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west virginia department of environmental protection

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

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

Thursday, October 25, 2018  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC  
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for MICHAEL RATCLIFFE OHI 8H  
47-069-00275-00-00

Modified lateral length for a horizontal length of 17,578.36' and a TMD of 24,415'

SWN PRODUCTION COMPANY, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926-0450.

A blue ink signature of James A. Martin, written in a cursive style.

James A. Martin  
Chief

Operator's Well Number: MICHAEL RATCLIFFE OHI 8H  
Farm Name: MICHAEL T. RATCLIFFE  
U.S. WELL NUMBER: 47-069-00275-00-00  
Horizontal 6A New Drill  
Date Modification Issued: October 25, 2018

Promoting a healthy environment.

A

WW-6B  
(04/15)

API NO. 47-069 - 00275MOD  
OPERATOR WELL NO. Michael Ratcliffe OHI 8H  
Well Pad Name: Michael Ratcliffe OHI Pad

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

1) Well Operator: SWN Production Co., LLC 494512924 069-Ohio Liberty Bethany  
Operator ID County District Quadrangle

2) Operator's Well Number: Michael Ratcliffe OHI 8H Well Pad Name: Michael Ratcliffe OHI Pad

3) Farm Name/Surface Owner: Michael T. Ratcliffe Public Road Access: Longs Run Road

4) Elevation, current ground: 1281' Elevation, proposed post-construction: 1281'

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

Other

(b) If Gas Shallow X Deep

Horizontal X

6) Existing Pad: Yes or No Yes

*Handwritten signature and date: 6-4-18*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Target Formation- Marcellus Down-Dip Well to the South, Target Top TVD- 6535', Target Base TVD- 6576', Anticipated Thickness- 41', Associated Pressure- 4274

8) Proposed Total Vertical Depth: 6550'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 24,415'

11) Proposed Horizontal Leg Length: 17,578.38'

12) Approximate Fresh Water Strata Depths: 401'

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

14) Approximate Saltwater Depths: 728' salinity profile

15) Approximate Coal Seam Depths: 610'

16) Approximate Depth to Possible Void (coal mine, karst, other): Possible void 610'

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

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

WV Department of  
Environmental Protection

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#                    | 665'                       | 665'                         | 623 sx/CTS                                   |
| Coal         |           |             |         |                        |                            |                              |  |
| Intermediate | 9 5/8"    | New         | J-55    | 36#                    | 1995'                      | 1995'                        | 757 sx/CTS                                   |
| Production   | 5 1/2"    | New         | HCP-110 | 20#                    | 24,415'                    | 24,415'                      | lead 690 sx Tail 4300 sx inside intermediate |
| Tubing       |           |             |         |                        |                            |                              |  |
| Liners       |           |             |         |                        |                            |                              |  |

*C. BLO 6-4-18*

| TYPE         | Size (in) | Wellbore Diameter (in) | Wall Thickness (in) | Burst Pressure (psi) | Anticipated Max. Internal Pressure (psi) | Cement Type | Cement Yield (cu. ft./k) |
|--------------|-----------|------------------------|---------------------|----------------------|--|-------------|--------------------------|
| Conductor    | 20"       | 30"                    | 0.25                | 2120                 | 81                                       | Class A     | 1.19/50% Excess          |
| Fresh Water  | 13 3/8"   | 17.5"                  | 0.380               | 2740                 | 633                                      | Class A     | 1.19/50% Excess          |
| Coal         | 9 5/8"    | 12 1/4"                | 0.395               | 3950                 | 1768                                     | Class A     | 1.19/50% Excess          |
| Intermediate | 7"        | 8 3/4"                 | 0.317               | 4360                 | 3250                                     | Class A     | 1.20/50% Excess          |
| Production   | 5 1/2"    | 8 3/4"                 | 0.361               | 12360                | 9500                                     | Class A     | 1.20/50% Excess          |
| Tubing       |           |                        |                     |                      |  |             |                          |
| Liners       |           |                        |                     |                      |  |             |                          |

PACKERS

|             |  |  |  |   |
|-------------|--|--|--|---|
| Kind:       |  |  |  | RECEIVED<br>Office of Oil and Gas             |
| Sizes:      |  |  |  | SEP 6 2018                                    |
| Depths Set: |  |  |  | V.V Department of<br>Environmental Protection |

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, vertical separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 100 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 13.48

22) Area to be disturbed for well pad only, less access road (acres): 8.60

23) Describe centralizer placement for each casing string:

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

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

See Attachment \*\*\*

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WV Department of  
Environmental Protection

