 16.00% | 33/292 |
| | | Michael Whitco | SWN Production Company, LLC | 16.00% | 33/289 |
| | | Paula Baranowski | SWN Production Company, LLC | 16.00% | 34/73 |
| | | Eileen Ridgely | SWN Production Company, LLC | 16.00% | 34/79 |
| 4) | 03-0B28-0042-0000-0000 ✓ | Randy R. and Patricia J. Graham, husband and wife | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.0000% | 16/729 30/480 |
| 5) | 03-0B28-0045-0001-0000 ✓ | Frederick L. Hervey and Cathy Jo Hervey, husband and wife, as JTWR0S | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.0000% | 17/94 30/480 |
| 6) | 03-0B28-0044-0001-0000 ✓ | Robert G. Stanley and Ellen Stanley Julia Stanley | Fortuna Energy, Inc. Range Resources-Appalachia, LLC Chesapeake Appalachia, L.L.C. Chesapeake Appalachia, LLC SWN Production Company, LLC | 18.0000% | 9/650 10/207 10/552 16/782 30/480 |
| 7) | 03-0B28-0044-0000-0000 ✓ | Robert G. Stanley and Ellen Stanley | Fortuna Energy, Inc. Range Resources-Appalachia, LLC Chesapeake Appalachia, L.L.C. Chesapeake Appalachia, LLC SWN Production Company, LLC | 18.0000% | 9/650 10/207 10/552 16/782 30/480 |
| 8) | 03-0B28F-0024-0000-0000 ✓ | Robert G. Stanley and Ellen Stanley | Fortuna Energy, Inc. Range Resources-Appalachia, LLC Chesapeake Appalachia, L.L.C. Chesapeake Appalachia, LLC SWN Production Company, LLC | 18.0000% | 9/650 10/207 10/552 16/782 30/480 |

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4700900291

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 Russell Hervey BRK 201H
 Brooke County, West Virginia

| # | TMP | LESSOR | LESSEE | ROYALTY | BK/PG |
|-----|--------------------------------------|---|---|---------|--|
| 9) | 03-0B28F-0023-0000-0000 ✓ | Martha Hall, Life Tenant Robert Charles Stanley, Remainderman | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 26/222 30/480 |
| 10) | 03-0B28F-0061-0000-0000 ✓ | Dewitt and Nicole Maree Stanley, husband and wife | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 21/770 30/480 |
| 11) | 03-0B28F-0022-0000-0000 ✓ | Melissa Richardson | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 22/587 30/480 |
| 12) | 03-0B28F-0021-0000-0000 ✓ | Charles G. Thorne and Ellen A. Thorne | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 23/26 30/480 |
| 13) | 03-0B28F-0020-0000-0000 ✓ | Charles G. Thorne and Ellen A. Thorne | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 23/26 30/480 |
| 14) | 03-0B28F-0018-0000-0000 ✓ | John Baumgartner and Nancy Baumgartner, husband and wife | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 22/368 30/480 |
| 15) | 03-0B28F-0017-0000-0000 ✓ | David A. Sesler, Sr., a/k/a David A. Sessler | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 22/363 30/480 |
| 16) | 03-0B28B-0036-0000-0000 ✓ | Richard Irvin and Patricia Ann Sims, husband and wife | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 21/551 30/480 |
| 17) | 03-0B28A-0039-0000-0000 ✓ | Four Swans, LP | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 23/416 30/480 |
| 18) | 03-0B28A-0040-0000-0000 ✓ | Daniel L. Gilchrist and Jo Ann Gilchrist, husband and wife | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 18.000% | 21/287 30/480 |
| 19) | State Route 27 aka Washington Pike ✓ | West Virginia Department of Transportation, Division of Highways | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 15.00% | 18/723 30/480 |
| 20) | 04-CC28-0005-0000-0000 ✓ | William R. and Margaret L. Aftanas, husband and wife | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 14.00% | 11/1 30/480 |
| 21) | 04-CC23-0238-0000-0000 ✓ | Wellsburg Church of the Nazarene, Inc., a/k/a The First Church of the Nazarene | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC | 14.00% | 19/242 30/480 |
| 22) | 04-CC23-0236-0000-0000 ✓ | James Bruce and Diana Midcap, husband and wife Garnet Midcap, widow Betty Jan Midcap, widow Alicia Howard, widow | Chesapeake Appalachia, L.L.C. SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC | 18.00% | 27/449 30/480 27/459 30/480 28/121 30/480 27/444 30/480 |

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 Russell Hervey BRK 201H
 Brooke County, West Virginia

