

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 515109

API: 47 - 103 - 03162

Submission: Initial Amended

Notes: ~~Initial Report w/ Flowback~~

Final

RECEIVED
Office of Oil and Gas
FEB 27 2018
WV Department of
Environmental Protection

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

API 47-103-03162 County WETZEL District GRANT
Quad BIG RUN Pad Name BIG360 Field/Pool Name N/A
Farm name COASTAL FOREST RESOURCES d/b/a COASTAL TIMBERLANDS COMPANY Well Number 515109
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 4,375,978.21 Easting 532,943.40
Landing Point of Curve Northing 4,376,024.56 Easting 532,809.98
Bottom Hole Northing 4,377,542.31 Easting 532,415.70

Elevation (ft) 999' 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)

Synthetic Base Mud 13.4 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 11/30/2016 Date drilling commenced 5/30/2017 Date drilling ceased 10/14/2017
Date completion activities began 11/7/2017 Date completion activities ceased 11/30/2017
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 291,353 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1972 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 280,440,661,763 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

See on file 5-10-18

Reviewed by:

DMH

RECEIVED
Office of Oil and Gas
FEB 27 2018
WV Department of
Environmental Protection

API 47- 103 - 03162 Farm name COASTAL FOREST RESOURCES dba COASTAL TIMBERLANDS COMPANY Well number 515109

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	30"	26"	40'	NEW	A-500	N/A	Y
Surface	17 1/2"	13 3/8"	857'	NEW	J-55	313'	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	2449'	NEW	A-500	932'	Y
Intermediate 2							
Intermediate 3							
Production	8 1/2"	5 1/2"	12773'	NEW	P-110	N/A	X
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	49	15.6	1.18	57.8	0	8
Surface	CLASS A	778	15.6	1.20	933.6	0	8
Coal							
Intermediate 1	CLASS A / CLASS A	676 / 200	15.6 / 15.6	1.20 / 1.20	1051.2	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS H / CLASS H	182 / 673	15.2 / 15.6	1.25 / 2.06	1613.88	X	XX
Tubing							

Drillers TD (ft) 12775' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 4400'

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: 3 CENTRALIZERS ON JOINTS 1,11,21
 INTERMEDIATE: 5 CENTRALIZERS PLACED EVERY 500'
 PRODUCTION: 162 Spiral body composite centralizers placed every joint from 12771' to 5701' MD.

RECEIVED
Office of Oil and Gas

FEB 27 2018

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 _____

WV Department of Environmental Protection

API 47- 103 - 03162 Farm name COASTAL FOREST RESOURCES dba COASTAL TIMBERLANDS COMPANY Well number 515109

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

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

RECEIVED
Office of Oil and Gas

FEB 27 2018

WV Department of
Environmental Protection

Final Formations Well #515109 API #47-103-03162

Formation Name	Drill Top MD (ftKB)	Drill Top (TVD) (ftKB)	Drill Btm MD (ftKB)	Drill Btm (TVD) (ftKB)
SAND / SHALE	1	1	280	280
WASHINGTON COAL	280	280	282	282
SAND / SHALE	282	282	440	440
COAL	440	440	444	444
SAND / SHALE	444	444	661	661
SEWICKLEY COAL	661	661	662	662
SAND / SHALE	662	662	763	763
PITTSBURGH COAL	763	763	767	767
SAND / SHALE	767	767	1,792	1,792
MAXTON	1,792	1,792	1,809	1,809
SAND / SHALE	1,809	1,809	1,943	1,943
BIG LIME	1,943	1,943	2,082	2,082
SAND / SHALE	2,082	2,082	2,105	2,105
BIG INJUN	2,105	2,105	2,206	2,206
SAND / SHALE	2,206	2,206	2,372	2,372
WEIR	2,372	2,372	2,441	2,441
SAND / SHALE	2,441	2,441	2,523	2,523
GANTZ	2,523	2,523	2,558	2,558
SAND / SHALE	2,558	2,558	2,628	2,628
FIFTY FOOT	2,628	2,628	2,656	2,656
SAND / SHALE	2,656	2,656	2,784	2,784
THIRTY FOOT	2,784	2,784	2,798	2,798
SAND / SHALE	2,798	2,798	2,800	2,800
GORDON	2,800	2,800	2,846	2,846
SAND / SHALE	2,846	2,846	2,886	2,886
FORTH SAND	2,886	2,886	2,897	2,897
SAND / SHALE	2,897	2,897	3,018	3,018
BAYARD	3,018	3,018	3,043	3,043
SAND / SHALE	3,043	3,043	3,466	3,466
WARREN	3,466	3,466	3,523	3,523
SAND / SHALE	3,523	3,523	3,620	3,620
SPEECHLEY	3,620	3,620	3,654	3,654
SAND / SHALE	3,654	3,654	3,973	3,973
BALLTOWN A	3,973	3,973	4,339	4,339
SAND / SHALE	4,339	4,339	4,461	4,461
RILEY	4,461	4,461	4,500	4,500
BENSON	5,116	5,116	5,168	5,168
SAND / SHALE	5,168	5,168	5,456	5,456
ALEXANDER	5,456	5,456	5,495	5,495
ELKS	5,495	5,495	6,823	6,691
SONYEA	6,823	6,691	6,967	6,815
MIDDLESEX	6,967	6,815	7,048	6,879
GENESEE	7,048	6,879	7,160	6,955
GENESEO	7,160	6,955	7,215	6,986
TULLY	7,215	6,986	7,248	7,004
HAMILTON	7,248	7,004	7,503	7,089
MARCELLUS	7,503	7,089	12,775	7,061

RECEIVED
 Office of Oil and Gas
 FEB 27 2018
 WV Department of Environmental Protection



Where energy meets innovation.

EQT PRODUCTION

Wetzel County, WV

BIG 360

Well #515109 -MRC - Slot 515109

API# 47-103-03162

Main

Design: 515109 As Drilled

Standard Survey Report

13 October, 2017

RECEIVED
Office of Oil and Gas

FEB 27 2018

WV Department of
Environmental Protection



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services LP
Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #515109 -MRC - Slot 515109
Project:	Wetzel County, WV	TVD Reference:	KB @23' @ 1022.0usft
Site:	BIG 360	MD Reference:	KB @23' @ 1022.0usft
Well:	Well #515109 -MRC	North Reference:	Grid
Wellbore:	Main	Survey Calculation Method:	Minimum Curvature
Design:	515109 As Drilled	Database:	Compass 5000 NER

Project	Wetzel County, WV		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site	BIG 360				
Site Position:		Northing:	378,106.49 usft	Latitude:	39° 31' 57.892 N
From:	Map	Easting:	1,684,996.84 usft	Longitude:	80° 37' 0.648 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.71 °

Well	Well #515109 -MRC - Slot 515109					
Well Position	+N/-S	0.0 usft	Northing:	378,106.49 usft	Latitude:	39° 31' 57.892 N
	+E/-W	0.0 usft	Easting:	1,684,996.84 usft	Longitude:	80° 37' 0.648 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	999.0 usft

Wellbore	Main				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/5/2017	-8.20	66.85	52,302

Design	515109 As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0		342.26

Survey Program	Date	10/13/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	5,561.0	Gyrodata Gyro (Main)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
5,654.0	12,775.0	Phoenix MWD Survey (Main)	MWD+HDGM	OWSG Rev.2 MWD + HDGM	

RECEIVED
Office of Oil and Gas
FEB 27 2018

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.10	311.34	100.0	0.1	-0.1	0.1	0.10	0.10	0.00	
200.0	0.14	311.61	200.0	0.2	-0.2	0.3	0.04	0.04	0.27	
300.0	0.14	243.34	300.0	0.2	-0.4	0.3	0.16	0.00	-68.27	
400.0	0.11	262.39	400.0	0.2	-0.6	0.3	0.05	-0.03	19.05	
500.0	0.14	12.02	500.0	0.3	-0.7	0.5	0.21	0.03	109.63	
600.0	0.17	16.66	600.0	0.5	-0.6	0.7	0.03	0.03	4.64	
700.0	0.15	20.01	700.0	0.8	-0.5	0.9	0.02	-0.02	3.35	
800.0	0.11	15.58	800.0	1.0	-0.5	1.1	0.04	-0.04	-4.43	
900.0	0.75	123.77	900.0	0.7	0.1	0.7	0.79	0.64	108.19	

