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**west virginia** department of environmental protection

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

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

May 26, 2015

**WELL WORK PLUGGING PERMIT**

**Plugging**

This permit, API Well Number: 47-7100010, issued to CHESAPEAKE APPALACHIA, L.L.C., is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. The above named operator will also file, as required in WV Code 22-6-23, an affidavit on form WR-38 by two experienced persons in the operator's employment and the Oil and Gas inspector that the work authorized under this permit was performed and a description given. Failure to abide by all statutory and regulatory provisions governing all duties and operations here under may result in suspensions or revocation of this permit and in addition may result in civil and/or criminal penalties being imposed upon the operator.

This permit will expire in two (2) years from date of issue. If there are any questions, please free to contact me at (304) 926-0499 ext. 1654.

James Martin

Chief

Operator's Well No: 1A-1880

Farm Name: UNITED STATES OF AMERICA

**API Well Number: 47-7100010**

**Permit Type: Plugging**

Date Issued: 05/26/2015

**Promoting a healthy environment.**

**05/29/2015**

# PERMIT CONDITIONS

West Virginia Code §22-6-11 allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

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## CONDITIONS

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1. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.

71 000 109

CK # 5258660  
\$100.00

FORM WW-4 (B)  
Observe  
File Copy  
(Rev. 2/01)

1) Date: 3/30/2015  
2) Operator's Well No. 21201  
3) API Well No. 47-071-00010

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

- 4) Well Type: Oil        Gas X Liquid injection        Waste disposal         
(Is Gas, Production X or Underground storage       ) Deep        Shallow X
- 5) Location: Elevation 2,526' Watershed Shafter Run of North Fork of South Branch  
District Union County Pendleton Quadrangle Hopeville, WV 7.5'
- 6) Well Operator Chesapeake Appalachia, L.L.C. 7) Designated Agent Jessica Greathouse  
Address P.O. Box 18496 Address P.O. Box 6070  
Oklahoma City, OK 73154-0496 Charleston, WV 25362
- 8) Oil and Gas Inspector to be notified 9) Plugging Contractor  
Name Bill Hatfield Name Chesapeake Appalachia, L.L.C.  
Address P.O. Box 522 Address P.O. Box 18496  
Buckhannon, WV 26201 Oklahoma City, OK 73154-0496

10) Work Order: The work order for the manner of plugging this well is as follows:

See Attached Sheet

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work Order approved by Inspector Bill Hatfield Date 4/29/2015

05/29/2015



## 21201 P&amp;A Procedure

NOTE: There are bridge plugs in this well at 8700' and 8627'

- 1) Prepare road and location, MIRU service rig
- 2) Check pressure on tubing and casing
- 3) Blow well down to tank
- 4) If needed load hole with enough fluid to kill highest pressure, plus 25% safety factor
- 5) Install BOP if needed, TOH with 2 3/8" tubing
- 6) Remove cage/seating nipple and inspect tubing. If tubing is in good condition, use as work string – if not replace
- 7) TIH with W.S. to 8600', pump 20 bbls gel
- 8) Spot 200' cement plug 8600'-8400', pull W.S.
- 9) RIH with tools to check top of plug. If TOC is below 8450', then add to top of plug
- 10) TIH with W.S. to 7700', spot 75 bbls gel
- 11) Spot 125' cement plug 7700'-7575', pull W.S.
- 12) Attempt to cut or rip 5 1/2" casing approximately at 4600' and pull
  - A) If successful
    - a) Run W.S. to 4600', pump 120 bbls gel
    - b) Spot 100' cement plug 4600'-4500'
    - c) Proceed to step 13
  - B) If unsuccessful
    - a) Rip or shoot additional holes approximately at 4550'
    - b) TIH with W.S. to 4600', pump 40 bbls gel
    - c) Spot 100' cement plug 4600'-4500', pull W.S.
    - d) Cut 5 1/2" at free-point approximately at 3100', and pull
    - e) Proceed to step 13
- 13) Pull or run W.S. to 3100', pump 150 bbls gel
- 14) Spot 130' cement plug 3100'-2970', pull W.S. to 1200'
- 15) Pump 80 bbls gel (shut down if gel returns to surface)
- 16) Spot 100' cement plug 1200'-1100', pull W.S. to 150'
- 17) <sup>(6a)</sup> SPOT 100' CEMENT PLUG FROM 473' - 373'.  
Spot 150' cement plug 150'-surface
- 18) Pull W.S. and top off with cement
- 19) Erect monument and reclaim as prescribed by law