| # | TMP | LESSOR | LESSEE | ROYALTY | BK/PG |
|---|-----|--|-------------------------------|---------|--------|
| | | Paul Alan and Erika Midcap, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 27/454 |
| | | Patrick and Cynthia McCloskey, husband and wife | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Jerry Wayne Midcap, married | Chesapeake Appalachia, L.L.C. | 18.00% | 27/608 |
| | | D. Brent Queen, widower | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Martha L. Goddard, widow | Chesapeake Appalachia, L.L.C. | 18.00% | 28/126 |
| | | Frederic Scott and Diane M. Makara, husband and wife | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Brian and Tammy Makara, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 28/109 |
| | | Jan Chamberlain and Stephanie Makara Chamberlain, husband and wife | SWN Production Company, LLC | 18.00% | 30/480 |
| | | William B. and Paula J. Kumer husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 29/97 |
| | | Richard L. Kumer, Jr. and Connie H. Kumer, husband and wife | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Richard L. and Deborah C. Collins, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 29/103 |
| | | Douglas R. Lauck, single | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Randal J. Lauck, single | Chesapeake Appalachia, L.L.C. | 18.00% | 30/480 |
| | | Curtis J. Lauck, single | SWN Production Company, LLC | 18.00% | 29/289 |
| | | Burton R. and Wanda Lauck, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 30/480 |
| | | Lawrence R. Midcap, widower | SWN Production Company, LLC | 18.00% | 29/534 |
| | | Grace M. Midcap, widow | Chesapeake Appalachia, L.L.C. | 18.00% | 30/480 |

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 Russell Hervey BRK 201H
 Brooke County, West Virginia

| # | TMP | LESSOR | LESSEE | ROYALTY | BK/PG |
|-----|------------------------|--|-------------------------------|---------|--------|
| | | Emmett Wheeler, a/k/a Emmitt Wheeler, and Bonnie Wheeler, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 29/546 |
| | | Douglas and Marita Wheeler, husband and wife | SWN Production Company, LLC | 18.00% | 31/288 |
| | | Aaron Wheeler, single | Chesapeake Appalachia, L.L.C. | 18.00% | 30/114 |
| | | Judy A. Snodgrass, widow | SWN Production Company, LLC | 18.00% | 31/288 |
| | | Mary Beth Barrett, married | Chesapeake Appalachia, L.L.C. | 18.00% | 30/148 |
| | | George Michael Makara, unmarried | SWN Production Company, LLC | 18.00% | 31/288 |
| | | Carole Anne Bondi, widow | Chesapeake Appalachia, L.L.C. | 18.00% | 30/120 |
| | | Christopher Siebert and Shannon Wheeler, husband and wife | SWN Production Company, LLC | 18.00% | 31/288 |
| | | Ruth Ellen Yazevac, unmarried | Chesapeake Appalachia, L.L.C. | 18.00% | 30/396 |
| | | Tara Keeley, individually and as Attorney-in-Fact for Frank R. Keeley | SWN Production Company, LLC | 18.00% | 31/288 |
| | | Alfred C. and Brenda K. Leist, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 30/403 |
| | | Edward and Paula Wheeler, husband and wife | SWN Production Company, LLC | 18.00% | 31/288 |
| | | Schiappa and Company, Inc. | SWN Production Company, LLC | 18.00% | 31/11 |
| 23) | 04-CC28-0002-0000-0000 | James Bruce and Diana Midcap, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 30/782 |
| | | Garnet Midcap, widow | SWN Production Company, LLC | 18.00% | 30/788 |
| | | Betty Jane Midcap, widow | Chesapeake Appalachia, L.L.C. | 18.00% | 31/37 |
| | | Alicia Howard | SWN Production Company, LLC | 18.00% | 31/16 |
| | | Paul allen and Erika Midcap, husband and wife | SWN Production Company, LLC | 18.00% | 31/72 |
| | | Patrick and Cynthia McCloskey, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 24/430 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 27/449 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 27/459 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 28/121 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 24/444 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 24/454 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 27/608 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |

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EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC., Operator
 Russell Hervey BRK 201H
 Brooke County, West Virginia

| # | TMP | LESSOR | LESSEE | ROYALTY | BK/PG |
|---|-----|--|-------------------------------|---------|--------|
| | | Jerry Wayne Midcap, married | Chesapeake Appalachia, L.L.C. | 18.00% | 28/126 |
| | | D. Brent Queen, widower | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Martha L. Goddard, widow | Chesapeake Appalachia, L.L.C. | 18.00% | 28/109 |
| | | Frederic Scott and Diane M. Makara, husband and wife | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Brian and Tammy Makara, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 29/97 |
| | | Jan Chamberlain and Stephanie Makara Chamberlain, husband and wife | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Richard L. and Deborah C. Collins, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 29/103 |
| | | Douglas R. Lauck, single | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Randal J. Lauck, single | Chesapeake Appalachia, L.L.C. | 18.00% | 30/108 |
| | | Curtis J. Lauck, single | SWN Production Company, LLC | 18.00% | 31/288 |
| | | Burton R. and Wanda Lauck, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 29/180 |
| | | Lawrence R. Midcap, widower | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Grace M. Midcap, widow | Chesapeake Appalachia, L.L.C. | 18.00% | 29/268 |
| | | Emmett Wheeler, a/k/a Emmitt Wheeler, and Bonnie Wheeler, husband and wife | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Douglas and Marita Wheeler, husband and wife | Chesapeake Appalachia, L.L.C. | 18.00% | 29/274 |
| | | Aaron Wheeler, single | SWN Production Company, LLC | 18.00% | 30/480 |
| | | George Michael Makara, unmarried | Chesapeake Appalachia, L.L.C. | 18.00% | 29/449 |
| | | | SWN Production Company, LLC | 18.00% | 31/288 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 29/257 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 29/413 |
| | | | SWN Production Company, LLC | 18.00% | 31/288 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 29/407 |
| | | | SWN Production Company, LLC | 18.00% | 31/288 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 29/424 |
| | | | SWN Production Company, LLC | 18.00% | 31/288 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 29/546 |
| | | | SWN Production Company, LLC | 18.00% | 31/288 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 30/114 |
| | | | SWN Production Company, LLC | 18.00% | 31/288 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 30/148 |
| | | | SWN Production Company, LLC | 18.00% | 31/288 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 30/403 |
| | | | SWN Production Company, LLC | 18.00% | 31/288 |

