

APPROVED

WR-35
Rev. 8/23/13

Page ___ of ___

NAME: J. L. Morris
DATE: 2/10/2016

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

API 47 - 017 - 6609 County DODDRIDGE District SOUTHWEST
Quad OXFORD Pad Name OXF127 Field/Pool Name _____
Farm name I.L. MORRIS Well Number 515680
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 4,338,840 Easting 518,090
Landing Point of Curve Northing 4,338,722 Easting 518,041
Bottom Hole Northing 4,337,026 Easting 518,857

Elevation (ft) 1242 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 13.5 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 12/01/2014 Date drilling commenced 04/11/2015 Date drilling ceased 7/27/2015
Date completion activities began 10/29/2015 Date completion activities ceased 11/5/2015
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 83',394',502' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1034',1263',1386',1442' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 225' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by: W.S. AK 02/10/16
02/12/2016

API 47-017 - 6609

Farm name I.L. MORRIS

Well number 515680

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"	1042'	NEW	J-55 54.5LB/FT	288'	Y
Coal							
Intermediate 1	12.375" & 12.25"	9.625"	2970'	NEW	A-500 40LB/FT	NONE	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	13,228'	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 ²)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	909	15.6	1.20	1090.8	0	8
Coal							
Intermediate 1	CLASS A	1161	15.6	1.20	1393.2	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	555 / 880	14.2 / 15.2	1.23 / 1.95	2398.65	2982	24
Tubing							

Drillers TD (ft) 13,328 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) 5,072 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: 1,11, 21	
INTERMEDIATE- 7 CENTRALIZERS RAN AT LEAST EVERY 500' FEET	
PRODUCTION- Composite body spiral centralizers run every joint from TD to 4,008'	

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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 02/12/2016

API 47- 017 - 6609 Farm name I.L. MORRIS Well number 515680

Drilling Contractor Savanna Drilling
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 _____
Address _____ City _____ State _____ Zip _____

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

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515680 Final Formations - API 47-1706609

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	505	505
SAND/SHALE	1	1	227	227
WASHINGTON COAL	227	227	228	228
SAND/SHALE	228	228	1,713.00	1,712.80
MAXTON	1,713.00	1,712.80	1,879.00	1,877.50
BIG LIME	1,879.00	1,877.50	2,172.00	2,169.10
WEIR	2,172.00	2,169.10	2,345.00	2,342.00
BEREA	2,345.00	2,342.00	2,389.00	2,386.00
GANTZ	2,389.00	2,386.00	2,470.00	2,467.00
50F	2,470.00	2,467.00	2,580.00	2,577.00
30F	2,580.00	2,577.00	2,623.00	2,620.00
GORDON	2,623.00	2,620.00	2,727.00	2,724.00
4TH SAND	2,727.00	2,724.00	2,862.00	2,858.90
5TH SAND	2,862.00	2,858.90	2,901.00	2,897.80
BAYARD	2,901.00	2,897.80	3,235.00	3,231.60
WARREN	3,235.00	3,231.60	3,306.00	3,302.60
SPEECHLEY	3,306.00	3,302.60	3,837.00	3,833.60
BALLTOWN A	3,837.00	3,833.60	3,990.00	3,986.60
BALLTOWN B	3,990.00	3,986.60	4,179.00	4,175.60
BRADFORD	4,179.00	4,175.60	4,442.00	4,438.60
RILEY	4,442.00	4,438.60	4,871.00	4,867.60
BENSON	4,871.00	4,867.60	5,102.00	5,098.50
ALEXANDER	5,102.00	5,098.50	5,827.00	5,778.90
RHINESTREET	5,827.00	5,778.90	6,394.00	6,313.20
SONYEA	6,394.00	6,313.20	6,525.00	6,421.40
MIDDLESEX	6,525.00	6,421.40	6,591.00	6,469.00
GENESSEE	6,591.00	6,469.00	6,708.00	6,540.40
GENESE0	6,708.00	6,540.40	6,805.00	6,587.30
TULLY	6,805.00	6,587.30	6,854.00	6,606.60
HAMILTON	6,854.00	6,606.60	7,208.00	6,645.30
MARCELLUS	7,208.00	6,645.30		