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Well 21201  
API 47-071-00010  
Page 1 of 2



IV-35  
(Rev 8-84)

**RECEIVED**  
AUG 24 1984

OIL & GAS DIVISION  
DEPT. OF MINES

State of West Virginia  
Department of Mines  
Oil and Gas Division

Date August 22, 1984  
Operator's Well No. 1 - 1880  
Farm USA #A1 - Confidential  
API No. 47 - 071 - 0010  
CONFIDENTIAL

WELL OPERATOR'S REPORT  
OF

DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil \_\_\_ / Gas x / Liquid Injection \_\_\_ / Waste Disposal \_\_\_  
(If "Gas," Production \_\_\_ / Underground Storage \_\_\_ / Deep x / Shallow \_\_\_)

LOCATION: Elevation: 2522' Watershed Shaffer Run  
District: Union County Pendleton Quadrangle Hopeville

COMPANY Union Drilling, Inc.  
ADDRESS P.O. Drawer 40, Buckhannon, WV 26201  
DESIGNATED AGENT Joseph C. Vanzant, Jr.  
ADDRESS P.O. Drawer 40, Buckhannon, WV 26201  
SURFACE OWNER Monongahela Nat'l Forest  
ADDRESS Jerry Bremer, Petersburg, WV 26847  
MINERAL RIGHTS OWNER Same  
ADDRESS \_\_\_\_\_

OIL AND GAS INSPECTOR FOR THIS WORK  
Robert Stewart ADDRESS P.O. Box 345 Jane Lew, WV  
PERMIT ISSUED 6/17/83 26378  
DRILLING COMMENCED 6/23/83  
DRILLING COMPLETED 8/29/83

IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON \_\_\_\_\_

Casing Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cord.			
13-10"	423'		
9 5/8	3017.6'	3017.6	1295 cf
8 5/8			
7			
5 1/2		9016.48	642 cf
4 1/2			
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Oriskany Depth 8600' feet  
Depth of completed well 9047' feet Rotary x / Cable Tools \_\_\_\_\_  
Water strata depth: Fresh \_\_\_\_\_ feet; Salt \_\_\_\_\_ feet  
Coal seam depths: none Is coal being mined in the area? no

OPEN FLOW DATA  
Producing formation Oriskany Pay zone depth 8592' feet  
Gas: Initial open flow show Mcf/d Oil: Initial open flow \_\_\_\_\_ Bbl/d  
Final open flow 1235 mcf Mcf/d Final open flow \_\_\_\_\_ Bbl/d  
Time of open flow between initial and final tests 2 hours

Static rock pressure 1850# psig (surface measurement) after 7 days hours shut in  
(If applicable due to multiple completion--)

Second producing formation \_\_\_\_\_ Pay zone depth \_\_\_\_\_ feet  
Gas: Initial open flow \_\_\_\_\_ Mcf/d Oil: Initial open flow APR 1 2015 Bbl/d  
Final open flow \_\_\_\_\_ Mcf/d Oil: Final open flow \_\_\_\_\_ Bbl/d  
Time of open flow between initial and final tests \_\_\_\_\_ hours

Static rock pressure \_\_\_\_\_ psig (surface measurement) after \_\_\_\_\_ hours shut in

(Continue on reverse side)

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WV Department of Environmental Protection

Well 21201  
API 47-071-00010  
Page 2 of 2

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

- Halliburton - 10/11/83 - Acid Treatment - 1500 gal. Acid
- Halliburton - 10/13/83 - Acid Treatment - 1500 gal. Acid
- Halliburton - 10/25/83 - Frac Treatment
- 8745/47, 8759/64, 8789/92 - 47,500# sand and 775 Bbls. water