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EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC., Operator
 Russell Hervey BRK 201H
 Brooke County, West Virginia

| # | TMP | LESSOR | LESSEE | ROYALTY | BK/PG |
|-----|--------------------------|---|-------------------------------|---------|--------|
| | | Judy A. Snodgrass, widow | Chesapeake Appalachia, L.L.C. | 18.00% | 30/120 |
| | | Christopher Siebert and Shannon Wheeler, husband and wife | SWN Production Company, LLC | 18.00% | 31/288 |
| | | Ruth Ellen Yazevac, unmarried | SWN Production Company, LLC | 18.00% | 30/782 |
| | | Alfred C. and Brenda K. Leist, husband and wife | SWN Production Company, LLC | 18.00% | 30/788 |
| | | Tara Keeley, individually and as Attorney-in-Fact for Frank R. Keeley | SWN Production Company, LLC | 18.00% | 31/16 |
| | | Edward and Paula Wheeler, husband and wife | SWN Production Company, LLC | 18.00% | 31/37 |
| | | West Virginia Department of Transportation, Division of Highways | Chesapeake Appalachia, L.L.C. | 15.00% | 18/723 |
| 24) | 04-CC23-0203-0000-0000 ← | James Lunsford, widower | SWN Production Company, LLC | 18.00% | 30/480 |
| | | Donna Kathryn Hall | Chesapeake Appalachia, L.L.C. | 18.00% | 11/367 |
| 25) | 04-CC23-0229-0000-0000 ← | | SWN Production Company, LLC | 18.00% | 30/480 |
| | | | Chesapeake Appalachia, L.L.C. | 18.00% | 11/317 |
| | | | SWN Production Company, LLC | 18.00% | 30/480 |

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

October 4, 2019

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

RE: SWN's proposed New Well: Russell Hervey BRK 401H & Russell Hervey BRK 201H in Brooke County, West Virginia, Drilling under Genteel Ridge Road and Washington Pike.

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 Genteel Ridge Road and Washington Pike. 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,

Michael H. Wilder
Staff Landman
SWN Production Company, LLC

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Department of
Natural Resources

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

4700900291

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

Date of Notice Certification: 10/31/19

API No. 47- 009 -
Operator's Well No. Russell Hervey BRK 201H
Well Pad Name: Russell Hervey BRK

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>537717.25</u> |
| County: <u>009- Brooke</u> | Northing: <u>4456499.58</u> |
| District: <u>Buffalo</u> | Public Road Access: <u>Pierce Run Road</u> |
| Quadrangle: <u>Steubenville East</u> | Generally used farm name: <u>Russell Hervey</u> |
| Watershed: <u>Buffalo 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 checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 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 checked="" 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> |
|--|--|

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Required Attachments:

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

Certification of Notice is hereby given:

THEREFORE, I 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 3rd day of September, 2019
Jessica L. Van Gilder Notary Public
 My Commission Expires 7-20-20

Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 10/31/19 **Date Permit Application Filed:** 10/31/19

Notice of:

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

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

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

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

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

SURFACE OWNER(s)
 Name: Russell D. Hervey
 Address: 200 Carol Road
Wellsburg, WV 26070

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

Name: _____
 Address: _____

COAL OPERATOR
 Name: _____
 Address: _____

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

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

Name: _____
 Address: _____

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

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

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*Please attach additional forms if necessary

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

WW-6A
(8-13)

API NO. 47- 009 -
OPERATOR WELL NO. Russell Hervey BRK 201H
Well Pad Name: Russell Hervey BRK

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

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47-009-4700900291
OPERATOR WELL NO. Russell Hervey BRK 201H
Well Pad Name: Russell Hervey BRK

Notice is hereby given by:

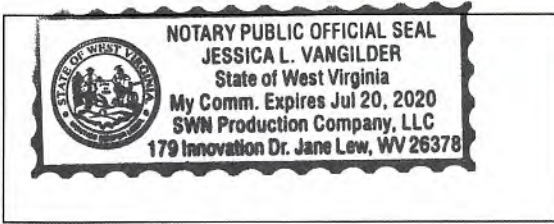
Well Operator: SWN Production Co., LLC
Telephone: 304-884-1610
Email: Brittany_Woody@swn.com

Brittany Woody

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 3rd day of Sept. 2019.
Jessica L. Vangilder Notary Public
My Commission Expires 7-20-20

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4700900291

ATTACHMENT 13

| PARID | OWNER | ADDRESS | CITY | STATE | ZIP | WATERSOURCE |
|--------------------|---------------------------|----------------------|-----------|-------|-------|-------------|
| 03 B28004500000000 | HERVEY RUSSELL D | 200 CAROL RD | WELLSBURG | WV | 26070 | 1 |
| 03 B28004500020000 | HERVEY WILLIAM JUDSON III | 1030 WASHINGTON PIKE | WELLSBURG | WV | 26070 | 1 |

