



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

Wednesday, January 2, 2019
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for BARRY GREATHOUSE B BRK 5H
47-009-00233-00-00

Lateral Extension

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.

James A. Martin
Chief

Operator's Well Number: BARRY GREATHOUSE B BRK 5H
Farm Name: BARRY L & PATRICIA A GREATHOUSE
U.S. WELL NUMBER: 47-009-00233-00-00
Horizontal 6A New Drill
Date Modification Issued: January 2, 2019

October 4, 2018

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

RE: Proposed New Well: Barry Greathouse B BRK 5H

Dear Ms. Adkins

Enclosed please find the updated 6B, WBD, Mylar, 6A1, and road letter for the above captioned well. We are extending the lateral. This well is situated on the Greathouse's property in Brooke County, West Virginia.

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

Thank you.

Sincerely,



Brittany Woody
Regulatory Analyst
Southwestern Energy Production Company, LLC

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Environmental Protection

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 641- Tiltonsville
Operator ID County District Quadrangle

2) Operator's Well Number: Barry Greathouse B BRK 5H Well Pad Name: Barry Greathouse B PAD

3) Farm Name/Surface Owner: Barry L. Greathouse & Patricia A. Greathouse Public Road Access: Gritys Run Road

4) Elevation, current ground: 1143' Elevation, proposed post-construction: 1143'

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

(b) If Gas Shallow Deep _____
Horizontal _____

6) Existing Pad: Yes or No Yes

C. Hill 10-3-18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus, Up-Dip well to the North, Target Top TVD- 5781', Target Base TVD- 5822', Anticipated Thickness- 41', Associated Pressure- 3784

8) Proposed Total Vertical Depth: 5811'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18226'

11) Proposed Horizontal Leg Length: 12065.52'

12) Approximate Fresh Water Strata Depths: 281'

13) Method to Determine Fresh Water Depths: Salinity Profile

14) Approximate Saltwater Depths: 390' Salinity Profile

15) Approximate Coal Seam Depths: 295'

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

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

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

01/04/2019

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#	367'	367;	364 sx/CTS
Coal	See	Surface	Casing				
Intermediate	9 5/8"	New	J-55	36#	1623'	1623'	633 sx/CTS
Production	5 1/2"	New	HCP-110	20#	18226'	18226'	lead 972sx/Tal 2914sx/ 100' inside in 
Tubing							
Liners							

C-750 10-3-14

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:					RECEIVED Office of Oil and Gas
Sizes:					OCT - 9 2018
Depths Set:					WV Department of 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, horizontal separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 100 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 7.8

22) Area to be disturbed for well pad only, less access road (acres): 7.0

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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25) Proposed borehole conditioning procedures:

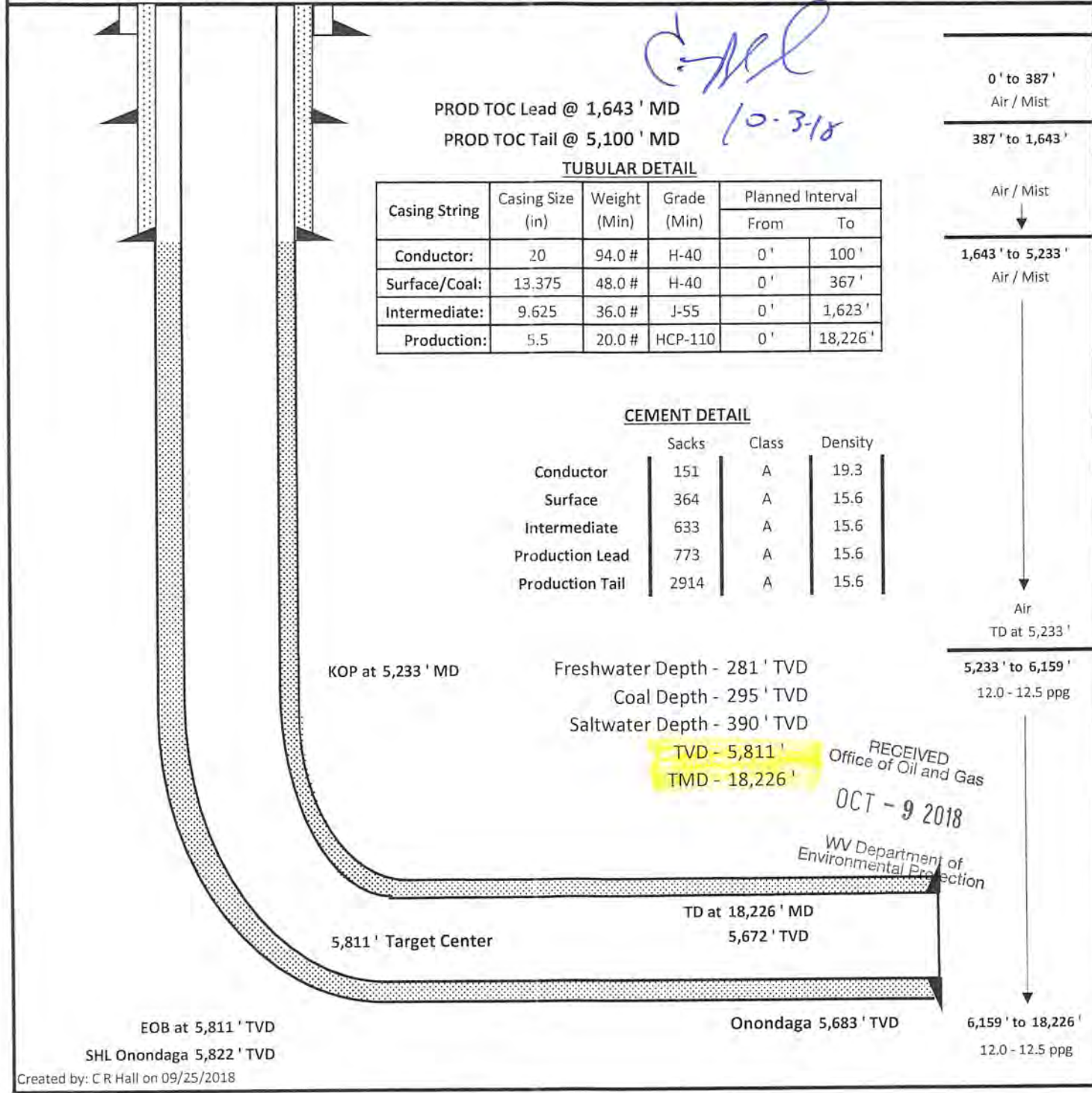
All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

WV Department of
Environmental Protection

*Note: Attach additional sheets as needed.

01/04/2019

Southwestern Energy Company			Proposed Drilling Program		
Well:	BARRY GREATHOUSE B BRK 5		Re-entry Rig:	TBD	
Field:	PANHANDLE FIELD \		Prospect:	PANHANDLE	
County:	BROOKE		State:	WV	
SHL:	40.1877 Latitude	-80.6412 Longitude			
BHL:	40.2191 Latitude	-80.6594 Longitude			
KB Elev:	1,169 ft MSL	KB: 26 ft AGL	GL Elev:	1,143 ft MSL	



(2,000' SCALE) LATITUDE: 40°15'00" BOTTOM HOLE

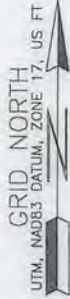
9575'

(2,000' SCALE) LATITUDE: 40°12'30" SURFACE HOLE

4471'



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

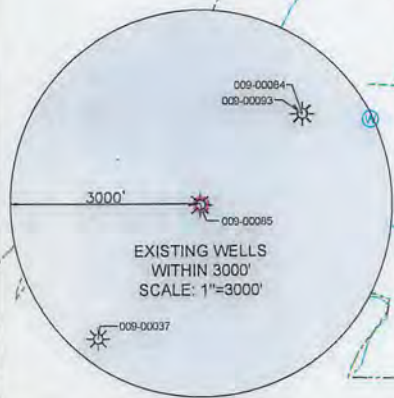
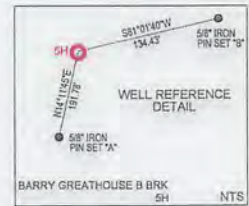


NOTES ON SURVEY

1. COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO DWELLINGS OR BUILDINGS WITHIN 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.

