

04/19/2019



west virginia department of environmental protection

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

www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

/

Re: Permit Modification Approval for

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.

Chief

Operator's Well Number:

Farm Name:

U.S. WELL NUMBER:

Date Modification Issued:

Promoting a healthy environment.

WW-6B
(04/15)

Permit Modification (API# 47-017-06878)
API NO. 47-017 - 06878
OPERATOR WELL NO. Mondeo Unit 3H
Well Pad Name: Deets Pad

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

1) Well Operator: Antero Resources Corporation 494507062 017 - Doddri West Uni Smithburg 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Mondeo Unit 3H Well Pad Name: Deets Pad

3) Farm Name/Surface Owner: Mary E. Deets and/or Paul A. Smith Public Road Access: Old US-50

4) Elevation, current ground: ~1422' Elevation, proposed post-construction: 1376'

5) Well Type (a) Gas Oil _____ Underground Storage _____
Other _____

(b) If Gas Shallow Deep _____
Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7600' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2950#

8) Proposed Total Vertical Depth: 7600' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 24200' MD

11) Proposed Horizontal Leg Length: 15370'

12) Approximate Fresh Water Strata Depths: 196', 221'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 1381', 1843', 1966'

15) Approximate Coal Seam Depths: 583', 755', 891

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

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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Office of Oil and Gas
MAR 29 2019
WV Department of
Environmental Protection

PDF
3/22/19

WW-6B
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Permit Modification (API# 47-017-06878)
API NO. 47- 017 - 06878
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Well Pad Name: Deets Pad

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	20"	New	H-40	94#	80'	80'	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	300'	300'	CTS, 417 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	24200'	24200'	6246 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

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	20"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	1000	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12,630	2500	Lead-HIPOZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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WV Department of
Environmental Protection

DAF
3/28/19

WW-6B
(10/14)

Permit Modification (API# 47-017-06878)
API NO. 47- 017 - 06878
OPERATOR WELL NO. Mondeo Unit 3H
Well Pad Name: Deets Pad

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

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

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

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs

Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 41.13 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.82 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.

Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

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25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

DAF
3/28/19

MONDEO UNIT 3H (DEETS PAD) - AREA OF REVIEW 35-8-5.11 PAGE 2

UWI (AP/Nura)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formations	Productive Formation(s) not perf'd
47017028100000	JONES B F JR	2	EQT PRODUCTION CO	CARNEGIE NAT GAS CRP	5,125	2920 - 4917	Blue Monday, Gordon, Warren, Alexander	Weir, Fifth, Warren

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Office of Oil and Gas
MAR 29 2011
WV Department of Environmental Protection

LATITUDE 39°20'00"

4,835'

LONGITUDE 80°40'00"

LATITUDE 39°17'30"

6,842'

6,110' TO BOTTOM HOLE

LONGITUDE 80°42'30"

11,029' TO BOTTOM HOLE

Antero Resources Corporation
Well No. Mondeo Unit 3H

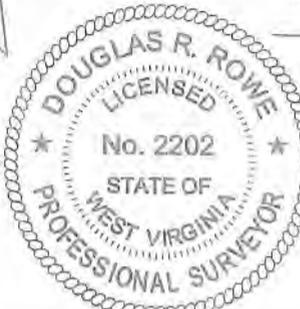
NOTES:
 WELL 3H TOP HOLE INFORMATION:
 N: 299,040ft E: 1,653,292ft
 LAT: 39°18'52.38" LON: 80°43'31.51"
 BOTTOM HOLE INFORMATION:
 N: 284,522ft E: 1,658,698ft
 LAT: 39°16'29.61" LON: 80°42'20.25"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE
 ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. FLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
 WELL 3H TOP HOLE INFORMATION:
 N: 4,351,729m E: 523,686m
 BOTTOM HOLE INFORMATION:
 N: 4,347,333m E: 525,407m

