



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

July 06, 2015

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-8510214, issued to ANTERO RESOURCES CORPORATION, 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.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.

James Martin

Chief

Operator's Well No: HUGHES RIVER UNIT 2H

Farm Name: LYNWOOD IRELAND

API Well Number: 47-8510214

Permit Type: Horizontal 6A Well

Date Issued: 07/06/2015

Promoting a healthy environment.

07/10/2015

PERMIT CONDITIONS 470 0510214

West Virginia Code § 22-6A-8(d) 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. Operator shall take additional measures with this permitted activity to avoid communication with offset wells. Such additional measures are described in the attached addendum. This addendum is part of the terms of the well work permit, and includes a description of depth and completed formations of offset wells. Also included is a description of monitoring activities that will take place during fracturing operations of the permitted well work.
1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

API Number: _____

PERMIT CONDITIONS⁴⁷⁰⁸⁵¹⁰²¹⁴

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.
9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.



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REVISED Addendum for Antero pads in Ritchie County, WV

Hughes River Unit 2H	Ireland North Pad
Karen Unit 1H	Ireland North Pad
Karen Unit 3H	Ireland North Pad

The following outlines the process to be undertaken by Antero Resources prior to and during completion process of wells in Ritchie County.

- Investigate all wells within 1320' of new wells - for all identified Marcellus vertical wells and any existing well(s) with an interval that is less than 1500 feet from the deepest formation drilled (including, but not specific to the Alexander formation) to the top of Marcellus:
 - Contact operator of all wells
 - Confirm well status, producing horizon, well completion/stimulation information
 - Discuss plans to stimulate the horizontal Marcellus wells and the plans for monitoring potential impact on shallow wells
 - Make sure all vertical wells (with an interval that is less than 1500 feet from the deepest formation drilled to the top of Marcellus) have adequate wellhead equipment, including pressure gauges
 - Provide shallow well operator with frac dates and develop plan for monitoring during stimulation
 - If well waters out during frac, shut it in until after stimulation, and install adequate well control equipment prior to swabbing in the impacted shallow well
- Control fracturing parameters during job to limit fracture height growth
 - Limit rate and limit pressures for each segment of fracturing stages

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MAY 07 2015

07/10/2015

WW-6B
(04/15)

API NO. 47-085 -
OPERATOR WELL NO. Hughes River Unit 2H
Well Pad Name: Ireland North Pad

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

1) Well Operator: Antero Resources Corporation 494488557 085-Ritchie Union Pullman 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Hughes River Unit 2H Well Pad Name: Ireland North Pad

3) Farm Name/Surface Owner: Ireland, Lynwood, et al Public Road Access: CR 9

4) Elevation, current ground: ~957' Elevation, proposed post-construction: 947'

5) Well Type (a) Gas X Oil _____ Underground Storage _____
Other _____
(b) If Gas Shallow X Deep _____
Horizontal X

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6500' TVD, Anticipated Thickness- 50 feet, Associated Pressure- 3000#

8) Proposed Total Vertical Depth: 6500' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 18400' MD

11) Proposed Horizontal Leg Length: 11450'

12) Approximate Fresh Water Strata Depths: 69', 279', 359'

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

14) Approximate Saltwater Depths: 1451, 1807'

15) Approximate Coal Seam Depths: 343'

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

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No X

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	410' *see #19	410' *see #19	CTS, 570 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2400'	2400'	CTS, 977 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	18400'	18400'	4682 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7,100	
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	1000	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	2500	Lead-HPOZ & Tail-H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200			
Liners							

PACKERS

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

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4708510214

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

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

*Antero will be air drilling the fresh water string which makes it difficult to determine when freshwater is encountered, therefore we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

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

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

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 28.25 acres

22) Area to be disturbed for well pad only, less access road (acres): 3.56 acres

23) Describe centralizer placement for each casing string:

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

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

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

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

WW-9
(2/15)

API Number 47 - 085
Operator's Well No. Hughes River Unit 2H

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 494488557

Watershed (HUC 10) South Fork Hughes River Quadrangle Pullman 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? 470851214 Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be tanked and hauled off site.

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- 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 _____)

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Sluff foam, Production - Water Based Mud

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

Additives to be used in drilling medium? Please See Attachment

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Stored in tanks, removed offsite and taken to landfill.

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

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98)

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, 2005, 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 [Signature]

Company Official (Typed Name) Cole Kilstrom

Company Official Title Environmental & Regulatory Manager

Subscribed and sworn before me this 30 day of April

Kara Quackenbush

My commission expires JULY 21, 2018

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Office of Oil and Gas
20 15
KARA QUACKENBUSH
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144028297
MY COMMISSION EXPIRES JULY 21, 2018

MAY 15 2015
Notary Public

WV Department of
Environmental Protection

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 28.25 acres Prevegetation pH 6.0

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

Fertilizer type Hay or straw or Wood Fiber (will be used where needed)

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

4708510214

Well Pad Construction (3.56) + Access Road Construction (7.22) + Topsoil / Excess Material (1.15) + Additional Clearing (16.32) = 28.25 Acres

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Fox Tail / Grassy	40
		Perennial Rye Grass	30
		Crown Vetch	20
*or type of grass seed requested by surface owner		*or type of grass seed requested by surface owner	

Attach:
Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Daniel C. Cunniff

Comments: present & mulch all cut area no less than two ton per acre, maintain all E&S during operation

Title: oil & gas inspector

Date: 5 RECEIVED
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Field Reviewed? Yes No

