

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

API 47 - 017 - 06729 County DODDRIDGE District SOUTHWEST
Quad OXFORD 7.5' Pad Name OXF153 Field/Pool Name _____
Farm name I.L. MORRIS Well Number 516239
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 4,337,886.3 Easting 515,746.9
Landing Point of Curve Northing 4,337,583.1 Easting 515,240.8
Bottom Hole Northing 4,336,761.2 - 762.4 Easting 515,640.8 642.4

Elevation (ft) 1141 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 12.5 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 04/28/2015 Date drilling commenced 05/05/2015 Date drilling ceased 10/1/2015
Date completion activities began 11/13/2015 Date completion activities ceased 11/17/2015
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 49,442 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1365,1407,1457 Void(s) encountered (Y/N) depths _____
Coal depth(s) ft 68 Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) N

APPROVED

NAME: Gequalin Thornton
DATE: 6/1/2016

RECEIVED
Office of Oil and Gas
Reviewed by:
APR 21 2016
WV Department of
Environmental Protection
07/01/2016
AX WS 06/29/16

API 47-017 - 06729

Farm name I.L. MORRIS

Well number 516239

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"	40'	NEW	A-500 94LB/FT	NONE	Y
Surface	17.5"	13.375"	592'	NEW	J-55 54.5LB/FT	257'	Y
Coal							
Intermediate 1	12.375"	9.625"	2966'	NEW	A-500 40LB/FT	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	10,595'	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details N/A

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	38	15.6	1.18	44.84	0	8
Surface	CLASS A	543	15.6	1.19	646.17	0	8
Coal							
Intermediate 1	CLASS A	1123	15.6	1.18	1325.14	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	905 / 450	15.2 / 15.6	1.07 / 1.84	1796.35	2995	24
Tubing							

Drillers TD (ft) 10,595' MD

Loggers TD (ft) N/A

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 3,953 MD

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- NONE

SURFACE- JOINTS: 1, 9

INTERMEDIATE- 7 CENTRALIZERS RAN AT LEAST EVERY 500' FEET

PRODUCTION- Composite body spiral centralizers installed every joint from bottom to 3,511'

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

RECEIVED
 Office of Oil and Gas
 APR 01 2016
 WV Department of
 Environmental Protection
 07/01/2016

API 47- 017 - 06729 Farm name I.L. MORRIS Well number 516239

Drilling Contractor Savanna Drilling (Rig 655)
Address 125 Industry Road City Waynesburg State PA Zip 15370

Logging Company GYRODATA
Address 601 MAYER ST City BRIDGEVILLE State PA Zip 15017

Logging Company Phoenix Technology Services
Address 1805 Brittmoore Road City Houston State TX Zip 77043

Cementing Company C&J Energy Services (Nabors)
Address 2504 Smith Creek Road City Waynesburg State PA Zip 15370

RECEIVED
Office of Oil and Gas
APR 01 2016
WV Department of
Environmental Protection

