

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

API 47 - 051 - 01828 County Marshall District Meade
Quad Wileyville 7.5 Pad Name Bonnette MSH 8H Field/Pool Name Victory Field
Farm name Bonnette MSH Well Number 8H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY LLC
Address PO BOX 12359 City SPRING State TX Zip 77397-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4396892.210 Easting 524694.023
Landing Point of Curve Northing 4397027.593 Easting 524877.678
Bottom Hole Northing 4396147.338 Easting 525826.612

Elevation (ft) 1428 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 _____ Date drilling commenced 6/17/2015 Date drilling ceased 9/24/2015
Date completion activities began 10/24/15 Date completion activities ceased 12/11/15
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 334 Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 1717 Void(s) encountered (Y/N) depths _____
Coal depth(s) ft 1205 Cavern(s) encountered (Y/N) depths _____

Is coal being mined in area (Y/N) N

APPROVED

NAME: Jacqueline Horvath
DATE: 6/30/2016

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AK 1032016
11/03/16

API 47-051 - 01828 Farm name Bonnette MSH Well number 8H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24	20	126	N	J-55/ 94#		Y
Surface	17.5	13.375	714	N	J-55/ 54.50#		Y
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	2790	N	J-55/ 40#		Y
Intermediate 2							
Intermediate 3							
Production	8.75 TO 8.50	5.5	11788	N	P-110/20#		Y
Tubing		2.375	7548	N	L-80/4.70#		N
Packer type and depth set		N/A					

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	A	GROUT	19.3	1.20		SURFACE	24
Surface	A	841	15.6	1.20	10092	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	A	1104	16	1.14	1259	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	A	929/937	15.6	1.23/1.19	2258	SURFACE	24
Tubing							

Drillers TD (ft) 11791 Loggers TD (ft) 11791
 Deepest formation penetrated MARCELLUS Plug back to (ft) NA
 Plug back procedure NA

Kick off depth (ft) 6360

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 _____

ALL CASING STRINGS RAN WITH A CENTRALIZER AT A MINIMUM OF 1 PER EVERY 3RD JOINT OF CASING

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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JUN 28 2016
WV Department of
Environmental Protection 7/16/2016

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/24/2015
Job End Date:	10/28/2015
State:	West Virginia
County:	Marshall
API Number:	47-051-01828-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	BONNETTE MSH 8H
Longitude:	-80.71187393
Latitude:	39.72154816
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,218
Total Base Water Volume (gal):	5,549,166
Total Base Non Water Volume:	0



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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
Water	Operator	Carrier	Water	7732-18-5	100.00000	73.49876	
DustPro Chemical Coating	Baker Hughes	Dust Suppression	MSDS and Non-MSDS Ingredients Listed Below	N/A		12.44933	
Sand, White, 40/70	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		7.43440	
Sand, White, 100 mesh	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		5.01496	
HCl, 10.1 - 15%	Baker Hughes	Acidizing	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.96111	SmartCare Product
MaxPerm 30	Baker Hughes	Friction Reducer	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.05737	
MaxPerm-20A, 265 gallon tote	Baker Hughes	Friction Reducer	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.04336	SmartCare Product
Scaletrol 720	Baker Hughes	Scale Inhibitor					

