WR-35
Rev. 8/23/13

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
6/11/18

Reviewed by:
SB 6/11/18

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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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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE	ATTACHMENT	1		

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
		SEE	ATTACHMENT	2				

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
MARCELLUS	6202	TVD	6859	MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown □ Open Flow OIL TEST □ Flow □ Pump

SHUT-IN PRESSURE Surface 1323 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 4237 mcfpd Oil 484 bpd NGL _____ bpd Water 408 bpd GAS MEASURED BY □ Estimated □ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
	SEE	ATTACHMENT	3		

Please insert additional pages as applicable.

Drilling Contractor SWN DRILLING COMPANY
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Logging Company WEATHERFORD
Address 2000 St. James Place City Houston State TX Zip 77056

Cementing Company SCHLUMBERGER WELL SERVICES
Address 1080 US Hwy 33 East City Weston State WV Zip 26452

Stimulating Company SWN WELL SERVICES
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Please insert additional pages as applicable.

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Completed by BOBBY WILLIS Telephone 832-796-2884
Signature _____ Title REGULATORY ANALYST Date 5/17/18

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

JOHN HUPP BRK 210H
ATTACHMENT 1
PERF REPORT

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	2/11/2018	12,820	12,927	42
2	2/12/2018	12,680	12,787	42
3	2/12/2018	12,575	12,647	33
4	2/13/2018	12,400	12,537	30
5	2/13/2018	12,260	12,367	42
6	2/13/2018	12,120	12,227	42
7	2/14/2018	11,980	12,087	42
8	2/14/2018	11,840	11,947	42
9	2/15/2018	11,700	11,807	42
10	2/15/2018	11,560	11,667	42
11	2/15/2018	11,420	11,527	42
12	2/16/2018	11,280	11,387	42
13	2/16/2018	11,140	11,247	42
14	2/17/2018	11,000	11,107	42
15	2/17/2018	10,860	10,967	42
16	2/18/2018	10,720	10,827	42
17	2/18/2018	10,580	10,687	42
18	2/18/2018	10,440	10,547	42
19	2/19/2018	10,300	10,407	42
20	2/19/2018	10,160	10,267	42
21	2/19/2018	10,020	10,127	42
22	2/19/2018	9,880	9,987	42
23	2/20/2018	9,740	9,847	42
24	2/20/2018	9,600	9,707	42
25	2/20/2018	9,460	9,567	42
26	2/21/2018	9,320	9,427	42
27	2/21/2018	9,180	9,287	42
28	2/21/2018	9,040	9,147	42
29	2/21/2018	8,900	9,007	42
30	2/23/2018	8,760	8,867	42
31	2/24/2018	8,620	8,727	42
32	2/24/2018	8,480	8,587	42
33	2/24/2018	8,340	8,447	42
34	2/25/2018	8,200	8,307	42
35	2/25/2018	8,060	8,167	42
36	2/25/2018	7,920	8,027	42
37	2/26/2018	7,780	7,887	42
38	2/26/2018	7,640	7,747	42
39	2/28/2018	7,500	7,607	42
40	2/28/2018	7,360	7,467	42
41	2/25/2018	7,920	8,027	42
42	3/1/2018	7,080	7,187	42
43	3/1/2018	6,940	7,047	42

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JOHN HUPP BRK 210H
ATTACHMENT 2
STIM REPORT

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/other
1	2/11/2018	88	7,944	8,342	3,789	288,160	7,064	
2	2/12/2018	89	8,600	9,042	4,027	283,260	4,228	
3	2/12/2018	86	8,207	8,844	4,170	290,420	5,166	
4	2/13/2018	91	7,837	8,491	4,380	287,920	4,991	
5	2/13/2018	87	8,264	9,094	3,998	291,580	4,670	
6	2/14/2018	91	8,125	9,177	4,432	288,740	4,843	
7	2/14/2018	89	7,891	8,633	4,430	291,120	4,615	
8	2/14/2018	94	7,890	8,529	4,399	294,640	4,747	
9	2/15/2018	95	8,225	8,752	4,175	289,620	4,837	
10	2/15/2018	95	8,087	8,793	4,362	296,480	4,888	
11	2/16/2018	94	8,065	8,681	4,507	291,280	5,012	
12	2/16/2018	98	8,050	8,800	4,445	295,960	4,494	
13	2/17/2018	88	8,084	8,930	4,384	293,280	4,194	
14	2/17/2018	94	7,505	7,940	4,649	294,792	4,207	
15	2/17/2018	93	7,524	8,081	4,282	296,240	4,600	
16	2/18/2018	93	7,661	8,431	4,542	296,240	4,052	
17	2/18/2018	92	7,460	8,466	4,025	288,620	4,040	
18	2/18/2018	93	7,511	8,332	4,513	291,160	4,039	
19	2/19/2018	94	7,564	8,115	4,511	288,620	3,950	
20	2/19/2018	95	7,661	8,101	4,498	291,360	3,746	
21	2/19/2018	91	7,670	8,483	4,554	288,820	3,842	
22	2/20/2018	89	7,804	8,604	4,287	292,700	3,868	
23	2/20/2018	92	7,328	7,839	4,849	288,520	3,941	
24	2/20/2018	92	7,284	7,786	4,609	294,340	3,954	
25	2/20/2018	93	7,247	7,801	4,740	290,319	3,992	
26	2/21/2018	97	7,468	8,189	4,314	290,920	3,697	
27	2/21/2018	96	7,477	8,639	4,672	292,660	3,757	
28	2/23/2018	99	7,901	8,181	4,110	290,040	3,990	
29	2/23/2018	100	7,357	8,593	4,822	289,260	3,551	
30	2/24/2018	98	7,078	7,657	4,986	287,400	3,332	
31	2/24/2018	100	7,123	7,439	4,456	287,980	3,425	
32	2/24/2018	100	7,153	7,837	4,942	289,180	3,814	
33	2/25/2018	99	6,851	7,256	4,369	291,980	3,690	
34	2/25/2018	100	7,083	7,957	4,633	293,600	3,754	
35	2/25/2018	99	6,679	7,021	4,860	289,760	3,654	
36	2/26/2018	100	6,761	6,943	4,449	291,820	3,466	
37	2/26/2018	100	7,081	7,586	4,670	282,220	3,352	
38	2/26/2018	100	6,574	6,896	5,149	290,100	3,379	
39	2/28/2018	100	6,718	7,191	4,715	290,720	3,676	
40	2/28/2018	99	6,667	7,081	4,907	289,500	3,543	
41	3/1/2018	103	6,783	7,132	4,846	292,700	3,434	
42	3/1/2018	102	6,604	7,114	4,958	290,400	3,452	
43	3/1/2018	101	6,537	6,889	4,262	293,640	3,324	

