

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

API 47-103-02760 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #19H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,373,430 Easting 528,115
Landing Point of Curve Northing 4,373,771 Easting 528,017
Bottom Hole Northing 4,374,915 Easting 527,199

Elevation (ft) 1,291 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)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 6/13/2012 Date drilling commenced 12/11/2012 Date drilling ceased 7/16/2013
Date completion activities began 1/17/2014 Date completion activities ceased 7/12/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

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

Freshwater depth(s) ft 75 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,291 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 821 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15
W.S. 6/12/2015

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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	24"	20"	60'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,290'	New	J55	126' & 204'	Y - CTS
Coal	17.5"	13.375"	1,290'	New	J55		Y - CTS
Intermediate 1	12.25"	9.625"	2,757'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,468'	New	P110		N
Tubing	N/A	2.375"	7,642'	New	N80		N/A
Packer type and depth set							

Comment Details 13.375" casing string circulated 32 bbls cement to surface, 9.625" casing string circulated 40 bbls cement to surface. TOC from the CBL on 5.5" casing is @ 350'.

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	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	976	15.6	1.19	1,161	Surface	8.0
Coal	Class "A"	976	15.6	1.19	1,161	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-540 Tail-420	Lead-15.0 Tail-15.5	Lead-1.26 Tail-1.19	Lead-680 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-Class "A"	Lead-865 Tail-1,568	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,453 Tail-1,882	350	7.0
Tubing							

Drillers TD (ft) 12,476 MD / 7,254 TVD Loggers TD (ft) N/A

Deepest formation penetrated Marcellus Shale Plug back to (ft)

Plug back procedure

Kick off depth (ft) 6,227 MD / 6,219 TVD

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/Coal casing had bow spring centralizers placed on joints #s 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30 and 32. Intermediate casing had bow spring centralizers placed on joints #s 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62 and 65. The production casing has rigid spiral alternating left/right centralizers placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #145. From there bow spring centralizers were placed beginning on joint #148 and then every third joint to joint #280 (TOC). A total of 37 rigid left/right centralizers were used and 45 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you climb towards the surface.

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)
1	1/19/14	12,154	12,360	72	Marcellus Shale
2	4/3/14	11,881	12,073	72	Marcellus Shale
3	4/4/14	11,617	11,791	72	Marcellus Shale
4	4/11/14	11,357	11,552	72	Marcellus Shale
5	4/12/14	11,077	11,288	72	Marcellus Shale
6	4/13/14	10,811	11,003	72	Marcellus Shale
7	4/15/14	10,552	10,741	72	Marcellus Shale
8	4/16/14	10,291	10,483	72	Marcellus Shale
9	4/23/14	10,030	10,219	72	Marcellus Shale
10	4/24/14	9,771	9,963	72	Marcellus Shale
11	4/25/14	9,511	9,700	72	Marcellus Shale
12	4/26/14	9,260	9,443	72	Marcellus Shale
13	4/27/14	8,990	9,193	72	Marcellus Shale
14	4/28/14	8,736	8,923	72	Marcellus Shale
15	4/29/14	8,471	8,663	72	Marcellus Shale
16	4/30/14	8,211	8,403	72	Marcellus Shale

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)
1	4/3/14	80.8	8,188	6,650	4,253	363,160	8,065	
2	4/4/14	82.0	7,962	6,977	4,253	411,900	8,133	
3	4/8/14	84.4	7,950	6,683	6,000	308,500	10,695	
4	4/12/14	85.0	7,721	6,369	4,782	405,500	8,358	
5	4/13/14	82.8	7,950	6,700	4,416	409,340	8,077	
6	4/15/14	77.1	7,693	6,957	4,820	194,861	8,401	
7	4/16/14	77.0	7,375	6,606	4,286	412,725	8,203	
8	4/17/14	79.6	7,516	6,672	Screened	314,761	7,062	
9	4/24/14	84.9	7,291	6,069	4,477	410,240	8,104	
10	4/25/14	83.2	7,197	6,163	4,416	413,020	7,947	
11	4/26/14	83.1	7,580	6,871	Screened	414,020	7,893	
12	4/27/14	85.2	7,476	6,401	4,293	414,680	7,834	
13	4/28/14	85.0	7,349	6,776	4,841	413,460	7,894	
14	4/29/14	84.1	7,554	6,675	4,477	409,720	8,284	
15	4/30/14	85.1	7,263	6,557	5,087	407,560	7,916	
16	5/1/14	83.6	7,318	6,425	4,841	408,869	7,800	

Please insert additional pages as applicable.

