



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, May 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 BRIAN DYTOKO OHI 5H
47-069-00265-00-00

Sidetracking the well

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 printed name and title.

Operator's Well Number: BRIAN DYTOKO OHI 5H
Farm Name: BRIAN J DYTOKO
U.S. WELL NUMBER: 47-069-00265-00-00
Horizontal 6A New Drill
Date Modification Issued: May 25, 2018

Promoting a healthy environment.

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 69-Ohio Tridelp Valley Grove
Operator ID County District Quadrangle

2) Operator's Well Number: Brian Dytko OHI 5H ST 1 Well Pad Name: Brian Dytko OHI Pad

3) Farm Name/Surface Owner: Brian J Dytko Public Road Access: Stone Church Road

4) Elevation, current ground: 1222' Elevation, proposed post-construction: 1222'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus Dip Well to the North , Target Top TVD- 6375', Target Base TVD- 6407', Anticipated Thickness- 32', Associated Pressure-4165

[Handwritten signature]
5-15-18

8) Proposed Total Vertical Depth: 6380'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 15,425'

11) Proposed Horizontal Leg Length: 8610.78'

12) Approximate Fresh Water Strata Depths: 555'

13) Method to Determine Fresh Water Depths: Offset wells; WR-35

14) Approximate Saltwater Depths: 999' top of saline water (det by WR-035 completion report)

15) Approximate Coal Seam Depths: 639'

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: Shoemaker Mine / Ohio County Shoemaker
Depth: 639'
Seam: Pittsburgh
Owner: Murray Energy Corporation

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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	J-55	54.5#	676'	676'	709 sx/CTS
Coal							
Intermediate	9 5/8"	New	J-55	36#	1972'	1972'	745 sx/CTS
Production	5 1/2"	New	HCP-110	20#	15,425'	15,425'	Load 1025 vs. 1297 oil and gas
Tubing							
Liners							

E. Hill 5-15-18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface 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	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/15% Excess
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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 50' below void nor more than 100' below void. (*If freshwater is encountered deeper than anticipated it must be protected, set casing 50'-75' 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): 7.94

22) Area to be disturbed for well pad only, less access road (acres): 6.05

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.

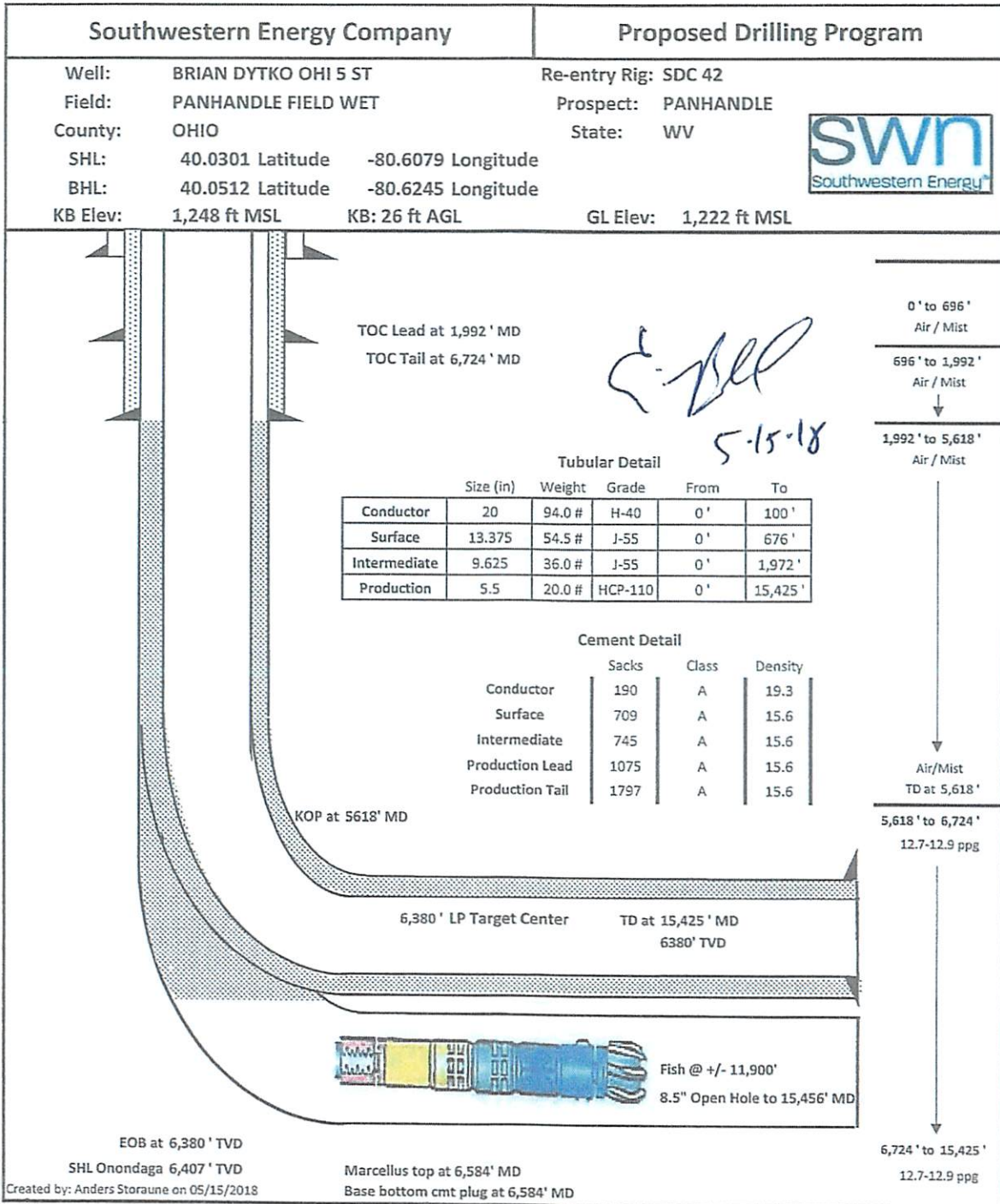
24) Describe all cement additives associated with each cement type:

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.

*Note: Attach additional sheets as needed.



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Brian Dytko OHI 5H ST1

Subject well was drilled to TD of 15,456 MD. Mid way in lateral (11,788—12,032' MD) we encountered an Onondaga "pop-up" feature and spent 244' MD in Onondaga before getting back in target zone.

While tripping out of hole, we encountered a tight spot at 12,095' and got stuck (believe top stabilizer is stuck in the Onondaga transition). Since then, we picked up jars to work pipe free but have been unsuccessful freeing the pipe.

- 1) Drill pipe was backed off at 11,828' (just above the BHA. Leaving drilling BHA in hole).
- 2) Cement plugs were set from 6,584' to 5,927' (48 bbl 13.5 ppg) and from 5,927' to 5,228' (52bbl 16.5 ppg)
- 3) Plan forward is to sidetrack well at 5,618' MD, drill curve, and lateral to 15,424' MD.
 - a. Attempt to kick off cement plug with a max KOP depth of 5,865' MD.
 - b. If max depth reached and unsuccessful on sidetrack, then set open hole whipstock at 5,865' MD
 - c. Sidetrack well utilizing whipstock at 5,835 MD

C. Dytko
5-25-18

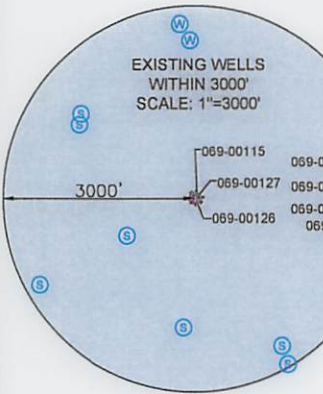
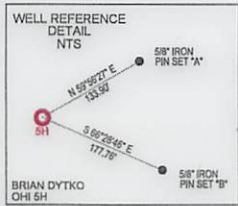
LATITUDE: 40°02'30" SURFACE HOLE | 6861'

LATITUDE: 40°05'00" BOTTOM HOLE | 11617'



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

LINE	BEARING	DISTANCE
L1	N 56°31'35" E	2157.19'
L2	N 59°51'44" E	1821.10'



SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4431166.35 EASTING: 533458.49
LANDING POINT (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4431349.31 EASTING: 533491.60
TURNING POINT (TPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4431614.29 EASTING: 533425.46
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4433506.34 EASTING: 531998.05

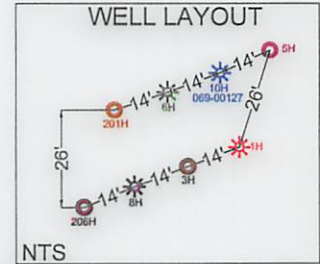
I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2041

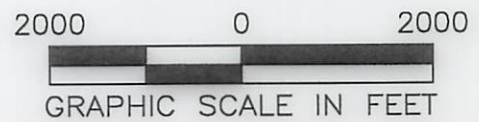


NOTES ON SURVEY

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.