WV Department of Environmental Protection

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #515109 -MRC - Slot 515109
Project:	Wetzel County, WV	TVD Reference:	KB @23' @ 1022.0usft
Site:	BIG 360	MD Reference:	KB @23' @ 1022.0usft
Well:	Well #515109 -MRC	North Reference:	Grid
Wellbore:	Main	Survey Calculation Method:	Minimum Curvature
Design:	515109 As Drilled	Database:	Compass 5000 NER

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	1.01	117.13	1,000.0	0.0	1.4	-0.5	0.28	0.26	-6.64
1,100.0	0.96	116.76	1,100.0	-0.8	3.0	-1.7	0.05	-0.05	-0.37
1,200.0	0.78	108.36	1,200.0	-1.4	4.4	-2.7	0.22	-0.18	-8.40
1,300.0	0.71	107.25	1,299.9	-1.8	5.6	-3.4	0.07	-0.07	-1.11
1,400.0	0.76	109.42	1,399.9	-2.2	6.8	-4.2	0.06	0.05	2.17
1,500.0	0.84	111.15	1,499.9	-2.7	8.1	-5.0	0.08	0.08	1.73
1,600.0	0.82	120.33	1,599.9	-3.3	9.4	-6.0	0.13	-0.02	9.18
1,700.0	0.65	127.73	1,699.9	-4.0	10.5	-7.0	0.19	-0.17	7.40
1,800.0	0.65	128.85	1,799.9	-4.7	11.4	-8.0	0.01	0.00	1.12
1,900.0	0.65	123.65	1,899.9	-5.4	12.3	-8.9	0.06	0.00	-5.20
2,000.0	0.53	130.54	1,999.9	-6.0	13.1	-9.7	0.14	-0.12	6.89
2,100.0	0.52	127.78	2,099.9	-6.6	13.8	-10.5	0.03	-0.01	-2.76
2,200.0	0.46	131.59	2,199.9	-7.1	14.5	-11.2	0.07	-0.06	3.81
2,300.0	0.25	133.17	2,299.9	-7.6	14.9	-11.7	0.21	-0.21	1.58
2,400.0	0.22	131.04	2,399.9	-7.8	15.2	-12.1	0.03	-0.03	-2.13
2,500.0	0.19	128.38	2,499.9	-8.1	15.5	-12.4	0.03	-0.03	-2.66
2,600.0	0.24	263.50	2,599.9	-8.2	15.4	-12.5	0.40	0.05	135.12
2,700.0	0.48	292.46	2,699.9	-8.0	14.8	-12.2	0.29	0.24	28.96
2,800.0	0.64	299.84	2,799.9	-7.6	14.0	-11.5	0.18	0.16	7.38
2,900.0	0.80	307.56	2,899.9	-6.9	12.9	-10.5	0.19	0.16	7.72
3,000.0	0.75	305.23	2,999.9	-6.1	11.8	-9.4	0.06	-0.05	-2.33
3,100.0	0.75	301.65	3,099.8	-5.4	10.8	-8.4	0.05	0.00	-3.58
3,200.0	0.75	300.93	3,199.8	-4.7	9.6	-7.4	0.01	0.00	-0.72
3,300.0	0.68	308.03	3,299.8	-4.0	8.6	-6.4	0.11	-0.07	7.10
3,400.0	0.48	315.72	3,399.8	-3.3	7.9	-5.6	0.21	-0.20	7.69
3,500.0	0.48	311.77	3,499.8	-2.8	7.2	-4.8	0.03	0.00	-3.95
3,600.0	0.53	305.29	3,599.8	-2.2	6.6	-4.1	0.08	0.05	-6.48
3,700.0	0.63	301.05	3,699.8	-1.7	5.7	-3.3	0.11	0.10	-4.24
3,800.0	0.67	307.83	3,799.8	-1.0	4.8	-2.4	0.09	0.04	6.78
3,900.0	0.70	304.92	3,899.8	-0.3	3.8	-1.5	0.05	0.03	-2.91
4,000.0	0.56	306.49	3,999.8	0.3	2.9	-0.6	0.14	-0.14	1.57
4,100.0	0.54	294.73	4,099.8	0.8	2.1	0.1	0.11	-0.02	-11.76
4,200.0	0.23	331.56	4,199.8	1.2	1.6	0.7	0.38	-0.31	36.83
4,300.0	0.22	355.97	4,299.8	1.6	1.5	1.0	0.10	-0.01	24.41
4,400.0	0.21	11.78	4,399.8	1.9	1.5	1.4	0.06	-0.01	15.81
4,500.0	0.36	82.58	4,499.8	2.2	1.8	1.5	0.35	0.15	70.80
4,600.0	0.50	100.21	4,599.8	2.1	2.6	1.2	0.19	0.14	17.63
4,700.0	0.47	98.37	4,699.8	2.0	3.4	0.8	0.03	-0.03	-1.84
4,800.0	0.47	58.36	4,799.8	2.1	4.2	0.8	0.32	0.00	-40.01
4,900.0	0.47	78.40	4,899.8	2.4	4.9	0.8	0.16	0.00	20.04
5,000.0	0.65	119.17	4,999.8	2.2	5.8	0.4	0.43	0.18	40.77
5,100.0	0.59	126.51	5,099.8	1.7	6.7	-0.5	0.10	-0.06	7.34
5,200.0	0.29	131.51	5,199.8	1.2	7.3	-1.1	0.30	-0.30	5.00

RECEIVED
Office of Oil and Gas
FEB 27 2018
WV Department of Environmental Protection



Phoenix Technology Services LP
Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #515109 -MRC - Slot 515109
Project:	Wetzel County, WV	TVD Reference:	KB @23' @ 1022.0usft
Site:	BIG 360	MD Reference:	KB @23' @ 1022.0usft
Well:	Well #515109 -MRC	North Reference:	Grid
Wellbore:	Main	Survey Calculation Method:	Minimum Curvature
Design:	515109 As Drilled	Database:	Compass 5000 NER