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

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

Date of Notice: 8/8/2019 **Date of Planned Entry:** 8/15/2019

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

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

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

Notice is hereby provided to:

SURFACE OWNER(s) ✓

Name: Russell D. Hervey

Address: 200 Carol Road
Wellsburg, WV 26070

Name: _____

Address: _____

Name: _____

Address: _____

COAL OWNER OR LESSEE ✓

Name: Starvaggi Industries

Address: 401 Pennsylvania Ave
Weirton, WV 26062

MINERAL OWNER(s) ✓

Name: Russell D. Hervey

Address: 200 Carol Road
Wellsburg, WV 26070

*please attach additional forms if necessary

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 Environmental Protection

Notice is hereby given:

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

| | |
|---------------------------------|--|
| State: <u>WV</u> | Approx. Latitude & Longitude: <u>40.258149, -90.556494</u> |
| County: <u>Brooke</u> | Public Road Access: <u>Gentee Ridge Road</u> |
| District: <u>Buffalo</u> | Watershed: <u>Buffalo Creek</u> |
| Quadrangle: <u>Steubenville</u> | Generally used farm name: <u>Russell Hervey BRK Pad</u> |

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

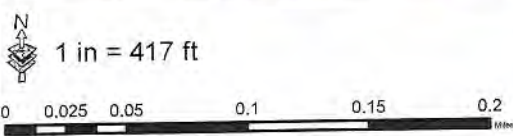
Notice is hereby given by:

| | |
|--|--------------------------------|
| Well Operator: <u>SWN PRODUCTION COMPANY, LLC</u> | Address: <u>PO BOX 1300</u> |
| Telephone: <u>304-884-1610</u> | <u>JANE LEW, WV 26378</u> |
| Email: <u>dee_southall@swn.com or brittany_woody@swn.com</u> | Facsimile: <u>304-884-1690</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.

4700900291



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

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

Coordinates: 40.25819, -80.556459

Water Purveyor Map
 Well Pad: Russell Hervey
 County: BRK



Date: 7/10/2019 Author: willisb

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: 08/26/2019 **Date Permit Application Filed:** 10/31/19

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

HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

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

Name: Russell D Hervey
Address: 200 Carol Rd
Wellsburg, WV 26070

Name: _____
Address: _____

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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: 537,717.25
County: Brooke Northing: 4,456,499.58
District: Buffalo Public Road Access: Pierce Run Rd
Quadrangle: Steubenville East Generally used farm name: Russell Hervey BRK
Watershed: Buffalo Creek

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 201
Morgantown, WV 26508
Telephone: 304-517-6603
Email: Michael_Yates@SWN.com
Facsimile: 304-884-1691

Authorized Representative: Mike Yates
Address: 1300 Fort Pierpont Dr., Suite 201
Morgantown, WV 26508
Telephone: 304-517-6603
Email: Michael_Yates@SWN.com
Facsimile: 304-884-1691

Oil and Gas Privacy Notice:

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

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: 08/26/2019 **Date Permit Application Filed:** 10/31/19

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

- CERTIFIED MAIL RETURN RECEIPT REQUESTED
- HAND 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: Russell D Hervey
Address: 200 Carol Rd
Wellsburg, WV 26070

Name: _____
Address: _____

Notice is hereby given:

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

| | | | | |
|-------------|--------------------------|---------------------------|---------------------------|---------------------|
| State: | <u>West Virginia</u> | UTM NAD 83 | Easting: | <u>537,717.25</u> |
| County: | <u>Brooke</u> | | Northing: | <u>4,456,499.58</u> |
| District: | <u>Buffalo</u> | Public Road Access: | <u>Pierce Run Rd</u> | |
| Quadrangle: | <u>Steubenville East</u> | Generally used farm name: | <u>Russell Hervey BRK</u> | |
| Watershed: | <u>Buffalo Creek</u> | | | |

This Notice Shall Include:

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

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

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

Oil and Gas Privacy Notice:

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Environmental Protection



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

Byrd E. White, III
 Secretary of Transportation

August 26, 2019

Jimmy Wriston, P. E.
 Deputy Secretary/
 Acting 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 Russell Hervey Pad, Brooke County
 Russell Hervey BRK 201H Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2012-0308 issued to Southwestern Energy for access to the State Road for a well site located off Brooke County Route 27/4 SLS.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018.

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 Environmental Protection

Very Truly Yours,

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

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

Attachment VI Frac Additives

| Product Name | Product Use | Chemical Name | CAS Number |
|---------------------------------------|--------------------------|---|-------------|
| AI-303 (U.S. Well Services) | Mixture | Ethylene glycol | 107-21-1 |
| | | Cinnamaldehyde | 104-55-2 |
| | | Butyl cellosolve | 111-76-2 |
| | | Formic acid | 64-18-6 |
| | | Polyether | Proprietary |
| | | Acetophenone, thiourea, formaldehyde polymer | 68527-49-1 |
| AP ONE (U.S. Well Services) | Breaker | Ammonium persulfate | 7727-54-0 |
| Bactron K-139 (Champion Technologies) | Biocide | Glutaraldehyde | 111-30-8 |
| | | Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides | 68424-85-1 |
| | | Ethanol | 64-17-5 |
| Bactron K-219 (Champion Technologies) | Biocide | Methanol | 67-56-1 |
| | | Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides | 68424-85-1 |
| CarboNRT | Tracer | Ceramic Proppant | 66402-68-4 |
| EC6486A (Nalco Champion) | Scale Inhibitor | Amine Triphosphate | Proprietary |
| | | Ethylene Glycol | 107-21-1 |
| EC6734A (Champion Technologies) | Biocide | Hydrogen Peroxide | 7722-84-1 |
| | | Acetic Acid | 64-19-7 |
| | | Peroxyacetic Acid | 79-21-0 |
| Econo-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, Exoxylated 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-propenamides | 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 propenamide | 9003-06-9 |

