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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Jim Justice, Governor  
Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

EQT PRODUCTION COMPANY  
120 PROFESSIONAL PLACE  
BUILDING II  
BRIDGEPORT, WV 26330

Re: Permit Modification Approval for 515112  
47-103-03165-00-00

Changing conductor casing from 20" to 26"


EQT PRODUCTION COMPANY

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief



Operator's Well Number: 515112  
Farm Name: COASTAL FOREST RESOURCES COMPANY D/B/A COASTAL   
U.S. WELL NUMBER: 47-103-03165-00-00  
Horizontal 6A / New Drill  
Date Issued: 6/13/2017

Promoting a healthy environment.

06/16/2017

18)

**CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	26	New	A-500	85.6	40	40	60 ft <sup>3</sup> / CTS
Fresh Water	13 3/8	New	J-55	54.5	856	856	757 ft <sup>3</sup> / CTS
Coal							
Intermediate	9 5/8	New	A-500	40	2480	2480	971 ft <sup>3</sup> / CTS
Production	5 1/2	New	P-110	20	13355	13355	500' above top producing zone
Tubing	2 3/8		J-55	4.7		May not be run, if run set 40' above top perf or 80' inclination	
Liners							

*DMH 6/7/17*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	26	30	.375	1378	18	Class A	1.18
Fresh Water	13 3/8	17 1/2	.38	2700	2160	See Variance	1.19
Coal							
Intermediate	9 5/8	12 3/8	.395	3950	3160	See Variance	1.19
Production	5 1/2	8 1/2	.361	12640	10112	Class A/H	1.123/2.098
Tubing	2 3/8	NA	.19	7700			
Liners							

**PACKERS**

Kind:				
Sizes:				
Depths Set:				

