

JAN 22 2018

WV Department of  
Environmental Protection

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47 - 095 - 02285 County Tyler District Centerville  
Quad Shirley 7.5' Pad Name Edna Monroe Pad Field/Pool Name ---  
Farm name Edna Monroe Well Number Seckman Unit 2H  
Operator (as registered with the OOG) Antero Resources Corporation  
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4363708m Easting 510915m  
Landing Point of Curve Northing 4363951.420m Easting 511285.994m  
Bottom Hole Northing 4366449m Easting 510409m

Elevation (ft) 1044' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine  
Mud Type(s) and Additive(s)  
Air - Foam & 4% KCL  
Mud - Polymer

Date permit issued 08/07/2015 Date drilling commenced 09/13/2016 Date drilling ceased 12/21/2016  
Date completion activities began 05/10/2017 Date completion activities ceased 09/11/2017  
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 337' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

Reviewed

Reviewed by:

*JEB*

03/02/2018

API 47-095 - 02285 Farm name Edna Monroe Well number Seckman Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	93'	New	94#, H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	565'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2647'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	15861'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6841'		4.6#, N-80		
Packer type and depth set		N/A					

Comment Details \*Cement plug on 11/25/2016.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	241	0	8 Hrs.
Surface	Class A	680 sx	15.6	1.18	802	0	8 Hrs.
Coal							
Intermediate 1	Class A	1030 sx	15.6	1.18	1215	0	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	787 sx (Lead), 1281 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.87 (Tail)	3529	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15861' MD, 6510' TVD (BHL & Deepest point drilled) Loggers TD (ft) 15833' MD  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5930'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Bead Unit 2H API# 47-095-02362). Please reference the wireline logs submitted with Form WR-35 for the Bead Unit 2H. A Cement Bond Log has been included with this submittal.

Check all wireline logs run  caliper  density  deviated/directional  induction  neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No Conventional  Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

Conductor - 0  
 Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface  
 Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface  
 Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED N/A

API 47- 095 - 02285 Farm name Edna Monroe Well number Seckman Unit 2H

**PERFORATION RECORD**

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

**\* PLEASE SEE ATTACHED EXHIBIT 1**


Please insert additional pages as applicable.

**STIMULATION INFORMATION PER STAGE**

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

**\* PLEASE SEE ATTACHED EXHIBIT 2**


Please insert additional pages as applicable.

API 47- 095 - 02285 Farm name Edna Monroe Well number Seckman Unit 2H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6488' (Top)	TVD	6915' (Top) MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 4100 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 12191 mcfpd Oil 104 bpd NGL - bpd Water 101 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
<b>* PLEASE SEE ATTACHED EXHIBIT 3</b>					

Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company LLC  
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Pro Oilfield Services LLC  
Address 3141 Pulaski Rd City New Castle State PA Zip 16105

Cementing Company Allied Oil & Gas Services, LLC  
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company Halliburton  
Address 121 Champion Way Suite 200 City Cannonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759  
Signature  Title Permitting Agent Date 01/19/2018

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/21/2017
Job End Date:	8/7/2017
State:	West Virginia
County:	Tyler
API Number:	47-095-02285-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Seckman 2H
Latitude:	39.42275556
Longitude:	-80.87336400
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,537
Total Base Water Volume (gal):	17,371,550
Total Base Non Water Volume:	0



### Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	88.79910	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.35233	

SAND- PREMIUM WHITE- 30/50,BULK	Halliburton	Proppant					
				Listed Below			
HYDROCHLORI C ACID	Halliburton	Solvent					
				Listed Below			
FR-76	Halliburton	Friction Reducer					
				Listed Below			
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
MC S-2510T	Halliburton	Scale Inhibitor					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
OptiKleen-WF (TM)	Halliburton	Concentrate					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			

SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica, quartz	14808-60-7	100.00000	10.79817	
			Hydrochloric acid	7647-01-0	15.00000	0.04520	
			Guar gum	9000-30-0	100.00000	0.01922	
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.01760	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary	30.00000	0.01760	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01760	
			Ethylene Glycol	107-21-1	60.00000	0.00853	
			Glutaraldehyde	111-30-8	30.00000	0.00264	
			Neutralized Polyacrylic Emulsion	Proprietary	10.00000	0.00142	
			Quaternary ammonium compounds, benzyl-C12- 16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00044	
			Sodium perborate tetrahydrate	10486-00-7	100.00000	0.00032	
			Methanol	67-56-1	60.00000	0.00014	
			Ethanol	64-17-5	1.00000	0.00009	

			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1	30.00000	0.00006	
			Fatty acids, tall oil	Proprietary	30.00000	0.00006	
			Ethoxylated alcohols	Proprietary	30.00000	0.00006	
			Olefins	Proprietary	5.00000	0.00003	
			Propargyl alcohol	107-19-7	10.00000	0.00002	
			Phosphoric acid	7664-38-2	0.10000	0.00001	

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)



LATITUDE 39°27'30"

11,309'

1,187' TO BOTTOM HOLE  
LATITUDE 39°27'30"

LONGITUDE 80°52'30"

3,962' TO BOTTOM HOLE

12,959'

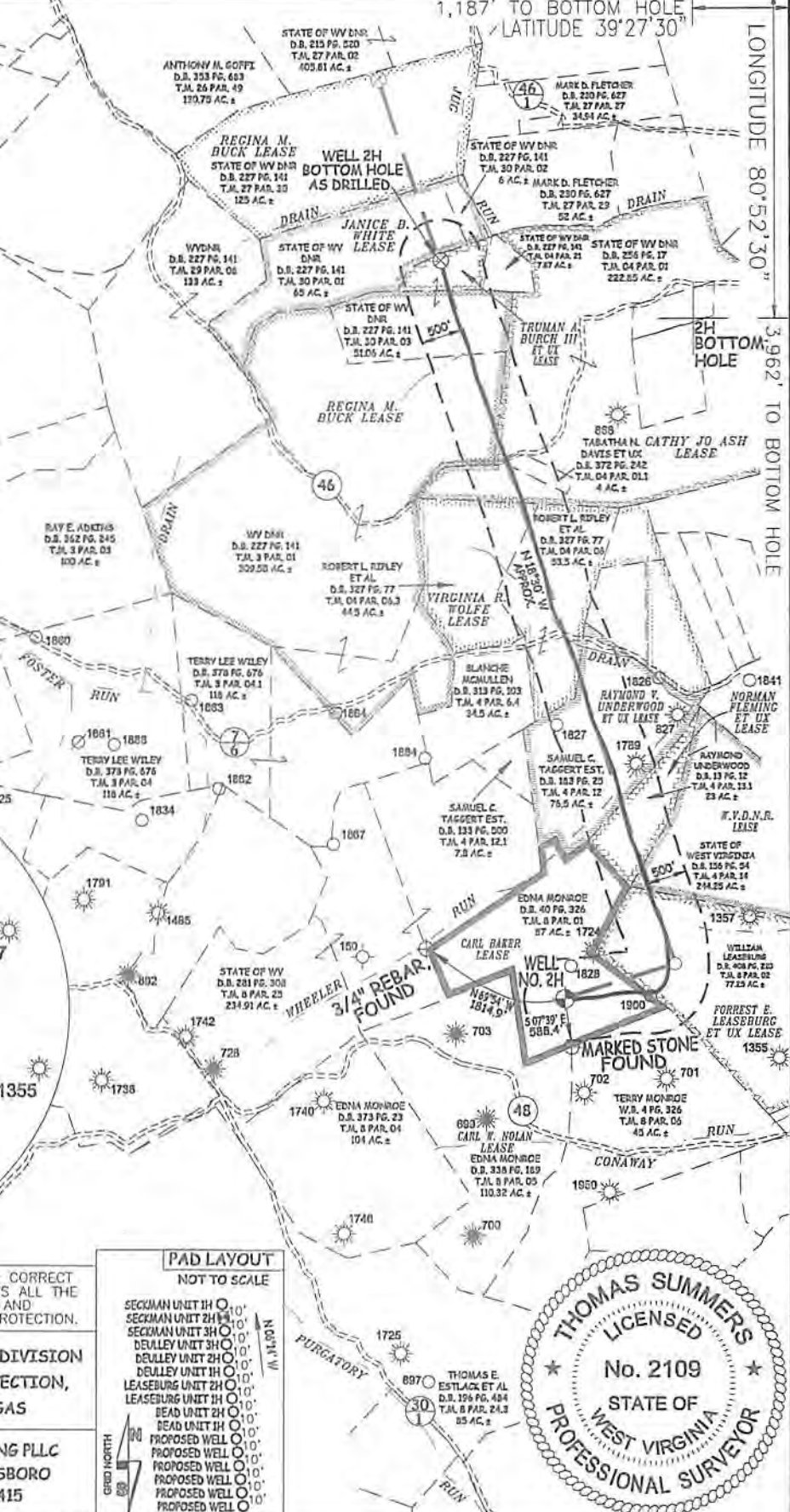
LONGITUDE 80°50'00"