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Sand & Shale			0	2129	
Foreknobs Group			2129	2154	
Benson			3808	3835	
Scherr			3967	4015	
Elk			5885	5920	
Herrell Black Shale			7621	7688	
Chaneyville Limestone			7845	7856	
Mahantango Shale			7860	7898	
Upper Marcellus Shale			8097	8141	
Lower Marcellus Shale			8165	8220	
Tioga Metabentonite			8315	8330	
Needmore Shale			8360	8378	
Oriskany Sandstone			8512	8597	
Helderberg Sandstone			8742	8802	
				9047	T.D.

(Attach separate sheets as necessary)

Union Drilling, Inc.  
Well Operator

By: Joseph C. Pettey

Date: Joseph C. Pettey, Vice President of Production  
8/22/84

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Note: Regulation 2.02(i) provides as follows:  
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including ..., encountered in the drilling of a well."

WV Department of Environmental Protection

05/29/2015



7100010P

WW4-A  
Revised  
2/01

1) Date: 3/30/2015  
2) Operator's Well No. 21201 P&A  
3) API Well No. 47-071-00010

STATE OF WEST VIRGINIA - BUREAU OF ENVIRONMENT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL

4) Surface Owner(s) to be served:  
(a) Name U.S. Department of Agriculture  
Address U.S. Forest Service/  
Mon. National Forest  
200 Sycamore Street  
Elkins, WV 26241-3962  
(b) Name U.S. Department of Interior  
Address Bureau of Land Mgmt - Eastern States  
626 E. Wisconsin Ave., Suite 200  
Milwaukee, WI 53202-4617  
(c) Name \_\_\_\_\_  
Address \_\_\_\_\_  
6) Inspector Bill Hatfield  
Address P.O. Box 522  
Buckhannon, WV 26201  
Telephone 304-767-1828

5) Coal Operator  
(a) Name \_\_\_\_\_  
Coal Owner(s) with Declaration  
(b) Name \_\_\_\_\_  
Address \_\_\_\_\_  
Name \_\_\_\_\_  
Address \_\_\_\_\_  
Name \_\_\_\_\_  
Address \_\_\_\_\_  
Coal Lessee with Declaration  
(c) Name \_\_\_\_\_  
Address \_\_\_\_\_

TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:

- (1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
- (2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side. However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed the Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of the Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.



Well Operator: Chesapeake Appalachia, L.L.C.  
By: [Signature]  
Its: Manager - Operations, Appalachia South  
Address: P.O. Box 18496  
Oklahoma City, OK 73154-0496  
Telephone: 405-935-4073

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Subscribed and sworn before me this 27<sup>th</sup> day of March the year of 2015 APR 01 2015

My Commission Expires September 16, 2018

Notary Public  
WV Department of  
Environmental Protection

05/29/2015

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Well 21201  
API 47-071-00010

7014 2120 0003 6636 5965

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**ELKINS WV 26241**

Postage	\$ 1.40	0523
Certified Fee	\$3.30	01
Return Receipt Fee (Endorsement Required)	\$2.70	Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00	
<b>Total P</b>	<b>\$7.40</b>	<b>03/30/2015</b>

Sent To: **21201 P&A**  
 Street & or PO B: U.S. Department of Agriculture  
 City, Sta: U.S. Forest Service/Mon. National Forest  
 200 Sycamore Street  
 Elkins, WV 26241-3962

PS Form See Reverse for Instructions

7014 2120 0003 6636 5958

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**MILWAUKEE WI 53202**

Postage	\$ 1.40	0523
Certified Fee	\$3.30	01
Return Receipt Fee (Endorsement Required)	\$2.70	Postmark Here
Restricted Delivery Fee (Endorsement Required)	\$0.00	
<b>Total P</b>	<b>\$7.40</b>	<b>03/30/2015</b>

Sent To: **21201 P&A**  
 Street & or PO B: U.S. Department of Interior  
 City, Sta: Bureau of Land Management - Eastern States  
 626 E. Wisconsin Avenue, Suite 200  
 Milwaukee, WI 53202-4617

