

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47-009-00187 County BROOKE District BUFFALO
Quad BETHANY Pad Name JOHN HUPP BRK PAD Field/Pool Name PANHANDLE FIELD WET
Farm name JOHN W. HUPP & LINDA H. DOUBLE Well Number JOHN HUPP BRK 210H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY, LLC
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,447,424.827 Easting 536,712.101
Landing Point of Curve Northing 4,447,493.48 Easting 537,159.886
Bottom Hole Northing 4,445,793.815 Easting 537,814.634

Elevation (ft) 1275.7 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM

Date permit issued 03/02/2017 Date drilling commenced 05/12/2017 Date drilling ceased 08/25/2017
Date completion activities began 02/09/2018 Date completion activities ceased 03/15/2018
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 450 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 977 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 497 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed
[Signature]

Reviewed by:
[Signature]
07/20/2018

API 47-009 - 00187 Farm name JOHN W. HUPP & LINDA H. DOUBLE Well number JOHN HUPP BRK 210H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	26	20	126	NEW	J-55/94#		Y
Surface	17.5	13.375	630	NEW	J-55/48#		Y, 10 BBLS
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	1930	NEW	J-55/36#		Y, 33 BBLS
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	13049	NEW	HCP-110/20#		Y
Tubing		2.375	6917	NEW	P-110/4.7#		N
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	812	15.60	1.20	974.4	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	722	15.60	1.18	851.96	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	930/1390	15.60	1.21/1.19	1125.3/1654.1	SURFACE	24
Tubing							

Drillers TD (ft) 13049 Loggers TD (ft) 13049
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5537

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

SURFACE: 7 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 INTERMEDIATE: 24 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 PRODUCTION: 181 CENTRALIZERS - EVERY THIRD JOINT FROM SURFACE TO TOP OF CURVE, THEN EVERY JOINT UNTIL TD

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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Well Name: John Hupp BRK 210H

47009001870000

LITHOLOGY/FORMATION	TOP DEPTH, MD (FT)	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, MD (FT)	BOTTOM DEPTH, TVD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	0.00	0.00	450.00	450.00	
Top of Salt Water	977.00	977.00	NA	NA	
Pittsburgh Coal	497.00	497.00	502.00	502.00	
Pottsville (ss)	617.00	617.00	744.00	744.00	
Mauch Chunk (shale)	852.00	852.00	1536.00	1536.00	
Raven Cliff (ss)	959.00	959.00	1226.00	1226.00	
Maxton (ss)	1311.00	1311.00	1434.00	1434.00	
Greenbriar (ls)	1536.00	1536.00	1678.00	1678.00	
Big Injun (ss)	1678.00	1678.00	1813.00	1813.00	
Berea (siltstone)	2167.00	2167.00	2210.00	2210.00	
Rhinestreet (shale)	6065.00	5720.00	6233.00	5865.00	
Cashaqua (shale)	6233.00	5865.00	6315.00	5928.00	
Middlesex (shale)	6315.00	5928.00	6423.00	6003.00	
Burket (shale)	6423.00	6003.00	6447.00	6018.00	
Tully (ls)	6447.00	6018.00	6532.00	6068.00	
Mahantango (shale)	6532.00	6068.00	6712.00	6160.00	
Marcellus (shale)	6859.00	6202.00	NA	NA	GAS

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/11/2018
Job End Date:	3/1/2018
State:	West Virginia
County:	Brooke
API Number:	47-009-00187-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	John Hupp BRK 210
Latitude:	40.17639600
Longitude:	-80.56880206
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,286
Total Base Water Volume (gal):	7,317,844
Total Base Non Water Volume:	128,000



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
HCL	SWN Well Services	Solvent					
				Listed Below			
	SWN Well Services	Iron Control					
				Listed Below			

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SCAL16486A	Nalco	Scale Inhibitor					
				Listed Below			
Sand	SWN Well Services	Proppant					
				Listed Below			
BIOC11219A	Nalco	Biocide					
				Listed Below			
Ingredients	Listed Above	Listed Above					
				Listed Below			
FLOJET DR 9000LPP	SWN Well Services	Friction Reducer					
				Listed Below			
Base Water	Operator	Base Fluid					
				Listed Below			
Econo-CI200	SWN Well Services	Corrosion Inhibitor					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

			Water	7732-18-5	100.00000	81.63056	Density = 8.345
			Crystalline Silica, quartz	14808-60-7	100.00000	16.71860	
			Water	7732-18-5	85.00000	1.33845	
			Hydrochloric Acid	7647-01-0	15.00000	0.22917	
			Petroleum Distillates, Hydrotreated	64742-47-8	45.00000	0.03767	