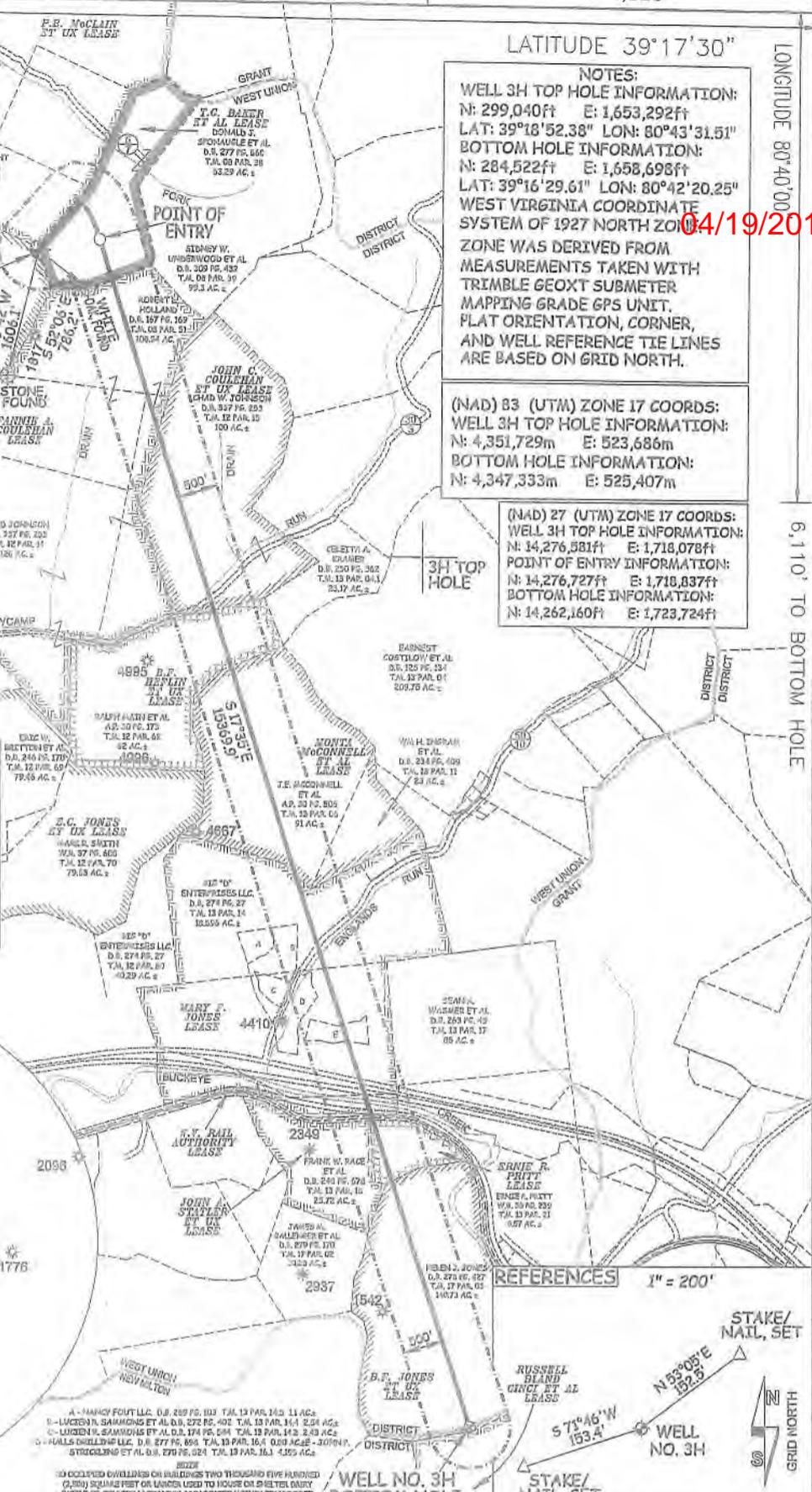
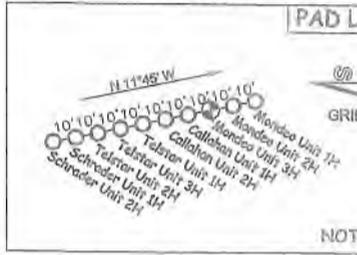
(NAD) 27 (UTM) ZONE 17 COORDS:
 WELL 3H TOP HOLE INFORMATION:
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 POINT OF ENTRY INFORMATION:
 N: 14,276,727ft E: 1,718,837ft
 BOTTOM HOLE INFORMATION:
 N: 14,262,160ft E: 1,723,724ft

04/19/2019

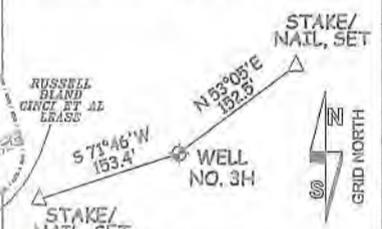
WV NORTH ZONE GRID NORTH



PAD LAYOUT



REFERENCES 1" = 200'



JOB # 14-025WA
 DRAWING # MONDEO3HR3
 SCALE 1" = 2000'

MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

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

LOCATION: ELEVATION 1,422' ORIGINAL 1,376' PROPOSED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
 QUADRANGLE SMITHBURG 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE

SURFACE OWNER MARY E. DEETS AND/OR PAUL A. SMITH
 OIL & GAS ROYALTY OWNER JOHNSON B. SMITH ET UX; T.G. BAKER ET AL; P.B. MCLAIN ET UX;
 FANNIE A. COULEHAN; JOHN C. COULEHAN ET UX; B.F. HEFLIN ET UX; MONTA MCCONNELL ET AL; MARY F. JONES;
 W.V. RAIL AUTHORITY; ERNIE R. PRITT; B.F. JONES ET UX

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-POE
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,600' TVD 24,200' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPLER - GT CORPORATION SYSTEM
 ADDRESS 1815 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

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 RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
 WILLOW LAND SURVEYING PLLC
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

LEGEND
 --- Surface Owner Boundary Lines +/-
 - - - Interior Surface Tracts +/-
 - - - Existing Fence
 ⊕ Found monument, as noted

THOMAS SUMMERS P.S. 2109
 DATE 03/08/19

OPERATOR'S WELL# MONDEO UNIT #3H
 API WELL # 47 - 017 - 06878
 STATE COUNTY PERMIT

ACREAGE 53.29 ACRES +/- AND/OR 175.78 ACRES +/-
 LEASE ACREAGE 180 ACRES +/-; 53.46 ACRES +/-; 200 ACRES +/-; 250 ACRES +/-; 118 ACRES +/-; 82 ACRES +/-; 114 ACRES +/-; 194 ACRES +/-; 301.18 ACRES +/-; 0.57 ACRES +/-; 145 ACRES +/-

LATITUDE 39°20'00"

4,835'

LATITUDE 39°17'30"

LONGITUDE 80°40'00"

6,842'

LONGITUDE 80°42'30"

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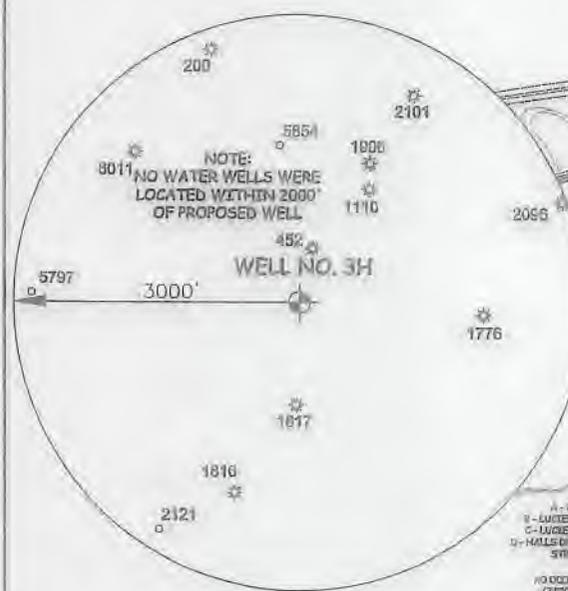
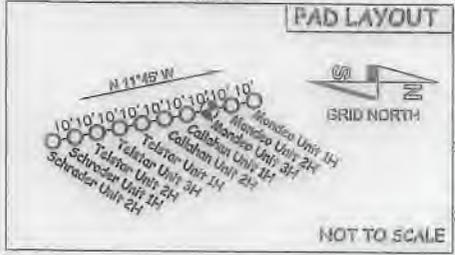
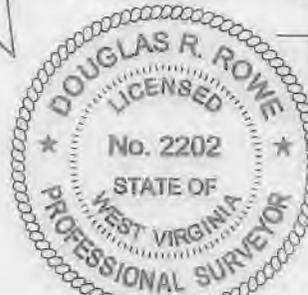
Antero Resources Corporation Well No. Mondeo Unit 3H

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WV NORTH ZONE GRID NORTH



JOB # 14-025WA
 DRAWING # MONDEO3HR3
 SCALE 1" = 2000'
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 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
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 WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
 LOCATION: ELEVATION 1,422'-ORIGINAL 1,376'-PROPOSED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
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THOMAS SUMMERS P.S. 2109
 DATE 03/08/19
 OPERATOR'S WELL# MONDEO UNIT #3H
 API WELL # 47 - 017 - 06878
 STATE COUNTY PERMIT



COUNTY NAME PERMIT

WW-6A1
(5/13)

Permit Modification (API# 47-017-06878)

