



**west virginia** department of environmental protection

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

June 13, 2016

**WELL WORK PLUGGING PERMIT**

**Plugging**

This permit, API Well Number: 47-7500051, 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: MNF 15

Farm Name: U.S.A.

**API Well Number: 47-7500051**

**Permit Type: Plugging**

Date Issued: 06/13/2016

**Promoting a healthy environment.**

**06/17/2016**

## 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.

### 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.
4. This well is under a consent order and must be plugged under the terms of that agreement.

Inspector's Signed Copy 7500051A

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

1) Date: 5/5/2016  
2) Operator's Well No. 824478  
3) API Well No. 47-075-00051

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 3,915' Watershed Walderman Run of Poca Run  
 District Green Bank County Pocahontas Quadrangle Thornwood, 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 Name Danny Mullins  
 Address 220 Jackacres Road  
Buckhannon, WV 26201

9) Plugging Contractor Name Chesapeake Appalachia, L.L.C.  
 Address P.O. Box 18496  
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 Danny Mullins Date 5-16-16

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API Number: 47-075-00051Operator's Well Number: 824478**P&A PROCEDURE**

- 1) Prepare road and location, MIRU Service Rig
- 2) Check pressures, blow well down to tank
- 3) If needed, kill well with enough fluid to kill highest pressure plus 25% safety factor
- 4) If needed, install BOP, tag PBTD with tubing (expect approximately 6040'), TOH with tubing
- 5) Remove cage/seating nipple and inspect tubing. If tubing is in suitable condition, use as work string – if not, replace.
- 6) Run W.S. to PBTD (approximately 6040') deeper if possible, spot gel
- 7) Spot 300' cement plug approximately 6040'-5740', pull W.S., WOC
- 8) RIH with tools or tubing to check top of plug. If TOC is below 5765', then add to top of plug
- 9) Pull or run W.S. to 5425', spot gel
- 10) Spot 150' cement plug 5425'-5275', pull W.S. to 4700'
- 11) Spot 125' cement plug 4700'-4575', pull W.S.
- 12) Cut 4.5" casing at free-point (approximately 2960') and pull
- 13) Run W.S. to 2960', spot gel
- 14) Spot 150' cement plug 2960'-2810', pull W.S. to 1450'
- 15) Spot 100' cement plug 1450'-1350', pull W.S. to 1125'
- 16) Spot 150' cement plug 1125'-985', pull W.S., WOC
- 17) RIH with tools or tubing to check top of plug. If TOC is below 1030', then add to top of plug.
- 18) Run or pull W.S. to 265'
- 19) Spot 265' cement plug 265'-surface
- 20) Pull W.S. and top off with cement
- 21) Erect monument and reclaim as prescribed by law

DM

3915' Elevation  
 3965 to 3865  
 100' cement plug

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 Environmental Protection

WR-35

Date: January 5, 2001  
API # 47-075-00051

State of West Virginia  
Division of Environmental Protection  
Section of Oil and Gas  
Well Operator's Report of Well Work

*ADP*

Farm name: US Dept of Interior Operator Well No.: MNF #15

LOCATION: Elevation: 3915.6' Quadrange: Thornwood  
District: Greenbank County: Pocahontas  
Latitude: 11324' feet South of 38° DEG. 37' MIN. 30" SEC.  
Longitude: 7617' feet West of 79° DEG. 37' MIN. 30" SEC.

Company: Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 500  
Charleston, WV 25301

Agent: John Abshire  
Inspector: Craig Duckworth  
Permit Issued: 6/15/00  
Well Work Commenced: 10/22/00  
Well Work Completed: 12/18/00  
Verbal Plugging  
Permission granted on:  
Rotary  Cable  
Total Depth (feet) 6176' MD / 5986' TVD  
Fresh Water Depths (ft) 81', 234'

Casing & Tubing Size	Used in Drilling	Left in Well	Cement Fill up Cu. Ft.
20"	35'	35'	16 sks
13-3/8"	1060'	1060'	795 sks
8-5/8"	2874'		
4-1/2"		6155'	380 sks
4-1/2" CASING SET ON McALLISTER ACP INFLATABLE PACKER SET @ 5785'			
2-3/8"		5908'	

Salt Water Depths (ft) 2597'

Is coal being mined in area (Y / N)?           