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



(+) 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)

COMPANY: **SWN** Production Company, LLC

OPERATOR'S WELL #: BRIAN DYTKO OHI 5H ST1
API WELL #: 47 STATE 069 COUNTY 00265 PERMIT Mod

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

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1222.6'

DISTRICT: TRIADELPHIA COUNTY: OHIO QUADRANGLE: VALLEY GROVE, WV

SURFACE OWNER: BRIAN J DYTKO ACREAGE: ±41.00

OIL & GAS ROYALTY OWNER: BRIAN J DYTKO ACREAGE: ±41.00

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: 6,380' TVD 15,424.5'TMD


WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL
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

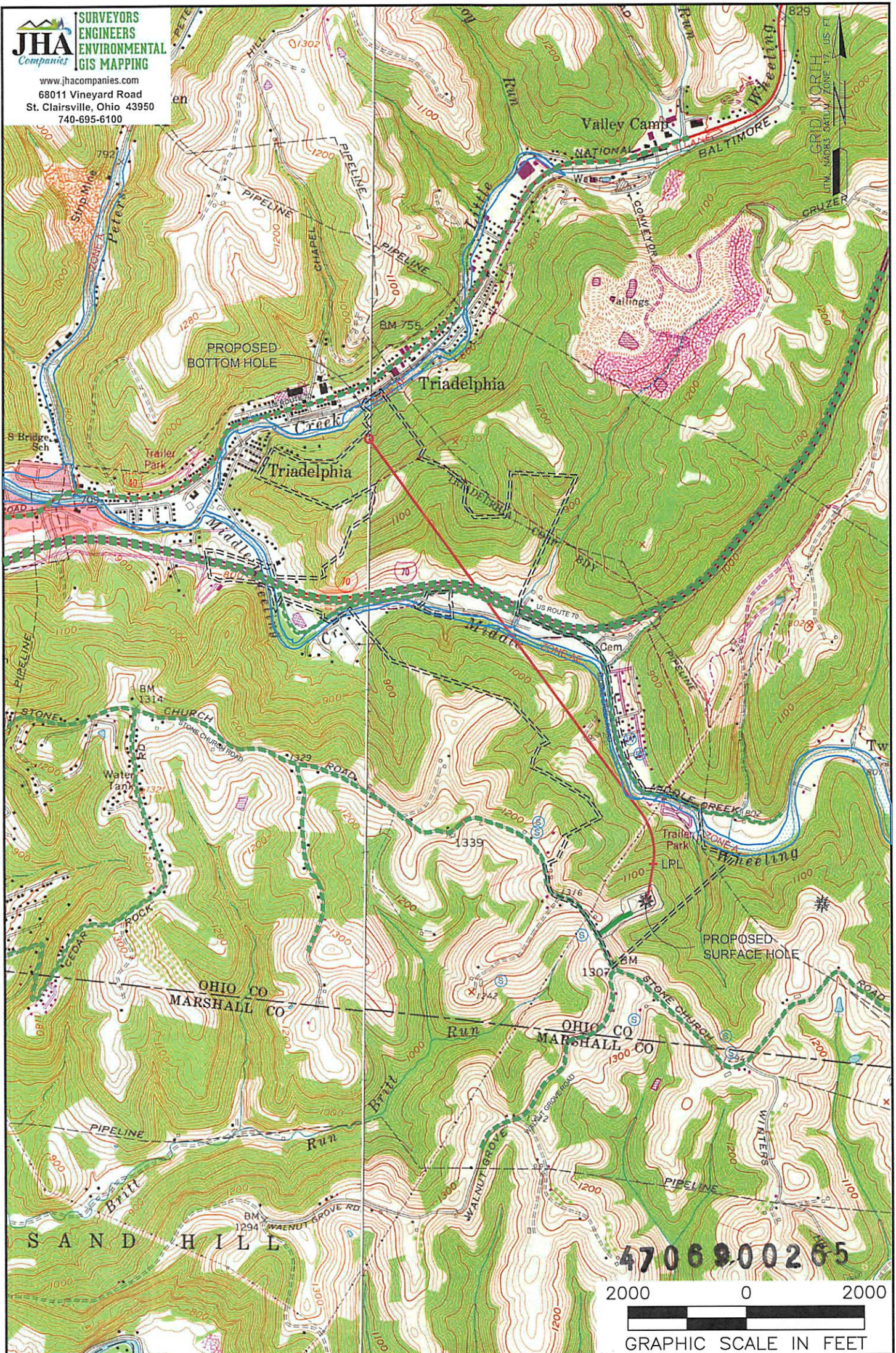
LEGEND: ● PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD LPL* LANDING POINT LOCATION W EXISTING WATER WELL S EXISTING SPRING — SURVEYED BOUNDARY - - - DRILLING UNIT = = = LEASE BOUNDARY — PROPOSED PATH TPL* TURNING POINT LOCATION	REVISIONS:	DATE: 05-16-2018
		DRAWN BY: D. REED
		SCALE: 1" = 2000'
		DRAWING NO: 2017-300
		WELL LOCATION PLAT