01/04/2019

LINE	BEARING	DISTANCE
L1	S37°12'48"W	3059.53'
L2	S78°48'56"W	2249.38'



SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4448656.47 EASTING: 530544.68
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4448824.01 EASTING: 530578.50
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4452132.62 EASTING: 528976.20



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

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)	BARRY GREATHOUSE B BRK OPERATOR'S WELL #: 5H API WELL #: 47 009 00233 STATE COUNTY PERMIT
	WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	WATERSHED: UPPER OHIO SOUTH DISTRICT: BUFFALO COUNTY: BROOKE SURFACE OWNER: BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE OIL & GAS ROYALTY OWNER: RAYLE COAL COMPANY

DRILL <input checked="" type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/> CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input type="checkbox"/> (SPECIFY)	TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 5,811' TVD 18,225.6' TMD
---	--

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378	DESIGNATED AGENT: BRITTANY WOODY ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378
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LEGEND: (S) PROPOSED SURFACE HOLE / BOTTOM HOLE (X) EXISTING / PRODUCING WELLHEAD LPL (X) LANDING POINT LOCATION (W) EXISTING WATER WELL (S) EXISTING SPRING (---) SURVEYED BOUNDARY (---) DRILLING UNIT (---) LEASE BOUNDARY (---) PROPOSED PATH	REVISIONS: DATE: 10-03-2018 DRAWN BY: D. REED SCALE: 1" = 3000' DRAWING NO: 2017-547 WELL LOCATION PLAT
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WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE (S) RAYLE COAL COMPANY (R)	03-841-0082.0000
TRACT	SURFACE OWNER	TAX PARCEL
2	ROBERT J., JR. & LINDA MILLER	03-841-0047.0000
3	JOY ANN & EBBIE J. SCHUETZ	03-841-0046.0000
4	WINDSOR COAL COMPANY	03-841-0039.0000
5	WINDSOR COAL COMPANY	03-836-0091.0000
6	BUSINESS DEVELOPMENT CORPORATION OF THE NORTHERN PANHANDLE	01-8B36-0023.0001
7	BUSINESS DEVELOPMENT CORPORATION OF THE NORTHERN PANHANDLE	01-8B36-0001.0000
8	BUSINESS DEVELOPMENT CORPORATION OF THE NORTHERN PANHANDLE	01-8B36-0024.0000
9	BUSINESS DEVELOPMENT CORPORATION OF THE NORTHERN PANHANDLE	01-836K-0013.0000

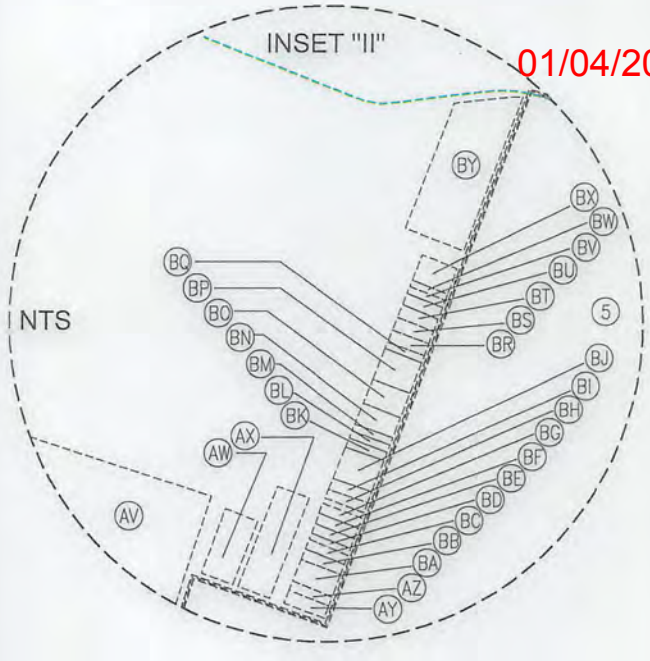
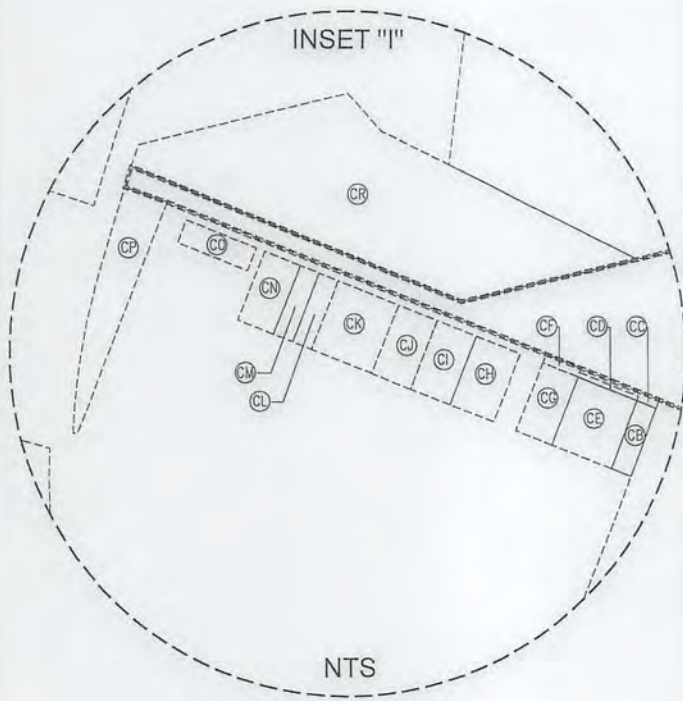
ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	DANNY GENE & VIRGINIA MARGARET BRITT (SURVIVOR)	03-846-0027.0000
B	BOARD OF COMMISSION OHIO COUNTY, C/O WHG OHIO COUNTY AIRPORT AUTHORITY	04-0085-0010.0000
C	STACY ANN & PATRICIA ANN GREATHOUSE (SURVIVOR)	03-846-0041.0000
D	BARRY L. & PATRICIA A. GREATHOUSE	03-841-0032.0000
E	DANNY GENE & VIRGINIA MARGARET BRITT (SURVIVOR)	03-846-0027.0000
F	CHARLES BELL ESTATE	03-841-0031.0000
G	ROSEMARY KINDER MOORE	03-841-0035.0000
H	RAY PAUL NICOLAN	03-841-0042.0000
I	JAMES HANCHER	03-841-0044.0000
J	JOY ANN SCHUETZ	03-841-0043.0000
K	JOY ANN & EBBIE J. SCHUETZ (SURVIVOR)	03-841-0045.0000
L	SYLVESTER & MARY KELLER (SURVIVOR)	03-841-0038.0000
M	CHARLES BELL ESTATE	03-841-0031.0000
N	WINDSOR COAL COMPANY	03-841-0007.0000
O	WEST PENN POWER CO	01-8B36-0027.0000
P	WINDSOR COAL COMPANY	01-8B36-0026.0000
Q	WINDSOR COAL COMPANY	01-8B36-0025.0000
R	WINDSOR COAL COMPANY	01-8B36-0022.0000
S	MARY LOUISE MCALISTER	01-8B36-0021.0000
T	MARY LOUISE MCALISTER	01-8B36-0020.0000
U	LEITHA ADAMSON	01-8B36-0022.0000
V	RALPH & MARY ANN PLANTS	01-8B36-0004.0000
W	ALLEGHENY ENERGY SUPPLY COMPANY, LLC	01-8B36-0030.0000
X	BUSINESS DEVELOPMENT CORP OF THE NORTHERN PANHANDLE	01-8B36-0023.0000
Y	OHIO RIVER (STATE OF WEST VIRGINIA)	OHIO RIVER
Z	STATE ROUTE #2	RIGHT OF WAY
AA	DENNIS RUSCHEL	01-836K-0002.0000
AB	VILLAGE OF BEECH BOTTOM	01-836K-0003.0000
AC	DOLORES VIRGINIA COEN	01-836K-0012.0000
AD	VILLAGE OF BEECH BOTTOM	01-836K-0011.0000
AE	CURTIS D. & TINA L. OSSMAN (SURVIVOR)	01-836K-0010.0000
AF	LINDA COX (L. CONTRACT); WILLIAM HAROLD JONES	01-836K-0009.0000
AG	LINDA ANN COX (L. CONTRACT); WILLIAM HAROLD JONES	01-836K-0008.0000
AH	NICHOLAS RYNIWEC	01-836F-0096.0000
AI	GARY EDWARD & CONSTANCE L. COOPER	01-836F-0095.0000
AJ	ESTATE OF CHRIS W. KERCHER	01-836F-0094.0000
AK	WILLIAM E. & DEBRA L. LEONARD (SURVIVOR)	01-836F-0093.0000
AL	TARA D. SUTER	01-836F-0092.0000
AM	TARA D. SUTER	01-836F-0091.0000
AN	JOHN ESKEY	01-836F-0090.0000
AO	AMY N. FREY	01-836F-0089.0000
AP	BRUCE & DEBBI SELMON (SURVIVOR)	01-836F-0088.0000
AQ	BRUCE & DEBBI SELMON (SURVIVOR)	01-836F-0085.0000
AR	TERRY LYNN LILLY	01-836F-0084.0000
AS	GEORGE W. & CHARLOTTE BARNHART (SURVIVOR)	01-836F-0081.0000
AT	GEORGE W. & CHARLOTTE BARNHART (SURVIVOR)	01-836F-0079.0000
AU	C & P TELEPHONE COMPANY OF WEST VIRGINIA	01-836F-0078.0000
AV	BUSINESS DEVELOPMENT CORP OF THE NORTHERN PANHANDLE	01-836F-0077.0000
AW	MARK T. SVETIC	01-836F-0025.0000
AX	JAC FRED WV, LLC, A NORTH CAROLINA LLC	01-836F-0026.0000
AY	MICHAEL EDWARD & EMMA FEDCZAK	01-836F-0076.0000
AZ	MICHAEL EDWARD & EMMA FEDCZAK	01-836F-0075.0000
BA	SHELBY L. CASTO	01-836F-0074.0000
BB	SHELBY L. CASTO	01-836F-0073.0000
BC	PHYLLIS MARKER	01-836F-0072.0000
BD	GLENN T. & CAROLYN MOORE	01-836F-0071.0000
BE	CAROLYN K. MOORE	01-836F-0070.0000
BF	JEFFREY & CHERYL WEEKLEY (JWS)	01-836F-0069.0000
BG	JEFFREY L. STOLLAR	01-836F-0068.0000
BH	JUNE E. MORRELL	01-836F-0067.0000
BI	JUNE E. MORRELL	01-836F-0066.0000
BJ	SHIRLEY M. RYNIWEC	01-836F-0065.0000
BK	ALLEN KEITH & CAROLE YAHRLING	01-836F-0064.0000
BL	JUNE E. MORRELL	01-836F-0063.0000
BM	EDWARD A. POLAND	01-836F-0062.0000
BN	LELAND J. & TRACY A. DICKINSON	01-836F-0061.0000
BO	THE VILLAGE OF BEECH BOTTOM	01-836F-0060.0000
BP	JOYCE L. PAINTER	01-836F-0059.0000
BQ	JANET L. RICHARDSON	01-836F-0058.0000
BR	JANET L. RICHARDSON	01-836F-0057.0000
BS	JANET L. RICHARDSON	01-836F-0056.0000
BT	JANET L. RICHARDSON	01-836F-0055.0000
BU	JANET L. RICHARDSON	01-836F-0054.0000
BV	MONONGAHELA POWER COMPANY	01-836F-0053.0000
BW	LARRY W. GRIMES	01-836F-0052.0000
BX	LARRY W. GRIMES	01-836F-0051.0000
BY	BOARD OF EDUCATION	01-836B-0106.0000
BZ	CLINTON W. & LORRAINE DEWITT	01-836B-0061.0000
CA	VILLAGE OF BEECH BOTTOM	01-836B-0017.0000
CB	VILLAGE OF BEECH BOTTOM	01-836B-0016.0000
CC	VILLAGE OF BEECH BOTTOM	XXXXX
CD	JUSTIN & AMANDA SMART (JWS)	01-836B-0013.0000
CE	JUSTIN & AMANDA SMART (JWS)	01-836B-0015.0000
CF	GEORGE M. & JUDY LEWIS (SURVIVOR)	01-836B-0012.0000