			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00945	SmartCare Product
Alpha 1427	Baker Hughes	Biocide					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00862	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00661	SmartCare Product
CI-39	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00193	
GBW-5	Baker Hughes	Breaker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00081	SmartCare Product
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Ingredients in Additive (s) (MSDS and non- MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	12.36303	
			Non-hazardous acrylic polymer	NA	75.00000	9.27225	
			Propylene glycol	57-55-6	30.00000	3.70890	
			Water	7732-18-5	85.00000	0.88456	
			Hydrochloric Acid	7647-01-0	15.00000	0.14317	
			Acrylamide Modified Polymer	38193-60-1	60.00000	0.03418	
			1-Propanesulfonic acid, 2- methyl-2-[(1-oxo-2-propen-1-yl) amino]-, polymer with 2- propenamide, sodium salt	83446-68-8	60.00000	0.02584	
			Petroleum Distillates	64742-47-8	30.00000	0.01709	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.01292	
			Sodium Chloride	7647-14-5	5.00000	0.00510	
			Oxyalkylated alcohol	78330-21-9	5.00000	0.00500	
			Ethylene Glycol	107-21-1	45.00000	0.00422	
			Citric Acid	77-92-9	60.00000	0.00394	
			Sorbitan, mono-(9Z)- 9octadecenoate	1338-43-8	5.00000	0.00285	
			Sorbitan monooleate ethoxylate	9005-65-5	5.00000	0.00285	
			Glutaraldehyde	111-30-8	30.00000	0.00257	
			Sorbitan, mono-(9Z)-9- octadecenoate	1338-43-8	5.00000	0.00215	
			Polyoxyethylene sorbitan monooleate	9005-65-6	5.00000	0.00215	
			2-Propenoic, Polymer with Sodium Phosphinate, Sodium Salt	71050-62-9	20.00000	0.00188	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	10.00000	0.00086	
			Ammonium Persulphate	7727-54-0	100.00000	0.00080	
			Oxyalkylated Fatty Acid	61791-002	40.00000	0.00077	
			Tar Bases, Quinoline Derivs., Benzyl Chloride-Quaternized	72480-70-7	30.00000	0.00057	
			Formic Acid	64-18-6	30.00000	0.00057	

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		Aldehyde	104-55-2	30.00000	0.00057
		Acetic Acid, Potassium Salt	127-08-2	1.00000	0.00057
		Quaternary Ammonium Compound	68424-85-1	5.00000	0.00052
		Calcium Chloride	10043-52-4	5.00000	0.00047
		Ethanol	64-17-5	5.00000	0.00043
		Isopropanol	67-63-0	5.00000	0.00010
		Sulfurized polyolefin	68037-13-8	5.00000	0.00010
		Potassium Chloride	7447-40-7	1.00000	0.00009
		Acetic Acid	64-19-7	0.10000	0.00006
		Tetrasodium EDTA	64-02-8	0.10000	0.00006
		Potassium Iodide	7681-11-0	2.00000	0.00004
		Polyaklylene	7756-94-7	1.00000	0.00002
		Potassium Acetate	127-08-2	0.50000	0.00001

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

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

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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BONNETTE MSH 8H

LITHOLOGY/FORMATION	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, TVD (FT)	TOP DEPTH, MD (FT)	BOTTOM DEPTH, MD (FT)	QUANTITY AND TYPE OF FLUID
Bash of Fresh Water	N.A.	334.00	N.A.	334.00	
Top of Salt Water	584.00	N.A.	584.00	N.A.	
Pittsburgh Coal	1203.12	1210.09	1204.00	1211.00	
Big Injun (ss)	2316.06	2941.93	2319.00	2945.00	
Berea (siltstone)	2941.93	6476.41	2945.00	6560.33	
Rhinestreet (shale)	6476.41	6791.24	6560.33	6889.82	
Cashaqua (shale)	6791.24	6854.26	6889.82	6963.12	
Middlesex (shale)	6854.26	6927.23	6963.12	7053.58	
Burket (shale)	6927.23	6956.74	7053.58	7093.74	
Tully (ls)	6956.74	6989.17	7093.74	7141.92	
Mahantango (shale)	6989.17	7079.03	7141.92	7359.33	
Marcellus (shale)	7079.03	N.A.	7359.33	N.A.	

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BONNETTE MSH 8 - PERFORATION RECORD

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	10/25/2015	11,487	11,681	42
2	10/25/2015	11,231	11,425	42
3	10/25/2015	10,975	11,169	42
4	10/25/2015	10,719	10,913	42
5	10/25/2015	10,463	10,657	42
6	10/26/2015	10,207	10,401	42
7	10/26/2015	9,951	10,145	42
8	10/26/2015	9,695	9,889	42
9	10/26/2015	9,439	9,633	42
10	10/27/2015	9,183	9,377	42
11	10/27/2015	8,927	9,121	42
12	10/27/2015	8,671	8,865	42
13	10/27/2015	8,415	8,609	42
14	10/27/2015	8,159	8,353	42
15	10/28/2015	7,903	8,097	42
16	10/28/2015	7,647	7,841	42

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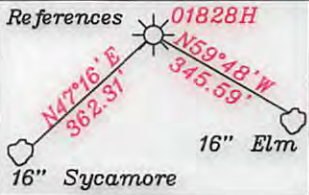
11/04/2016