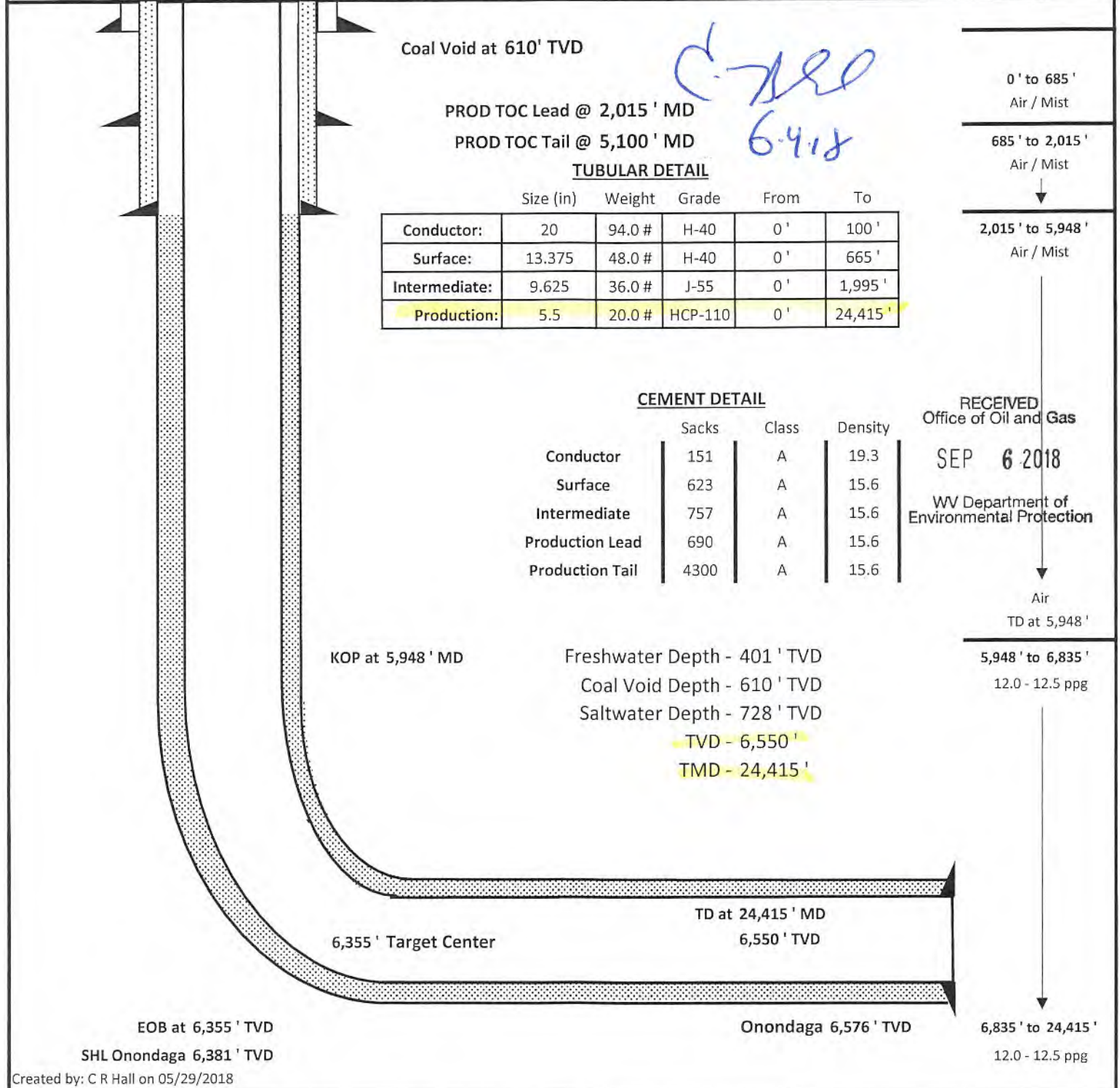
25) Proposed borehole conditioning procedures:

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

\*Note: Attach additional sheets as needed.

|                                    |                                  |
|------------------------------------|----------------------------------|
| <b>Southwestern Energy Company</b> | <b>Proposed Drilling Program</b> |
|------------------------------------|----------------------------------|

|  |   |
|--|---|
| Well: MICHAEL RATCLIFFE OHI 8<br>Field: PANHANDLE FIELD WET<br>County: OHIO<br>SHL: 40.1485 Latitude -80.5670 Longitude<br>BHL: 40.1040 Latitude -80.5372 Longitude<br>KB Elev: 1,307 ft MSL | Re-entry Rig: TBD<br>Prospect: PANHANDLE<br>State: WV<br>KB: 26 ft AGL<br>GL Elev: 1,281 ft MSL |
|--|---|