WV Department of Environmental Protection

Form WW-9 Additives Attachment

SURFACE INTERVAL

1. Fresh Water
2. Soap –Foamer AC
3. Air

4708510214

INTERMEDIATE INTERVAL

STIFF FOAM RECIPE:

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 (11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard (9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

PRODUCTION INTERVAL

1. Alpha 1655
Salt Inhibitor
2. Mil-Carb
Calcium Carbonate
3. Cottonseed Hulls
Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal
Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol
Amine Acid Complex – Shale Stabilizer
6. Xan-Plex
Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)
Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill
Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda
Sodium Hydroxide – Alkalinity Control
10. Mil-Lime
Calcium Hydroxide – Lime
11. LD-9
Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica
Hydro-Biotite Mica – LCM

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13. Escaid 110
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco
Highly Oxidized Leonardite – Filtration Control Agent
15. Super Sweep
Polypropylene – Hole Cleaning Agent
16. Sulfatrol K
Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous
Inorganic Salt
18. D-D
Drilling Detergent – Surfactant
19. Terra-Rate
Organic Surfactant Blend
20. W.O. Defoam
Alcohol-Based Defoamer
21. Perma-Lose HT
Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D
Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells
Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite
Natural Graphite – LCM
25. Mil Bar
Barite – Weighting Agent
26. X-Cide 102
Biocide
27. Soda Ash
Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol
Amine Acid complex – Shale Stabilizer
29. Sulfatrol
Sulfonated Asphalt – Shale Control Additive
30. Xanvis
Viscosifier For Water-Based Muds
31. Milstarch
Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube
Drilling Fluid Lubricant

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911 ADDRESS
4392 Oxford Rd.
West Union, WV 26456

Well Site Safety Plan

Antero Resources

Well Name: Pritchard Unit 1H, Pritchard Unit 2H, Pritchard Unit 3H, Pritchard Unit 4H, Karen Unit 1H, Karen Unit 2H, Karen Unit 3H, Hughes River Unit 1H, Hughes River Unit 2H, Hughes River Unit 3H, Hughes River Unit 4H

Pad Location: IRELAND NORTH PAD
Ritchie County/ Union District

GPS Coordinates: Lat 39°10'22.1658"/Long -80°53'56.7456" (NAD83)

Driving Directions:

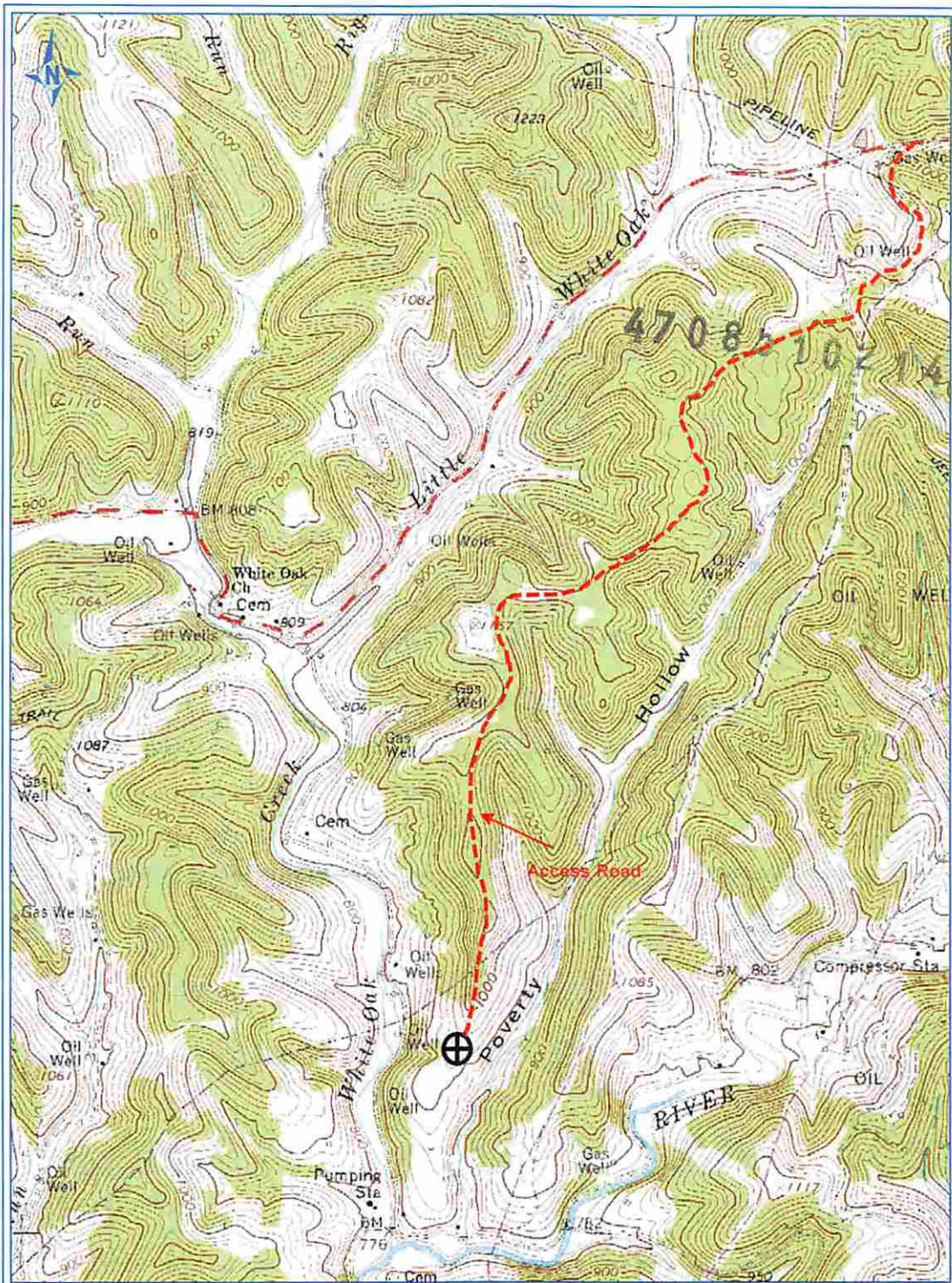
From Pullman: Head northeast on Co. Rd. 9/Main St/Ash Hill St for 4.6 miles. Make a sharp right onto Possum Run Rd. In 0.6 miles, access road will be on the right.

