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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 516848  
47-103-03167-00-00

Lengthen Lateral of Well


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: 516848  
Farm Name: COASTAL FOREST RESOURCES COMPANY D/B/A COASTAL   
U.S. WELL NUMBER: 47-103-03167-00-00  
Horizontal 6A / New Drill  
Date Issued: 2/16/2017

Promoting a healthy environment.

02/17/2017



February 7, 2017

Ms. Gene Smith  
West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304

Re: Modification of API 47-103-03167

Dear Mr. Smith,

Enclosed are forms WW6B, schematic, Mylar plat, WW6A1, road letter and Rec Plan for the above API number. EQT would like to lengthen the lateral of this well.

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.

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Office of Oil and Gas  
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WV Department of  
Environmental Protection

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

1) Well Operator: EQT Production Company 306686 Wetzel Grant Big Run  
Operator ID County District Quadrangle

2) Operator's Well Number: 516848 Well Pad Name: BIG190

3) Farm Name/Surface Owner: Coastal Forest Resources Co  
DBA Coastal Timberlands Co Public Road Access: Co Rt 15/2

4) Elevation, current ground: 1473 Elevation, proposed post-construction: 1473

5) Well Type (a) Gas  Oil  Underground Storage

Other

(b) If Gas Shallow  Deep

Horizontal

6) Existing Pad: Yes or No Yes

*DMH  
2-10-17*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus, 7572', 51', 2620 PSI

8) Proposed Total Vertical Depth: 7572'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 15650'

11) Proposed Horizontal Leg Length: 6676'

12) Approximate Fresh Water Strata Depths: 85', 388', 507'

13) Method to Determine Fresh Water Depths: By offset wells

14) Approximate Saltwater Depths: 2230', 2355'

15) Approximate Coal Seam Depths: 734', 857', 1048', 1199'

16) Approximate Depth to Possible Void (coal mine, karst, other): none

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes  No

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

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18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size (in)</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft. (lb/ft)</b>	<b>FOOTAGE: For Drilling (ft)</b>	<b>INTERVALS: Left in Well (ft)</b>	<b>CEMENT: Fill-up (Cu. Ft.)/CTS</b>
Conductor	20	New	A-500	78.6	40	40	60 ft <sup>3</sup> / CTS
Fresh Water	13 3/8	New	J-55	54.5	1255	1255	1089 ft <sup>3</sup> / CTS
Coal							
Intermediate	9 5/8	New	A-500	40	2728	2728	1055 ft <sup>3</sup> / CTS
Production	5 1/2	New	P-110	20	15650	15650	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  
2-10-17

<b>TYPE</b>	<b>Size (in)</b>	<b>Wellbore Diameter (in)</b>	<b>Wall Thickness (in)</b>	<b>Burst Pressure (psi)</b>	<b>Anticipated Max. Internal Pressure (psi)</b>	<b>Cement Type</b>	<b>Cement Yield (cu. ft./k)</b>
Conductor	20	26	.375	1378	18	Class A	1.18
Fresh Water	13 3/8	17 1/2	.38	2700	2160	See Variance 2014-17	1.19
Coal							
Intermediate	9 5/8	12 3/8	.395	3950	3160	See Variance 2014-17	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:				

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## 19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and complete a new horizontal well in the Marcellus Formation. Drill the vertical to an approximate depth of 3920'. Kick off and drill curve. Drill the lateral in the Marcellus. Cement casing.

DH  
2-10-17

## 20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemicals (including 15% Hydrochloric acid, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated internal casing pressure is expected to be approximately 10000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 250,000 gallons of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 250,000 pounds of sand per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): no additional disturbance

22) Area to be disturbed for well pad only, less access road (acres): no additional disturbance

## 23) Describe centralizer placement for each casing string:

- Surface: Bow spring centralizers – One centralizer at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One centralizer at the shoe and one spaced every 500'.
- Production: One solid body centralizer spaced every joint from production casing shoe to KOP

## 24) Describe all cement additives associated with each cement type:

Conductor: Class A no additives  
 Surface (Type 1 Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries  
 Intermediate (Type 1 Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries.  
 Production:  
 Lead (Class A Cement): 0.2% CD-20 (dispersant makes cement easier to mix). .15% SuperFL-300 (fluid loss/lengthens thickening time) .15% SEC-10 (fluid loss) 50:50 POZ (extender)  
 Tail (Class H Cement): 0.2% Super CR-1 (Retarder). Lengthens thickening time. .3% Super FL-200 (fluid loss) .2% SEC-10 (Fluid loss). .2% SuperFL-350 (fluid loss) Reduces amount of water lost to formation. 60 % Calcium Carbonate. Acid solubility.

## 25) Proposed borehole conditioning procedures:

Surface: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.  
 Intermediate: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.  
 Production: Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume. Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

\*Note: Attach additional sheets as needed.



