



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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Thursday, January 31, 2019
WELL WORK PLUGGING PERMIT
Vertical Plugging

CHESAPEAKE APPALACHIA, L.L.C.
6100 N. WESTERN AVE.

OKLAHOMA CITY, OK 73118

Re: Permit approval for WVGO2569
47-023-00024-00-00

This well work permit 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 any additional specific 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. Please be advised that form WR-38, Affidavit of Plugging and Filling Well, is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

A blue ink signature of James A. Martin, Chief, is written over the printed name and title.

Operator's Well Number: WVGO2569
Farm Name: MOOMAU, DR. FREDERICK
U.S. WELL NUMBER: 47-023-00024-00-00
Vertical Plugging
Date Issued: 1/31/2019

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

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.

1) Date 11-5, 2018
2) Operator's
Well No. ~~2528~~ 2569
3) API Well No. 47-023 - 00024

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 ___ /
(If "Gas, Production ___ or Underground storage ___) Deep ___ / Shallow ___

5) Location: Elevation 837.59m (2761') Watershed _____
District Milroy County Grant Quadrangle Hopeville, WV

6) Well Operator Chesapeake Appalachia, LLC 7) Designated Agent Eric Haskins - Manager Reg. Ops 570-882-7702 SA 24007
Address P.O. Box 18496 Address 14 Chesapeake Lane
Oklahoma City, OK 73154-0496 Sayre, PA 18840

8) Oil and Gas Inspector to be notified Name Bryan Harris
Address P.O. Box 157
Volga, WV 26238
9) Plugging Contractor Name Chesapeake Appalachia, LLC
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

NOTIFY INSPECTOR BRYAN HARRIS
@ 304-553-6087

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EL JRM

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

Work order approved by inspector _____ Date _____

SCOPE OF OPERATION

1. Safety is the highest priority. Control costs and avoid unnecessary expenditures.
2. TOOH with 2-3/8" tubing. Set CIBP above perms. TIH w/ 2 3/8" tubing.
3. Pump required cement and gel plugs per WV DEP state requirements
4. Plant a well monument with WV State API number

PROCEDURE

1. Contact the BLM Inspector 48 hours prior to operations.
2. Safety is the highest priority. Hold wellsite safety meetings prior to each significant operation. Review critical parameters and objectives as well as emergency action plans.
3. MIRU construction equipment if necessary to repair road / location in order to get workover rig in. Remove any tanks, separators, well lines, meter runs, exc.
4. MIRU service rig & needed BOP equipment. NOTE: Blow down well to pit or tank.
5. TOOH with 8,563' of 2 3/8" tubing. May have a RTTS packer (Not set) at 8,570'.
6. RIH w/ sandline tools and RIH w/ 5K CIBP & set @ 8,550'.
7. TIH strapping 2 3/8" tubing & tag 5K CIBP @ 8,550'. Load hole with 198 bbls of 6% gelled water or break surface with circulation.
8. Pump 12 sks of Class A cement for 100' cement plug on top of CIBP, flush tubing with 34 bbls 6% gelled water. 9. TOOH with 2 3/8" tubing to surface.
9. ND BOP & 'B' Section. Weld on 5 1/2" pull sub. RU casing jacks and remove slips. Work casing for free point and ensure casing is free no deeper than 8,350' (actual free point will determine point to cut casing, cut 100' above free point).
10. NU 'B' Section & BOP. RU Wireline and cut 5 1/2" casing @ 8,350' (or new depth determine by free point). Pull and laydown casing. ≈ 6600'
11. TIH w/ 2 3/8" tubing to 50' inside of top of casing 5 1/2" stub (50' inside of 5 1/2" casing). Circulate hole w/ 487 bbls of 6% gelled water. Pump ~~22~~⁴⁴ sks of Class A cement for 100' 200' cement plug (50' inside of 5 1/2" & 50' above casing stub), flush tubing with 33 bbls 6% gelled water. 150'
12. TOOH w/ 2 3/8" tubing to ~~2,140'~~^{2,900'} and Pump 53 sks of Class A cement for 162' intermediate shoe cement plug and elevation cement plug, flush tubing with 7 bbls 6% gelled water. PLUG WIRELINE 80' BELOW 9 5/8" & 80' UP INSIDE 9 5/8"

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13. TOOH w/ 2 3/8" tubing to ^{200'}100' Pump 6 bbl of 6% gelled water or break circulation. Pump ⁵⁸29-
sks of Class A cement for ^{200'}100' surface cement plug, TOOH w/ tubing.
14. Top off well with required Class A cement as needed.
15. RDMO all service equipment providers and reclaim location to BLM requirements.

