

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 515874

API: 47 - 085 - 10282

Submission:  Initial  Amended

Notes: Initial Report w/ Flowback

Reviewed

RECEIVED  
Office of Oil and Gas

DEC 26 2017

WV Department of  
Environmental Protection

02/16/2018

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

API 47-085-10282 County RITCHIE District CLAY  
Quad PENNSBORO 7.5' Pad Name PEN54 Field/Pool Name \_\_\_\_\_  
Farm name Jerry Morton et al Well Number 515874  
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 4,345,367.53 Easting 506,278.12  
Landing Point of Curve Northing 4,345,939.20 Easting 505,901.54  
Bottom Hole Northing 4,347,651.09 Easting 506,367.13

Elevation (ft) 1016 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 based mud 12.3 ppg, barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, sodium hydroxide, chrome lignosulfonate, calcium hydroxide, sodium acid pyrophosphate, bentonite, Methyl ester of sulfonated tannin, treated silica, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, glutaraldehyde, ground walnut shells, calcium carbonate, fibrous cellulose.

Date permit issued 06/09/2016 Date drilling commenced 07/05/2016 Date drilling ceased 07/22/2016  
Date completion activities began 9/8/2017 Date completion activities ceased 10/5/2017  
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 109',115',312',637',739',755',780' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1360' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 336',799',877',1088',1192' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
02/16/2018

API 47-085 - 10282 Farm name Jerry Morton et al Well number 515874

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"	918'	NEW	J-55 54.5LB/FT	289'	Y
Coal							
Intermediate 1	12.375"	9.625"	5249'	NEW	A-500 & P-110 40lb/ft	3421'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	14090	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set		Davis Lynch casing packer and diverter tool placed at 3402'. Two stage cement job performed.					

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	45	0	8
Surface	CLASS A	739	15.6	1.20	887	0	8
Coal							
Intermediate 1	CLASS A	259/315 & 1230	14.2/15.6 & 15.6	1.24/1.18 & 1.18	2138	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	1055 / 765	15.2 / 15.6	1.12 / 2.37	2978	2407'	72+
Tubing							

Drillers TD (ft) 14094' \_\_\_\_\_ Loggers TD (ft) N/A \_\_\_\_\_  
 Deepest formation penetrated MARCELLUS \_\_\_\_\_ Plug back to (ft) N/A \_\_\_\_\_  
 Plug back procedure N/A \_\_\_\_\_

Kick off depth (ft) 4200' \_\_\_\_\_

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: 1,9,19  
 INTERMEDIATE- RAN AT LEAST EVERY 500' FEET  
 PRODUCTION- COMPOSITE BODY CENTRALIZERS RAN EVERY JOINT FROM SHOE TO KOP

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- 085 - 10282 Farm name Jerry Morton et al Well number 515874

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					Please See Attached

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)
							Please	See Attached

Please insert additional pages as applicable.

API 47- 085 - 10282 Farm name Jerry Morton et al Well number 515874

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
Marcellus	6,287' TVD	7,922' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 1,414 psi Bottom Hole N/A psi DURATION OF TEST 87.50 hrs

OPEN FLOW Gas 13,345 mcfpd Oil N/A bpd NGL 144.8 bpd Water 1,368 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		

Please insert additional pages as applicable.

Drilling Contractor Savanna Drilling - Rig 803  
Address 125 Industry Road City Waynesburg State PA Zip 15370

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

Cementing Company HALLIBURTON ENERGY SERVICES  
Address 121 CHAMPION WAY City CANONSBURG State PA Zip 15317

Stimulating Company Keane  
Address 1245 Old Route 119 City Mount Pleasant State PA Zip 15666

Please insert additional pages as applicable.

Completed by Michael Rehl Telephone (412) 553-5815  
Signature  Title Dir Completions Date 12/21/2017

API 47- 085 - 10282 Farm name Jerry Morton et al Well number 515874

Drilling Contractor \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Logging Company \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Logging Company PRO-DIRECTIONAL  
Address 103 SUDS RUN ROAD City MT. CLARE State WV Zip 26408

Cementing Company ALLIED SERVICES  
Address 116 KIMMEL SCHOOL ROAD City SHELOCTA State PA Zip 15773

