

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

API 47-095-02353 County Tyler District Meade  
Quad Pennsboro 7.5' Pad Name Terry Snider Pad Field/Pool Name -----  
Farm name Terry L. Snider Well Number Dillon Unit 3H  
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 4357619m Easting 503104m  
Landing Point of Curve Northing 4357508.10m Easting 503781.87m  
Bottom Hole Northing 4355501m Easting 504581m

Elevation (ft) 1146.5' 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 5/6/2016 Date drilling commenced 5/11/2016 Date drilling ceased 11/19/2016  
Date completion activities began 10/4/2017 Date completion activities ceased 4/3/2018  
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 N/A Open mine(s) (Y/N) depths \_\_\_\_\_  
Salt water depth(s) ft N/A Void(s) encountered (Y/N) depths \_\_\_\_\_  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

RECEIVED  
Office of Oil and Gas  
AUG 23 2018  
No WV Department of  
Environmental Protection

Reviewed by:

Reviewed

JEB  
7/9/12/2018

API 47- 095 - 02353 Farm name Terry L. Snider Well number Dillon Unit 3H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	65'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	515'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2578'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15064'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6796'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details \_\_\_\_\_

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	102 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	603 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1000 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	n/a sx (Lead) n/a sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.87 (Tail)	3774	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15064' MD, 6468' TVD (BHL), 6471' (Deepest Point Drilled) Loggers TD (ft) 15064' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5854'

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

RECEIVED  
Office of Oil and Gas

AUG 23 2013

WV Department of  
Environmental Protection

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 - 02353 Farm name Terry L. Snider Well number Dillon Unit 3H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6416' (TOP)</u>	<u>TVD</u>	<u>6960' (TOP)</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 2800 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 10799 mcfpd Oil 151 bpd NGL --- bpd Water 520 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>		<u>BOTTOM</u>		<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H<sub>2</sub>S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	

**\*PLEASE SEE ATTACHED EXHIBIT 3**


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 Kodiak Services Int'l  
Address 2219 Sawdust Road, Unit 1604-1605 City The Woodlands State TX Zip 77380

Cementing Company BJ Services  
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company Baker Hughes  
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Megan Griffith Telephone 303-357-7223  
Signature  Title Permitting Agent Date 8/20/2018

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

RECEIVED  
Office of Oil and Gas  
AUG 23 2018  
WV Department of  
Environmental Protection

API 47-095-02353 Farm Name Terry L. Snider Well Number Dillon Unit 3H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	1/4/2018	14793	14962	60	Marcellus
2	1/6/2018	14593	14762	60	Marcellus
3	1/7/2018	14392	14561	60	Marcellus
4	1/8/2018	14192	14361	60	Marcellus
5	1/9/2018	13992	14161	60	Marcellus
6	1/10/2018	13791	13960	60	Marcellus
7	2/4/2018	13591	13760	60	Marcellus
8	2/5/2018	13391	13560	60	Marcellus
9	2/5/2018	13190	13359	60	Marcellus
10	2/5/2018	12990	13159	60	Marcellus
11	2/6/2018	12790	12959	60	Marcellus
12	2/6/2018	12589	12758	60	Marcellus
13	2/6/2018	12389	12558	60	Marcellus
14	2/7/2018	12189	12358	60	Marcellus
15	2/7/2018	11988	12157	60	Marcellus
16	2/8/2018	11788	11957	60	Marcellus
17	2/8/2018	11588	11757	60	Marcellus
18	2/8/2018	11387	11556	60	Marcellus
19	2/9/2018	11187	11356	60	Marcellus
20	2/9/2018	10987	11156	60	Marcellus
21	2/10/2018	10786	10955	60	Marcellus
22	2/10/2018	10586	10755	60	Marcellus
23	2/10/2018	10386	10555	60	Marcellus
24	2/11/2018	10185	10354	60	Marcellus
25	2/11/2018	9985	10154	60	Marcellus
26	2/12/2018	9785	9954	60	Marcellus
27	2/12/2018	9584	9753	60	Marcellus
28	2/13/2018	9384	9553	60	Marcellus
29	2/13/2018	9184	9352	60	Marcellus
30	2/13/2018	8983	9152	60	Marcellus
31	2/14/2018	8783	8952	60	Marcellus
32	2/15/2018	8583	8751	60	Marcellus
33	2/15/2018	8382	8551	60	Marcellus
34	2/15/2018	8182	8351	60	Marcellus
35	2/18/2018	7981	8150	60	Marcellus
36	2/18/2018	7781	7950	60	Marcellus
37	2/19/2018	7581	7750	60	Marcellus
38	2/19/2018	7380	7549	60	Marcellus
39	2/19/2018	7180	7349	60	Marcellus
40	2/20/2018	6980	7149	60	Marcellus

