

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

API 47-017-6448 County DODDRIDGE District WEST UNION  
Quad WEST UNION 7.5' Pad Name WEU49 Field/Pool Name \_\_\_\_\_  
Farm name MARY FARR SECRIST Well Number 514395  
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 4,345,098 Easting 518,424  
Landing Point of Curve Northing 4,344,983 Easting 518,565  
Bottom Hole Northing 4,343,838 Easting 519,122

Elevation (ft) 1130 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)  
SBM 13.1 ppg - powdered hydrocarbon resin, calcium carbonate, ground almond hulls, barium sulfate, calcium chloride, lecithin liquid, organophilic clay,  
partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrocchrome tignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 03/13/2014 Date drilling commenced 06/24/2014 Date drilling ceased 1/27/2015  
Date completion activities began 6/13/2015 Date completion activities ceased 6/23/2015  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug  
Freshwater depth(s) ft 487 Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1542 Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 340, 483 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
JA  
10/16/2015

API 47-017 - 6448 Farm name MARY FARR SECRIST Well number 514395

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 40LB/FT	NONE	Y
Surface	17.5"	13.375"	1055'	NEW	J-55 54.5LB/FT	306'	Y
Coal							
Intermediate 1	12.375"	9.625"	5245'	NEW	P-110 40LB/FT	1433', 2263', 2929', 4199'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	11940	NEW	P-110 20LB/FT	None	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	38	15.6	1.18	44.84	0	8
Surface	CLASS A	890	15.6	1.19	1059.1	0	8
Coal							
Intermediate 1	CLASS A / CLASS A	370 / 340	14.2 / 15.6	1.28 / 1.18	874.8	0	8
Intermediate 2							
Intermediate 3							
Production	Class H/Class H	274/645	14.2/15.2	1.26/1.97	1612	5400	8
Tubing							

Drillers TD (ft) 11940 Loggers TD (ft) N/A  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure \_\_\_\_\_

Kick off depth (ft) 5325

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- Bow Spring Centralizers JOINTS: 1, 13, 23

INTERMEDIATE- Bow Spring Centralizers on joints: 1, 11, 23, 35, 47, 59, 71, 83, 95, 107, 191

PRODUCTION- Composite Body Matrix centralizers Used Joints: 4-166 (5013'-11917')

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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- 017 - 6448 Farm name MARY FARR SECRIST Well number 514395

Drilling Contractor Orion 17  
Address 674 Flato Road City Corpus Christi State TX Zip 78405

Logging Company ProDirectional  
Address 103 Suds Run Road City Mount Clare State WV Zip 26408

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

Cementing Company Nabors Cementing Services  
Address 2504 Smith Creek Road City Waynesburg State PA Zip 15370

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Farm Name: Mary

API 47-1706448

Farr Secrist

Well Number: 514395

Wellbores

Formations

Formation Name	Final Top MD (ftGL)	Final Top TVD (ft)	Final Btm MD (ftGL)	Final Btm TVD (ft)	
FRESH WATER ZONE		1		497	
SAND/SHALE		1		350	
COAL		350		353	
SAND/SHALE		353		493	
PITTSBURGH COAL		493		495	
SAND/SHALE		495		1,428.00	
MAXTON		1,428.00		1,861.00	
BIG LIME		1,861.00		2,156.00	
WEIR		2,156.00		2,358.00	
BEREA		2,358.00		2,363.00	
GANTZ		2,363.00		2,484.00	
50F		2,484.00		2,567.00	
30F		2,567.00		2,610.00	
GORDON		2,610.00		2,721.00	
4TH		2,721.00		2,905.00	
BAYARD		2,905.00		3,229.00	
WARREN		3,229.00		3,293.00	
SPEECHLEY		3,293.00		3,930.00	
BALLTOWN A		3,930.00		4,227.00	
BRADFORD		4,227.00		4,426.00	
RILEY		4,426.00		4,867.00	
BENSON		4,867.00		5,121.00	
ALEXANDER		5,121.00		6,334.00	6,198.70
SONYEA		6,334.00	6,198.70	6,667.00	6,491.50
MIDDLESEX		6,667.00	6,491.50	6,725.00	6,541.20
GENESSEE		6,725.00	6,541.20	6,837.00	6,624.10
GENESEO		6,837.00	6,624.10	6,899.00	6,660.30
TULLY		6,899.00	6,660.30	6,941.00	6,680.60
HAMILTON		6,941.00	6,680.60	7,008.00	6,705.20
MARCELLUS		7,008.00	6,705.20		