EMERGENCY (24 HOUR) CONTACT 1-800-878-1373

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Antero Resources Corp

APPALACHIAN BASIN

Hughes River Unit 2H
Ritchie County

REMARKS
QUADRANGLE: PULLMAN 7.5'
WATERSHED: SOUTH FORK HUGHES RIVER
DISTRICT: UNION

By: ECM



07/10/2015

LATITUDE 39°12'30"

6,871'

LATITUDE 39°10'00" 3,022' TO BOTTOM HOLE

LONGITUDE 80°52'30"

8,779' TO BOTTOM HOLE

12,979'

LONGITUDE 80°52'30"

Antero Resources Corporation
Well No. Hughes River Unit 2H

NOTES:
 WELL 2H TOP HOLE INFORMATION:
 N: 248,100ft E: 1,603,313ft
 LAT: 39°10'21.72" LON: 80°53'57.25"
 BOTTOM HOLE INFORMATION:
 N: 237,066ft E: 1,606,994ft
 LAT: 39°08'33.23" LON: 80°53'08.35"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
 WELL 2H TOP HOLE INFORMATION:
 N: 4,335,956m E: 508,719m
 BOTTOM HOLE INFORMATION:
 N: 4,332,613m E: 509,896m

LEGEND

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

D. R. ROWE

DOUGLAS R. ROWE P.S. 2202

DATE 04/23/15

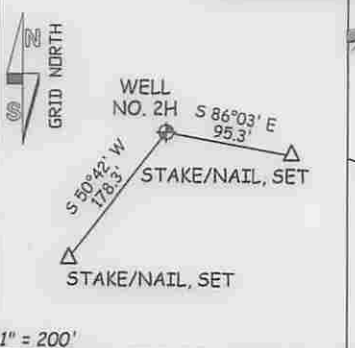
OPERATOR'S WELL# _____

API WELL # _____

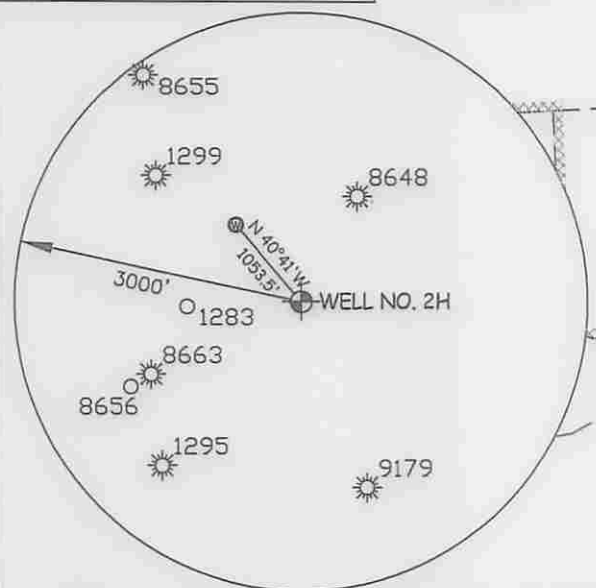
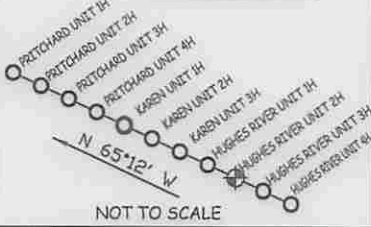
STATE COUNTY PERMIT

47 - 085 - 10214 HGA

REFERENCES



PAD LAYOUT

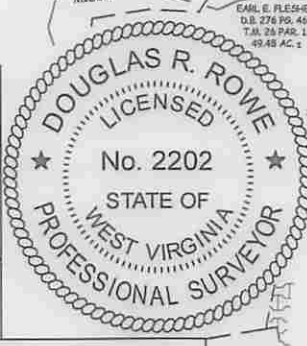


I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



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

WILLOW LAND SURVEYING PLLC
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415



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

LOCATION: ORIGINAL GROUND ELEV. 957' PROPOSED ELEV. 947' WATERSHED SOUTH FORK HUGHES RIVER

QUADRANGLE PULLMAN 7.5 DISTRICT UNION _____ COUNTY RITCHIE

SURFACE OWNER LYNWOOD IRELAND ET AL ACREAGE 144.276 ACRES +/-

OIL & GAS ROYALTY OWNER BELLE PRITCHARD; C. C. DAVIS LEASE ACREAGE 415 AC±; 130 AC±

ET AL: JOYCE E. WEBBER; CHARLES CARSON; 445.67 AC±; 71.6 AC±

ELBERT SHEETS HEIRS; MIKE SPIKER ET AL; 70.25 AC±; 84.14 AC±

YVONNE JOYCE RIGGLEMAN; AI. G. KELLEY 35.5 AC±; 100 AC±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____ PLUG & ABANDON CLEAN OUT & REPLUG

TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,500' TVD 18,400' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT _____
 ADDRESS 1615 WYNKOOP STREET ADDRESS _____