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WELL DATA

Location (Surface)	Lat. 39.0698466 Long. -79.2757308
TD	8,602'

CASING AND TUBULAR DATA

STRING	SIZE	WEIGHT/GRADE	DEPTH
Intermediate	9 5/8"	40 lb/ft; J-55	2,822'
Production	5 1/2"	17 lb/ft; N-80	8,832'

PRESSURE AND DIMENSIONAL DATA

SIZE	WEIGHT	GRADE	BURST	COLLAPSE	DRIFT
13 3/8"	48lb/ft	H-40	1,730	740	12.559"
9 5/8"	40 lb/ft	J-55	3,950	2,570	8.835"
5 1/2"	17 lb/ft	N-80	5,320	4,910	4.767"
2 3/8"	4.7 lb/ft	N-80	11,200	11,780	1.901"

CAPACITIES

SIZE	WEIGHT	CAPACITY (FT ³ /FT.)	CAPACITY (BBL/FT.)
13 3/8"	48lb/ft	0.8817	0.1570
9 5/8"	40 lb/ft	0.3575	0.0636
7 7/8"	Open Hole	0.3382	0.0583
5 1/2"	17.0 lb/ft	0.1305	0.0232
2 3/8"	4.7 lb/ft	0.0217	0.0039

WELLHEAD EQUIPMENT

COMPONENT	SIZE & RATING
Manufacturer	No Record
Tubing Spool	No Record
Casing Spool	No Record
Bradenhead	No Record

DRIVING DIRECTIONS

Contact Field Personnel

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WR-35

26-Jul-89
API # 47- 23-00024

State of West Virginia
DEPARTMENT OF ENERGY
Division of Oil and Gas

Well Operator's Report of Well Work

Farm name: MOOMAU, FREDERICK DR. Operator Well No.: WVG02569

LOCATION: Elevation: 2760.00 Quadrangle: BLACKBIRD KNOB

District: UNION County: GRANT
Latitude: 4880 Feet South of 39 Deg. 5 Min. 0 Sec.
Longitude 7300 Feet West of 79 Deg. 15 Min. 0 Sec.

Company: EQUITABLE RESOURCES EXP.
P. O. DRAWER 40
BUCKHANNON, WV 26201-0040

Agent: DOUGLAS P. TERRY

Inspector: PHILLIP TRACY
Permit Issued: 07/26/89
Well work Commenced: 9/6/89
Well work Completed: 10/6/89
Verbal Plugging
Permission granted on:
Rotary X Cable Rig
Total Depth (feet) 8864
Fresh water depths (ft) 78
Salt water depths (ft)
Is coal being mined in area (Y/N)? N
Coal Depths (ft): None

Casing & Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
13 3/8"	42.20	42.20	
9 5/8"	2822.05	2822.05	1395 CF
5 1/2"	8832.70	8832.70	622 CF
2 3/8"	8563	8563	

Top ≈ 6600'

OPEN FLOW DATA

Producing formation Oriskany Pay zone depth (ft) 8654
Gas: Initial open flow N/A MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow 6,519 MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests 3 1/2 Hours
Static rock Pressure 1300 psig (surface pressure) after 48 Hours

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ 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: EQUITABLE RESOURCES EXP.

By: Douglas P. Terry, Operations Manager, North
Date: November 29, 1989

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RTTS Packer at 8570' (not set)
Perforations: 8599-8654', Oriskany Formation
Breakdown and acidize with 2000 gals. 5% Fe Acid.