Operator's Well No. Mondeo Unit 3H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
B.F Jones, et ux Lease	B.F. Jones, et ux	Carnegie Natural Gas Company	Flat Rate	0049/0008
	Carnegie Natural Gas Company	Carnegie Production Company	Assignment and Bill of Sale	0186/0061
	Carnegie Production Company	Equitable Production Company	Certificate of Registration of Trade Name	Exhibit 3
	Equitable Production Company	EQT Production Company	Name Change	0281/0346
	EQT Production Company	Antero Resources Corporation	Assignment	0325/0539

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Corporation
 By: Kevin Kilstrom
 Its: Senior Vice President - Production

RECEIVED
Office of Oil and Gas
MAR 29 2019
WV Department of Environmental Protection

*DAE
3/28/19*

WW-6A1

Operator's Well Number **Mondeo Unit 3H**
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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Johnson B. Smith et ux Lease</u>			
Johnson B. Smith, et ux	Eastern Oil Company	1/8	0022/0231
Eastern Oil Company	A. W. Stevenson	Assignment	0042/0328
A. W. Stevenson	Eastern Union Gas Company	Assignment	0042/0330
Eastern Union Gas Company	Pittsburgh & West Virginia Gas Company	Assignment	0085/0334
Pittsburgh & West Virginia Gas Company	Equitable Gas Company	Assignment	0121/0303
Equitable Gas Company	Equitrans, Inc.	Assignment	0154/0475
Equitrans, Inc.	Equitrans, L.P.	Name Change	0302/0123
Equitrans, L.P.	Equitable Production-Eastern States, Inc.	Assignment	0192/0019
Equitable Production-Eastern States, Inc.	Equitable Production Company	Merged	Exhibit 3
Equitable Production Company	EQT Production Company	Name Change	0281/0346
EQT Production Company	Antero Resources Corporation	Assignment	0325/0539
<u>P.B. McClain et ux Lease</u>			
P.B. McClain, et ux	The West Union Gas Company	1/8	0014/0477
The West Union Gas Company	Eastern Oil Company	Assignment	0024/0136
Eastern Oil Company	A.W. Stevenson	Assignment	0042/0328
A.W. Stevenson	Eastern Union Gas Company	Assignment	0042/0328
Eastern Union Gas Company	Pittsburgh & West Virginia Gas Company	Assignment	0085/0334
Pittsburgh & West Virginia Gas Company	Equitable Gas Company	Assignment	0121/0303
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EQT Production Company	Antero Resources Corporation	Assignment	0325/0539
<u>T.G. Baker et al Lease</u>			
T.G. Baker et al	J.D. Foley	1/8	0044/0483
J.D. Foley	Delta Petroleum Company	Assignment	Unrecorded
Delta Petroleum Company	Petroleum Development Corporation	Assignment	Unrecorded
Petroleum Development Corporation	PDC Mountaineer, LLC	Assignment	0240/0118
PDC Mountaineer, LLC	Antero Resources Corporation	Assignment	0371/0253

RECEIVED
 Office of Oil and Gas
 MAR 29 2019
 WV Department of Environmental Protection

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**CONTINUED ON NEXT PAGE

WW-6A1

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Fannie A. Coulehan Lease</u>			
Fannie A. Coulehan	West Virginia Gas Company	1/8	0018/0297
West Virginia Gas Company	Eastern Oil Company	Assignment	0018/0299
Eastern Oil Company	A.W. Stevenson	Assignment	0042/0328
A.W. Stevenson	Eastern Union Gas Company	Assignment	0042/0330
Eastern Union Gas Company	Pittsburgh & West Virginia Gas Company	Assignment	0085/0334
Pittsburgh & West Virginia Gas Company	Equitable Gas Company	Assignment	0121/0303
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<u>John C. Coulehan et ux Lease</u>			
John C. Coulehan, et ux	West Union Gas Company	1/8	0018/0291
West Union Gas Company	Eastern Oil Company	Assignment	0018/0290
Eastern Oil Company	Eastern Union Gas Company, et al	Assignment	0042/0328
Eastern Union Gas Company, et al	Pittsburgh & West Virginia Gas Company	Deed	0085/0334
Pittsburgh & West Virginia Gas Company	Equitable Gas Company	Deed	0121/0257
Equitable Gas Company	Equitrans, Inc.	Assignment	0154/0475
Equitrans, Inc.	Equitrans, L.P.	Name Change	0302/0123
Equitrans, L.P.	Equitable Production-Eastern States, Inc.	Assignment	0192/0019
Equitable Production-Eastern States, Inc.	Equitable Production Company	Merged	Exhibit 2
Equitable Production Company	EQT Production Company	Name Change	0281/0346
EQT Production Company	Antero Resources Corporation	Assignment	0325/0539
<u>B.F. Heflin, et ux Lease</u>			
B.F. Heflin, et ux	Joseph Freeman & D.P Stout	1/8	0017/0224
Joseph Freeman & D.P. Stout	South Penn Oil Company	Assignment	Unrecorded
South Penn Oil Company	Hope Natural Gas Company	Assignment	0026/0159
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Assignment	0143/0345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Name Change	0051/0795
CNG Transmission Corporation	Doninion Transmission Inc	Name Change	0058/0362
Doninion Transmission Inc	CNX Gas Company LLC	Merged	0293/0252
CNX Gas Company LLC	Noble Energy Inc	Assignment	0260/0369
Noble Energy Inc	Antero Resources Corporation	Assignment	0317/0379

