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west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Friday, May 4, 2018  
WELL WORK PLUGGING PERMIT  
Vertical Plugging

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit approval for 2  
47-017-00438-00-00

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, written in a cursive style.

Operator's Well Number: 2  
Farm Name: DAVIS, CHRISTOPHER  
U.S. WELL NUMBER: 47-017-00438-00-00  
Vertical Plugging  
Date Issued: 5/4/2018

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## 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.

WW-4B  
Rev. 2/01

1) Date April 12, 2018  
2) Operator's  
Well No. Christopher Davis 2  
3) API Well No. 47-017 - 00438

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 X \_\_\_

5) Location: Elevation 898' Watershed Conaway Run Middle Island Creek  
District West Union County Doddridge Quadrangle West Union 7.5'

6) Well Operator Antero Resources Corporation 7) Designated Agent CT Corporation System - Dianna Stamper  
Address 1615 Wynkoop Street Address 5400 D Big Tyler Road  
Denver, CO 80202 Charleston, WV 25313

8) Oil and Gas Inspector to be notified 9) Plugging Contractor  
Name Daniel Flack Name N/A - Antero will plug well  
Address 601 57th Street, SE Address  
Charleston, WV 25304

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

\*Please see attached Work Order.

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WV Department of  
Environmental Protection

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

Work order approved by inspector Dan Flack by phone Date May 4, 2018  
gmm

05/04/2018

17-00438P

**Christopher Davis #2**  
**Doddridge County, WV**  
API #47-017-00438



**Antero Resources**  
1615 Wynkoop St.  
Denver, CO 80202  
**Office:** 303.357.7310  
**Fax:** 303.357.7315

**Objective:** Plug and Abandon Wellbore.

**Pipe Schedule:**

- 1. 16" Wood Conductor @ 162'. Cement unknown.
- 2. 8-5/8" set @ 788'. Cement unknown
- 3. 4-1/2" set @ 1,947' with estimated TOC @ 1,667' (To Be Confirmed)
  - a. \*\*TOC assuming 7 7/8" hole size\*\*

Elevation: 891'

**Oil and Gas Zones:**

- 1. Big Lime: 1,742' - ,1860'; Perf'd from 1,854'-1,855'
- 2. Big Injun: 1,860' - 1,920'; Perf'd from 1,862-1,862' and 1,870'-1,920'

OK 5/1/2018  
gwm

**Procedure:**

- 1. Check and record all casing/annular pressures into Wellview.
- 2. Coordinate and schedule casing jacks.
- 3. Notify WVDEP prior to commencing work, for plug witnessing (Harrison County Inspector).
- 4. Move in and rig up flat tank and frac tank (No pits will be utilized).
- 5. Move in rig up service unit.
- 6. NU BOPE and test- check and report surface pressure including bradenhead pressure.
- 7. Kill well prior to pulling tubing.
- 8. RU wireline and lubricator.
- 9. Make gauge ring run to @ 1,947'
- 10. POOH. Note fluid depth tagged.
- 11. MIRU logging crew.
- 12. Load Hole with 6% gel.
- 13. Run CBL from 1,947' to surface.
- 14. Locate TOC around 4.5" casing.
- 15. Discuss results with completions engineers before proceeding.
- 16. TIH with 2 3/8" tubing to 1,947'.
- 17. MIRU cement services. Mix and pump 22 sacks for a 240' balanced plug from 1,700'-1,940'. (Class A cement + 2% CaCl2, 20% excess included; yield =1.18 ft<sup>3</sup>/sk, WR=5.2 gal/sk)
  - a. Displace to balance plug
  - b. Slowly pull out of cement plug.
  - c. Reverse circulate tubing clear of cement
  - d. WOC and tag TOC @ 1,700'
- 18. POOH with tubing.
- 19. Lubricate and RIH W/ CIBP and set @ 1,700'.
- 20. POOH w/ wireline.
- 21. Pressure test CIBP to 500 psi
- 22. RIH wireline and run free point above TOC in 4.5" casing
  - a. Chemical cut at ~1,660' (exact depth to be determined via freepoint and CBL)
  - b. RU casing jacks and POOH - LD 4.5" casing.
- 23. TIH with 2 3/8" tubing to 1,699 (1' above CIBP)
- 24. MIRU cement services. Mix and pump 25 sacks for balanced plug from 1,599'-1,699'. (Class A cement + 2% CaCl2, 20% excess included; yield =1.18 ft<sup>3</sup>/sk, WR=5.2 gal/sk)
  - a. Displace to balance plug
  - b. Slowly pull out of cement plug.
  - c. Reverse circulate tubing clear of cement
- 25. Pull up to 888'
- 26. Mix and pump 75 sacks for balanced plug from 688'-888' (Class A cement + 2% CaCl2, 20% excess included; yield =1.18 ft<sup>3</sup>/sk, WR=5.2 gal/sk).
  - a. Displace to balance plug
  - b. Slowly pull out of cement plug.
  - c. Reverse circulate tubing clear of cement
  - d. WOC and tag TOC @ 688'
- 27. Pull up to 300'
- 28. Mix and pump 112 sacks from surface-300' (Class A cement + 2% CaCl2, 20% excess included; yield =1.18 ft<sup>3</sup>/sk, WR=5.2 gal/sk)

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29. TOOH
30. Wait on cement 8hrs.
31. Weld on a P&A monument that extends thirty inches above the surface with well name and API number. ( API No.: 47-017-00438).