Devonian Sand & Shales	0 to 8199
Upper Marcellus	8200
Purcell Limestone	8222
Lower Marcellus	8314
Needmore Shale	8374
Oriskany	8485
Helderberg Limestone	8690

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WW-4A
Revised 6-07

1) Date: 11-5-2018
2) Operator's Well Number
2528

3) API Well No.: 47 - 023 - 00024

STATE OF WEST VIRGINIA
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:	5) (a) Coal Operator
(a) Name <u>Suedon Investments</u>	Name <u>Suedon Investments</u>
Address <u>11690 Frederick Rd.</u>	Address <u>11690 Frederick Rd.</u>
<u>Ellicott, MD 21042</u>	<u>Ellicott, MD 21042</u>
(b) Name _____	(b) Coal Owner(s) with Declaration
Address _____	Name _____
_____	Address _____
(c) Name _____	Name _____
Address _____	Address _____
_____	_____
6) Inspector <u>Bryan Harris</u>	(c) Coal Lessee with Declaration
Address <u>P.O. Box 157</u>	Name _____
<u>Volga, WV 26238</u>	Address _____
Telephone <u>304-553-6087</u>	_____

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 this 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 this 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, LLC
 By: Marlene Williams *Marlene Williams* RECEIVED
 Its: Regulatory Analyst II Office of Oil and Gas
 Address: P.O. Box 18496 NOV 14 2018
Oklahoma City, OK 73154-0496
 Telephone: 405-935-4158
 WV Department of Environmental Protection

Subscribed and sworn before me this 5th day of November 2018
Jacqueline Potvin Notary Public
 My Commission Expires 10-21-21



Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

JAN 30 2019

WW-9
(5/16)

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API Number 47 - 023 - 00024
Operator's Well No. 2528

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Chesapeake Appalachia, LLC OP Code 2528

Watershed (HUC 10) _____ Quadrangle Hopeville, WV

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

Will a pit be used? Yes No

If so, please describe anticipated pit waste: _____

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application (if selected provide a completed form WW-9-GPP)
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Chesapeake will not use pits and intends to utilize tanks. Chesapeake plans to contract Eco-First Environmental Services to dispose of the fluids at the appropriate off-site facility. _____)

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

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 April 1, 2016, 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 Marlene Williams

Company Official (Typed Name) Marlene Williams

Company Official Title Regulatory Analyst II

Subscribed and sworn before me this 29th day of January, 2019

Morgan Beuchaw Notary Public

My commission expires 8/1/19



Proposed Revegetation Treatment: Acres Disturbed 1.15 Prevegetation pH 6.25

Lime 0.75 Tons/acre or to correct to pH 7

Fertilizer type 19-19-19

Fertilizer amount 350 lbs/acre

Mulch 1.5(promatrix) Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type lbs/acre

Seed Type lbs/acre

Oats / Annual Rye 50lbs/acre

Advanced Landscape Blend 300 lbs/acre

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by:

Comments:

[Blank lines for comments]

OK gwm

Title:

Date:

Field Reviewed? () Yes

() No

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

Operator Name: Chesapeake Appalachia, LLC
Watershed (HUC 10): _____ Quad Hopeville, WV
Farm Name: Moomau

- 1. List the procedures used for the treatment and discharge of fluids. Include a list of all operations that could contaminate the groundwater.

See attached

- 2. Describe procedures and equipment used to protect groundwater quality from the list of potential contaminant sources above.

- 3. List the closest water body, distance to closest water body, and distance from closest Well Head Protection Area to the discharge area.

- 4. Summarize all activities at your facility that are already regulated for groundwater protection.

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- 5. Discuss any existing groundwater quality data for your facility or an adjacent property.