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*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

**CONTINUED ON NEXT PAGE

WW-6A1

Operator's Well Number

Mondeo Unit 3H

Permit Modification (API# 47-017-06878)

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Monta McConnell et al Lease</u>			
Monta McConnell et al	E. D. Tate	1/8	0054/0364
E.D. Tate	P. Douglas Farr	Assignment	0094/0128
P. Douglas Farr	Carolyn Farr	Will	0015/0347
Carolyn Farr	Antero Resources Appalachian Corporation	Assignment	0271/0541
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Mary F. Jones Lease</u>			
Mary F. Jones	Tate and Gribble	1/8	0053/0404
Tate and Gribble	Carolyn E. Farr	Assignment	0126/0065
Carolyn E. Farr	P.D. Farr II	Assignment	0163/0368
P.D. Farr II	Carolyn E. Farr	Assignment	0167/0234
Carolyn E. Farr	Carolyn Elizabeth Farr Trust	Conveyance	0220/0237
Carolyn Elizabeth Farr Trust	Antero Resources Appalachian Corporation	Assignment	0271/0541
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Ernie R. Pritt Lease</u>			
Ernie R. Pritt	Antero Resources Corporation	1/8+	0388/0336

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Environmental Protection

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FORM WW-6A1
EXHIBIT 1

FILED

JUN 10 2013



IN THE OFFICE OF
SECRETARY OF STATE

Penny Barker, Manager
Corporations Division
Tel: (304)358-8000
Fax: (304)358-8381
Website: www.wv.gov
E-mail: judsonm@wv.gov

Natalie H. Turnant,
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-E
Charleston, WV 25305

FILE ONE ORIGINAL
(If you want a final stamped copy returned to you)
FEE: \$20.00

APPLICATION FOR
AMENDED CERTIFICATE
OF AUTHORITY

Office Hours: Monday - Friday
8:30 a.m. - 5:00 p.m. ET

In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby
applies for an Amended Certificate of Authority and submits the following statement:

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home state of incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
- Other amendments: _____
(attach additional pages if necessary)
- Name and phone number of contact person. (This is optional; however, if there is a problem with the filing, having a contact person and phone number may avoid having to return or reject the document.)

<u>Alvin A. Schopp</u>	<u>(304) 867-7310</u>
Contact Name	Phone Number
- Signature Information (See below "Important Legal Notice Regarding Signatures")

Print Name of Signer: <u>Alvin A. Schopp</u>	Title/Capacity: <u>Authorized Person</u>
Signature: <u>[Handwritten Signature]</u>	Date: <u>June 10, 2013</u>

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***Important Legal Notice Regarding Signatures For West Virginia Code §11B-4-120. Penalty for signing false document.**
Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

FORM WW-6A1
EXHIBIT 2

State of West Virginia



Certificate

*I, Joe Manchin III, Secretary of State of the
State of West Virginia, hereby certify that*

by the provisions of Chapter 31 of the West Virginia Code, Articles of Merger were received and filed
MERGING EQUITABLE PRODUCTION - EASTERN STATES, INC., A QUALIFIED DE ORGANIZATION, WITH AND INTO
EQUITABLE PRODUCTION COMPANY, A QUALIFIED ORGANIZATION.

Therefore, I hereby issue this

CERTIFICATE OF MERGER

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MAR 29 2019
WV Department of
Environmental Protection



*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
June 28, 2001*

Secretary of State

FORM WW-6A1
EXHIBIT 3

AE

State of West Virginia



Certificate

*I, Natalie E. Tennant, Secretary of State of the
State of West Virginia, hereby certify that*

EQT PRODUCTION COMPANY

has filed a "Certificate of Registration of Trade Name" in my office according to the provisions of Chapter 47 of the West Virginia Code and was found to conform to law.