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	BRIAN J DYTKO (S)/(R)	06-T18-0004.0001
TRACT	SURFACE OWNER	TAX PARCEL
2	WILLIAM G. THOMS	06-T18-0003.0000
3	OK TRAILER COURT INC.	06-T13-0005.0002
4	JOHN W. NOLAN JR. AND DARLENE G. NOLAN	06-T13-0002.0002
5	OHIO VALLEY INDUSTRIAL & BUSINESS DEVELOPMENT CORPORATION	06-T13-0026.0000
6	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	I-70
7	OHIO COUNTY COMMISSIONERS	07-TW10-0001.0000
8	THE OHIO COUNTY DEVELOPMENT AUTHORITY	07-TW5-0024.0001
9	OHIO COUNTY COMMISSIONERS	06-T12-0053.0000

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	THERESA L BLATT	06-T18-0017.0000
B	GREGORY W. & JILLIAN F. GARDNER	06-T18-0025.0000
C	CHARLES D. FISCHER, JR.	06-T18-0004.0000
D	RL WHITE PROPERTIES, LLC	06-T18-0003.0002
E	RONALD J. & P.A. SNYDER	06-T18-0003.0004
F	ROGER A. & MARY K. CLUTTER	06-T13-0002.0005
G	SETH & HEATHER MCCORD	06-T13-0002.0004
H	JOHN EDWARD MCCORD	06-T13-0002.0003
I	EDWARD MCCORD	06-T13-0002.0006
J	PAUL PAVLACK	06-T18-0001.0000
K	MIDDLE CREEK GARAGE, INC.	06-T13-0003.0000
L	BRADLEY W. CLARK	06-T12-0044.0000
M	PAUL W. BLAKE TRUST AGREEMENT DATED AUGUST 29, 2009	06-T12-0038.0001
N	OHIO VALLEY INDUSTRIAL DEVELOPMENT CORPORATION	06-T13-0026.0001
O	JERRY L & JOSEPHINE L. MESTROVIC	06-T12-0041.0000
P	EDWARD H., II & MARIA M. STEIN	06-T12-0043.0000
Q	CARL E. CARPENTER	06-T12-0039.0001
R	D.R. KOEHL	06-T12-0034.0000
S	CARL E. CARPENTER	06-T12-0039.0000
T	FLOYD J. POGGI	07-TW6-0004.0000
U	BOARD OF EDUCATION	07-TW6-0003.0000
V	ROBERT A. CARR & JESSICA E. WILHELM-MARTH	07-TW6-0002.0000
W	ERIC LICHWA	07-TW6-0001.0000
X	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	07-T12-0031.0000
Y	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	07-TW2-0057.0001
Z	TRAVIS M. KELLY	07-TW5-0020.0000
AA	VICKI SHEARER, PHILIP SHEARER, DAVID SHEARER & PAUL SHEARER	07-TW5-0021.0000
AB	MARK T. MORRIS & DAVID B. MORRIS (SUBJECT TO THE LIFE ESTATE OF JAMES L. MORRIS & MARY A. MORRIS, HUSBAND AND WIFE)	07-TW5-0023.0000
AC	MOUNTAIN ESTATE REALTY, LLC	07-TW5-0014.0000
AD	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW5-0013.0000
AE	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW5-0012.0000
AF	JAMES E. SHAW	07-TW5-0002.0000
AG	JAMES E. SHAW	07-TW5-0001.0000
AH	ROBIN S. STARKEY	07-TW4-0124.0000
AI	H3, LLC	07-TW4-0117.0000
AJ	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW4-0118.0000
AK	CHAS L. & J.J. CRESAP	07-TW4-0119.0000
AL	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW4-0120.0000
AM	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW4-0121.0000