Coal Depths (ft)           

OPEN FLOW DATA

Producing formation

	<u>Oriskany</u>		Pay zone depth (ft)	<u>5987' - 6030'</u>	
Gas: Initial open flow	<u>2000</u> MCF/d	Oil: Initial open flow	<u>N/A</u>	Bbl/d	
Final open flow	<u>1404</u> MCF/d	Final open flow	<u>N/A</u>	Bbl/d	
Time of open flow between initial and final tests	<u>          </u>		<u>9.5</u>	Hours	
Static rock pressure	<u>822</u> psig (surface pressure after		<u>48</u>	Hours	

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JAN 18 2001  
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Second producing formation

			Pay zone depth (ft)	
Gas: Initial open flow	<u>          </u> MCF/d	Oil: Initial open flow	<u>          </u>	Bbl/d
Final open flow	<u>          </u> MCF/d	Final open flow	<u>          </u>	Bbl/d
Time of open flow between initial and final tests	<u>          </u>		<u>          </u>	Hours
Static rock pressure	<u>          </u> psig (surface pressure after		<u>          </u>	Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For: CABOT OIL & GAS CORPORATION

By: *Roy Prudnick* Operations Manager  
Date: 1-17-01

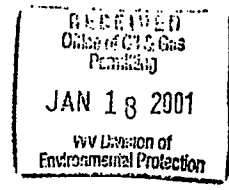
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7500051 P  
 Well 824478  
 Page 2 of 2

Loggers constructed perf guns on site. 2.5" x 4 wire shogun strip guns. RIH to perf 6008'-6010', 6015'-6018' and 6026'-6030'. Gun shorted and failed to fire. Attempted to POOH, but gun apparently caught on baffle and fell off line. RIH with CCI only and checked hole to 6050', POOH RIH with second gun, 2.5" x 4 wire shogun (24.5 grams, 0.35 EHD, 33.3" pen) and perforated 5987'-6001' with 5 SPF 71 holes total. POOH. Bottom wires blown off. RIH to check hole. Set down on wires in proposed lower perfs. Spud on wires and drove down hole, POOH. Rebuild #1 gun and RIH. Perf 6008'-6010', 8 holes, 6015'-6018', 10 holes and 6026'-6030', 13 holes with approx. 3 SPF because of lost charges in bottom of hole (48 total @ bottom).  
 Break down perfs with KCl water. Perfs broke @ 1996 psi, pumped 40 bbl @ 6.5 BPM, treated @ 1950 psi avg., ISIP: 1800 psi @ 11:00 PM, 5 min ISIP, 870 psi, press dropped to 0 psi and on vacuum in 9.25 min.  
 Pumped 50,550# 20/40 sand, concentration 1-3 ppa, ATP 3892#, MTP 4166#, ATR 25 bbl/min., ISIP 3600#, 5 min. 2902#, 10 min. 2280#, 15 min 1955#. Total fluid 923 bbl. RU Allegheny and perf Oriskany (1st) from 5900'-5920', 4 SPF, 81 holes. Dropped frac ball and chased with perf gun. Cross-link gel frac Oriskany (1st). Break down Oriskany with 1500 gal acid (placed during displacement of 1st stage) and 14 bbl treated water. No clear indication of breakdown. ISIP 3100#. Calc bottom hole treating pressure 5600#. Cross link Oriskany (1st) using 28,660# sand, 1-3 ppa. ATP 3850#, MTP 4100#, ATR 24.7 bbl/min., ISIP 2577#, 5 min 2435#, 10 min 2348#, 15 min 2275#. Total fluid 666 bbl.