BONNETTE MSH 8 - STIMULATION INFORMATION

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	10/25/2015	2	8,188	8,664	4,239	499,759	10,141	
2	10/25/2015	2	7,959	8,184	4,620	500,468	8,397	
3	10/25/2015	2	8,039	9,215	5,375	455,261	7,583	
4	10/25/2015	2	7,776	8,309	4,905	501,207	7,700	
5	10/25/2015	2	7,958	8,326	5,084	500,383	9,993	
6	10/26/2015	2	8,138	8,434	5,017	495,511	8,659	
7	10/26/2015	2	8,083	8,544	4,523	499,965	9,141	
8	10/26/2015	2	7,958	8,390	4,690	501,157	8,856	
9	10/26/2015	2	7,657	8,608	5,197	501,117	9,169	
10	10/27/2015	2	8,215	9,016	5,069	492,707	8,657	
11	10/27/2015	2	7,880	8,292	4,862	500,424	7,968	
12	10/27/2015	2	7,762	8,481	5,286	501,876	6,942	
13	10/27/2015	2	7,664	8,401	5,037	500,756	6,985	
14	10/27/2015	2	7,689	8,202	4,644	500,331	7,346	
15	10/28/2015	2	7,561	8,432	4,712	504,204	7,486	
16	10/28/2015	2	7,333	7,519	5,046	503,175	7,100	
Grand total		2	7,866	9,215	4,894	7,958,301	132,123	

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Surface Hole
 UTM NAD 83(meters)-4396892.210 N. 524694.023 E
 LP
 UTM NAD 83(meters)-4397027.593 N. 524877.678 E
Bottom Hole
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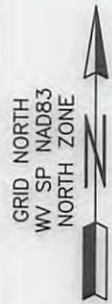
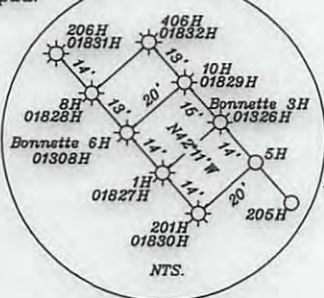
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 LP
 UTM NAD 83(meters)-4397004.116 N. 524897.739 E
Bottom Hole
 UTM NAD 83(meters)-4396129.689 N. 525815.540 E

LATITUDE 39-45-00 N
 Note: All wells within 500' of the horizontal leg are shown on this plat based upon information taken from DEP mapping, well plats and aerial photos.

Note: No water wells were found within 250' of well location. A dwelling is located S18°21'W 534' from the center of the pad.

- A = Ries 3 Ac. T.M. 3/8
- B = Hohman 4.07 Ac. T.M. 3/8.3
- C = Hohman 4.12 Ac. T.M. 3/8.2&8.1-254855-000
- D = B. Ferrell 1 Ac. T.M. 3/9
- E = B. Ferrell 0.54 Ac. T.M. 3/10.1
- F = B. Ferrell 0.33 Ac. T.M. 3/10.5
- G = J. Ferrell 28.97 Ac. T.M. 3/10.3
- H = Miller 5.02 Ac. T.M. 3/10.2
- I = Ferrell 1.29 Ac. T.M. 3/10.4
- J = Zombotti 4.34 Ac. T.M.3/11.2
- K = R. Yoho et al 38.59 Ac. T.M. 3/11
- L = Blatt 7.42 Ac. T.M. 3/11.3
- M = Herrick 0.65 Ac. T.M. 3/11.1
- N = Bonnette 126.53 Ac. T.M. 22/8 1-254855-000
- O = Fox 56 Ac. T.M. 4/1 1-254904-000
- P = Dulaney 52 Ac. T.M. 4/12
- Q = Klug 48 Ac. T.M. 4/22
- R = Estep 3.45 Ac. T.M. 4/21
- S = Zombotti 4.15 Ac. T.M. 3/10
- U = Scheibelhood 9.8 Ac. T.M. 4/32
- V = Fox 74.7 Ac. T.M. 4/2 1-254904-000
- W = Blatt 22.1 Ac. T.M. 4/13 1-254905-000
- X = Blatt 106.83 Ac. T.M. 4/3&4 1-254905-000
- Y = Blatt 37 Ac. T.M. 4/14 1-254836-000
- C1 = The Co. Comm. of Marshall Co. 3.143 Ac. TM.22-8.1 1-254855-000
- D1 = Klug 1 Ac. T.M.22-7

Note: A dwelling is located S18°21'W 534' from the center of the pad.