AN	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW4-0126.0000
AO	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW4-0122.0000
AP	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW4-0128.0000
AQ	MIDTOWN MOBILE HOMES, INC. & TIM T. & PATRICIA A. TEMPLIN	07-TW4-0129.0000
AR	KATHRYN M. KNOLLINGER	07-TW8-0075.0000
AS	EVELYN D.N. GROVER	06-T7-0182.0000
AT	AUGUST FRANKLIN ROBINSON	06-T8-0043.0000
AU	THE OHIO COUNTY DEVELOPMENT AUTHORITY	06-T8-0040.0005
AV	THE OHIO COUNTY DEVELOPMENT AUTHORITY	06-T8-0040.0011
AW	JEWISH MEMORIAL PARK	07-TW12-0013.0001
AX	CONGREGATION L'SHEM SHOMAYIM	07-TW12-0013.0000
AY	KRIJETTA DUKE CLARK	07-TW12-0001.0000
AZ	BRADLEY A. RUSSELL	07-TW12-0002.0000
BA	BRADLEY A. RUSSELL	07-TW12-0003.0000
BB	DOUGLAS W. KNOLLINGER	07-TW12-0004.0000
BC	ALFRED E. & D.M. MORRIS	07-TW12-0005.0000
BD	BRADLEY R. & DONNA L. MILLER	07-TW13-0001.0000
BE	BRADLEY R. & DONNA L. MILLER	07-TW13-0002.0000
BF	BRADLEY R. & DONNA L. MILLER	07-TW13-0003.0000
BG	MARGARET I. RUSSELL	07-TW13-0004.0000
BH	DESSIE ANN EIMER	07-TW13-0005.0000
BI	E.H. & M.L. MOORE	07-TW13-0006.0000
BJ	RANDY L. HINDMAN, LORI E. HINDMAN & JANICE L. HINDMAN	07-TW13-0007.0000
BK	RANDY L. & LORI E. HINDMAN	07-TW13-0008.0000
BL	CHARLES D. & SUSAN E. YUHASE	07-TW13-0009.0000
BM	JAMES B. JR. & J.O. WILLIAMS	07-TW13-0010.0000
BN	DEBORAH J. & R.L. PRAGER	07-TW13-0011.0001
BO	JOHN E. & DEBORAH A. VOSCAWITCH	07-TW13-0011.0000
BP	JOHN E. & DEBORAH A. VOSCAWITCH	07-TW13-0012.0000
BQ	VICKI LYNN & ROGER L. FROHNAPFEL	07-TW13-0013.0000
BR	BEVERLY S. COOK	07-TW13-0014.0000
BS	BEVERLY S. COOK	07-TW13-0015.0000
BT	DENNIS L. SR. & BEVERLY S. COOK	07-TW13-0016.0000
BU	DENNIS L. SR. & BEVERLY S. COOK	07-TW13-0016.0001
BV	DOUGLAS W. & SUSAN E. NELSON	07-TW13-0017.0000
BW	KATHRYN M. KNOLLINGER & WOODROW J. KNOLLINGER	07-TW13-0018.0000
BX	J. GREGORY & STACEY ANN DECARLO	07-TW13-0019.0000
BY	COLUMBIA GAS TRANSMISSION CORPORATION	06-T13-0005.0001
BZ	DAVID H. FITZSIMMONS & RICH H. FITZSIMMONS	06-T13-0005.0003
CA	ROBERT L. JR. & K.S. BOGARD	07-TW13-0005.0007
CB	ROBERT L. JR. & K.S. BOGARD	07-TW13-0005.0005

47-069-00265 Mod

REVISIONS:	COMPANY:			DATE: 05-16-2018
				DRAWN BY: D. REED
	OPERATOR'S	BRIAN DYTKO		SCALE: N/A
	WELL #:	OHI 5H ST1		DRAWING NO: 2017-300
	DISTRICT:	COUNTY:	STATE:	WELL LOCATION PLAT
	TRIADELPHIA	OHIO	WV	



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 PLAIN
- 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:
 BRIAN J DYTKO

WELL (FARM) NAME:
 BRIAN DYTKO OHI

COUNTY - CODE
 OHIO - 069

USGS 7 1/2 QUADRANGLE MAP NAME
 VALLEY GROVE, WV

WELL # SERIAL #
 5H ST1 XXXX

DISTRICT;
 TRIADDELPHIA