Coal Void at 610' TVD

PROD TOC Lead @ 2,015' MD

PROD TOC Tail @ 5,100' MD

**TUBULAR DETAIL**

|               | Size (in) | Weight | Grade   | From | To      |
|---------------|-----------|--------|---------|------|---------|
| Conductor:    | 20        | 94.0 # | H-40    | 0'   | 100'    |
| Surface:      | 13.375    | 48.0 # | H-40    | 0'   | 665'    |
| Intermediate: | 9.625     | 36.0 # | J-55    | 0'   | 1,995'  |
| Production:   | 5.5       | 20.0 # | HCP-110 | 0'   | 24,415' |

**CEMENT DETAIL**

|                 | Sacks | Class | Density |
|-----------------|-------|-------|---------|
| Conductor       | 151   | A     | 19.3    |
| Surface         | 623   | A     | 15.6    |
| Intermediate    | 757   | A     | 15.6    |
| Production Lead | 690   | A     | 15.6    |
| Production Tail | 4300  | A     | 15.6    |

0' to 685' Air / Mist

685' to 2,015' Air / Mist

2,015' to 5,948' Air / Mist

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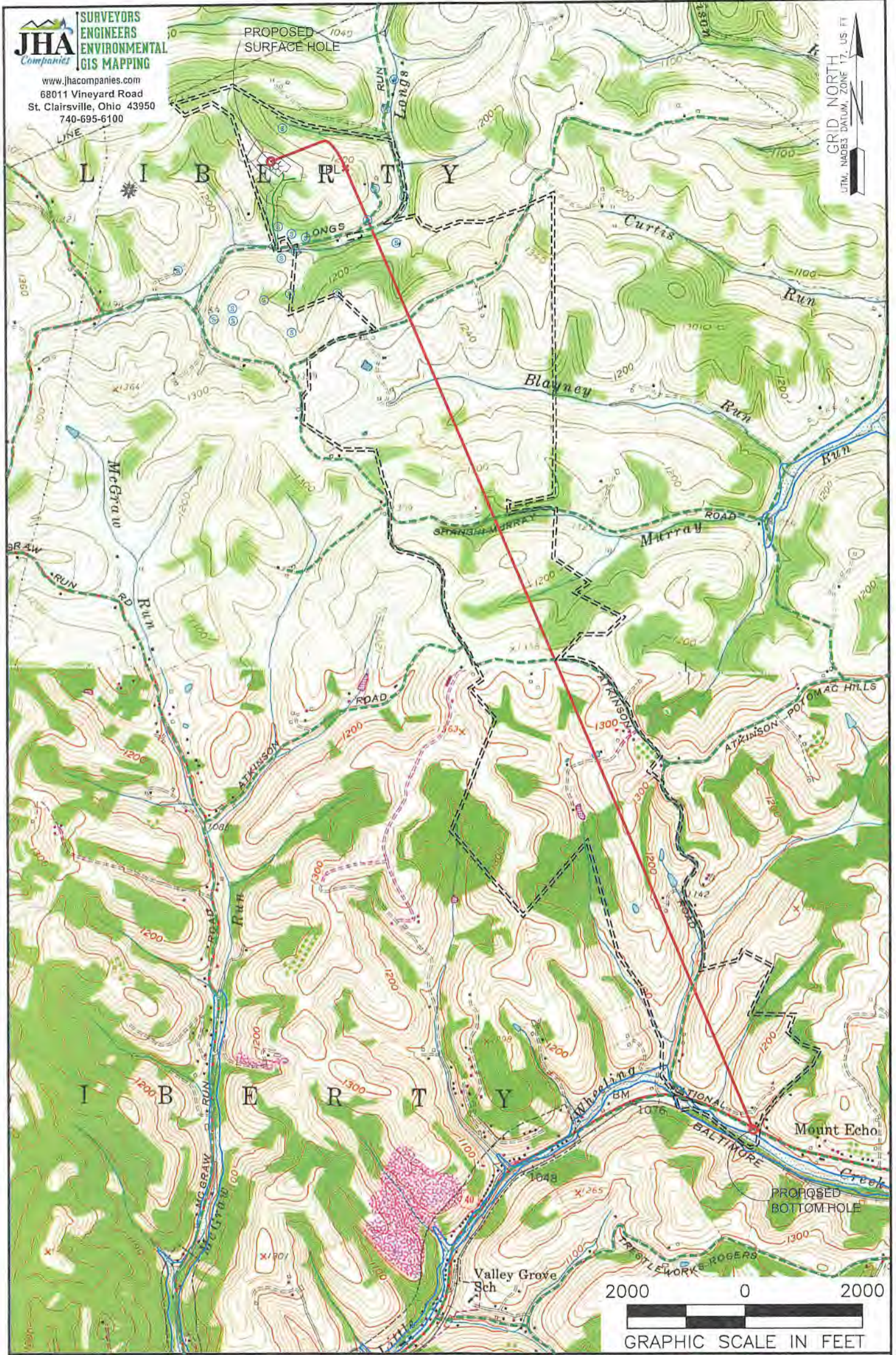
Air  
TD at 5,948'