FORMATION	TOP	BOTTOM	REMARKS
SHALE/SILT	0	3090	FW @ 81', 234' SW @ 2597'
SILTSTONE	3090	3095	
SHALE/SILT	3095	3724	
SILTSTONE	3724	3730	
SHALE/SILT	3730	4187	
SILTSTONE	4187	4195	
SHALE/SILT	4195	4380	
SILTSTONE	4380	4390	
SHALE/SILT	4390	5212	
TULLEY	5212	5242	
UPPER MARCELLUS	5409	5498	
PURCELL	5498	5516	
LOWER MARCELLUR	5516	5573	
ONONDAGA	5573	5657	
HUNTERSVILLE CHERT	5657	5676	
NEEDMORE SHALE	5676	5778	
ORISKANY (BENCH 1)	5778	5863	
ORISKANY (BENCH 2)	5863	5950	
ORISKANY (BENCH 3)	5950	5984	
HELDERBERG	5984	6176	Measured Dpeth



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 MAY 23 2016 06/17/2016  
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WW4-A  
Revised  
1/01

1) Date: 5/5/2016  
2) Operator's Well No. 824478  
3) API Well No. 47-075-00051

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

1) 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 \_\_\_\_\_  
Address \_\_\_\_\_  
  
(c) Name \_\_\_\_\_  
Address \_\_\_\_\_

5) Coal Operator  
(a) Name None  
  
Coal Owner(s) with Declaration  
(b) Name U.S. Department of Interior  
Address Bureau of Land Mgmt - Eastern States  
626 E. Wisconsin Ave., Suite 200  
Milwaukee, WI 53202-4617  
  
Name \_\_\_\_\_  
Address \_\_\_\_\_  
  
Name \_\_\_\_\_  
Address \_\_\_\_\_

2) Inspector Danny Mullins  
Address 220 Jackacres Road  
Buckhannon, WV 26201  
  
Telephone 304-932-6844

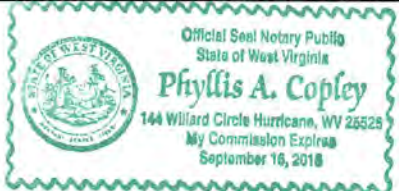
Coal Lessee with Declaration  
(c) Name None  
Address \_\_\_\_\_

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

Received  
Office of Oil & Gas  
MAY 09 2016

Subscribed and sworn before me this 5<sup>th</sup> day of May the year of 2016  
Phyllis A. Copley Notary Public

My Commission Expires September 16, 2018  
Form WW-9

7500051P

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Office of Oil and Gas

JUN 13 2016

Form WW-9  
4/16)

WV Department of  
Environmental Protection

API Number 47-075-00051  
Operator's Well No. 824478

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
FLUIDS/CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Chesapeake Appalachia, L.L.C. OP Code 494477557  
Watershed (HUC 10) Walderman Run of Poca Run Quadrangle Thornwood, WV 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work No

Description of anticipated Pit Waste: Plugging Returns/Cement

Will a synthetic liner be used in the pit? No If so, what ml.? \_\_\_\_\_

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: No pit will be used. Fluid will be collected in steel tanks and hauled for proper disposal)

Will closed loop system be used? No If so, describe: \_\_\_\_\_

Drilling medium anticipated for this well (Vertical and horizontal)? Air, freshwater, oil based, etc.

-If oil based, what type? Synthetic, petroleum, etc.

Additives to be used in drilling medium? \_\_\_\_\_

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc.

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) \_\_\_\_\_

-Landfill or offsite name/permit number? \_\_\_\_\_

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2015, 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*

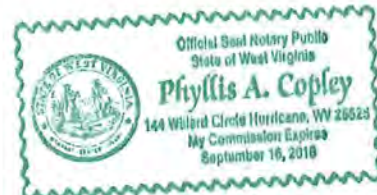
Company Official (Typed Name) David Gocke

Company Official Title Manager - Operations, Appalachia South

Subscribed and sworn before me this 13<sup>th</sup> day of June, 2016.

*Phyllis A. Copley* Notary Public.