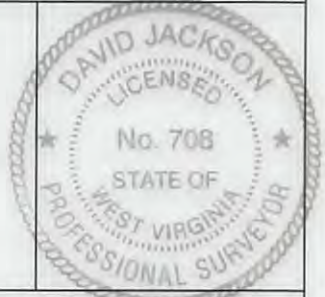
LEGEND
 AsDrilled Leg (Red Text)
 Permit Leg (Blue Text)

NUMBER	DIRECTION	DISTANCE
L1	N54°34'E	748.81'
L2	S28°55'E	1044.89'
L3	N08°54'W	2442.66'

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

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 THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

(SIGNED) *David L Jackson*
 R.P.E. _____ L.L.S. 708



FILE NO. _____
 DRAWING NO. 1
 SCALE 1" = 2000'
 MINIMUM DEGREE OF ACCURACY 1 in 200
 PROVEN SOURCE OF ELEVATION GPS
submeter unit

STATE OF WEST VIRGINIA
 Division of Environmental Protection
 OFFICE OF OIL AND GAS

DATE March 1, 2016
 OPERATOR'S WELL NO. Bonnette MSH 8H
 API WELL NO. 47-051-01828H

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL STATE COUNTY PERMIT
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1,427.7' WATER SHED Whetstone Creek
 DISTRICT Meade COUNTY Marshall
 QUADRANGLE Wileyville 7 1/2'

SURFACE OWNER Robert and Linda Bonnette ACREAGE 126.53 ac.
 OIL & GAS ROYALTY OWNER Robert and Linda Bonnette, Robert and Barbara Bias, & Larry and Glenda Kress LEASE ACREAGE 426.303 ac.

LEASE NO. _____ DATE 11/04/2016
 LEASE NO. _____

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AsDrilled

PLUG AND ABANDON CLEAN OUT AND REPLUG

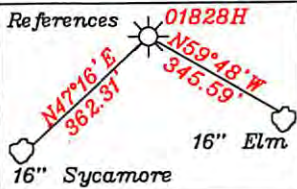
TARGET FORMATION Marcellus ESTIMATED DEPTH TVD=7,103'; TMD=11,791'
 WELL OPERATOR SWN Production Co. LLC DESIGNATED AGENT Dee Southall
 ADDRESS P.O. Box 1300 Jane Lew, WV 26378 ADDRESS P.O. Box 1300 Jane Lew, WV 26378

Top Hole LONGITUDE 80-42-30 W
 Bottom Hole LONGITUDE 80-40-00 W
 Bottom Hole 12,729'
 Top Hole 10,377'

Top Hole 1,189'

Bottom Hole 9,228'