5,948' to 6,835' 12.0 - 12.5 ppg

6,835' to 24,415' 12.0 - 12.5 ppg

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

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



**NOTES ON SURVEY**

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

**LEGEND:**

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

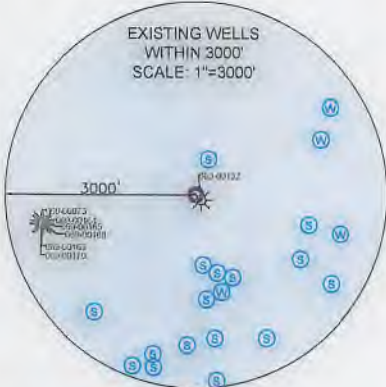
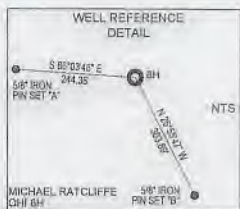
|   |  |                      |                  |
|---|--|----------------------|------------------|
| WELL OPERATOR:<br>SWN PRODUCTION COMPANY, LLC | WELL (FARM) NAME:<br>MICHAEL RATCLIFFE OHI                   | WELL #<br>8H         | SERIAL #<br>XXXX |
| ADDRESS:<br>P.O. BOX 1300 JANE LEW, WV 26378  | COUNTY - CODE<br>OHIO - 069                                  | DISTRICT;<br>LIBERTY |                  |
| SURFACE OWNER:<br>MICHAEL T. RATCLIFFE        | USGS 7 1/2 QUADRANGLE MAP NAME<br>BETHANY & VALLEY GROVE, WV |                      |                  |

NOTES ON SURVEY

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



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



|   |
|---|
| <b>SURFACE HOLE LOCATION (SHL):</b>   |
| UTM (NAD83, ZONE 17, METERS):<br>NORTHING: 4444328.61<br>EASTING: 536880.45 |
| <b>LANDING POINT (LPL):</b>   |
| UTM (NAD83, ZONE 17, METERS):<br>NORTHING: 4444298.18<br>EASTING: 537267.40 |
| <b>BOTTOM HOLE LOCATION (BHL):</b>  |
| UTM (NAD83, ZONE 17, METERS):<br>NORTHING: 4439403.38<br>EASTING: 539441.62 |

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

P.S. 2041



GRAPHIC SCALE IN FEET



COMPANY:

**SWN**

Production Company, LLC

**SWN**

Production Company™

MICHAEL RATCLIFFE

OPERATOR'S WELL #: OHI 8H

API WELL #: **47** **069** **002751000**

STATE COUNTY PERMIT



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200

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

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

WATERSHED: OHIO UPPER SOUTH ELEVATION: 1,281.2'

DISTRICT: LIBERTY COUNTY: OHIO QUADRANGLE: BETHANY & VALLEY GROVE, WV

SURFACE OWNER: MICHAEL T. RATCLIFFE ACREAGE: ±55.835

OIL & GAS ROYALTY OWNER: MICHAEL T. RATCLIFFE ACREAGE: ±55.835

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

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,550' TVD 24,414.5' TMD

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

ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

|                                       |                      |                         |
|---------------------------------------|----------------------|-------------------------|
| <b>LEGEND:</b>                        | <b>REVISIONS:</b>    | <b>DATE:</b> 08-07-2018 |
| ○ PROPOSED SURFACE HOLE / BOTTOM HOLE | — SURVEYED BOUNDARY  |                         |
| ☼ EXISTING / PRODUCING WELLHEAD       | ===== LEASE BOUNDARY |                         |
| LPL* LANDING POINT LOCATION           | — PROPOSED PATH      |                         |
| ⊙ EXISTING WATER WELL                 |                      |                         |
| ⊙ EXISTING SPRING                     |                      |                         |
|                                       |                      | DRAWN BY: D. REED       |
|                                       |                      | SCALE: 1" = 3000'       |
|                                       |                      | DRAWING NO: 2017-637    |
|                                       |                      | WELL LOCATION PLAT      |

| WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS |  |             |
|--|--|-------------|
| TRACT  | SURFACE OWNER (S) / ROYALTY OWNER (R)      | TAX PARCEL  |
| 1  | MICHAEL T. RATCLIFFE (S/R)                 | 03-L5-12.4  |
| TRACT  | SURFACE OWNER                              | TAX PARCEL  |
| 2  | TRAVIS C. RATCLIFFE                        | 03-L5-12    |
| 3  | TRAVIS CHRISTOPHER RATCLIFFE (L/E)         | 03-L5-12.1  |
| 4  | DONALD D. PRINCE                           | 03-L5-24    |
| 5  | SUSAN LOUISE SMITH                         | 03-L5-27    |
| 6  | SUSAN NORTHWOOD SMITH & RICHARD ALAN SMITH | 03-L5-23.1  |
| 7  | DALE R. & JACKIE A. RITCHEA                | 03-L5-23.2  |
| 8  | WALTER W., JR. & MONA DEE KNOLLINGER       | 03-L5-23.4  |
| 9  | DONALD L. & DEBORAH JO WADDELL             | 03-L5-23.6  |
| 10   | DONALD L. & DEBORAH JO WADDELL             | 03-L5-23    |
| 11   | BERNARD T. & MARJORIE A. RAAB              | 03-L8-7     |
| 12   | ROBERT C. JONES                            | 03-L8-11    |
| 13   | DAVID E. DAVIS, JR.                        | 03-L8-35    |
| 14   | HOWARD WINTERS                             | 03-L8-36    |
| 15   | HOWARD WINTERS                             | 03-L11-28.1 |
| 16   | MARTHA E. CREIGHTON                        | 03-L11-29   |
| 17   | MILDRED J. MAZGAJ                          | 03-L11-62   |

| ADJOINING OWNERS TABLE |   |             |
|------------------------|---|-------------|
| TRACT                  | SURFACE OWNER   | TAX PARCEL  |
| A                      | JOSEPH P. & SHIRLEY J. TAGGART                              | 03-L5-3     |
| B                      | DONALD F. & J.L. DOLENCE                                    | 03-L5-11    |
| C                      | JOSEPH G. PRINCE & DONALD D. PRINCE                         | 03-L5-11.2  |
| D                      | HELEN L. & JOHN I., JR. TOMINACK                            | 03-L5-10    |
| E                      | LYNN MCELVANY   | 03-L5-26    |
| F                      | GLENN A. DILLE  | 03-L8-9.7   |
| G                      | NEAL P. BROWN   | 03-L8-9.6   |
| H                      | PETER, JR. & D.J. COTTAGE, THE COTTAGE FAMILY REV TRUST)    | 03-L8-8     |
| I                      | DONALD L. & DEBORAH JO WADDELL                              | 03-L8-39    |
| J                      | SCOTT A. & JILL L. DILLE                                    | 03-L8-9.3   |
| K                      | GEORGE E., III & M.A. PORTER                                | 03-L8-9.5   |
| L                      | ROBERT F. & N.C. REASS                                      | 03-L9-1     |
| M                      | JODY LEE SHILLING   | 03-L8-10    |
| N                      | RANDY J. CREIGHTON  | 03-L8-11.2  |
| O                      | PAUL A. MAIN  | 03-L8-10.1  |
| P                      | RICHARD C. & K.J. WHEAT                                     | 03-L8-10.2  |
| Q                      | LARRY G. BALL   | 03-L8-42    |
| R                      | SUSAN J.H. HARDMAN  | 03-L8-37    |
| S                      | BERNARD T. & PATRICIA ADAMS                                 | 03-L8-37.1  |
| T                      | TIMMY B. & AMY LYNN MINCH                                   | 03-L9-12    |
| U                      | WILLIAM I. RODGERS & DOUGLAS W. RODGERS                     | 03-L12-1    |
| V                      | CATHY J. & JERRY W. CALDWELL                                | 03-L12-6    |
| W                      | JERRY & CATHY CALDWELL                                      | 03-L11-69   |
| X                      | LARRY MICHAEL PATRICK                                       | 03-L11-68   |
| Y                      | MARION S. & MILDRED J. MAZGAJ                               | 03-L11-67   |
| Z                      | TUNNEL RIDGE, LLC   | 03-L12-32   |
| AA                     | SHARON & WARREN GRIFFITH                                    | 03-L11-60.1 |
| AB                     | JOHN A. NOLAN, JR.  | 03-L11-61   |
| AC                     | JOHN A. NOLAN, JR.  | 03-L11-63   |
| AD                     | WINTERS FAMILY FARM, LLC                                    | 03-L11-28   |
| AE                     | EDWARD G. GROUX, JR. & JEFFREY L. GROUX                     | 03-L11-27   |
| AF                     | EDWARD G. & LYDIA GROUX (LIFE ESTATE), EDWARD G. GROUX, JR. | 03-L11-26   |
| AG                     | EDWARD G. & LYDIA GROUX (LIFE ESTATE), EDWARD G. GROUX, JR. | 03-L11-26.6 |
| AH                     | ROBERT C. JONES   | 03-L8-11.1  |
| AI                     | ROBERT A. SHILLING, SR.                                     | 03-L8-33.9  |
| AJ                     | JOSEPH T. KLUG  | 03-L8-34.1  |
| AK                     | ROBERT A. SHILLING, SR.                                     | 03-L8-33    |
| AL                     | THOMAS P. & TERESA HUDRLIK                                  | 03-L8-12.12 |
| AM                     | BILL RAILING  | 03-L8-12.8  |
| AN                     | VICKI L. & DANIEL P. TUSTIN                                 | 03-L8-12.6  |
| AO                     | DANIEL P. TUSTIN, JR.                                       | 03-L8-12.9  |
| AP                     | DANIEL PAUL TUSTIN, JR.                                     | 03-L8-12.11 |
| AQ                     | RICHARD R. & L.L. BLOOMFIELD                                | 03-L8-12.10 |
| AR                     | BARNETT E. & LAURIE L. BECK                                 | 03-L8-12.5  |
| AS                     | KATHY J. HUNTER   | 03-L8-6     |
| AT                     | A.R. & Z.I. NIXON   | 03-L8-5     |
| AU                     | JENNIFER G. BURROWS   | 03-L8-4.1   |
| AV                     | DAVID PAUL & DAWN M. DOYLE                                  | 03-L8-4     |
| AW                     | RICHARD C. LINK (LIFE ESTATE: ROBERT W., JR. & D.M. LINK)   | 03-L5-22.6  |
| AX                     | DAVID A. WADDELL  | 03-L5-23.5  |
| AY                     | EDWARD & ELIZABETH LINK                                     | 03-L5-23.7  |
| AZ                     | JASON & RACHEL MILLER                                       | 03-L5-23.3  |
| BA                     | EDWARD R. & ELIZABETH A. LINK                               | 03-L5-22    |
| BB                     | MICHAEL T. RATCLIFFE  | 03-L5-12.3  |
| BC                     | CASEY P. & DEVAN M. YOUNG                                   | 03-L5-13    |
| BD                     | MARK & ANNEJESE KAUFMAN                                     | 03-L5-1.1   |