My Commission Expires September 16, 2018



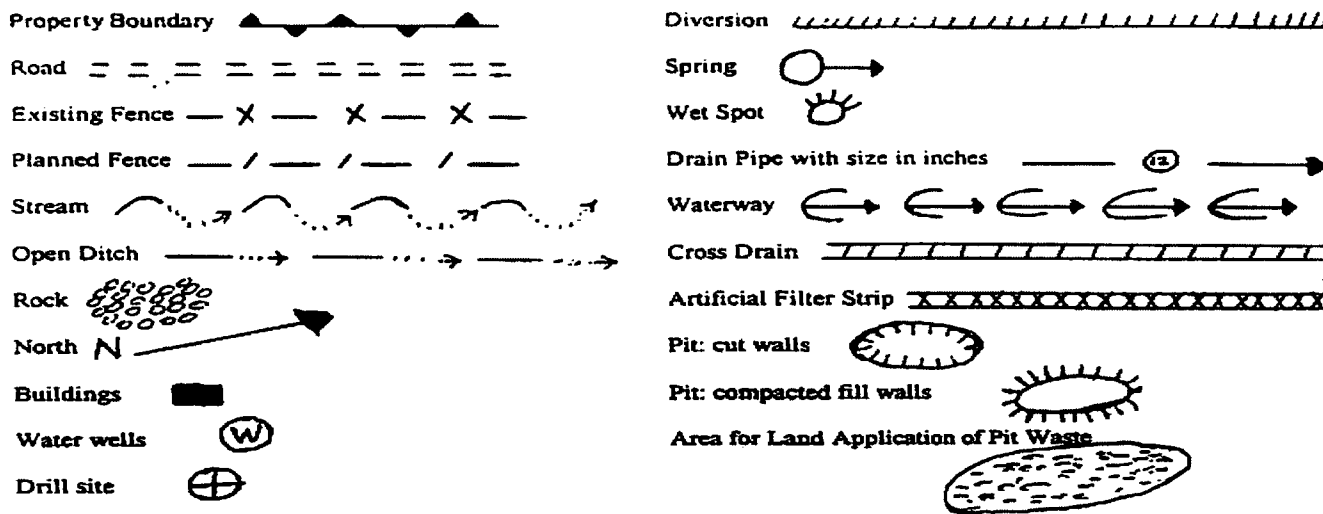
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Attachment #1

API #: 47-075-00051  
 Operator's Well No. 824478

**LEGEND**



Timothy - 7 lbs./acre  
 Kentucky Bluegrass - 7 lbs./acre  
 Winter Wheat (June 15-Nov. 15) or Spring Wheat (Feb. 15-June 15) - 12 lbs./acre  
 Annual Rye (June 15-Nov. 15) or Oats (Feb. 15-June 15) - 14 lbs/acre  
 Alfalfa (pre inoculated) - 10 lbs./acre  
 Durana Clover (pre inoculated) - 3 lbs./acre  
 Mammoth Red Clover (pre inoculated) - 5 lbs./acre  
 Chicory - 2 lbs./acre

**Total Seeding will be 60 lbs./acre**

Mulch - Weed free straw at 1500 lbs./acre  
 Fertilizer - 10-20-10 at 500 lbs./acre  
 Lime - Agricultural lime or lime pellets at 3 tons/acre