PS Form See Reverse for Instructions

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Form WW-9  
Rev. 02/01

API Number 47-071-00010  
Operator's Well No. 21201 P&A

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM  
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name Chesapeake Appalachia, L.L.C. OP Code 494477557  
Watershed Shafter Run of North Fork of South Branch Quadrangle Hopeville, WV 7.5'  
Elevation 2,526' County Pendleton District Union

Description of anticipated Pit Waste: Plugging Returns/Cement

Will a synthetic liner be used in the pit? Yes

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number \_\_\_\_\_ )
- Reuse (at API Number \_\_\_\_\_ )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain \_\_\_\_\_ )

Proposed Work For Which Pit Will Be Used:

- Drilling
- Workover
- Swabbing
- Plugging
- Other (Explain \_\_\_\_\_ )

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on December 31, 1999, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature *David Gocke*

Company Official (Typed Name) David Gocke

Company Official Title Manager - Operations, Appalachia South

Subscribed and sworn before me this 27<sup>th</sup> day of March, 2015

*Phyllis A. Copley* Notary Public.

My Commission Expires September 16, 2018

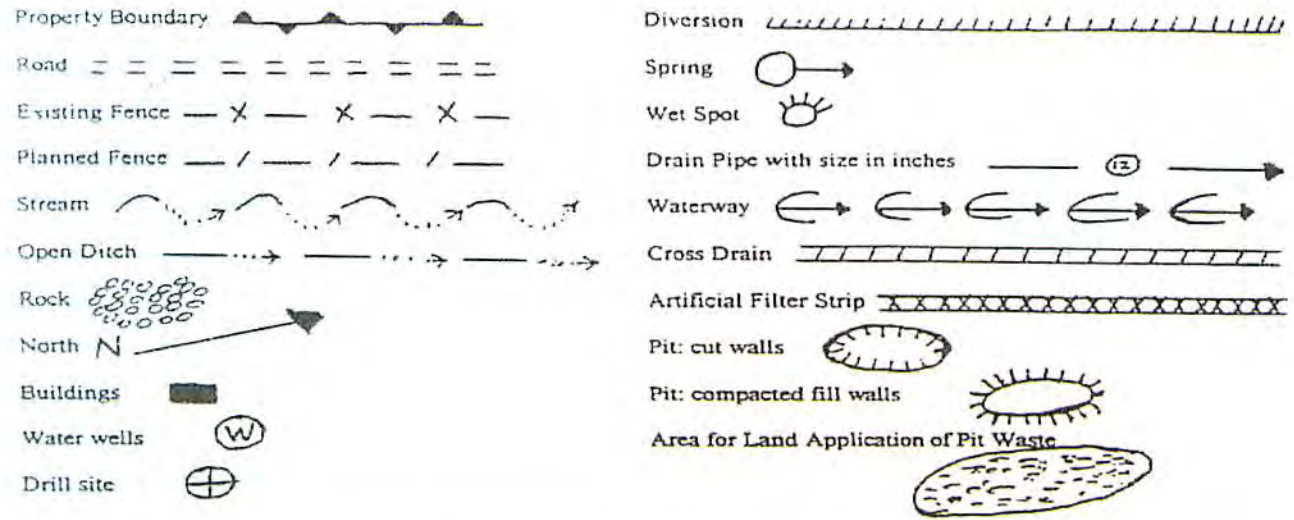


05/29/2015

Attachment #1

API #: 47-071-00010  
 Operator's Well No. 21201 P&A

LEGEND



Proposed Revegetation Treatment: Acres Disturbed 1.0 Prevegetation pH 6.1  
 Lime 3 Tons/acre or to correct to pH 6.5  
 Fertilizer (10-20-10 or equivalent) 500 lbs/acre  
 Mulch Weed free straw