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
CG	GEORGE M. & JUDY LEWIS (SURVIVOR)	01-836B-0014.0000
CH	BELINDA DAUGHERTY & ET AL (L/E: JUNE ANN DAUGHERTY)	01-836B-0011.0000
CJ	BARBARA MCCUTCHAN	01-836B-0010.0000
CK	WILLIAM B., JR. & ELIZABETH N. CAIN	01-836B-0009.0000
CL	SHEILA ANN LAZEAR	01-836B-0008.0000
CM	SHEILA LAZEAR	01-836B-0007.0000
CN	JOHN C. & KELLY A. RICHIE	01-836B-0006.0000
CO	JOHN C. & KELLY A. RICHIE	01-836B-0005.0000
CP	PATRICK J. DALBO	01-836B-0002.0000
CQ	VILLAGE OF BEECH BOTTOM	01-836B-0001.0000
CR	BROWNLEE LAND VENTURES LP	01-836B-0115.0000
CS	JOYCE A. SMITH	01-836B-0004.0000
CT	JOSEPH H. HODGES	01-836B-0121.0000
CU	LARRY WILLIAM COUCH (L/E: JEAN COUCH)	01-836B-0124.0000
CV	EDWARD A. CONERY	01-836B-0125.0000
CW	LOUIS & ARLINE MILLER	03-836-0005.0000
CX	LOUIS & ARLINE MILLER	03-836-0006.0000
CY	ELVINA WELLS BUCY & ET AL	03-831-0074.0000
CZ	BERNARD J. LOMBARD, III	03-831-0081.0000
DA	STEPHEN A. FODOR & JUDY L. BROWNLEE	03-836-0176.0000
DB	JOHN R. HOFFMAN & ALICE J. BUCHANAN	03-836-0175.0000
DC	PAUL D. & KIMBERLY D. LEONARD (SURVIVOR)	03-836-0173.0000
DD	BRANNON P. & EMILY M. LEONARD (SURVIVOR)	03-836-0172.0000
DE	BRANNON P. & EMILY M. LEONARD (SURVIVOR)	03-8360171.0000
DF	HARLEY J. LEMASTERS	03-836-0170.0000
DG	HARLEY J. LEMASTERS	03-836G-0047.0000
DH	HARLEY J. LEMASTERS	03-836G-0046.0000
DI	HARLEY J. LEMASTERS	03-836G-0045.0000
DJ	HARLEY J. LEMASTERS	03-836G-0044.0000
DK	HARLEY J. LEMASTERS	03-836G-0042.0000
DL	HARLEY J. LEMASTERS	03-836G-0041.0000
DM	LESTER & KATHERINE WALLACE (SURVIVOR)	03-836G-0001.0000
DN	TONYA S. LOWE	03-836L-0011.0000
DO	JEFFREY M. & KRISTINA L. BARR (SURVIVOR)	03-836L-0011.0001
DP	AMANDA HUFF	03-836L-0017.0000
DQ	CONNIE WAGNER	03-836L-0015.0000
DR	BRIAN D. & CASEY K. RICHARDSON	03-836L-0021.0001
DS	WINDSOR COAL COMPANY	03-836-0101.0000
DT	WINDSOR COAL COMPANY	03-836-0102.0000
DU	WINDSOR COAL COMPANY	03-836-0100.0000
DV	WINDSOR COAL COMPANY	03-841-0048.0000
DW	SCOTT A. & SANDRA J. SANDRETH (SURVIVOR)	03-841-0050.0000
DX	FRED W. YOUNG, JR.	03-841-0054.0001
DY	DOROTHY S. MOORE	03-841-0054.0000
DZ	KARL DOUGLAS STEPHENS	03-841-0054.0002
EA	WILLIAM & DAWNA MILLER (SURVIVOR)	03-841-0061.0000
EB	JAY GLEN COLLINS	03-841-0080.0000
EC	DALE T. & MARY R. WOOD	03-841-0084.0000
ED	MARISSA J. FORSHEY	01-836K-0032.0000
EE	MARISSA J. FORSHEY	01-836K-0033.0000
EF	DONALD E. & PATRICIA A. GILBERT	01-836K-0034.0000
EG	MARISSA J. & ROBERT B. FORSHEY (SURVIVOR)	01-836K-0036.0000
EH	DONALD & PATRICIA GILBERT (SURVIVOR)	01-836K-0035.0000
EI	LINDA DARLIN SPENCER	01-836K-0037.0000
EJ	JESSE MCKEE	01-836K-0038.0000
EK	ALICE M. TAYLOR	01-836K-0039.0000
EL	MORRIS W. BLEAU	01-836K-0040.0000
EM	PAUL A. & MARY R. NEGRI; ROGER S. NEGRI	01-836K-0041.0000
EN	DONALD & ROSEMARIE MEADOWS (SURVIVOR)	01-836K-0042.0000
EO	JOHN MILLER	01-836K-0043.0000
EP	ALYSSA NEGRI	01-836K-0044.0000
EQ	ALYSSA R. NEGRI	01-836K-0045.0000
ER	JOHN E. & VIOLET E. CORSO (SURVIVOR)	01-836K-0046.0000
ES	JOHN E. & VIOLET E. CORSO (SURVIVOR)	01-836K-0047.0000
ET	JOHN E. & VIOLET E. CORSO (SURVIVOR)	01-836K-0048.0000
EU	MARK JORDAN	01-836K-0049.0000
EV	MARK L. & SHARON KAY JORDAN	01-836K-0050.0000
EW	CHARLES G., JR. & CECELIA MOORE (JWS)	01-836K-0051.0000
EX	JAMES D. MEADOWS	01-836K-0050.0002
EY	JAMES D. MEADOWS	01-836K-0050.0001
EZ	CHARLES G. & CHRISTINE L. HOOD	01-836K-0050.0003
FA	CHARLES G. & CHRISTINE L. HOOD	01-836K-0031.0000
FB	CHRISTOPHER DEAN	01-836K-0030.0000
FC	MORRIS BLEAU	01-836K-0029.0000
FD	STEPHEN A. POLLOCK, JUDITH HALL & ET AL	01-836K-0028.0000
FE	ROGER S. NEGRI	01-836K-0027.0000
FF	ROGER S. NEGRI	01-836K-0026.0000
FG	KENNETH IVERSON	01-836K-0023.0000
FH	PAUL A. NEGRI	01-836K-0025.0000
FI	ROGER S. NEGRI	01-836K-0024.0000
FJ	ROGER S. NEGRI	01-836K-0022.0000
FK	ROGER S. NEGRI	01-836K-0021.0000
FL	ROGER S. NEGRI	01-836K-0020.0000
FM	LEONARD D., SR. & LORIE K. VARNER	01-836K-0019.0000
FN	LEONARD & LORIE VARNER	01-836K-0018.0000
FO	TERRY L. STEWART	01-836K-0017.0000
FP	MICHAEL OWEN MATHES	01-836K-0016.0000
FQ	WANDA S. JONES	01-836K-0015.0000
FR	WANDA S. JONES	01-836K-0014.0000
FS	LELAND J. & TRACY A. DICKINSON (SURVIVOR)	01-8B36-0006.0000
FT	DANIEL L. & CATHY J. JOHNSTON (SURVIVOR)	01-8B36-0007.0000
FU	STEVEN ANDREW & DEBBIE LYNN MURDOCK (SURVIVOR)	01-8B36-0008.0000
FV	CHERYL E. SMITH, LINDA CURIA (L/E: ROBERT & JOANN SMITH)	01-8B36-0009.0000
FW	FRANKLIN & CONNIE J. MILLER (SURVIVOR)	01-8B36-0010.0000
FX	FRANKLIN & CONNIE J. MILLER (SURVIVOR)	01-8B36-0011.0000
FY	FRANKLIN MILLER	01-8B36-0012.0000
FZ	FRANKLIN MILLER	01-8B36-0013.0000
GA	FRANKLIN MILLER	01-8B36-0014.0000
GB	FRANKLIN MILLER	01-8B36-0015.0000
GC	PAUL & MARY G. CUNNINGHAM (SURVIVOR)	01-8B36-0016.0000
GD	PAUL & GENEVIEVE CUNNINGHAM	01-8B36-0017.0000