Attach:  
 Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

**Plan Approved by:** \_\_\_\_\_

**Title:** \_\_\_\_\_

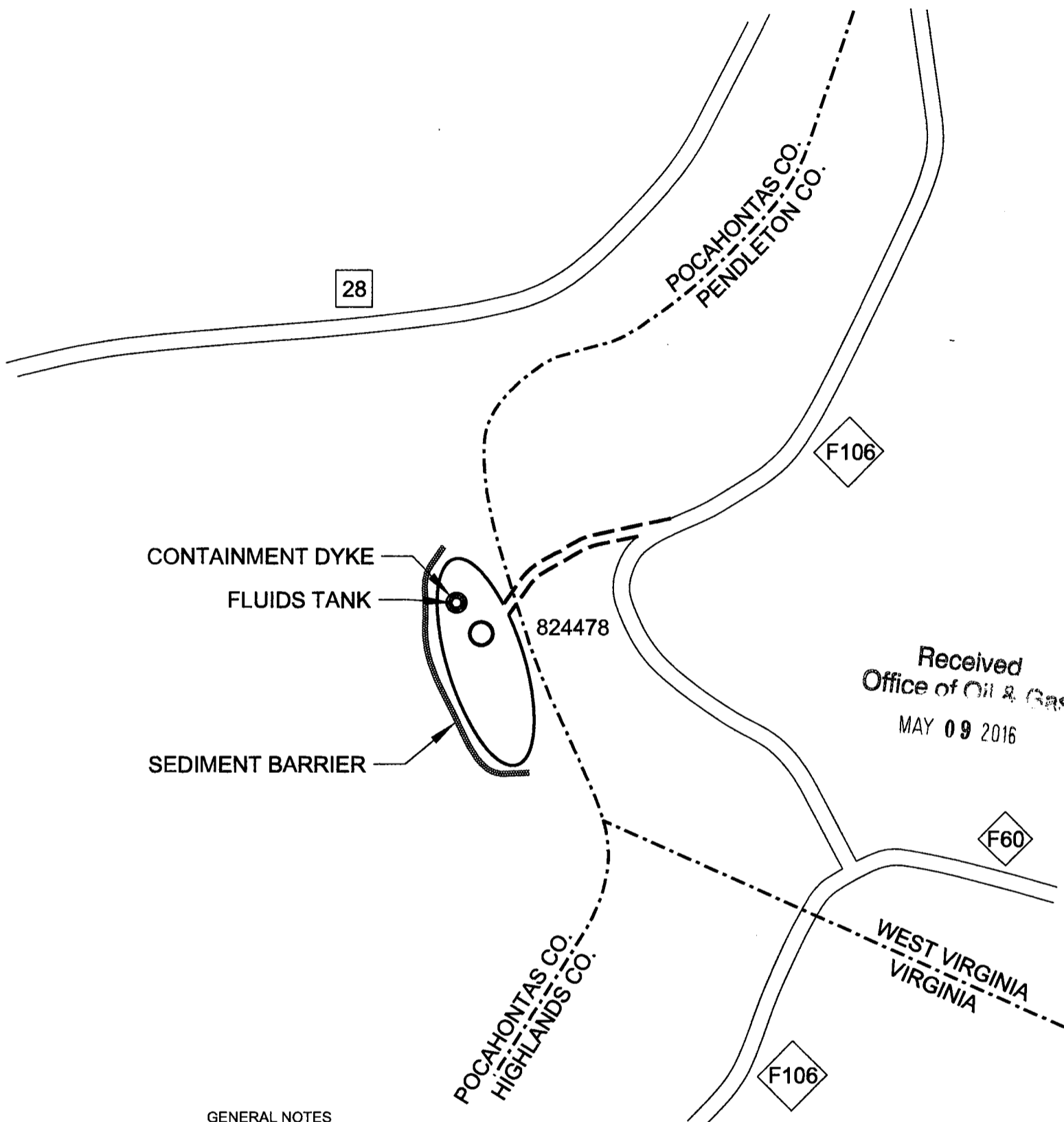
**Date:** \_\_\_\_\_

**Field Reviewed?** ( ) Yes ( ) No

# CHESAPEAKE APPALACHIA, L.L.C.

## RECLAMATION DIAGRAM WELL LOCATION 824478

API 47-075-00051



### 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 outfall 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 and 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.