FORM WW-6 DENVER, CO 80202

JOB # 14-126WA

DRAWING # HUGHESRIVER2H

SCALE 1" = 1000'

MINIMUM DEGREE OF ACCURACY SUBMETER

PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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

DIANNA STAMPER
 CT CORPORATION SYSTEM
 5400 D BIG TYLER ROAD
 CHARLESTON, WV 25313

07/10/2015

4308510214

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

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

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Belle Pritchard Lease</u>			
Belle Pritchard	Ritchie A. Ireland	1/8	0079/0019
Ritchie A. Ireland	S. M. Vokel, H.R. Jackson, Sam T. Mallison & Charles E. Young	Assignment	0080/0386
S. M. Vokel, H.R. Jackson, Sam T. Mallison & Charles E. Young	Warren Associates, Inc.	Assignment	0126/0464
Warren Associates, Inc.	Haught, Inc.	Affidavit	0170/0461
Haughts, Inc.	Haught Oil Producing Corporation	Merger	Exhibit 2
Haught Oil Producing Corporation	710 Corporation	Assignment	0180/0791
710 Corporation	Lynwood K. Ireland	Assignment	0204/0553
Lynwood K. Ireland	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0255/0652
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>C.C. Davis, et al Lease</u>			
C.C. Davis, et ux; Janie D. Prunty, R.M. Davis, Blanche Davis & Scott Maxwell, et ux	C.A. Stricklin	1/8	0091/0431
C.A. Stricklin	Big A Oil Corporation	Assignment	0152/0591
Big A Oil Corporation	Lamar Oil & Gas Company	Merge	CR 0005/0669
Lamar Oil & Gas Company	Antero Resources Appalachian Corporation	Assignment	0257/0778
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Joyce E. Webber Lease</u>			
Joyce E. Webber	Antero Resources Appalachian Corporation	1/8+	0254/0999
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Charles Carson Lease</u>			
Charles Carson	Antero Resources Appalachian Corporation	1/8+	0259/0556
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Elbert Sheets Heirs Lease</u>			
Elbert G. Sheets Heirs	Tower Drilling Corporation	1/8	0128/0308
Tower Drilling Corporation	John R. Umstead	Assignment	0180/0706
John R. Umstead	Solomon Production Company	Assignment	0225/0765
Solomon Production Company	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0258/0715
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

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

****CONTINUED ON NEXT PAGE****

07/10/2015

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

4708510214

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

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Mike Spiker, et al Lease</u>			
Mike I Spiker, Mark A. Spiker, Brada S. Stotts, and Briana S. Spiker	Key Oil Company	1/8	0240/0219
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	0253/0747
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Yvonne Joyce Riggleman Lease</u>			
Yvonne Joyce Riggleman	Antero Resources Appalachian Corporation	1/8	0254/0548
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

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 Office of Oil & Gas
 MAY 07 2015

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

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

47085-214

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Al G. Kelley Lease</u>	Al G. Kelley	Carnegie Production Company	1/8	0050/0410
	Carnegie Production Company	EQT Production Company	Assignment & Ratification	0252/0385
	EQT Production Company	Antero Resources Corporation	*Partial Assignment of Oil & Gas Leases	0277/0836

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

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

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

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

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

Well Operator: Antero Resources Corporation
 By: Kevin Kilstrom
 Its: VP of Production

FORM WV-6A1
EXHIBIT 1

FILED
4708510214
JUN 10 2013

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



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

APPLICATION FOR
AMENDED CERTIFICATE
OF AUTHORITY

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

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

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

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
- Other amendments:
(attach additional pages if necessary)
- Name and phone number of contact person. (This is optional; however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)
Alwyn A. Schopp (303) 367-7310
Contact Name Phone Number
- Signature information (See below *Important Legal Notice Regarding Signature*):
Print Name of Signer: Alwyn A. Schopp Title/Capacity: Authorized Person
Signature: [Handwritten Signature] Date: June 10, 2013

***Important Legal Notice Regarding Signature:** Per West Virginia Code §31D-1-129, Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

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MAY 17 2015

4708510214



*I, Ken Heckler, Secretary of State of the
State of West Virginia, hereby certify that*
THE FOLLOWING IS A TRUE AND CORRECT COPY OF THE ARTICLES OF MERGER
OF:

HAUGHT, INC., A WEST VIRGINIA CORPORATION AND HAUGHT OIL
PRODUCING CORP., A UTAH CORPORATION DULY SIGNED AND VERIFIED
PURSUANT TO THE PROVISIONS OF SECTION 38, ARTICLE 1, CHAPTER
31 OF THE CODE OF WEST VIRGINIA, 1931, AS AMENDED, HAVE
BEEN RECEIVED AND ARE FOUND TO CONFORM TO LAW.

ACCORDINGLY, I HEREBY ISSUE THIS CERTIFICATE OF MERGER, MERGING
HAUGHT, INC., WITH AND INTO HAUGHT OIL PRODUCING CORP., THE
SURVIVOR AND ATTACH A DUPLICATE ORIGINAL OF SAID ARTICLES
OF MERGER AS APPEARS FROM THE RECORDS OF MY SAID OFFICE.

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

TWELFTH day of
JANUARY 19 67



Ken Heckler
Secretary of State

Received
Office of Oil & Gas

MAY 07 2015

FORM WW-6A1
EXHIBIT 2, PAGE 2

BOOK 39 OF 686 919025

IRA M. HAUGHT
ATTORNEY AT LAW
210 E. MAIN STREET
HARRISVILLE, WEST VIRGINIA 26302
708510214

Division of Commercial Code of the Utah State
2003
State Documents Examiner
2500

ARTICLES OF MERGER OF HAUGHT, INC.
INTO HAUGHT OIL PRODUCING CORP.