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,300.0	0.32	111.96	5,299.8	0.9	7.8	-1.5	0.11	0.03	-19.55	
5,400.0	0.23	111.90	5,399.8	0.7	8.2	-1.8	0.09	-0.09	-0.06	
5,500.0	0.11	121.88	5,499.8	0.6	8.5	-2.0	0.12	-0.12	9.98	
5,561.0	0.06	100.82	5,560.8	0.6	8.6	-2.1	0.10	-0.08	-34.52	
Tie In										
5,654.0	0.16	83.11	5,653.8	0.6	8.7	-2.1	0.11	0.11	-19.04	
First Phoenix MWD Survey										
5,686.0	1.09	156.93	5,685.8	0.3	8.9	-2.4	3.30	2.91	230.69	
5,696.0	2.27	171.07	5,695.8	0.0	9.0	-2.7	12.39	11.77	141.40	
KOP As-Drilled: 5696'MD/5695.8'TVD										
5,717.0	4.84	177.71	5,716.7	-1.3	9.1	-4.0	12.39	12.25	31.62	
5,749.0	8.86	181.32	5,748.5	-5.1	9.1	-7.6	12.63	12.56	11.28	
5,780.0	12.64	184.85	5,778.9	-10.9	8.7	-13.0	12.37	12.19	11.39	
5,812.0	15.29	187.28	5,810.0	-18.5	7.9	-20.1	8.48	8.28	7.59	
5,843.0	17.90	188.21	5,839.7	-27.3	6.7	-28.1	8.46	8.42	3.00	
5,874.0	20.96	188.91	5,868.9	-37.5	5.2	-37.3	9.90	9.87	2.26	
5,906.0	24.16	189.05	5,898.5	-49.6	3.2	-48.3	10.00	10.00	0.44	
5,937.0	26.63	189.52	5,926.5	-62.7	1.1	-60.1	7.99	7.97	1.52	
5,969.0	28.70	189.86	5,954.8	-77.4	-1.4	-73.3	6.49	6.47	1.06	
6,000.0	31.01	190.16	5,981.7	-92.6	-4.1	-86.9	7.47	7.45	0.97	
6,032.0	33.64	190.00	6,008.7	-109.4	-7.1	-102.1	8.22	8.22	-0.50	
6,064.0	37.14	190.58	6,034.8	-127.7	-10.4	-118.4	10.99	10.94	1.81	
6,095.0	40.67	190.83	6,058.9	-146.8	-14.0	-135.5	11.40	11.39	0.81	
6,126.0	42.66	190.92	6,082.1	-167.0	-17.9	-153.6	6.42	6.42	0.29	
6,220.0	40.63	188.89	6,152.3	-228.5	-28.7	-209.0	2.59	-2.16	-2.16	
6,252.0	40.28	188.15	6,176.7	-249.1	-31.7	-227.6	1.86	-1.09	-2.31	
6,283.0	39.50	188.91	6,200.5	-268.7	-34.7	-245.4	2.97	-2.52	2.45	
6,315.0	36.69	190.69	6,225.6	-288.2	-38.0	-262.9	9.43	-8.78	5.56	
6,346.0	32.76	193.45	6,251.1	-305.5	-41.7	-278.2	13.65	-12.68	8.90	
6,378.0	29.62	196.78	6,278.5	-321.5	-46.0	-292.2	11.19	-9.81	10.41	
6,409.0	26.45	199.88	6,305.9	-335.3	-50.6	-303.9	11.25	-10.23	10.00	
6,440.0	24.32	202.83	6,333.9	-347.7	-55.4	-314.3	7.99	-6.87	9.52	
6,472.0	22.41	208.14	6,363.2	-359.1	-60.8	-323.5	8.88	-5.97	16.59	
6,503.0	20.72	212.83	6,392.1	-368.9	-66.6	-331.1	7.78	-5.45	15.13	
6,534.0	20.39	218.33	6,421.1	-377.8	-72.9	-337.6	6.32	-1.06	17.74	
6,566.0	20.15	223.57	6,451.1	-386.2	-80.2	-343.4	5.72	-0.75	16.38	
6,597.0	19.66	228.26	6,480.3	-393.5	-87.7	-348.1	5.39	-1.58	15.13	
6,629.0	18.80	238.29	6,510.5	-399.8	-96.1	-351.5	10.65	-2.69	31.34	
6,660.0	18.42	248.40	6,539.9	-404.2	-104.9	-353.0	10.47	-1.23	32.61	
6,692.0	18.43	256.97	6,570.2	-407.2	-114.6	-353.0	8.46	0.03	26.78	
6,723.0	20.12	269.59	6,599.5	-408.4	-124.7	-351.0	14.47	5.45	40.71	
6,755.0	22.94	279.98	6,629.3	-407.3	-136.3	-346.4	14.79	8.81	32.47	
6,786.0	24.69	285.38	6,657.7	-404.6	-148.5	-340.1	9.01	5.65	17.42	
6,818.0	26.18	289.44	6,686.6	-400.4	-161.6	-332.2	7.17	4.66	12.69	

RECEIVED
Office of Oil and Gas
FEB 27 2018
Department of Environmental Protection



Phoenix Technology Services LP

Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #515109 -MRC - Slot 515109
Project:	Wetzel County, WV	TVD Reference:	KB @23' @ 1022.0usft
Site:	BIG 360	MD Reference:	KB @23' @ 1022.0usft
Well:	Well #515109 -MRC	North Reference:	Grid
Wellbore:	Main	Survey Calculation Method:	Minimum Curvature
Design:	515109 As Drilled	Database:	Compass 5000 NER

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,849.0	27.54	295.55	6,714.2	-395.1	-174.6	-323.1	9.92	4.39	19.71	
6,881.0	29.60	301.22	6,742.3	-387.8	-188.0	-312.1	10.64	6.44	17.72	
6,912.0	31.42	307.61	6,769.0	-378.9	-200.9	-299.6	11.99	5.87	20.61	
6,944.0	33.45	312.46	6,796.1	-367.8	-214.1	-285.1	10.31	6.34	15.16	
6,975.0	35.20	315.83	6,821.7	-355.6	-226.6	-269.7	8.33	5.65	10.87	
7,006.0	37.55	320.28	6,846.6	-342.0	-238.9	-252.9	11.40	7.58	14.35	
7,038.0	40.62	324.21	6,871.5	-326.0	-251.2	-234.0	12.32	9.59	12.28	
7,069.0	43.41	326.97	6,894.5	-308.9	-262.9	-214.1	10.79	9.00	8.90	
7,101.0	46.90	329.28	6,917.1	-289.6	-274.9	-192.1	12.05	10.91	7.22	
7,132.0	50.24	330.85	6,937.6	-269.5	-286.5	-169.4	11.42	10.77	5.06	
7,164.0	53.18	332.22	6,957.4	-247.4	-298.4	-144.7	9.78	9.19	4.28	
7,195.0	56.04	332.76	6,975.3	-225.0	-310.1	-119.8	9.33	9.23	1.74	
7,227.0	58.46	334.22	6,992.7	-200.9	-322.1	-93.2	8.48	7.56	4.56	
7,258.0	59.90	336.01	7,008.5	-176.8	-333.3	-66.8	6.79	4.65	5.77	
7,289.0	61.32	337.32	7,023.7	-152.0	-344.0	-39.9	5.88	4.58	4.23	
7,321.0	63.54	338.57	7,038.6	-125.7	-354.6	-11.6	7.75	6.94	3.91	
7,352.0	67.56	339.43	7,051.4	-99.3	-364.7	16.5	13.21	12.97	2.77	
7,384.0	71.68	341.64	7,062.5	-71.0	-374.7	46.5	14.41	12.88	6.91	
7,415.0	74.62	342.93	7,071.5	-42.8	-383.8	76.2	10.29	9.48	4.16	
7,447.0	77.36	344.26	7,079.3	-13.0	-392.5	107.2	9.46	8.56	4.16	
7,478.0	80.19	345.20	7,085.3	16.3	-400.5	137.6	9.60	9.13	3.03	
7,510.0	82.28	345.79	7,090.2	46.9	-408.4	169.1	6.78	6.53	1.84	
7,541.0	84.30	346.74	7,093.8	76.8	-415.8	199.9	7.19	6.52	3.06	
7,573.0	86.58	347.17	7,096.3	107.9	-423.0	231.6	7.25	7.13	1.34	
7,626.0	90.71	345.97	7,097.6	159.4	-435.3	284.5	8.11	7.79	-2.26	
LP As-Drilled: 7626'MD/7097.6'TVD - Purcell Target										
7,635.0	91.41	345.77	7,097.4	168.2	-437.5	293.4	8.11	7.79	-2.26	
7,729.0	90.01	344.70	7,096.3	259.1	-461.4	387.3	1.87	-1.49	-1.14	
7,823.0	88.87	343.61	7,097.2	349.5	-487.1	481.3	1.68	-1.21	-1.16	
7,918.0	88.65	344.80	7,099.2	440.9	-512.9	576.2	1.27	-0.23	1.25	
8,012.0	89.36	346.02	7,100.9	531.8	-536.6	670.0	1.50	0.76	1.30	
8,107.0	90.10	344.87	7,101.3	623.8	-560.5	764.9	1.44	0.78	-1.21	
8,201.0	89.35	345.45	7,101.8	714.6	-584.5	858.7	1.01	-0.80	0.62	
8,292.0	89.72	345.60	7,102.5	802.7	-607.3	949.6	0.44	0.40	0.17	
Deepest Point @ 8292'MD/7102.5'TVD										
8,295.0	89.73	345.61	7,102.5	805.6	-608.0	952.6	0.44	0.40	0.17	
8,389.0	91.35	348.39	7,101.6	897.2	-629.2	1,046.2	3.42	1.72	2.96	
8,483.0	90.27	348.28	7,100.3	989.3	-648.2	1,139.7	1.15	-1.15	-0.12	
8,578.0	90.65	349.54	7,099.5	1,082.5	-666.5	1,234.1	1.39	0.40	0.17	
8,672.0	89.93	348.44	7,099.1	1,174.8	-684.4	1,327.4	1.40	-0.77	-1.17	
8,766.0	90.21	345.34	7,099.0	1,266.3	-705.7	1,421.1	3.31	0.30	-3.30	
8,860.0	90.99	345.56	7,098.0	1,357.3	-729.3	1,514.9	0.86	0.83	0.23	
8,954.0	90.16	345.95	7,097.0	1,448.4	-752.5	1,608.8	0.98	-0.88	0.23	