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Southwestern Energy®

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			
Copol-FEAC	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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			Methonol	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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John Hupp BRK 210H
Brooke County, WV
Quail 9
Plan vs Actual

Weatherford®

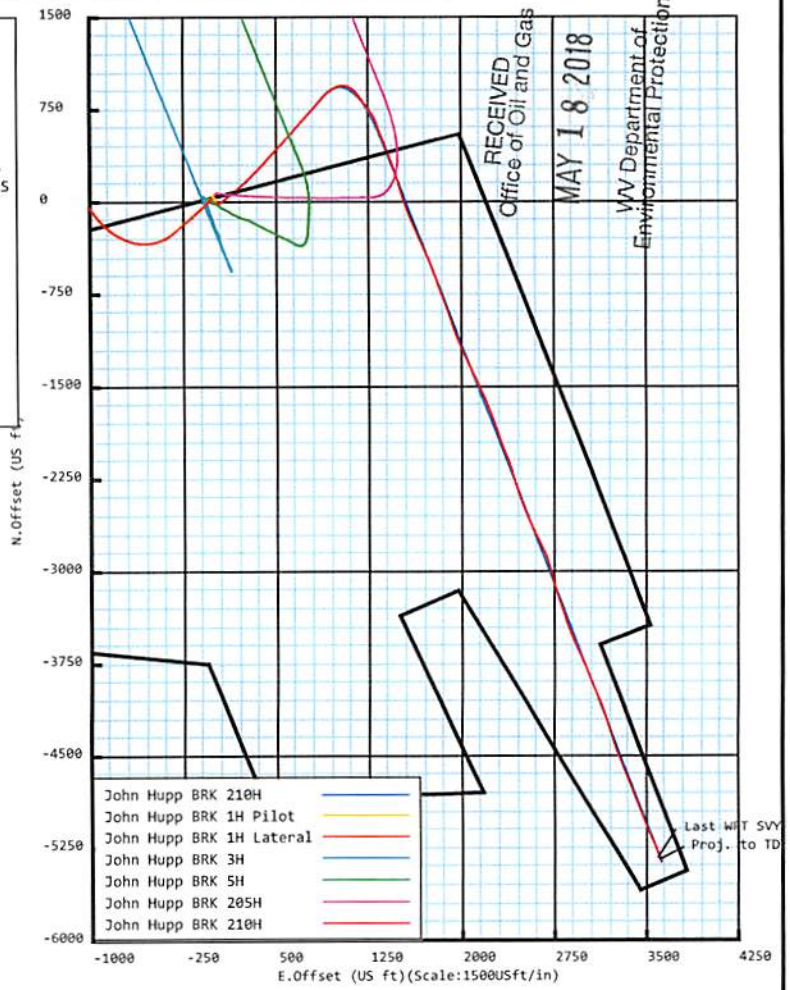
Plan Data for John Hupp BRK 210H

Plan Point Information:
DogLeg Severity Unit: °/100.00ft Position offsets from Slot centre

MD (USft)	Inc (°)	Az (°)	TVD (USft)	+N/-S (USft)	+E/-W (USft)	VSec (USft)	DLS (DLSU)	Toolface (°)	Comments
5131.00	29.62	42.71	4888.68	724.78	769.47	-170.58	0.75	28.8	Last WFT SVY
5553.51	29.62	42.71	5255.98	878.22	911.12	-218.59	0.00	0.0	Curve KOP 7° DLS
6476.55	50.00	152.80	6038.61	713.54	1265.85	116.30	7.00	127.2	Build/Turn 7° DLS
6772.03	70.00	158.95	6185.70	480.78	1368.55	366.70	7.00	16.6	Build 9° DLS
6983.32	89.02	158.95	6224.00	287.77	1442.81	568.24	9.00	0.0	Landing Point
13036.42	89.02	158.95	6328.00	-5360.74	3616.19	6466.40	0.00	0.0	PBHL JH210H

Target Set Information:
Name: John Hupp BRK 210H
Position offsets from Slot centre

Name	TVD (USft)	+N/-S (USft)	+E/-W (USft)	Northing (USft)	Easting (USft)	Lat (°)	Long (°)
LP JH210H	6224.00	306.75	1435.52	14591566.40	1762298.47	40.177219	-80.563658
PBHL JH210H	6328.00	-5360.74	3616.19	14585898.91	1764479.14	40.161626	-80.555952



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Plan Data for John Hupp BRK 210H