LATITUDE 39-45-00 N



Surface Hole
UTM NAD 83(meters)-4396892.210 N. 524694.023 E
LP
UTM NAD 83(meters)-4397027.593 N. 524877.678 E
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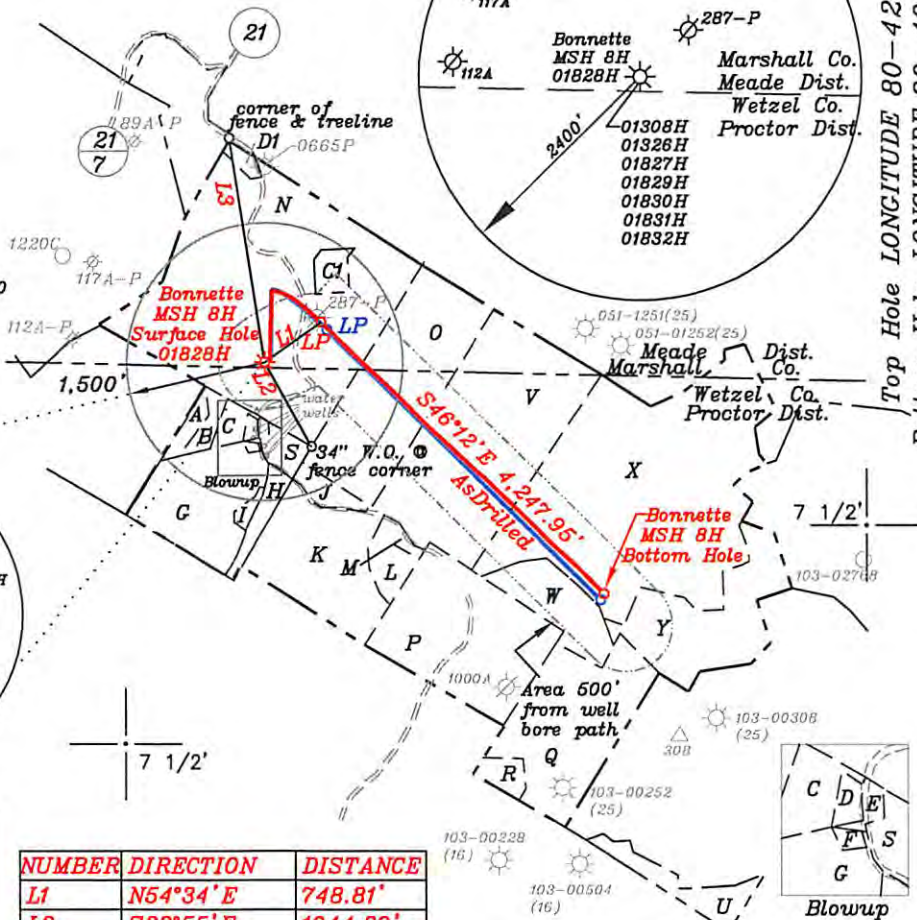
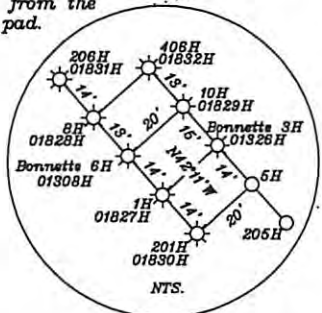
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Note: A dwelling is located S18°21'W 534' from the center of the pad.



Top Hole LONGITUDE 80-42-30 W
Bottom Hole LONGITUDE 80-40-00 W
Bottom Hole 12,729'
Top Hole 10,377'



LEGEND
AsDrilled Leg (Red Text)
Permit Leg (Blue Text)

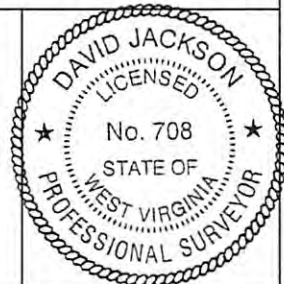
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L2	S28°55'E	1044.89'
L3	N08°54'W	2442.66'

Note: Ties to wells and corners are based on State Plane Grid North-WV North Zone NAD 83.

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

FILE NO. _____
DRAWING NO. 1
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY 1 in 200
PROVEN SOURCE OF ELEVATION GPS
submeter unit

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 THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
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STATE OF WEST VIRGINIA
Division of Environmental Protection
OFFICE OF OIL AND GAS

DATE March 1, 2016
OPERATOR'S WELL NO. Bonnette MSH 8H
API WELL NO. 47-051-01828H
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL STATE COUNTY PERMIT
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X

LOCATION: ELEVATION 1,427.7' WATER SHED Whetstone Creek
DISTRICT Meade COUNTY Marshall
QUADRANGLE Wileyville 7 1/2'

SURFACE OWNER Robert and Linda Bonnette ACREAGE 126.53 ac.
OIL & GAS ROYALTY OWNER Robert and Linda Bonnette, Robert and Barbara Bias, & Larry and Glenda Kress LEASE ACREAGE 426.303 ac.