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### Wellbore Diagram

4/2/2018

Elev.: 891'

Spud: 9/1/1988

16" Wood Conductor Casing  
Set @ 162'

300' plug to surface

8 5/8" Surface Casing  
Set @ 788'

200' plug (75 sks)  
100' below and above  
8 5/8" casing

100' plug (25 sks: 1,600-1,700')  
around 4.5" casing cut

TOC estimated @1667'  
(Assuming 7 7/8" hole)

CIBP set at 1,700'

Plug from 1,700'-1,940'  
240' using 22 sks

**Big Lime (1,742'-1,860') Perfs:**

1,854' - 1,855'

**Big Injun (1,860'-1,920') Perforations:**

1,861 - 1,862'; 1,870' - 1,920'

4-1/2" Production Casing  
Set @ 1,947' w/ 54 sks

TD @ 1,947'

**Antero Resources Corporation**

Christopher Davis #2

API: 47-017-00438

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STATE OF WEST VIRGINIA  
DEPARTMENT OF MINES  
OIL AND GAS DIVISION 7

Quadrangle West Union

WELL RECORD

Permit No. DOD-438

Oil or Gas Well Gas  
(MIND)

Company Ferrell L. Prior  
 Address 720 Union Trust Bldg. Parkersburg, W. Va.  
 Farm Christopher Davis Acres 82  
 Location (waters) \_\_\_\_\_  
 Well No. 2 Elev. 891  
 District Grant County Doddridge  
 The surface of tract is owned in fee by George Britton Heirs  
 Address Wilbur, W. Va.  
 Mineral rights are owned by Christopher Davis  
 Address West Union, W. Va.  
 Drilling commenced 8-5-60  
 Drilling completed 8-31-60  
 Date Shot \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_  
 With \_\_\_\_\_  
 Open Flow /10ths Water in \_\_\_\_\_ Inch  
 /10ths Merc. in \_\_\_\_\_ Inch  
 Volume 30,000 Cu. Ft.  
 Rock Pressure Not Taken lbs. \_\_\_\_\_ hra.  
 Oil \_\_\_\_\_ bbls., 1st 24 hrs.  
 WELL ACIDIZED \_\_\_\_\_  
 WELL FRACTURED 600 bbls. water, 200 sacks of sand

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size 16 16'			Kind of Packer
13			
10	193'	162'	Size of
9 5/8	788'		
6 5/8			Depth set
5 3/16			
4 1/2	1947'	1947'	Perf. top 1854
			Perf. bottom 1855
2			Perf. top 1861
			Perf. bottom 1862
			1870
			1920

CASING CEMENTED 4 1/2 SIZE 1947 No. Ft. 8-25-60 Date  
5 1/2 sks. cement - 4 sks. Aquagel - Lawson Cementing  
H. E. Co.  
 COAL WAS ENCOUNTERED AT None FEET \_\_\_\_\_ INCHES  
 \_\_\_\_\_ FEET \_\_\_\_\_ INCHES FEET \_\_\_\_\_ INCHES  
 \_\_\_\_\_ FEET \_\_\_\_\_ INCHES FEET \_\_\_\_\_ INCHES

RESULT AFTER TREATMENT 940,000  
 ROCK PRESSURE AFTER TREATMENT 500 lbs.  
 Fresh Water None Feet \_\_\_\_\_ Salt Water None Feet \_\_\_\_\_

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Sand			0	18			
Sand			18	35			
Shale			35	55			
Red Rock			55	113			
Shale			113	140			
Shale			140	170			
Red Rock			170	175			
Red Rock			175	193			
Sand			193	230			
Shale			230	235			
Shale			235	280			
Sand			280	325			
Lime			325	355			
Red Rock			355	365			
Red Rock			365	380			
Shale & Lime			380	400			
Sand			400	405			
Sand			405	454			
Sand			454	460			
Red Rock			460	468			
Shale			468	510			
Shale			510	515			
Lime			515	535			
Lime			535	540			
Shale			540	545			
Shale			545	555			
Lime			555	565			
Shale			565	575			
Lime			575	590			
Lime			590	610			