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**514395 - 47-017-06448-0000 - 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	6/12/2015	73.4	8,916	9,400	6,278	18,208	3948	0
1	6/12/2015	57.3	8,737	9,576	5,359	23,090	4539	0
2	6/13/2015	97.4	7,807	8,588	3,210	502,328	11978	0
3	6/13/2015	62.6	6,891	9,135	5,863	1,267	3320	0
3.01	6/13/2015	72.6	7,830	9,203	3,607	298,848	12362	0
4	6/14/2015	69.7	7,835	8,796	8,945	164,571	5253	0
4.01	6/14/2015	2.2	4,493	9,396	8,601	0	1340	0
4.02	6/15/2015	2.5	4,143	9,203	6,710	0	657	0
5	6/17/2015	12.2	5,141	6,340	4,898	0	1532	0
5.01	6/17/2015	67.4	8,130	9,324	3,816	300,761	9163	0
6	6/18/2015	87.5	7,625	8,234	3,622	300,710	7439	0
7	6/18/2015	11.4	7,661	9,295	4,393	301,988	10078	0
8	6/18/2015	99	7,982	8,386	4,908	300,068	7240	0
9	6/18/2015	99.1	7,954	8,291	3,932	301,507	7279	0
10	6/19/2015	100.5	7,720	8,189	4,508	300,875	7274	0
11	6/19/2015	100.4	7,748	8,629	4,148	299,631	7062	0
12	6/19/2015	101.5	7,567	8,497	4,490	300,224	7137	0
13	6/19/2015	99.6	8,051	9,224	3,285	298,894	7039	0
14	6/19/2015	100.3	7,698	8,255	3,623	301,327	7200	0
15	6/19/2015	100	7,540	8,855	3,155	300,123	7229	0
16	6/20/2015	98	7,766	8,920	4,445	300,686	7144	0
17	6/20/2015	60	8,875	9,244	4,483	0	3466	0
17.01	6/20/2015	100.7	8,202	10,169	4,621	301,259	7018	0
17.02	6/20/2015	8.9	9	6,640	5,082	0	3294	0
18	6/21/2015	100.3	8,000	9,819	3,606	281,353	6923	0
18.01	6/21/2015	10.4	5,684	6,752	5,274	0	2756	0
19	6/21/2015	99.5	7,851	9,173	4,049	282,435	6906	0
20	6/21/2015	91.1	7,894	8,808	3,860	298,558	7145	0
21	6/22/2015	99.1	7,808	8,685	5,567	271,412	6938	0
22	6/22/2015	99.9	7,352	8,114	5,436	299,395	7291	0
23	6/22/2015	100.1	7,420	8,984	5,615	299,291	7190	0
24	6/22/2015	100.8	7,134	8,257	5,146	299,903	7199	0
25	6/23/2015	101.8	6,974	7,964	4,959	301,432	7307	0
26	6/23/2015	100.8	7,902	9,086	4,612	107,471	4313	0
26.01	6/23/2015	101.4	7,080	8,162	4,455	193,264	4680	0
27	6/23/2015	101.1	6,556	8,884	2,621	301,427	6993	0

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**514395 - 47-017-06448-0000 - Perforations**

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	4/29/2015	11,939	11,940	10	MARCELLUS
1	6/12/2015	11,682	11,821	28	MARCELLUS
2	6/13/2015	11,532	11,652	42	MARCELLUS
3	6/13/2015	11,352	11,472	42	MARCELLUS
3.01	6/13/2015	11,324	11,472	28	MARCELLUS
4	6/13/2015	11,174	11,292	42	MARCELLUS
5	6/17/2015	10,992	11,114	42	MARCELLUS
6	6/18/2015	10,812	10,932	42	MARCELLUS
7	6/18/2015	10,632	10,752	42	MARCELLUS
7.01	6/18/2015	10,632	10,752	28	MARCELLUS
8	6/18/2015	10,403	10,520	42	MARCELLUS
9	6/18/2015	10,220	10,340	42	MARCELLUS
10	6/18/2015	10,042	10,160	42	MARCELLUS
11	6/19/2015	9,860	9,980	42	MARCELLUS
12	6/19/2015	9,680	9,802	42	MARCELLUS
13	6/19/2015	9,502	9,620	42	MARCELLUS
14	6/19/2015	9,320	9,440	42	MARCELLUS
15	6/19/2015	9,140	9,260	42	MARCELLUS
16	6/20/2015	8,960	9,080	42	MARCELLUS
17	6/20/2015	8,780	8,900	42	MARCELLUS
17.01	6/20/2015	8,747	8,900	42	MARCELLUS
18	6/21/2015	8,567	8,688	42	MARCELLUS
19	6/21/2015	8,387	8,507	42	MARCELLUS
20	6/21/2015	8,206	8,329	42	MARCELLUS
21	6/22/2015	8,047	8,149	42	MARCELLUS
22	6/22/2015	7,855	7,978	42	MARCELLUS
23	6/22/2015	7,677	7,797	42	MARCELLUS
24	6/22/2015	7,497	7,617	42	MARCELLUS
25	6/22/2015	7,317	7,437	42	MARCELLUS
26	6/23/2015	7,137	7,257	42	MARCELLUS
26.01	6/23/2015	7,137	7,169	42	MARCELLUS
27	6/23/2015	6,942	7,061	42	MARCELLUS