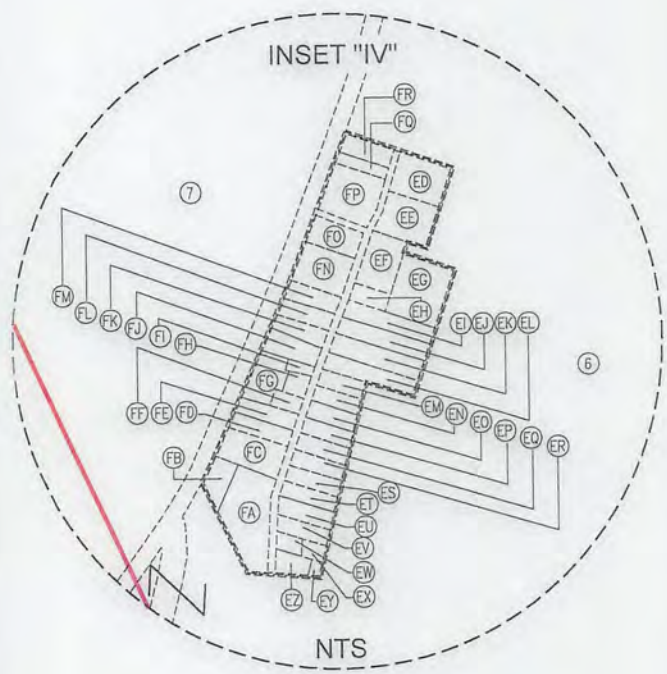
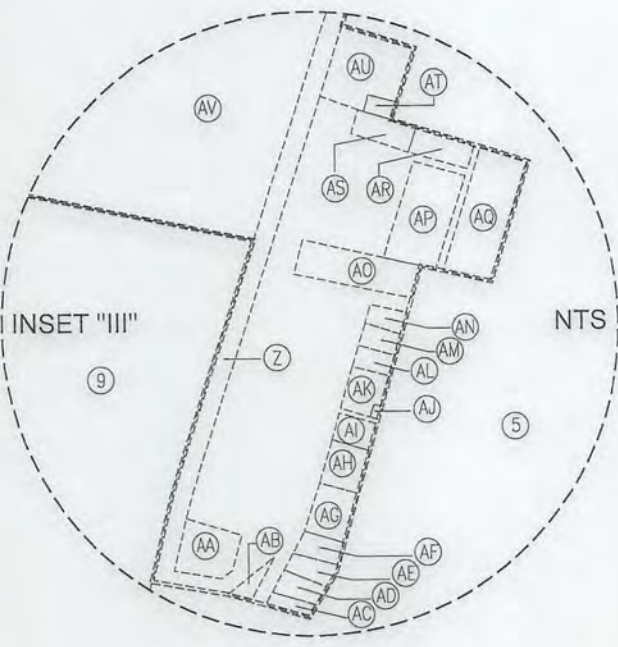
01/04/2019

REVISIONS:	


COMPANY:			
OPERATOR'S	BARRY GREATHOUSE B BRK		
WELL #:	5H		
DISTRICT:	COUNTY:	STATE:	DATE:
BUFFALO	BROOKE	WV	10-03-2018
			DRAWN BY: D. REED
			SCALE: N/A
			DRAWING NO: 2017-547
			WELL LOCATION PLAT