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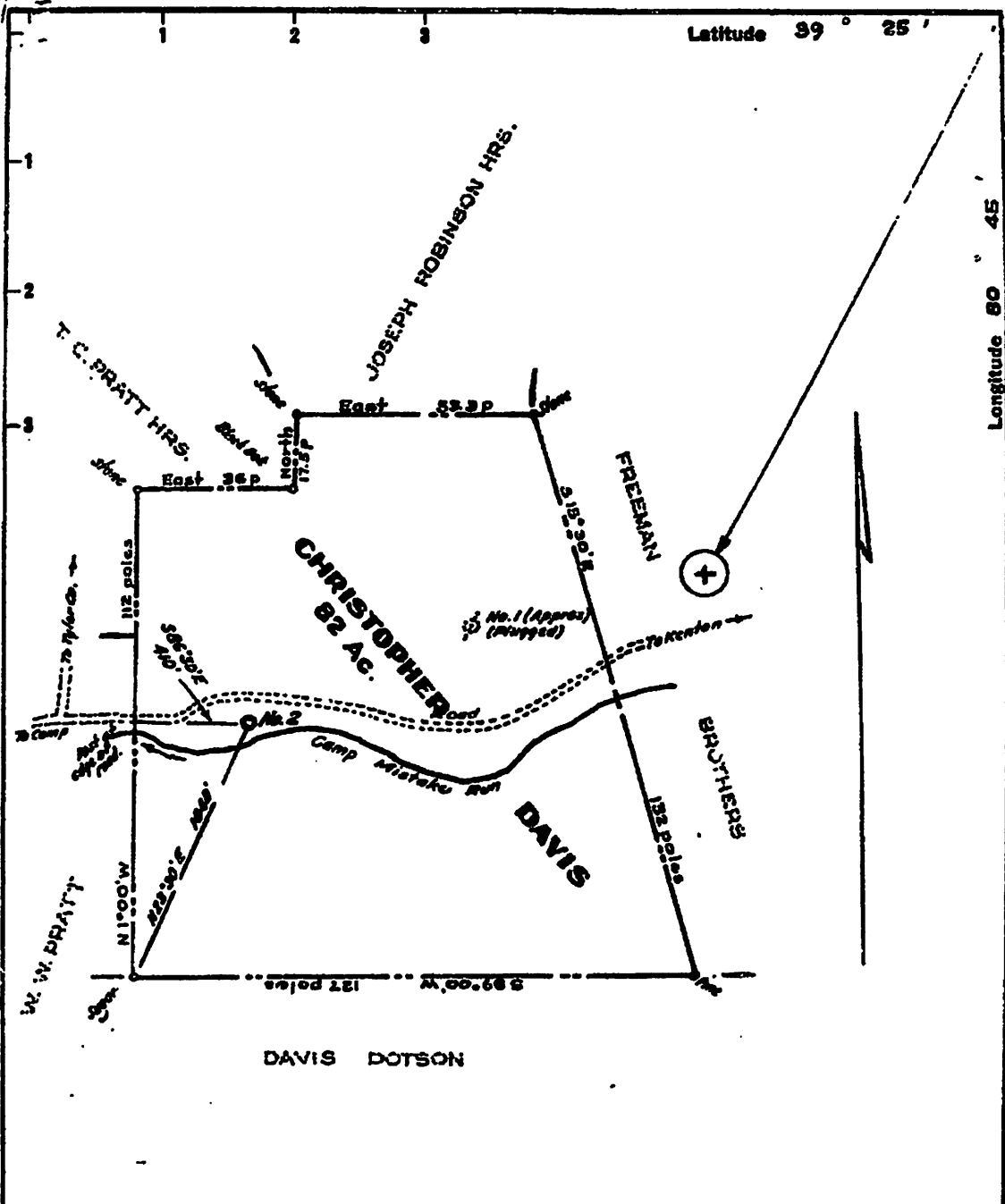
(over)

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth Found	Remarks
Shale & Shells			610	620			
Shale			620	655			
Sand			655	675			
Red Rock			675	697			
Red Rock			697	735			
Red Rock			735	768			
Shale			768	788			
Shale & Slate			788	805			
Slate & Shells			805	825			
Slate & Shells			825	857			
Red Rock			857	870			
Lime			870	890			
Shale & Shells			890	900			
Shale & Lime			900	930			
Shale & Lime			930	955			
Shale & Lime			955	995			
Shale & Shells			995	1010			
Sand			1010	1030			
Sand			1030	1050			
Slate & Shells			1050	1065			
Sand & Lime			1065	1090			
Sand & Lime			1090	1100			
Lime & Shale			1100	1150			
Shale & Shells			1150	1198			
Slate & Shells			1198	1225			
Slate & Shells			1225	1253			
Lime			1253	1265			
Shale			1265	1280			
Shale			1280	1302			
Sand			1302	1305			
Sand			1305	1335			
Sand			1335	1373			
Sand			1373	1382			
Sand			1382	1395			
Shale			1395	1405			
Sand			1405	1415			
Sand			1415	1425			
Shale			1425	1450			
Lime			1450	1530			
Shale			1530	1537			
Lime			1537	1590			
Sand			1590	1610			
Lime			1610	1630			
Lime & Shale			1630	1653			
Lime			1653	1678			
Red Rock			1678	1690			
Red Rock			1690	1710			
Shale & Lime			1710	1725			
Shale & Shells			1725	1742			
Lime			1742	1755			
Lime			1755	1772			
Lime			1772	1795			
Lime			1795	1825			
Lime			1825	1860	Gas	1855	
Sand			1860	1882			
Sand			1882	1888			
Sand			1888	1900			
Sand			1900	1920	Gas	1915	
Sand & Shales			1920	1930			
T D			1947				

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Date \_\_\_\_\_  
APPROVED \_\_\_\_\_  
By \_\_\_\_\_ Title \_\_\_\_\_





New Location   
 Drill Deeper   
 Abandonment

No coal  
 Surface is owned by the Geo. Britton Hrs.,  
 Mrs. Lummie Britton, Wilbur, W.Va.