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515680- 47-017-06609-0000 - 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	10/30/2015	22.2	7,722.00	9,140.00	3,635.00	0	417	0
1	10/30/2015	84.4	8,045.00	9,019.00	3,079.00	256,275	6620	0
2	10/30/2015	77.3	7,805.00	8,647.00	4,584.00	250,485	7212	0
3	10/31/2015	86.7	7,437.00	7,904.00	5,879.00	251,920	6147	0
4	10/31/2015	90.8	7,354.00	7,726.00	5,047.00	255,740	6225	0
5	10/31/2015	87.7	6,670.00	8,121.00	5,150.00	253,420	6307	0
6	10/31/2015	92.8	7,443.00	8,007.00	4,809.00	253,560	6281	0
7	10/31/2015	91.3	7,301.00	7,734.00	5,415.00	253,200	6169	0
8	10/31/2015	92.3	7,416.00	8,118.00	5,973.00	250,320	6434	0
9	11/1/2015	95	7,505.00	7,898.00	4,859.00	255,680	6172	0
10	11/1/2015	89.9	7,394.00	8,072.00	4,334.00	251,780	6211	0
11	11/1/2015	97.2	7,650.00	8,221.00	5,023.00	252,740	6217	0
12	11/1/2015	95.6	7,407.00	7,789.00	4,705.00	251,745	6225	0
13	11/1/2015	90.7	7,626.00	8,217.00	5,694.00	252,725	6052	0
14	11/1/2015	88.2	7,386.00	7,927.00	4,546.00	252,550	6085	0
15	11/2/2015	96	7,263.00	7,686.00	5,268.00	248,157	6243	0
16	11/2/2015	96	7,322.00	7,747.00	4,860.00	253,880	6216	0
17	11/2/2015	95.2	7,153.00	7,503.00	4,099.00	252,045	6344	0
18	11/2/2015	99.10	7,566.00	8,359.00	4,596.00	253,105	6,073	0
19	11/2/2015	99.80	7,497.00	7,946.00	4,048.00	249,580	6,129	0
20	11/2/2015	97.40	7,306.00	7,779.00	5,309.00	250,290	5,864	0
21	11/2/2015	99.60	7,289.00	7,570.00	5,507.00	253,660	5,969	0
22	11/3/2015	99.50	7,071.00	7,322.00	5,195.00	251,360	5,941	0
23	11/3/2015	98.90	7,137.00	7,372.00	4,402.00	249,700	6,011	0
24	11/3/2015	100.8	7,505.00	8,105.00	4,189.00	253,320	6103	0
25	11/3/2015	96.5	7,303.00	8,312.00	4,943.00	253,580	6042	0
26	11/3/2015	101.8	7,159.00	7,281.00	4,535.00	249,420	6003	0
27	11/3/2015	100.2	7,296.00	7,408.00	4,228.00	251,820	6213	0
28	11/3/2015	100.5	7,225.00	7,330.00	4,529.00	252,300	5864	0
29	11/4/2015	100.5	7,306.00	7,587.00	4,181.00	254,160	6047	0
30	11/4/2015	100.4	7,610.00	8,313.00	3,679.00	253,980	5770	0
31	11/4/2015	96.3	7,059.00	8,668.00	4,589.00	253,660	6777	0
32	11/4/2015	101.3	6,957.00	7,233.00	4,438.00	249,435	5999	0
33	11/4/2015	100.3	7,083.00	7,441.00	4,083.00	253,675	6279	0
34	11/4/2015	99.9	7,360.00	8,422.00	5,115.00	252,270	5785	0
35	11/4/2015	100.8	7,035.00	7,620.00	5,796.00	250,700	5823	0
36	11/5/2015	100.5	6,966.00	7,461.00	4,381.00	248,020	5694	0
37	11/5/2015	102.00	7,684.00	8,847.00	5,433.00	252,060	6,119	0
38	11/5/2015	100.50	7,056.00	8,121.00	4,693.00	249,580	6,006	0
39	11/5/2015	100.80	6,880.00	7,095.00	4,335.00	251,580	5,973	0
40	11/5/2015	101.70	7,143.00	7,853.00	4,858.00	252,390	6,895	0
41	11/5/2015	101.3	6,577.00	6,695.00	3,713.00	253,870	5696	0
42	11/5/2015	99	7,614.00	8,595.00	3,791.00	251,620	5716	0