RECEIVED  
 Office of Oil and Gas  
 AUG 23 2018  
 WV Department of  
 Environmental Protection

**EXHIBIT 2**

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	1/4/2018	77.8	7783	4958	4466	17207	10243	N/A
2	1/6/2018	73.5	7495	5541	3651	16687	9001	N/A
3	1/7/2018	75.7	7615	5716	6447	19778	11126	N/A
4	1/8/2018	73.9	7566	5442	4757	17765	11785	N/A
5	1/9/2018	66	7329	5470	3112	15911	10346	N/A
6	1/10/2018	66.8	7323	5782	8106	21211	13021	N/A
7	2/4/2018	75.5	7354	5524	4120	16998	11005	N/A
8	2/5/2018	75.1	7306	5359	3631	16296	9226	N/A
9	2/5/2018	73	7024	5624	4415	17063	8991	N/A
10	2/5/2018	70.4	7419	6430	5877	19726	9834	N/A
11	2/6/2018	75.4	7130	5277	4215	16622	9130	N/A
12	2/6/2018	73	7081	5302	4020	16403	9925	N/A
13	2/6/2018	75.2	7038	5165	4155	16358	9097	N/A
14	2/7/2018	71.1	6961	5474	4471	16906	9057	N/A
15	2/7/2018	75.1	7348	5565	3956	16869	9418	N/A
16	2/8/2018	75.8	6945	5045	4260	16250	10129	N/A
17	2/8/2018	74.2	6990	5961	3899	16850	9399	N/A
18	2/8/2018	73.3	7115	5400	3889	16404	8900	N/A
19	2/9/2018	74.3	6982	5304	3715	16001	9009	N/A
20	2/9/2018	74.6	6992	6019	3642	16653	8864	N/A
21	2/10/2018	75.2	6919	5811	4060	16790	9057	N/A
22	2/10/2018	75.2	6799	5631	3821	16251	9136	N/A
23	2/10/2018	75.6	6658	5504	4020	16182	8920	N/A
24	2/11/2018	74.9	6745	5555	4311	16611	8708	N/A
25	2/11/2018	75.4	7012	5874	3631	16517	8902	N/A
26	2/12/2018	76.4	6876	5496	4507	16879	8967	N/A
27	2/12/2018	76.5	6700	5618	4076	16394	8841	N/A
28	2/13/2018	76.8	6751	5480	3803	16034	8897	N/A
29	2/13/2018	75.4	6533	6328	4029	16890	8770	N/A
30	2/13/2018	76.8	6507	5389	4221	16117	8623	N/A
31	2/14/2018	75	6595	5139	3626	15360	8772	N/A
32	2/15/2018	78.2	6689	5301	3700	15690	8813	N/A
33	2/15/2018	76.3	6665	5366	3741	15772	8994	N/A
34	2/15/2018	76.3	6368	5274	3872	15514	9291	N/A
35	2/18/2018	76.2	6459	5564	4068	16091	8915	N/A
36	2/18/2018	77.7	6781	5175	4352	16308	10587	N/A
37	2/19/2018	77.3	6712	4886	3877	15475	10478	N/A
38	2/19/2018	78.7	6685	5095	4308	16088	11711	N/A
39	2/19/2018	79.1	6674	4998	4032	15704	10785	N/A
40	2/20/2018	75.7	6221	5540	4064	15825	9091	N/A
	AVG=	75.0	6,954	5,485	4,223	666,450	383,764	TOTAL

