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**west virginia** department of environmental protection

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

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

April 28, 2014

**WELL WORK PERMIT**  
**Horizontal 6A Well**

This permit, API Well Number: 47-1706467, 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: SHERWOOD UNIT 2H  
Farm Name: JOHNSON, CHAD W. ., ET AL  
**API Well Number: 47-1706467**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 04/28/2014

**Promoting a healthy environment.**

4701706467

## PERMIT CONDITIONS

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

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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 fifty (50) 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 fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. 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.
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.

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4701706467

WW-6B  
(9/13)

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

1) Well Operator: Antero Resources Corporation 494488557 017-Doddridge Greenbrier New Milton 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Sherwood Unit 2H Well Pad Name: Victor Pad

3) Farm Name/Surface Owner: Chad W. Johnson Public Road Access: CR 25/10

4) Elevation, current ground: ~1170' Elevation, proposed post-construction: 1156'

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

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Marcellus Shale: 7500' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3250#

8) Proposed Total Vertical Depth: 7500' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 15,500' MD

11) Proposed Horizontal Leg Length: 7657'

12) Approximate Fresh Water Strata Depths: 346', 420', 522'

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

14) Approximate Saltwater Depths: 1412', 1644', 1860'

15) Approximate Coal Seam Depths: 352', 817', 1229'

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

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

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18)

**CASING AND TUBING PROGRAM**

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
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#	585'	585"see #19	CTS, 813 Cu. Ft
Coal	9-5/8"	New	J-55	36#	2460'	2460'	CTS, 1002 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	15500'	15500'	3867 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

*DCN  
3-6-2014*

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & 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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WW-6B  
(9/13)

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."

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 30.25 acres

22) Area to be disturbed for well pad only, less access road (acres): 4.46 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  
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 pipe capacity + 40 bbls fresh 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.

\*Note: Attach additional sheets as needed.

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WW-9  
(9/13)

API Number 47 - 017 - \_\_\_\_\_  
Operator's Well No. Sherwood 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) Beech Lick of Meathouse Fork Quadrangle New Milton 7.5'

Elevation 1155' County Doddridge District Greenbrier

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: 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 \_\_\_\_\_)

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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 - Oil, Dust/Solids 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)

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) Evan Foster

Company Official Title Environmental Specialist

**RECEIVED**  
LISA BOTTINELLI  
Notary Public  
State of West Virginia  
Notary ID 20124072365  
My Commission Expires Nov 9, 2016  
MAR 24 2014

Subscribed and sworn before me this 6 day of Feb, 20 14

[Signature] Notary Public

My commission expires 11/9/2016

WV Department of Environmental Protection

4701706467

Form WW-9

Operator's Well No. Sherwood Unit 2H

**Antero Resources Corporation**

Proposed Revegetation Treatment: Acres Disturbed 30.25 Prevegetation pH \_\_\_\_\_

Lime 2-4 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

Road A (8.24) + Road B (1.28) + Road C (10.39) + Road D (2.20) + Well Pad (4.46) + Engineered Fill Pad (2.17) + Topsoil Spoil Pad (.59) + Water Containment Pad (.92) = 30.25 Acres

**Seed Mixtures**

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Crownvetch	25	Crownvetch	25
Perennial Ryegrass	30	Perennial Ryegrass	30
*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: Douglas Newlon

Comments: Preseed & Mulch install and maintain ETS To WV Dep regulations

Title: Oil & Gas inspector

Date: 3-6-2014

Field Reviewed?  Yes  No

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## Well Site Safety Plan

### Antero Resources

**Well Name:** Standings Unit 1H, Standings Unit 2H,  
Sherwood Unit 2H, Falcon Unit 1H, Colorado  
Unit 1H & Colorado Unit 2H