Area I		Seed Mixtures		Area II	
Seed Type	lbs/acre	Seed Type	lbs/acre	Seed Type	lbs/acre
Winter Wheat (6/15-11/15)	20	Spring Wheat (2/15-6/15)	20		
Annual Rye (6/15-11/15)	20	Oats (2/15-6/15)	20		
Alfalfa (pre inoculated)	10	Durana Clover (pre inoculated)	2		
Mammoth Red Clover (pre inoculated)	5	Chicory	3		

Attach:  
 Drawing(s) of road, location, pit and proposed area for land application.  
 Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Bill Halfield  
 Title: oil & gas inspector  
 Date: 4/29/2015  
 Field Reviewed? (  ) Yes (  ) No



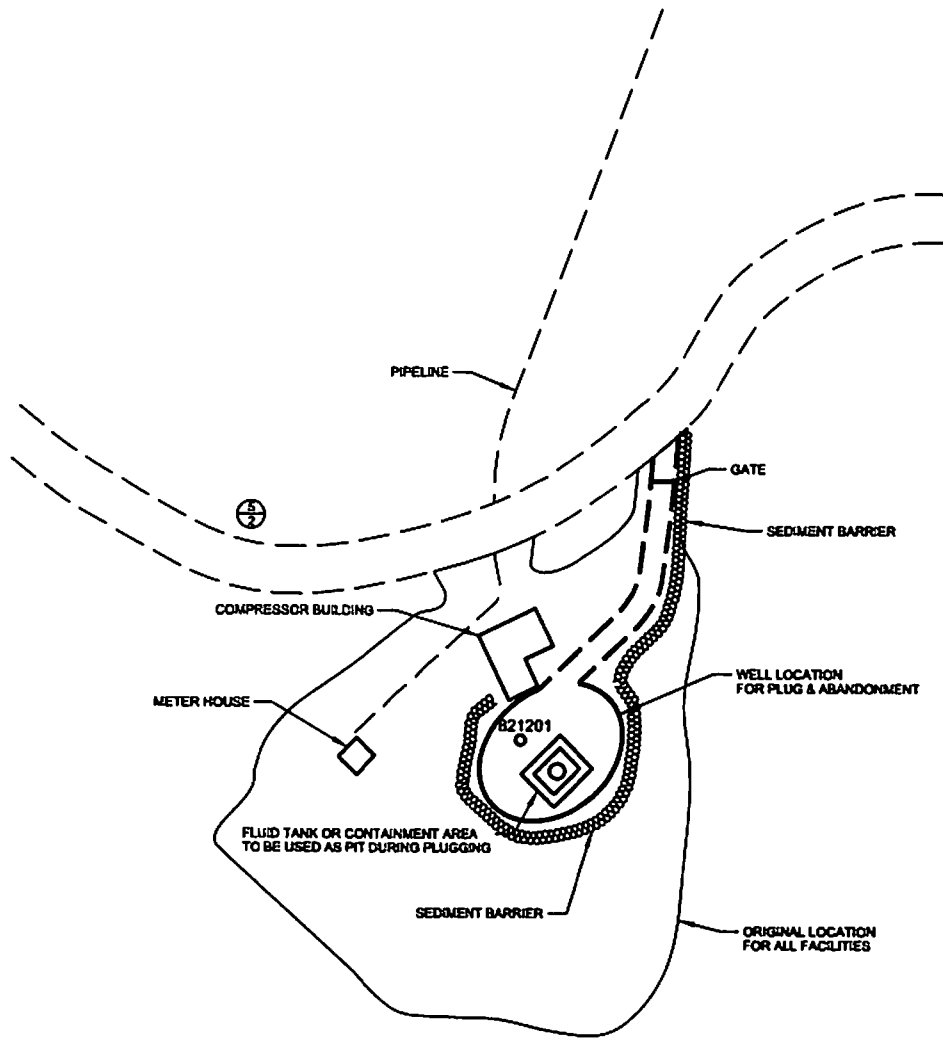
71000104

# CHESAPEAKE APPALACHIA, L.L.C.

## RECLAMATION DIAGRAM

### WELL LOCATION 21201

API 47-071-00010



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#### GENERAL NOTES

This drawing is a schematic representation of the well site and access road. Proposed structures such as well site, drilling pit, roadways, culverts, sediment barriers, etc. are shown in approximate pre-planning configurations.