Pursuant to the laws of the State of Utah, the undersigned corporation, Haught Oil Producing Corp., a Utah corporation, (the "surviving corporation") adopts the following articles of merger for the purpose of merging the subsidiary, Haught, Inc., a West Virginia corporation, into the undersigned as the surviving corporation.

FIRST: The plans of merger attached hereto as Exhibit "A" were approved by resolution of the Board of Directors of the surviving corporation, on the 27th day of July, 1984, in the manner prescribed by the laws of the State of Utah.

SECOND: The number of shares outstanding of the subsidiary corporation is 230 shares of common stock, of which all 230 shares are owned by the surviving corporation.

THIRD: On December 3, 1984 a copy of the Plan of Merger set forth above was delivered to the shareholders of Haught, Inc.

DATED: December 5, 1984

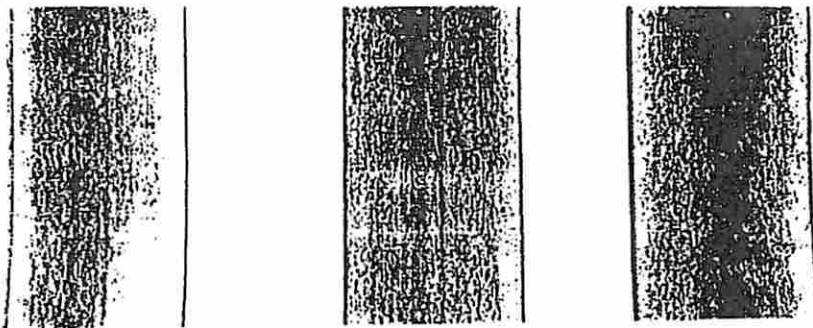
(CORPORATE SEAL)
ATTEST:
Lenna G. Haught
Lenna G. Haught, Secretary

HAUGHT, INC.
By: *Warren R. Haught*
Warren R. Haught, President

IRA M. HAUGHT
ATTORNEY AT LAW
210 E. MAIN STREET
HARRISVILLE
WEST VIRGINIA
26302
12041 642-4180

(CORPORATE SEAL)
ATTEST:
Lenna G. Haught
Lenna G. Haught, Secretary

HAUGHT OIL PRODUCING CORP.
By: *Warren R. Haught*
Warren R. Haught, President



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MAY 07 2015



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

April 24, 2015

West Virginia Department of Environmental Protection
Chief, Office of Oil and Gas
Attn: Mr. James Martin
601 57th Street SE
Charleston, WV 25304

4708510214

RE: Hughes River Unit 2H
Quadrangle: Pullman 7.5'
Ritchie County/Union District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the Hughes River Unit 2H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Hughes River Unit 2H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

A handwritten signature in blue ink, appearing to read "Haley West", is written over a horizontal line.

Haley West
Landman

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Office of Oil & Gas
MAY 07 2015

07/10/2015

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

47085

Date of Notice Certification: 04/30/2015

API No. 47- 085

Operator's Well No. Hughes River Unit 2H

Well Pad Name: Ireland North

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Eastings: <u>508719m</u>
County: <u>Ritchie</u>		Northing: <u>4335956m</u>
District: <u>Union</u>	Public Road Access: <u>CR 9</u>	
Quadrangle: <u>Pullman 7.5'</u>	Generally used farm name: <u>Ireland, Lynwood, et al</u>	
Watershed: <u>South Fork Hughes River</u>		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
---	---

Required Attachments:


The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

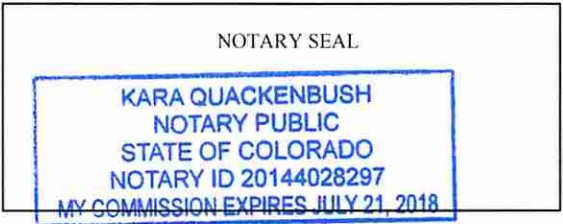
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Office of Oil & Gas
MAY 07 2015

07/10/2015

Certification of Notice is hereby given:

THEREFORE, I Kevin Kilstrom, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, 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 and imprisonment.

Well Operator:	<u>Antero Resources Corporation</u>	Address:	<u>1615 Wynkoop Street</u>
By:	<u>Kevin Kilstrom</u> 		<u>Denver, CO 80202</u>
Its:	<u>VP of Production</u>	Facsimile:	<u>303-357-7315</u>
Telephone:	<u>303-357-7310</u>	Email:	<u>asteele@anteroresources.com</u>



Subscribed and sworn before me this 30 day of April 2015.

Kara Quackenbush Notary Public

My Commission Expires July 21, 2018

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as 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 or your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.