**Pad Location:** VICTOR PAD

Doddridge County/ New Milton &  
Greenbrier District

**GPS Coordinates:** Lat 39°11'9.996"/Long -80°37'51.689" (NAD83)

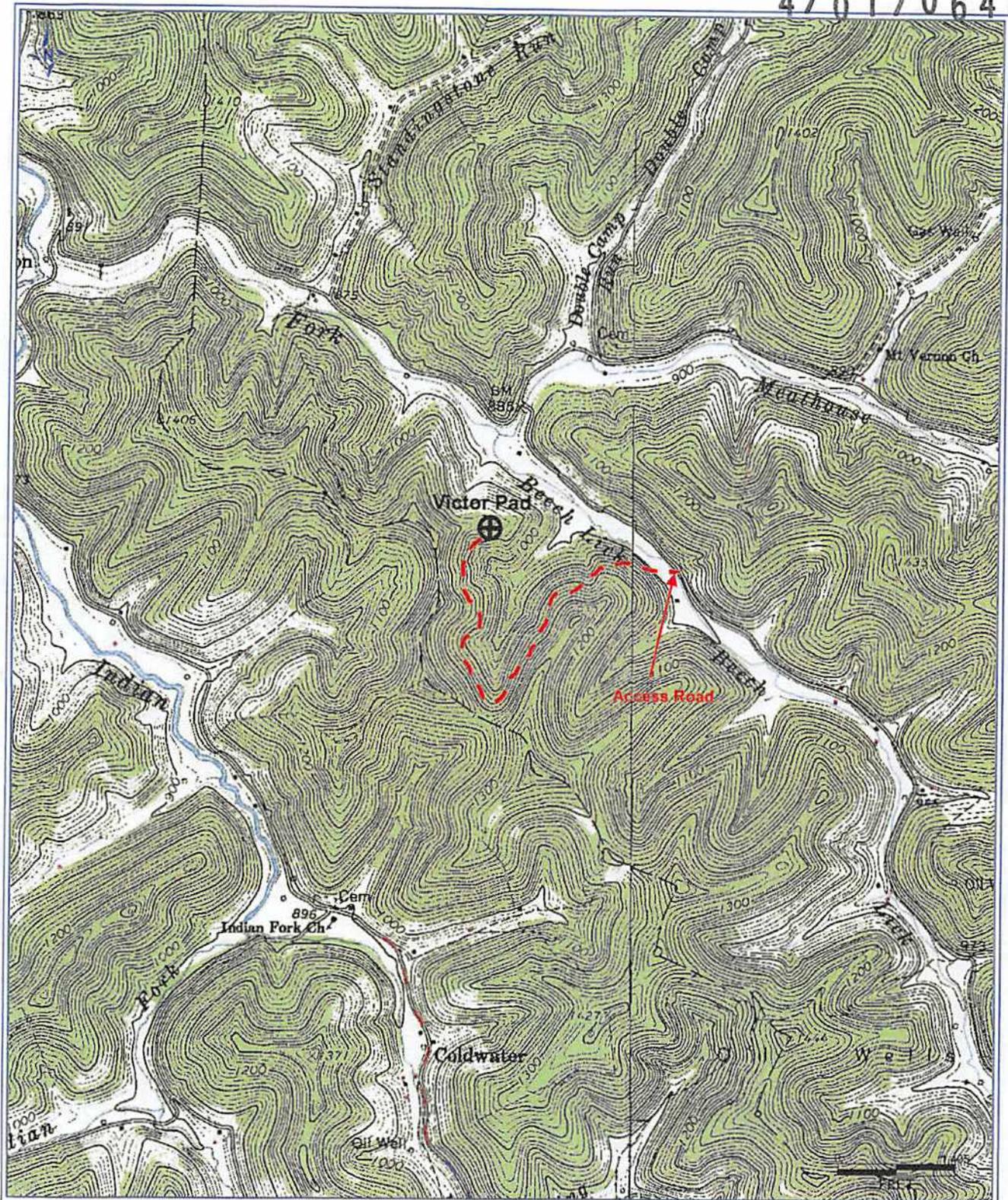
### Driving Directions:

**From West Union:**

Head southeast on WV-18 S for 6.3 miles. Turn left onto Co Route 25/ Meathouse Fork.  
Continue to follow Co Route 25 for 7.1 miles. Turn right onto Co Rte 25/10, your destination will  
be on the right in 0.2 miles.