All culvert pipes will be a minimum of 15 inches in diameter. All culvert pipes installed will be accompanied by an entrance sump with dimensions no less than 3 feet (width) x 3 feet (length) x 4 feet (deep). Culverts will be installed at an angle to ensure proper flow. The out fall of culverts will be protected from erosion and sedimentation using large rocks or other sediment controls deemed necessary in the prevention of erosion and sedimentation. Storm water from the ditches to the culverts will be directed to stable natural vegetative areas. Where culverts are not practical, operator will have other sediment control in place to minimize erosion sedimentation.

Cross drains, broad based dips, water bars, and diversion ditches, will be employed during the construction phase. These erosion and sediment control structures will be used to control erosion and sedimentation during the construction phase, where applicable, and in areas that will allow. These structures will be considered permanent and used as such.

Permanent seeding: See Attachment #1.

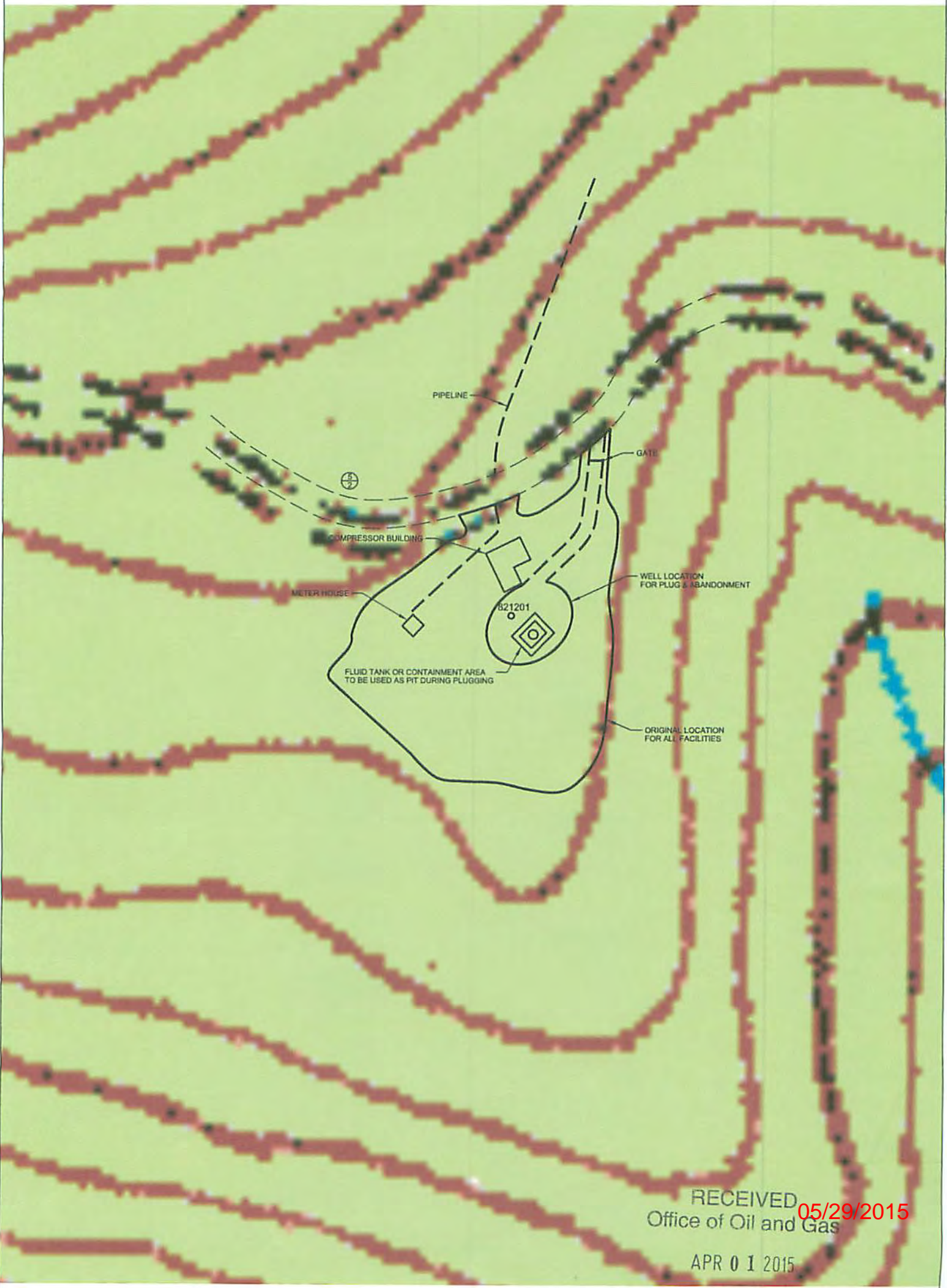
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CHESAPEAKE APPALACHIA, L.L.C.  
TOPOGRAPHICAL MAP OF ACCESS AND  
WELL LOCATION 21201  
API 47-071-00010