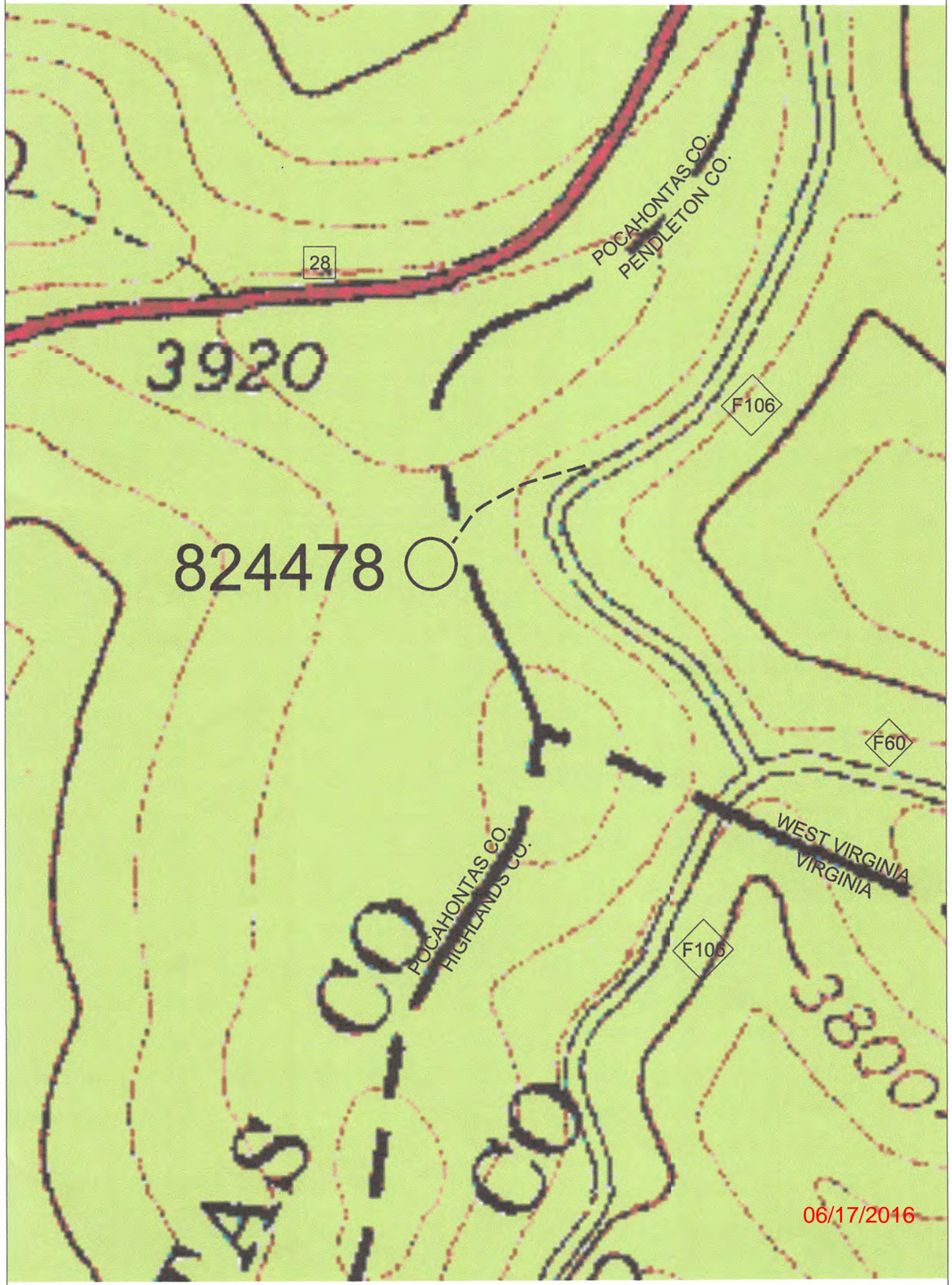
Permanent seeding: See Attachment #1.