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515680-47-017-06609-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	9/15/2015	13,226.00	13,228.00	10	MARCELLUS
1	10/30/2015	13,081.00	13,173.00	32	MARCELLUS
2	10/30/2015	12,931.00	13,053.00	40	MARCELLUS
3	10/30/2015	12,781.00	12,900.00	40	MARCELLUS
4	10/31/2015	12,631.00	12,753.00	40	MARCELLUS
5	10/31/2015	12,481.00	12,603.00	40	MARCELLUS
6	10/31/2015	12,331.00	12,453.00	40	MARCELLUS
7	10/31/2015	12,181.00	12,303.00	40	MARCELLUS
8	10/31/2015	12,031.00	12,153.00	40	MARCELLUS
9	11/1/2015	11,881.00	12,003.00	40	MARCELLUS
10	11/1/2015	11,731.00	11,853.00	40	MARCELLUS
11	11/1/2015	11,581.00	11,703.00	40	MARCELLUS
12	11/1/2015	11,431.00	11,553.00	40	MARCELLUS
13	11/1/2015	11,281.00	11,403.00	40	MARCELLUS
14	11/1/2015	11,135.00	11,253.00	40	MARCELLUS
15	11/1/2015	10,981.00	11,103.00	40	MARCELLUS
16	11/2/2015	10,831.00	10,953.00	40	MARCELLUS
17	11/2/2015	10,681.00	10,803.00	40	MARCELLUS
18	11/2/2015	10,531.00	10,653.00	40	MARCELLUS
19	11/2/2015	10,381.00	10,503.00	40	MARCELLUS
20	11/2/2015	10,231.00	10,353.00	40	MARCELLUS
21	11/2/2015	10,081.00	10,203.00	40	MARCELLUS
22	11/3/2015	9,931.00	10,053.00	40	MARCELLUS
23	11/3/2015	9,781.00	9,903.00	40	MARCELLUS
24	11/3/2015	9,631.00	9,753.00	40	MARCELLUS
25	11/3/2015	9,481.00	9,603.00	40	MARCELLUS
26	11/3/2015	9,331.00	9,453.00	40	MARCELLUS
27	11/3/2015	9,181.00	9,303.00	40	MARCELLUS
28	11/3/2015	9,031.00	9,153.00	40	MARCELLUS
29	11/3/2015	8,881.00	9,003.00	40	MARCELLUS
30	11/4/2015	8,731.00	8,853.00	40	MARCELLUS
31	11/4/2015	8,581.00	8,703.00	40	MARCELLUS
32	11/4/2015	8,431.00	8,553.00	40	MARCELLUS
33	11/4/2015	8,281.00	8,403.00	40	MARCELLUS
34	11/4/2015	8,131.00	8,253.00	40	MARCELLUS
35	11/4/2015	7,981.00	8,103.00	40	MARCELLUS
36	11/5/2015	7,831.00	7,953.00	40	MARCELLUS
37	11/5/2015	7,681.00	7,803.00	40	MARCELLUS
38	11/5/2015	7,531.00	7,653.00	40	MARCELLUS
39	11/5/2015	7,381.00	7,500.00	40	MARCELLUS
40	11/5/2015	7,231.00	7,353.00	40	MARCELLUS
41	11/5/2015	7,081.00	7,203.00	40	MARCELLUS
42	11/5/2015	6,931.00	7,053.00	40	MARCELLUS

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Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	10/29/2015
Job End Date:	11/5/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06609-00-00
Operator Name:	EQT Production
Well Name and Number:	515680
Longitude:	-80.79066500
Latitude:	39.19854600
Datum:	NAD83
Federal/Tribal-Well:	NO
True Vertical Depth:	6,645
Total Base Water Volume (gal):	10,851,456
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	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.19441	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	10.43218	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05700	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03005	None
FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30.00000	0.01585	None
			Alkyl Alcohol	Proprietary	10.00000	0.00528	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00264	None
EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00124	None
AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40.00000	0.00020	None
			N, N-Dimethylformamide	68-12-2	20.00000	0.00010	None
			Cinnamialdehyde	104-55-2	15.00000	0.00008	None