47-049-00275mod

REVISIONS:

COMPANY:

**SWN**  
Production Company, LLC

**SWN** <sup>R-1V+0</sup>  
Production Company™

OPERATOR'S MICHAEL RATCLIFFE

DATE: 08-07-2018

WELL #: OHI 8H

DRAWN BY: D. REED

DISTRICT: LIBERTY COUNTY: OHIO STATE: WV

SCALE: N/A  
DRAWING NO: 2017-637  
WELL LOCATION PLAT



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

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

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

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

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

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

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

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

Well Operator: SWN Production Company, LLC.  
 By: [Signature]  
 Its: Landman

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Office of Oil and Gas  
SEP 6 2018  
WV Department of  
Environmental Protection

**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  
 Michael Ratcliffe OHI 8H  
 Ohio County, West Virginia

| #   | TAX ID     | LESSOR   | LESSEE   | ROYALTY | BK/PG              |
|-----|------------|--|--|---------|--------------------|
| 1 ✓ | 03-L5-12.4 | Michael T. Ratcliffe   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 15%     | 795/622<br>885/272 |
| 2 ✓ | 03-L5-12   | Travis C. Ratcliffe, a single man  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 15%     | 795/661<br>885/272 |
| 3 ✓ | 03-L5-12.1 | Travis C. Ratcliffe, a single man  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 15%     | 795/661<br>885/272 |
| 4 ✓ | 03-L5-24   | Beth D. McCammon   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 826/758<br>885/656 |
| 4 ✓ | 03-L5-24   | Linda Ann Porter and Thomas E. Porter  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 826/391<br>885/656 |
| 4   | 03-L5-24   | Robert Eugene Main and Loretta Jean Main   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC   | 18%     | 826/753<br>885/656 |
| 4   | 03-L5-24   | Martha Elizabeth Strohecker  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 826/763<br>885/656 |
| 4   | 03-L5-24   | D. Pauline Archer  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 827/643<br>885/656 |
| 4   | 03-L5-24   | Wilda M. Moore   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 827/638<br>885/656 |
| 4   | 03-L5-24   | William R. Krumme  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 831/479<br>885/656 |
| 4   | 03-L5-24   | Ethel Lynn Denges a/k/a Ethel Lynn Krumme<br>and Robert A. Denges<br>C. Lucille Obermann | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 831/501<br>885/656 |
| 4   | 03-L5-24   |  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 827/633<br>885/656 |