RECEIVED  
Office of Oil and Gas

AUG 23 2018

WV Department of  
Environmental Protection

## EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Sandstone	0	N/A	0	N/A
Silty Sandstone	260	N/A	260	N/A
Shale w/trace Coal	560	N/A	560	N/A
Silty Sandstone	740	N/A	740	N/A
Limey Shale	880	N/A	880	N/A
Silty Shale w/trace Coal	1,080	N/A	1,080	N/A
Silty Sandstone	1,240	N/A	1,240	N/A
Silty Shale w/trace Coal	1,380	N/A	1,380	N/A
Silty Sandstone	1,520	N/A	1,520	N/A
Sandstone w/trace Coal	1,600	N/A	1,600	N/A
Silty Sandstone	1,680	N/A	1,680	N/A
Shale w/trace Coal	1,740	N/A	1,740	N/A
Silty Sandstone	1,840	N/A	1,840	N/A
Big Lime	2,060	N/A	2,072	N/A
Big Injun	2,155	N/A	2,192	N/A
Gantz Sand	2,559	N/A	2,616	N/A
Fifty Foot Sandstone	2,849	N/A	2,921	N/A
Gordon	2,938	N/A	3,015	N/A
Fifth Sandstone	3,211	N/A	3,310	N/A
Bayard	3,279	N/A	3,383	N/A
Warren	3,669	N/A	3,806	N/A
Speechley	4,010	N/A	4,175	N/A
Balltwon	4,311	N/A	4,503	N/A
Bradford	4,690	N/A	4,915	N/A
Bernson	5,089	N/A	5,348	N/A
Alexander	5,282	N/A	5,558	N/A
Rhinestreet	5,856	N/A	6,177	N/A
Sycamore	6,193	N/A	6,563	N/A
Middlesex	6,290	N/A	6,702	N/A
Burkett	6,381	N/A	6,868	N/A
Tully	6,405	N/A	6,928	N/A
Marcellus	6,416	N/A	6,960	N/A

\*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

RECEIVED  
Office of Oil and Gas

AUG 23 2018

WV Department of  
Environmental Protection



LATITUDE 39°22'30" 1,640'

LATITUDE 39°22'30"

8,580' TO BOTTOM HOLE

LONGITUDE 80°55'00" 2,569'  
LONGITUDE 80°57'30" 9,522' TO BOTTOM HOLE

Antero Resources Corporation  
Well No. Dillon Unit 3H  
A.P.I. 47-095-02353

AS DRILLED DATA:  
WELL 3H TOP HOLE INFORMATION:  
N: 319,497ft E: 1,586,075ft  
LAT: 39°22'04.61" N: 80°57'50.88"  
BOTTOM HOLE INFORMATION:  
N: 312,467ft E: 1,590,805ft  
LAT: 39°20'55.89" N: 80°56'49.22"  
3H TOP HOLE  
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 3H TOP HOLE INFORMATION:  
N: 4,357,619m E: 503,104m  
BOTTOM HOLE INFORMATION:  
N: 4,355,501m E: 504,581m

WV NORTH ZONE GRID NORTH  
JOSEPHS FORK  
REBAR, FOUND  
REBAR, FOUND  
REBAR, FOUND

WELL NO. 3H  
47-095-02353

PAD LAYOUT NOT TO SCALE  
EDWARDS UNIT 1H  
10' MARKLE UNIT 1H  
10' EDWARDS UNIT 3H  
10' MARKLE UNIT 2H  
10' EDWARDS UNIT 2H  
10' MARKLE UNIT 3H  
10' TINKER UNIT 3H  
10' DILLON UNIT 2H  
10' TINKER UNIT 2H  
10' DILLON UNIT 3H  
10' TINKER UNIT 1H  
10' DILLON UNIT 1H



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 MASONRY AVE. PENNSBORO WEST VIRGINIA 26415

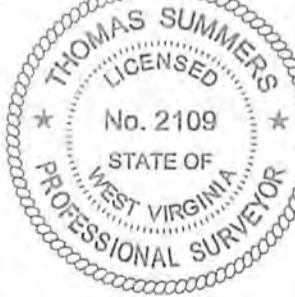
JOB # 12-152WA  
DRAWING # DILLON3HAD  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND  
--- Surface Owner Boundary Lines +/-  
--- Interior Surface Tracts +/-  
--- Proposed Well Path  
--- As Drilled Well Path  
THOMAS SUMMERS P.S. 2109