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BROOKE COUNTY, WV HIGHWAY MAP



HIGHWAY MAP SCALE
1 MILE 0 1 MILE 2 MILES

ENTRANCE LOCATION

PROJECT LOCATION

SOUTHWESTERN ENERGY

AS-BUILT PLANS FOR THE

RUSSELL HERVEY BRK PAD "A"

BUFFALO DISTRICT, BROOKE COUNTY, WV

JULY 2015

**WVDEP 00G
ACCEPTED AS-BUILT**

Vaj 12/4/2015

swn
Southwestern Energy®

SOUTHWESTERN ENERGY
179 Chesapeake Drive
Jane Lew, WV 26378
(304) 884-1610

SHEET INDEX

| SHEET | DESCRIPTION |
|-------|----------------------------------|
| 1 | TITLE SHEET |
| 2-3 | EVACUATION ROUTE/PREVAILING WIND |
| 4 | AS-BUILT OVERVIEW |
| 5-7 | AS-BUILT ACCESS ROAD PLAN |
| 8 | AS-BUILT WELL PAD PLAN |
| 9 | AS-BUILT ACCESS ROAD PROFILE |
| 10 | AS-BUILT WELL PAD PROFILE |
| 11 | RECLAMATION PLAN |
| 12 | RECLAMATION GENERAL NOTES |
| 13 | RECLAMATION DETAILS |

RUSSELL HERVEY BRK PAD "A" WULLS

EXISTING WELL SR: API# 47-009-00144
EXISTING WELL RE: API# 47-009-00136

STUBENVILLE RAST OHIO QUAD MAP



VICINITY MAP SCALE
2000' 0 2000' 4000'

ENTRANCE LOCATION

PROJECT LOCATION

AS-BUILT ACCESS ROAD BEGINNING
NAD83 Latitude = N 40.26486°
NAD83 Longitude = W 80.56820°
UTM 83-17 Northing = 14623476.598 ft.
UTM 83-17 Easting = 1769874.300 ft.

AS-BUILT CENTER OF WELL PAD
NAD83 Latitude = N 40.25805°
NAD83 Longitude = W 80.55651°
UTM 83-17 Northing = 14621012.380 ft.
UTM 83-17 Easting = 1764146.353 ft.

NOTES

- PORTIONS OF THE ORIGINAL, AS-BUILT SURVEY OF THIS SITE PROVIDED BY BOORD BENCHECK & ASSOCIATES, INC (BBA) TO CHESAPEAKE ENERGY IN JANUARY 2013 HAVE BEEN INCORPORATED INTO THESE PLANS. THE BBA AS-BUILT SURVEY WAS PROVIDED TO THRASHER BY SOUTHWESTERN ENERGY IN JUNE 2015 INCLUDING CONTOURS, PROPERTY LINES, ENVIRONMENTAL FEATURES, ROADS, BUILDINGS, TREE LINES, ETC.
- EXISTING ROAD EDGES, WELL PAD EDGE, GAS PRODUCTION EQUIPMENT AND ABOVE GROUND PIPING, AND EROSION & SEDIMENT CONTROL FEATURES WERE VERIFIED AND AS-BUILT BY THRASHER JUNE 2015.
- THE COORDINATE SYSTEM USED FOR THIS PROJECT IS UTM WITH NAD83 DATUM, ZONE 17, US FOOT, CENTRAL MERIDIAN 814W.



| REVISION NUMBER | REVISED SHEETS | BY | DATE | DESCRIPTION |
|-----------------|----------------|-----|----------|---|
| 1 | 1, 4-13 | JFW | 12/03/15 | ADDRESSED AS-BUILT COMMENTS PER WVDEP OFFICE OF OIL & GAS. ADDED AS-BUILT ACCESS ROAD PROFILE, RECLAMATION PLAN, PE SEAL AND WELL & CELLAR INFORMATION. |
| | | | | |
| | | | | |
| | | | | |

ONE CALL UTILITY SYSTEM CONTACT INFO



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

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THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330
PHONE (304) 624-4108 • FAX (304) 624-7831