515874 47-085-10282-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	9/11/2016	14,064	14,106	10	MARCELLUS
1	9/9/2017	13,904	14,026	32	MARCELLUS
2	9/9/2017	13,704	13,866	40	MARCELLUS
3	9/9/2017	13,443	13,525	24	MARCELLUS
3	9/12/2017	13,504	13,666	40	MARCELLUS
4	9/12/2017	13,243	13,405	40	MARCELLUS
5	9/13/2017	13,043	13,205	40	MARCELLUS
6	9/13/2017	12,843	13,005	40	MARCELLUS
7	9/14/2017	12,643	12,805	40	MARCELLUS
8	9/27/2017	12,523	12,605	24	MARCELLUS
9	9/27/2017	12,218	12,380	40	MARCELLUS
10	9/28/2017	12,018	12,180	40	MARCELLUS
11	9/28/2017	11,818	11,980	40	MARCELLUS
12	9/29/2017	11,618	11,780	40	MARCELLUS
13	9/29/2017	11,418	11,580	40	MARCELLUS
14	9/29/2017	11,218	11,380	40	MARCELLUS
15	9/30/2017	11,018	11,180	40	MARCELLUS
16	9/30/2017	10,818	10,980	40	MARCELLUS
17	10/1/2017	10,618	10,780	40	MARCELLUS
18	10/1/2017	10,418	10,580	40	MARCELLUS
19	10/1/2017	10,218	10,380	40	MARCELLUS
20	10/2/2017	10,018	10,180	40	MARCELLUS
21	10/2/2017	9,818	9,980	40	MARCELLUS
22	10/3/2017	9,618	9,780	40	MARCELLUS
23	10/3/2017	9,418	9,580	40	MARCELLUS
24	10/3/2017	9,178	9,380	40	MARCELLUS
25	10/3/2017	8,803	8,965	40	MARCELLUS
26	10/4/2017	8,643	8,765	40	MARCELLUS
27	10/4/2017	8,103	8,286	40	MARCELLUS
28	10/4/2017	7,903	8,065	40	MARCELLUS

			Water	7732-18-5	89.00000	0.00088	None
			Water	7732-18-5	60.00000	0.00641	None
Other Chemical (s)	Listed Above	See Trade Name (s) List					
			Water	7732-18-5	50.00000	0.02855	
			Water	7732-18-5	60.00000	0.00641	
			Water	7732-18-5	89.00000	0.00088	
KSI-19	Keane	Scale Inhibitor					
				Listed Below			
Hydrochloric Acid (15%)	Keane	Acidizing					
				Listed Below			
BrOx	Dirk Thomas Solutions	Sodium Hypochlorite					
				Listed Below			
KWG-111L	Keane	Gel					
				Listed Below			
KWBO-2	Keane	Gel Breaker					
				Listed Below			
KFR-23	Keane	Friction Reducer					



				Listed Below			
Sand (Proppant)	Keane	Proppant					
				Listed Below			
KAI-12	Keane	Acid Corrosion Inhibitor					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

			Silica Substrate	14808-60-7	100.00000	13.38099	None
			Hydrochloric Acid	7647-01-0	15.00000	0.02389	None
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01142	None
			copolymer of 2-propenamide	69418-26-4	20.00000	0.01142	
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01142	
			copolymer of 2-propenamide	69418-26-4	20.00000	0.01142	None
			Methanol	67-56-1	30.00000	0.00590	
			Methanol	67-56-1	30.00000	0.00590	None
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.00214	
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.00214	None
			alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00114	None
			oleic acid diethanolamide	93-83-4	2.00000	0.00114	
			oleic acid diethanolamide	93-83-4	2.00000	0.00114	None
			alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00114	
			Methanol	67-56-1	90.00000	0.00022	None
			Ammonium Chloride	12125-02-9	1.50000	0.00016	None
			Ammonium Chloride	12125-02-9	1.50000	0.00016	

			oleic acid diethanolamide	93-83-4	1.50000	0.00016	None
			oleic acid diethanolamide	93-83-4	1.50000	0.00016	
			Sodium Hypochlorite	7681-52-9	16.00000	0.00016	None
			Sodium Hypochlorite	7681-52-9	16.00000	0.00016	
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00011	None
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00011	
			Guar Gum	9000-30-0	60.00000	0.00006	
			Guar Gum	9000-30-0	60.00000	0.00006	None
			Solvent Naphtha (petroleum) heavy aliph	64742-96-7	60.00000	0.00006	None
			Solvent Naphtha (petroleum) heavy aliph	64742-96-7	60.00000	0.00006	
			Sodium Hydroxide	1310-73-2	5.00000	0.00005	
			Sodium Hydroxide	1310-73-2	5.00000	0.00005	None
			Sodium Persulfate	7775-27-1	99.00000	0.00004	None
			Sodium Persulfate	7775-27-1	99.00000	0.00004	
			Isoproyl Alcohol	67-63-0	5.00000	0.00001	None
			Prop-2-yn-1-ol	107-19-7	5.00000	0.00001	None
			Xylene	1330-20-7	5.00000	0.00001	None
			Fatty Imidazoline	61790-69-0	5.00000	0.00001	None
			Alcohols, C7-9-iso-, C8- rich	68526-83-0	5.00000	0.00001	None
			Trade Secret	Proprietary	10.00000	0.00001	None
			Trade Secret	Proprietary	10.00000	0.00001	
			Ethylbenzene	100-41-4	1.00000	0.00000	None