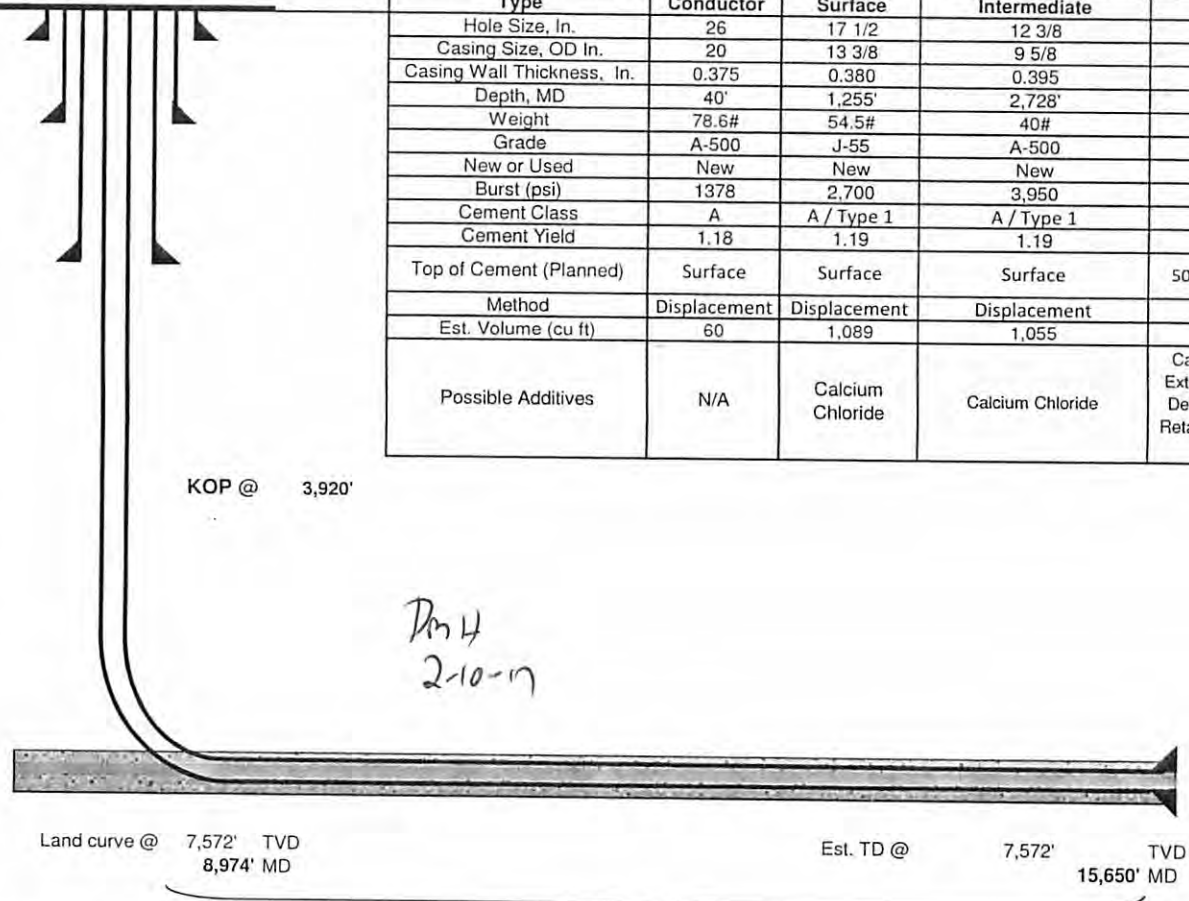
**Well 516848 (BIG190H20)**  
**EQT Production**  
**Big Run Quad**  
**Wetzel County, WV**

Azimuth 343  
 Vertical Section 6820

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	507	
Surface Casing	1255	
Maxton	2262	2340
Big Lime	2418	2532
Base Red Rock	2455	
Big Injun	2547	2653
Intermediate Casing	2728	
Weir	2824	2881
Gantz	2992	3027
Fifty foot	3027	3068
Thirty foot	3122	3153
Gordon	3267	3267
Forth Sand	3340	3381
Bayard	3497	3530
Warren	3876	3887
Speechley	4077	4205
Balltown A	4448	4580
Riley	4905	4958
Benson	5549	5629
Alexander	5924	5964
Sonyea	7129	7268
Middlesex	7268	7321
Genesee	7321	7394
Geneseo	7394	7426
Tully	7426	7444
Hamilton	7444	7538
Marcellus	7538	7589
Production Casing	15650	MD
Onondaga	7589	

Casing and Cementing				Deepest Fresh Water: 507'
Type	Conductor	Surface	Intermediate	Production
Hole Size, In.	26	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	20	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.375	0.380	0.395	0.361
Depth, MD	40'	1,255'	2,728'	15,650'
Weight	78.6#	54.5#	40#	20#
Grade	A-500	J-55	A-500	P-110
New or Used	New	New	New	New
Burst (psi)	1378	2,700	3,950	12,640
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.19	1.19	1.123 / 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above top Producing Zone
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	60	1,089	1,055	3,242
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent



Land curve @ 7,572' TVD 8,974' MD  
 Est. TD @ 7,572' TVD 15,650' MD  
 6,676' Lateral

Proposed Well Work:  
 Drill and complete a new horizontal well in the Marcellus formation.  
 Drill the vertical to an approximate depth of 3920'.  
 Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

4710303167



west virginia department of environmental protection

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

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
dep.wv.gov

**BEFORE THE OFFICE OF OIL AND GAS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STATE OF WEST VIRGINIA**

**IN THE MATTER OF A VARIANCE FROM ) ORDER NO. 2014 - 17**  
**REGULATION 35 CSR § 4-11.4/11.5/14.1 )**  
**AND 35 CSR § 8-9.2.h. 4/5/6/8 OF THE )**  
**THE OPERATIONAL )**  
**REGULATIONS OF CEMENTING OIL )**  
**AND GAS WELLS )**

**REPORT OF THE OFFICE**

Nabors Completion & Production Services Co. requests approval of a different cement blend for use in cementing surface and coal protection casing of oil and gas wells.

**FINDINGS OF FACT**

- 1.) Nabors Completion & Production Services Co. proposes the following cement blend:
  - 2% Calcium Chloride (Accelerator)
  - 0.25 % Super Flake (Lost Circulation)
  - 94% Type "1" Cement
  - 5.20 % Water
  
- 2.) Laboratory testing results indicate that the blend listed in Fact No.1 will achieve a 500 psi compressive strength within 6 hours and a 2,435 psi compressive strength within 24 hours.

Promoting a healthy environment.

**CONCLUSIONS OF LAW**

Pursuant to Articles 6 and 6A, Chapter 22 of the Code of West Virginia, the Office of Oil and Gas has jurisdiction over the subject matter embraced in said notice, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed Order.

Pursuant to 35 CSR § 4-11.5 and 35 CSR § 8-9.2.h.8 the Chief of the Office of Oil and Gas may approve different cement blends upon the well operator providing satisfactory proof that different cement types are adequate.

**ORDER**

It is ordered that Nabors Completion & Production Services Co. may use the cement blend listed in Findings of Fact No.1 for the cementing of surface and coal protection casing of oil and gas wells in the State as may be requested by oil and gas operators. The waiting time on the cement blend shall be 8 hours. The cement blend shall be mixed in strict accordance with the specifications for each blend and weight measurements made on-site to assure the cement slurries meet the minimum weight specifications. A sample shall be collected and, if after 8 hours the cement is not set up, additional time will be required. Nabors Completion & Production Services Co. shall keep a record of cement blend jobs in which the cement blend approved under this order is to be used and made available to the Office of Oil and Gas upon request.

Dated this, the 18th day of March, 2014.

IN THE NAME OF THE STATE OF WEST VIRGINIA

OFFICE OF OIL AND GAS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OF THE STATE OF WEST VIRGINIA



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James Martin, Chief  
Office of Oil and Gas





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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, SE  
Charleston, WV 25304  
(304) 926-0450  
(304) 926-0452 fax

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
dep.wv.gov

March 18, 2014

Nabors Completion & Production Services Company  
1380 Route 286 Hwy E #121  
Indiana PA 15701

Re: Cement Variance Request

Dear Sir or Madam,

This agency is approving a variance request for the cement blend listed below to be used on surface and coal protection strings for the drilling of oil and gas wells in the state of West Virginia. The variance cannot be used without requesting its use on a permit application and approval by this agency:

- Type 1 (2% Calcium Chloride-Accelerator, 0.25% Super Flake-Lost Circulation, 5.2% Water, 94% Type "1" Cement)

If you have any questions regarding this matter feel free to contact me at 304-926-0499, ext. 1653.

Sincerely,

James Peterson  
Environmental Resources Specialist / Permitting

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WV Department of  
Environmental Protection

02/17/2017

Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>988530</u>	Mills Wetzel Lands, Inc.	EQT Production Company	**	OG 126A/288
	<u>ET Blue Grass LLC, et al. (current mineral owner)</u>		**	
<u>300607</u>	W. C. Henthorn, et ux.	South Penn Oil Company		DB 49/323
	South Penn Oil Company	Hope Natural Gas Company		OG 9A/230
	Hope Natural Gas Company	Consolidated Gas Supply Corporation		DB 233/387
	Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation		OG 66A/69
	Consolidated Gas Transmission Corporation	CNG Transmission Corporation		CB 13/151
	CNG Transmission Corporation	Eastern States Oil and Gas, Inc.		OG 76A/232
	Eastern States Oil and Gas, Inc.	Blazer Energy		CB 12/253
	Blazer Energy	Eastern States Oil and Gas, Inc.		CB 12/259
	Eastern States Oil and Gas Inc.	Equitable Production - Eastern States Oil & Gas, Inc.		CB 13/14
	Equitable Production - Eastern States Oil & Gas, Inc.	Equitable Production Company		CB 13/14
	Equitable Production Company	EQT Production Company		CB 13/14
	Shiben Estates, Inc.	EQT Production Company	**	OG 178A/15
<u>988625</u>	Jeffrey Scott Cozart, et al.	EQT Production Company	**	DB 135A/589
<u>993343</u>	Mary R. Huggins, et al.	EQT Production Company	**	DB 143A/204
<u>993291</u>	Mary Margaret Price & James G. Price, et al.	EQT Production Company	**	DB 140/671
<u>991536</u>	Frank Melvin Willey, et al	EQT Production Company	**	DB 143A/564