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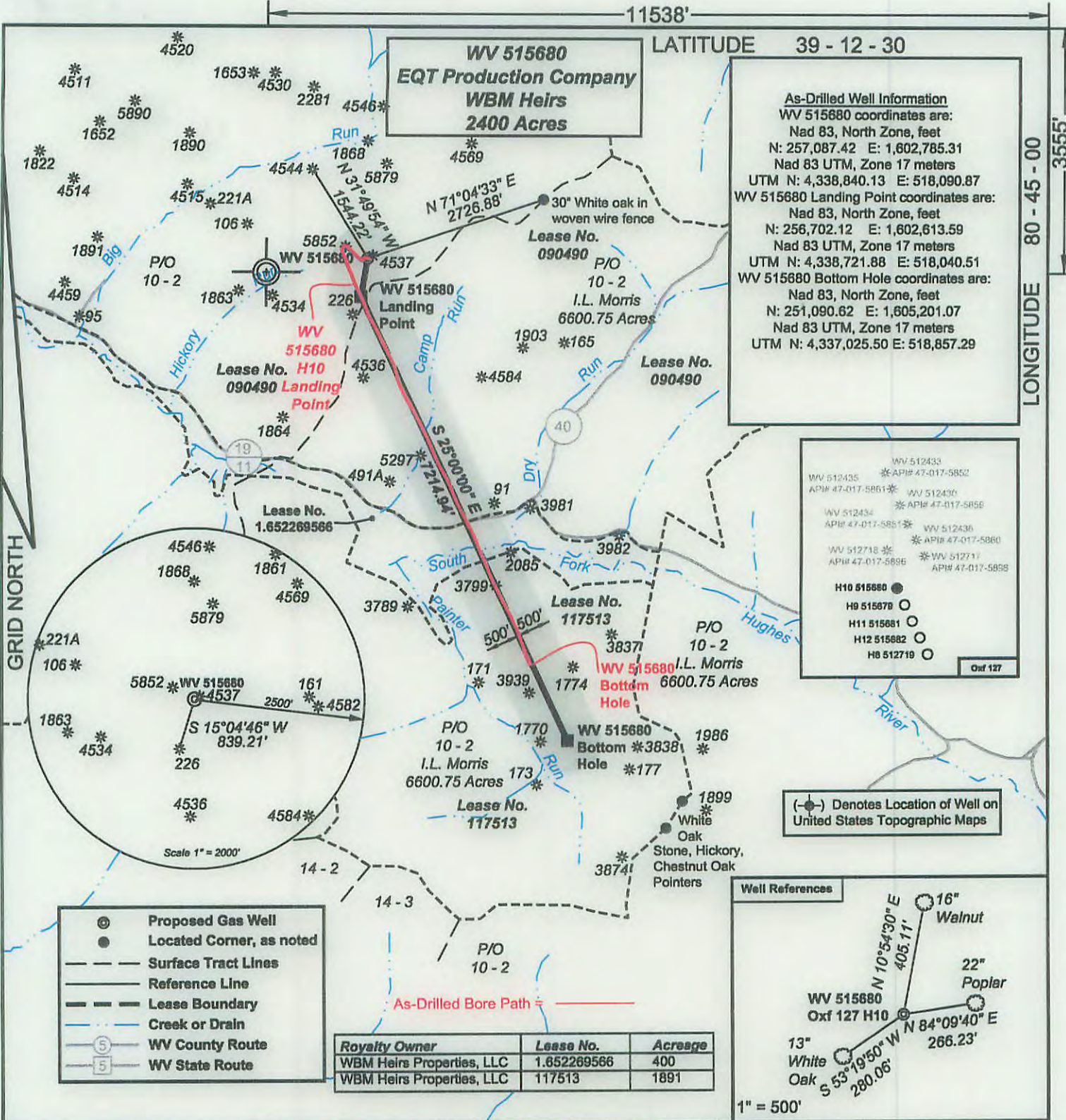
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00008	None
			2-Butoxyethanol	111-76-2	15.00000	0.00008	None
			Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00003	None
			1-Decanol	112-30-1	5.00000	0.00003	None
			Isopropyl alcohol	67-63-0	2.50000	0.00001	None
			Triethyl Phosphate	78-40-0	2.50000	0.00001	None
			1-Octanol	111-87-5	2.50000	0.00001	None
LEB-10X	Keane Group	Gel Breaker					
			Ethylene Glycol	107-21-1	30.00000	0.00001	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)

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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: 150-30-SW-14
DRAWING NO: H10
SCALE: 1" = 2000'
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: August 27 20 15
OPERATOR'S WELL NO. 515680
API WELL NO
47 - 017 - 06609
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: Existing 1240 Proposed 1242.1 WATERSHED Hickory Run of South Fork of Hughes River QUADRANGLE: Oxford
DISTRICT: Southwest COUNTY: Doddridge
SURFACE OWNER: I. L. Morris ACREAGE: 6600.75
ROYALTY OWNER: WBM Heirs Properties, LLC LEASE NO: 090490 ACREAGE: 2400
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: 1700-1800

WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Rex C. Ray
ADDRESS: 115 Professional Place PO Box 280 ADDRESS: 115 Professional Place PO Box 280
Bridgeport, WV 26330 Bridgeport, WV 26330