RECEIVED
Office of Oil and Gas
FEB 27 2018
0.41 WV Department of
Environmental Protection



Phoenix Technology Services LP
Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #515109 -MRC - Slot 515109
Project:	Wetzel County, WV	TVD Reference:	KB @23' @ 1022.0usft
Site:	BIG 360	MD Reference:	KB @23' @ 1022.0usft
Well:	Well #515109 -MRC	North Reference:	Grid
Wellbore:	Main	Survey Calculation Method:	Minimum Curvature
Design:	515109 As Drilled	Database:	Compass 5000 NER

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
9,048.0	90.21	345.19	7,096.7	1,539.4	-775.9	1,702.6	0.81	0.05	-0.81	
9,143.0	90.65	343.82	7,096.0	1,631.0	-801.3	1,797.5	1.51	0.46	-1.44	
9,237.0	89.10	343.58	7,096.2	1,721.2	-827.7	1,891.5	1.67	-1.65	-0.26	
9,332.0	89.16	343.49	7,097.7	1,812.3	-854.6	1,986.5	0.11	0.06	-0.09	
9,426.0	88.58	344.88	7,099.5	1,902.7	-880.2	2,080.4	1.60	-0.62	1.48	
9,521.0	89.72	346.12	7,100.9	1,994.6	-904.0	2,175.2	1.77	1.20	1.31	
9,615.0	91.62	345.35	7,099.8	2,085.7	-927.1	2,269.0	2.18	2.02	-0.82	
9,710.0	92.67	347.28	7,096.3	2,178.0	-949.6	2,363.7	2.31	1.11	2.03	
9,804.0	91.44	345.96	7,092.9	2,269.4	-971.3	2,457.4	1.92	-1.31	-1.40	
9,898.0	89.98	346.10	7,091.7	2,360.6	-994.0	2,551.2	1.56	-1.55	0.15	
9,993.0	89.47	347.07	7,092.2	2,453.0	-1,016.1	2,645.9	1.15	-0.54	1.02	
10,087.0	90.47	348.48	7,092.2	2,544.8	-1,036.0	2,739.5	1.84	1.06	1.50	
10,181.0	90.13	347.83	7,091.7	2,636.8	-1,055.3	2,833.0	0.78	-0.36	-0.69	
10,276.0	91.04	347.26	7,090.8	2,729.6	-1,075.7	2,927.6	1.13	0.96	-0.60	
10,370.0	90.98	348.14	7,089.1	2,821.4	-1,095.8	3,021.1	0.94	-0.06	0.94	
10,464.0	89.79	344.62	7,088.5	2,912.8	-1,117.9	3,114.9	3.95	-1.27	-3.74	
10,559.0	91.07	343.30	7,087.8	3,004.0	-1,144.1	3,209.8	1.94	1.35	-1.39	
10,653.0	89.81	344.35	7,087.0	3,094.3	-1,170.3	3,303.8	1.74	-1.34	1.12	
10,747.0	90.55	345.09	7,086.8	3,185.0	-1,195.1	3,397.7	1.11	0.79	0.79	
10,842.0	90.07	346.94	7,086.2	3,277.2	-1,218.1	3,492.5	2.01	-0.51	1.95	
10,936.0	90.33	348.16	7,085.9	3,369.0	-1,238.3	3,586.1	1.33	0.28	1.30	
11,030.0	91.04	347.78	7,084.8	3,460.9	-1,257.9	3,679.6	0.86	0.76	-0.40	
11,124.0	91.59	348.22	7,082.6	3,552.8	-1,277.4	3,773.1	0.75	0.59	0.47	
11,219.0	90.41	345.20	7,081.0	3,645.2	-1,299.3	3,867.8	3.41	-1.24	-3.18	
11,313.0	90.27	347.47	7,080.4	3,736.6	-1,321.5	3,961.5	2.42	-0.15	2.41	
11,407.0	89.81	345.95	7,080.3	3,828.1	-1,343.1	4,055.3	1.69	-0.49	-1.62	
11,501.0	90.30	348.62	7,080.3	3,919.7	-1,363.8	4,148.9	2.89	0.52	2.84	
11,595.0	90.98	349.21	7,079.2	4,012.0	-1,381.9	4,242.2	0.96	0.72	0.63	
11,690.0	91.98	349.14	7,076.8	4,105.3	-1,399.7	4,336.5	1.06	1.05	-0.07	
11,784.0	89.99	347.98	7,075.1	4,197.4	-1,418.3	4,429.9	2.45	-2.12	-1.23	
11,878.0	89.15	346.72	7,075.8	4,289.1	-1,438.9	4,523.6	1.61	-0.89	-1.34	
11,973.0	90.16	347.66	7,076.4	4,381.7	-1,460.0	4,618.2	1.45	1.06	0.99	
12,067.0	91.59	346.51	7,075.0	4,473.3	-1,481.0	4,711.9	1.95	1.52	-1.22	
12,161.0	91.92	346.25	7,072.1	4,564.6	-1,503.1	4,805.6	0.45	0.35	-0.28	
12,255.0	92.87	345.85	7,068.2	4,655.8	-1,525.7	4,899.3	1.10	1.01	-0.43	
12,350.0	91.48	345.94	7,064.6	4,747.8	-1,548.9	4,994.0	1.47	-1.46	0.09	
12,445.0	92.25	345.97	7,061.5	4,840.0	-1,571.9	5,088.8	0.81	0.81	0.03	
12,539.0	90.25	346.77	7,059.4	4,931.3	-1,594.1	5,182.5	2.29	-2.13	0.85	
12,634.0	89.02	347.32	7,060.0	5,023.9	-1,615.4	5,277.2	1.42	-1.29	0.58	
12,698.0	89.73	347.43	7,060.7	5,086.3	-1,629.4	5,340.9	1.12	1.11	0.17	
Final Phoenix MWD Survey										
12,775.0	89.73	347.43	7,061.1	5,161.5	-1,646.1	5,417.6	0.00	0.00		
PTBAs-Drilled: 12775MD/7061TVD										

RECEIVED
Office of Oil and Gas
000
FEB 27 2018

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #515109 -MRC - Slot 515109
Project:	Wetzel County, WV	TVD Reference:	KB @23' @ 1022.0usft
Site:	BIG 360	MD Reference:	KB @23' @ 1022.0usft
Well:	Well #515109 -MRC	North Reference:	Grid
Wellbore:	Main	Survey Calculation Method:	Minimum Curvature
Design:	515109 As Drilled	Database:	Compass 5000 NER

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
515109 - As-Drilled KOF - hit/miss target - Shape - actual wellpath hits target center - Point	0.00	0.00	5,695.8	0.0	9.0	378,106.50	1,685,005.82	39° 31' 57.894 N	80° 37' 0.533 W
515109 - As-Drilled TD - actual wellpath hits target center - Point	0.00	0.00	7,061.1	5,161.5	-1,646.1	383,267.95	1,683,350.73	39° 32' 48.701 N	80° 37' 22.480 W
515109 - As-Drilled LP - actual wellpath hits target center - Point	0.00	0.00	7,097.6	159.4	-435.3	378,265.93	1,684,561.58	39° 31' 59.415 N	80° 37' 6.228 W

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
5,561.0	5,560.8	0.6	8.6	Tie In	
5,654.0	5,653.8	0.6	8.7	First Phoenix MWD Survey	
5,696.0	5,695.8	0.0	9.0	KOP As-Drilled: 5696'MD/5695.8'TVD	
7,626.0	7,097.6	159.4	-435.3	LP As-Drilled: 7626'MD/7097.6'TVD	
7,626.0	7,097.6	159.4	-435.3	Purcell Target	
8,292.0	7,102.5	802.7	-607.3	Deepest Point @ 8292'MD/7102.5'TVD	
12,698.0	7,060.7	5,086.3	-1,629.4	Final Phoenix MWD Survey	
12,775.0	7,061.1	5,161.5	-1,646.1	PTBAs-Drilled: 12775'MD/7061'TVD	

