



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

March 27, 2020

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street  
Charleston, WV 25304

To Whom It May Concern:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report), Discharge Monitoring Report Form WR-34 and corresponding logs for the following wells off of the **Meredith Pad**:

- Horst Unit 2H-3H
- Sarahlene Unit 1H-2H
- Sterling Unit 1H-3H

If you have any questions, please feel free to contact me at (303)-357-7223.

Sincerely,

A handwritten signature in black ink, appearing to read "MGriffith", written over a light blue horizontal line.

Megan Griffith  
Permitting Agent  
Antero Resources Corporation

Enclosures

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

API 47-095-02520 County Tyler District Centerville  
Quad West Union 7.5' Pad Name Meredith Pad Field/Pool Name -----  
Farm name Roy A. Meredith Well Number Sterling Unit 1H  
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 4355462m Easting 511174m  
Landing Point of Curve Northing 4355384.06m Easting 510489.69m  
Bottom Hole Northing 4358399m Easting 509520m

Elevation (ft) 1111' 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 9/21/2018 Date drilling commenced 10/7/2018 Date drilling ceased 2/17/2019  
Date completion activities began 9/4/2019 Date completion activities ceased 10/11/2019  
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 463', 683' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 1521', 2109' Void(s) encountered (Y/N) depths No  
Coal depth(s) ft 63', 1239' Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

Reviewed by:

\_\_\_\_\_

API 47-095 - 02520 Farm name Roy A. Meredith Well number Sterling Unit 1H

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"	97'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	798'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2673'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	17824'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7177'		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	204 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	675 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	895 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	770 sx (Lead) 1670 sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.40 (Lead), 1.26 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17844' MD, 6541' TVD (BHL), 6541' (Deepest Point Drilled) Loggers TD (ft) 17844' MD

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

Plug back procedure N/A

Kick off depth (ft) 6200'

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 - 02520 Farm name Roy A. Meredith Well number Sterling Unit 1H

PRODUCING FORMATION(S)

DEPTHS

<u>Marcellus</u>	<u>6465' (TOP)</u>	<u>TVD</u>	<u>7240' (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 11598 mcfpd Oil 118 bpd NGL --- bpd Water 238 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
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**\*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 KLX Energy Services  
Address 3040 Post Oak Boulevard City Houston State TX Zip 77056

Cementing Company C&J Energy Services  
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

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 3.27.20

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

## EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	8/7/2019	17619.4	17722.7	60	Marcellus
2	8/8/2019	17420.66154	17588.2769	60	Marcellus
3	8/9/2019	17221.92308	17389.5385	60	Marcellus
4	8/9/2019	17023.18462	17190.8	60	Marcellus
5	8/10/2019	16824.44615	16992.0615	60	Marcellus
6	8/10/2019	16625.70769	16793.3231	60	Marcellus
7	8/11/2019	16426.96923	16594.5846	60	Marcellus
8	8/11/2019	16228.23077	16395.8462	60	Marcellus
9	8/11/2019	16029.49231	16197.1077	60	Marcellus
10	8/12/2019	15830.75385	15998.3692	60	Marcellus
11	8/12/2019	15632.01538	15799.6308	60	Marcellus
12	8/13/2019	15433.27692	15600.8923	60	Marcellus
13	8/14/2019	15234.53846	15402.1538	60	Marcellus
14	8/14/2019	15035.8	15203.4154	60	Marcellus
15	8/15/2019	14837.06154	15004.6769	60	Marcellus
16	8/15/2019	14638.32308	14805.9385	60	Marcellus
17	8/15/2019	14439.58462	14607.2	60	Marcellus
18	8/16/2019	14240.84615	14408.4615	60	Marcellus
19	8/16/2019	14042.10769	14209.7231	60	Marcellus
20	8/17/2019	13843.36923	14010.9846	60	Marcellus
21	8/17/2019	13644.63077	13812.2462	60	Marcellus
22	8/18/2019	13445.89231	13613.5077	60	Marcellus
23	8/18/2019	13247.15385	13414.7692	60	Marcellus
24	8/19/2019	13048.41538	13216.0308	60	Marcellus
25	8/19/2019	12849.67692	13017.2923	60	Marcellus
26	8/20/2019	12650.93846	12818.5538	60	Marcellus
27	8/20/2019	12452.2	12619.8154	60	Marcellus
28	8/21/2019	12253.46154	12421.0769	60	Marcellus
29	8/21/2019	12054.72308	12222.3385	60	Marcellus
30	8/22/2019	11855.98462	12023.6	60	Marcellus
31	8/23/2019	11657.24615	11824.8615	60	Marcellus
32	8/23/2019	11458.50769	11626.1231	60	Marcellus
33	8/23/2019	11259.76923	11427.3846	60	Marcellus
34	8/24/2019	11061.03077	11228.6462	60	Marcellus
35	8/25/2019	10862.29231	11029.9077	60	Marcellus
36	8/25/2019	10663.55385	10831.1692	60	Marcellus
37	8/25/2019	10464.81538	10632.4308	60	Marcellus
38	8/26/2019	10266.07692	10433.6923	60	Marcellus
39	8/27/2019	10067.33846	10234.9538	60	Marcellus
40	8/27/2019	9868.6	10036.2154	60	Marcellus
41	8/27/2019	9669.861538	9837.47692	60	Marcellus
42	8/28/2019	9471.123077	9638.73846	60	Marcellus
43	8/28/2019	9272.384615	9440	60	Marcellus
44	8/28/2019	9073.646154	9241.26154	60	Marcellus
45	8/29/2019	8874.907692	9042.52308	60	Marcellus
46	8/29/2019	8676.169231	8843.78462	60	Marcellus
47	8/30/2019	8477.430769	8645.04615	60	Marcellus
48	8/30/2019	8278.692308	8446.30769	60	Marcellus
49	8/31/2019	8079.953846	8247.56923	60	Marcellus
50	8/31/2019	7881.215385	8048.83077	60	Marcellus
51	9/1/2019	7682.476923	7850.09231	60	Marcellus
52	9/1/2019	7483.738462	7651.35385	60	Marcellus
53	9/1/2019	7285	7452.61538	60	Marcellus