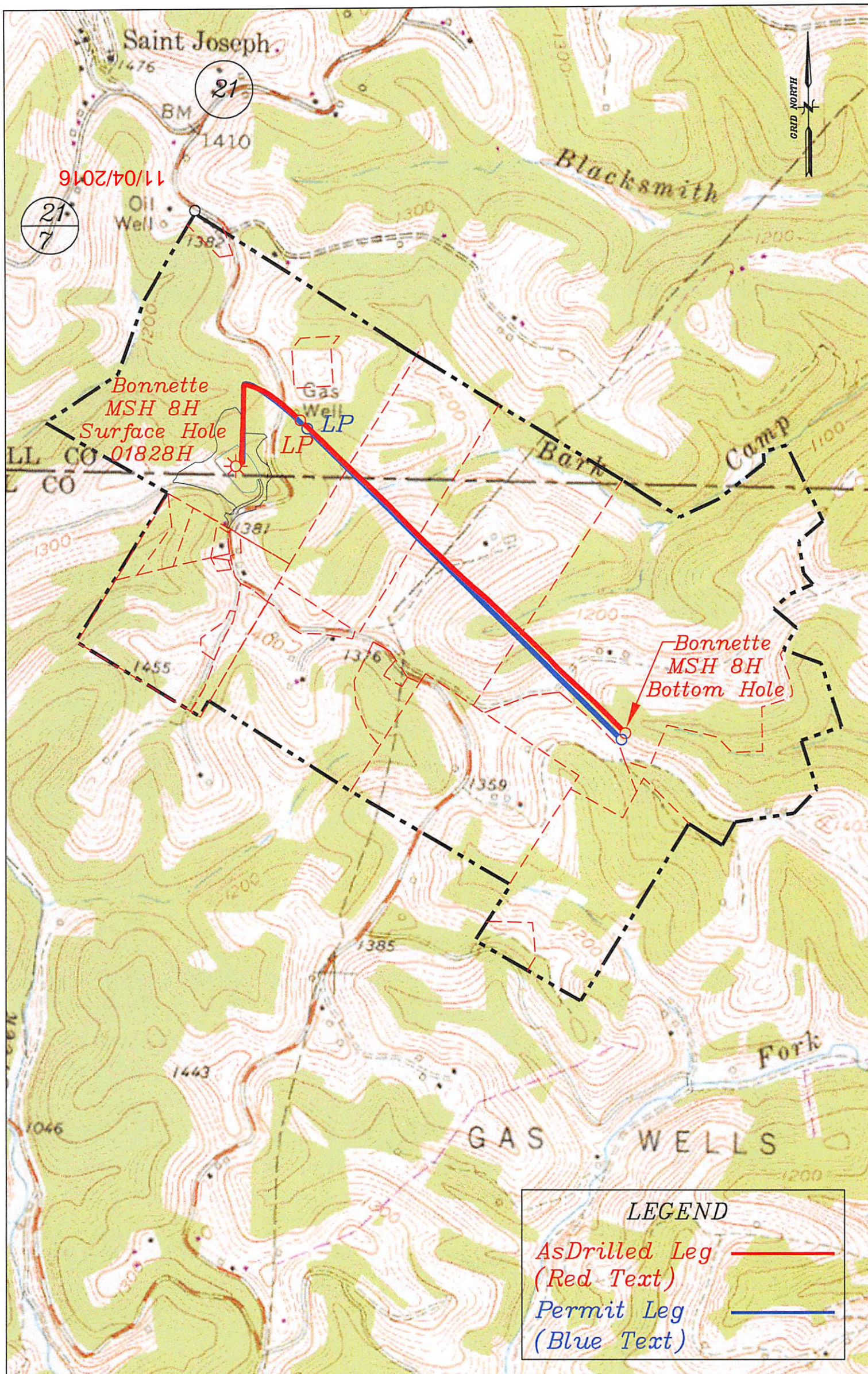
LEASE NO. _____
LEASE NO. _____

PROPOSED WORK: DRILL X CONVERT DRILL DEEPER REDRILL FRACTURE OR
STIMULATE X PLUG OFF OLD FORMATION PERFORATE NEW
FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AsDrilled

PLUG AND ABANDON CLEAN OUT AND REPLUG
TARGET FORMATION Marcellus ESTIMATED DEPTH TVD=7,103'; TMD=11,791'

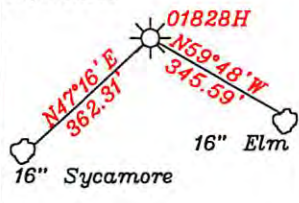
WELL OPERATOR SWN Production Co. LLC DESIGNATED AGENT Dee Southall
ADDRESS P.O. Box 1300 Jane Lew, WV 26378 ADDRESS P.O. Box 1300 Jane Lew, WV 26378