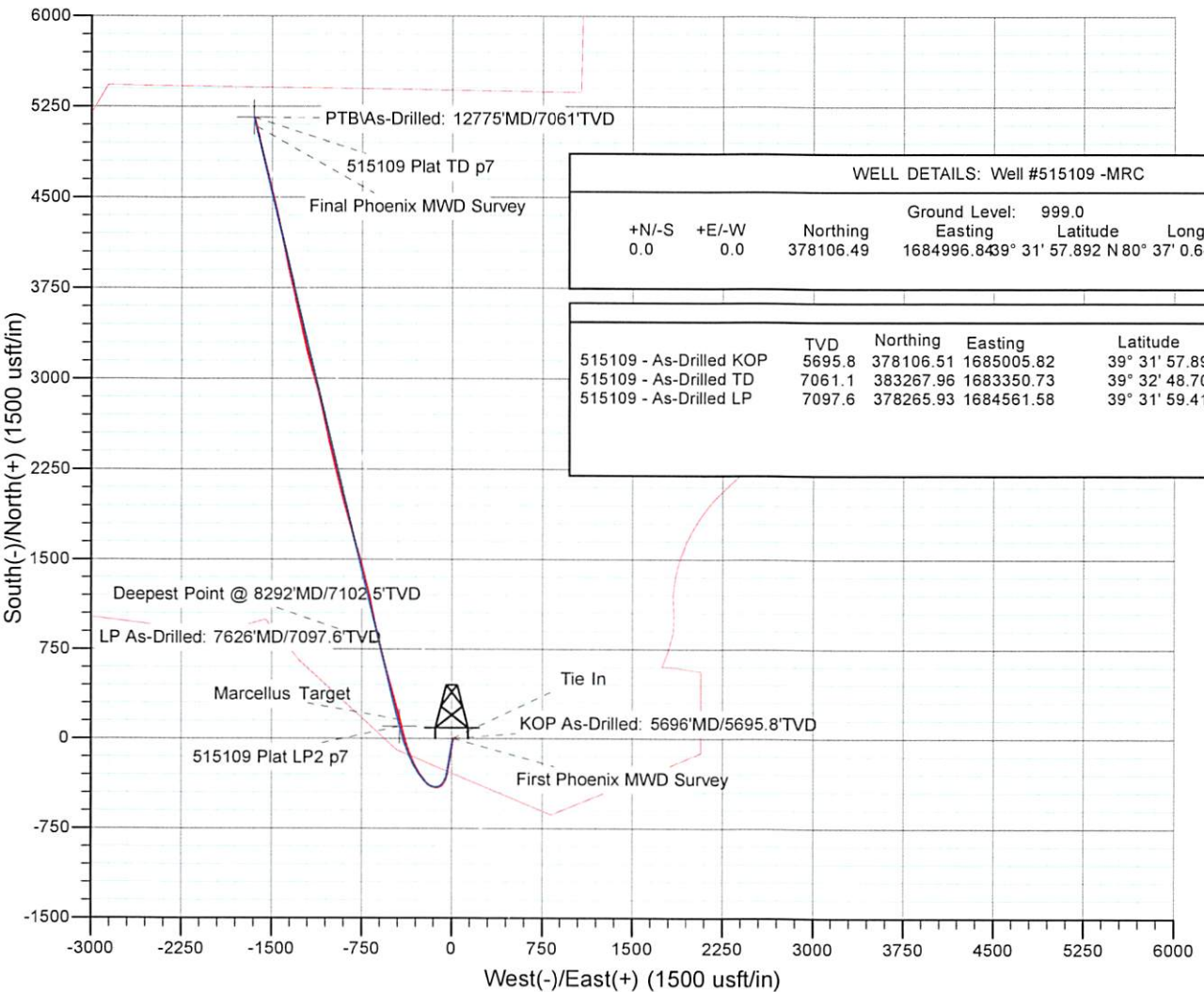
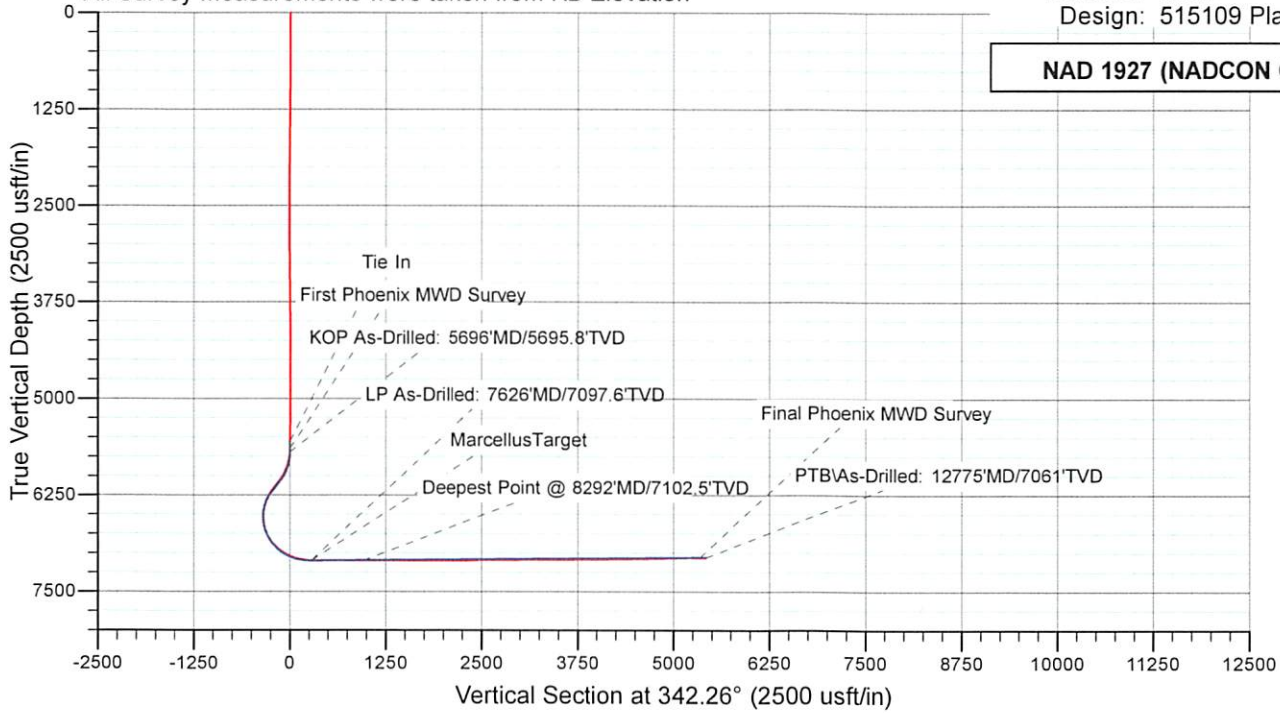
RECEIVED
Office of Oil and Gas
FEB 27 2018
WV Department of
Environmental Protection

KB Elevation=1319 FT
Ground Elevation=1296 FT

Project: Wetzel County, WV
Site: BIG 360
Well: Well #515109 -MRC
Wellbore: Main
Design: 515109 Plan 9

All Survey Measurements were taken from KB Elevation

NAD 1927 (NADCON CONUS)



WELL DETAILS: Well #515109 -MRC						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	378106.49	1684996.8439	31° 57.892 N	80° 37' 0.648 W	515109

	TVD	Northing	Easting	Latitude	Longitude
515109 - As-Drilled KOP	5695.8	378106.51	1685005.82	39° 31' 57.894 N	80° 37' 0.533 W
515109 - As-Drilled TD	7061.1	383267.96	1683350.73	39° 32' 48.701 N	80° 37' 22.480 W
515109 - As-Drilled LP	7097.6	378265.93	1684561.58	39° 31' 59.415 N	80° 37' 6.228 W

RECEIVED
Office of Oil and Gas
FEB 27 2018
WV Department of
Environmental Protection

RECEIVED
Office of Oil and Gas
FEB 27 2018
WV Department of Environmental Protection

GRID NORTH

WV 515109
Bottom Hole

WV 515109
Bottom Hole

Lease No.
1012498

N 16°22'22" W
1386.38'

N 13°30'06" W
5200.94'

