

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

PM

API 47 - 103 - 02856 County Wetzel District Grant  
Quad Big Run 7.5' Pad Name BIG190 Field/Pool Name \_\_\_\_\_  
Farm name COASTAL LUMBER COMPANY Well Number 513930  
Operator (as registered with the OOG) EQT Production Company  
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4378120.3 Easting 533883.6  
Landing Point of Curve Northing 4378162.3 Easting 534134.8  
Bottom Hole Northing 4377440.7 Easting 534317.4

Elevation (ft) 1473 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)  
Water base Mud 14.0 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 2/21/2013 Date drilling commenced 10/16/2013 Date drilling ceased 1/28/2014  
Date completion activities began 4/24/2014 Date completion activities ceased 4/27/2014  
Verbal plugging (Y/N) n/a 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 751' Open mine(s) (Y/N) depths \_\_\_\_\_  
Salt water depth(s) ft 2163' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 411, 1204, 1222 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

RECEIVED  
Office of Oil and Gas  
JUL 28 2014  
Reviewed by:  
Environmental Protection

API 47-103 - 02856 Farm name COASTAL LUMBER COMPANY Well number 513930

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	28"	26"	40'	New	82.6#/ft	n/a	Y
Surface	17-1/2"	13-3/8"	844'	New	54.5#/ft	96'	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	3412'	New	40#/ft	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	10646'	New	20#	N/A	N
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	49	15.6	1.18	57.82	0	8
Surface	Class A	775	15.6	1.19	923	0	8
Coal							
Intermediate 1	Class A	1195	15.6	1.20	1434	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	780/360	15/15.6	1.21/1.83	2297	4480	8
Tubing							

Drillers TD (ft) 10,647 Loggers TD (ft) N/A  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 8050'

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 Conductor-N/A  
 Surface-bow spring centralizers set at 604', 665', 568', 491', 333', 214', 94'  
 Intermediate-bow spring centralizers set at 3368, 2900', 2395', 1887', 1380', 916', 409'  
 Production-composite centralizer ran on every joint from td up to 4,500'

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 \_\_\_\_\_



API 47- 103 - 02856 Farm name COASTAL LUMBER COMPANY Well number 513925

PRODUCING FORMATION(S)	DEPTHS	
<u>Marcellus</u>	<u>7,553</u> TVD	<u>8,030</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump  
 SHUT-IN PRESSURE Surface 1.950 psi Bottom Hole NA psi DURATION OF TEST 51.5 hrs

OPEN FLOW Gas 12,384 mcfpd Oil 0 bpd NGL 0 bpd Water 144 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME/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 <sub>2</sub> S, ETC)
	<u>0</u>		<u>0</u>		

Please insert additional pages as applicable.

Drilling Contractor Savanna Drilling  
 Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company Hoss Co. Services LLC  
 Address 614 Trotters Lane City Charleston State WV Zip 25312

Cementing Company Halliburton Energy Services  
 Address 121 Champion Way City Canonsburg State PA Zip 15317

Stimulating Company Nabors Completion and Production Services  
 Address PO Box 975682 City Dallas State TX Zip 75397-5682

Please insert additional pages as applicable.

Completed by James Abbott Telephone 412-553-5996  
 Signature  Title Director - Completions Operations Date 7/22/2014