RECEIVED  
Office of Oil and Gas

JUN 8 2017

103-03165

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Office of Oil and Gas

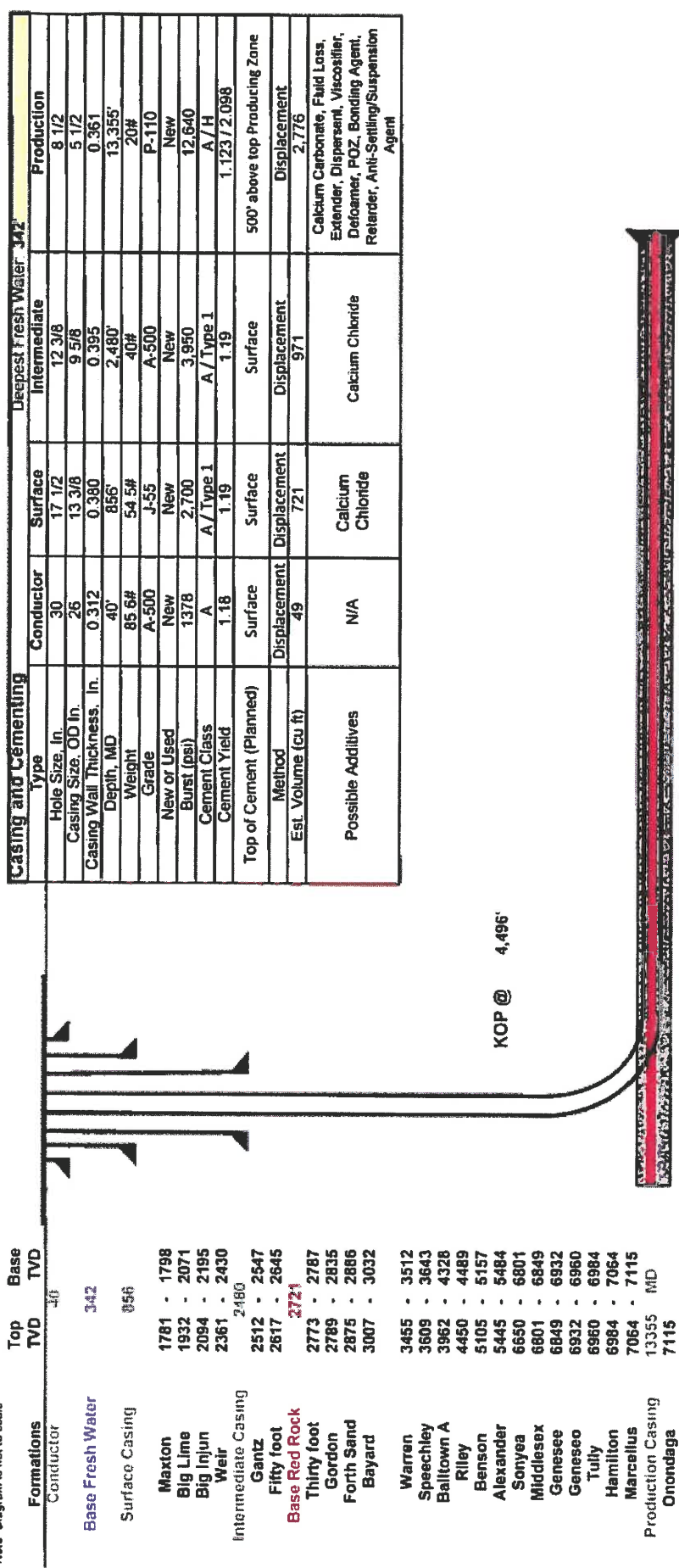
JUN 8 2017

WV Department of  
Environmental Protection

**Well**  
**EQT Production**  
**Big Run Quad**  
**Wetzel County, WV**

Vertical Section  
Azimuth 347  
5166

Note: Diagram is not to scale



Casing and Cementing		Deepest Fresh Water 342	
Type	Conductor	Surface	Intermediate
Hole Size, In.	30	17 1/2	12 3/8
Casing Size, OD In.	26	13 3/8	9 5/8
Casing Wall Thickness, In.	0.312	0.380	0.395
Depth, MD	40'	866'	2,480'
Weight	85.6 #	54.5 #	20 #
Grade	A-500	J-55	A-500
New or Used	New	New	New
Burst (psi)	1378	2,700	3,950
Cement Class	A	A / Type 1	A / Type 1
Cement Yield	1.18	1.19	1.123 / 2.098
Top of Cement (Planned)	Surface	Surface	500' above top Producing Zone
Method	Surface	Surface	Surface
Est. Volume (cu ft)	Displacement	Displacement	Displacement
Possible Additives	49	721	971
	N/A	Calcium Chloride	Calcium Chloride
		Calcium Chloride	Calcium Chloride, Fluid Loss, Extender, Dispersant, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent
			2,776

Land curve @ 7,085' TVD  
8,104' MD

Est. TD @ 7,085' 13,355' MD

TVD 13,355' MD

DWH 6/7/17

5.251' Lateral

- Formations
- Conductor
- Top Base TVD 40'
- Base Fresh Water 342
- Surface Casing 856
- Maxton 1781 - 1798
- Big Lime 1932 - 2071
- Big Injun 2094 - 2195
- Weir 2361 - 2430
- Intermediate Casing 2480
- Gantz 2512 - 2547
- Fifty foot 2617 - 2645
- Base Red Rock 2721
- Thirty foot 2773 - 2787
- Gordon 2789 - 2835
- Forth Sand 2875 - 2886
- Bayard 3007 - 3032
- Warren 3455 - 3512
- Speechley 3609 - 3643
- Balltown A 3962 - 4328
- Riley 4450 - 4489
- Benson 5105 - 5157
- Alexander 5445 - 5484
- Sonyea 6650 - 6801
- Middlesex 6801 - 6849
- Genesee 6849 - 6932
- Genesee 6932 - 6960
- Tully 6960 - 6984
- Hamilton 6984 - 7054
- Marcellus 7054 - 7115
- Production Casing 13355 MD
- Onondaga 7115

Proposed Well Work  
Drill and complete a new horizontal well in the Marcellus formation.  
Drill the vertical to an approximate depth of 4496'.  
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

06/16/2017



June 7, 2017

Laura Adkins  
West Virginia Department of Environmental Protection  
601 57th Street SE  
Charleston, WV 25304

Re: Modification 47-10303159, 03162, 03163, 03164, 03165

Dear Ms. Adkins,

Attached are modifications for the above API numbers. The conductor casing has been changed from 20" to 26". The inspector Derek Haught approved this change.

If you have any questions, please do not hesitate to contact me at (304) 848-0076.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Vicki Roark'.

Vicki Roark  
Permitting Supervisor-WV

Enc.

RECEIVED  
Office of Oil and Gas

JUN 8 2017

WV Department of  
Environmental Protection