919 *
500' 500'

Set Stone Set Stone

Lease No.
988530

N 76°42'24" W
448.31'

WV 515109
Landing Point

WV 515109
Landing Point

WV 515109

S 78°28'34" W
467.71'

- Proposed Gas Well
- Located Corner, as noted
- Surface Tract Lines
- - - Reference Line
- Lease Boundary
- Creek or Drain
- WV County Route
- WV State Route

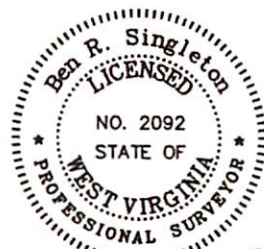
(⊙) Denotes Location of Well on United States Topographic Maps

BH: 13286' LON: 80-35-00
LON: 80-35-00



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



SEAL

FILE NO: 174-13
DRAWING NO: 174-13 Big 360 H2
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: October 24 20 17
OPERATOR'S WELL NO. 515109
API WELL NO
47 - 103 - 03162
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: Original Ground = 1008' Proposed Ground = 998' WATERSHED Richwood Run QUADRANGLE: Big Run
DISTRICT: Grant COUNTY: Wetzel

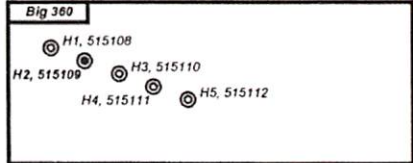
SURFACE OWNER: Coastal Forest Resources Company d/b/a Coastal Timberlands Company ACREAGE: 1,636.5
ROYALTY OWNER: Mills-Wetzel Land, Inc. LEASE NO: 988530 ACREAGE: 659

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION

2	15	46	Wetzel	Grant	Buri Henthorn Est, et al.	99.00
3	12	47	Wetzel	Grant	Coastal Forest Resources Co.	87.50
4	22	12	Wetzel	Grant	James Jones, et al.	18.67
5	22	11	Wetzel	Grant	Mary M. Snodgrass	10.14
6	18	1	Wetzel	Grant	McKinley E. Calvert Heirs	100.00
7	18	14	Wetzel	Grant	Frank M. & Frankie L. Dulaney	9.55
8	18	13	Wetzel	Grant	Ralph G. Dulaney	87.50
9	18	17	Wetzel	Grant	Alan D. & Diana L. Barr	13.00
10	18	22	Wetzel	Grant	Karen R. Dennison, et al.	111.40
11	23	5	Wetzel	Grant	Thomas E. Wyatt, et al.	174.68
12	23	4	Wetzel	Grant	Dallison Lumber Inc.	36.10
13	23	2	Wetzel	Grant	Billy D. Arnolds, Jr.	38.80
14	23	1	Wetzel	Grant	Billy D. Arnolds, Jr.	16.50
15	22	27	Wetzel	Grant	Dallison Lumber Inc.	31.35
16	22	13	Wetzel	Grant	James Jones, et al.	16.75
17	17	16	Wetzel	Grant	David A. Arnolds	402.61
18	17	13	Wetzel	Grant	David A. Arnolds	62.25
19	17	12	Wetzel	Grant	Rhonda K. Spencer	57.20
20	17	4	Wetzel	Grant	George W. Cain	42.60
21	12	45	Wetzel	Grant	Jimmy L & James C. Yoho	44.10
22	12	46	Wetzel	Grant	Jimmy L & James C. Yoho	56.10
23	22	7	Wetzel	Grant	Billy D. Arnolds	5.20
24	17	16.1	Wetzel	Grant	Coastal Forest Resources Co.	137.39
25	16	40	Wetzel	Grant	Coastal Forest Resources Co.	412.80
26	17	6	Wetzel	Grant	Georgia Ann Smith	0.55

WV 515109 Bottom Hole coordinates:
 NAD 27 N: 383,267.94 E: 1,683,350.73
 NAD 83 UTM N: 4,377,542.31 E: 532,415.70

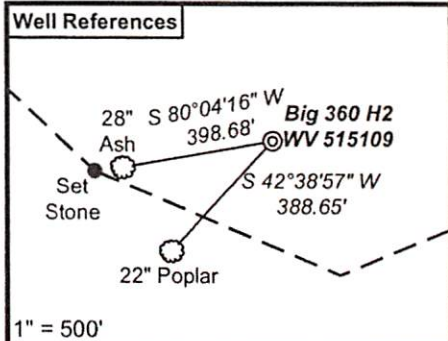
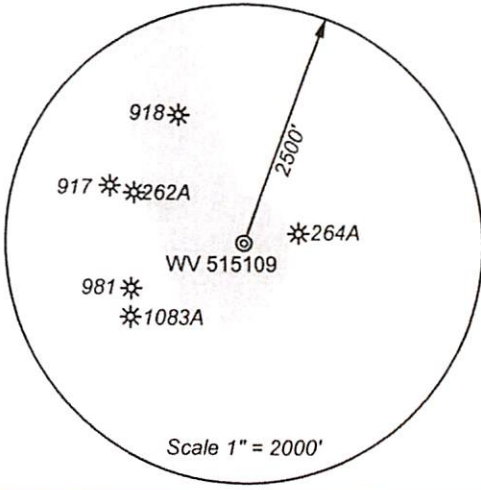
West Virginia Coordinate System of 1927 (North Zone) based upon Differential GPS Measurements.
 Plat orientation, corner and well ties are based upon the grid north meridian.
 Well location references are based upon the grid north meridian.
 UTM coordinates are NAD83, Zone 17, Meters.



WV Department of Environmental Protection
 RECEIVED
 Office of Oil and Gas
 FEB 27 2018

Sub Surface Tract 15	Acres	Owner
	31.35	Dallison Lumber Inc.

Lease No.	Acres	Owner
1012498	514	Kenneth R. Mason, et al.



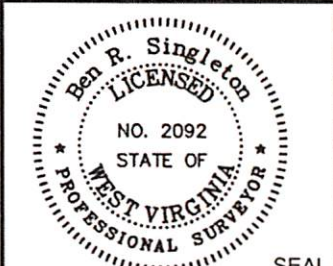
- Proposed Gas Well
- Located Corner, as noted
- Surface Tract Lines
- Reference Line
- Lease Boundary
- Creek or Drain
- WV County Route
- WV State Route



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: 174-13
 DRAWING NO: 174-13 Big 360 H2
 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: October 24 20 17
 OPERATOR'S WELL NO. 515109
 API WELL NO 47 - 103 - 03162
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: Original Ground = 1008' Proposed Ground = 998' WATERSHED Richwood Run QUADRANGLE: Big Run

DISTRICT: Grant COUNTY: Wetzel

SURFACE OWNER: Coastal Forest Resources Company d/b/a Coastal Timberlands 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

515109 47-103-03162-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	11/2/2017	12,747	12,773	10	Marcellus
1	11/7/2017	12,586	12,708	32	Marcellus
2	11/8/2017	12,386	12,548	40	Marcellus
3	11/9/2017	12,186	12,348	40	Marcellus
4	11/11/2017	11,986	12,148	40	Marcellus
5	11/12/2017	11,786	11,948	40	Marcellus
6	11/12/2017	11,586	11,748	40	Marcellus
7	11/13/2017	11,386	11,548	40	Marcellus
8	11/14/2017	11,186	11,348	40	Marcellus
9	11/16/2017	10,986	11,148	40	Marcellus
10	11/16/2017	10,786	10,948	40	Marcellus
11	11/17/2017	10,586	10,748	40	Marcellus
12	11/18/2017	10,386	10,548	40	Marcellus
13	11/18/2017	10,186	10,348	40	Marcellus
14	11/19/2017	9,986	10,148	40	Marcellus
15	11/20/2017	9,786	9,948	40	Marcellus
16	11/21/2017	9,586	9,748	40	Marcellus
17	11/22/2017	9,386	9,548	40	Marcellus
18	11/23/2017	9,186	9,348	40	Marcellus
19	11/24/2017	8,986	9,148	40	Marcellus
20	11/25/2017	8,786	8,948	40	Marcellus
21	11/25/2017	8,586	8,748	40	Marcellus
22	11/26/2017	8,386	8,548	40	Marcellus
23	11/27/2017	8,186	8,348	40	Marcellus
24	11/28/2017	7,986	8,148	40	Marcellus
25	11/28/2017	7,786	7,948	40	Marcellus
26	11/29/2017	7,586	7,748	40	Marcellus