07/01/2016

516239 Final Formations (API #47-17006729)

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	445	445
SAND/SHALE	1	1	71	71
WASHINGTON COAL	71	71	72	72
SAND/SHALE	72	72	1,689.00	1,689.00
MAXTON	1,689.00	1,689.00	1,868.00	1,868.00
BIG LIME	1,868.00	1,868.00	1,929.00	1,929.00
KEENER	1,929.00	1,929.00	2,098.00	2,098.00
WEIR	2,098.00	2,098.00	2,343.00	2,343.00
GANTZ	2,343.00	2,343.00	2,439.00	2,439.00
50F	2,439.00	2,439.00	2,627.00	2,627.00
GORDON	2,627.00	2,627.00	2,864.00	2,864.00
5TH	2,864.00	2,864.00	2,906.00	2,906.00
BAYARD	2,906.00	2,906.00	3,219.00	3,219.00
WARREN	3,219.00	3,219.00	3,294.00	3,294.00
SPEECHLEY	3,294.00	3,294.00	3,827.00	3,827.00
BALLTOWN A	3,827.00	3,827.00	3,969.00	3,969.00
BALLTOWN B	3,969.00	3,969.00	4,164.00	4,160.70
BRADFORD	4,164.00	4,160.70	4,462.00	4,424.10
RILEY	4,462.00	4,424.10	5,006.00	4,848.00
BENSON	5,006.00	4,848.00	5,450.00	5,186.30
ALEXANDER	5,450.00	5,186.30	6,803.00	6,204.50
ELKS	6,803.00	6,204.50	6,959.00	6,319.30
SONYEA	6,959.00	6,319.30	7,028.00	6,366.40
MIDDLESEX	7,028.00	6,366.40	7,147.00	6,438.20
GENESEO	7,147.00	6,438.20	7,272.00	6,498.40
TULLY	7,272.00	6,498.40	7,328.00	6,519.30
HAMILTON	7,328.00	6,519.30	7,347.00	6,525.50
MARCELLUS	7,347.00	6,525.50		

RECEIVED
Office of Oil and Gas

APR 01 2016

WV Department of
Environmental Protection
07/01/2016

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/13/2015
Job End Date:	11/17/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06729-00-00
Operator Name:	EQT Production
Well Name and Number:	516239
Longitude:	-80.81783200
Latitude:	39.18999700
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,526
Total Base Water Volume (gal):	5,551,056
Total Base Non Water Volume:	0



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	FTS International	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.43556	None
Sand (Proppant)	FTS International	Proppant	Silica Substrate	14808-60-7	100.00000	10.13827	None
MC MX 437-5	Multi-Chem Group LLC	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05511	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03620	None
FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.01990	None
			Alkyl alcohol	Proprietary	10.00000	0.00663	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00332	None
CS-500-SI	FTS International	Scale inhibitor	Ethylene glycol	107-21-1	10.00000	0.00244	None
FE-100L	FTS International	Iron control	Citric acid	77-92-9	55.00000	0.00080	None
CI-150	FTS International	Acid corrosion inhibitor	Ethylene glycol	107-21-1	30.00000	0.00013	None

RECEIVED
 ENVIRONMENTAL PROTECTION
 DEPARTMENT OF
 APR 01 2016

			Isopropanol	67-63-0	30.00000	0.00013	None
			Organic amine resin salt	Proprietary	30.00000	0.00013	None
			Aromatic aldehyde	Proprietary	10.00000	0.00004	None
			Dimethylformamide	68-12-2	10.00000	0.00004	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00004	None
NE-100	FTS International	Non-emulsifier					
			Methanol	67-56-1	15.00000	0.00006	None
			2-Butoxyethanol	111-76-2	10.00000	0.00004	None
			2-Propanol	67-63-0	10.00000	0.00004	None
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00002	None
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.							

* 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)

RECEIVED
 Office of Oil and Gas
 APR 01 2016
 WV Department of
 Environmental Protection