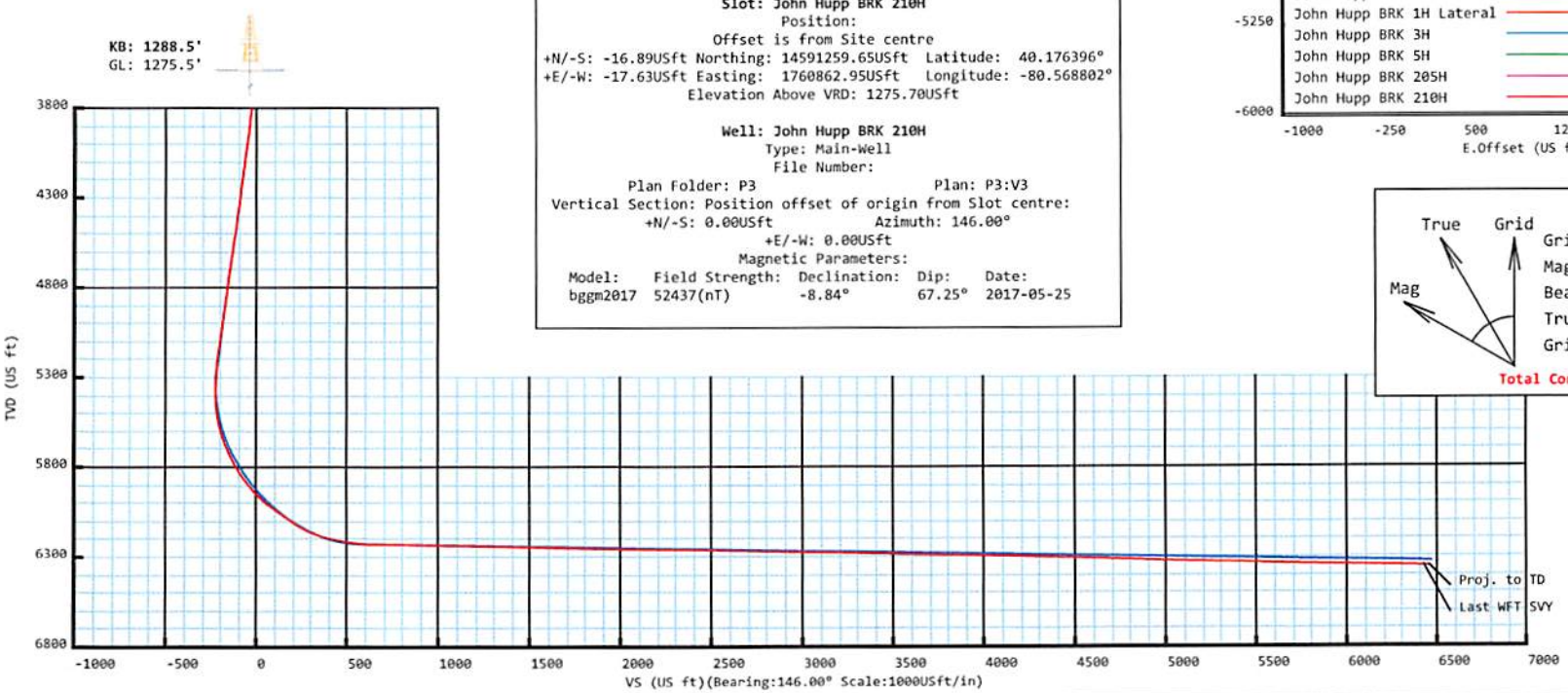
Field: SOUTHWESTERN_BROOKE CO, WV UTM NAD 83 (17N)
Map Unit: USFt Vertical Reference Datum (VRD):
Projected Coordinate System: NAD83 / UTM zone 17N

Site: John Hupp Pad
Unit: USFeet TVD Reference:
Company Name: SOUTHWESTERN ENERGY
Position: Northing: 14591276.54USft Latitude: 40.176442°
Easting: 1760880.58USft Longitude: -80.568739°
North Reference: Grid Grid Convergence: 0.28°
Elevation Above VRD: 1276.30USft

Slot: John Hupp BRK 210H
Position:
Offset is from Site centre
+N/-S: -16.89USft Northing: 14591259.65USft Latitude: 40.176396°
+E/-W: -17.63USft Easting: 1760862.95USft Longitude: -80.568802°
Elevation Above VRD: 1275.70USft

Well: John Hupp BRK 210H
Type: Main-Well
File Number:
Plan Folder: P3 Plan: P3:V3
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 146.00°
+E/-W: 0.00USft
Magnetic Parameters:

Model:	Field Strength:	Declination:	Dip:	Date:
bggm2017	52437(nT)	-8.84°	67.25°	2017-05-25



Grid Convergence: 0.28°
Mag Declination: -8.84°
Bearing:
True = Mag - 8.84°
Grid = True - 0.28°
Total Correction to Grid North -9.12°

Drawing By: GWR Date: 08/07/2017
Weatherford Drilling Services
7725 W. Reno, Ste. #220
Oklahoma City, OK 73127
+1.405.773.1100 Main
+1.405.773.1887 Fax

Southwestern Energy®

5D Survey Report

SOUTHWESTERN ENERGY

Field Name: *SOUTHWESTERN_BROOKE CO, WV UTM NAD 83 (17N)*
Site Name: *John Hupp Pad*
Well Name: *John Hupp BRK 210H*
Survey: *Definitive survey*

24 August 2017

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John Hupp BRK 210H

Field Name: SOUTHWESTERN_BROOKE CO, WV UTM NAD 83 (17N)

Map Units: US ft **Company Name:** SOUTHWESTERN ENERGY

Vertical Reference Datum (VRD):

Projected Coordinate System: NAD83 / UTM zone 17N

Comment:

Site: John Hupp Pad

Units: US ft **North Reference:** Grid **Convergence Angle:** 0.28

Position: **Northing:** 14591276.54 US ft **Latitude:** 40.176442
Easting: 1760880.58 US ft **Longitude:** -80.568739

Elevation above Field Reference: 1276.30 US ft

Comment:

Slot: John Hupp BRK 210H

Position (Relative to Site Centre)

+N/-S: -16.89 US ft **Northing:** 14591259.65 US ft **Latitude:** 40.176396
+E/-W: -17.63 US ft **Easting:** 1760862.95 US ft **Longitude:** -80.568802

Elevation above Field Reference: 1275.70 US ft

Comment:

Well: John Hupp BRK 210H

Type: Main well **UWI:**

File Number: **Comment:**

Closure Distance: 6459.02US ft **Closure Azimuth:** 145.94°

Vertical Section: Position of Origin (Relative to Slot centre)

+N/-S: 0.00 US ft **+E/-W:** -0.00 US ft **Az:** 146.00°

Drill floor: Survey Name: Definitive Survey

Rig Height (Drill Floor): 26.00US ft **Elevation above Field Reference:** 1301.70US ft **Inclination:** 0.00° **Azimuth:** 0.00°

Survey Name: Definitive Survey

Date: 17/May/2017 **Survey Tool:** *See Survey Tool Ranges below.* **Comment:** **Company:**

Magnetic Model:

Model Name: bggm2017 **Date:** 25/May/2017 **Field Strength:** 52437.6nT **Declination:** -8.84° **Dip:** 67.25°

Tie Point:

MD: 0.00 US ft **Inclination:** 0.00° **Azimuth:** 0.00° **TVD:** 0.00 US ft **North Offset:** 0.00 US ft **East Offset:** -0.00 US ft

Survey Tool Ranges:

Name	Start MD(USFt)	End MD(USFt)	Source Survey
GYRO-MWD_FI_OW	0.00	528.00	Gyro_01
MWD	528.00	1856.00	WFT MWD_01
MWD	1856.00	5131.00	WFT MWD_02
MWD	5131.00	13049.00	WFT MWD_03

Wellpath created using minimum curvature.