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*DCW  
3-6-2014*

**Antero Resources Corporation**

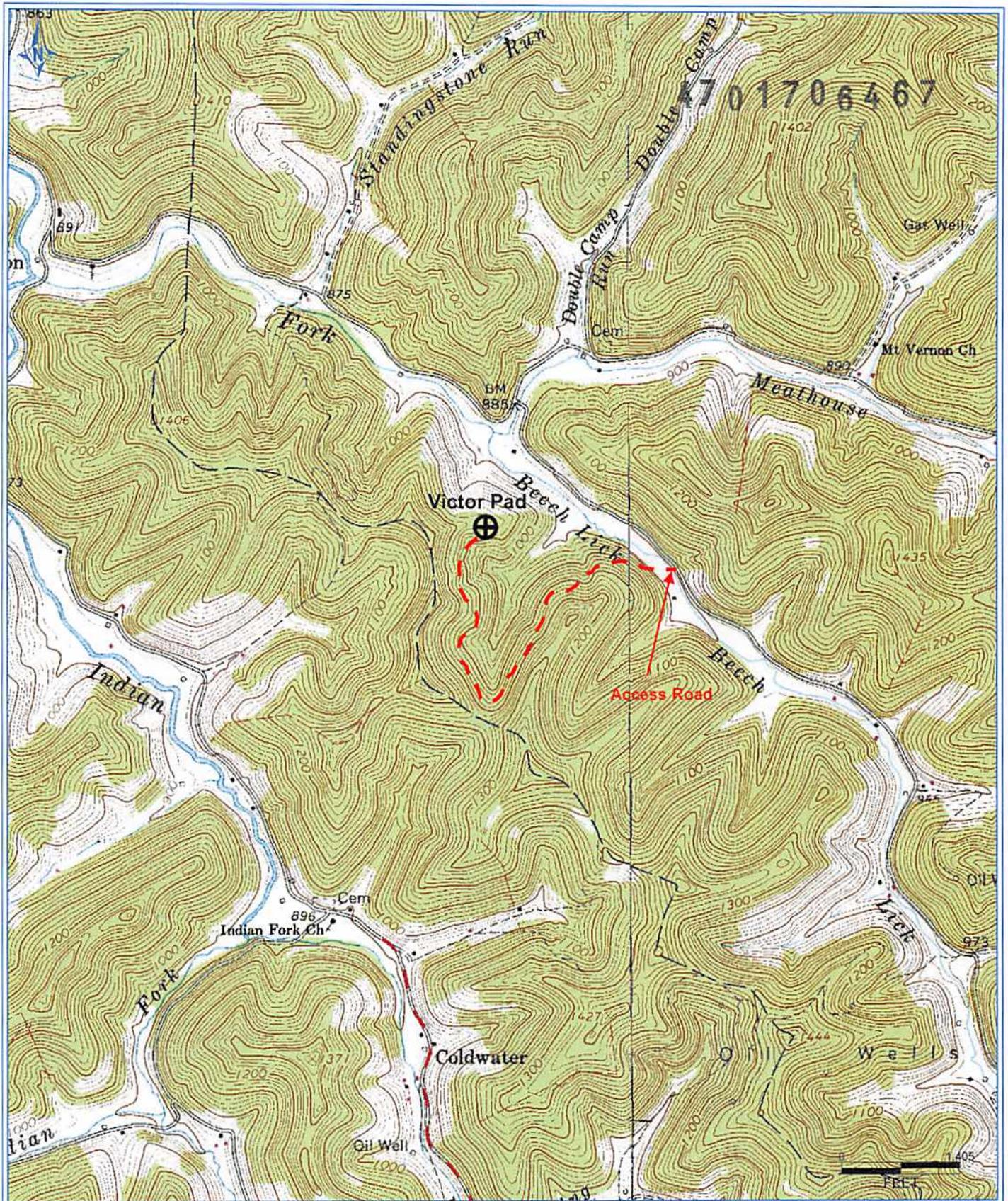
Appalachian Basin  
 Sherwood Unit 2H  
 Doddridge County

Quadrangle: New Milton  
 Watershed: Headwaters Middle Island Creek/Meathouse Fork  
 District: Greenbrier/New Milton  
 Date: 2/6/2014

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**Antero Resources Corporation**  
 Appalachian Basin  
 Sherwood Unit 2H  
 Doddridge County

Quadrangle: New Milton  
 Watershed: Headwaters Middle Island Creek/Meathouse Fork  
 District: Greenbrier/New Milton  
 Date: 2/6/2014

Office of Oil and Gas  
 Dept. of Environmental Protection

Received  
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LATITUDE 39°12'30" 1,760'

Antero Resources Corporation  
Well No. Sherwood Unit 2H

NOTE  
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHUTTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.