Michael Ratcliffe Unit  
1 of 6

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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  
**Michael Ratcliffe OHI 8H**  
 Ohio County, West Virginia

| # | TAX ID   | LESSOR   | LESSEE   | ROYALTY | BK/PG              |
|---|----------|--|--|---------|--------------------|
| 4 | 03-L5-24 | Jennifer Pogue   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 828/315<br>885/668 |
| 4 | 03-L5-24 | Dena Pogue   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 832/51<br>885/668  |
| 4 | 03-L5-24 | Marlene Lambert and Edward Lambert                                     | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 832/46<br>885/668  |
| 4 | 03-L5-24 | Joann Chegan   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 832/74<br>885/668  |
| 4 | 03-L5-24 | William B. Pogue and Mary L. Pogue                                     | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 832/27<br>885/668  |
| 4 | 03-L5-24 | Sharon Grace Porter  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 833/304<br>885/668 |
| 4 | 03-L5-24 | Sandra W. Weckesser a/k/a Sandra K. Weaver<br>and Timothy C. Weckesser | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 833/605<br>885/668 |
| 4 | 03-L5-24 | Linda McLendon and Larry McLendon                                      | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 835/45<br>885/668  |
| 4 | 03-L5-24 | Gwen Leistner and Michael Leistner                                     | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 828/269<br>885/668 |
| 4 | 03-L5-24 | Gail Spence and Ronald Spence  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 828/301<br>885/668 |
| 4 | 03-L5-24 | Gene Masteller   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 826/768<br>885/668 |
| 4 | 03-L5-24 | James I. Masteller   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 835/160<br>885/668 |

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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  
**Michael Ratcliffe OHI 8H**  
 Ohio County, West Virginia

| # | TAX ID   | LESSOR   | LESSEE   | ROYALTY | BK/PG              |
|---|----------|--|--|---------|--------------------|
| 4 | 03-L5-24 | John E. Masteller  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 835/154<br>885/668 |
| 4 | 03-L5-24 | Gary Farrar and Rebecca Farrar   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 828/320<br>885/668 |
| 4 | 03-L5-24 | Beverly D. Hertig  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 837/190<br>885/668 |
| 4 | 03-L5-24 | Patricia Kirkbride   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 838/720<br>885/668 |
| 4 | 03-L5-24 | The Estate of Charles Montgomery Eberhardt by<br>and through Monica J. Franklin, Executrix | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 20%     | 840/578<br>885/668 |
| 4 | 03-L5-24 | William Reed   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 840/645<br>885/668 |
| 4 | 03-L5-24 | Tamara R. Kerr   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 841/715<br>885/668 |
| 4 | 03-L5-24 | Billie Sprowls   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 846/105<br>885/668 |
| 4 | 03-L5-24 | Jason E. Martin  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 869/117<br>883/778 |
| 4 | 03-L5-24 | Jessica L. Grabenhorst f/k/a Jessica L. Byrd   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 869/439<br>883/778 |
| 4 | 03-L5-24 | Jeremy Owen Byrd   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 869/445<br>883/778 |
| 4 | 03-L5-24 | Susan D. DiGiandomenico a/k/a<br>Susan DiGiandomen   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 873/144<br>883/766 |

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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  
**Michael Ratcliffe OHI 8H**  
 Ohio County, West Virginia

| #   | TAX ID     | LESSOR  | LESSEE  | ROYALTY | BK/PG                         |
|-----|------------|---|---|---------|-------------------------------|
| 4   | 03-L5-24   | James Robert Johnson  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 874/257<br>885/548            |
| 4   | 03-L5-24   | Ian L. Montgomery   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 873/175<br>885/536            |
| 4   | 03-L5-24   | Eleanor B. Riggs  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 860/149<br>883/766            |
| 4   | 03-L5-24   | Robert W. Wardle  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 860/144<br>883/766            |
| 4   | 03-L5-24   | Nadine Montgomery McDowell  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 862/107<br>883/766            |
| 4   | 03-L5-24   | Heather H. Montgomery   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 877/594<br>895/498            |
| 5 ✓ | 03-L5-27   | George Flaccus Smith, a single man                                | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 813/288<br>883/563            |
| 6 ✓ | 03-L5-23.1 | Susan Northwood Smith and Richard Alan Smith,<br>husband and wife | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 813/136<br>885/608            |
| 7 ✓ | 03-L5-23.2 | Dale R. Ritchea and Jackie A. Ritchea,<br>husband and wife        | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 824/353<br>885/632            |
| 8 ✓ | 03-L5-23.4 | Walter W. Knollinger, Jr. and<br>Mona Dee Knollinger, his wife    | Great Lakes Energy Partners, L.L.C.<br>Chesapeake Appalachia, L.L.C. ✓<br>SWN Production Company, LLC | 12.5%   | 778/773<br>808/391<br>883/515 |
| 9   | 03-L5-23.6 | Donald L. Waddell and Deborah Jo Waddell,<br>his wife             | Great Lakes Energy Partners, L.L.C.<br>Chesapeake Appalachia, L.L.C. ✓<br>SWN Production Company, LLC | 12.5%   | 778/272<br>808/391<br>883/515 |