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

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
Fresh Water Zone	1	1	751	751
Sand / Shale	1	1	411	411
Mapletown Coal	411	411	417	417
Sand / Shale	417	417	1,211.00	1,211.00
Pittsburgh Coal	1,211.00	1,211.00	1,218.00	1,218.00
Sand / Shale	1,218.00	1,218.00	1,229.00	1,229.00
Coal	1,229.00	1,229.00	1,235.00	1,235.00
Sand / Shale	1,235.00	1,235.00	2,269.00	2,268.90
Maxton	2,269.00	2,268.90	2,425.00	2,424.90
Big Lime	2,425.00	2,424.90	2,554.00	2,553.90
Big Injun	2,554.00	2,553.90	2,832.00	2,831.90
Weir	2,832.00	2,831.90	2,999.00	2,998.90
Gantz	2,999.00	2,998.90	3,034.00	3,033.90
Fifty foot	3,034.00	3,033.90	3,129.00	3,128.90
Thirty foot	3,129.00	3,128.90	3,274.00	3,273.90
Gordon	3,274.00	3,273.90	3,347.00	3,346.90
Forth Sand	3,347.00	3,346.90	3,504.00	3,503.90
Bayard	3,504.00	3,503.90	3,887.00	3,886.90
Warren	3,887.00	3,886.90	4,084.00	4,083.80
Speechley	4,084.00	4,083.80	4,455.00	4,454.80
Balltown A	4,455.00	4,454.80	4,912.00	4,911.80
Riley	4,912.00	4,911.80	5,556.00	5,555.70
Benson	5,556.00	5,555.70	5,930.00	5,929.70
Alexander	5,930.00	5,929.70	7,079.00	6,886.00
Rhinestreet	7,079.00	6,886.00	7,391.00	7,146.40
Sonyea	7,391.00	7,146.40	7,554.00	7,287.60
Middlesex	7,554.00	7,287.60	7,620.00	7,340.70
Genesee	7,620.00	7,340.70	7,729.00	7,419.10
Geneseo	7,729.00	7,419.10	7,761.00	7,439.70
Tully	7,761.00	7,439.70	7,793.00	7,459.00
Hamilton	7,793.00	7,459.00	8,030.00	7,553.00
Marcellus	8,030.00	7,553.00	10,647.00	7,613.30

**513930 - Perforations**

<b>Stage Number</b>	<b>Perforation Date</b>	<b>Top Perf Depth (ftKB)</b>	<b>Bottom Perf Depth (ftKB)</b>	<b>Number of Shots</b>	<b>Formation</b>
<b>Initiation Sleeve</b>	4/24/2014	10,618.00	10,620.00	10	MARCELLUS
<b>1</b>	4/25/2014	10,439.00	10,576.00	32	MARCELLUS
<b>2</b>	4/25/2014	10,215.00	10,397.00	40	MARCELLUS
<b>3</b>	4/25/2014	9,989.00	10,172.00	40	MARCELLUS
<b>4</b>	4/25/2014	9,764.00	9,947.00	40	MARCELLUS
<b>5</b>	4/25/2014	9,539.00	9,722.00	40	MARCELLUS
<b>6</b>	4/26/2014	9,315.00	9,497.00	40	MARCELLUS
<b>7</b>	4/26/2014	9,089.00	9,272.00	40	MARCELLUS
<b>8</b>	4/26/2014	8,865.00	9,045.00	40	MARCELLUS
<b>9</b>	4/27/2014	8,640.00	8,822.00	40	MARCELLUS
<b>10</b>	4/27/2014	8,415.00	8,597.00	40	MARCELLUS
<b>11</b>	4/27/2014	8,190.00	8,372.00	40	MARCELLUS
<b>12</b>	4/27/2014	7,964.00	8,147.00	40	MARCELLUS