6. Provide a statement that no waste material will be used for deicing or fill material on the property.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

8. Provide provisions and frequency for inspections of all GPP elements and equipment.

Signature: _____

Date: _____

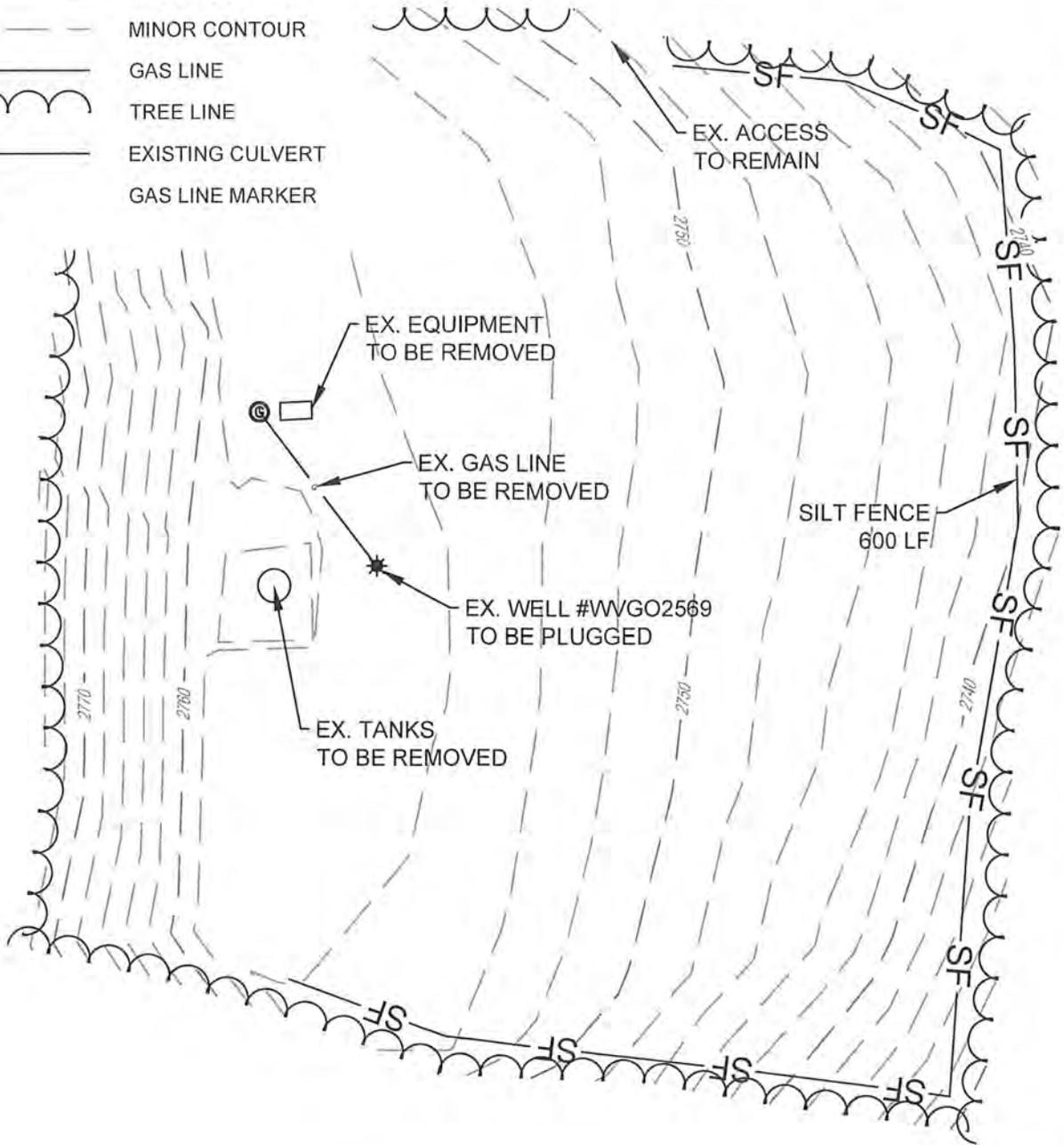
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LEGEND

-  EXISTING WELL
-  SILT FENCE
-  EXISTING PAVEMENT
-  MAJOR CONTOUR
-  MINOR CONTOUR
-  GAS LINE
-  TREE LINE
-  EXISTING CULVERT
-  GAS LINE MARKER