## 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	8/7/2019	62.60976	7477.466	6807	3540	272900	8674	N/A
2	8/8/2019	72.76776	8013.091	6499	4240	409400	7309	N/A
3	8/9/2019	65.80616	8014.609	6372	4415	408450	9548	N/A
4	8/9/2019	70.8965	7635.466	5913	4197	408950	8573	N/A
5	8/10/2019	77.68113	7981.347	5550	4336	409000	7316	N/A
6	8/10/2019	74.20741	7728.733	5485	4188	409000	7141	N/A
7	8/11/2019	74.76303	7948.07	6802	4874	409500	8521	N/A
8	8/11/2019	76.63887	8140.415	6197	3619	409300	7158	N/A
9	8/11/2019	72.65435	8026.299	6402	3684	409250	7212	N/A
10	8/12/2019	73.58287	8195.288	6802	3592	409100	7192	N/A
11	8/12/2019	72.59348	7800.893	6248	3513	409090	7616	N/A
12	8/13/2019	70.3755	7704.687	5987	4230	408600	8909	N/A
13	8/14/2019	73.55786	7793.949	6335	3501	408900	6994.1	N/A
14	8/14/2019	81.02105	8111.847	6829	3487	409100	6993.9	N/A
15	8/15/2019	81.3795	8295.792	6094	3597	409450	7142.2	N/A
16	8/15/2019	79.71904	8265.771	6166	3678	408950	7105.9	N/A
17	8/15/2019	78.58848	8009.555	5986	4122	408800	6994.3	N/A
18	8/16/2019	78.91773	8056.533	6126	3731	409800	6927.1	N/A
19	8/16/2019	81.89377	8348.286	5889	3612	409090	7008.4	N/A
20	8/17/2019	75.20221	8210.092	6308	3464	409300	7106.9	N/A
21	8/17/2019	67.97949	6991.098	6816	3321	409700	7050.1	N/A
22	8/18/2019	77.96549	7883.233	6368	3544	409100	7005	N/A
23	8/18/2019	76.67214	7709.566	6742	3379	409500	6934.1	N/A
24	8/19/2019	76.80262	7799.447	6581	3533	409300	7042	N/A
25	8/19/2019	75.46525	7423.069	6595	3571	409070	6988	N/A
26	8/20/2019	82.83674	8080.102	6203	3412	409800	7063	N/A
27	8/20/2019	81.16685	7927.541	6335	3447	409500	6884	N/A
28	8/21/2019	83.85532	8171.134	6515	3517	410100	6950	N/A
29	8/21/2019	79.90042	7781.636	6953	3647	409250	7016	N/A
30	8/22/2019	83.05349	7659.788	6714	3546	409050	7007	N/A
31	8/23/2019	83.97471	7574.365	5270	3746	409600	6922	N/A
32	8/23/2019	83.04035	7903.615	4894	3807	408600	7166	N/A
33	8/23/2019	84.60711	7889.52	5347	3497	409800	6998	N/A
34	8/24/2019	83.81615	7673.74	6055	3671	409500	6971	N/A
35	8/25/2019	85.6591	7788.434	5259	3531	410000	6919	N/A
36	8/25/2019	75.53477	7011.869	6648	3531	410050	6916	N/A
37	8/25/2019	83.11392	7492.483	6805	3466	410900	7005	N/A
38	8/26/2019	74.58727	7192.384	6607	3662	409400	6856	N/A
39	8/27/2019	79.84853	7241.675	5974	3722	409500	7737	N/A
40	8/27/2019	85.10663	7563.612	5643	3688	412050	6838	N/A
41	8/27/2019	84.65514	7776.741	6393	3506	409300	6841	N/A
42	8/28/2019	84.91534	7752.035	6255	3465	409400	6880	N/A
43	8/28/2019	84.14287	7546.164	7016	3691	408750	6886	N/A
44	8/28/2019	82.92197	7428.805	6471	3519	410500	6972	N/A
45	8/29/2019	82.77929	7862.552	6554	3584	409800	6922	N/A
46	8/29/2019	80.13596	7278.568	6622	3700	409400	6821	N/A
47	8/30/2019	84.79363	7367.277	6605	4029	410700	6959	N/A
48	8/30/2019	80.21908	7593.967	6874	3765	409060	7079	N/A
49	8/31/2019	81.03943	7599.608	7244	3669	409000	6855	N/A
50	8/31/2019	81.46005	7448.511	6732	3897	409200	6800	N/A
51	9/1/2019	82.51076	7032.043	6962	3555	408850	6934	N/A
52	9/1/2019	83.99012	7027.736	7628	3515	409150	6848	N/A
53	9/1/2019	83.79129	7082.638	6715	3451	408800	6928	N/A
	<b>AVG</b>	<b>78.2</b>	<b>7,797</b>	<b>6,262</b>	<b>3,703</b>	<b>18,287,450</b>	<b>326,210</b>	<b>TOTAL</b>