**SIMON J. & LILLIAN STICKEL LEASE**  
DARLA GRABER  
M.S. 16 PG. 284  
T.M. 13 PAR. 28  
72.5 AC. ±

**DONALD G. BOWEN LEASE**  
CAROLYN R. LEHMANN TRUST  
D.B. 250 PG. 26  
T.M. 09 PAR. 01  
240 AC. ±

STACY TALLMAN ET AL  
D.B. 272 PG. 97  
T.M. 09 PAR. 02  
37.51 AC. ±

**BERNARD KNORR, III LEASE**  
IRA C. ADAMS III ET AL  
D.B. 277 PG. 462  
T.M. 13 PAR. 01  
16.78 AC. ±

**IRA CLINTON ADAMS ET UX LEASE**

KENNETH P. MORAN ET AL  
D.B. 297 PG. 360  
T.M. 13 PAR. 20  
48.75 AC. ±

**JOSEPHINE WILKINS LEASE**  
**ED BROOME, INC. LEASE**

**ELIZABETH JONES & RICHARD JONES LEASE**

CLARENCE TRENT, JR. ET AL  
D.B. 243 PG. 668  
T.M. 10 PAR. 18  
155 AC. ±

**CORA SCOTT ET AL LEASE**  
BRENT D. QUEEN ET AL  
D.B. 184 PG. 662  
T.M. 09 PAR. 04  
28.1 AC. ±

**DONALD G. BOWEN LEASE**

JOHN BOWEN ET AL  
D.B. 211 PG. 263  
T.M. 09 PAR. 03  
54 AC. ±

**MARK MUSGRAVE LEASE**

**CAROLYN R. LEHMANN TRUST LEASE**  
CAROLYN R. LEHMANN TRUST  
D.B. 250 PG. 26  
T.M. 14 PAR. 06  
7.5 AC. ±

CAROLYN R. LEHMANN TRUST  
D.B. 250 PG. 26  
T.M. 14 PAR. 01  
77.78 AC. ±

MARK W. HERRICK ET AL  
D.B. 239 PG. 435  
T.M. 14 PAR. 02  
63.37 AC. ±

KENNETH R. RYAN SR.  
D.B. 287 PG. 604  
T.M. 13 PAR. 05  
44 AC. ±

VICTOR R. COX ET AL  
D.B. 229 PG. 313  
T.M. 13 PAR. 11  
25 AC. ±

VICTOR R. COX ET AL  
D.B. 207 PG. 541  
T.M. 13 PAR. 08.1  
25.5 AC. ±

KENNETH R. RYAN SR. ET AL LEASE

VICTOR R. COX ET AL  
D.B. 207 PG. 541  
T.M. 13 PAR. 08  
40.32 AC. ±

BROOKS J. GUM  
D.B. 128 PG. 8  
T.M. 16 PAR. 19  
178.4 AC. ±

**WELL NO. 2H**  
CHAD W. JOHNSON ET AL  
D.B. 271 PG. 90  
T.M. 13 PAR. 09  
24 AC. ±

**RONALD LEE SWANN LEASE**

**DALLAS E. CAIN LEASE**

**CARL N. & IRENE COX LEASE**

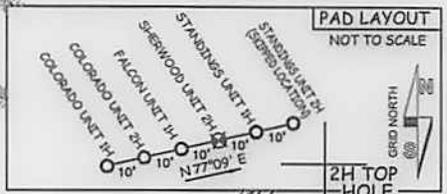
**LANDING POINT**  
N: 252059  
E: 1679586