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WV Department of  
Environmental Protection

CHESAPEAKE ENERGY CORPORATION - EASTERN DIVISION  
P.O. BOX 579 - 8165 COURT AVENUE - HAMLIN, WV 25523  
304 824-5141 - FAX 304 824-2247



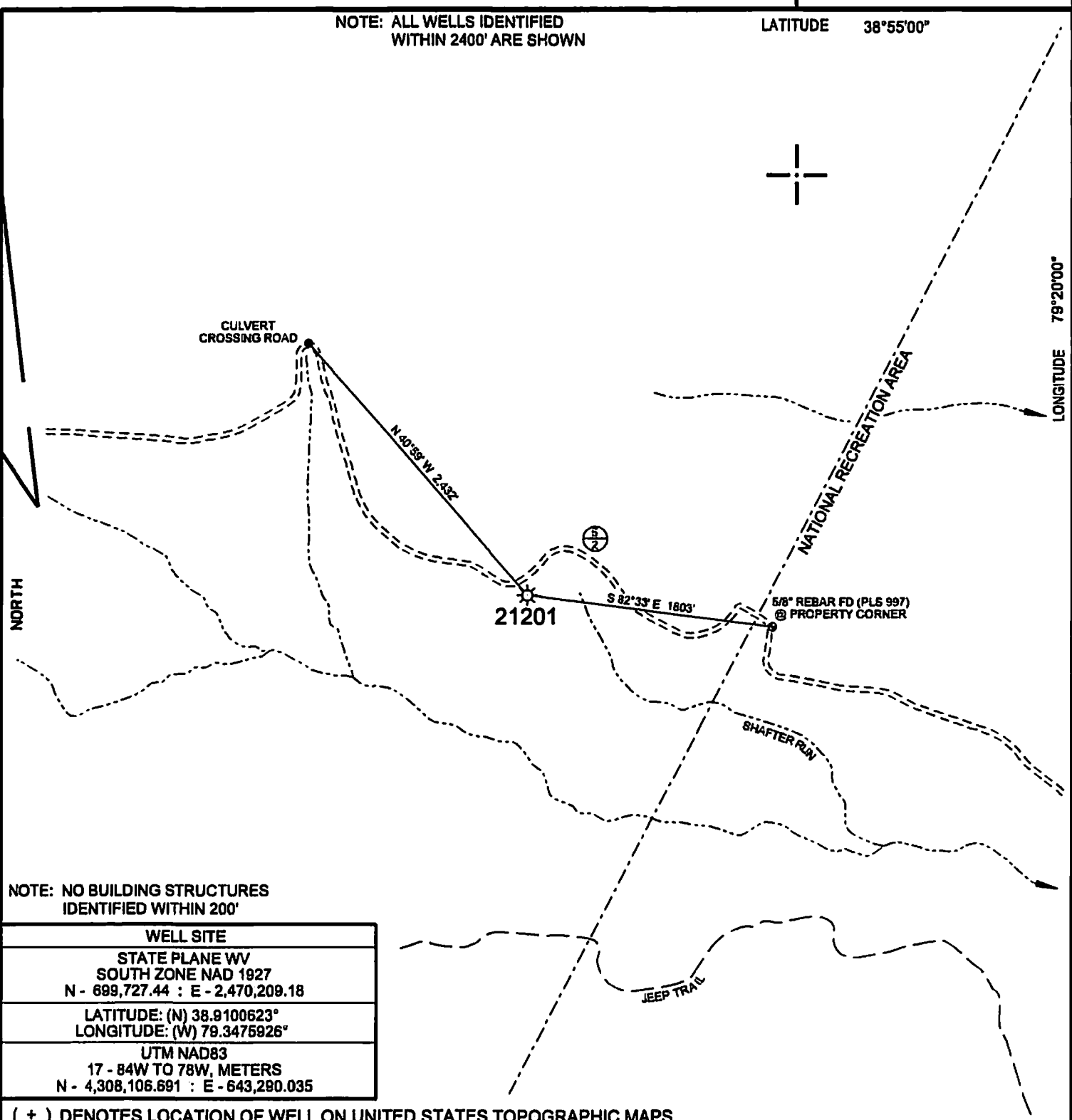
NOTE: ALL WELLS IDENTIFIED  
WITHIN 2400' ARE SHOWN