**Antero Resources Corporation**  
**Well No. Seckman Unit 2H**  
**47-095-02285 (AS DRILLED)**

**AS DRILLED NOTES:**  
**WELL 2H TOP HOLE INFORMATION:**  
N: 339,051ft E: 1,612,040ft  
LAT: 39°25'21.92" LON: 80°52'24.11"  
**BOTTOM HOLE INFORMATION:**  
N: 348,072ft E: 1,610,529ft  
LAT: 39°26'50.84" LON: 80°52'45.13"  
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: 4,363,708m E: 510,915m  
**BOTTOM HOLE INFORMATION:**  
N: 4,366,449m E: 510,409m

WV NORTH ZONE  
GRID NORTH

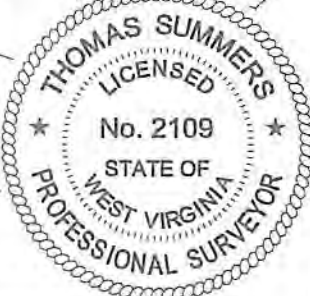
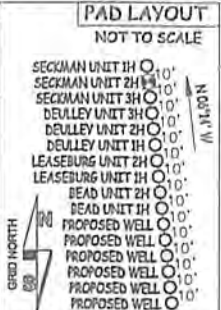


I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



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

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



JOB # 14-026WA  
DRAWING # SECKMAN2HAD  
SCALE 1" = 2000'  
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

**LEGEND**  
Surface Owner Boundary Lines +/-  
Interior Surface Tracts +/-  
Found monument, as noted  
Proposed Well Path  
As Drilled Well Path

THOMAS SUMMERS P.S. 2109  
DATE 12/13/17  
OPERATOR'S WELL# SECKMAN UNIT #2H

**NOTE**  
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.  
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.  
3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.  
4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.  
5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR DISCREPANCIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
(IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X  
LOCATION: ELEVATION 1,044' - AS DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK  
QUADRANGLE SHIRLEY 7.5' - TOP HOLE MIDDLEBOURNE 7.5' - BOTTOM HOLE DISTRICT CENTERVILLE COUNTY TYLER  
SURFACE OWNER EDNA MONROE ACREAGE 87 ACRES +/-  
OIL & GAS ROYALTY OWNER CARL BAKER; FORREST E. LEASEBURG ET UX; W.V.D.N.R.; NORMAN FLEMING ET UX; LEASE ACREAGE 87 AC +/- 78 AC +/- 244.25 AC +/- 23.69 AC +/-  
RAYMOND V. UNDERWOOD ET UX; VIRGINIA R. WOLFE; CATHY JO ASH; REGINA M. BUCK; TRUMAN A. BURCH III ET UX 76.5 AC +/- 126 AC +/- 315.25 AC +/- 465 AC +/- 11,062.5 AC +/-  
PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_  
PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL \_\_\_  
(SPECIFY) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,510' TVD 15,861' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313

03/02/2018

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL  
DIVISION OF OIL AND GAS  
DEPARTMENT OF ENERGY  
STATE OF WEST VIRGINIA  
THOMAS SUMMERS P.S. 2109  
DATE 12/13/17  
OPERATOR'S WELL # SECTION UNIT # 2H