06/17/2016

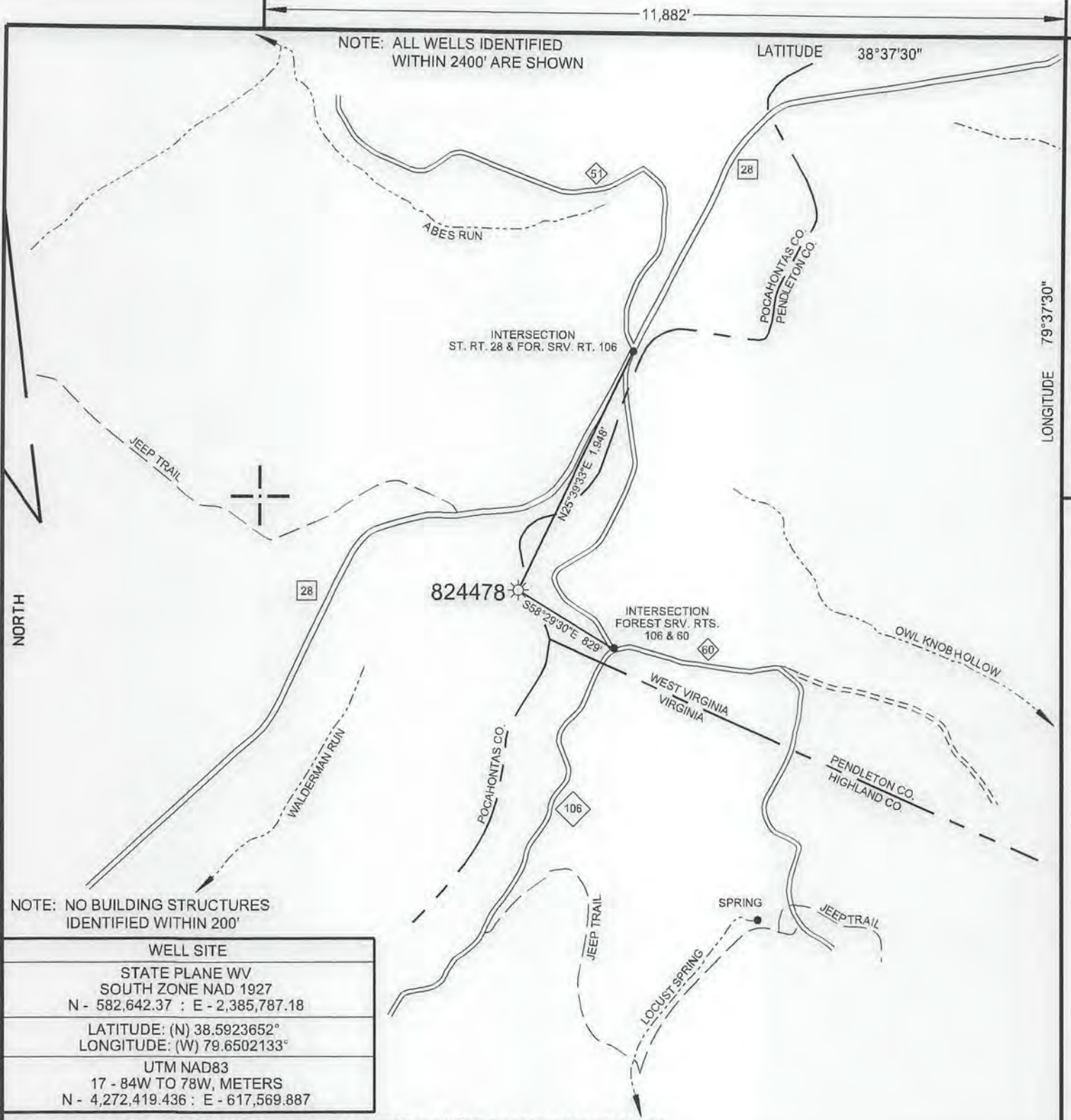
# CHESAPEAKE APPALACHIA, L.L.C.

TOPOGRAPHICAL MAP OF ACCESS AND  
WELL LOCATION 824478

API 47-075-00051



06/17/2016



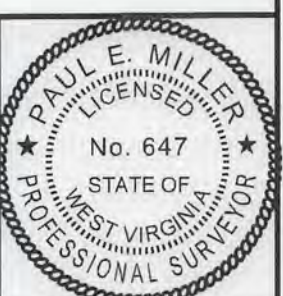
WELL SITE	
STATE PLANE WV SOUTH ZONE NAD 1927 N - 582,642.37 : E - 2,385,787.18	
LATITUDE: (N) 38.5923652° LONGITUDE: (W) 79.6502133°	
UTM NAD83 17 - 84W TO 78W, METERS N - 4,272,419.436 : E - 617,569.887	

FILE NO.	CA 824478 P&A.DGN
DRAWING NO.	CA824478 P&A
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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT 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	OCTOBER 5	20	15
		OPERATOR'S WELL NO.	824478		
WELL TYPE: OIL ___ GAS <input checked="" type="checkbox"/> LIQUID INJECTION ___ WASTE DISPOSAL ___		STATE	47	COUNTY	075
(IF "GAS,") PRODUCTION <input checked="" type="checkbox"/> STORAGE ___ DEEP ___ SHALLOW ___		PERMIT	00051 P		
LOCATION: ELEVATION 3.915' WATER SHED WALDERMAN RUN OF POCA RUN		COUNTY NAME			
DISTRICT GREENBANK COUNTY POCAHONTAS		PERMIT			
QUADRANGLE THORNWOOD, WV 7.5'		DATE			
SURFACE OWNER UNITED STATES OF AMERICA ACREAGE -		06/17/2016			
OIL & GAS ROYALTY OWNER US BUREAU OF LAND MANAGEMENT LEASE ACREAGE -		LEASE NO. BLM-A-17120			
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 <input checked="" type="checkbox"/> CLEAN OUT AND REPLUG ___			
TARGET FORMATION ORISKANY 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 6070, CHARLESTON, WV 25362			

FORM WW-6