Company FERRILL L. BRIDG  
 Address 100 Union Trust Bldg., Parkersburg, W.Va.  
 Farm Christopher Davis  
 Tract \_\_\_\_\_ Acres 82 Lease No. \_\_\_\_\_  
 Well (Farm) No. Two Serial No. \_\_\_\_\_  
 Elevation (Spirit Level) 891  
 Quadrangle West Union EC  
 County Doddridge District West Union  
 Engineer W. H. [Signature]  
 Engineer's Registration No. 1227  
 File No. \_\_\_\_\_ Drawing No. \_\_\_\_\_  
 Date July 1960 Scale 1" = 20 poles

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION  
 CHARLESTON

WELL LOCATION MAP  
 FILE NO. 000-458

+ Denotes location of well on United States  
 Topographic Maps, scale 1 to 62,500, lat-  
 itude and longitude lines being represented  
 by border lines as shown.  
 - Denotes one inch spaces on border line  
 of original tracing.

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WW-4A  
Revised 6-07

1) Date: April 12, 2018  
2) Operator's Well Number  
Christopher Davis 2

3) API Well No.: 47 - 017 - 00438

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

<b>4) Surface Owner(s) to be served:</b>	<b>5) (a) Coal Operator</b>
(a) Name <u>Charles C Hittel III</u>	Name <u>NO DECLARATIONS ON RECORD WITH COUNTY</u>
Address <u>116 Michael Ave</u>	Address _____
<u>Linthicum, MD 21090</u>	_____
(b) Name _____	(b) Coal Owner(s) with Declaration
Address _____	Name <u>NO DECLARATIONS ON RECORD WITH COUNTY</u>
_____	Address _____
(c) Name <u>*All other surface owners with existing access road</u>	Name _____
Address <u>disturbance are off-lease and not required to be notified.</u>	Address _____
_____	_____
<b>6) Inspector</b> <u>Daniel Flack</u>	(c) Coal Lessee with Declaration
Address <u>601 57th Street SE</u>	Name <u>NO DECLARATIONS ON RECORD WITH COUNTY</u>
<u>Charleston, WV 25304</u>	Address _____
Telephone <u>304-389-7583</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.

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**MAY 04 2018**  
WV Department of  
Environmental Protection

Well Operator Antero Resources Corporation  
 By: Kevin Kilstrom  
 Its: Sr Vice President of Production  
 Address 1615 Wynkoop Street  
Denver, CO 80202  
 Telephone 303-357-7310

Subscribed and sworn before me this 4<sup>th</sup> day of May

My Commission Expires 03/13/2022

Oil and Gas Privacy Notice

Notary Public
MEGAN GRIFFITH
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184011666
MY COMMISSION EXPIRES MARCH 13, 2022

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](mailto:depprivacyofficer@wv.gov).



**SURFACE OWNER WAIVER**

Operator's Well  
Number

Christopher Davis 2

**INSTRUCTIONS TO SURFACE OWNERS NAMED ON PAGE WW4-A**

The well operator named on page WW-4A is applying for a permit from the State to plug and abandon a well. (Note: If the surface tract is owned by more than three persons, then these materials were served on you because your name appeared on the Sheriff's tax ticket on the land or because you actually occupy the surface tract. In either case, you may be the only owner who will actually receive these materials.) See Chapter 22 of the West Virginia Code. Well work permits are valid for 24 months. If you do not own any interest in the surface tract, please forward these materials to the true owner immediately if you know who it is. Also, please notify the well operator and the Office of Oil and Gas.

**NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.  
WHERE TO FILE COMMENTS AND OBTAIN ADDITIONAL INFORMATION:**

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

**Time Limits and methods for filing comments.** The law requires these materials to be served on or before the date the operator files his Application. You have **FIVE (5) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

**Comments must be in writing.** Your comments must include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

The Chief has the power to deny or condition a well work permit based on comments on the following grounds:

- 1) The proposed well work will constitute a hazard to the safety of persons.
- 2) The soil erosion and sediment control plan is not adequate or effective;
- 3) Damage would occur to publicly owned lands or resources;
- 4) The proposed well work fails to protect fresh water sources or supplies;
- 5) The applicant has committed a substantial violation of a previous permit or a substantial violation of one or more of the rules promulgated under Chapter 22, and has failed to abate or seek review of the violation..."

If you want a copy of the permit as it is issued or a copy of the order denying the permit, you should request a copy from the Chief.

**VOLUNTARY STATEMENT OF NO OBJECTION**

I hereby state that I have read the instructions to surface owners and that I have received copies of a Notice and Application For A Permit To Plug And Abandon on Forms WW-4A and WW-4B, and a survey plat.

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

FOR EXECUTION BY A NATURAL PERSON  
ETC.