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5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	40.176396	-80.568802	0.00	
13.00	0.00	0.00	13.00	-0.00	0.00	-0.00	40.176396	-80.568802	0.00	
26.00	0.00	0.00	26.00	-0.00	0.00	-0.00	40.176396	-80.568802	0.00	
113.00	0.19	302.14	113.00	-0.13	0.08	-0.12	40.176396	-80.568802	0.22	
213.00	0.25	246.17	213.00	-0.32	0.08	-0.46	40.176396	-80.568804	0.21	
313.00	1.11	221.82	312.99	-0.12	-0.73	-1.31	40.176394	-80.568807	0.89	
413.00	1.72	228.95	412.96	0.30	-2.44	-3.09	40.176389	-80.568813	0.63	
513.00	1.54	236.56	512.92	0.47	-4.17	-5.34	40.176384	-80.568821	0.28	
528.00	1.55	241.03	527.91	0.45	-4.38	-5.68	40.176384	-80.568822	0.81	
627.00	0.33	227.10	626.90	0.38	-5.22	-7.06	40.176381	-80.568827	1.24	
715.00	0.22	160.61	714.90	0.58	-5.55	-7.19	40.176380	-80.568828	0.36	
801.00	0.58	243.28	800.90	0.68	-5.90	-7.53	40.176379	-80.568829	0.69	
888.00	0.78	257.20	887.89	0.41	-6.23	-8.50	40.176379	-80.568833	0.30	
976.00	0.84	255.77	975.88	-0.02	-6.52	-9.71	40.176378	-80.568837	0.07	
1063.00	0.68	240.29	1062.87	-0.28	-6.94	-10.77	40.176377	-80.568841	0.30	
1151.00	0.50	232.29	1150.87	-0.29	-7.43	-11.53	40.176375	-80.568843	0.22	
1237.00	0.48	240.96	1236.87	-0.30	-7.83	-12.14	40.176374	-80.568846	0.09	
1323.00	0.44	282.44	1322.86	-0.57	-7.94	-12.78	40.176374	-80.568848	0.38	
1411.00	0.44	332.21	1410.86	-1.15	-7.57	-13.27	40.176375	-80.568850	0.42	
1499.00	0.45	9.88	1498.86	-1.73	-6.93	-13.37	40.176377	-80.568850	0.33	
1586.00	0.36	46.73	1585.86	-2.02	-6.40	-13.11	40.176378	-80.568849	0.31	
1674.00	0.40	102.85	1673.86	-1.84	-6.28	-12.61	40.176379	-80.568847	0.41	
1760.00	0.65	118.80	1759.85	-1.19	-6.58	-11.89	40.176378	-80.568845	0.33	
1856.00	0.57	110.21	1855.85	-0.32	-7.01	-10.96	40.176376	-80.568841	0.13	Last WFT SVY
1948.00	0.46	23.30	1947.84	-0.15	-6.83	-10.39	40.176377	-80.568839	0.77	
2035.00	0.93	54.33	2034.84	-0.36	-6.10	-9.68	40.176379	-80.568837	0.67	
2123.00	2.77	88.63	2122.79	0.77	-5.63	-6.97	40.176380	-80.568827	2.35	
2211.00	5.31	101.39	2210.57	4.82	-6.38	-0.85	40.176378	-80.568805	3.04	
2255.00	5.65	105.11	2254.36	7.90	-7.35	3.24	40.176375	-80.568791	1.12	
2298.00	5.89	109.80	2297.15	11.28	-8.65	7.36	40.176372	-80.568776	1.23	
2342.00	6.36	109.46	2340.90	15.06	-10.22	11.78	40.176367	-80.568760	1.07	
2386.00	6.43	103.24	2384.62	18.83	-11.60	16.47	40.176364	-80.568743	1.58	
2430.00	6.30	97.52	2428.35	22.24	-12.48	21.27	40.176361	-80.568726	1.47	
2474.00	6.54	85.19	2472.08	25.06	-12.59	26.16	40.176361	-80.568709	3.17	
2517.00	7.25	72.58	2514.77	27.03	-11.57	31.19	40.176363	-80.568691	3.88	
2561.00	8.15	64.29	2558.37	28.27	-9.39	36.64	40.176369	-80.568671	3.24	
2604.00	8.84	60.64	2600.90	28.98	-6.44	42.27	40.176377	-80.568651	2.04	
2648.00	9.78	60.41	2644.32	29.54	-2.94	48.47	40.176387	-80.568629	2.14	
2692.00	10.10	59.66	2687.66	30.07	0.85	55.05	40.176397	-80.568605	0.78	
2736.00	10.79	57.16	2730.93	30.40	5.04	61.84	40.176409	-80.568581	1.88	
2824.00	12.70	53.16	2817.09	30.09	15.30	76.50	40.176437	-80.568528	2.36	
2911.00	13.90	51.08	2901.75	28.72	27.60	92.29	40.176470	-80.568471	1.48	
2954.00	13.97	50.31	2943.49	27.76	34.16	100.30	40.176488	-80.568442	0.46	
2998.00	14.48	50.90	2986.14	26.75	41.03	108.65	40.176507	-80.568412	1.21	
3042.00	15.37	52.15	3028.65	25.87	48.07	117.53	40.176526	-80.568380	2.15	
3086.00	16.39	53.05	3070.97	25.16	55.38	127.09	40.176546	-80.568346	2.38	
3175.00	19.20	50.20	3155.71	23.03	72.30	148.38	40.176592	-80.568270	3.30	
3263.00	20.97	48.10	3238.35	19.40	92.08	171.22	40.176646	-80.568188	2.17	
3350.00	22.05	48.50	3319.29	15.13	113.30	195.03	40.176704	-80.568102	1.25	
3437.00	23.07	48.17	3399.64	10.68	135.49	219.97	40.176765	-80.568012	1.18	
3523.00	24.26	46.51	3478.40	5.47	158.89	245.34	40.176829	-80.567921	1.59	
3611.00	25.53	45.83	3558.22	-0.86	184.55	272.06	40.176899	-80.567825	1.48	
3699.00	26.94	44.76	3637.16	-8.09	211.91	299.70	40.176974	-80.567725	1.69	
3784.00	27.93	43.97	3712.60	-16.00	239.91	327.08	40.177050	-80.567627	1.24	
3872.00	28.44	42.99	3790.16	-25.01	270.08	355.68	40.177132	-80.567524	0.78	
3959.00	29.21	42.87	3866.38	-34.50	300.79	384.25	40.177216	-80.567421	0.89	
4046.00	29.85	43.25	3942.08	-44.10	332.12	413.52	40.177302	-80.567316	0.77	
4133.00	29.04	42.41	4017.84	-53.84	363.48	442.60	40.177388	-80.567211	1.05	