4700900291

**WVDEP OOG
ACCEPTED AS-BUILT**
12 / 4 / 2018

PLAN LEGEND

| | |
|-----|---------------------------------------|
| --- | PRE-CONSTRUCTION CONTOURS |
| --- | EXISTING ROAD |
| --- | EXISTING TREE LINE |
| --- | EXISTING PROPERTY LINE |
| --- | EXISTING TELEPHONE LINE |
| --- | EXISTING WATER LINE |
| --- | BRA AS-BUILT 1" CMP OUTLET PROTECTION |
| --- | BRA AS-BUILT 2" CONTOURS |
| --- | BRA AS-BUILT PROJECT BOUNDARY |
| --- | BRA AS-BUILT WATERCROSSING |
| --- | BRA AS-BUILT STREAM |
| --- | BRA AS-BUILT WETLAND |
| --- | BRA AS-BUILT ELECTRIC LINE |
| --- | TTG AS-BUILT ROAD EDGE |
| --- | TTG AS-BUILT EDGE OF PAVEMENT |
| --- | TTG AS-BUILT LOG PILE |
| --- | TTG AS-BUILT PAD EDGE |
| --- | TTG AS-BUILT DETCH |
| --- | TTG AS-BUILT CONTAINMENT AREA |
| --- | TTG AS-BUILT PRODUCTION EQUIPMENT |
| --- | TTG AS-BUILT SILE FENCE |
| --- | TTG AS-BUILT TEXT |
| --- | AS-BUILT |
| --- | BRA AS-BUILT TEXT |

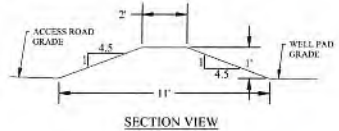
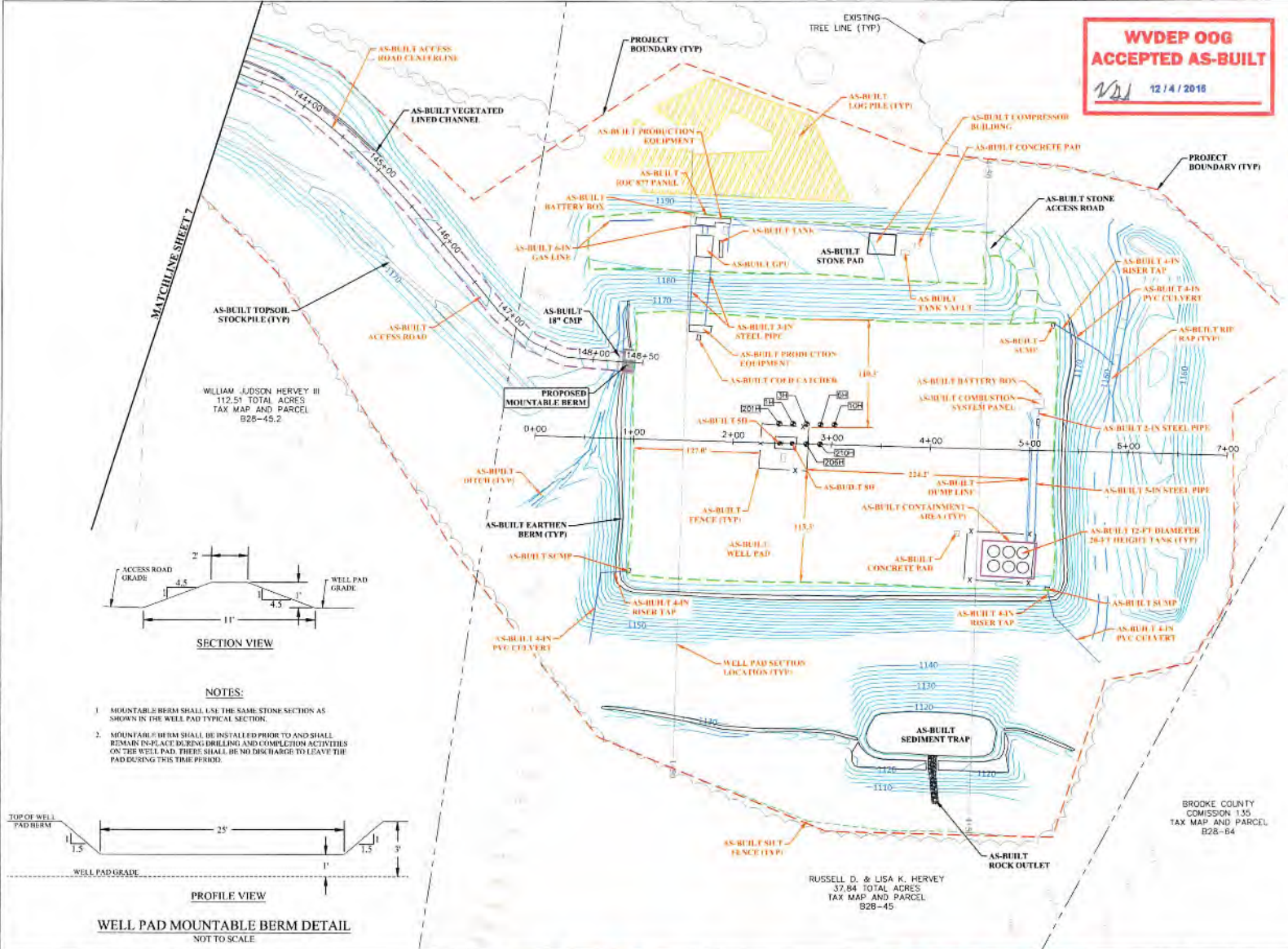
NOTES