516239- 47-017-06729-0000 - Stimulated Stages

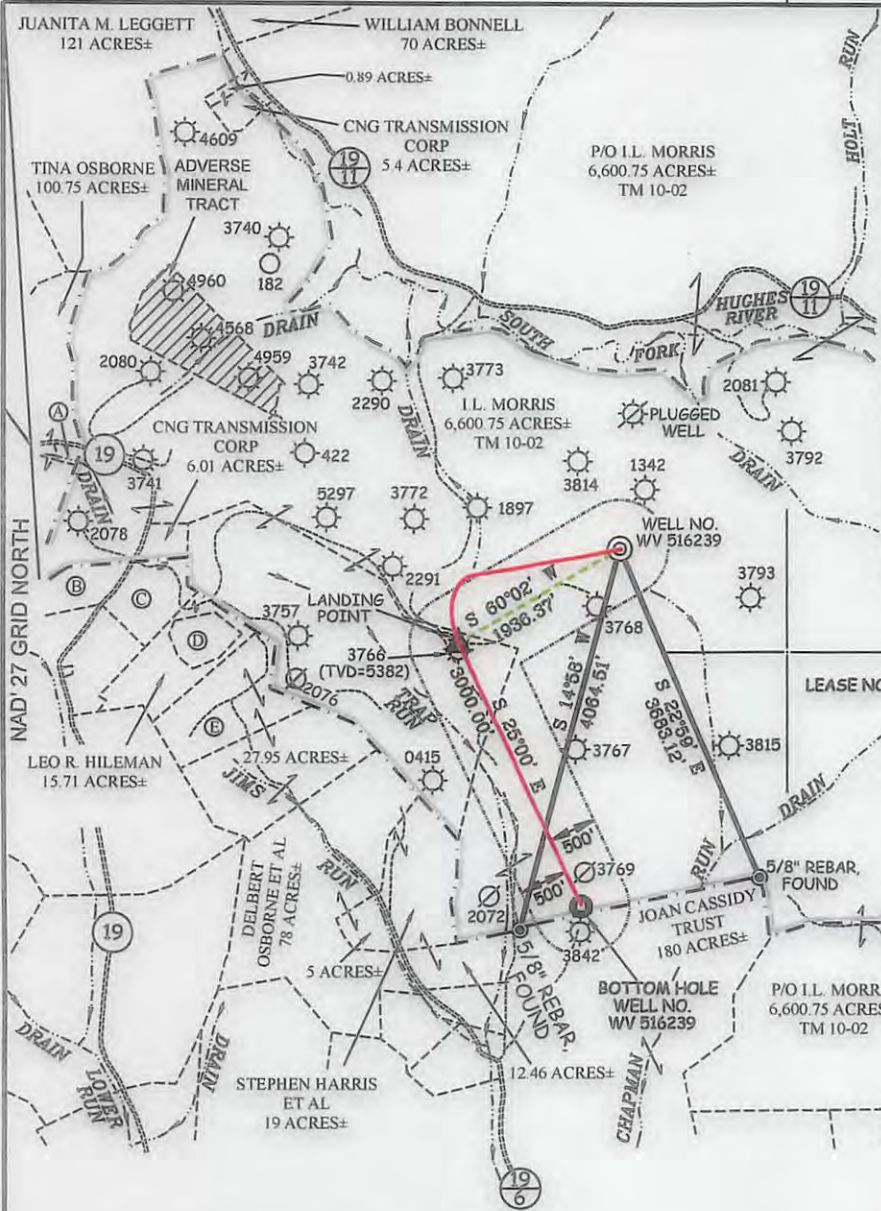
Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	11/13/2015	8.90	7,292.00	8,995.00	4,987.00	0	975	0
1	11/13/2015	90.00	8,458.00	9,000.00	2,918.00	249,906	7726	0
2	11/13/2015	97.60	8,564.00	8,958.00	3,394.00	250,847	6015	0
3	11/13/2015	94.80	8,694.00	9,104.00	3,092.00	249,587	6130	0
4	11/14/2015	97.00	8,658.00	8,860.00	3,154.00	249,608	6130	0
5	11/14/2015	96.50	8,210.00	8,863.00	3,323.00	249,718	6193	0
6	11/14/2015	100.00	8,470.00	8,894.00	3,795.00	249,534	6001	0
7	11/14/2015	100.30	8,740.00	8,968.00	3,655.00	250,057	6305	0
8	11/14/2015	97.40	8,740.00	9,028.00	3,221.00	247,099	6225	0
9	11/14/2015	97.70	8,206.00	9,107.00	3,389.00	252,611	5968	0
10	11/14/2015	99.90	8,373.00	8,964.00	3,037.00	248,957	6123	0
11	11/15/2015	100.20	8,489.00	9,029.00	3,305.00	248,863	6153	0
12	11/15/2015	100.00	8,197.00	8,908.00	3,383.00	250,703	6242	0
13	11/15/2015	99.80	8,284.00	8,913.00	3,125.00	250,480	6325	0
14	11/15/2015	96.20	8,031.00	8,605.00	3,607.00	250,501	7238	0
15	11/15/2015	99.00	7,946.00	8,733.00	3,693.00	250,133	6085	0
16	11/15/2015	100.70	7,797.00	8,841.00	3,582.00	250,513	6063	0
17	11/16/2015	100.00	8,182.00	9,331.00	4,250.00	250,383	5874	0
18	11/16/2015	100.00	7,727.00	8,457.00	4,848.00	250,409	6,079	0
19	11/16/2015	95.20	8,188.00	9,495.00	3,677.00	250,491	6,402	0
20	11/17/2015	98.60	8,418.00	9,476.00	3,991.00	249,795	5,981	0
21	11/17/2015	99.20	7,795.00	9,172.00	4,301.00	250,971	5,935	0