SITE PLAN
MOOMAU SITE RECLAMATION
API#47-23-00024
GRANT COUNTY, WEST VIRGINIA

DATE: 10/23/2018


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47-023-00024P

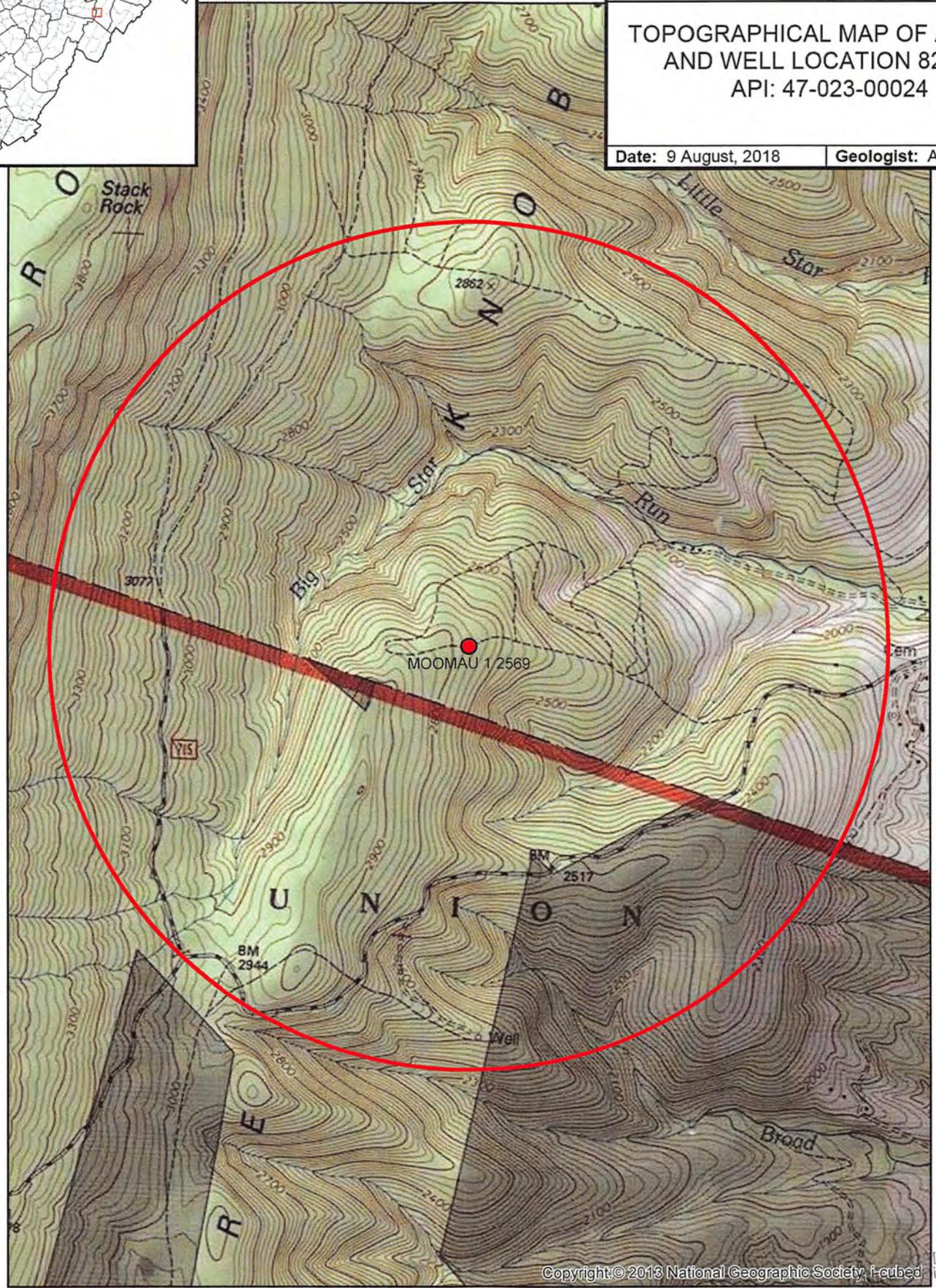
CHESAPEAKE
ENERGY

CHESAPEAKE
OPERATING,
INC.

TOPOGRAPHICAL MAP OF ACCESS
AND WELL LOCATION 821989
API: 47-023-00024

Date: 9 August, 2018

Geologist: APPALACHIA



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