\*\* We will pay a minimum one-eighth of the total amount paid to or received by or allowed to the owner of the working interest at the wellhead for the oil or gas extracted, produced, or marketed before deducting the amount to be paid to or set aside for the owner of the oil or gas in place, on all such oil or gas to be extracted, produced, or marketed from the well.

Environmental Protection  
 My Department of  
 FEB 14 2017  
 RECEIVED  
 Office of Oil and Gas

4710303167



47 1 0 3 0 3 1 6 7

February 7, 2017

Mr. James Martin  
West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304

Re: BIG190 (516847, 516848  
Grant District, Wetzel County

Dear Mr. Martin,

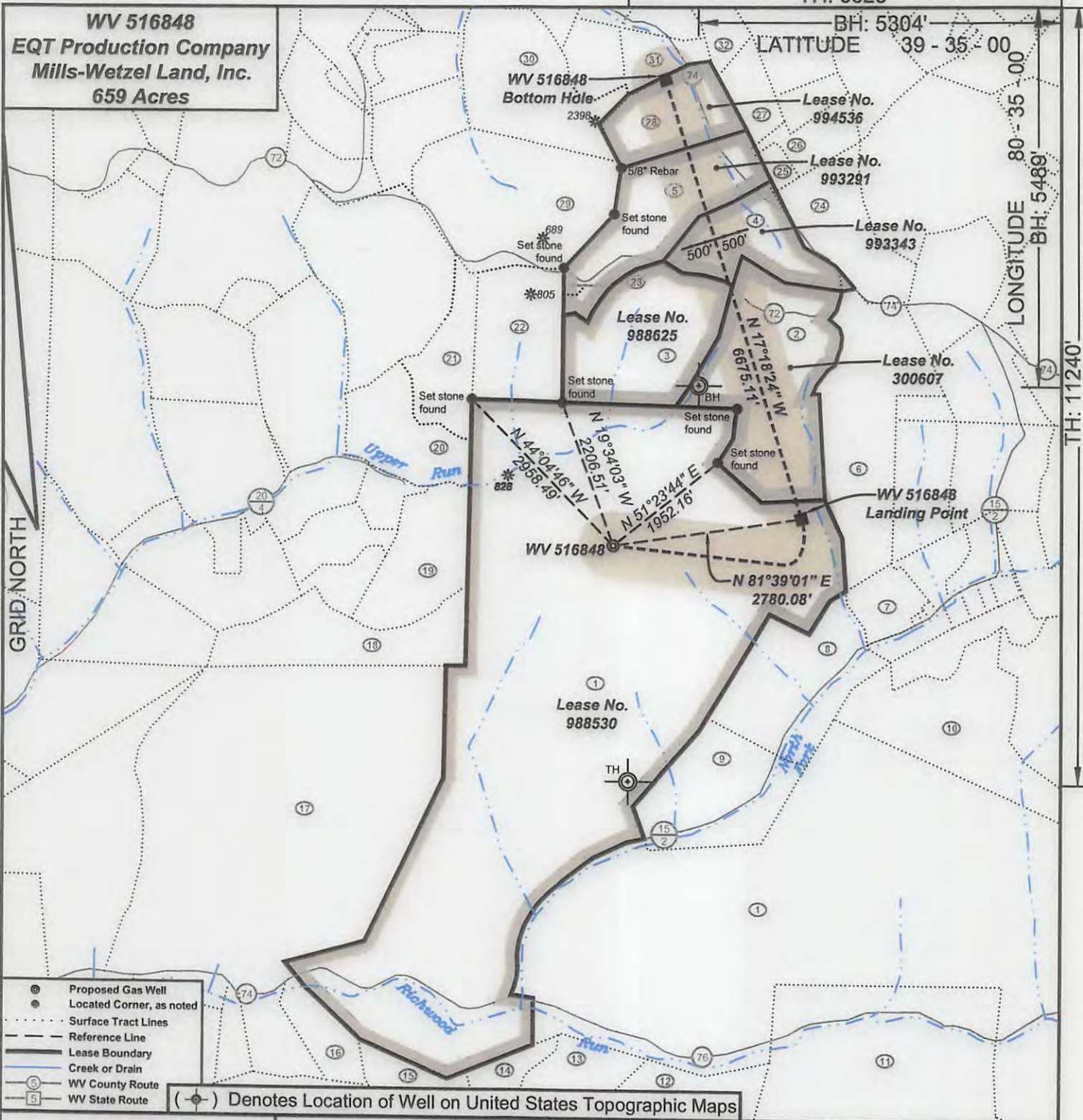
EQT Production Company is submitting an application for a new well work permit for the above well number. Upon information and belief, Operator's lease and/ or other real property rights permit it to conduct drilling operations for the subject well in the location shown on the plat, including under any public roads that the well lateral crosses.