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)

**PEN54**  
**WV 515874**  
**EQT PRODUCTION COMPANY**

SUBSURFACE EASEMENT		
HEARTWOOD FORESTLAND FUND IV LP	196.00 AC.±	TAX MAP 31 PARCEL 11

3,040'  
 2,741'  
 LATITUDE 39°17'30"  
 LONGITUDE 80°55'00"  
 4,938'  
 12,432'

**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.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000.
- AS DRILLED INFORMATION PROVIDED BY EQT.

A	JERRY MORTON ET AL	243.50 ACRES±	TM C-31-05
B	HEARTWOOD FORESTLAND FUND IV LP	185.3 ACRES±	TM C-31-14
C	DONALD & BARBARA DEEM	133.07 ACRES±	TM C-31-10
D	HEARTWOOD FORESTLAND FUND IV LP	196.90 ACRES±	TM C-31-11
E	ROGER SATTERFIELD	3 ACRES±	TM C-31-5.2
F	JOSEPH FLANAGAN ET AL	2.5 ACRES±	TM C-31-5.3
G	ANTERO TREATMENT LLC	175.85 ACRES±	TM C-31-6
H	JUDITH & JO ANN ROBINSON	106.265 ACRES±	TM C-31-22
I	VIRGINIA COTTRILL	25.5 ACRES±	TM C-31-04
J	VIRGINIA COTTRILL	55.73 ACRES±	TM C-26-56.2
K	VIRGINIA COTTRILL	57.63 ACRES±	TM C-26-56.1
L	VIRGINIA COTTRILL	84.35 ACRES±	TM C-26-56
M	WV RAILROAD MAINTENANCE AUTHORITY	48.14 ACRES±	TM C-26-19
N	WV RAILROAD MAINTENANCE AUTHORITY	P/O 1141.03 ACRES±	TM C-26-X
O	ROY & LINDA HAMMOND	77.088 ACRES±	TM C-26-57
P	JANICE WILLIAMS	111.876 ACRES±	TM C-26-58.9
Q	EQT PRODUCTION COMPANY	46.63 ACRES±	TM C-26-58
R	JANICE WILLIAMS	1.715 ACRES±	TM C-26-58.2
S	EUSTACE LAMM ET AL	2.28 ACRES±	TM C-26-20.1
T	EARL DAUGHERTY	1.80 ACRES±	TM C-26-52.1
U	JEAN & KRISTINE KNUITSEN	5.34 ACRES±	TM C-26-58.3
V	KATRINA DOTSON	1.01 ACRES±	TM C-26-58.4
W	KEVIN & MICHELE ESTEP	2.912 ACRES±	TM C-26-57.1
X	BRIAN & JULIE RICHEY	7.69 ACRES±	TM C-26-58.8
Y	FERYL & MAHLON HARRIS	8.38 ACRES±	TM C-26-58.1
Z	FERYL & MAHLON HARRIS	16.62 ACRES±	TM C-26-58.6
AA	WILLIAM & JANET BROADWATER	37.565 ACRES±	TM C-26-12
BB	CITY OF PENNSBORO	25.246 ACRES±	TM C-26-12.1
CC	CITY OF PENNSBORO	4.778 ACRES±	TM C-26-5.1
DD	MOUNTVIEW CONFERENCE CHURCH	10.41 ACRES±	TM C-26-58.5
EE	TODD G. GILLENWATER	65 ACRES±	TM C-26-11
FF	TERRY & JANET HALL	5.71 ACRES±	TM C-26-4.4
GG	CITY OF PENNSBORO	2.625 ACRES±	TM C-26-4.3
HH	P.M. MANAGEMENT COMPANY	83.022 ACRES±	TM C-26-05
II	WILLIAM & JANET BROADWATER	8.203 ACRES±	TM C-26-4.1
JJ	WILLIAM & JANET BROADWATER	50 ACRES±	TM C-26-4.2
KK	CAROL COGAR ET AL	172.44 ACRES±	TM C-32-01
LL	TODD G. GILLENWATER	10.18 ACRES±	TM C-26-11.1
MM	CARLA POLING ET AL	5.4 ACRES±	TM C-26-23
NN	CARLA POLING ET AL	11.43 ACRES±	TM C-26-22