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Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
4220.00	28.82	41.95	4093.99	-63.89	394.66	470.86	40.177473	-80.567110	0.36	
4308.00	30.77	44.03	4170.35	-73.71	426.63	500.69	40.177560	-80.567002	2.51	
4396.00	30.58	43.69	4246.04	-83.15	459.00	531.80	40.177649	-80.566890	0.29	
4484.00	29.89	42.59	4322.07	-93.01	491.33	562.10	40.177737	-80.566781	1.01	
4572.00	29.15	41.51	4398.64	-103.46	523.52	591.14	40.177825	-80.566677	1.04	
4657.00	28.98	41.57	4472.94	-113.77	554.43	618.52	40.177910	-80.566578	0.20	
4744.00	29.04	41.58	4549.02	-124.28	585.99	646.52	40.177996	-80.566477	0.07	
4831.00	27.99	40.35	4625.47	-135.04	617.35	673.76	40.178082	-80.566379	1.38	
4918.00	27.78	40.75	4702.37	-145.88	648.26	700.21	40.178166	-80.566284	0.32	
5004.00	29.17	42.50	4777.96	-156.05	678.90	727.45	40.178250	-80.566186	1.88	
5090.00	29.35	42.41	4852.99	-165.89	709.91	755.83	40.178335	-80.566084	0.22	
5131.00	29.62	42.71	4888.68	-170.58	724.78	769.47	40.178376	-80.566035	0.75	
5241.00	28.67	40.57	4984.76	-183.85	764.80	805.08	40.178485	-80.565907	1.28	
5327.00	27.50	40.77	5060.63	-194.56	795.51	831.46	40.178569	-80.565812	1.36	
5414.00	27.74	41.51	5137.71	-204.90	825.88	858.00	40.178652	-80.565716	0.48	
5501.00	27.30	42.23	5214.87	-214.72	855.82	884.82	40.178734	-80.565619	0.63	
5588.00	23.09	49.88	5293.60	-221.29	881.60	911.30	40.178804	-80.565524	6.11	
5631.00	22.20	51.90	5333.28	-222.77	892.05	924.14	40.178833	-80.565478	2.75	
5674.00	24.75	53.82	5372.72	-223.69	902.37	937.80	40.178861	-80.565429	6.19	
5718.00	27.72	58.70	5412.19	-223.56	913.13	953.98	40.178890	-80.565371	8.34	
5761.00	29.00	63.56	5450.03	-221.72	922.97	971.87	40.178917	-80.565307	6.14	
5804.00	29.71	67.83	5487.51	-218.16	931.63	991.07	40.178941	-80.565238	5.14	
5847.00	28.24	74.92	5525.14	-212.68	938.30	1010.77	40.178959	-80.565167	8.68	
5891.00	26.12	81.89	5564.29	-205.07	942.38	1030.41	40.178970	-80.565097	8.69	
5934.00	26.09	91.66	5602.92	-195.42	943.44	1049.24	40.178972	-80.565029	9.99	
5978.00	26.56	101.60	5642.38	-182.74	941.18	1068.56	40.178966	-80.564960	10.06	
6021.00	27.07	110.44	5680.77	-167.91	935.83	1087.15	40.178951	-80.564894	9.34	
6064.00	27.12	119.38	5719.07	-151.18	927.60	1104.87	40.178928	-80.564830	9.46	
6108.00	28.11	127.22	5758.07	-132.39	916.41	1121.87	40.178897	-80.564770	8.55	
6154.00	30.28	133.89	5798.23	-110.79	901.81	1138.86	40.178857	-80.564709	8.50	
6198.00	32.85	138.97	5835.73	-88.09	885.11	1154.70	40.178811	-80.564653	8.40	
6241.00	36.19	142.58	5871.15	-63.83	866.22	1170.07	40.178759	-80.564598	9.11	
6285.00	40.02	144.87	5905.77	-36.71	844.32	1186.11	40.178698	-80.564541	9.28	
6328.00	43.35	144.95	5937.88	-8.12	820.93	1202.55	40.178634	-80.564483	7.75	
6371.00	45.83	143.92	5968.50	22.05	796.38	1220.11	40.178566	-80.564420	6.01	
6414.00	49.27	143.13	5997.52	53.74	770.87	1238.97	40.178496	-80.564353	8.11	
6458.00	52.85	144.39	6025.17	87.93	743.27	1259.19	40.178420	-80.564281	8.44	
6501.00	55.45	147.60	6050.36	122.78	714.38	1278.67	40.178340	-80.564212	8.55	
6546.00	55.22	152.48	6075.96	159.68	682.33	1297.14	40.178252	-80.564146	8.93	
6590.00	55.99	158.34	6100.83	195.47	649.33	1312.23	40.178161	-80.564093	11.13	
6633.00	58.92	161.14	6123.96	230.67	615.33	1324.77	40.178068	-80.564049	8.75	
6676.00	63.32	161.04	6144.73	267.01	579.72	1336.97	40.177970	-80.564006	10.23	
6720.00	67.97	159.23	6162.87	305.87	542.04	1350.60	40.177866	-80.563958	11.21	
6763.00	71.82	158.50	6177.65	345.23	504.38	1365.16	40.177762	-80.563906	9.09	
6806.00	74.83	158.47	6189.98	385.45	466.07	1380.26	40.177657	-80.563853	7.00	
6850.00	77.50	158.87	6200.50	427.13	426.27	1395.80	40.177547	-80.563798	6.13	
6893.00	80.02	159.25	6208.89	468.21	386.89	1410.87	40.177439	-80.563744	5.92	
6937.00	82.21	159.87	6215.68	510.46	346.15	1426.05	40.177327	-80.563691	5.17	
6980.00	82.71	159.85	6221.32	551.85	306.13	1440.73	40.177217	-80.563639	1.16	
7066.00	89.44	161.44	6227.21	634.81	225.23	1469.14	40.176994	-80.563539	8.04	
7153.00	88.83	163.27	6228.52	718.28	142.34	1495.51	40.176766	-80.563446	2.22	
7240.00	88.89	162.83	6230.25	801.44	59.13	1520.87	40.176538	-80.563356	0.51	
7327.00	88.52	161.82	6232.22	884.90	-23.74	1547.27	40.176310	-80.563263	1.24	
7413.00	88.70	158.15	6234.30	968.32	-104.51	1576.70	40.176087	-80.563159	4.27	
7500.00	89.20	156.24	6235.90	1053.64	-184.69	1610.41	40.175867	-80.563040	2.27	
7587.00	89.14	156.48	6237.16	1139.22	-264.38	1645.29	40.175648	-80.562917	0.28	
7674.00	89.14	155.63	6238.46	1224.87	-343.88	1680.60	40.175429	-80.562792	0.98	
7760.00	89.26	156.48	6239.67	1309.54	-422.47	1715.50	40.175212	-80.562668	1.00	
7847.00	88.58	158.12	6241.31	1394.83	-502.72	1749.06	40.174992	-80.562549	2.04	