**513930 - Stimulated Stages**

<b>Stage Number</b>	<b>Stimulation Date</b>	<b>Ave Pump Rate (BPM)</b>	<b>Ave Treatment Pressure (PSI)</b>	<b>Max Breakdown Pressure (PSI)</b>	<b>ISIP (PSI)</b>	<b>Amount of Proppant (lbs)</b>	<b>Amount of Water (bbls)</b>	<b>Amount of Nitrogen/other (units)</b>
<b>Initiation Sleeve</b>	4/24/2014	15.20	8,760.00	NA	5,552	NA	1,671	0
<b>1</b>	4/25/2014	85.90	8,696.00	5,864.00	4,190	301,000	7,104	0
<b>2</b>	4/25/2014	95.32	8,466.00	7,480.00	4,154	299,800	7,122	0
<b>3</b>	4/25/2014	99.41	8,501.00	6,086.00	4,984	300,000	7,592	0
<b>4</b>	4/25/2014	100.10	8,180.00	6,602.00	5,721	299,800	7,337	0
<b>5</b>	4/26/2014	101.50	8,244.00	6,429.00	5,544	301,400	7,822	0
<b>6</b>	4/26/2014	99.38	8,446.00	6,661.00	4,811	299,500	7,378	0
<b>7</b>	4/26/2014	100.31	7,799.00	6,329.00	5,623	300,700	7,836	0
<b>8</b>	4/26/2014	100.80	8,106.00	6,407.00	5,069	300,900	7,348	0
<b>9</b>	4/27/2014	103.20	8,313.00	6,179.00	4,823	299,400	7,111	0
<b>10</b>	4/27/2014	100.56	8,324.00	6,339.00	5,217	300,600	7,409	0
<b>11</b>	4/27/2014	100.03	8,198.00	6,641.00	5,675	300,200	7,372	0
<b>12</b>	4/27/2014	101.80	7,757.00	7,725.00	4,384	301,700	7,020	0

# Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date	4/24/2014
Job End Date	4/27/2014
State	West Virginia
County	Wetzel
API Number	47-103-02856-00-00
Operator Name	EQT Production
Well Name and Number	BIG190 - 513930
Longitude	-80.60561500
Latitude	39.55209400
Datum	NAD83
Federal/Tribal Well	NO
True Vertical Depth	7,612
Total Base Water Volume (gal)	3,907,470
Total Base Non Water Volume	180,461

## Hydraulic Fracturing Fluid Composition:

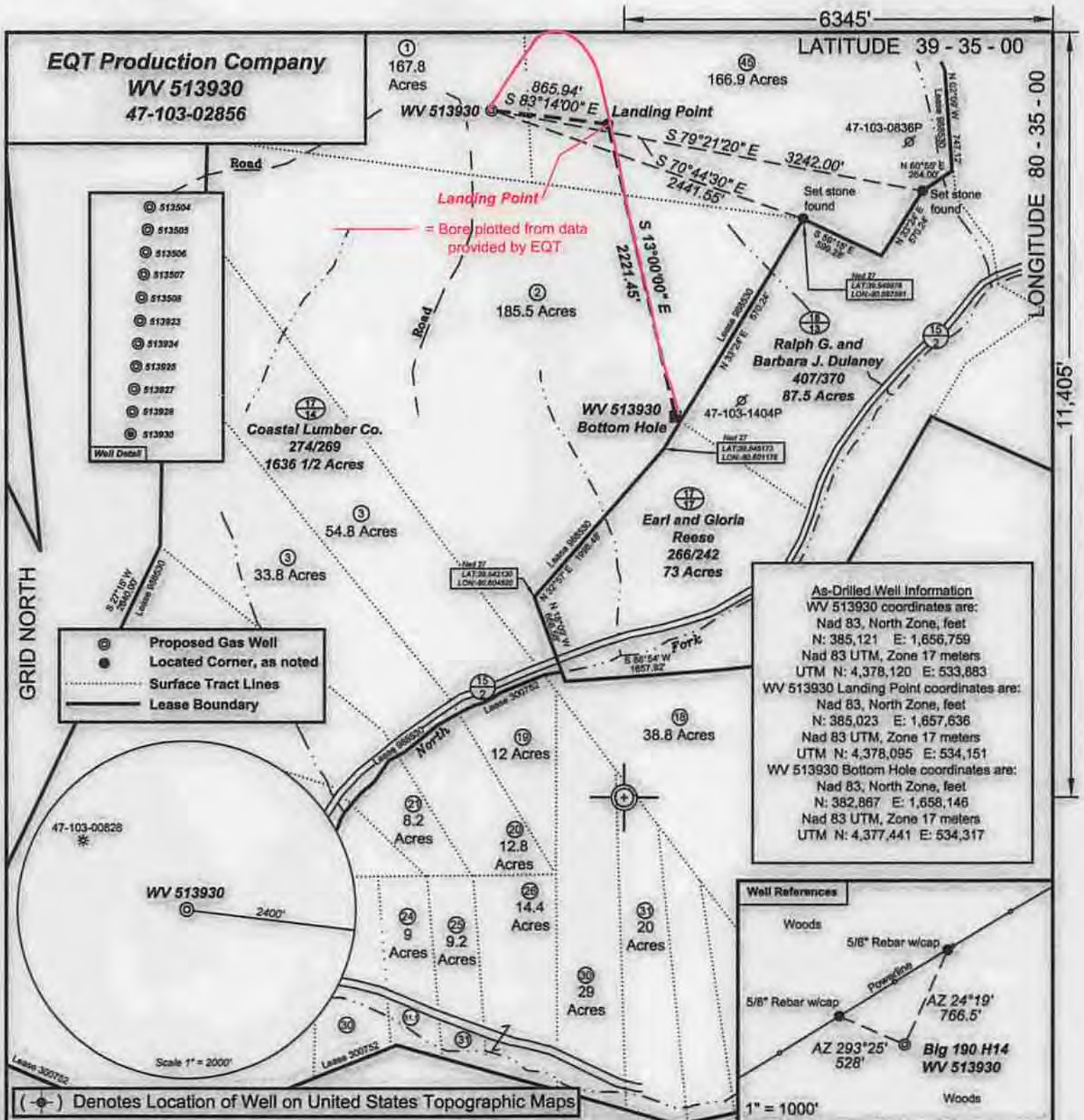
Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Nabors	Carrier	Water	7732-18-5	100.00000	89.63710	
Sand	Nabors	Proppant	Crystalline Silica	14808-60-7	100.00000	9.92780	
MX-5	Halliburton	Biocide	Sodium Nitrate	7631-99-4	60.00000	0.05730	
WFR-3B	Nabors	Reduces friction between pipe and fluid	Hydrotreated light distillates (petroleum)	64742-47-8	50.00000	0.03470	
			Ethoxylated alcohols	68551-12-2	15.00000	0.01040	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00350	
Hydrochloric Acid 15%	Nabors	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03790	
MX-8	Halliburton	Biocide	Bacteria Culture	000-00-0	100.00000	0.00970	
LSG-100L	Nabors	Adds viscosity to fluid	Solvent Naptha, petroleum, heavy aliph	64742-47-8	65.00000	0.00470	
AI-2	Nabors	Protects Casing	Propargyl Alcohol	107-19-7	40.00000	0.00017	