FOR EXECUTION BY A CORPORATION,

*Chris Davis*

Date 4-17-18

Name

Signature

By

*objections addressed*

Its

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Office of Oil and Gas

APR 24 2018 Date

Signature

WV Department of Date  
Environmental Protection

05/04/2018

WW-9  
(5/16)

API Number 47 - 017 - 0438  
Operator's Well No. Christopher Davis 2

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

Operator Name Antero Resources Corporation OP Code 494507062  
Watershed (HUC 10) Conaway Run Middle Creek Quadrangle West Union 7.5'

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                      \*UIC Permit # will be provided on Form WR-34 )
- Reuse (at API Number                      Future permitted well locations when applicable. API# will be provided on Form WR-34 )
- Off Site Disposal (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain                      Northwestern Landfill Permit #SWF-1025/WV0109410)

Will closed loop system be used? If so, describe: Yes, fluids stored in tanks, cuttings removed off site and taken to landfill.

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.

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Office of Oil and Gas

Company Official Signature *Gretchen Kohler*

Company Official (Typed Name) Gretchen Kohler

Company Official Title Senior Environmental & Regulatory Manager

MAY 04 2018

WV Department of  
Environmental Protection

Subscribed and sworn before me this 1st day of MAY, 20 18

My commission expires 03/13/22

Notary Public  
MEGAN GRIFFITH  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20184011666  
MY COMMISSION EXPIRES MARCH 13, 2022

05/04/2018

Proposed Revegetation Treatment: Acres Disturbed 0.89 Prevegetation pH \_\_\_\_\_

Lime 2-3 Tons/acre or to correct to pH 6.5

Fertilizer type \_\_\_\_\_

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

**Seed Mixtures**

**Temporary**

**Permanent**

Seed Type	lbs/acre
Annual Ryegrass	40
Field Bromegrass	40

Seed Type	lbs/acre
Crownvetch	10-15
Tall Fescue	30

Please reference Table IV-3 on page 5 of the Christopher Davis 2 Well Plugging Plan

Please reference Table IV-4A on page 5 of the Christopher Davis 2 Well Plugging Plan