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			Methanol	67-56-1	60.00000	0.01396	
			Ethylene glycol	107-21-1	10.00000	0.01005	
			Benzyl-(C12-C16 Alky)- Dimethyl-Ammonium	68424-85-1	30.00000	0.00698	
			Acetic Acid	64-19-7	37.50000	0.00305	
			Chloride Glutaraldehyde	111-30-8	10.00000	0.00233	
			Methanol	67-56-1	80.00000	0.00187	
			Citric Acid	77-92-9	22.50000	0.00183	
			Amine Triphosphate	Proprietary	30.00000	0.00168	
			Fatty alcohols ethoxylated	Proprietary	2.00000	0.00167	
			Alcohols, C12- C16,Ethoxylated propoxylated	68213-24-1	2.00000	0.00167	
			Oxyalkylated fatty acid	68951-67-7	9.67400	0.00023	
			Fatty acids	61790-12-3	5.02700	0.00012	
			Modified thiourea polymer	68527-49-1	4.74600	0.00011	
			Potassium acetate	127-08-2	0.02200	0.00000	
			Formaldehyde	50-00-0	0.00400	0.00000	

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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RETTEW Associates, Inc.
27 Travato Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rettetw@rettetw.com
Website: www.rettetw.com

LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	S78°11'35"E	936.17	SHL TO LANDMARK	
L2	S03°17'38"W	1545.83'	SHL TO LANDMARK	
L3	N45°42'09"W	204.96'	SHL TO REF. PNT.	1/2" REBAR/CAP
L4	S37°17'44"E	217.27'	SHL TO REF. PNT.	1/2" REBAR/CAP
L5	S74°06'04"W	300.41'	SHL TO REF. PNT.	1/2" REBAR SET

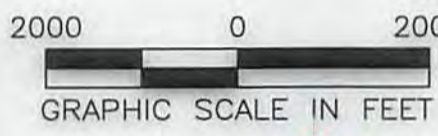
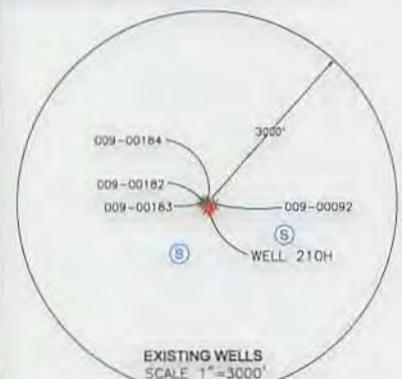
AS-DRILLED

SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,447,424.827 EASTING: 536,712.101
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,447,493.48 EASTING: 537,159.886
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,445,793.815 EASTING: 537,814.634
SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,447,424.827 EASTING: 536,712.101
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,447,518.334 EASTING: 537,149.678
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,445,790.870 EASTING: 537,814.318

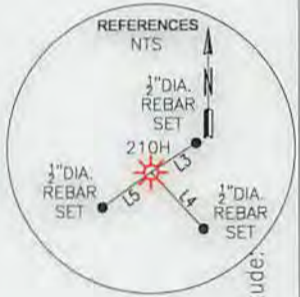
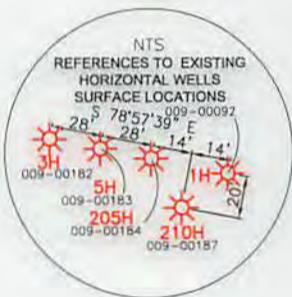
AS-DRILLED SURFACE HOLE LOCATION
ELEV: 1,275.7'



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



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



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. 2241 *Craig West*

COMPANY: **SWN** Production Company, LLC

(+) 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)

OPERATOR'S WELL #: JOHN HUPP BRK 210H
API WELL #: 47 STATE COUNTY PERMIT 009 00187

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

WATERSHED: UPPER OHIO NORTH ELEVATION: ±1,275.7 (AS-BUILT)