**WELL NO. 2H**  
CHAD W. JOHNSON ET AL  
D.B. 271 PG. 90  
T.M. 13 PAR. 09  
24 AC. ±

**RONALD LEE SWANN LEASE**

NOTES:  
WELL 2H TOP HOLE INFORMATION:  
N: 251,886ft E: 1,679,356ft  
LAT: 39°11'09.72" LON: 80°37'52.35"  
BOTTOM HOLE INFORMATION:  
N: 259,408ft E: 1,677,437ft  
LAT: 39°12'23.82" LON: 80°38'17.93"  
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: 4,337,496m E: 531,866m  
BOTTOM HOLE INFORMATION:  
N: 4,339,778m E: 531,243m

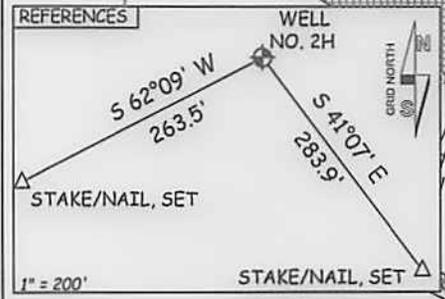


WV NORTH ZONE GRID NORTH

626' TO BOTTOM HOLE  
LONGITUDE 80°37'30"

8,123'

LONGITUDE 80°37'30"



JOB # 13-124WA  
DRAWING # SHERWOOD2HR2  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE 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

LEGEND  
--- Surface Owner Boundary Lines +/-  
--- Interior Surface Tracts +/-  
X Existing Fence  
Rebar, Found

THOMAS SUMMERS P.S. 2109

DATE 02/04/14  
OPERATOR'S WELL# SHERWOOD UNIT #2H

API WELL # 47 - 017 - 06467 H6A  
STATE COUNTY PERMIT

QUADRANGLE NEW MILTON 7.5' DISTRICT GREENBRIER COUNTY DODDRIDGE

SURFACE OWNER CHAD W. JOHNSON ET AL ACREAGE 24 ACRES +/-  
OIL & GAS ROYALTY OWNER RONALD LEE SWANN, CARL N. & IRENE COX; DALLAS E. CAIN; RONALD S. RYAN ET AL; DONALD G. BOWEN; BERNARD KNORR, III; JOSEPHINE WILKINS LEASE ACREAGE 23.49 ACRES±; 82 ACRES±; 22.162 ACRES±; 44 ACRES±; 102.385 ACRES±; 15.385 ACRES±; 29.33 ACRES±

PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE X  
PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_ PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,500' TVD 15,500' MD

WELL OPERATOR ANTERO RESOURCES CORPORATION DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1625 17TH STREET ADDRESS 5400 D BIG TYLER ROAD CT CORPORATION SYSTEM  
DENVER, CO 80202 CHARLESTON, WV 25313

# VICTOR PAD

## SITE DESIGN, CONSTRUCTION PLAN, & EROSION & SEDIMENT CONTROL PLANS ANTERO RESOURCES CORPORATION



West Virginia State Plane Coordinate System  
North Zone, NAD83  
Elevations Based on NAVD83  
Established By Survey Grade GPS & DPUS Post-Processing  
**API#1706442**

Well Table			
Prop. Well Standings Unit 2H WV NAD83 N: 291748.01 WV NAD83 E: 164726.47 LAT NAD83: 38 18N17 LONG NAD83: 48 53W02	Prop. Well Standings Unit 1H WV NAD83 N: 291748.01 WV NAD83 E: 164726.47 LAT NAD83: 38 18N17 LONG NAD83: 48 53W02	Prop. Well Standings Unit 2H WV NAD83 N: 291748.01 WV NAD83 E: 164726.47 LAT NAD83: 38 18N17 LONG NAD83: 48 53W02	Prop. Well Standings Unit 1H WV NAD83 N: 291748.01 WV NAD83 E: 164726.47 LAT NAD83: 38 18N17 LONG NAD83: 48 53W02
Prop. Well Colorado Unit 2H WV NAD83 N: 291748.01 WV NAD83 E: 164726.47 LAT NAD83: 38 18N17 LONG NAD83: 48 53W02	Prop. Well Colorado Unit 1H WV NAD83 N: 291748.01 WV NAD83 E: 164726.47 LAT NAD83: 38 18N17 LONG NAD83: 48 53W02	Left Blank Intentionally	Left Blank Intentionally