01/04/2019

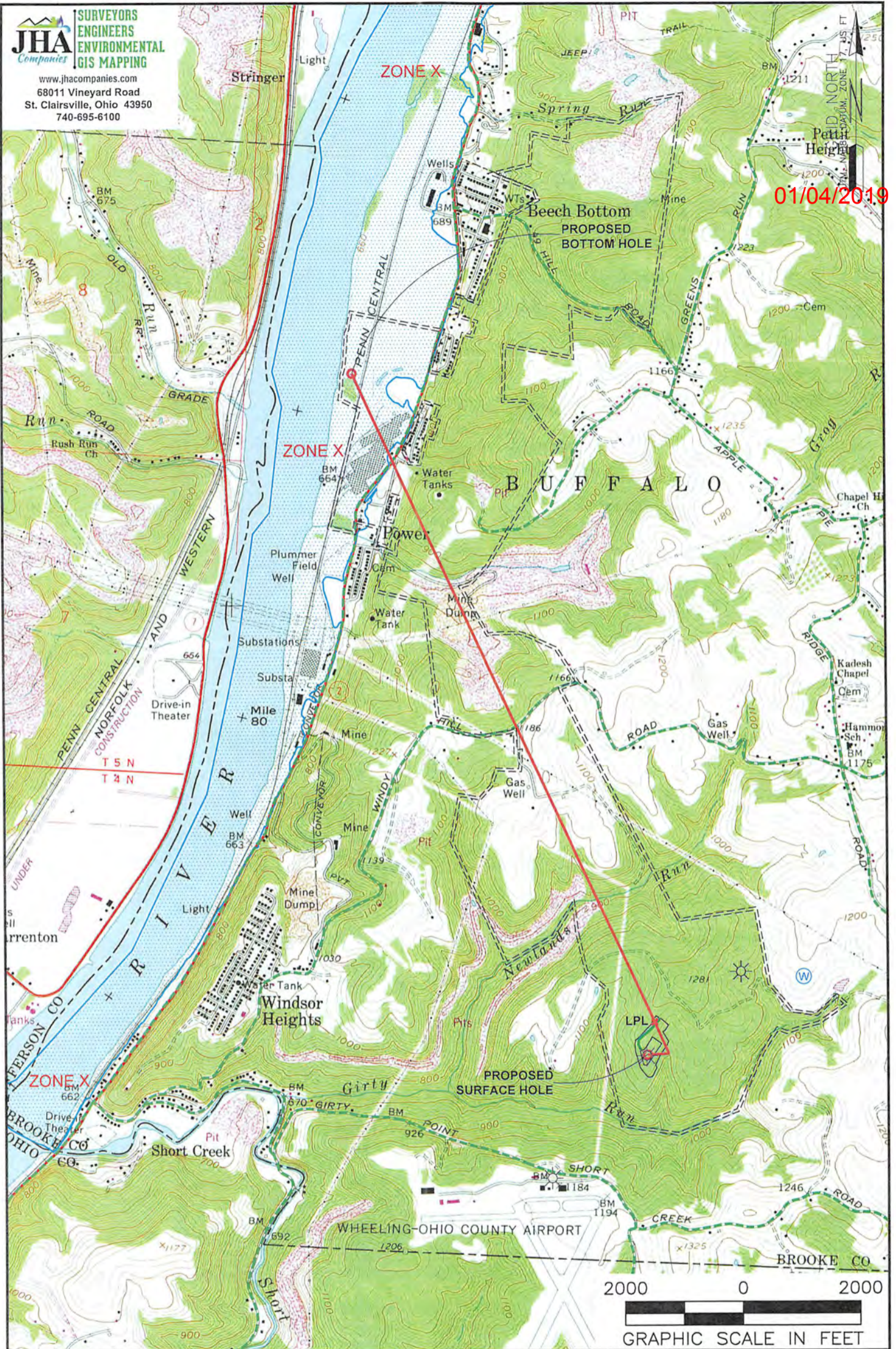


REVISIONS:	

COMPANY:				
OPERATOR'S			BARRY GREATHOUSE B BRK	
WELL #:			5H	
DISTRICT:		COUNTY:	STATE:	DATE:
BUFFALO		BROOKE	WV	10-03-2018
DRAWN BY: D. REED				
SCALE: N/A				
DRAWING NO: 2017-547				
WELL LOCATION PLAT				

PROPERTY NUMBER 2501166102
PAD ID 3001156743

01/04/2019



NOTES ON SURVEY

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

LEGEND:

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

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	WELL (FARM) NAME: BARRY GREATHOUSE B BRK	WELL # 5H	SERIAL # XXXX
ADDRESS: P.O. BOX 1300 JANE LEW, WV 26378	COUNTY - CODE BROOKE - 009	DISTRICT; BUFFALO	
SURFACE OWNER: BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE	USGS 7 1/2 QUADRANGLE MAP NAME TILTONVILLE, OH-WV		

October 2, 2018

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

RE: SWN's proposed Barry Greathouse B BRK 5H in Brooke County, West Virginia, Drilling under Hukill Run Road.

Dear Ms. Adkins:

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

Thank you.

Sincerely,



Gary Nuckolls
Staff Landman
SWN Production Company, LLC

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Office of Oil and Gas
OCT - 9 2018
WV Department of
Environmental Protection

$\frac{R^2}{A} \rightarrow V^+$

Barry Greenhouse
B BRK SH

WW-6A1
(5/13)

Operator's Well No. _____

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

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

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

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

See Exhibit A

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

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

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

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

Well Operator: SWN Production Co., LLC

By: [Signature] Gary Norwalk
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
 Barry Greathouse B BRK 5H
 Brooke County, West Virginia

#	TMP	SURFACE OWNER	LESSOR	LESSEE	ROYALTY	BK/PG
1)	03-0B41-0082-0000-0000	Barry L. Greathouse and Patricia A. Greathouse	Rayle Coal Company	Chesapeake Appalachia, LLC	17.00%	10/751
				SWN Production Company, LLC		32/384
				Barry L. Greathouse and Patricia A. Greathouse (Rayle Coal Company)	15.50%	26/649
				Range Resources-Appalachia, LLC		20/733
2)	03-0B41-0047-0000-0000	Robert J. Miller, Jr. and Linda M. Miller	Robert J. Miller, Jr. and Linda M. Miller, JTWROS	Chesapeake Appalachia, LLC	15.50%	10/552
				SWN Production Company, LLC		33/492
				Great Lakes Energy Partners, LLC		9/517
				Range Resources-Appalachia, LLC		20/733
3)	03-0B41-0046-0000-0000	Joy Ann Schuetz and Ebbie Schuetz	Ebbie J. Scheutz and Joy Ann Schuetz	Chesapeake Appalachia, LLC	14.00%	26/287
				SWN Production Company, LLC		30/480
				West Penn Power Company	18%	48/524
				SWN Production Company, LLC		47/677
4)	03-0B41-0039-0000-0000	Windsor Coal Company	Windsor Coal Company	HG Energy II Appalachia LLC	18%	47/677
				SWN Production Company, LLC		47/677
5)	03-0B36-0091-0000-0000	Windsor Coal Company	HG Energy II Appalachia LLC	SWN Production Company, LLC	18%	47/677
6)	01-0B836-0023-0001-0000	Business Development Corporation of the Northern Panhandle	Bounty Minerals, LLC	SWN Production Company, LLC	18.00%	43/278
7)	01-BB36-0001-0000	Business Development Corporation of the Northern Panhandle	Bounty Minerals, LLC	SWN Production Company, LLC	18.00%	47/73
8)	01-BB36-0024-0000-0000	Business Development Corp of the Northern Panhandle	Bounty Minerals, LLC	SWN Production Company, LLC	18.00%	47/73
9)	01-B36K-0013-0000-0000	Business Development Corp of the Northern Panhandle	Bounty Minerals, LLC	SWN Production Company, LLC	18.00%	43/278

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01/04/2019



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

Wednesday, January 2, 2019
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for BARRY GREATHOUSE A BRK 26
47-009-00232-00-00

Lateral Extension

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.

James A. Martin
Chief

A handwritten signature in blue ink, appearing to read "James A. Martin", is written over the typed name and title.

Operator's Well Number: BARRY GREATHOUSE A BRK 206H
Farm Name: BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE
U.S. WELL NUMBER: 47-009-00232-00-00
Horizontal 6A New Drill
Date Modification Issued: January 2, 2019

Promoting a healthy environment.