			Glycol Ethers	111-76-2	40.00000	0.00017
			sopropanol	67-63-0	40.00000	0.00017
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00010
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004
OB-2	Nabors		Reduces viscosity of the fluid			
			Ammonium Persulfate	7727-54-0	100.00000	0.00010
<b>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.</b>						
Super TSC-LT	Nabors		Scale Inhibitor			
			Amine Salts	NA		Non Hazardous

\* 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)



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 Department of Environmental Protection.

*Ben R. Singleton*  
P.S. 2092



FILE NO: 196-34-G-10  
 DRAWING NO: 196-10 Big 190 H14.dwg  
 SCALE: 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY: 1:2500  
 PROVEN SOURCE OF ELEVATION: NGS CORS Station

**STATE OF WEST VIRGINIA**  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: July 10 20 14  
 OPERATOR'S WELL NO. WV 513930  
 API WELL NO  
 47 - 103 - 02856  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
 LOCATION: ELEVATION: Ground N/A Proposed 1473' WATERSHED Upper Run and North Fork QUADRANGLE: Big Run  
 DISTRICT: Grant COUNTY: Wetzel  
 SURFACE OWNER: Coastal Lumber Company ACREAGE: 1,636.5  
 ROYALTY OWNER: Mills-Wetzel Land, Inc. LEASE NO: 988530 ACREAGE: 659  
 PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY)  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus ESTIMATED DEPTH: TVD=7,800 MD=12,000

WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Rex C. Ray  
 ADDRESS: 1710 Pennsylvania Avenue ADDRESS: 1710 Pennsylvania Avenue  
 Charleston, WV 25302 Charleston, WV 25302