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MILL-WETZEL #19H

API 47-103-02760

Stone Energy Corporation

Horizontal

	Top (ft TVD)	Top (ft MD)	Bottom (ft TVD)	Bottom (ft MD)
Sandstone & Shale	Surface	*	821	FW @ 75'
Coal	821	*	826	
Sandstone & Shale	826	*	2,190	SW @ 1,291'
Little Lime	2,190	*	2,220	
Big Lime	2,220	*	2,365	
Big Injun	2,365	*	2,422	
Sandstone & Shale	2,422	*	2,851	
Berea Sandstone	2,851	*	2,881	
Shale	2,881	*	3,055	
Gordon	3,055	*	3,105	
Undiff Devonian Shale	3,105	*	5,358	
Riley Shale	5,358	*	5,465	
Benson Siltstone	5,465	*	5,713	
Pipe Creek Shale	5,713	*	5,722	
Undiff Devonian Shale	5,722	~	6,422	6,431
Rhinestreet	6,422	6,431	3,830	6,873
Cashaqua	6,830	6,873	6,900	6,958
Middlesex	6,900	6,958	7,043	7,152
West River	7,043	7,152	7,149	7,322
Geneseo	7,149	7,322	7,182	7,385
Tully Limestone	7,182	7,385	7,204	7,432
Hamilton Shale	7,204	7,432	7,269	7,640
Marcellus	7,269	7,640	7,254	12,476
TD			7,254	12,476

* From Pilot Hole Log and Driller's Log

~ From MWD Gamma Log

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	5/4/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02760
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #19H
Longitude:	528,115
Latitude:	4,373,430
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	6128300

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
Proppant Transport	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, Surfactant, Acid, Breaker, Gelling Agent, Friction Reducer, Rheology Modifier, Iron Control Agent, Clay Control Agent, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		87.96688%	
			Crystalline silica	14808-60-7	98.51058%	11.85390%	
			Hydrochloric acid	7647-01-0	0.83335%	0.10028%	
			Carbohydrate polymer	Proprietary	0.33737%	0.04060%	
			Fatty acid amidoalkyl betaine	Proprietary	0.32753%	0.03941%	
			Ammonium sulfate	7783-20-2	0.24441%	0.02941%	
			Isopropanol	67-63-0	0.22523%	0.02710%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.05890%	0.00709%	
			Glutaraldehyde	111-30-8	0.04608%	0.00555%	
			Urea	57-13-6	0.04073%	0.00490%	
			Calcium chloride	10043-52-4	0.01071%	0.00129%	
			Diammonium peroxodisulfate	7727-54-0	0.00804%	0.00097%	
			Sulfonated polystyrene	Proprietary	0.00643%	0.00077%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00453%	0.00055%	
			Trisodium ortho phosphate	7601-54-9	0.00423%	0.00051%	
			Ethane-1,2-diol	107-21-1	0.00423%	0.00051%	
			Sodium erythorbate	6381-77-7	0.00370%	0.00045%	
			Methanol	67-56-1	0.00319%	0.00038%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00239%	0.00029%	
			Aliphatic acids	Proprietary	0.00239%	0.00029%	
			Prop-2-yn-1-ol	107-19-7	0.00080%	0.00010%	

* 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%

Report ID: RPT-27146 (Generated on 5/14/2014 4:55 PM)