October 10, 2018

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

RE: Modifications: Barry Greathouse A BRK 6H, Barry Greathouse A BRK 8H, & Barry Greathouse A BRK 206H

Dear Ms. Adkins

Enclosed please find the updated 6B, WBD, Mylar, 6A1, & Road letter for the above captioned wells. We are extending the laterals. These wells are situated on the Greathouse's property in Brooke 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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Environmental Protection

$\frac{R^2}{A} \rightarrow V^+$

4700900232

01/04/2019

WW-6B
(04/15)

API NO. 47-09
OPERATOR WELL NO. Barry Greathouse A BRK 206H
Well Pad Name: Barry Greathouse A BRK 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 009-Brooke Buffalo Bethany
Operator ID County District Quadrangle

2) Operator's Well Number: Barry Greathouse A BRK 206H Well Pad Name: Barry Greathouse A BRK PAD

3) Farm Name/Surface Owner: Barry L. & Patricia A. Greathouse Public Road Access: Gritty Run

4) Elevation, current ground: 1136' Elevation, proposed post-construction: 1136'

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

C. J. B. 10.3.18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus, Down-Dip well to the South BHL Target Top TVD- 5885', Target Base TVD- 5926', Anticipated Thickness- 41', Associated Pressure- 3852

8) Proposed Total Vertical Depth: 5915'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17439'

11) Proposed Horizontal Leg Length: 11212.52'

12) Approximate Fresh Water Strata Depths: 275'

13) Method to Determine Fresh Water Depths: salinity profile

14) Approximate Saltwater Depths: 384' salinity profile

15) Approximate Coal Seam Depths: 292'

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

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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:

WW-6B
(04/15)

API NO. 47- 09 -
OPERATOR WELL NO. Barry Greathouse A BRK 206H
Well Pad Name: Barry Greathouse A BRK PAD

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#	375'	375'	371 sx/CTS
Coal	See	Surface	Casing				
Intermediate	9 5/8"	New	J-55	36#	1617'	1617'	630 sx/CTS
Production	5 1/2"	New	HCP-110	20#	17439'	17439'	Lead 774sx tail 2741sx/100' inside interval
Tubing							
Liners							

C. M. O 10-3-18

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	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							

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PACKERS

Kind:				
Sizes:				
Depths Set:				

WW-6B
(10/14)

API NO. 47- 09 - _____
OPERATOR WELL NO. Bary Greathouse A BRK 206H
Well Pad Name: Bary Greathouse A BRK PAD

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

Drill and stimulate any potential zones between and including the Benson to Marcellus. **If we should encounter a void place basket above and below void area- balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50' 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 @ 80 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 7.8

22) Area to be disturbed for well pad only, less access road (acres): 7.0

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 ***

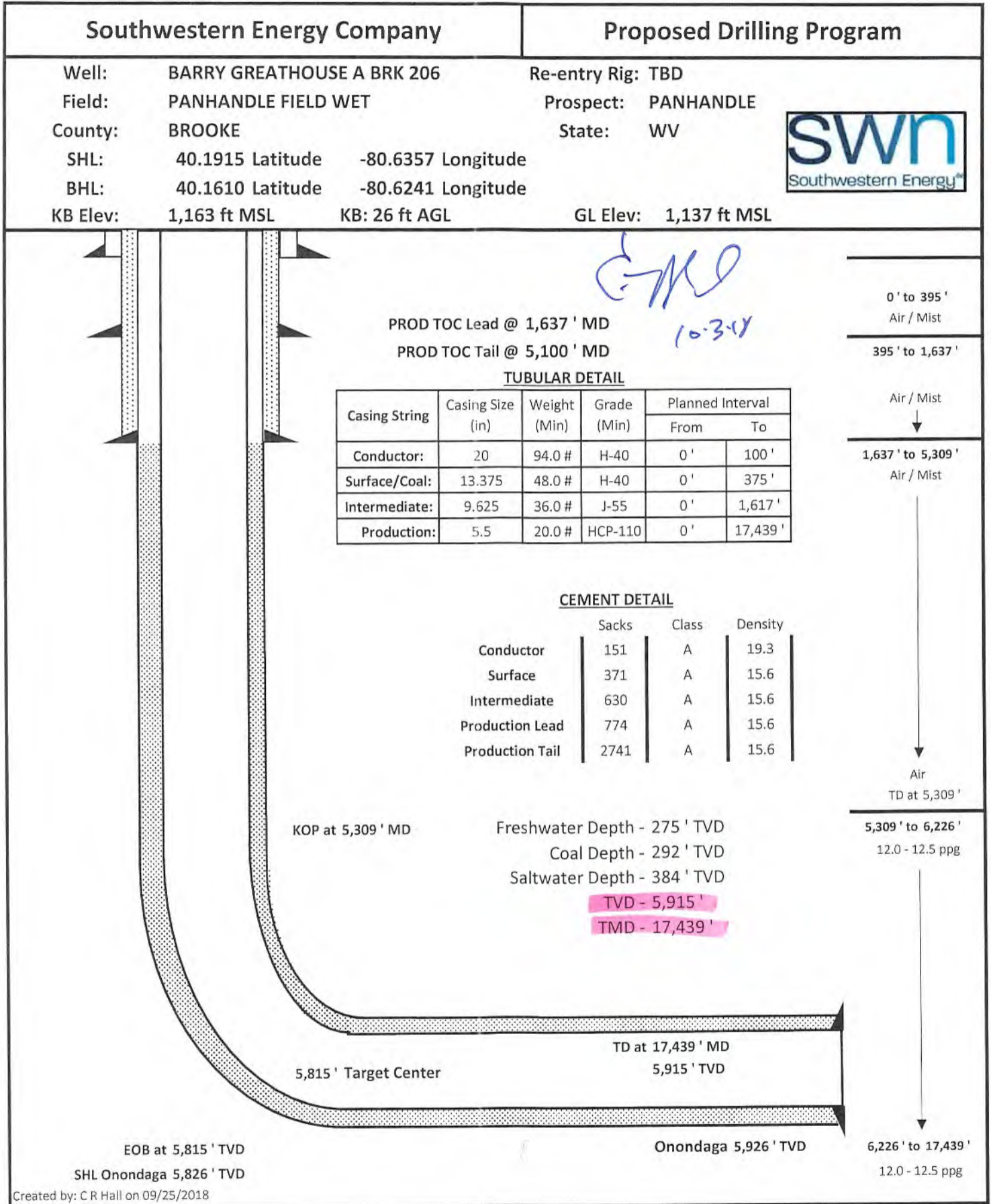
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25) Proposed borehole conditioning procedures:

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.

01/04/2019

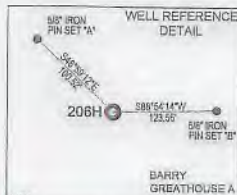


(2000' SCALE) SURFACE HOLE LATITUDE 40°12'30" 2924'

(2000' SCALE) BOTTOM HOLE LATITUDE 40°10'00" 11374'



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

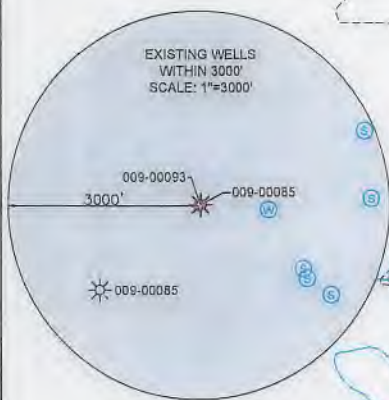
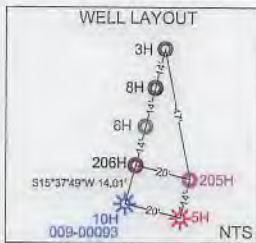


NOTES ON SURVEY

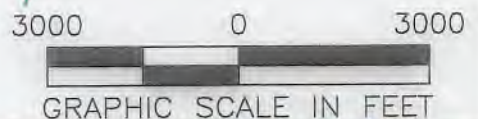
1. COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
3. THIS PLAT DOES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