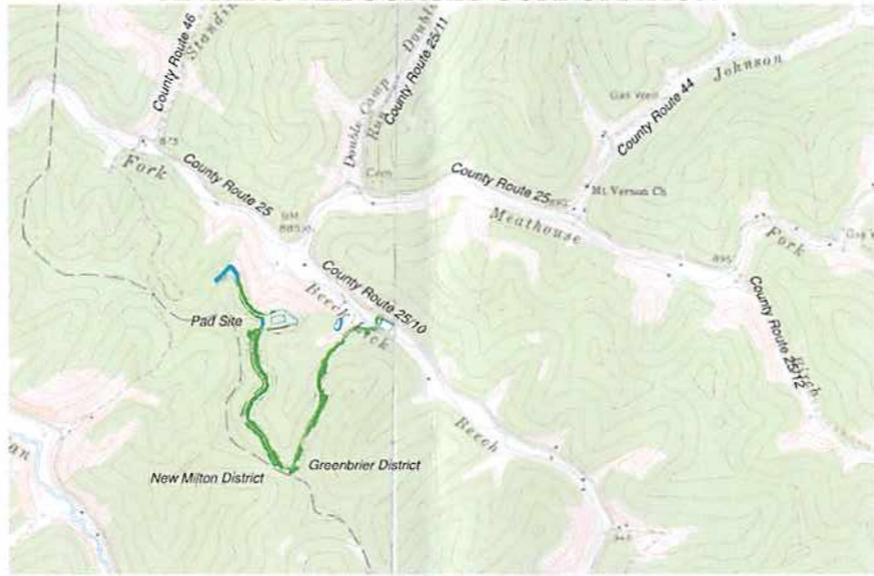
**Project Contacts**  
Antero Resources  
Mike Ash - Survey Coordinator  
304-380-6121 Cell  
Roger Dunlap - Survey Coordinator  
304-651-5568  
El Wagoner, Environmental Engineer  
304-622-3842, ext 311 Off 304-476-9770 Cell  
John Kawcak, Engineer  
817-368-1553  
Dusty Woods  
817-771-1436  
Aaron Kuntzer, Construction Supervisor  
405-227-8344  
Anthony Smith, Manager WY Design & Survey  
304-869-3405 Off 304-673-6196 Cell  
**Surveyor & Engineer**  
Bill Yelzer, P.S. E.I. - Allegheny Surveys Inc.  
304-848-5035 Off 304-619-4937 Cell  
Kirk Wilson, PE - LAW Enterprises, Inc.  
304-257-4818 Off 304-688-0365 Cell

Antero will obtain an Encroachment Permit (Form MM-109) from the West Virginia Department of Transportation Division of Highways, prior to commencement of any construction activities.

- Well Pad Location Restrictions:**
- All Pad construction complies with the following restrictions.
  - \* 250' from an existing well or developed spring used for human or domestic animals.
  - \* 625' from occupied dwelling or barn greater than 2500 SF used for poultry or dairy measured from the center of the pad.
  - \* 100' from edge of disturbance to perennial streams, natural or artificial lake, pond or reservoir. Wetlands 4, 5, 7, 8, & 9 are impacted by Road C, Wetland 11 is impacted by Road D, Wetland 17 by the Water Containment Pad, and Wetland 18 by Road A. Army Corps of Engineers Nationwide Permits required for those wetland impacts.
  - \* 300' from edge of disturbance to a naturally reproducing trout stream.
  - \* 1000' of a surface or ground water intake to a public water supply.

FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	YES
FLOODPLAIN SHOWN ON DRAWINGS:	YES
FIRM MAP NUMBER(S) FOR SITE:	54017C0235C / 54017C0250C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN:	0.00 Acres

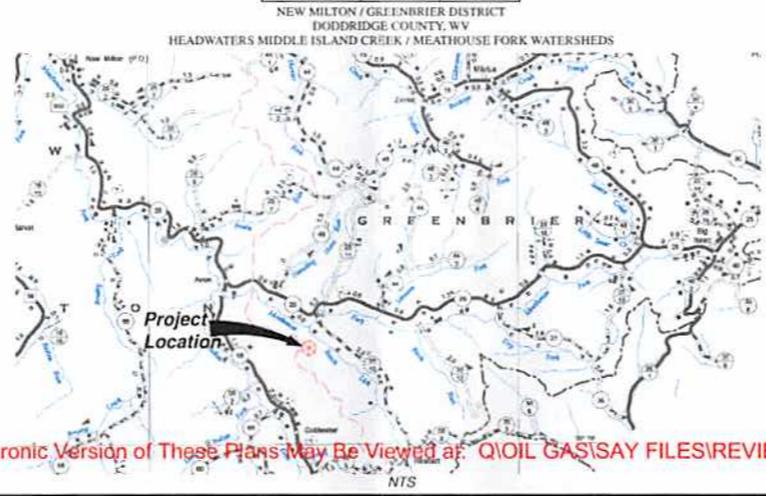
MISS Utility of West Virginia  
1-800-245-4848  
West Virginia State Law  
(Section XIV: Chapter 24-C)  
Requires that you call two business days before you dig in the state of West Virginia.  
**IT'S THE LAW!!**



NEW MILTON QUAD

0 5000 20000 30000

SITE 1 LOCATIONS			
NAD 83			
Begin Access Road	N=4337520.68 m	E=532343.83 m	
Center of Well Pad	N=4337484.91 m	E=531866.34 m	
LATITUDE LONGITUDE			
Begin Access Road	39 18N102E	80 62E49W	
Center of Well Pad	39 18N109E	80 63W02E	



Electronic Version of These Plans May Be Viewed at: Q:\OIL GAS\SAY FILES\REVIEWS

Property Owner Information - Victor Pad						
New Milton / Greenbrier District - Doddridge County						
Owner	TM/Parcel	Deed/Page	Total Acres	Type of Disturbance	Acres	
Victor E. Cox and	25/8	207/541	40.32	Road B & Construction Access	0.52	
Wanda T. Cox				Topsoil Spoil Pile	0.07	
				Well Pad	1.56	
				Road D	2.30	
				Engineered Fill Pad	0.91	
				<b>Total</b>	<b>5.36</b>	
Thomas D. and	14/26	205/213	62.5	Road B & Construction Access	0.39	
Heleen L. Aspy				Road A	1.47	
				Water Containment Pad	0.92	
				<b>Total</b>	<b>2.78</b>	
Chad W. Johnson, et al	13/30	271/30	63.631	Road B & Construction Access	0.17	
				Topsoil Spoil Pile	0.34	
				Road A	6.77	
				Road C	5.90	
				<b>Total</b>	<b>13.18</b>	
Chad W. Johnson, et al	13/9	271/30	24	Road C	1.15	
				Well Pad	2.90	
				Topsoil Spoil Pile	0.18	
				<b>Total</b>	<b>4.23</b>	
Michael Ryan	15/7	287/308	27.73	Engineered Fill Pad	1.34	
Brooks J. Gum	16/19	128/8	32.4	Road C	1.61	
				<b>Grand Total</b>	<b>30.25</b>	

Ephemeral Stream Impact (Linear feet)					
Stream and Impact Cause	Culvert (LF)	Inlet/Outlet Structures (LF)	Slope Fill (LF)	Constr. Disturb. To LOD (LF)	Total Impact (LF)
Stream 1 (Access Road A)	0	8	0	24	32
<b>Total Ephemeral Impact</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>24</b>	<b>32</b>

Intermittent Stream Impact (Linear feet)					
Stream and Impact Cause	Culvert (LF)	Inlet/Outlet Structures (LF)	Slope Fill (LF)	Constr. Disturb. To LOD (LF)	Total Impact (LF)
Stream 2 (Access Road A)	0	6	0	4	10
Stream 2 (Gasline Crossing)**	10	0	0	12	22
Stream 5 (Access Road C)	0	0	13	27	40
<b>Total Intermittent Impact</b>	<b>10</b>	<b>6</b>	<b>13</b>	<b>43</b>	<b>72</b>