**\*or type of grass seed requested by surface owner**

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

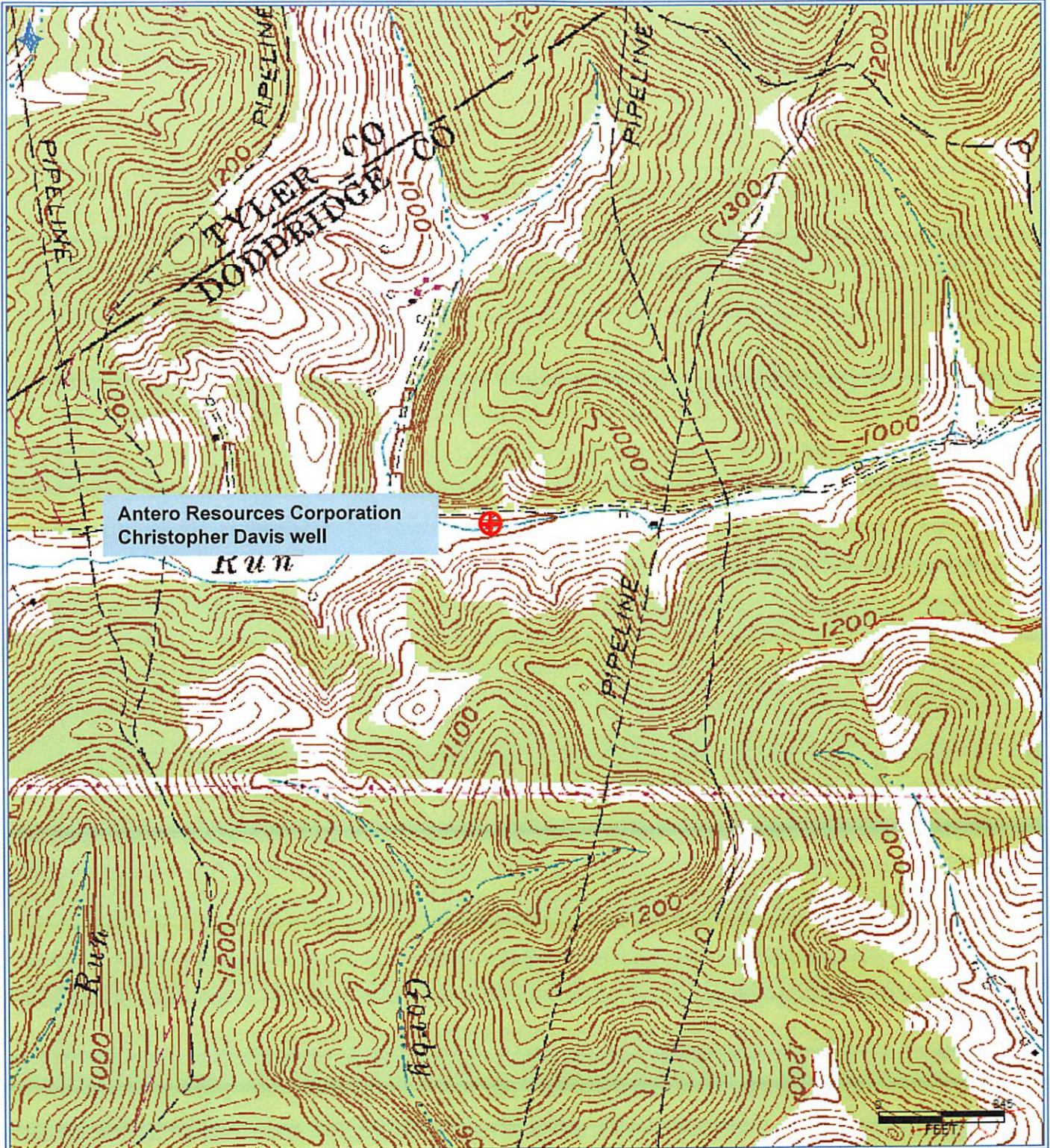
Comments: \_\_\_\_\_

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 MAY 04 2018  
 WV Department of Environmental Protection

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Field Reviewed? ( ) Yes ( ) No





Antero Resources Corporation  
 Christopher Davis well

**Antero Resources Corporation**  
 Appalachian Basin  
 Christopher Davis well  
 Doddridge County

Quadrangle: West Union  
 Watershed: Middle Island Creek  
 District: West Union  
 Date: 4-12-2018

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WW-7  
8-30-06



West Virginia Department of Environmental Protection  
Office of Oil and Gas

**WELL LOCATION FORM: GPS**

API: 47-017-00438 WELL NO.: 2

FARM NAME: Christopher Davis

RESPONSIBLE PARTY NAME: Antero Resources Corporation

COUNTY: Doddridge DISTRICT: West Union

QUADRANGLE: West Union

SURFACE OWNER: Charles C Hittel III

ROYALTY OWNER: S&R Gas Ventures, Ltd.

UTM GPS NORTHING: 4356258.98 m

UTM GPS EASTING: 518054.92 m GPS ELEVATION: 898'

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

- Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
- Accuracy to Datum – 3.05 meters
- Data Collection Method:

Survey grade GPS  : Post Processed Differential \_\_\_\_\_  
Real-Time Differential

Mapping Grade GPS  : Post Processed Differential \_\_\_\_\_  
Real-Time Differential

- Letter size copy of the topography map showing the well location.**

I the undersigned, hereby certify this data 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 Office of Oil and Gas.

Mary Sita  
Signature

Permitting Supervisor  
Title

5/1/18  
Date

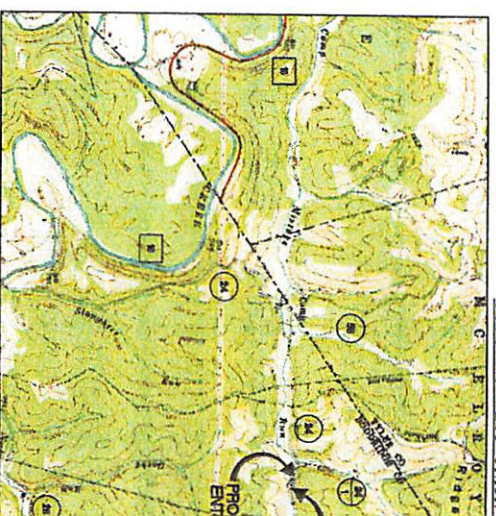
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WV Department of  
Environmental Protection

05/04/2018

**API#47-017**  
**CHRISTOPHER**  
**WELL PLUGGIN'**  
 WEST UNION DISTRICT, DODDRIDGE  
 CONAWAY RUN-MIDDLE ISLAND  
 USGS 7.5 WEST UNION



WEST VIRGINIA COUNTY MAP



(NOT TO SCALE)

**LOCATION COORDINATES:**

ACCESS ROAD ENTRANCE  
 LATITUDE: 39.555748 LONGITUDE: -80.790946 (NAD 83)  
 N 4362673.74 E 51798921 (UTM ZONE 17 METERS)  
 CENTER OF PAD  
 LATITUDE: 39.555585 LONGITUDE: -80.790967 (NAD 83)  
 N 4362626.30 E 518035.41 (UTM ZONE 17 METERS)

**GENERAL DESCRIPTION:**

THE EXISTING ACCESS ROAD AND WELL PAD ARE BEING UPGRADED TO AID IN THE PLUGGING OF EXISTING INDIVIDUAL GAS WELLS.

**FLOODPLAIN NOTES:**

THE PROPOSED SITE IS LOCATED WITHIN FEMA FLOOD ZONE 'X' PER FEMA FLOOD MAP #64017C010C.

**MISS UTILITY STATEMENT:**

ANTERO RESOURCES CORPORATION WILL NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

**ENTRANCE PERMIT:**

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION WILL OBTAIN AN ENGAGEMENT PERMIT (FORM D04-100) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES, IF REQUIRED.

**GEOTECHNICAL NOTES:**

NO SOIL STUDIES OR SUBSURFACE INVESTIGATIONS WERE PERFORMED AND ANALYZED FOR THE DESIGN OF THIS SITE.