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Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
7934.00	88.52	160.71	6243.51	1479.43	-584.13	1779.64	40.174768	-80.562441	2.98	
8021.00	88.46	160.83	6245.80	1563.52	-666.24	1808.28	40.174542	-80.562340	0.15	
8108.00	88.40	159.87	6248.18	1647.77	-748.15	1837.53	40.174316	-80.562237	1.11	
8194.00	88.77	159.95	6250.31	1731.23	-828.89	1867.06	40.174094	-80.562133	0.44	
8281.00	88.89	160.14	6252.08	1815.61	-910.65	1896.75	40.173869	-80.562028	0.26	
8368.00	89.32	161.37	6253.44	1899.73	-992.77	1925.42	40.173644	-80.561927	1.50	
8455.00	89.14	159.34	6254.61	1984.00	-1074.70	1954.66	40.173418	-80.561824	2.34	
8542.00	88.95	156.23	6256.06	2069.14	-1155.22	1987.55	40.173197	-80.561707	3.58	
8628.00	89.01	156.60	6257.59	2153.71	-1234.02	2021.95	40.172980	-80.561585	0.44	
8715.00	89.01	155.56	6259.10	2239.36	-1313.54	2057.22	40.172761	-80.561461	1.20	
8811.00	88.76	155.25	6260.96	2334.05	-1400.81	2097.17	40.172521	-80.561319	0.41	
8907.00	88.89	154.73	6262.93	2428.85	-1487.79	2137.75	40.172281	-80.561175	0.56	
9003.00	88.64	156.21	6265.00	2523.51	-1575.10	2177.59	40.172041	-80.561034	1.56	
9099.00	88.95	159.31	6267.02	2617.47	-1663.93	2213.91	40.171797	-80.560906	3.24	
9196.00	89.07	160.75	6268.70	2711.56	-1755.08	2247.04	40.171546	-80.560789	1.49	
9292.00	88.77	161.32	6270.51	2804.25	-1845.86	2278.23	40.171296	-80.560679	0.67	
9389.00	88.70	159.68	6272.65	2898.14	-1937.27	2310.60	40.171045	-80.560565	1.69	
9485.00	88.83	157.91	6274.72	2991.73	-2026.74	2345.31	40.170799	-80.560442	1.85	
9581.00	89.14	159.76	6276.42	3085.31	-2116.25	2379.97	40.170552	-80.560320	1.95	
9677.00	88.83	163.16	6278.12	3177.81	-2207.24	2410.48	40.170302	-80.560212	3.56	
9773.00	88.95	163.38	6279.98	3269.46	-2299.16	2438.11	40.170049	-80.560115	0.26	
9869.00	88.77	160.23	6281.89	3361.80	-2390.33	2468.08	40.169798	-80.560009	3.29	
9965.00	88.83	157.20	6283.90	3455.42	-2479.75	2502.92	40.169552	-80.559886	3.16	
10061.00	88.64	157.11	6286.02	3549.58	-2568.20	2540.18	40.169309	-80.559754	0.22	
10157.00	88.58	154.83	6288.35	3644.10	-2655.85	2579.26	40.169068	-80.559616	2.38	
10253.00	88.83	152.15	6290.52	3739.25	-2741.72	2622.09	40.168831	-80.559464	2.80	
10349.00	88.95	157.24	6292.38	3834.09	-2828.47	2663.11	40.168593	-80.559319	5.30	
10445.00	89.14	161.18	6293.98	3927.52	-2918.18	2697.17	40.168346	-80.559198	4.11	
10541.00	89.07	165.58	6295.48	4019.11	-3010.14	2724.62	40.168093	-80.559102	4.58	
10637.00	88.89	163.88	6297.19	4110.00	-3102.73	2749.89	40.167838	-80.559013	1.78	
10734.00	88.09	161.33	6299.75	4202.92	-3195.26	2778.88	40.167584	-80.558911	2.75	
10829.00	88.40	161.37	6302.66	4294.49	-3285.23	2809.25	40.167336	-80.558804	0.33	
10925.00	88.95	161.23	6304.88	4387.06	-3376.13	2840.02	40.167086	-80.558695	0.59	
11022.00	88.83	159.10	6306.76	4481.09	-3467.36	2872.92	40.166835	-80.558579	2.20	
11118.00	88.15	157.16	6309.29	4574.90	-3556.41	2908.67	40.166590	-80.558453	2.14	
11214.00	88.09	154.68	6312.44	4669.41	-3644.00	2947.81	40.166349	-80.558314	2.58	
11311.00	88.33	156.64	6315.47	4764.98	-3732.33	2987.77	40.166106	-80.558173	2.03	
11407.00	88.03	159.35	6318.52	4858.83	-3821.29	3023.72	40.165861	-80.558046	2.84	
11503.00	88.09	158.83	6321.76	4952.28	-3910.91	3057.96	40.165615	-80.557925	0.54	
11600.00	88.89	156.57	6324.32	5047.23	-4000.62	3094.75	40.165368	-80.557794	2.47	
11696.00	88.89	158.31	6326.18	5141.30	-4089.25	3131.57	40.165124	-80.557664	1.81	
11791.00	88.89	161.18	6328.02	5233.55	-4178.35	3164.45	40.164879	-80.557548	3.02	
11888.00	88.58	162.68	6330.16	5326.80	-4270.54	3194.53	40.164625	-80.557442	1.58	
11984.00	88.40	161.78	6332.69	5418.94	-4361.93	3223.82	40.164374	-80.557339	0.96	
12080.00	88.21	159.24	6335.53	5511.83	-4452.38	3255.83	40.164125	-80.557226	2.65	
12176.00	88.46	158.94	6338.32	5605.30	-4542.02	3290.08	40.163879	-80.557105	0.41	
12272.00	88.95	158.20	6340.49	5698.97	-4631.36	3325.15	40.163633	-80.556981	0.92	
12367.00	89.08	158.35	6342.13	5791.79	-4719.60	3360.31	40.163390	-80.556857	0.21	
12464.00	88.70	158.43	6344.00	5886.51	-4809.77	3396.02	40.163142	-80.556731	0.40	
12559.00	88.89	158.47	6346.00	5979.26	-4898.11	3430.91	40.162899	-80.556607	0.20	
12655.00	89.14	159.06	6347.65	6072.87	-4987.57	3465.68	40.162653	-80.556484	0.67	
12751.00	88.58	158.44	6349.56	6166.48	-5077.03	3500.46	40.162407	-80.556362	0.87	
12847.00	88.95	156.44	6351.63	6260.55	-5165.66	3537.28	40.162163	-80.556231	2.12	
12944.00	88.95	156.24	6353.41	6355.96	-5254.49	3576.20	40.161918	-80.556094	0.21	
13026.00	88.83	157.44	6355.00	6436.48	-5329.86	3608.45	40.161711	-80.555980	1.47	Last WFT SVY
13049.00	88.83	157.44	6355.47	6459.02	-5351.10	3617.27	40.161652	-80.555948	0.00	Proj. to TD