Sincerely,

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

Vicki Roark  
Permitting Supervisor-WV





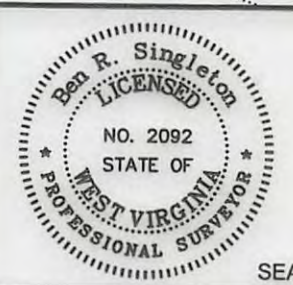
- ⊙ Proposed Gas Well
- Located Corner, as noted
- Surface Tract Lines
- - - Reference Line
- Lease Boundary
- Creek or Drain
- ⑤ WV County Route
- ⑤ WV State Route

(⊙) 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: 196-34-G-10  
DRAWING NO: 196-10 Big 190 H20  
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: February 6 20 17  
OPERATOR'S WELL NO.: 516848  
API WELL NO  
47 - 103 - 03167  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
LOCATION: ELEVATION: 1473.5' (As-built) WATERSHED Upper Run and North Fork QUADRANGLE: Big Run  
DISTRICT: Grant COUNTY: Wetzel  
SURFACE OWNER: Coastal Forest Resources Company d/b/a Coastal Timberlands Company ACREAGE: 1636.2  
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: 7,572

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



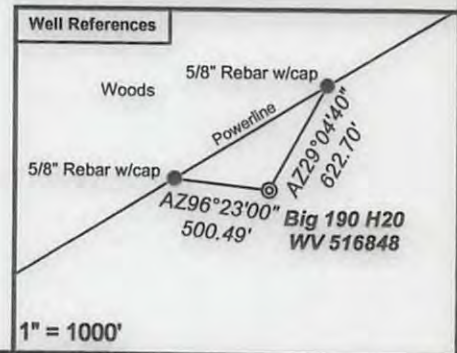
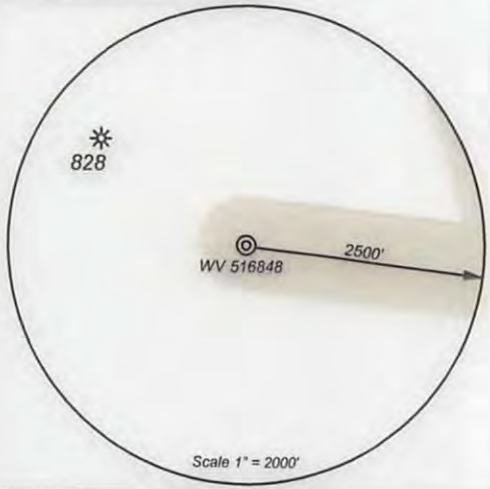
**WV 516848**  
**EQT Production Company**  
**Mills-Wetzel Land, Inc.**  
**659 Acres**

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	13	35	Wetzel	Grant	Jennie B. Goddard, et al.	50.00
5	12	43	Wetzel	Grant	Jennie B. Goddard, et al.	74.50
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	12	49	Wetzel	Grant	George W. Cain	1.00
24	13	36	Wetzel	Grant	Sara Miller, et al.	49.00
25	13	28	Wetzel	Grant	Kenneth D. Eiford	4.59
26	13	29	Wetzel	Grant	Kenneth D. Eiford	17.50
27	13	19	Wetzel	Grant	Larry D. & Mary A. Huggins	19.25
28	12	35	Wetzel	Grant	H. G. Kirkpatrick Est	49.50
29	12	42	Wetzel	Grant	Jimmy L. & James C. Yoho	103.30
30	12	34	Wetzel	Grant	HFP LLC	75.28
31	12	21	Wetzel	Grant	John Laws, et al.	11.50
32	12	22	Wetzel	Grant	Esther Ruth Coen	51.60

**Notes:**  
WV 516848 coordinates are  
NAD 27 N: 385,252.77 E: 1,688,213.00  
NAD 83 UTM N: 4,378,171.78 E: 533,887.00  
WV 516848 Landing Point coordinates are  
NAD 27 N: 385,656.48 E: 1,690,963.61  
NAD 27 Lat: 39.553677 Long: -80.596020  
NAD 83 UTM N: 4,378,308.78 E: 534,722.97  
WV 516848 Bottom Hole coordinates are  
NAD 27 N: 392,029.38 E: 1,688,977.86  
NAD 27 Lat: 39.571106 Long: -80.603340  
NAD 83 UTM N: 4,380,240.24 E: 534,085.65  
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.