17.06448

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OFFICE OF OIL AND GAS



# Hydraulic Fracturing Fluid Product Component Information Disclosure

17.06448

Job Start Date:	6/13/2015
Job End Date:	6/23/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06448-00-00
Operator Name:	EQT Production
Well Name and Number:	514395
Longitude:	-80.78663700
Latitude:	39.25493000
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,705
Total Base Water Volume (gal):	5,354,202
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	84.42310	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	14.83670	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.09245	None
FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.03980	None
			Alkyl Alcohol	Proprietary	10.00000	0.01327	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00663	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.05884	None
HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55.00000	0.00858	None
			Guar gum	9000-30-0	50.00000	0.00780	None
			Surfactant	68439-51-0	2.00000	0.00031	None
			Clay	14808-60-7	2.00000	0.00031	None
CS-500-SI	FTS International	Scale inhibitor					

FE-100L	FTS International	Iron control	Ethylene glycol	107-21-1	10.00000	0.00418	None
			Citric acid	77-92-9	55.00000	0.00124	None
CI-150	FTS International	Acid Corrosion Inhibitor	Ethylene glycol	107-21-1	30.00000	0.00022	None
			Isopropanol	67-63-0	30.00000	0.00022	None
			Organic amine resin salt	Proprietary	30.00000	0.00022	None
			Aromatic aldehyde	Proprietary	10.00000	0.00007	None
			Dimethylformamide	68-12-2	10.00000	0.00007	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00007	None
APB-1	FTS International	Breaker	Ammonium persulfate	7727-54-0	95.00000	0.00022	None
NE-100	FTS International	Non-emulsifier	2-Butoxyethanol	111-76-2	10.00000	0.00005	None
			2-Propanol	67-63-0	10.00000	0.00005	None
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00003	None

17-06448

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)

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NOTES ON SURVEY

1. 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.
2. AS DRILLED INFORMATION PROVIDED BY EQT.

TOM DAVIES, ET AL  
1437.95 ACRES±

**EQT PRODUCTION COMPANY  
LEWIS MAXWELL LEASE  
2,654 ACRES±  
WELL NO. WV 514395  
(WEU49 H6)**

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

NAD'27 S.P.C.(FT) N. 277,569.6 E. 1,635,662.0  
NAD'27 GEO. LAT-(N) 39.254930 LONG-(W) 80.786636  
NAD'83 UTM (M) N. 4,345,098.0 E. 518,423.9

LANDING POINT

NAD'27 S.P.C.(FT) N. 277,183.8 E. 1,636,117.8  
NAD'27 GEO. LAT-(N) 39.253888 LONG-(W) 80.785008  
NAD'83 UTM (M) N. 4,344,982.8 E. 518,564.7