**EXHIBIT 3**

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Silty Sandstone	85	145	85	145
Sandstone	145	185	145	185
Silty sandstone tr coal	185	540	185	540
Shaly siltstone tr coal	540	655	540	655
Shaly siltstone	655	705	655	705
Silty Sandstone	705	985	705	985
Silty sandstone	985	1,035	985	1,035
Silty Sandstone	1,035	1,105	1,035	1,105
Siltstone	1,105	1,285	1,105	1,285
Siltstone tr coal	1,285	1,405	1,285	1,405
Sandstone tr coal	1,405	1,635	1,405	1,635
Shaly siltstone tr coal	1,635	1,725	1,635	1,725
Silty sandstone tr coal	1,725	1,929	1,725	1,966
Big Lime	1,944	2,808	1,941	2,958
Fifty Foot Sandstone	2,808	2,909	2,933	3,071
Gordon	2,909	3,014	3,046	3,187
Fifth Sandstone	3,014	3,234	3,162	3,427
Bayard	3,234	3,760	3,402	4,002
Speechley	3,760	4,078	3,977	4,348
Balltown	4,078	4,602	4,323	4,912
Bradford	4,602	4,921	4,887	5,260
Benson	4,921	5,198	5,235	5,568
Alexander	5,198	6,319	5,543	6,839
Sycamore	6,179	6,294	6,652	6,814
Middlesex	6,294	6,403	6,814	7,032
Burkett	6,403	6,434	7,032	7,117
Tully	6,434	6,465	7,117	7,240
Marcellus	6,465	NA	7,240	NA

\*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.



State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Discharge Monitoring Report  
Oil and Gas General Permit

Company Name: Antero Resources Corporation  
API No: 47-095-02520 County: Tyler  
District: Centerville Well No: Sterling Unit 1H  
Farm Name: Roy A. Meredith et al  
Discharge Date/s From: (MMDDYY) 10/21/19 To: (MMDDYY) 11/20/19  
Discharge Times. From: 0:00 To: 24:00  
Total Volume to be Disposed from this facility (gallons): 719,859

Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: \_\_\_\_\_ (Include a topographical map of the Area.)  
(2) UIC: 1,522 Permit No. 3416729731  
(3) Offsite Disposal: \_\_\_\_\_ Site Location: \_\_\_\_\_  
(4) Reuse: 718,337 Alternate Permit Number: \_\_\_\_\_  
(5) Centralized Facility: \_\_\_\_\_ Permit No. \_\_\_\_\_  
(6) Other method: \_\_\_\_\_ (Include an explanation)