47085102

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 5/1/2015 Date Permit Application Filed: 5/1/2015

Notice of:

4708510214

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
 Name: Lynwood K. & Karen L. Ireland (2nd Address)
 Address: 342 Ireland Rd. 987 Middle Island Creek Rd.
 Pullman, WV 26421 St. Mary's, WV 26170

Name: Jack W. Kirsch II
 Address: 958 Holbrook Rd.
 Pullman, WV 26421

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: Lynwood K. & Karen L. Ireland (2nd Address)
 Address: 342 Ireland Rd. 987 Middle Island Creek Rd.
 Pullman, WV 26421 St. Mary's, WV 26170

*PLEASE NOTE THE ADDITIONAL SURFACE TRACTS WITH DISTURBANCE SHOWN ON PAD DESIGN ARE **NOT** OVERLYING THE OIL & GAS LEASEHOLD BEING DEVELOPED BY THE PROPOSED WELL; THEREFORE, ARE NOT REQUIRED TO BE NOTIFIED PER WV CODE 22-6A-10. ANTERO HAS SECURED A SIGNED AGREEMENT WITH THE RELATED PARTIES

COAL OWNER OR LESSEE
 Name: NO DECLARATIONS ON RECORD WITH COUNTY
 Address: _____

COAL OPERATOR
 Name: NO DECLARATIONS ON RECORD WITH COUNTY
 Address: _____

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE
 Name: Jack W. Kirsch II
 Address: 958 Holbrook Rd.
 Pullman, WV 26421

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
 Name: _____
 Address: _____

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 Office of Oil & Gas
 MAY 07 2015

*Please attach additional forms if necessary

07/10/2015

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

4708510274

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Office of Oil & Gas
MAY 07 2015

WW-6A
(8-13)

API NO. 47-085 -
OPERATOR WELL NO. Hughes River Unit 2H
Well Pad Name: Ireland North

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary. 47085102

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

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

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

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Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) 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.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and 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.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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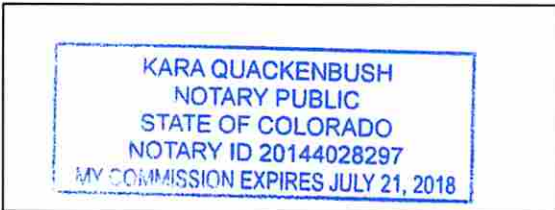
Notice is hereby given by:

Well Operator: Antero Resources Corporation
Telephone: (303) 357-7310
Email: asteel@anteroresources.com

Address: 1615 Wynkoop Street
Denver, CO 80202
Facsimile: 303-357-7315

Oil and Gas Privacy Notice:

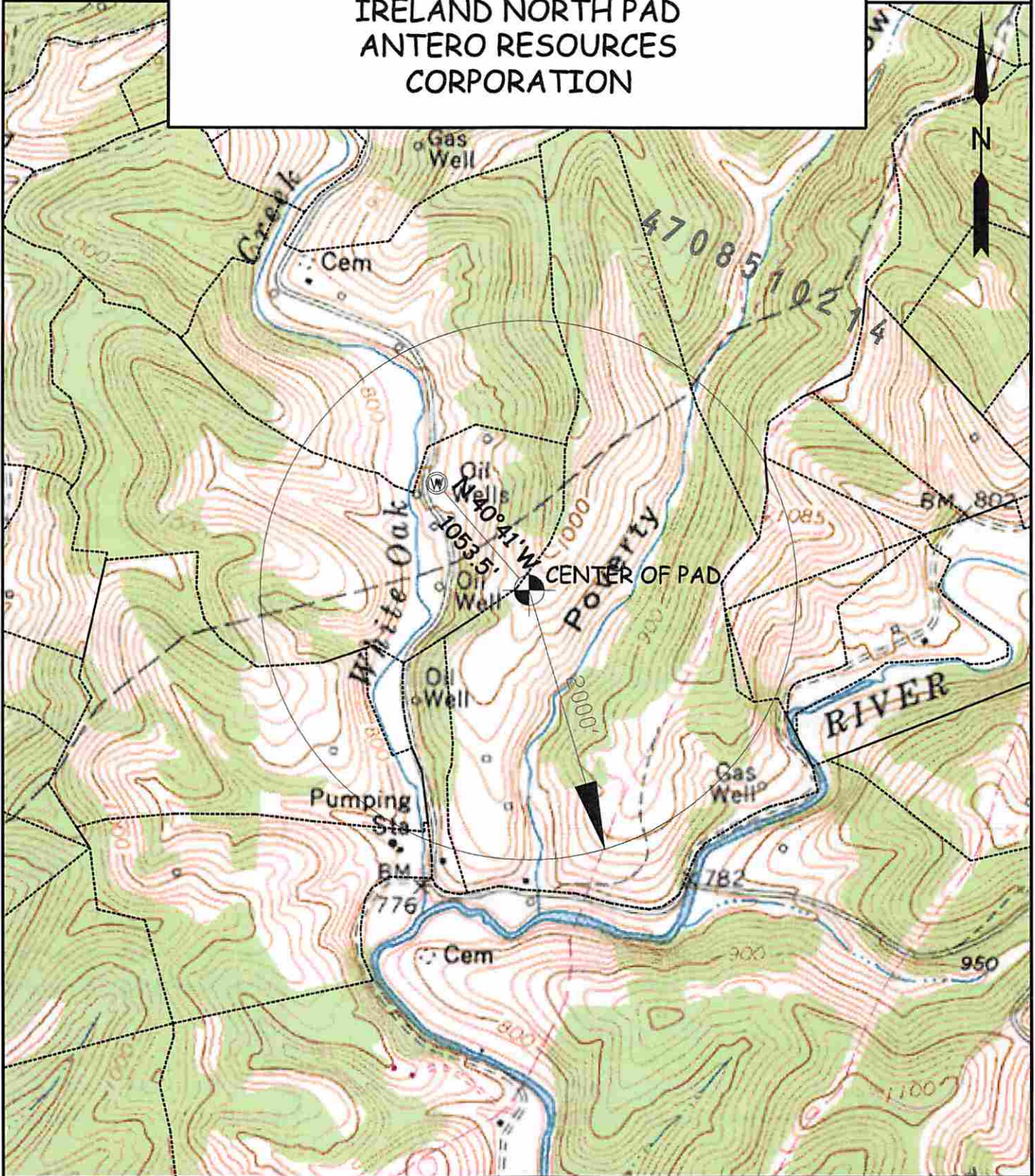
The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory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