1. MOUNTABLE BERM TO BE INSTALLED PRIOR TO DRILLING OF PROPOSED WELLS.

RUSSELL HERVEY BRK PAD "A" WELLS

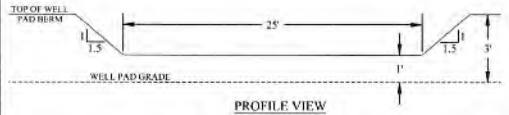
| WELL NAME | API NUMBER | CELLAR DIAMETER | CELLAR DEPTH | CELLAR MATERIAL |
|-------------------|--------------|-----------------|--------------|-----------------|
| AS-BUILT SH | 47-009-00144 | 8-FT | 8-FT | CMP* |
| AS-BUILT BH | 47-009-00136 | 8-FT | 8-FT | CMP* |
| PROPOSED WELL LH | - | 8-FT | 8-FT | CMP* |
| PROPOSED WELL MH | - | 8-FT | 8-FT | CMP* |
| PROPOSED WELL GH | - | 8-FT | 8-FT | CMP* |
| PROPOSED WELL IH | - | 8-FT | 8-FT | CMP* |
| PROPOSED WELL JH | - | 8-FT | 8-FT | CMP* |
| PROPOSED WELL KH | - | 8-FT | 8-FT | CMP* |
| PROPOSED WELL 20H | - | 8-FT | 8-FT | CMP* |
| PROPOSED WELL 21H | - | 8-FT | 8-FT | CMP* |

NOTES:
* CMP = CORRUGATED METAL PIP



NOTES:

1. MOUNTABLE BERM SHALL USE THE SAME STONE SECTION AS SHOWN IN THE WELL PAD TYPICAL SECTION.
2. MOUNTABLE BERM SHALL BE INSTALLED PRIOR TO AND SHALL REMAIN IN PLACE DURING DRILLING AND COMPLETION ACTIVITIES ON THE WELL PAD. THERE SHALL BE NO DISCHARGE TO LEAVE THE PAD DURING THIS TIME PERIOD.



WELL PAD MOUNTABLE BERM DETAIL
NOT TO SCALE

4700900291



DATE: 12/20/18
 PLOT DATE/TIME: 12/28/18 1:08 PM
 CADD FILE: \\S:\2018\4495-Russell Hervey BRK\Submittals_Energy\0495-Submittals.dwg

| NO. | BY | DATE | DESCRIPTION |
|-----|-----|----------|---|
| 1 | JFW | 12/20/18 | ADDRESSED AS-BUILT COMMENTS PER WVDEP OFFICE OF OIL & GAS |



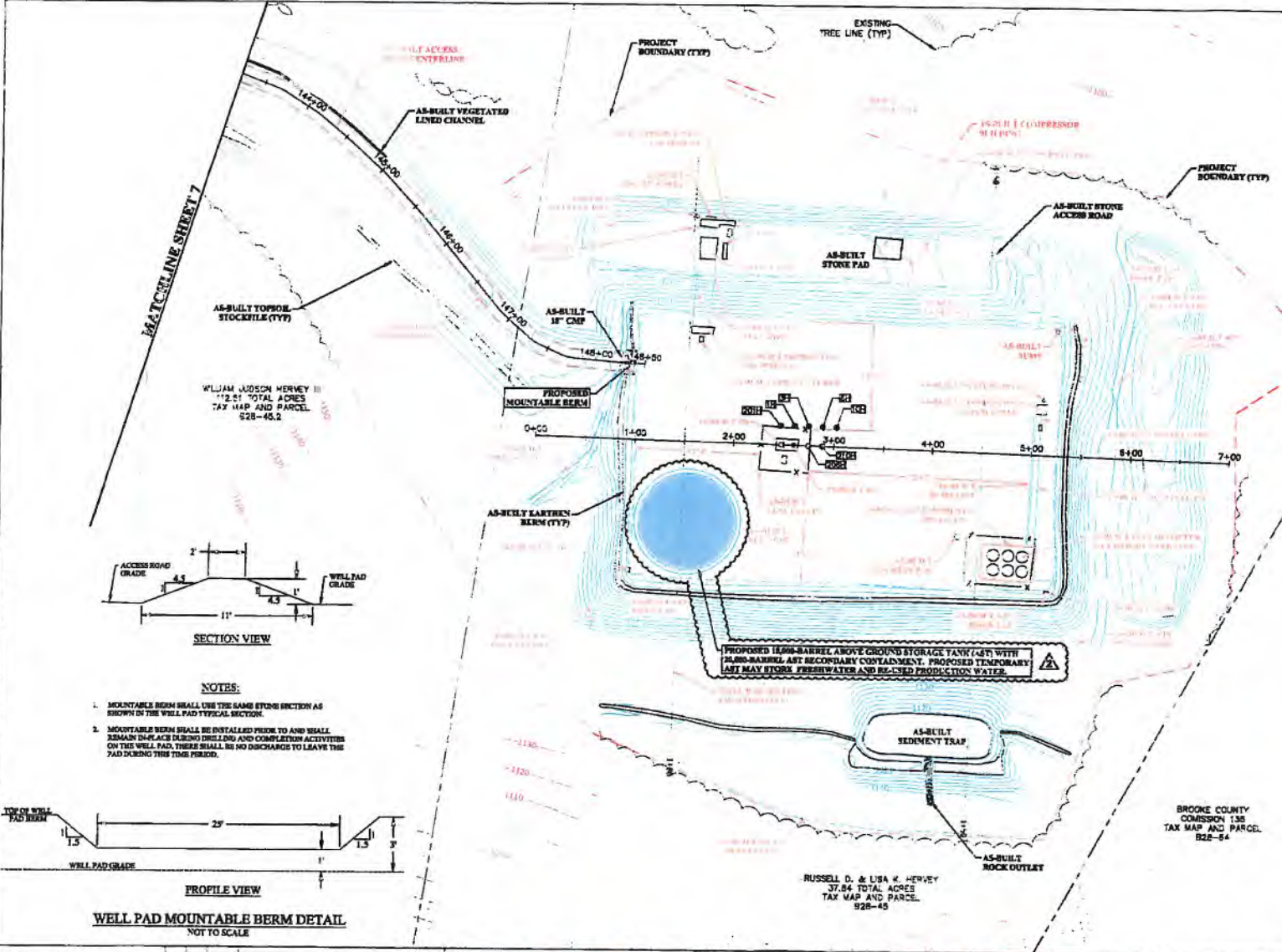
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| SCALE: | DATE: |
| DRAWN: | DATE: |
| CHECKED: | DATE: |
| APPROVED: | DATE: |
| SURVEY DATE: | DATE: |
| SHEET BY: | DATE: |
| FIELD BOOK No.: | DATE: |