Big 190	
H22, 516850	●
H21, 516849	●
H20, 516848	● 47-103-03109
H19, 516847	●
47-103-02727	● 47-103-03020
47-103-02728	● 47-103-03021
47-103-02729	● 47-103-03022
47-103-02730	● 47-103-03023
47-103-02731	●
47-103-02732	●
47-103-02733	●
47-103-02734	●
47-103-02735	●
47-103-02736	●
47-103-02856	●

Lease No.	Acres	Owner
300607	99	ET Blue Grass LLC, et al.
988625	87.5	Jeffrey Scott Cozart, et al.
993343	50	Mary R. Huggins, et al.
993291	74.5	Mary Margaret Price & James G. Price, et al.
994536	49.5	Gary Leigh Wright, 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: 196-34-G-10  
DRAWING NO: 196-10 Big 190 H20  
SCALE: 1" = 2000'  
MINIMUM DEGREE OF ACCURACY: 1:2500  
PROVEN SOURCE OF ELEVATION: NGS CORS Station

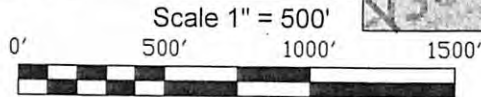
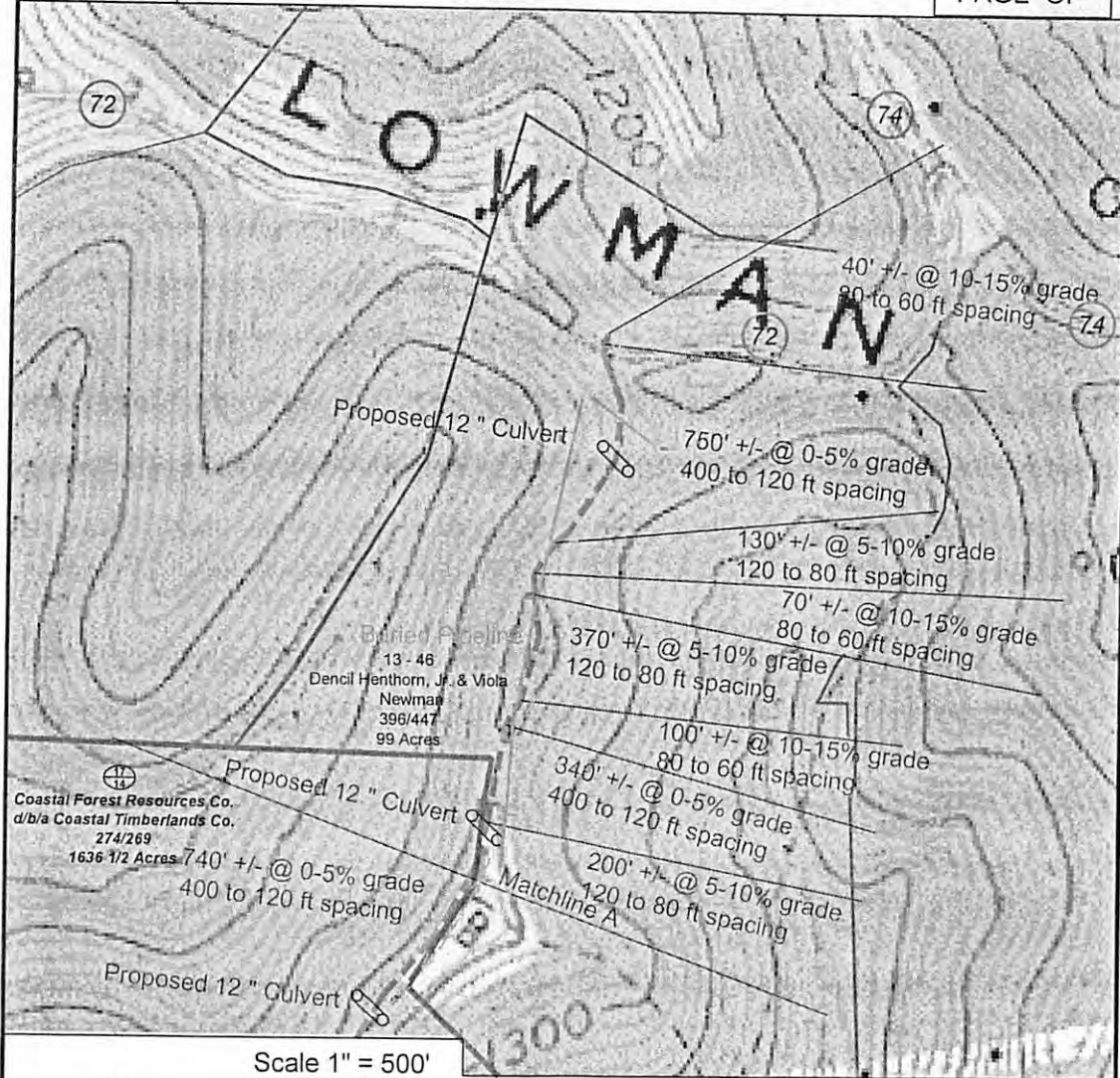
**STATE OF WEST VIRGINIA**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**OIL AND GAS DIVISION**