RECEIVED
Office of Oil and Gas
MAY 18 2018
WV Department of
Environmental Protection

Latitude: 40°12'30" — 7,580'

BHL Latitude: 40°12'30" — 3,990'

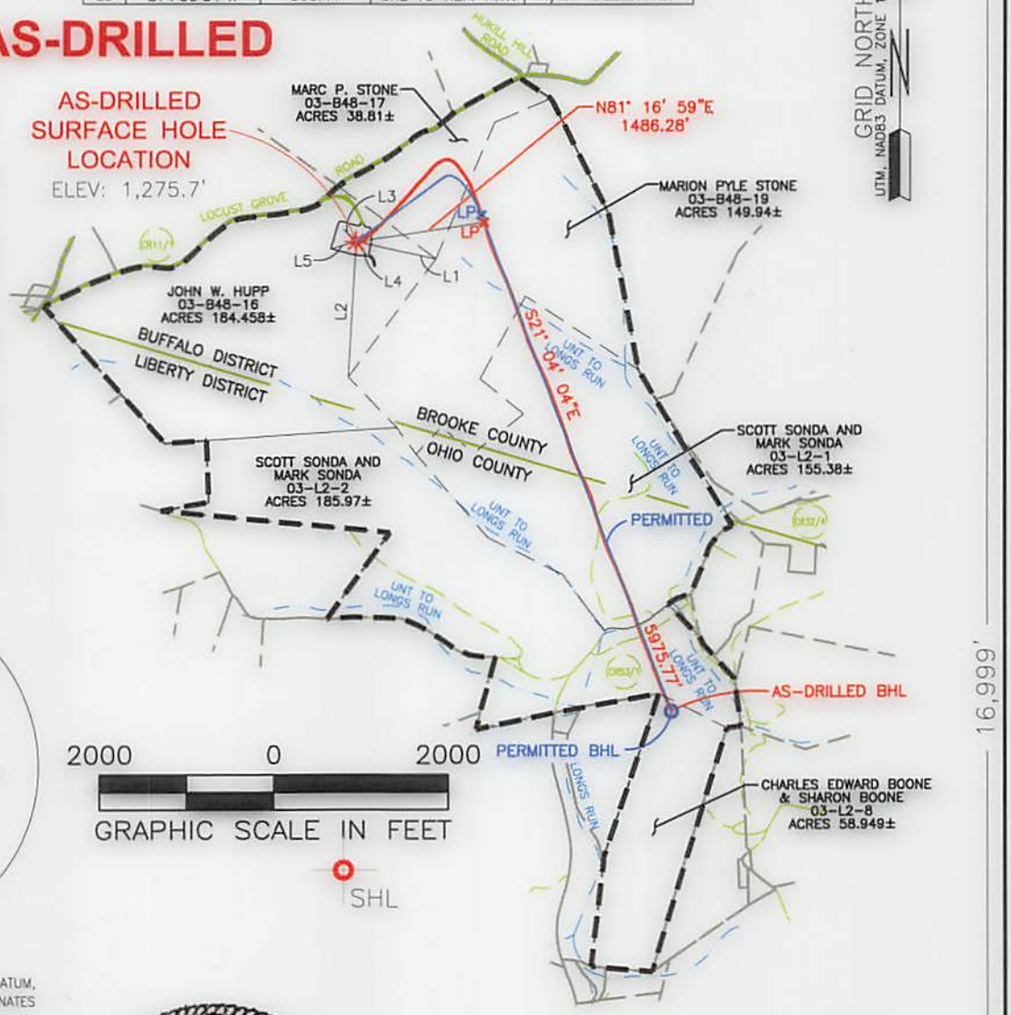
RETTEW

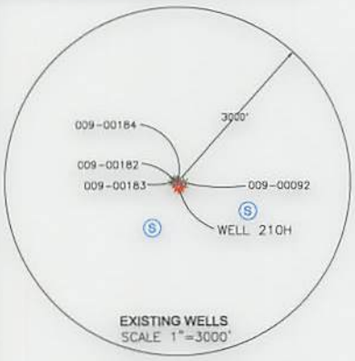
RETTEW Associates, Inc.
27 Travato Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rettew@rettew.com
Website: www.rettew.com

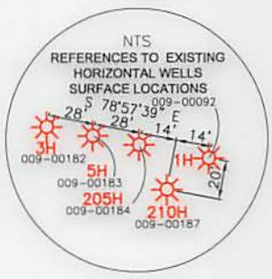
LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	S78°11'35"E	936.17'	SHL TO LANDMARK	
L2	S03°17'38"W	1545.83'	SHL TO LANDMARK	
L3	N45°42'09"W	204.96'	SHL TO REF. PNT.	1/2"ø REBAR/CAP
L4	S37°17'44"E	217.27'	SHL TO REF. PNT.	1/2"ø REBAR/CAP
L5	S74°06'04"W	300.41'	SHL TO REF. PNT.	1/2"ø REBAR SET

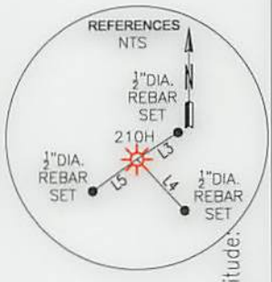
AS-DRILLED

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









NOTES ON SURVEY

1. COORDINATES 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 FIELD LOCATIONS.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
6. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
7. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