THRASHER
THE THRASHER GROUP, INC.
800 WHITE OAK BOULEVARD, BRIDGECRITY, WV 26330
PHONE (304) 624-4108 FAX (304) 624-7831

| | |
|---------------|--------------|
| PHASE No.: | |
| CONTRACT No.: | |
| PROJECT No.: | 101-050-5495 |

**SOUTHWESTERN ENERGY
AS-BUILT PLANS FOR THE
RUSSELL HERVEY BRK PAD "A"
BROOKE COUNTY, WV
AS-BUILT WELL PAD PLAN**

| | |
|------------|---|
| SHEET No.: | 8 |
|------------|---|



PLAN LEGEND

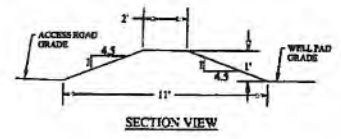
- PRE-CONSTRUCTION CONTOURS
- EXISTING ROAD
- EXISTING TREE LINE
- EXISTING PROPERTY LINE
- EXISTING TELEPHONE LINE
- EXISTING WATER LINE
- 8" AS-BUILT 1" CMP/UTILITY PROTECTION
- 8" AS-BUILT 2" CONTOUR
- 8" AS-BUILT PROJECT BOUNDARY
- 8" AS-BUILT WATERCOURSE
- 8" AS-BUILT STREAM
- 8" AS-BUILT WETLAND
- 8" AS-BUILT ELECTRIC LINE
- TYPICAL ROAD EDGE
- TYPICAL EDGE OF PAVEMENT
- TYPICAL LOG PILE
- TYPICAL PAD EDGE
- TYPICAL FENCE
- TYPICAL DITCH
- TYPICAL CONTAINMENT AREA
- TYPICAL PROTECTION EQUIPMENT
- TYPICAL BENT PILE
- TYPICAL TEXT
- AS-BUILT
- 8" AS-BUILT TEXT

NOTES

1. MOUNTABLE BERM TO BE INSTALLED PRIOR TO DRILLING OF PROPOSED WELLS.

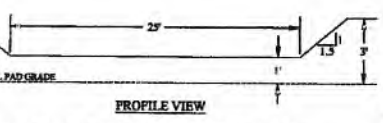
RUSSELL HERVEY BREAK "A" WELLS

| WELL NAME | AN NUMBER | CELLAR | CELLAR | CELLAR | CELLAR |
|----------------|--------------|--------|--------|--------|--------|
| AS-BUILT #1 | 47-002-00144 | 8 FT | 8 FT | 8 FT | 8 FT |
| AS-BUILT #2 | 47-002-00144 | 8 FT | 8 FT | 8 FT | 8 FT |
| PROPOSED WELLS | | 8 FT | 8 FT | 8 FT | 8 FT |
| PROPOSED WELLS | | 8 FT | 8 FT | 8 FT | 8 FT |
| PROPOSED WELLS | | 8 FT | 8 FT | 8 FT | 8 FT |
| PROPOSED WELLS | | 8 FT | 8 FT | 8 FT | 8 FT |
| PROPOSED WELLS | | 8 FT | 8 FT | 8 FT | 8 FT |



NOTES:

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WELL PAD MOUNTABLE BERM DETAIL
NOT TO SCALE



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Office of Oil and Gas
DEC 19 2016
WV Department of
Environmental Protection

4700900291

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| | |
|----------|------|
| SCALE | DATE |
| DESIGN | DATE |
| CHECK | DATE |
| APPROVE | DATE |
| DRAWN | DATE |
| CHECKED | DATE |
| DESIGNED | DATE |
| PROJECT | DATE |



| | |
|--------------|--|
| PROJECT No. | |
| CONTRACT No. | |
| WELL No. | |
| DATE | |
| FILED No. | |
| 101-650-5495 | |

SOUTHWESTERN ENERGY
AS-BUILT PLANS FOR THE
RUSSELL HERVEY BRK PAD "A"
BROOKE COUNTY, WV
AS-BUILT WELL PAD PLAN

SHEET No.
8