Subscribed and sworn before me this 1 day of May 2015.
Kara Quackenbush Notary Public
My Commission Expires July 21, 2018

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IRELAND NORTH PAD ANTERO RESOURCES CORPORATION



WELL SURFACE OWNER	ADDRESS	WELL LATITUDE	WELL LONGITUDE
W1 JACK W. KIRSCH II	958 HOLBROOK RD, PULLMAN WV, 26421	39°10'29.68"	80°54'06.66" W
WILLOW LAND SURVEYING, PLLC P.O. BOX 17, PENNSBORO, WV 26415 (304) 659-1717		TOPO SECTION(S) OF : PULLMAN 7.5' QUAD. JOB #: 12-123WA FILE: IRELANDNORTH PAD WATERMAP	
DATE: 09/22/14	DRAWN BY: D.R.R.	SCALE: 1-INCH = 1000- FEET 0' 1000' 2000' 3000' Office of the State Auditor MAY 07 2015	

07/10/2015

WW-6A3 Notice of Entry For Plat Survey Attachment:

Mineral Owners:

Owner: Eddy D. Beck ✓
Address: 143 McDougal Drive
Pennsboro, WV 26415

Owner: Donald J. Brohard ✓
Address: 820 BF Goddrich Dr.
Marietta, OH 45750

Owner: Mary Jean Hoover ✓
Address: 3307 Estate Circle
Youngstown, OH 44511

Owner: Albert Ireland ✓
Address: RR 1Box 26
Pullman, WV 26421

Owner: A.C.Ireland, Guy R Ireland Trust ✓
Address: 820 BF Goddrich Dr.
Marietta, OH 45750

Owner: Daniel Ireland ✓
Address: 820 BF Goddrich Dr.
Marietta, OH 45750

Owner: Kevin M. Ireland ✓
Address: 1224 Armdale Ln
Matthews, NC 28105

Owner: Lynwood K and Karen L Ireland ✓
Address: 342 Ireland Rd
Pullman, WV 26421

Owner: Owen V. Ireland ✓
Address: 157 Xenia Court
Monroe, OH 45050

Owner: Sherrie Lynn Ireland ✓
Address: 2120 Luka Ave
Colombus, OH 43201

Owner: William D. Ireland III ✓
Address: 871 Baier St.
St. Alban, WV 25177

Owner: Jack Wayne Kirsch II ✓
Address: 958 Holbrook Rd.
Pullman, WV 26421

Owner: Robert L. Richard ✓
Address: 525 N. Grey St.
Pennsboro, WV 26415

Owner: Mary A. Snodgrass ✓
Address: 525 N. Grey St.
Pennsboro, WV 26415

Owner: Joyce E. Webber ✓
Address: 525 N. Grey St.
Pennsboro, WV 26415

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Earl Ray Tomblin
Governor

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

March 27, 2015

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the Ireland North Pad, Ritchie County
Hughes River Unit 2H Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #03-2013-0010 which has been issued to Antero Resources Corporation for access to the State Road for a well site located off of Ritchie County Route 9 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: Megan Darling
Antero Resources Corporation
CH, OM, D-3
File

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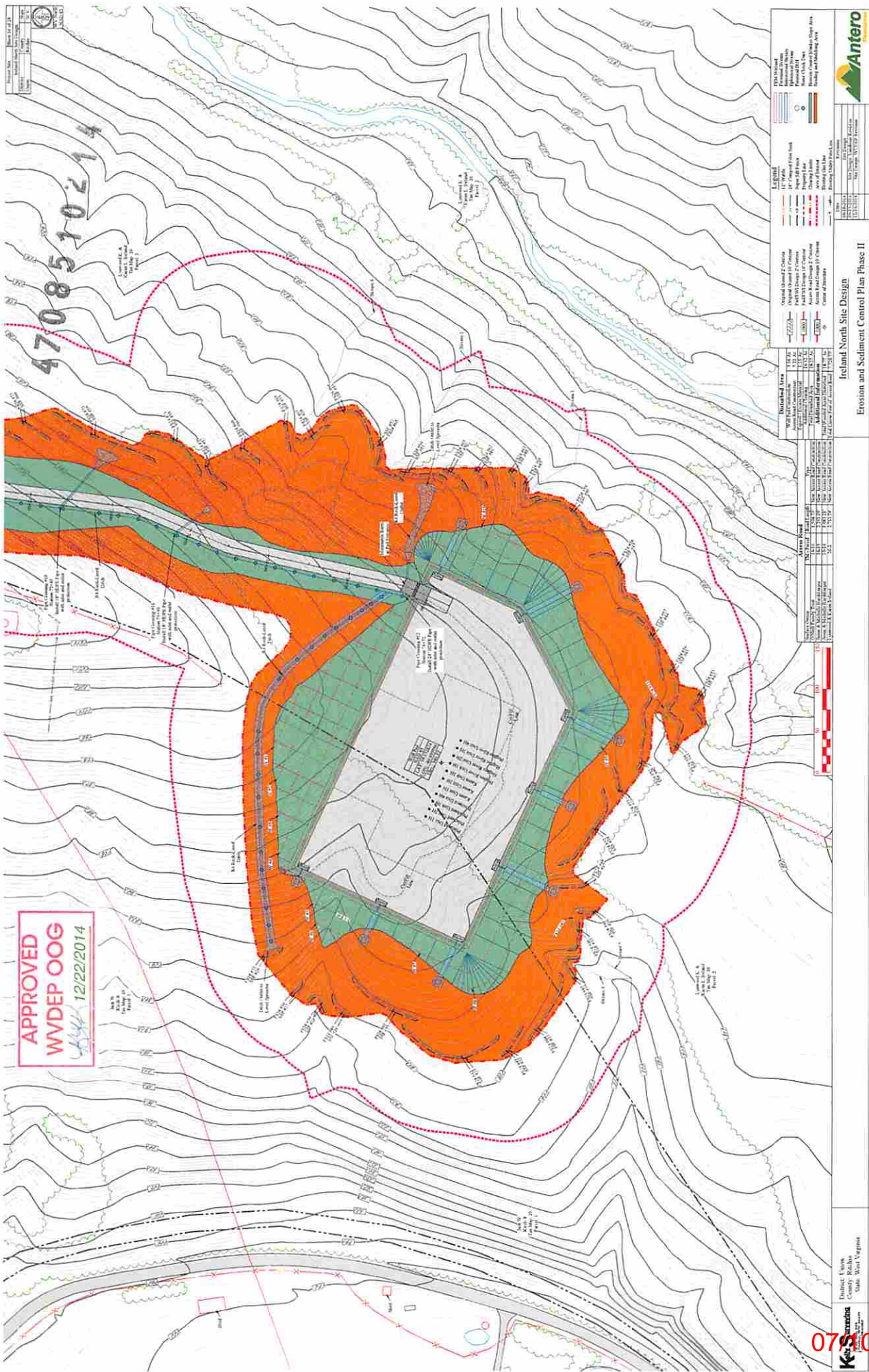
**List of Anticipated Additives Used for Fracturing or
Stimulating Well**