DATE: February 6 20 17  
OPERATOR'S WELL NO.: 516848  
API WELL NO  
47 - 103 - 03167  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
LOCATION: ELEVATION: 1473.5' (As-built) WATERSHED Upper Run and North Fork QUADRANGLE: Big Run  
DISTRICT: Grant COUNTY: Wetzel  
SURFACE OWNER: Coastal Forest Resources Company d/b/a Coastal Timberlands Company ACREAGE: 659  
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: 7,572

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





- Ⓒ Denotes to install 12" minimum culvert
- ⓧ Denotes a proposed stream crossing (if applies) \*see table for culvert detail\*

Unless otherwise noted, all roads shown hereon are existing and shall be maintained in accordance with WV D.E.P., Office of Oil and Gas Erosion and Sediment Control Field Manual as revised 2/99

Entrances upon county/state roads shall be maintained in accordance with WV D.O.T regulations, however, separate permits may be required by the WV D.O.T.

Sediment basins (traps) and appropriate erosion control barriers are to be constructed at all culverts and cross-drains as required in the aforementioned Erosion and Sediment Control Field Manual. Where field conditions dictate, alternative erosion control measures shall be enacted as required.

Earthwork contractors are responsible for notification to the operator and inspector prior to any deviation from this plan.

Temporary seed and mulch all slopes after construction of location.

Cut and stack all marketable timber.

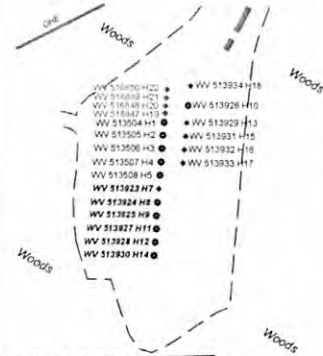
Stacked brush may be used for sediment control.

Applications for separate Public Land Corporation Permits on the access roads stream crossings have been prepared (if applies).

Additional culverts and/or other drainage structures and sediment control devices may be required by the WV D.E.P. Oil & Gas Inspector.

Operator is responsible for the coordination with contractor and Allegheny Surveys regarding any changes or additions the state may require

Big 190 Well Pad



DmH  
2-10-17

DRAWING IS NOT TO SCALE

SECTION OF THE Big Run 7.5' USGS QUADRANGLE	
Projected culvert inventory (for bid purposes only)	
12" minimum diameter culverts	0 Culverts
15" minimum diameter culverts	0 Culverts

DRAWN BY: Scott Brown	DATE: July 19, 2016	FILE NO: 196-34-G-10	DRAWING FILE NO: BIG 190 Well Pad Rec pg 1
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SURVEYING AND MAPPING SERVICES PERFORMED BY:  
**ALLEGHENY SURVEYS, INC.**

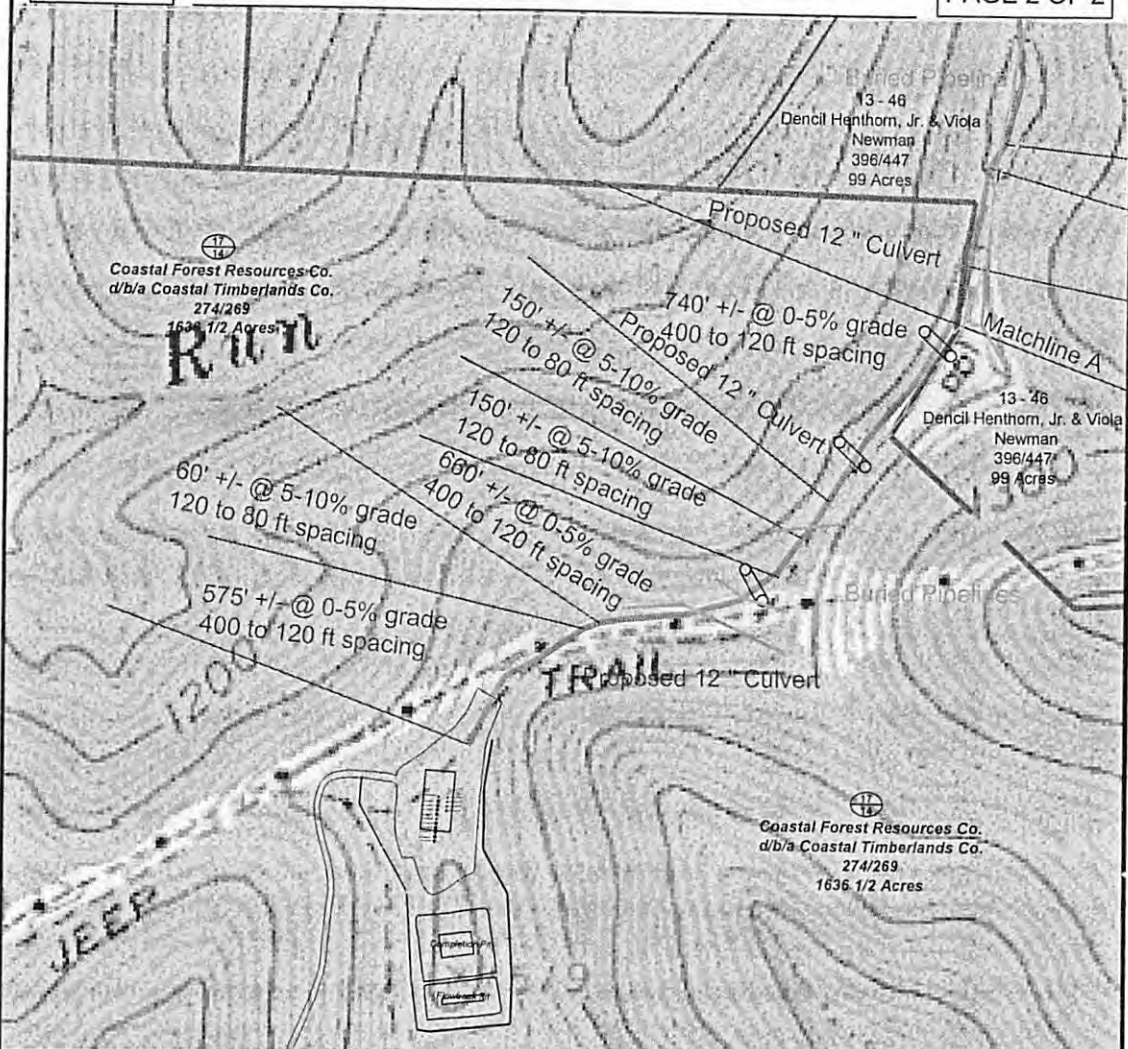
Birch River Office 1-800-482-8606 237 Birch River Road  
Phone: (304) 649-8606 P.O. Box 438  
Fax: (304) 649-8608 Birch River, WV 26610