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

DATE 08/01/18  
OPERATOR'S WELL# DILLON UNIT 3H

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 - 095 - 02353  
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT  
LOCATION: ELEVATION 1,146.5' AS-BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK  
QUADRANGLE PENNSBORO 7.5' DISTRICT MEADE COUNTY TYLER  
SURFACE OWNER RITCHIE PETROLEUM INC. ACREAGE 30.92 ACRES +/-  
OIL & GAS ROYALTY OWNER ASHFORD BROADWATER; TERRY L. SNIDER; HUNTERS INC.; THEODORE MCCULLOUGH ET UX; LEASE ACREAGE 593.212 ACRES; 87 ACRES; 471.20 ACRES; 188.72 ACRES;  
MATTHEW B. HARPER ET UX; JEANETTE MCCULLOUGH; RITCHIE PETROLEUM CORP., INC.; BLANCHE STEWART; VICTOR HOLDREN 182.25 ACRES; 48.05 ACRES; 35 ACRES; 30 ACRES;  
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 6,468' TVD 15,064' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313



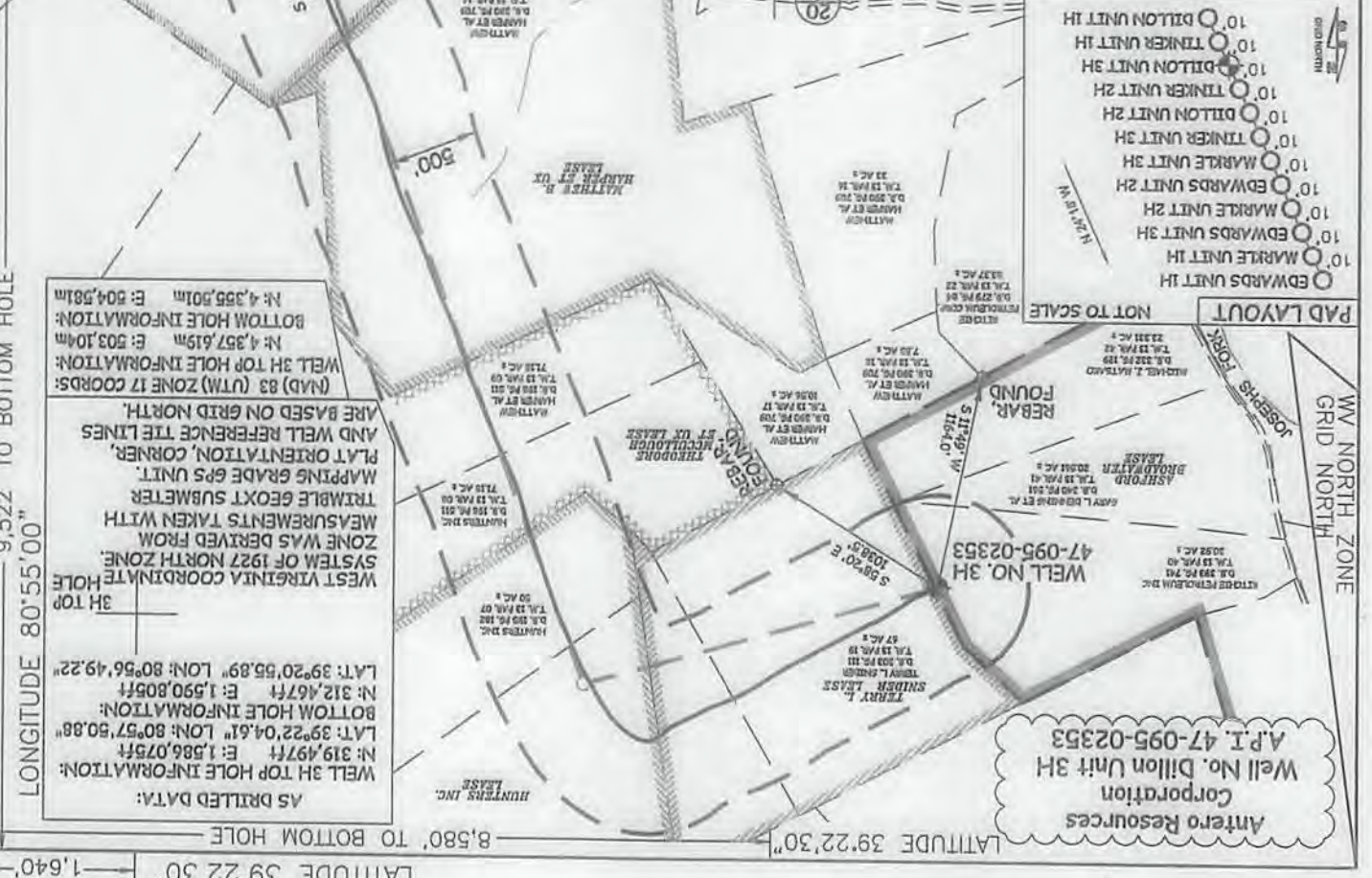
NOTE  
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.  
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEN INDY 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 INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