Perennial Stream Impact (Linear feet)					
Stream and Impact Cause	Culvert (LF)	Inlet/Outlet Structures (LF)	Slope Fill (LF)	Constr. Disturb. To LOD (LF)	Total Impact (LF)
Stream 3 (Access Road A)	80	26	0	12	118
<b>Total Perennial Impact</b>	<b>80</b>	<b>26</b>	<b>0</b>	<b>12</b>	<b>118</b>
<b>Total Stream Impacts</b>					<b>212</b>

Wetland Impact (Square feet)				
Wetland and Impact Cause	Fill (SF)	Constr. Disturb. To LOD (SF)	Total Impact (SF)	
Wetland 8 (Access Road C)	513	0	513	
Wetland 8 (Access Road C)	437	0	437	
Wetland 2 (Access Road C)	903	0	903	
Wetland 8 (Access Road C)	1068	0	1068	
Wetland 3 (Access Road C)	298	0	298	
Wetland 11 (Access Road C)	2244	0	2244	
Wetland 17 (Water Containment Pad)	2892	2112	5004	
Wetland 18 (Access Road A)	3067	390	3457	
<b>Total Square Feet</b>	<b>11657</b>	<b>2502</b>	<b>14159</b>	
<b>Total Acres</b>	<b>0.26</b>	<b>0.06</b>	<b>0.32</b>	

DRAWING INDEX	
1 COVER SHEET/LOCATION MAP	LOD Area (ac)
2 SCHEDULE OF QUANTITIES	Road A (1,500 feet) 3.24
3 CONSTRUCTION, EROSION, & SEDIMENT CONTROL NOTES	Road B (255 feet) / Construction Access 1.28
4 EXISTING CONDITIONS	Road C (2,620 feet) 10.39
5 PLAN SHEET INDEX	Road D (830 feet) 2.20
6-12 SITE PLANS	Well Pad 4.85
13-14 ACCESS ROAD A, C, AND D CROSS SECTIONS	Engineered Fill Pad 2.17
15 WELL PAD BASELINE PROFILE & CROSS SECTIONS	Topsoil Spoil Pad 0.58
16 DETAILS	Water Containment Pad 0.92
17 RECLAMATION PLAN	<b>Total Affected Area 30.25</b>
	<b>Total Wooded Acres Disturbed 14.30</b>
	<b>Total Linear Feet of Access Road 7,205</b>

DATE	REVISIONS
8-19-13	Updated Per New Antero Standards (Sheets: 1, 2, 3, 11, 15, & 16)
8-21-13	Updated Wetlands Delineation (Sheets: 1, 4, 5, & 6)
8-30-13	Updated Per Allstar Request (Sheets: 1, 10, 11, & 16)
11-20-13	Updated Per New Antero Standards and to Reflect Geotechnical Report (All Sheets)
12-13-13	Updated Wetlands Delineation (Sheets: 1, 4-11, & 16)
1-4-14	Revised Design and Well Layout (All Sheets)
1-14-14	Revised Site Entrance and Details (All Sheets)
2-28-14	Revised Keyway/Bench and Gabion Wall Details (Sheets: 1,8,9,11,14,15,&16)
3-21-14	Revised Per WVDEP Comments (Sheets: 1, 4, 10, 11, 12, & 15)

Allegheny Surveys, Inc.  
172 Thompson Drive  
Bridgeport, WV 26330  
(304) 848-5035

LAW ENTERPRISES, INC.  
10100 W. MARKET ST.  
SUITE 100  
DUNSMITH, WV 26031  
TEL: 304-257-4818  
FAX: 304-257-4824  
WWW.LAWENTERPRISES.COM

ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES CORPORATION

COVER SHEET/LOCATION MAP

VICTOR PAD

NEW MILTON / GREENBRIER DISTRICT  
DODDRIERGE COUNTY, WV

Date: 2/25/13  
Scale: N/A  
Designed By: CDK/CKM  
File No: Antero 211-12  
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