**ENVIRONMENTAL NOTES:**

FIELD SURVEYS WERE PERFORMED IN FEBRUARY 2018 BY GAI CONSULTANTS TO IDENTIFY SENSITIVE AREAS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGION. A REVIEW OF THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVED) THE MARCH 1, 2018 STREAM AND WETLAND DELINEATION INDEX MAP WAS PREPARED BY GAI CONSULTANTS AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVED.

**PROJECT CONTACTS:**

**OPERATOR:**  
 ANTERO RESOURCES CORPORATION  
 635 WHITE OAKS BLVD.  
 BRIDGEPORT, WV 26330  
 PHONE: (304) 842-4100  
 FAX: (304) 842-4102

**ENGINEER/SUPERVISOR:**  
 NAVIGUS ENGINEERING, INC.  
 CHRIS S. KUDR, PE - PROJECT  
 MANAGER/ENGINEER  
 OFFICE: (888) 682-4185 CELL: (640) 688-6747

**ENVIRONMENTAL GAI CONSULTANTS, INC.**  
 JASON A. COOK - SENIOR ENVIRONMENTAL  
 SPECIALIST  
 OFFICE: (304) 928-8100 CELL: (603) 709-3306

**ELI WAGNER - ENVIRONMENTAL ENGINEER**  
 OFFICE: (304) 842-4068 CELL: (304) 476-9770

**JON McEVERS - OPERATIONS SUPERINTENDENT**  
 OFFICE: (303) 551-6799 CELL: (303) 808-2423

**AARON KUNZLER - CONSTRUCTION SUPERVISOR**  
 CELL: (406) 227-8344

**ROBERT B. WIRMS - FIELD ENGINEER**  
 OFFICE: (304) 842-4100 CELL: (304) 627-7405

**CHARLES E. COLPITON, III - SURVEYING COORDINATOR**  
 CELL: (304) 719-6446

**TIM BAUNS - LAND AGENT**  
 OFFICE: (304) 842-4290 CELL: (406) 641-9336

**REPRODUCTION NOTE**

THESE PLANS WERE CREATED TO BE PLOTTED ON 27304" (ANSI D) PAPER. HALF SCALE DRAWINGS ARE ON 11"x17" (ANSI B) PAPER. THESE PLANS WERE CREATED FOR COLOR PLOTTING AND ANY REPRODUCTIONS IN GRAY SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.

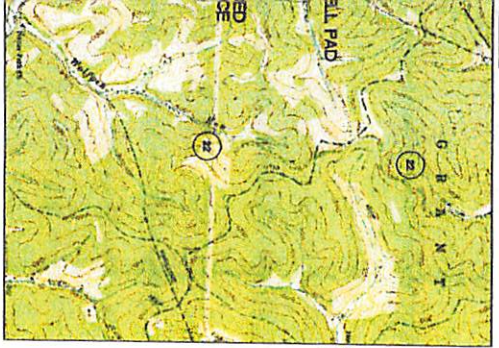
MISS Utility of West V  
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 West Virginia State  
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 Requires that you ca  
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3 PLAN

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EEK WATERSHED

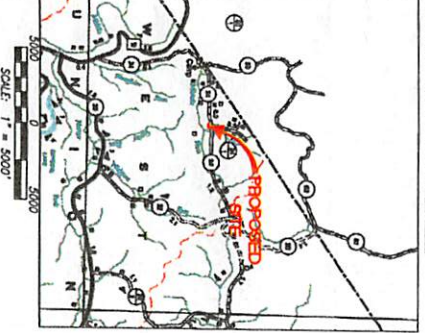


WEST VIRGINIA STATE PLANE COORDINATE SYSTEM  
NORTH ZONE, NAD83  
ELEVATION BASED ON NAVD86  
ESTABLISHED BY SURVEY GRADE GPS & OPUS  
POST-PROCESSING

- SHEET INDEX:**
- 1 - COVER SHEET
  - 2 - CONSTRUCTION AND EAS CONTROL NOTES
  - 3 - LEGEND
  - 4 - ACCESS ROAD & WELL PAD PLAN
  - 5 - CONSTRUCTION DETAILS

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WVDOH COUNTY ROAD MAP



Proprietary	WV NORTH	WV NORTH	UTM (HETERO)	WGS 1984 UTM ZONE 18 Q
North Coordinate	N 31512.73	N 31420.59	N 425007.98	LAT 39-21-22.1500
East Coordinate	E 103202.20	E 103203.18	E 31009.42	LONG 82-47-22.0000
Zone	18 Q	18 Q	18 Q	

APPROXIMATE TOTALS OF DISTURBED AREAS (AC)	
Disturbed & Cleared	0.89
Total Disturbed Area	0.22
Total Wooded Acres Disturbed	

Initial  
- (C)  
who  
dig in  
la.