WELL OPERATOR ANTERO RESOURCES CORP.  
DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP ST.  
DENVER, CO 80202

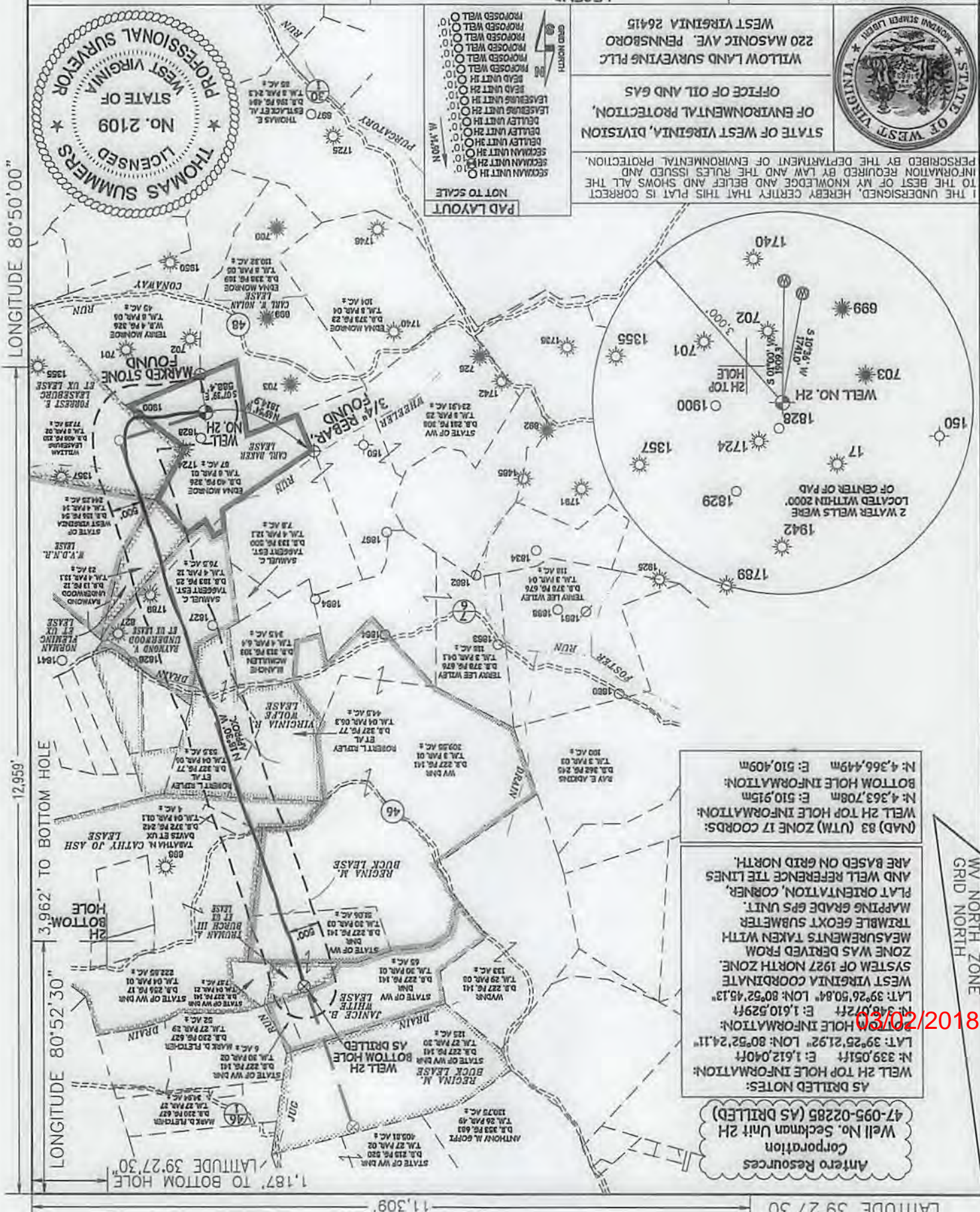
TARGET FORMATION MARCELLUS  
(SPECIFY) AS DRILLED  
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL  
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION  
OTHER PHYSICAL CHANGE IN WELL FRACTURE OR STIMULATE  
FRACURE & ABANDON  
PLUG & ABANDON  
CLEAN OUT & REPLUG