RECEIVED
 Office of Oil and Gas
 FEB 27 2018
 WV Department of
 Environmental Protection

515109 47-103-03162-0000 - 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)
1.01	11/7/2017	12	7,520	9,492	5,522	0	1,692	0
1	11/8/2017	85	8,970	9,349	4,245	453,041	10,905	0
2	11/9/2017	86	8,765	9,329	4,558	449,212	12,077	0
3	11/10/2017	83	8,872	9,367	4,184	452,206	11,218	0
4	11/12/2017	99	9,102	9,433	4,773	450,954	7,112	0
5	11/12/2017	91	9,111	9,430	4,551	450,111	7,238	0
6	11/13/2017	95	8,789	9,192	4,531	450,440	7,519	0
7	11/14/2017	93	8,738	9,156	4,397	450,788	7,738	0
8	11/14/2017	100	8,796	8,993	4,662	348,920	5,980	0
8	11/15/2017	11	5,103	7,723	5,670	104,828	5,352	0
9	11/16/2017	93	8,672	9,141	4,438	450,966	8,939	0
10	11/17/2017	97	9,063	9,321	4,474	450,650	7,462	0
11	11/18/2017	85	8,934	9,476	4,263	450,169	8,916	0
12	11/18/2017	92	8,926	9,349	4,424	450,703	7,917	0
13	11/19/2017	89	8,726	9,224	4,483	450,756	8,211	0
14	11/20/2017	81	8,367	9,528	4,492	450,030	7,058	0
15	11/21/2017	81	8,556	9,349	4,345	450,998	8,753	0
16	11/22/2017	85	9,063	9,585	5,112	405,972	7,574	0
17	11/22/2017	100	8,707	9,110	6,164	452,709	7,169	0
18	11/24/2017	97	8,872	9,380	5,495	449,495	7,260	0
19	11/24/2017	95	8,615	10,490	5,599	416,240	7,716	0
20	11/25/2017	98	8,515	9,281	4,050	448,267	7,227	0
21	11/26/2017	100	8,059	8,921	3,987	451,238	7,164	0
22	11/27/2017	100	8,325	9,140	4,277	450,146	7,314	0

RECEIVED
 Office of Oil and Gas
FEB 27 2018
 V.N. Department of
 Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/7/2017
Job End Date:	11/30/2017
State:	West Virginia
County:	Wetzel
API Number:	47-103-03162-00-00
Operator Name:	EQT Production
Well Name and Number:	515109
Latitude:	39.53275000
Longitude:	-80.61685000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,089
Total Base Water Volume (gal):	9,509,766
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	86.86973	None
Sand (Proppant)	FTS International	Proppant	Silica Substrate	14808-60-7	100.00000	12.74310	None
MX-5-3886	Multi-Chem	Bacteria Treatment	Calcium Nitrate.4H2O	13477-34-4	100.00000	0.10663	None
FRW-1450	FTS International	Mixture	Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.02671	None
			Alcohols. C-11-14-iso, C13-rich, ethoxylated	78330-21-9	5.00000	0.00445	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02346	None
MX-8-2544	Multi-Chem	Bacteria Treatment	Sodium Chloride	7647-14-5	100.00000	0.00939	None
			Sodium Nitrate	7631-99-4	5.00000	0.00047	None
CS-500-SI	FTS International	Scale Inhibitor	Ethylene Glycol	107-21-1	10.00000	0.00241	None

RECEIVED
 Office of Oil and Gas
 FEB 27 2018
 WV Department of Environmental Protection

HVG-14.0	FTS International	Gelling Agent					
			Raffinates, Sorption Process	64741-85-1	55.00000	0.00060	None
			Guar Gum	9000-30-0	50.00000	0.00055	None
			Quartz	14808-60-7	4.00000	0.00004	None
			Isotridecanol, ethoxylated	9043-30-5	2.00000	0.00002	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Ethylene Glycol	107-21-1	30.00000	0.00009	None
			Isopropanol	67-63-0	30.00000	0.00009	None
			Organic Amine Resin Salt	Proprietary	30.00000	0.00009	None
			Dimethylformamide	68-12-2	10.00000	0.00003	None
			Quaternary Ammonium Compound	Proprietary	10.00000	0.00003	None
			Aromatic Aldehyde	Proprietary	10.00000	0.00003	None
ABP-1	FTS International	Breaker					
			Ammonium Persulfate	7727-54-0	95.00000	0.00021	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.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Sodium Chloride	7647-14-5	100.00000	0.00939	
			Alcohols, C-11-14-iso, C13-rich, ethoxylated	78330-21-9	5.00000	0.00445	
			Raffinates, Sorption Process	64741-85-1	55.00000	0.00060	
			Organic Amine Resin Salt	Proprietary	30.00000	0.00009	
			Ethylene Glycol	107-21-1	30.00000	0.00009	
			Quartz	14808-60-7	4.00000	0.00004	
			Dimethylformamide	68-12-2	10.00000	0.00003	
			Aromatic Aldehyde	Proprietary	10.00000	0.00003	
			Quaternary Ammonium Compound	Proprietary	10.00000	0.00003	
			Isotridecanol, ethoxylated	9043-30-5	2.00000	0.00002	

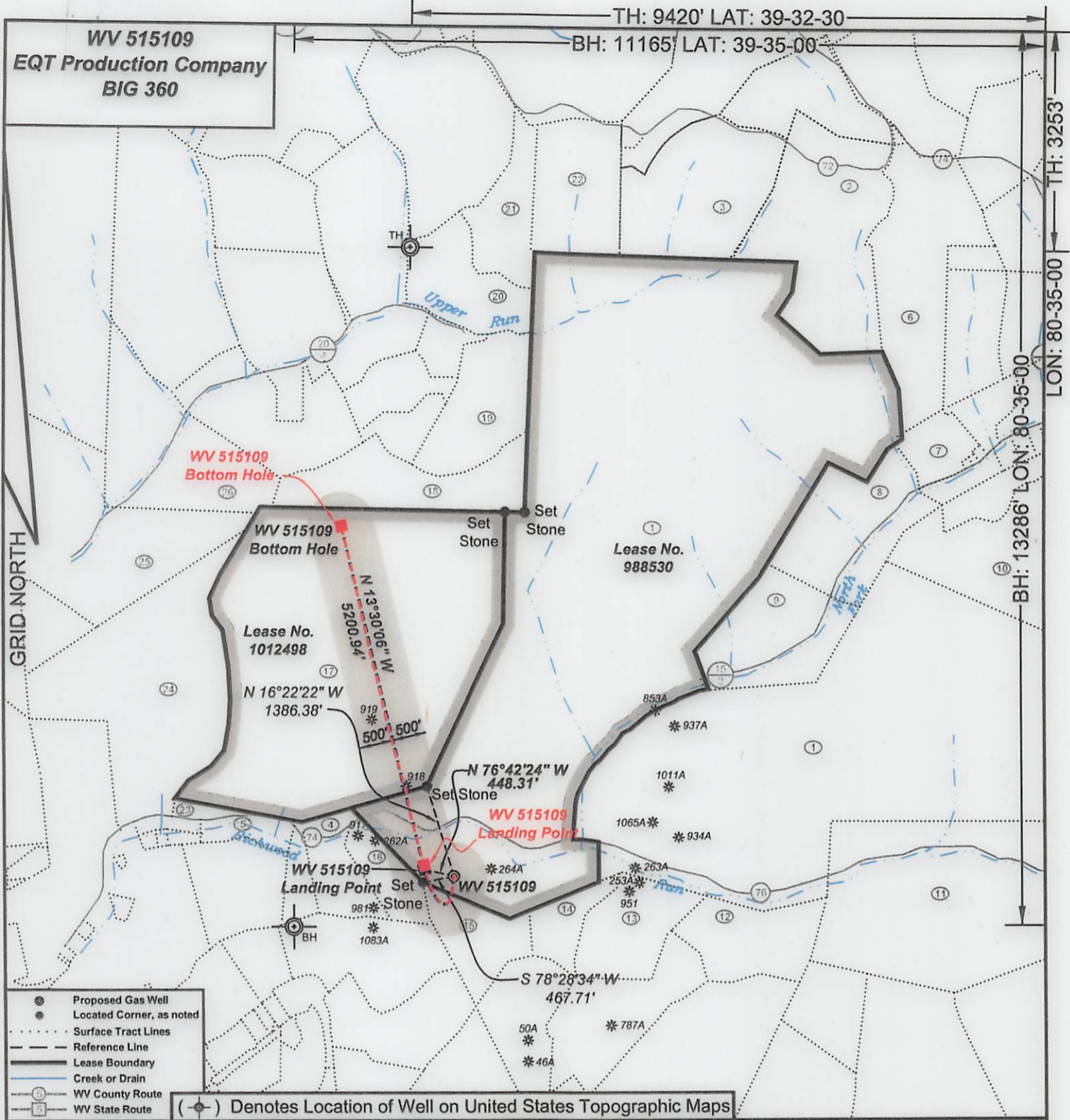
* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** 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
 FEB 27 2018
 Department of
 Environmental Protection