11/04/2016



Well: Bonnette MSH 8H
 Quad: Wileyville 7 1/2'
 District: Meade
 County: Marshall

References



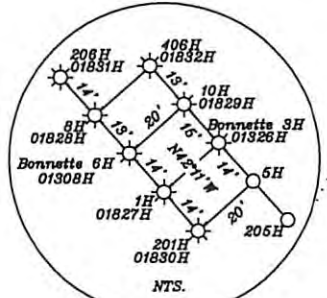
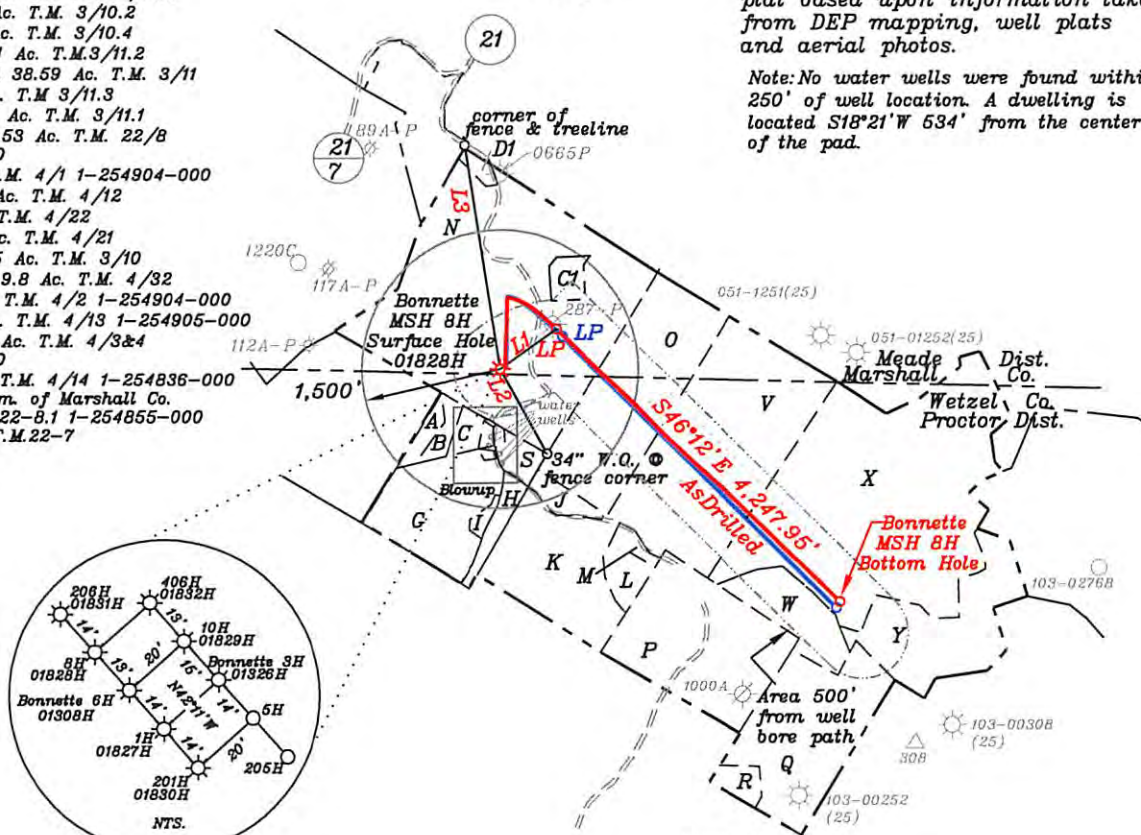
Note: Ties to wells and corners are based on State Plane Grid North-WV North Zone NAD 83.

SWN Production Co. LLC
AsDrilled
Bonnette MSH 8H
Meade District
Marshall County, W.V.
March 1, 2016

Note: All wells within 500' of the horizontal leg are shown on this plat based upon information taken from DEP mapping, well plats and aerial photos.

Note: No water wells were found within 250' of well location. A dwelling is located S18°21'W 534' from the center of the pad.