<p>COVER SHEET</p> <p><b>API#47-017-00438</b></p> <p><b>CHRISTOPHER DAVIS 2</b></p> <p>WEST UNION DISTRICT DODDRIDGE COUNTY, WEST VIRGINIA</p>	<p>THIS DOCUMENT IS THE PROPERTY OF ANTERO RESOURCES CORPORATION</p>	<table border="1"> <thead> <tr> <th>DATE</th> <th>REVISION</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	DATE	REVISION																			<p>Telephone: (888) 662-4185   www.NavitusEng.com</p>
DATE	REVISION																						
	<p>03/02/2018</p>	<p>DATE: 03/02/2018</p> <p>SCALE: AS SHOWN</p> <p>SHEET 1 OF 5</p>																					









# LEGEND

EX. INDEX CONTOUR & CONTOUR LABEL	PR. INDEX CONTOUR
EX. INTERMEDIATE CONTOUR	PR. INTERMEDIATE
EX. PROPERTY LINE	PR. INTERMEDIATE
EX. EDGE OF GRAVEL/DIRT	PR. INDEX ROAD
EX. EDGE OF PAVEMENT	PR. INTERMEDIATE
EX. ROAD CENTERLINE	PR. PADS/STOCK
EX. EDGE OF CONCRETS	PR. LIMITS OF DISTURBANCE
EX. GUARDRAIL	PR. ROAD/INPOUR
EX. BRIDGE	PR. GUARDRAIL
EX. DITCHLINE/DRAINAGE FEATURE	PR. GUARDRAIL
EX. RIP-RAP	PR. ROCK CONST.
EX. CULVERT	PR. AIR BRIDGE
EX. FENCELINE	PR. CULVERT
EX. BUILDING	PR. DITCH
EX. UNCELLANEOUS FEATURE	PR. RIP-RAP FILL
EX. 100-YR FEMA FLOODPLAIN	PR. OUTLET PROOT
EX. DEGRADED STREAM	PR. DIVERSION
EX. DEGRADED WETLAND/POUD	PR. ROCK FILTER
100' WETLAND/STREAM BUFFER	PR. COMPOST FILTER
STREAM/WETLAND DEMONSTRATION STUDY AREA	PR. SUPER SILT
EX. FENCELINE/PERMETER SAFETY FENCE	PR. STRAW MATTE
EX. GATE	PR. WELL HEAD
EX. ACCESS GATE WITH EMERGENCY PIPELINE	PR. PAD DEVIATION
EX. WELL HEAD ON DESIGNED PAD	PR. TOP OF PAD
EX. GAS WELL	PR. 250' X 350'
EX. PIPELINE R/W	PR. SPOT SHOT
EX. PIPELINE R/W	PR. PERMETER S.
EX. PIPELINE METER	PR. ACCESS GATE
EX. PIPELINE VALVE	PR. PIPELINE
EX. PIT	PR. PIPELINE R/W
EX. POWER POLE/GUY WIRE	PR. OVERHEAD UT
EX. OVERHEAD UTILITY	PR. POWER POLE/
EX. UNDERGROUND ELECTRIC	PR. OVERHEAD UT
EX. UNDERGROUND TELEPHONE	PR. TELEPHONE L
EX. UNDERGROUND FIBER OPTIC	PR. WATERLINE
EX. UTILITY R/W	PR. RIGHT-OF-WAY
EX. WATERLINE	PR. PERMANENT D
EX. SANITARY LINE	PR. TEMPORARY C
EX. WATER WELL/EX. SPRING	BORING LOCATION
EX. COMPOST SOCK	X-SECTION/PROFIT
EX. SUPER SILT FENCE	X-SECTION/PROFIT
EX. SILT FENCE	X-SECTION/PROFIT
EX. STRAW MATTE	X-SECTION/PROFIT
EX. RIGHT-OF-WAY	X-SECTION/PROFIT
MATCHLINE	X-SECTION/PROFIT

# LEGEND



(10' INTERVAL) & CONTOUR LABEL	1000
CONTOUR (2' INTERVAL)	
CONTOUR (1' INTERVAL)	
LOAD CONTOUR (10' INTERVAL) & CONTOUR LABEL	1000
LOAD CONTOUR (2' INTERVAL)	
LOAD CONTOUR (1' INTERVAL)	
TOPO LIMITS	
FINISHANCE	
PERCENT EDGE OF GRAVEL	
DE	
STATION ENTRANCE	
SCODAL DITCH	
ROAD	
SOCKET	
CE/SMART FENCE HD	
SYSTEM	
STAINMENT BERM	
FOOTPRINT	1000 X
TY FENCE	
EMERGENCY LAYDOWN	
TY	
TY R/W	
MADE EASEMENT	
STRUCTION EASEMENT	
ROAD INDEX	
PROPOSED GRADE	
EXISTING GRADE	
WATER SURFACE	
ADVERT	

DATE: 03/02/2018 SCALE: N/A SHEET 3 OF 5		<p style="text-align: center;">LEGEND</p> <p style="text-align: center;"><b>API#47-017-00438</b></p> <p style="text-align: center;">CHRISTOPHER DAVIS 2 WEST UNION DISTRICT DODDRIDGE COUNTY, WEST VIRGINIA</p>	 <p style="text-align: center;">THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION</p>	<table border="1"> <thead> <tr> <th>DATE</th> <th>REVISION</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	DATE	REVISION															<p style="text-align: center;"><b>NAVITUS</b> ENERGY ENGINEERING</p> <p style="text-align: center;">Telephone: (888) 662-4185   www.NavitusEng.com</p>
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