DISTRICT: BUFFALO COUNTY: BROOKE QUADRANGLE: BETHANY, WV-PA

SURFACE OWNER: JOHN W. HUPP & LINDA H. DOUBLE ACREAGE: ±184.46

OIL & GAS ROYALTY OWNER: JOHN W. HUPP & LINDA H. DOUBLE ACREAGE: ±184.46

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

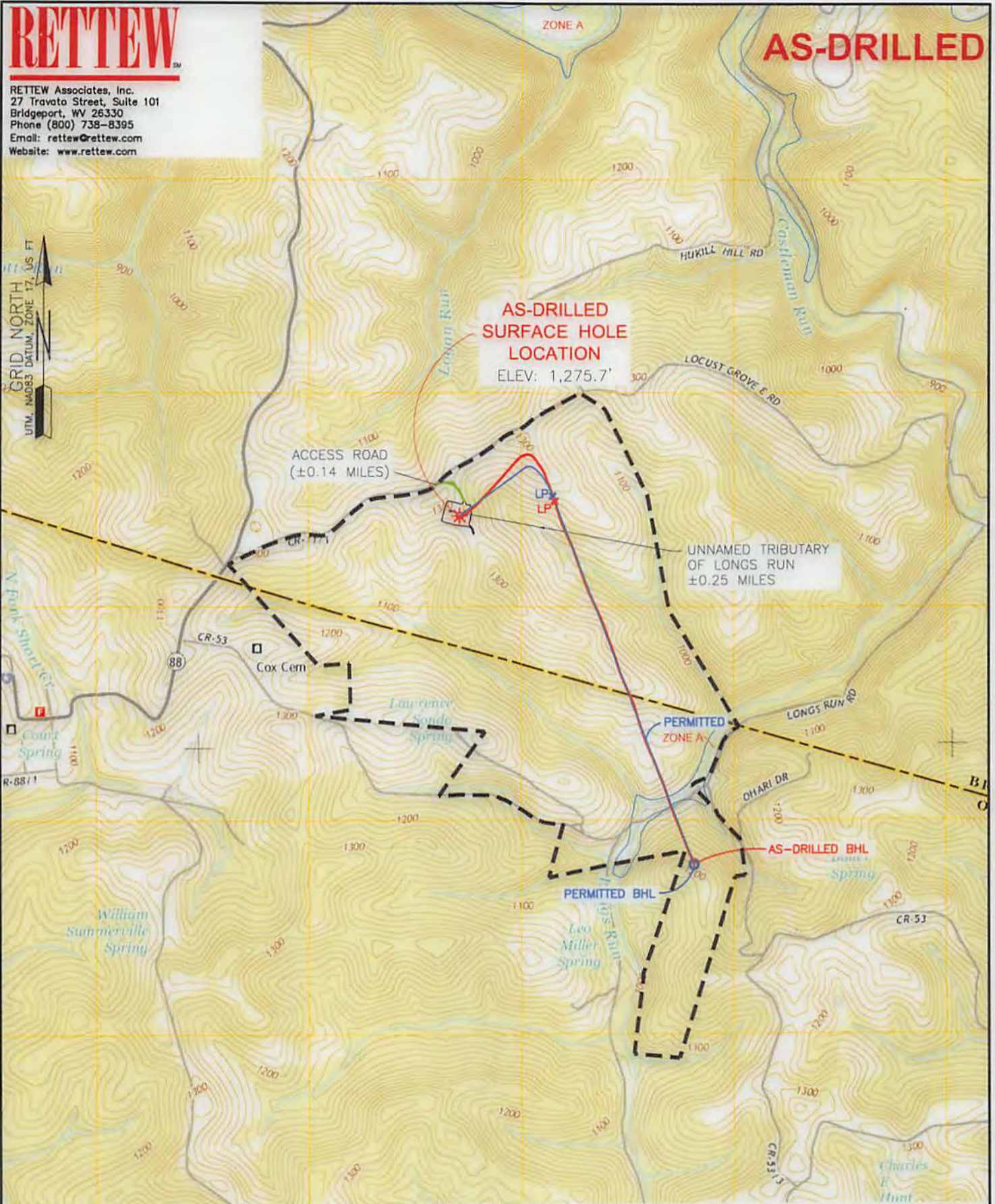
CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) **As-Drilled**

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,355' TVD 13,049' 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:	EXISTING SPRING	EXISTING WATER WELL	REVISIONS:	DATE: 11-13-2017
PROPOSED SURFACE HOLE / BOTTOM HOLE	EXISTING / PRODUCING WELLHEAD	TIE LINE		DRAWN BY: G.FLORES
ABANDONED WELL	PLUGGED & ABANDONED WELL	LEASE BOUNDARY		SCALE: 1" = 2000'
PERMITTED NOT DRILLED	CUT CONDUCTOR	ASDRILLED WELLPATH		DRAWING NO: 087569048
		PERMITTED WELLPATH		WELL LOCATION PLAT

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



2000 0 2000

WELL: JOHN HUPP BRK 210H
QUAD: BETHANY, WV-PA

GRAPHIC SCALE IN FEET

NAME AND DISTANCE TO THE NEAREST STREAM: UN-NAMED TRIBUTARY TO LONGS RUN IS LOCATED ±0.25 MILES SOUTH EAST OF THE CENTER OF THE DRILL PAD.		STREAM CROSSING COORDINATES (NAD 83): NO NEW CROSSINGS.		COMPANY: 	
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET		OPERATOR'S JOHN HUPP BRK		WELL #: 210H	
FEMA FLOOD INFORMATION: BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF BROOKE COUNTY, WEST VIRGINIA; MAP NUMBERS 54009C0130D, 54009C0135D, 54009C0140D, 54009C0141D, 54009C0145D; EFFECTIVE DATE: APRIL 19, 2010.		LOCATION: BUFFALO DISTRICT, BROOKE COUNTY, WEST VIRGINIA		SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.176395 LONGITUDE: -80.568802'	
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD --- LEASE BOUNDARY --- ASDRILLED WELLPATH --- PERMITTED WELLPATH --- ACCESS ROAD --- HIGHWAY/INTERSTATE --- COUNTY ROAD		BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.161652' LONGITUDE: -80.555949'		DATE: 11-13-2017 DRAWN BY: G.FLORES SCALE: 1" = 2000' DRAWING NO:087569048 TOPOGRAPHIC MAP	