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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  
**Michael Ratcliffe OHI 8H**  
**Ohio County, West Virginia**

| #   | TAX ID      | LESSOR   | LESSEE  | ROYALTY | BK/PG                         |
|-----|-------------|--|---|---------|-------------------------------|
| 10✓ | 03-L5-23    | Donald L. Waddell and Deborah Jo Waddell,<br>his wife                              | Great Lakes Energy Partners, L.L.C.<br>Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 12.5%   | 778/272<br>808/507<br>883/515 |
| 11✓ | 03-L8-7     | Bernard T. Raab and Marjorie A. Raab,<br>husband and wife                          | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 869/461<br>883/778            |
| 12✓ | 03-L8-11    | CNX Gas Company, LLC   | SWN Production Company, LLC ✓   | 18%     | 48/118                        |
| 13✓ | 03-L8-35    | David Elwood Davis, Jr., a single man  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 829/791<br>885/656            |
| 14✓ | 03-L8-36    | Howard Louis Winters, a married man  | SWN Production Company, LLC ✓   | 18%     | 943/384                       |
| 15✓ | 03-L11-28.1 | JoAnn A. Parsons, a widow  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 863/758<br>883/778            |
| 15✓ | 03-L11-28.1 | Patty Jean Ebbert, a widow   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 16%     | 845/440<br>885/752            |
| 15✓ | 03-L11-28.1 | William Asher Childers, a married man<br>dealing in his sole and separate property | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 16%     | 845/435<br>885/752            |
| 15/ | 03-L11-28.1 | Robert Joseph Childers, a married man<br>dealing in his sole and separate property | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 16%     | 845/445<br>885/752            |
| 15/ | 03-L11-28.1 | Mildred I. Maxwell f/k/a Mildred<br>Imogene Amend, a widow                         | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 867/29<br>883/778             |
| 16/ | 03-L11-29   | JoAnn A. Parsons, a widow  | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 18%     | 863/758<br>883/778            |
| 16✓ | 03-L11-29   | Patty Jean Ebbert, a widow   | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓  | 16%     | 845/440<br>885/752            |

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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  
**Michael Ratcliffe OHI 8H**  
**Ohio County, West Virginia**

| #    | TAX ID    | LESSOR   | LESSEE   | ROYALTY | BK/PG              |
|------|-----------|--|--|---------|--------------------|
| 16 ✓ | 03-L11-29 | William Asher Childers, a married man<br>dealing in his sole and separate property | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 16%     | 845/435<br>885/752 |
| 16 ✓ | 03-L11-29 | Robert Joseph Childers, a married man<br>dealing in his sole and separate property | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 16%     | 845/445<br>885/752 |
| 16 ✓ | 03-L11-29 | Mildred I. Maxwell f/k/a Mildred<br>Imogene Amend, a widow                         | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 867/29<br>883/778  |
| 17 ✓ | 03-L11-62 | Marion S. Mazgaj and Mildred J. Mazgaj,<br>husband and wife                        | Chesapeake Appalachia, L.L.C.<br>SWN Production Company, LLC ✓ | 18%     | 821/654<br>885/608 |

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69-00275 m09



69-00275 mod

SWN Production Company, LLC  
179 Innovation Drive  
Jane Lew, WV 26578  
Tel: 304 884 1610  
Fax: 304 471 2497  
www.swn.com

August 30, 2018

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

**RE:** SWN's proposed New Well: Michael Ratcliffe OHI 8H in Ohio County, West Virginia, Drilling under Long Run Road, Atkinson Crossing, G C & P Road, Shanghi Murray Road, & US-40.

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 Long Run Road, Atkinson Crossing, G C & P Road, Shanghi Murray, & US-40. 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,

Bradley Wilson  
Landman  
SWN Production Company, LLC  
PO Box 12359  
Spring, TX 77391-2359

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

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September 4, 2018

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

**RE:** Modification: Michael Ratcliffe OHI 10H & Michael Ratcliffe OHI 8H

Dear Ms. Adkins

69-00276

69-00275

Enclosed please find the updated 6B, WBD, Mylar, Leases, & Road Letter for the above captioned wells. We are extending the laterals. These wells are situated on the Ratcliffe's property, in Ohio County, West Virginia.

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

Thank you.

Sincerely,

*Brittany Woody*

Brittany Woody  
Regulatory Analyst  
Southwestern Energy Production Company, LLC

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