RECEIVED
 Office of Oil and Gas
 APR 01 2016
 WV Department of
 Environmental Protection

516239- 47-017-067290000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	10/27/2015	10,593.65	10,597.70	10	MARCELLUS
1	11/13/2015	10,449.00	10,539.00	32	MARCELLUS
2	11/13/2015	10,299.00	10,415.00	40	MARCELLUS
3	11/13/2015	10,149.00	10,271.00	40	MARCELLUS
4	11/13/2015	9,999.00	10,121.00	40	MARCELLUS
5	11/14/2015	9,849.00	9,971.00	40	MARCELLUS
6	11/14/2015	9,699.00	9,817.00	40	MARCELLUS
7	11/14/2015	9,549.00	9,669.00	40	MARCELLUS
8	11/14/2015	9,399.00	9,519.00	40	MARCELLUS
9	11/14/2015	9,248.00	9,369.00	40	MARCELLUS
10	11/14/2015	9,099.00	9,221.00	40	MARCELLUS
11	11/15/2015	8,949.00	9,071.00	40	MARCELLUS
12	11/15/2015	8,799.00	8,919.00	40	MARCELLUS
13	11/15/2015	8,649.00	8,767.00	40	MARCELLUS
14	11/15/2015	8,499.00	8,619.00	40	MARCELLUS
15	11/15/2015	8,349.00	8,471.00	40	MARCELLUS
16	11/15/2015	8,197.00	8,321.00	40	MARCELLUS
17	11/15/2015	8,049.00	8,171.00	40	MARCELLUS
18	11/16/2015	7,899.00	8,021.00	40	MARCELLUS
19	11/16/2015	7,749.00	7,871.00	40	MARCELLUS
20	11/17/2015	7,599.00	7,718.00	40	MARCELLUS
21	11/17/2015	7,449.00	7,571.00	40	MARCELLUS

RECEIVED
 Office of Oil and Gas
 APR 01 2016
 WV Department of
 Environmental Protection



LATITUDE 39°12'30"

**EQT PRODUCTION COMPANY
EAE/MAXWELL LEASE
1,891 ACRES±
WELL NO. WV 516239
(OXF-153 H8)**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 254,050.6	E. 1,626,482.0
NAD'27 GEO.	LAT-(N) 39.189997	LONG-(W) 80.817832
NAD'83 UTM (M)	N. 4,337,886.3	E. 515,746.9

LANDING POINT

NAD'27 S.P.C.(FT)	N. 253,083.3	E. 1,624,804.6
NAD'27 GEO.	LAT-(N) 39.187273	LONG-(W) 80.823699
NAD'83 UTM (M)	N. 4,337,583.1	E. 515,240.8

BOTTOM HOLE

NAD'27 S.P.C.(FT)	N. 250,364.4	E. 1,626,072.5
NAD'27 GEO.	LAT-(N) 39.179860	LONG-(W) 80.819086
NAD'83 UTM (M)	N. 4,336,761.2	E. 515,640.8