WELL TYPE: OIL  
 GAS X LIQUID INJECTION  
 WASTE DISPOSAL  
 COUNTY NAME PERMIT  
 COUNTY TILER  
 DISTRICT MEADE  
 QUADRANGLE PENNSBORO 7.5  
 SURFACE OWNER RITCHIE PETROLEUM INC.  
 OIL & GAS ROYALTY OWNER ASHFORD BROADWATER, TERRY L. SNIDER, HUNTERS INC., THEODORE MCCULLOUGH ET UX.  
 LEASE ACREAGE 30.92 ACRES +/-  
 102.26 ACRES +/- 48.05 ACRES +/- 35 ACRES +/- 47.12 ACRES +/-  
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL  
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL  
 (SPECIFY) AS DRILLED  
 PLUG & ABANDON  
 CLEAN OUT & REPLUG  
 TARGET FORMATION MARCELLUS  
 WELL OPERATOR ANTERO RESOURCES CORP.  
 ADDRESS 1615 WANKOOP STREET  
 DENVER, CO 80202  
 FORM WW-6

JOB # 12-152WA  
 DRAWING # DILLOHAD  
 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  
 OPERATOR'S WELL # DILLO UNIT 3H

LEGEND  
 Surface Owner Boundary Lines +/-  
 Interior Surface Tracts +/-  
 Proposed Well Path  
 As Drilled Well Path



AS DRILLED DATA:  
 WELL 3H TOP HOLE INFORMATION:  
 N: 319.497ft E: 1.586,075ft  
 LAT: 39°22'04.61" LON: 80°57'50.88"  
 BOTTOM HOLE INFORMATION:  
 N: 312.467ft E: 1.590,805ft  
 LAT: 39°20'55.89" LON: 80°56'49.22"  
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH 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 3H TOP HOLE INFORMATION:  
 N: 4,597.619m E: 503,104m  
 BOTTOM HOLE INFORMATION:  
 N: 4,355.501m E: 504,581m  
 LONGITUDE 80°55'00"  
 LONGITUDE 80°57'30"  
 LATITUDE 39°22'30"  
 LATITUDE 39°20'00"  
 1.640'  
 2.569'  
 9.522' TO BOTTOM HOLE  
 8.580' TO BOTTOM HOLE

ANTERO RESOURCES CORPORATION  
 WELL NO. DILLO UNIT 3H  
 A.P.I. 47-095-02353



## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/20/2018
Job End Date:	2/20/2018
State:	West Virginia
County:	Tyler
API Number:	47-095-02353-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Dillon 3H
Latitude:	39.36795000
Longitude:	-80.96413333
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,468
Total Base Water Volume (gal):	16,557,844
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	89.11475	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.17226	

HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
MC MX 2-2822	Halliburton	Scale Inhibitor					
				Listed Below			
FR-76	Halliburton	Friction Reducer					
				Listed Below			

SP BREAKER	Halliburton	Breaker					
				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	10.65708	
			Hydrochloric acid	7647-01-0	60.00000	0.06983	
			Guar gum	9000-30-0	100.00000	0.02530	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01924	
			Inorganic salt	Proprietary	30.00000	0.01924	
			Acrylamide acrylate copolymer	Proprietary	30.00000	0.01924	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Methanol	67-56-1	60.00000	0.00406	
			Amines, polyethylenepoly-, ethoxylated, phosphonomethylated, sodium salts	70900-16-2	30.00000	0.00392	
			Glutaraldehyde	111-30-8	30.00000	0.00259	
			Sodium persulfate	7775-27-1	100.00000	0.00068	
			Sodium chloride	7647-14-5	5.00000	0.00065	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00043	
			Ethanol	64-17-5	1.00000	0.00009	
			Fatty acids, tall oil	Proprietary	30.00000	0.00006	
			Ethoxylated alcohols	Proprietary	30.00000	0.00006	
			Modified thiourea polymer	Proprietary	30.00000	0.00006	
			Olefins	Proprietary	5.00000	0.00002	
			Propargyl alcohol	107-19-7	10.00000	0.00002	
			Formaldehyde	50-00-0	0.09000	0.00001	



			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Sodium sulfate	7757-82-6	0.10000	0.00000	

\* 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)