Therefore, I hereby issue this

CERTIFICATE OF REGISTRATION OF TRADE NAME

authorizing it to transact business in West Virginia under the assumed name of

CARNEGIE PRODUCTION COMPANY



*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
April 9, 2009*

Natalie E. Tennant

Secretary of State

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MAR 29 2019

WV Department of
Environmental Protection



04/19/2019



March 14, 2019

Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

West Virginia Department of Environmental Protection
Office of Oil and Gas
Attn: Ms. Laura Adkins
601 57th Street
Charleston, WV 25304

Ms. Adkins:

Antero Resources Corporation (Antero) would like to submit the following permit modifications for seven approved wells on the Deets Pad. We are requesting to change the bottom hole locations of the Telstar Unit 2H (API# 47-017-06881), Telstar Unit 3H (API# 47-017-06831), Schrader Unit 1H (API# 47-017-06877), Schrader Unit 2H (API# 47-017-06879), Callahan Unit 1H (API# 47-017-06873), Callahan Unit 2H (API# 47-017-06874), **Mondeo Unit 3H (API# 47-017-06878).**

Attached you will find the following documents:

- REVISED Form WW-6B, which shows the revised lateral length, measured depth, and Production Casing/Cement program
- REVISED Form WW-6A1, which shows the new leases we will be drilling into
- REVISED Mylar Plats, which shows the new bottom hole location

We would also like to request the following three wells be **cancelled**, Mondeo Unit 1H (API# 47-017-06875), Mondeo Unit 2H (API# 47-017-06876), Telstar Unit 1H (API# 47-017-06880).

If you have any questions please feel free to contact me at (303) 357-6820.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "Karin Cox", is written over a light blue circular stamp.