LATITUDE 38°55'00"

4,061'

LONGITUDE 79°20'00"

2,402'



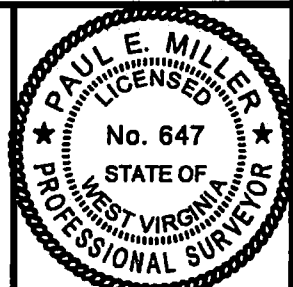
NOTE: NO BUILDING STRUCTURES  
IDENTIFIED WITHIN 200'

<b>WELL SITE</b>
STATE PLANE WV SOUTH ZONE NAD 1927 N - 699,727.44 : E - 2,470,209.18
LATITUDE: (N) 38.9100623° LONGITUDE: (W) 79.3475926°
UTM NAD83 17 - 84W TO 78W, METERS N - 4,308,106.691 : E - 643,280.035

( + ) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE NO.	821201.DGN
DRAWING NO.	821201
SCALE	1" = 1000'
MINIMUM DEGREE OF ACCURACY	1 : 200
PROVEN SOURCE OF ELEVATION	MAPPING GRADE GPS

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 REGU-  
LATIONS ISSUED AND PRESCRIBED BY THE DEPART-  
MENT OF ENVIRONMENTAL PROTECTION.  
(SIGNED) *Paul E. Miller*  
R.P.E. \_\_\_\_\_ L.L.S. 647



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



DATE MARCH 30, 2015  
OPERATOR'S WELL NO. 21201  
API WELL NO.

47 STATE 071 COUNTY 00010 P PERMIT

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

LOCATION: ELEVATION 2,526' WATER SHED SHAFTER RUN OF NORTH FORK OF SOUTH BRANCH

DISTRICT \_\_\_\_\_ UNION \_\_\_\_\_ COUNTY PENDLETON

QUADRANGLE HOPEVILLE, WV 7.5'

SURFACE OWNER USA ACREAGE -

OIL & GAS ROYALTY OWNER \_\_\_\_\_ LEASE ACREAGE \_\_\_\_\_

LEASE NO. \_\_\_\_\_

PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR  
STIMULATE \_\_\_ PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW  
FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_

PLUG AND ABANDON X CLEAN OUT AND REPLUG \_\_\_

TARGET FORMATION \_\_\_\_\_ ESTIMATED DEPTH \_\_\_\_\_

WELL OPERATOR CHESAPEAKE APPALACHIA, L.L.C. DESIGNATED AGENT JESSICA GREATHOUSE

ADDRESS P.O. BOX 18496, OKLAHOMA CITY, OK 73154-0496 ADDRESS CHESAPEAKE APPALACHIA, L.L.C. PO BOX 8070, CHARLESTON, WV 25382

FORM WW-6

COUNTY NAME

PERMIT

05/29/2015