CRAIG ROBERT WEST LICENSED No. 2241 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

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

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

(+) 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)

OPERATOR'S WELL #: JOHN HUPP BRK 210H

API WELL #: 47 (STATE) 009 (COUNTY) 00187 (PERMIT)

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

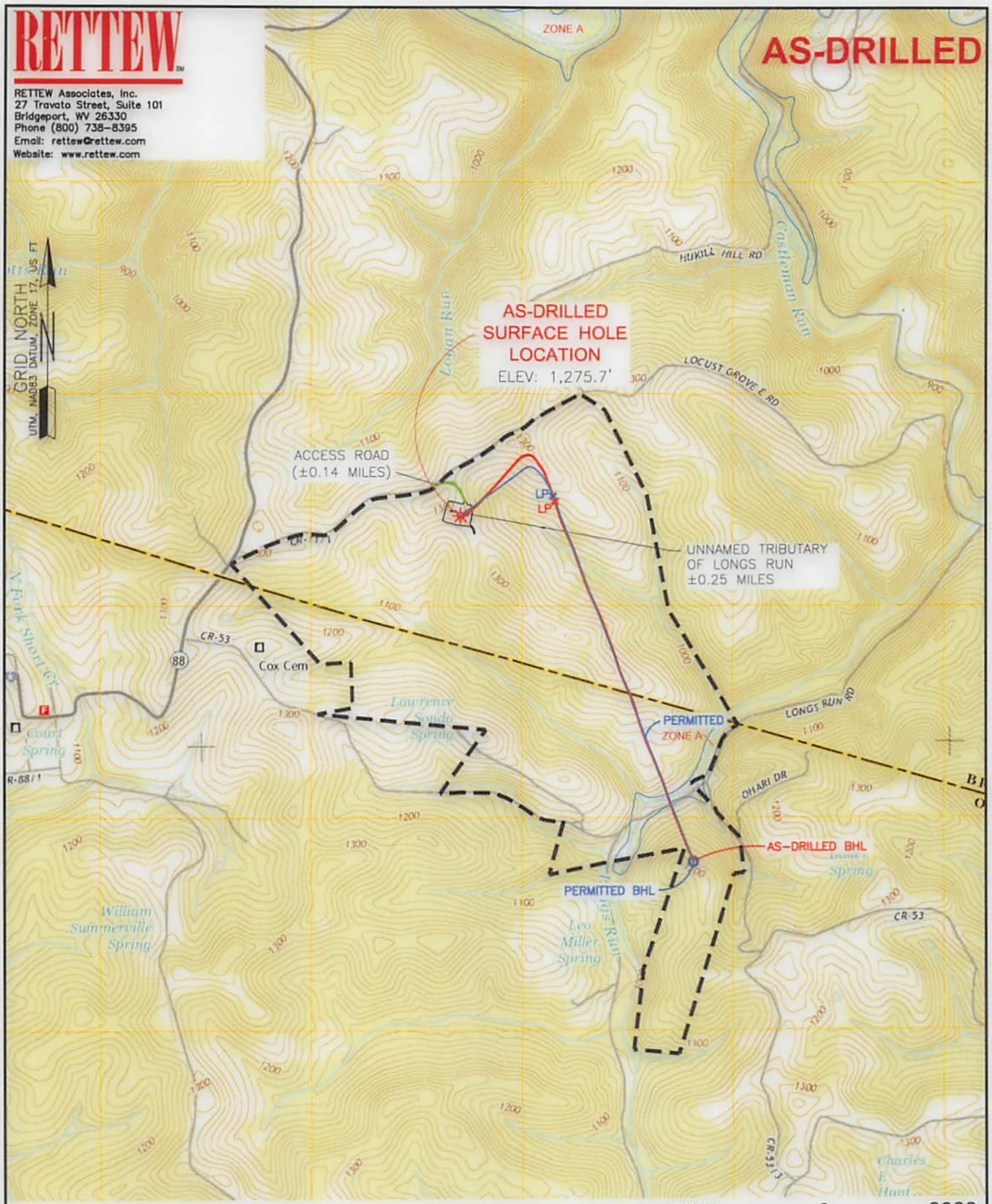
LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- PERMITTED NOT DRILLED
- CUT CONDUCTOR
- EXISTING SPRING
- EXISTING WATER WELL
- TIE LINE
- LEASE BOUNDARY
- ASDRILLED WELLPATH
- PERMITTED WELLPATH
- STREAM

REVISIONS:

DATE: 11-13-2017
DRAWN BY: G.FLORES
SCALE: 1" = 2000'
DRAWING NO:087569048
WELL LOCATION PLAT

C:_RETTEWVAULTWIP\087569048-HUPP BRK PAD\SHEETS\SV\AS-DRILLED\087569048-210H-AD-WELL-PLAT.DWG
MONDAY NOVEMBER 13 2017 04:53PM

COMPLETION ID 2501168665
PAD ID 3001156337



2000 0 2000

GRAPHIC SCALE IN FEET

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

NAME AND DISTANCE TO THE NEAREST STREAM:	STREAM CROSSING COORDINATES (NAD 83):
UN-NAMED TRIBUTARY TO LONGS RUN IS LOCATED ±0.25 MILES SOUTH EAST OF THE CENTER OF THE DRILL PAD.	NO NEW CROSSINGS.

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 LAGER THAN 2500 SQ FT: >625 FEET

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.

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

OPERATOR'S WELL #: JOHN HUPP BRK 210H

LOCATION: BUFFALO DISTRICT, BROOKE COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.176395
LONGITUDE: -80.568802'

BOTTOM HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.161652'
LONGITUDE: -80.555949'

LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- LEASE BOUNDARY
- ASDRILLED WELLPATH
- PERMITTED WELLPATH
- ACCESS ROAD
- HIGHWAY/INTERSTATE
- COUNTY ROAD

REVISIONS:	DATE: 11-13-2017
	DRAWN BY: G.FLORES
	SCALE: 1" = 2000'
	DRAWING NO:087569048
	TOPOGRAPHIC MAP

C:_RETTEWVAULTWIP\087569048-HUPP BRK PAD\SHEETS\SV\AS-DRILLED\087569048-210H-AD-WELL-PLAT.DWG
MONDAY NOVEMBER 13 2017 04:54PM

COMPLETION ID 2501168665
PAD ID 3001156337