- A = Ries 3 Ac. T.M. 3/8
- B = Hohman 4.07 Ac. T.M. 3/8.3
- C = Hohman 4.12 Ac. T.M. 3/8.2&8.1 1-254855-000
- D = B. Ferrell 1 Ac. T.M. 3/9
- E = B. Ferrell 0.64 Ac. T.M. 3/10.1
- F = B. Ferrell 0.33 Ac. T.M. 3/10.5
- G = J. Ferrell 28.97 Ac. T.M. 3/10.3
- H = Miller 5.02 Ac. T.M. 3/10.2
- I = Ferrell 1.29 Ac. T.M. 3/10.4
- J = Zombotti 4.34 Ac. T.M. 3/11.2
- K = R. Yoho et al 38.59 Ac. T.M. 3/11
- L = Blatt 7.42 Ac. T.M. 3/11.3
- M = Herrick 0.65 Ac. T.M. 3/11.1
- N = Bonnette 126.53 Ac. T.M. 22/8 1-254855-000
- O = Foz 56 Ac. T.M. 4/1 1-254904-000
- P = Dulaney 52 Ac. T.M. 4/12
- Q = Klug 48 Ac. T.M. 4/22
- R = Estep 3.45 Ac. T.M. 4/21
- S = Zombotti 4.15 Ac. T.M. 3/10
- U = Scheibelhood 9.8 Ac. T.M. 4/32
- V = Foz 74.7 Ac. T.M. 4/2 1-254904-000
- W = Blatt 22.1 Ac. T.M. 4/13 1-254905-000
- X = Blatt 106.83 Ac. T.M. 4/3&4 1-254905-000
- Y = Blatt 37 Ac. T.M. 4/14 1-254836-000
- C1 = The Co. Comm. of Marshall Co. 3.143 Ac. T.M. 22-8.1 1-254855-000
- D1 = Klug 1 Ac. T.M. 22-7



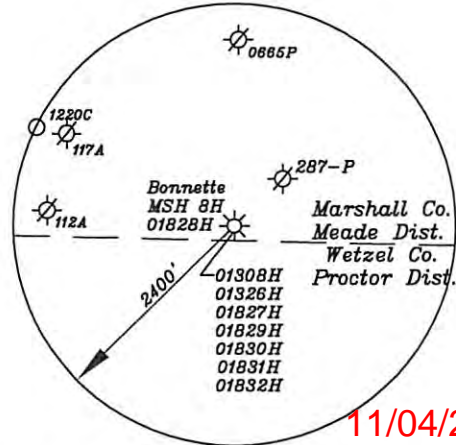
NUMBER	DIRECTION	DISTANCE
L1	N54°34' E	748.81'
L2	S28°55' E	1044.89'
L3	N08°54' W	2442.66'

LEGEND

AsDrilled Leg ——— (Red Text)

Permit Leg ——— (Blue Text)

NAD 83	
Surface Hole	
UTM NAD 83(meters)	-4396892.210 N, 524694.023 E
Geo. NAD 83	-39.721548 N, 80.711873 W
UTM NAD 83(Feet)	-14425470.525 N, 1721433.640 E
LP	
UTM NAD 83(meters)	-4397027.593 N, 524877.678 E
Geo. NAD 83	-39.722763 N, 80.709725 W
UTM NAD 83(feet)	-14425914.696 N, 1722036.181 E
Bottom Hole	
UTM NAD 83(meters)	-4396147.338 N, 525826.612 E
Geo. NAD 83	-39.714803 N, 80.698688 W
UTM NAD 83(feet)	-14423026.725 N, 1725149.478 E
NAD 83	
Surface Hole	
UTM NAD 83(meters)	-4396892.211 N, 524693.981 E
Geo. NAD 83	-39.721548 N, 80.711874 W
UTM NAD 83(Feet)	-14425470.529 N, 1721433.503 E
LP	
UTM NAD 83(meters)	-4397004.116 N, 524897.739 E
Geo. NAD 83	-39.722551 N, 80.709492 W
UTM NAD 83(feet)	-14425837.670 N, 1722102.000 E
Bottom Hole	
UTM NAD 83(meters)	-4396129.689 N, 525815.540 E
Geo. NAD 83	-39.714645 N, 80.698818 W
UTM NAD 83(feet)	-14422968.820 N, 1725113.150 E



Jackson Surveying, Inc.
 677 West Main Street
 Clarksburg, WV 26301