47025
214

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	proprietary
Anionic polymer	proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	(Proprietary)
Demulsifier Base	(Proprietary)
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Sillica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7

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APPROVED
WVDEP OOG
12/22/2014

07/10/2015

Anfero

Ireland North Site Design
Erosion and Sediment Control Plan Phase II

District: Union
County: Raleigh
State: West Virginia

Project No.: 15-001
Sheet No.: 15-001-01
Scale: 1" = 40'

Prepared By: [Name]
Checked By: [Name]
Approved By: [Name]

Project Location: [Address]

Project Description: [Description]

Project Start Date: [Date]

Project End Date: [Date]

Project Status: [Status]

Project Budget: [Budget]

Project Cost: [Cost]

Project Revenue: [Revenue]

Project Profit: [Profit]

Project Loss: [Loss]

Project Break-Even: [Break-Even]

Project ROI: [ROI]

Project NPV: [NPV]

Project IRR: [IRR]

Project Payback: [Payback]

Project Risk: [Risk]

Project Return: [Return]

Project Yield: [Yield]

Project Growth: [Growth]

Project Expansion: [Expansion]

Project Diversification: [Diversification]

Project Innovation: [Innovation]

Project Sustainability: [Sustainability]

Project Social Impact: [Social Impact]

Project Environmental Impact: [Environmental Impact]

Project Economic Impact: [Economic Impact]

Project Cultural Impact: [Cultural Impact]

Project Historical Impact: [Historical Impact]

Project Geographical Impact: [Geographical Impact]

Project Political Impact: [Political Impact]

Project Legal Impact: [Legal Impact]

Project Ethical Impact: [Ethical Impact]

Project Moral Impact: [Moral Impact]

Project Religious Impact: [Religious Impact]

Project Philosophical Impact: [Philosophical Impact]

Project Scientific Impact: [Scientific Impact]

Project Technological Impact: [Technological Impact]

Project Artistic Impact: [Artistic Impact]

Project Literary Impact: [Literary Impact]

Project Musical Impact: [Musical Impact]

Project Dramatic Impact: [Dramatic Impact]

Project Cinematic Impact: [Cinematic Impact]

Project Televisual Impact: [Televisual Impact]

Project Digital Impact: [Digital Impact]

Project Internet Impact: [Internet Impact]

Project Mobile Impact: [Mobile Impact]

Project Social Media Impact: [Social Media Impact]

Project Gaming Impact: [Gaming Impact]

Project Virtual Reality Impact: [Virtual Reality Impact]

Project Augmented Reality Impact: [Augmented Reality Impact]

Project Artificial Intelligence Impact: [Artificial Intelligence Impact]

Project Robotics Impact: [Robotics Impact]

Project Nanotechnology Impact: [Nanotechnology Impact]

Project Biotechnology Impact: [Biotechnology Impact]

Project Space Impact: [Space Impact]

Project Energy Impact: [Energy Impact]

Project Environment Impact: [Environment Impact]

Project Climate Impact: [Climate Impact]

Project Water Impact: [Water Impact]

Project Air Impact: [Air Impact]

Project Soil Impact: [Soil Impact]

Project Land Impact: [Land Impact]

Project Ocean Impact: [Ocean Impact]

Project Atmosphere Impact: [Atmosphere Impact]

Project Biosphere Impact: [Biosphere Impact]

Project Geosphere Impact: [Geosphere Impact]

Project Lithosphere Impact: [Lithosphere Impact]

Project Hydrosphere Impact: [Hydrosphere Impact]

Project Cryosphere Impact: [Cryosphere Impact]

Project Atmosphere Impact: [Atmosphere Impact]

Project Biosphere Impact: [Biosphere Impact]

Project Geosphere Impact: [Geosphere Impact]

Project Lithosphere Impact: [Lithosphere Impact]

Project Hydrosphere Impact: [Hydrosphere Impact]

Project Cryosphere Impact: [Cryosphere Impact]