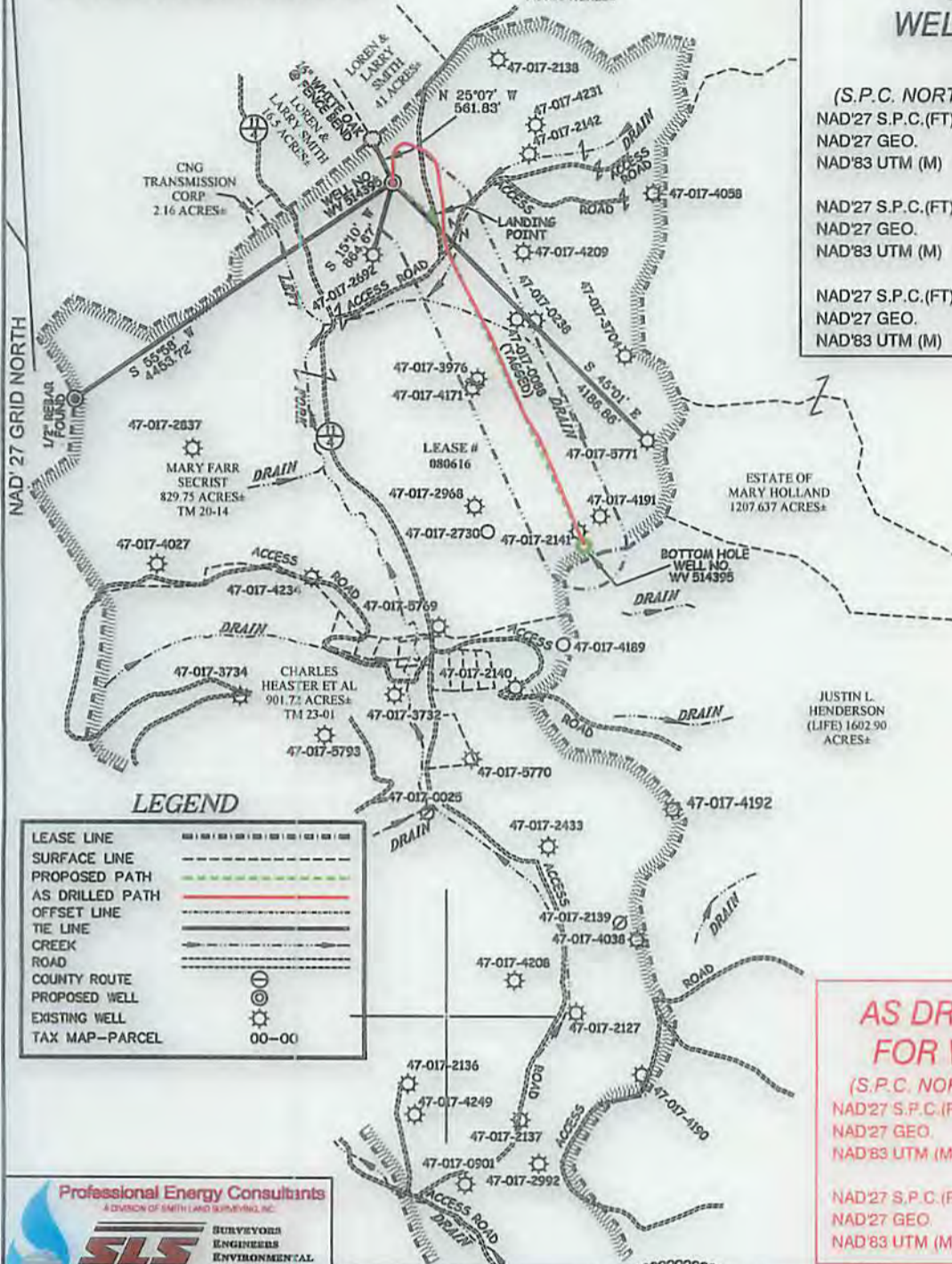
BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 273,395.4 E. 1,637,884.3  
NAD'27 GEO. LAT-(N) 39.243557 LONG-(W) 80.778580  
NAD'83 UTM (M) N. 4,343,837.7 E. 519,122.2

NAD'27 GRID NORTH

LONGITUDE 80°45'00"

13,381'



LEGEND

LEASE LINE	---
SURFACE LINE	---
PROPOSED PATH	---
AS DRILLED PATH	---
OFFSET LINE	---
TIE LINE	---
CREEK	---
ROAD	---
COUNTY ROUTE	---
PROPOSED WELL	⊙
EXISTING WELL	⊙
TAX MAP-PARCEL	00-00

**AS DRILLED COORDINATES  
FOR WELL NO. WV 514395**

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

NAD'27 S.P.C.(FT) N. 277,569.6 E. 1,635,662.0  
NAD'27 GEO. LAT-(N) 39.254930 LONG-(W) 80.786636  
NAD'83 UTM (M) N. 4,345,098.0 E. 518,423.9

BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 273,399.2 E. 1,637,890.3  
NAD'27 GEO. LAT-(N) 39.243568 LONG-(W) 80.778559  
NAD'83 UTM (M) N. 4,343,838.9 E. 519,124.0

**Professional Energy Consultants**  
A DIVISION OF SMITH LAND SURVEYING, INC.  
**SLS** SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
PROJECT MGMT.  
(304) 462-5834 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 DECEMBER 02, 20 13

REVISED 07/01/14, 07/31/14 & 09/11/15

OPERATORS WELL NO. WV 514395

API WELL NO. **47 - 017 - 06448H**  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7871AD514395  
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  GAS  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION:  
ELEVATION 1,158'(GROUND) 1,130'(PROPOSED) WATERSHED LEFT FORK OF ARNOLD CREEK  
DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE WEST UNION 7.5'  
SURFACE OWNER MARY FARR SECRIST ACREAGE 829.75±  
ROYALTY OWNER LEWIS MAXWELL HRS ACREAGE 2654± **10/16/2015**  
PROPOSED WORK:  
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 TVD 6,622'

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

COUNTY NAME

PERMIT