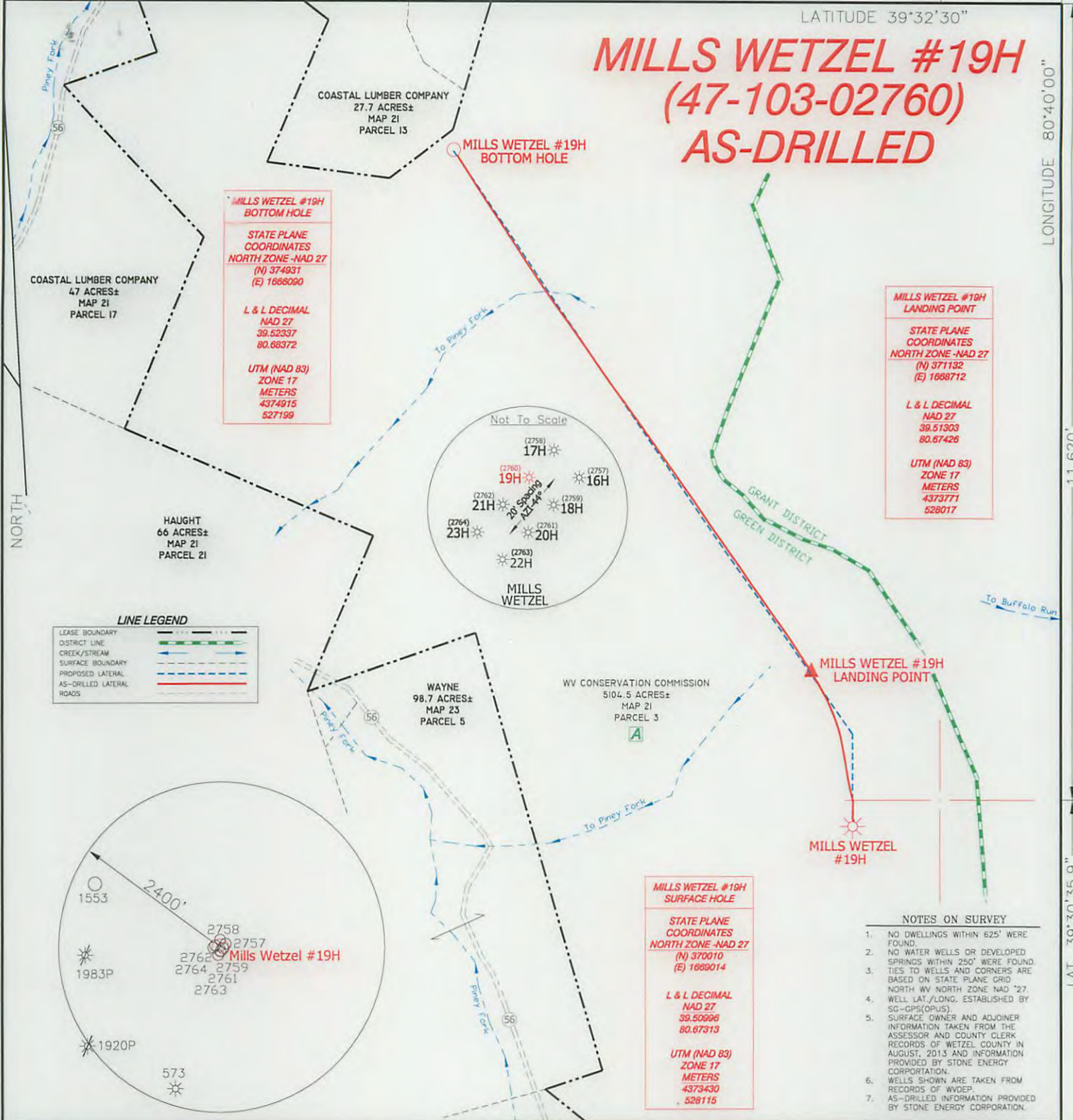
All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix B.

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MILLS WETZEL #19H (47-103-02760) AS-DRILLED



**MILLS WETZEL #19H
BOTTOM HOLE**

**STATE PLANE
COORDINATES
NORTH ZONE -NAD 27**
(N) 374931
(E) 1668090

**L & L DECIMAL
NAD 27**
39.52337
80.68372

**UTM (NAD 83)
ZONE 17
METERS**
4374915
527199

**MILLS WETZEL #19H
LANDING POINT**

**STATE PLANE
COORDINATES
NORTH ZONE -NAD 27**
(N) 371132
(E) 1668712

**L & L DECIMAL
NAD 27**
39.51303
80.67426

**UTM (NAD 83)
ZONE 17
METERS**
4373771
528017

**MILLS WETZEL #19H
SURFACE HOLE**

**STATE PLANE
COORDINATES
NORTH ZONE -NAD 27**
(N) 370010
(E) 1669014

**L & L DECIMAL
NAD 27**
39.50996
80.67313

**UTM (NAD 83)
ZONE 17
METERS**
4373430
528115

LINE LEGEND

LEASE BOUNDARY	---
D-DISTRICT LINE	---
CREEK/STREAM	---
SURFACE BOUNDARY	---
PROPOSED LATERAL	---
AS-DRILLED LATERAL	---
ROADS	---



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 REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 834
HUPP Surveying & Mapping
 P.O. Box 647 Grantsville, WV 26147
 (304) 354-7035 EMAIL: hupp@frontiernet.net



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE DECEMBER 16, 20 14
 OPERATORS WELL NO. MILLS WETZEL #19H
 API WELL NO. 47-103-02760
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W1719 (BK75-3)
 PROVEN SOURCE OF ELEVATION SG-GPS (OPUS) SCALE 1" = 1000'

STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS

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

LOCATION :
 ELEVATION 1293' WATERSHED TRIBUTARY OF PINEY FORK
 DISTRICT GREEN COUNTY WETZEL QUADRANGLE PINE GROVE 7.5'

SURFACE OWNER WEST VIRGINIA CONSERVATION COMMISSION ACREAGE 5104.5 ±
 ROYALTY OWNER MILLS WETZEL LAND Inc. LEASE ACREAGE 5104.5± **06/12/2015**

PROPOSED WORK : LEASE NO. _____
 DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER _____
 PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH 7,253' TVD 12,476' MD

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
 ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

COUNTY NAME PERMIT