01/04/2019

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US



SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4449075.14 EASTING: 531013.75
LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4448883.35 EASTING: 530792.49
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4445693.05 EASTING: 532014.41



LINE	BEARING	DISTANCE
L1	S14°49'18"W	1125.90'
L2	N35°14'47"W	1116.50'

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

P.S. 2041



SWN Production Company, LLC Production Company™

	(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS	MINIMUM DEGREE OF ACCURACY: 1/200	BARRY GREATHOUSE A BRK
	WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	PROVEN SURVEY SOURCE OF ELEVATION: GRADE GPS (NAVD 88, US FT)	OPERATOR'S WELL #: 206H
WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>		API WELL #: 47 STATE 009 COUNTY 00232 PERMIT	
WATERSHED: UPPER OHIO SOUTH		ELEVATION: 1136.0'	
DISTRICT: BUFFALO COUNTY: BROOKE		QUADRANGLE: TILTONSVILLE, OH & BETHANY, WV	
SURFACE OWNER: BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE		ACREAGE: ±229.00	
OIL & GAS ROYALTY OWNER: RAYLE COAL COMPANY		ACREAGE: ±229.00	
DRILL <input checked="" type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/>		ESTIMATED DEPTH: 5,915' TVD 17,439.2' TMD	
CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input type="checkbox"/> (SPECIFY)			
TARGET FORMATION: MARCELLUS			
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	
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD LPL: LANDING POINT LOCATION ⊙ EXISTING WATER WELL ⊕ EXISTING SPRING		REVISIONS: DATE: 09-28-2018	
— SURVEYED BOUNDARY - - - DRILLING UNIT - - - LEASE BOUNDARY - - - PROPOSED PATH		DRAWN BY: D. REED SCALE: 1" = 3000' DRAWING NO: 2017-422 WELL LOCATION PLAT	

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE (S) RAYLE COAL COMPANY (R)	03-B41-0082.0000
TRACT	SURFACE OWNER	TAX PARCEL
2	DANNY GENE BRITT & VIRGINIA MARGARET BRITT	03-B46-0027.0000
3	TRACY GILBERT	03-B46-0022.0000
4	BUSTER T. BLAKE & BARBARA A. BLAKE	03-B46-0023.0000
5	GARY L. WILLIAMS & MARGIE WILLIAMS	03-B46-0025.0000
6	MY THREE SONS HOLDING LP.	03-B46-0024.0000
7	GARY HERCULES & MARTHA HERCULES	04-R6-4
8	GARY & MARTHA HERCULES	04-R6-4.1
9	SHORT CREEK COAL CO	04-R6-17.3
10	SHORT CREEK COAL CO	04-R6-17.4
11	WINDELL H. & G. GOFF	04-R6-27.1

01/04/2019

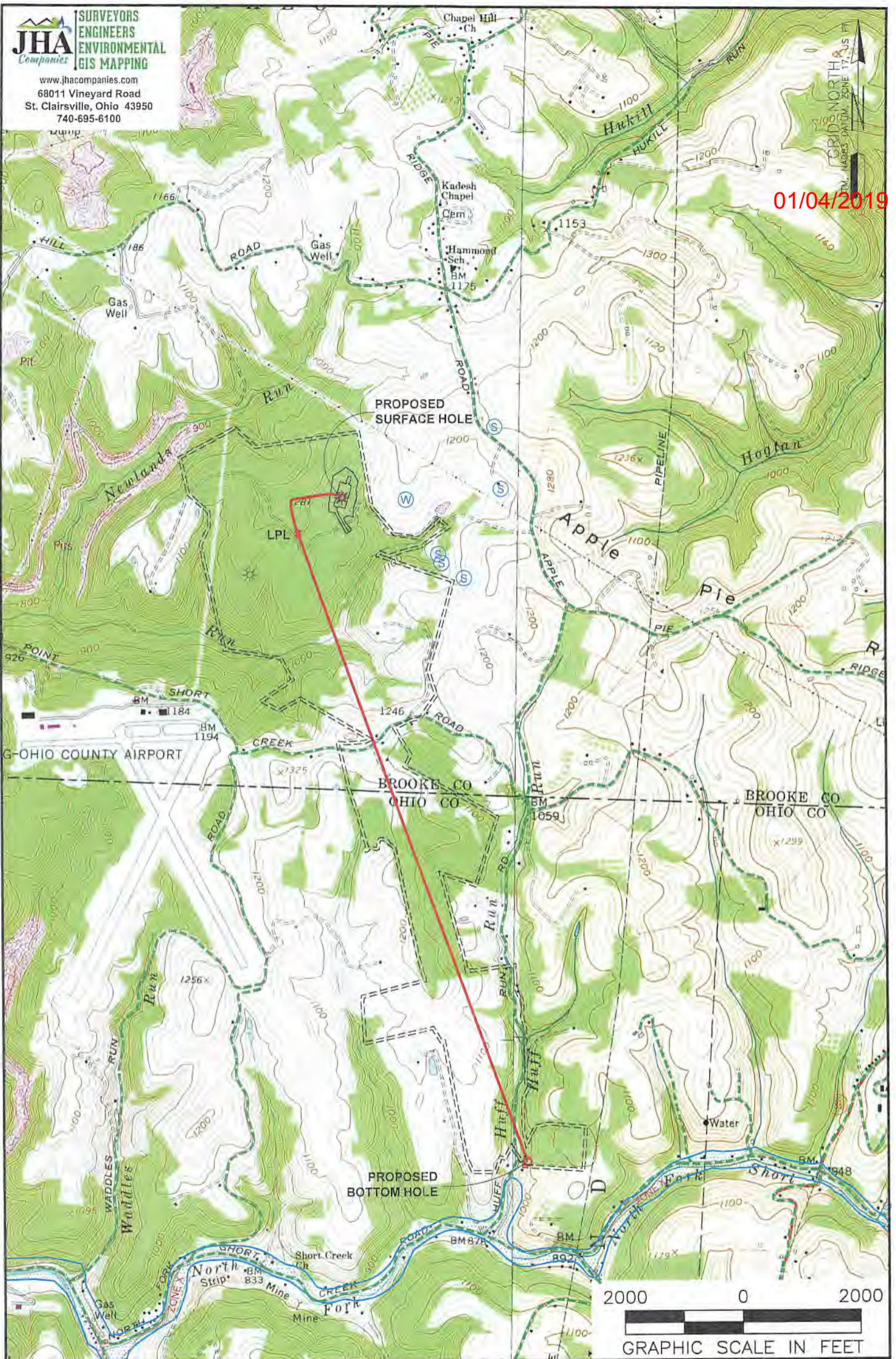
ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	ROBERT J. MILLER JR. & LINDA MILLER	03-B41-0047.0000
B	JAY GLEN COLLINS	03-B41-0080.0000
C	DALE T. WOOD & MARY R. WOOD	03-B41-0084.0000
D	JAMES B. GEBHARDT & MELISSA D. GEBHARDT	03-B46-0029.0000
E	RACHAEL R. BAXTER	03-B46-0028.0000
F	GRACE FRIEND	03-B46-0030.0000
G	REBECCA FRIEND	03-B46-0026.0000
H	TERRY L. CRUPE	03-B46-0033.0000
I	ALFRED SCHELL	03-B46-0037.0000
J	MELISSA KERNS, CHRISTINA A. KERNS, TIMOTHY E. KERNS & JEANETTE M. KERNS	03-B46-0040.0001
K	TIMOTHY E. KERNS & JEANETTE M. KERNS	04-R6-8.1
L	MELISSA ANN KERNS	04-R6-8
M	ULRICH UTT	04-R6-24.1
N	ULRICH UTT	04-R6-24.2
O	GARY & MARTHA HERCULES	04-R6-6.1
P	GARY & MARTHA HERCULES	04-R6-5
Q	GARY & MARTHA HERCULES	04-R6-6
R	GARY WAYNE HERCULES	04-R6-16
S	WINDSOR COAL COMPANY C/O CNX LAND-PROPERTY TAX	04-R6-12
T	WAYNE E SHOOK	04-R6-15
U	CHARLES B. DAVIS, III & ELIZABETH MARIE DAVIS	04-R6-14.4
V	RANDALL L. CRABTREE & CYNTHIA S. KOVALSKI	04-R6-27.3
W	NICOLE L. CARENBAUER	04-R6-28.6
X	WINDELL H. GOFF, II & GLADYS GOFF	04-R6-24.3
Y	STELLA M. BRYAN & KATHLEEN J. BRYAN	04-R6-17.1
Z	WINDSOR COAL COMPANY C/O CNX LAND-PROPERTY TAX	04-R6-25
AA	RICHARD A. WOOD, JR.	04-R6-24.6
AB	SHORT CREEK COAL COMPANY C/O RAYLE COAL COMPANY	04-R6-17
AC	SHORT CREEK COAL COMPANY C/O RAYLE COAL COMPANY	04-R6-17.2
AD	OHIO COUNTY BOARD OF COMMISSIONERS	04-R5-55
AE	WINDSOR COAL COMPANY C/O CNX LAND-PROPERTY TAX	04-R6-25
AF	BRUCE D. BONAR (3) & WILLIAM BONAR (4)	03-B46-0020.0000
AG	TRACY GILBERT	03-B46-0023.0001
AH	TRACY GILBERT	03-B46-0022.0001
AI	OHIO COUNTY BOARD OF COMMISSIONERS	04-R5-10
AJ	STACY ANN GREATHOUSE & PATRICIA ANN GREATHOUSE	03-B46-0041.0000
AK	BARRY L. GREATHOUSE & PATRICIA ANN GREATHOUSE	03-B41-0083.0000
AL	BARRY L. GREATHOUSE & PATRICIA ANN GREATHOUSE	03-B41-0032.0000