**AS DRILLED COORDINATES (PEN54 H8)**  
 (S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT) N. 279,120.12 E. 1,595,819.44  
 NAD'27 GEO. LAT-(N) 39.257534 LONG-(W) 80.927403  
 NAD'83 UTM (M) N. 4,345,367.53 E. 506,278.12

**LANDING POINT**

NAD'27 S.P.C.(FT) N. 280,961.88 E. 1,597,896.54  
 NAD'27 GEO. LAT-(N) 39.262680 LONG-(W) 80.920171  
 NAD'83 UTM (M) N. 4,345,939.20 E. 506,901.54

**BOTTOM HOLE**

NAD'27 S.P.C.(FT) N. 286,608.85 E. 1,596,236.60  
 NAD'27 GEO. LAT-(N) 39.278110 LONG-(W) 80.926349  
 NAD'83 UTM (M) N. 4,347,651.09 E. 506,367.13

ROYALTY OWNERS		
GUY FLANAGAN ET AL	126 AC.±	LEASE NO. 1005912
MARY LEE AZELVANDRE ET AL	500 AC.±	LEASE NO. 114193
WEST VIRGINIA RAIL AUTHORITY	24.30 AC.±	LEASE NO. 1012475
CAROL A. MARSH	72 AC.±	LEASE NO. 706265
KIEDAISCH & SUMMERS ENTERPRISES LLC	2.75 AC.±	LEASE NO. 1006531

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 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. 849 *C. Victor Moyers*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE JUNE 24, 20 15  
 REVISED 02/08/16, 05/12/16, 06/23/16 & 08/03/16  
 OPERATORS WELL NO. WV 515874  
 API WELL NO. 47 - 085 - 10282H  
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8083AD515874.dwg  
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE SEE NOTE 2

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: PAD ELEVATION 1,016' WATERSHED NORTH FORK HUGHES RIVER  
 DISTRICT CLAY COUNTY RITCHIE QUADRANGLE PENNSBORO 7.5'

SURFACE OWNER JERRY MORTON ET AL ACREAGE 243.50±  
 ROYALTY OWNER ELLEN S. FRANCAVIGLIA ET AL ACREAGE 268± LEASE NO. 105403

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 6,275'