Karin Cox
Permitting Agent
Antero Resources Corporation

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Office of Oil and Gas

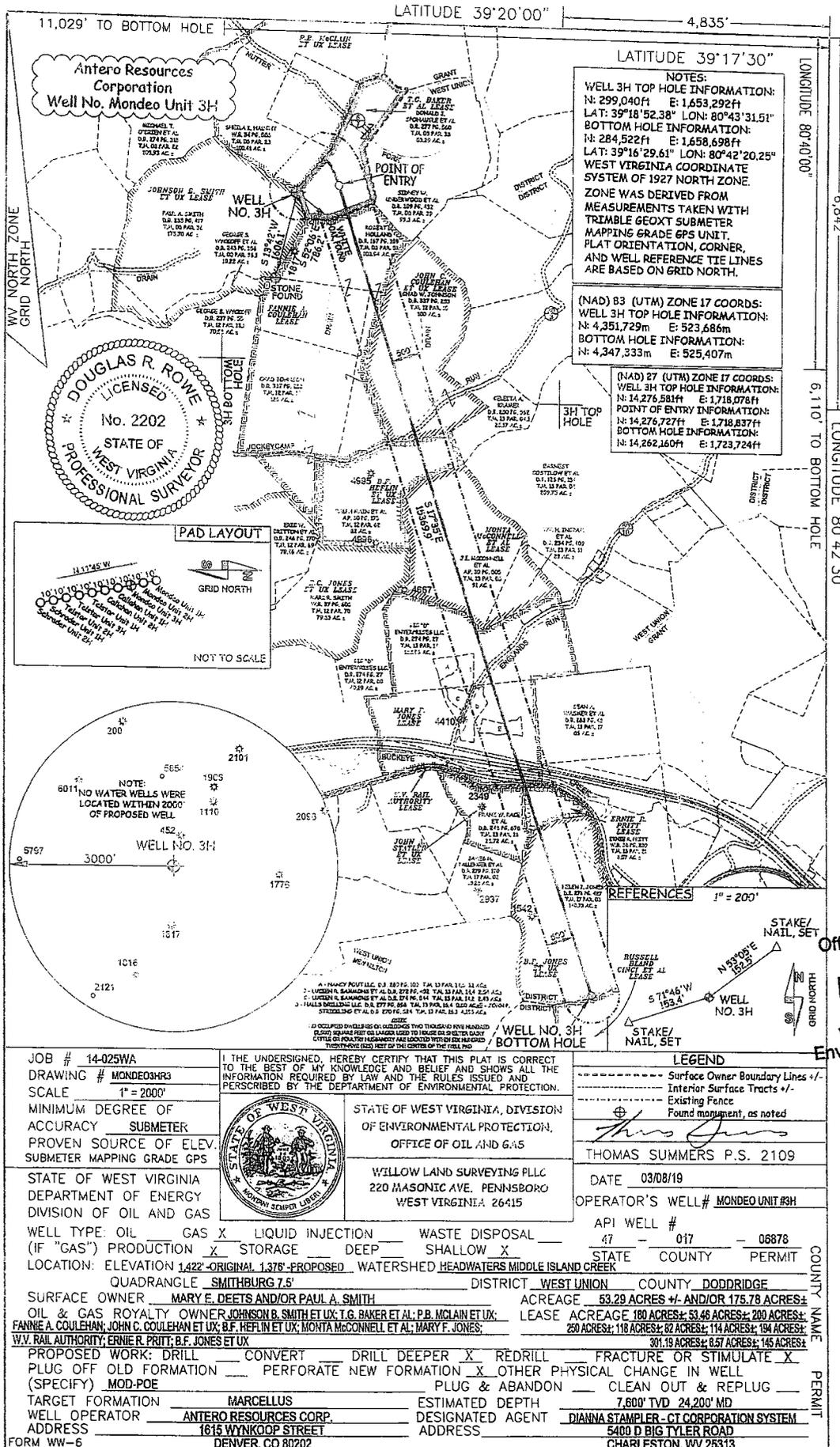
MAR 29 2019

WV Department of
Environmental Protection

Enclosures

VOID

Section



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

1) Well Operator: Antero Resources Corporation 494507062 017 - Doddri West Uni Smithburg 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Mondeo Unit 3H Well Pad Name: Deets Pad

3) Farm Name/Surface Owner: Mary E. Deets and/or Paul A. Smith Public Road Access: Old US-50

4) Elevation, current ground: ~1422' Elevation, proposed post-construction: 1376'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7600' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2950#

8) Proposed Total Vertical Depth: 7600' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 24200' MD

11) Proposed Horizontal Leg Length: 15370'

12) Approximate Fresh Water Strata Depths: 196', 221'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 1381', 1843', 1966'

15) Approximate Coal Seam Depths: 583', 755', 891

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

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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WW-6B
(04/15)

Permit Modification (API# 47-017-06878)
 API NO. 47- 017 - 06878 **04/19/2019**
 OPERATOR WELL NO. Mondeo Unit 3H
 Well Pad Name: Deets Pad

18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	80'	80'	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	300'	300'	CTS, 417 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500'	2500'	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	24200'	24200'	6246 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	1000	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12,630	2500	Lead-H/POZ & Tail-H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

WW-6B
(10/14)

Permit Modification (API# 47-017-06878)
API NO. 47-017 - 06878 **04/19/2019**
OPERATOR WELL NO. Mondeo Unit 3H
Well Pad Name: Deets Pad

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

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

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

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs
Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 41.13 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.82 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers
Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.
Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.
Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake
Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51
Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

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25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47017028100000	JONES B F JR	2	EQT PRODUCTION CO	CARNEGIE NAT GAS CRP	5,125	2920 - 4917	Blue Monday, Gordon, Warren, Alexander	Well, Fifth, Warren

WW-6A1
(5/13)

Operator's Well No. Mondeo Unit 3H

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
B.F Jones, et ux Lease	B.F. Jones, et ux	Carnegie Natural Gas Company	Flat Rate	0049/0008
	Carnegie Natural Gas Company	Carnegie Production Company	Assignment and Bill of Sale	0186/0061
	Carnegie Production Company	Equitable Production Company	Certificate of Registration of Trade Name	Exhibit 3
	Equitable Production Company	EQT Production Company	Name Change	0281/0346
	EQT Production Company	Antero Resources Corporation	Assignment	0325/0539

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

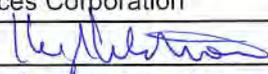
**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources
- WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

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MAR 15 2019
WV Department of
Environmental Protection

Well Operator: Antero Resources Corporation
 By: Kevin Kilstrom 
 Its: Senior Vice President - Production

Operator's Well Number

Mondeo Unit 3H

Permit Modification (API# 47-017-06878)