- PROPERTY BOUNDARY
- ROAD
- DITCH
- SILT FENCE
- PROPOSED WELL LOCATION
- BROAD BASED DIP
- EXISTING GATE
- EXISTING CULVERT
- PROPOSED CULVERT
- CROSS DRAIN
- PIT-CUT WALLS
- PIT-COMPACTED WALLS
- AREA OF LAND APPLICATION OF PIT WASTE

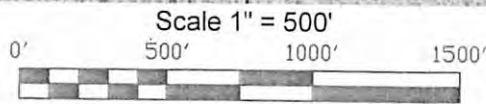
02/17/2017

4710303167





4710303167



Ⓒ Denotes to install 12" minimum culvert      ⓧ Denotes a proposed stream crossing (if applies) \*see table for culvert detail\*

Unless otherwise noted, all roads shown hereon are existing and shall be maintained in accordance with WV D.E.P., Office of Oil and Gas Erosion and Sediment Control Field Manual as revised 2/98

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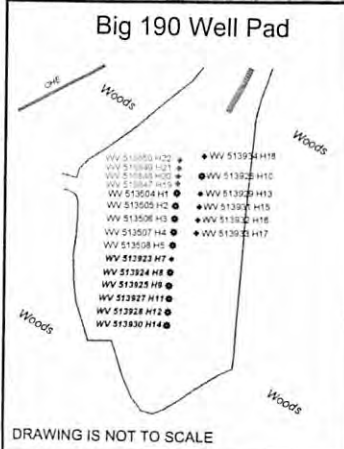
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Operator is responsible for the coordination with contractor and Allegheny Surveys regarding any changes or additions the state may require



*MH*  
*2-10-17*

SECTION OF THE Big Run 7.5' USGS QUADRANGLE		Proposed Disturbance Area	
Projected culvert inventory (for bid purposes only)		Well Site Location	Construction Complete
12" minimum diameter culverts	0 Culverts	Proposed Access Road	Construction Complete
15" minimum diameter culverts	0 Culverts	Approximate Total Disturbance	Construction Complete

DRAWN BY: Ben Singleton      DATE: July 19, 2015      FILE NO: 196-34-G-10      DRAWING FILE NO: BIG 190 Well Pad Rec pg 2

DRAWING IS NOT TO SCALE

PROPERTY BOUNDARY	
ROAD	
DITCH	
SILT FENCE	
PROPOSED WELL LOCATION	
BROAD BASED DIP	
EXISTING GATE	
EXISTING CULVERT	
PROPOSED CULVERT	
CROSS DRAIN	
PIT-CUT WALLS	
PIT-COMPACTED WALLS	
AREA OF LAND APPLICATION OF PIT WASTE	



SURVEYING AND MAPPING SERVICES PERFORMED BY:  
**ALLEGHENY SURVEYS, INC.**  
 Birch River Office      1-800-482-8606      237 Birch River Road  
 Phone: (304) 649-8606      P.O. Box 438  
 Fax: (304) 649-8608      Birch River, WV 26610

02/17/2017