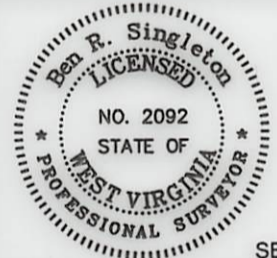
- ⊙ Proposed Gas Well
- Located Corner, as noted
- Surface Tract Lines
- - - Reference Line
- Lease Boundary
- Creek or Drain
- ⊙ WV County Route
- ⊙ WV State Route

(⊙) Denotes Location of Well on United States Topographic Maps



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



SEAL

FILE NO: 174-13
DRAWING NO: 174-13 Big 360 H2
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: October 24 20 17
OPERATOR'S WELL NO. 515109
API WELL NO
47 - 103 - 03162
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: Original Ground = 1008' Proposed Ground = 998' WATERSHED Richwood Run QUADRANGLE: Big Run
DISTRICT: Grant COUNTY: Wetzel
SURFACE OWNER: Coastal Forest Resources Company d/b/a Coastal Timberlands 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: 7,064'

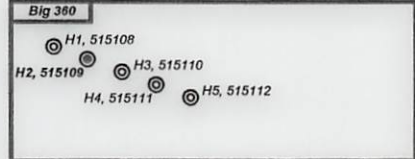
WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Rex C. Ray
ADDRESS: 115 Professional Place PO Box 280 ADDRESS: 115 Professional Place PO Box 280
Bridgeport, WV 26330 Bridgeport, WV 26330

WV 515109
EQT Production Company
BIG 360

Tract I.D.	Tax Map No.	Parcel No.	County	District	Surface Tract Owner	Acres
1	17	14	Wetzel	Grant	Coastal Forest Resources Co.	1627.60
2	13	46	Wetzel	Grant	Burl Henthorn Est, et al.	99.00
3	12	47	Wetzel	Grant	Coastal Forest Resources Co.	87.50
4	22	12	Wetzel	Grant	James Jones, et al.	18.67
5	22	11	Wetzel	Grant	Mary M. Snodgrass	10.14
6	18	1	Wetzel	Grant	McKinley E. Calvert Heirs	100.00
7	18	14	Wetzel	Grant	Frank M. & Frankie L. Dulaney	9.55
8	18	13	Wetzel	Grant	Ralph G. Dulaney	87.50
9	18	17	Wetzel	Grant	Alan D. & Diana L. Barr	13.00
10	18	22	Wetzel	Grant	Karen R. Dennison, et al.	111.40
11	23	5	Wetzel	Grant	Thomas E. Wyatt, et al.	174.68
12	23	4	Wetzel	Grant	Dallison Lumber Inc.	36.10
13	23	2	Wetzel	Grant	Billy D. Arnolds, Jr.	38.80
14	23	1	Wetzel	Grant	Billy D. Arnolds, Jr.	16.50
15	22	27	Wetzel	Grant	Dallison Lumber Inc.	31.35
16	22	13	Wetzel	Grant	James Jones, et al.	16.75
17	17	16	Wetzel	Grant	David A. Arnolds	402.61
18	17	13	Wetzel	Grant	David A. Arnolds	62.25
19	17	12	Wetzel	Grant	Rhonda K. Spencer	57.20
20	17	4	Wetzel	Grant	George W. Cain	42.60
21	12	45	Wetzel	Grant	Jimmy L & James C. Yoho	44.10
22	12	46	Wetzel	Grant	Jimmy L & James C. Yoho	56.10
23	22	7	Wetzel	Grant	Billy D. Arnolds	5.20
24	17	16.1	Wetzel	Grant	Coastal Forest Resources Co.	137.39
25	16	40	Wetzel	Grant	Coastal Forest Resources Co.	412.80
26	17	6	Wetzel	Grant	Georgia Ann Smith	0.55

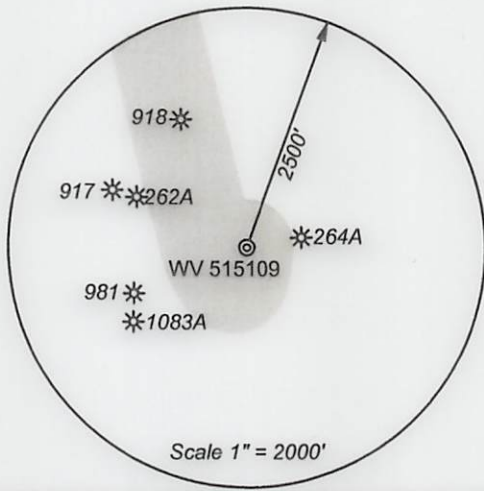
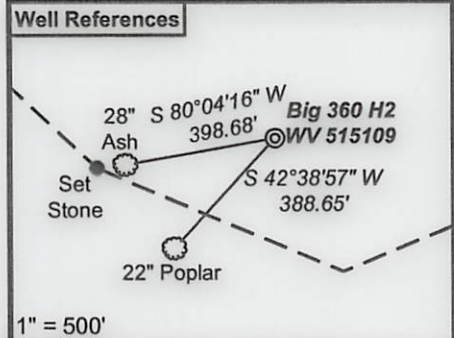
As-Drilled Well Information:
WV 515109 coordinates:
 NAD 27 N: 378,106.49 E: 1,684,996.84
 NAD 83 UTM N: 4,375,978.21 E: 532,943.40
WV 515109 Landing Point coordinates:
 NAD 27 N: 378,265.93 E: 1,684,561.58
 NAD 83 UTM N: 4,376,024.56 E: 532,809.98
WV 515109 Bottom Hole coordinates:
 NAD 27 N: 383,267.94 E: 1,683,350.73
 NAD 83 UTM N: 4,377,542.31 E: 532,415.70

West Virginia Coordinate System of 1927 (North Zone) based upon Differential GPS Measurements.
 Plat orientation, corner and well ties are based upon the grid north meridian.
 Well location references are based upon the grid north meridian.
 UTM coordinates are NAD83, Zone 17, Meters.



Sub Surface Tract	Acres	Owner
Tract 15	31.35	Dallison Lumber Inc.

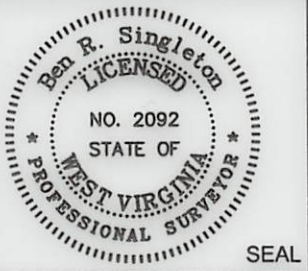
Lease No.	Acres	Owner
1012498	514	Kenneth R. Mason, et al.



- ⊙ Proposed Gas Well
- Located Corner, as noted
- Surface Tract Lines
- - - Reference Line
- Lease Boundary
- Creek or Drain
- ⊙ WV County Route
- ⊙ WV State Route

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: 174-13
 DRAWING NO: 174-13 Big 360 H2
 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: October 24 20 17
 OPERATOR'S WELL NO. 515109
 API WELL NO
 47 - 103 - 03162
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Original Ground = 1008' Proposed Ground = 998' WATERSHED Richwood Run QUADRANGLE: Big Run
 DISTRICT: Grant COUNTY: Wetzel
 SURFACE OWNER: Coastal Forest Resources Company d/b/a Coastal Timberlands 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: 7,064'

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