REVISIONS:	COMPANY:	 	
	OPERATOR'S	BARRY GREATHOUSE A BRK	DATE: 09-28-2018
	WELL #:	206H	DRAWN BY: D. REED
	DISTRICT:	BUFFALO	SCALE: N/A
	COUNTY:	BROOKE	DRAWING NO: 2017-422
	STATE:	WV	WELL LOCATION PLAT

PROPERTY NUMBER 2501166084
PAD ID 3001156331

47-001-00232

01/04/2019



NOTES ON SURVEY

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

LEGEND:

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

WELL OPERATOR:
SWN PRODUCTION COMPANY, LLC

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

SURFACE OWNER:
BARRY L. GREATHOUSE & PATRICIA A. GREATHOUSE

WELL (FARM) NAME:
BARRY GREATHOUSE A BRK

COUNTY - CODE
BROOKE - 009

USGS 7 1/2 QUADRANGLE MAP NAME
TILTONVILLE, OH-WV & BETHANY, WV-PA

WELL # SERIAL #
206H XXXX

DISTRICT;
BUFFALO

Barry Greathouse A
BRK 206H

WW-6A1
(5/13)

Operator's Well No. _____

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

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

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

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

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

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

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

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

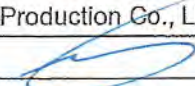
Well Operator: SWN Production Co., LLC
 By:  Gary Nuckolls
 Its: Staff Landman

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
 Barry Greathouse A BRK 206H
 Brooke County, West Virginia

#	TMP	SURFACE OWNER	LESSOR	LESSEE	ROYALTY	BK/PG
1)	03-0B41-0082-0000-0000	Barry L. Greathouse and Patricia A. Greathouse	Rayle Coal Company	Chesapeake Appalachia, LLC	15.50%	26/649
				Range Resources-Appalachia LLC		20/733
				Chesapeake Appalachia, LLC		10/552
				SWN Production Company, LLC		32/384
2)	03-0B46-0027-0000-0000	Danny Gene Britt and Virginia Margaret Britt	Danny Gene Britt and Virginia Margaret Britt	Great Lakes Energy Partners, LLC	12.50%	10/109
				Range Resources-Appalachia LLC		20/733
				Chesapeake Appalachia, LLC		10/552
				SWN Production Company, LLC		30/480
3)	03-0B46-0022-0000-0000	Tracy Gilbert	Tracy Gilbert	Great Lakes Energy Partners, LLC	12.50%	10/52
				Range Resources-Appalachia LLC		20/733
				Chesapeake Appalachia, LLC		10/552
				SWN Production Company, LLC		30/480
4)	03-0B46-0023-0000-0000	Buster T. Blake and Barbara A. Blake	Buster T. Blake and Barbara A. Blake	Chesapeake Appalachia, LLC	18.00%	19/147
				SWN Production Company, LLC		30/480
5)	03-0B46-0025-0000-0000	Gary L. Williams and Margie Williams	Gary L. Williams and Margie Williams	Chesapeake Appalachia, LLC	18.00%	15/296
				SWN Production Company, LLC		30/480
6)	03-0B46-0024-0000-0000	My Three Sons Holdings, LP	David Brandimarte	Chesapeake Appalachia, LLC	18.00%	23/516
				SWN Production Company, LLC		30/480
			Gregory Brandimarte and Susan Brandimarte	Chesapeake Appalachia, LLC	18.00%	23/511
				SWN Production Company, LLC	30/480	
			Josephine Jordan	Chesapeake Appalachia, LLC	18.00%	22/166
				SWN Production Company, LLC	30/480	
			Patrick Villinger and Teauna Villinger	Chesapeake Appalachia, LLC	18.00%	23/625
				SWN Production Company, LLC	30/480	
			Brandt Price and Linda Price	Chesapeake Appalachia, LLC	18.00%	23/212
				SWN Production Company, LLC	30/480	
Brian Mokricky and Myra Mockricky	03-0B46-0024-0000-0000	My Three Sons Holdings, LP	Brian Mokricky and Myra Mockricky	Chesapeake Appalachia, LLC	18.00%	24/684
				SWN Production Company, LLC		30/480
Anna Wilson	03-0B46-0024-0000-0000	My Three Sons Holdings, LP	Anna Wilson	Chesapeake Appalachia, LLC	18.00%	25/367
				SWN Production Company, LLC		30/480
Donna Yost	03-0B46-0024-0000-0000	My Three Sons Holdings, LP	Donna Yost	Chesapeake Appalachia, LLC	18.00%	22/161
				SWN Production Company, LLC		30/480
Marie P. Fisher and Lulu Fisher	03-0B46-0024-0000-0000	My Three Sons Holdings, LP	Marie P. Fisher and Lulu Fisher	Great Lake Energy Partners, LLC	15.50%	9/637

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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
 Barry Greathouse A BRK 206H
 Brooke County, West Virginia

				Range Resources-Appalachia, LLC		20/733
				Chesapeake Appalachia, LLC		10/552
				SWN Production Company, LLC		30/480
7)	04-OR06-0004-0000-0000	Gary Hercules and Martha Hercules	Gary Hercules and Martha Hercules	SWN Production Company, LLC	16.00%	926/147
8)	04-OR06-0004-0001-0000	Gary Hercules and Martha Hercules	Gary Hercules and Martha Hercules	SWN Production Company, LLC	16.00%	926/147
9)	04-OR06-0017-0003-0000	Rayle Coal Company	Rayle Coal Company	Chesapeake Appalachia, LLC	18.00%	808/334
				SWN Production Company, LLC		883/403
10)	04-R06-0017-0004-0000	Rayle Coal Company	Rayle Coal Company	Chesapeake Appalachia, LLC	18.00%	808/335
				SWN Production Company, LLC		883/403
11)	04-R06-0027-0001-0000	Windell H. Goff, II and Gladys Goff	Windell H. Goff, II and Gladys Goff	Chesapeake Appalachia, LLC	18.00%	813/688
				SWN Production Company, LLC		884/421

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October 8, 2018

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

RE: SWN's proposed New Well: Barry Greathouse BRK 6H & Barry Greathouse A BRK 206H in Brooke County, West Virginia, Drilling under Gritys Point Road & Huffs Run Road.

Dear Ms. Adkins:

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

Thank you.

Sincerely,



Gary Nuckolls
Staff Landman
SWN Production Company, LLC
PO Box 1300
Jane Lew, WV 26378

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