ESTIMATED DEPTH 6,510 TVD 15,861' MD  
6,510 TVD 15,861' MD  
DIANNA STAMPER - CT CORPORATION SYSTEM  
CHARLESTON, WV 26313

PERMIT 02285  
COUNTY COUNTY PERMIT  
STATE COUNTY PERMIT  
WATERSHED HEADWATERS MIDDLE ISLAND CREEK  
DISTRICT CENTERVILLE COUNTY TYLER

SURFACE OWNER EDNA MONROE  
OIL & GAS ROYALTY OWNER CARL BAKER, FORREST E. LEASBURG ET UX, W.D.N.R., NORMAN FLEMING ET UX, LEASE ACRES +/- 87 ACRES +/-  
RAYMOND Y. UNDERWOOD ET UX, VIRGINIA R. WOLFE, CATHY JO ASH, REGINA M. BURCH, TRUMAN A. BURCH III ET UX  
76.5 AC +/- 128 AC +/- 316.25 AC +/- 465 AC +/- 11,062.5 AC +/-

JOB # 14-028VA  
DRAWING # SEGMANZHAD  
SCALE 1" = 2000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEVATION SUBMETER MAPPING GRADE GPS  
STATE OF WEST VIRGINIA  
DEPARTMENT OF ENERGY  
DATE 12/13/17  
OPERATOR'S WELL # SECTION UNIT # 2H



LONGITUDE 80°50'00"

3,962' TO BOTTOM HOLE

LONGITUDE 80°52'30"

1,187' TO BOTTOM HOLE

LATITUDE 39°27'30"

LEGEND

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Found monument, as noted
- Proposed Well Path
- As Drilled Well Path

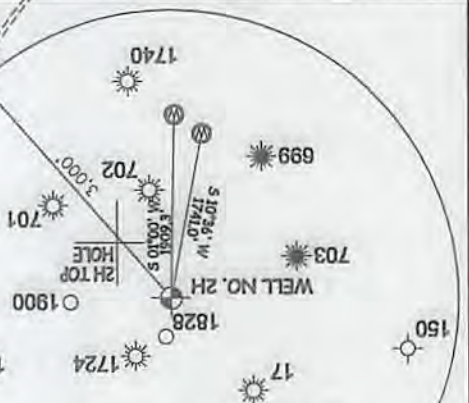
NOT TO SCALE

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STATE OF WEST VIRGINIA, DIVISION  
OFFICE OF ENVIRONMENTAL PROTECTION,  
WEST VIRGINIA 26415  
WILLOW LAND SURVEYING PLLC  
220 WASONIC AVE. PENNSBORO



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



AS DRILLED NOTES:  
Well No. Section Unit 2H  
Corporation  
Antero Resources

47-095-02285 (AS DRILLED)

WELL 2H TOP HOLE INFORMATION:  
N: 339,051ft E: 1,612,040ft  
LAT: 39°25'21.92" LON: 80°52'24.11"

WELL 2H BOTTOM HOLE INFORMATION:  
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WELL 2H TOP HOLE INFORMATION:  
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BOTTOM HOLE INFORMATION:  
N: 4,366,449m E: 510,409m

WV NORTH ZONE  
GRID NORTH  
ARE BASED ON GRID NORTH.  
FLAT ORIENTATION, CORNER,  
MAPPING GRADE GPS UNIT.  
TRIANGLE GEOMX SUBMETER  
MEASUREMENTS TAKEN WITH  
SYSTEM OF 1927 NORTH ZONE.  
WEST VIRGINIA COORDINATE  
ZONE WAS DERIVED FROM  
MEASUREMENTS TAKEN WITH  
TRIANGLE GEOMX SUBMETER  
MAPPING GRADE GPS UNIT.

LATITUDE 39°27'30"