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Johnson B. Smith et ux Lease</u>			
Johnson B. Smith, et ux	Eastern Oil Company	1/8	0022/0231
Eastern Oil Company	A. W. Stevenson	Assignment	0042/0328
A. W. Stevenson	Eastern Union Gas Company	Assignment	0042/0330
Eastern Union Gas Company	Pittsburgh & West Virginia Gas Company	Assignment	0085/0334
Pittsburgh & West Virginia Gas Company	Equitable Gas Company	Assignment	0121/0303
Equitable Gas Company	Equitrans, Inc.	Assignment	0154/0475
Equitrans, Inc.	Equitrans, L.P.	Name Change	0302/0123
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EQT Production Company	Antero Resources Corporation	Assignment	0325/0539
<u>P.B McClain et ux Lease</u>			
P.B. McClain, et ux	The West Union Gas Company	1/8	0014/0477
The West Union Gas Company	Eastern Oil Company	Assignment	0024/0136
Eastern Oil Company	A.W. Stevenson	Assignment	0042/0328
A.W. Stevenson	Eastern Union Gas Company	Assignment	0042/0328
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T.G. Baker et al	J.D. Foley	1/8	0044/0483
J.D. Foley	Delta Petroleum Company	Assignment	Unrecorded
Delta Petroleum Company	Petroleum Development Corporation	Assignment	Unrecorded
Petroleum Development Corporation	PDC Mountaineer, LLC	Assignment	0240/0118
PDC Mountaineer, LLC	Antero Resources Corporation	Assignment	0371/0253

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Fannie A. Coulehan	West Virginia Gas Company	1/8	0018/0297
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**CONTINUED ON NEXT PAGE

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Mondeo Unit 3H

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INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Monta McConnell et al Lease</u>			
Monta McConnell et al	E. D. Tate	1/8	0054/0364
E.D. Tate	P. Douglas Farr	Assignment	0094/0128
P. Douglas Farr	Carolyn Farr	Will	0015/0347
Carolyn Farr	Antero Resources Appalachian Corporation	Assignment	0271/0541
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Mary F. Jones Lease</u>			
Mary F. Jones	Tate and Gribble	1/8	0053/0404
Tate and Gribble	Carolyn E. Farr	Assignment	0126/0065
Carolyn E. Farr	P.D. Farr II	Assignment	0163/0368
P.D. Farr II	Carolyn E. Farr	Assignment	0167/0234
Carolyn E. Farr	Carolyn Elizabeth Farr Trust	Conveyance	0220/0237
Carolyn Elizabeth Farr Trust	Antero Resources Appalachian Corporation	Assignment	0271/0541
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Ernie R. Pritt Lease</u>			
Ernie R. Pritt	Antero Resources Corporation	1/8+	0388/0336

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

FORM WW-6A1
EXHIBIT 1

FILED

JUN 10 2013

Natalie E. Turnant,
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-K
Charleston, WV 25305



Peony Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvnet.com
E-mail: business@wvnet.com

APPLICATION FOR
AMENDED CERTIFICATE
OF AUTHORITY

Office Hours: Monday - Friday
8:30 a.m. - 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed
stamped copy returned to you)
FEE: \$25.00

*** In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby ***
applies for an Amended Certificate of Authority and submits the following statement:

- 1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- 2. Date Certificate of Authority was issued in West Virginia: 6/25/2008
- 3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- 4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
- 5. Other amendments: _____
(attach additional pages if necessary)

6. Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alwyn A. Schopp (303) 967-7310
Contact Name Phone Number

7. Signature information (See below **Important Legal Notice Regarding Signatures**):

Print Name of Signer: Alwyn A. Schopp Title/Capacity: Authorized Person

Signature: *Alwyn A. Schopp* Date: June 10, 2013

Important Legal Notice Regarding Signatures For West Virginia Code §111-1-129. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

RECEIVED
Office of Oil and Gas
MAR 15 2019
WV Department of
Environmental Protection

State of West Virginia



Certificate

*I, Joe Manchin III, Secretary of State of the
State of West Virginia, hereby certify that*

by the provisions of Chapter 31 of the West Virginia Code, Articles of Merger were received and filed
MERGING EQUITABLE PRODUCTION - EASTERN STATES, INC., A QUALIFIED DE ORGANIZATION, WITH AND INTO
EQUITABLE PRODUCTION COMPANY, A QUALIFIED ORGANIZATION.

Therefore, I hereby issue this

CERTIFICATE OF MERGER

RECEIVED
Office of Oil and Gas
MAR 15 2019
WV Department of
Environmental Protection



*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
June 28, 2001*

Secretary of State

State of West Virginia



Certificate

*I, Natalie E. Tennant, Secretary of State of the
State of West Virginia, hereby certify that*

EQT PRODUCTION COMPANY

has filed a "Certificate of Registration of Trade Name" in my office according to the provisions of Chapter 47 of the West Virginia Code and was found to conform to law.

Therefore, I hereby issue this

CERTIFICATE OF REGISTRATION OF TRADE NAME

authorizing it to transact business in West Virginia under the assumed name of

CARNEGIE PRODUCTION COMPANY



*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
April 9, 2009*

Natalie E. Tennant

Secretary of State

RECEIVED
Office of Oil and Gas
MAR 15 2019
WV Department of
Environmental Protection