LONGITUDE 80°47'30"

LEGEND

LEASE LINE	---
SURFACE LINE	- - - - -
AS DRILLED	---
PROPOSED	---
OFFSET LINE	---
TIE LINE	---
JEEP TRAIL	---
COUNTY ROUTE	○
PROPOSED WELL	⊙
EXISTING WELL	⊙
PERMITTED WELL	⊙
TAX MAP-PARCEL	TM 00-00

A	ANDA K. HILEMAN	0.81 ACRES±
B	MARK ALLEN HILEMAN ET AL	6 ACRES±
C	ICY JONES ESTATE	12.42 ACRES±
D	JERRY HILEMAN	6.29 ACRES±
E	RICHARDS ASSET MANAGEMENT TRUST	25.21 ACRES±

**AS DRILLED COORDINATES
FOR WELL NO. WV 516239**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 254,050.6	E. 1,626,482.0
NAD'27 GEO.	LAT-(N) 39.189997	LONG-(W) 80.817832
NAD'83 UTM (M)	N. 4,337,886.3	E. 515,746.9

BOTTOM HOLE

NAD'27 S.P.C.(FT)	N. 250,368.0	E. 1,626,077.8
NAD'27 GEO.	LAT-(N) 39.179870	LONG-(W) 80.819068
NAD'83 UTM (M)	N. 4,336,762.4	E. 515,642.4

NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- AS DRILLED INFORMATION PROVIDED BY EQT.

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.

SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.

(304) 462-5634 WWW.SLSURVEYS.COM



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.
2288 Earl N. Thompson

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

DATE JANUARY 28, 20 15

REVISED OCTOBER 13, 20 15

OPERATORS WELL NO. WV 516239

API WELL NO. 47 - 017 - 06729

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7310ASDRILLED516239

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

WELL TYPE:	OIL <input type="checkbox"/>	GAS <input checked="" type="checkbox"/>	LIQUID INJECTION <input type="checkbox"/>	WASTE DISPOSAL <input type="checkbox"/>	IF "GAS" PRODUCTION <input checked="" type="checkbox"/>	STORAGE <input type="checkbox"/>	DEEP <input type="checkbox"/>	SHALLOW <input checked="" type="checkbox"/>	
LOCATION:	ELEVATION <u>1,141'(PAD ELEVATION)</u>	WATERSHED <u>CHAPMAN RUN OF SOUTH FORK HUGHES RIVER</u>	DISTRICT <u>SOUTHWEST</u>	COUNTY <u>DODDRIDGE</u>	QUADRANGLE <u>OXFORD 7.5'</u>				
SURFACE OWNER	<u>I.L. MORRIS</u>			ACREAGE	<u>6,600.75±</u>				
ROYALTY OWNER	<u>W.B.M. HEIRS PROPERTIES, LLC</u>			ACREAGE	<u>1,891±</u> 07/01/2016				
PROPOSED WORK:				LEASE NO.	<u>117513</u>				
DRILL <input checked="" type="checkbox"/>	CONVERT <input type="checkbox"/>	DRILL DEEPER <input type="checkbox"/>	REDRILL <input type="checkbox"/>	FRACTURE OR STIMULATE <input checked="" type="checkbox"/>	PLUG OFF OLD FORMATION <input type="checkbox"/>	PERFORATE NEW FORMATION <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	CLEAN OUT AND REPLUG <input type="checkbox"/>	OTHER <input type="checkbox"/>
PHYSICAL CHANGE IN WELL (SPECIFY)				TARGET FORMATION	<u>MARCELLUS</u>				
				ESTIMATED DEPTH	<u>TVD 6,532'</u>				

WELL OPERATOR <u>EQT PRODUCTION COMPANY</u>	DESIGNATED AGENT <u>REX C. RAY</u>
ADDRESS <u>115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330</u>	ADDRESS <u>115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330</u>

COUNTY NAME PERMIT