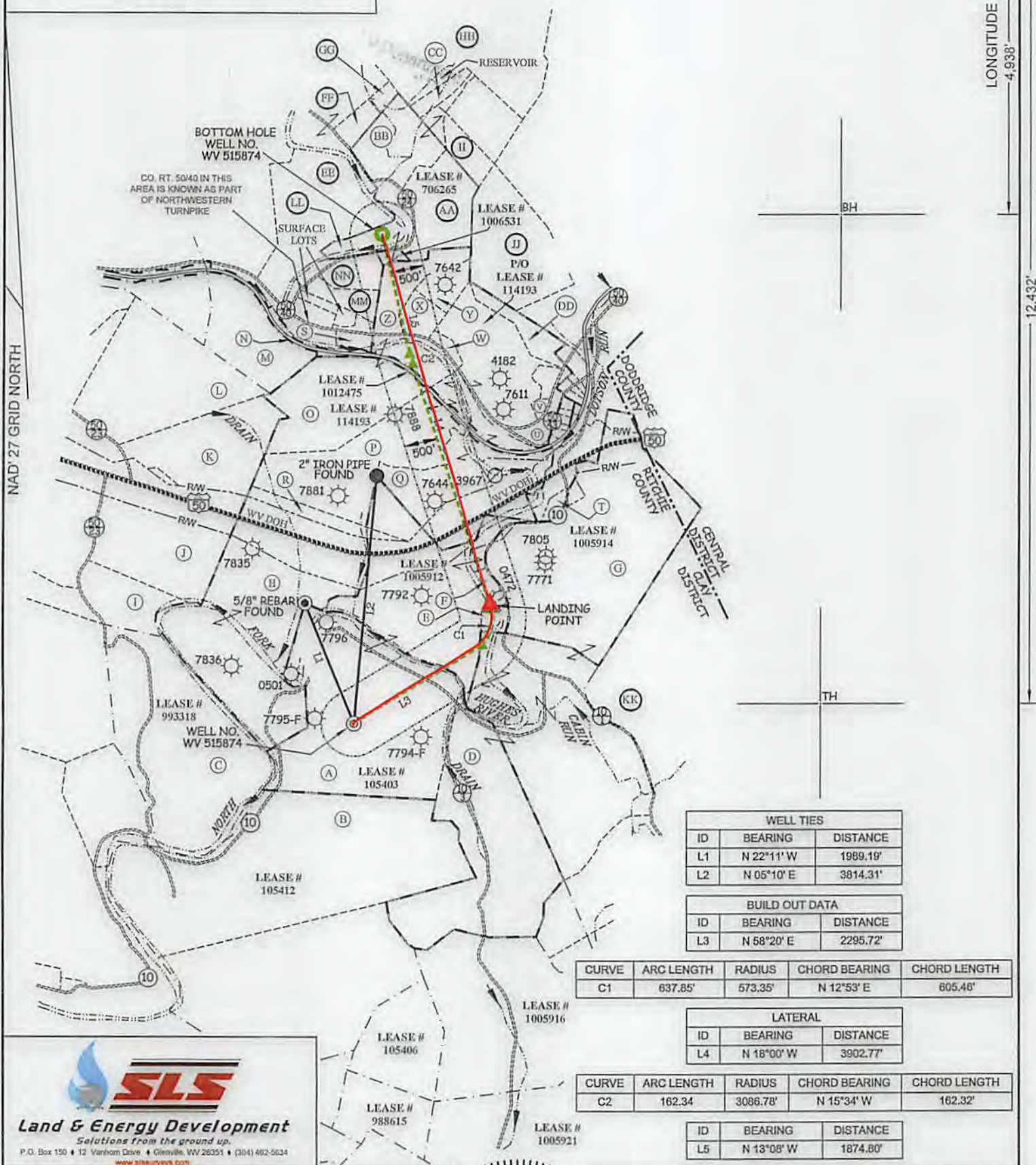
WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY  
 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

COUNTY NAME PERMIT

02/16/2016

3,040'  
2,741'  
LATITUDE 39°17'30"  
LONGITUDE 80°55'00"

**PEN54**  
**WV 515874**  
**EQT PRODUCTION COMPANY**



WELL TIES		
ID	BEARING	DISTANCE
L1	N 22°11' W	1989.19'
L2	N 05°10' E	3814.31'

BUILD OUT DATA		
ID	BEARING	DISTANCE
L3	N 58°20' E	2295.72'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	637.85'	573.35'	N 12°53' E	605.46'

LATERAL		
ID	BEARING	DISTANCE
L4	N 18°00' W	3902.77'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C2	162.34'	3086.78'	N 15°34' W	162.32'

ID	BEARING	DISTANCE
L5	N 13°08' W	1874.80'

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**AS DRILLED COORDINATES (PEN54 H8)**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
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 NAD83 UTM (M) N. 4,345,367.53 E. 508,278.12  
**LANDING POINT**  
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 NAD83 UTM (M) N. 4,345,939.20 E. 508,901.54  
**BOTTOM HOLE**  
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 NAD27 GEO. LAT.(N) 39.278110 LONG.(W) 80.926349  
 NAD83 UTM (M) N. 4,347,851.09 E. 508,387.13



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

**LEGEND**

- LEASE LINE
  - SURFACE LINE
  - PROPOSED PATH
  - AS DRILLED PATH
  - OFFSET LINE
  - TIE LINE
  - CREEK
  - ROAD
  - RAIL ROAD
  - COUNTY ROUTE
  - STATE ROUTE
  - PROPOSED WELL
  - EXISTING WELL
  - PERMITTED WELL
  - CLAY DISTRICT TAX MAP-PARCEL
- C-00-00

SCALE 1" = 2000'  
 DATE JUNE 24, 20 15  
 REVISED 02/08/16, 05/12/16, 06/23/16 & 08/03/16  
 OPERATORS WELL NO. WV 515874  
 API WELL NO. 47 — 085 — 10282H  
 STATE COUNTY PERMIT

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

DESIGNATED AGENT REX C. RAY  
 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

WELL OPERATOR EQT PRODUCTION COMPANY  
 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

COUNTY NAME PERMIT

02/16/2018