Follow Instructions below to determine your treatment category:

Optional Pretreatment test: n/a Cl- mg/l n/a DO mg/l

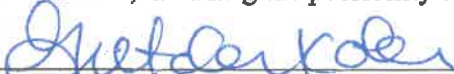
1. Do you have permission to use expedited treatment from the Director or his representative?  
(Y/N) n/a If yes, who? \_\_\_\_\_ and place a four (4) on line 7.  
If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) n/a If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride value pretreatment (see above)? (Y/N) n/a If yes, go to line 4  
If not, go to line 5.
4. Is the Chloride level less than 5000 mg/l? (Y/N) n/a If yes, then enter a one (1) on line 7.
5. Do you have a pretreatment value for DO? (See above) (Y/N) n/a If yes, go to line 6  
If not, enter a three (3) in line 7.
6. Is the DO level greater than 2.5 mg/l? (Y/N) n/a If yes, enter a two (2) on line 7. If not, enter a three (3) on line 7.
7. n/a is the category of your pit. Use the Appropriate section.
8. Comments on Pit condition: n/a No Pit on Site

Name of Principal Exec. Officer: Gretchen Kohler

Title of Officer: Senior Environmental and Regulatory Manager

Date Completed: 3/16/20

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the 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.



Signature of a Principal Exec. Officer or Authorized agent.

Category 1  
Sampling Results  
API No : \_\_\_\_\_

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	5	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl	5,000	_____	5,000	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
Total Al***		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Disposal Area		_____	Monitor	_____	Acres

\*\*\* Al is only reported if the pH is above 9.0

Category 2  
Sampling Results  
API No : \_\_\_\_\_

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	10	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
Total Al***		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Disposal Area		_____	Monitor	_____	Acres

\* Can be 25,000 with inspector's approval,

(Inspector's signature): \_\_\_\_\_

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

\*\* Include a description of your aeration technique.

Aeration Code: \_\_\_\_\_

\*\*\* Al is only reported if the pH is above 9.0

Category 3  
Sampling Results  
API No : \_\_\_\_\_

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	20	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
Total Al***		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Disposal Area		_____	Monitor	_____	Acres

\* Can be 25,000 with inspector's approval,

(Inspector's signature): \_\_\_\_\_ Date: \_\_\_\_\_

\*\* Include a description of your aeration technique. Aeration Code: \_\_\_\_\_

\*\*\* Al is only reported if the pH is above 9.0.

Category 4  
Sampling Results  
API No: \_\_\_\_\_

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	1	_____	N/A	N/A	Days
Fe	Monitor	_____	Monitor	_____	mg/l
D.O.	Monitor	_____	Monitor	_____	mg/l
Settleable Sol.	Monitor	_____	Monitor	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Activated Carbon (0.175)		_____	N/A	N/A	lb/B1
Date Site Reclaimed	N/A	N/A			10 days from dis.
Disposal Area		_____	Monitor	_____	Acres

\* Can be 25,000 with inspector's approval,

(Inspector's signature): \_\_\_\_\_ Date: \_\_\_\_\_

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/7/2019
Job End Date:	9/1/2019
State:	West Virginia
County:	Tyler
API Number:	47-095-02520-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Sterling Unit 1H
Latitude:	39.34844700
Longitude:	-80.87049200
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,539
Total Base Water Volume (gal):	16,639,226
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
Water	Supplied by Operator	Base Fluid	Water	7732-18-5	100.00000	86.27242	
DWP-641	CWS	Friction Reducer		Listed Below			

Sand (Proppant)	CWS	Propping Agent							
					Listed Below				
CalGel 4000	CWS	Gel Slurry							
					Listed Below				
Calbreak 5501	CWS	Breaker							
					Listed Below				
DAP-902	CWS	Scale Inhibitor							
					Listed Below				
SaniFrac 8844	CWS	Biocide							
					Listed Below				
Hydrochloric Acid	CWS	Clean Perforations							
					Listed Below				
DAP-103	CWS	Iron Control							
					Listed Below				
CI-9100G	CWS	Corrosion Inhibitor							
					Listed Below				
Other Chemical (s)	Listed Above	See Trade Name (s) List							

					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	13.39764
					Illite	12173-60-3	1.00000	0.13397
					Hydrochloric acid	7647-01-0	37.00000	0.06288
					Polymer	26100-47-0	45.00000	0.02019
					Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01346
					Ilmenite	98072-94-7	0.10000	0.01340
					Biotite	1302-27-8	0.10000	0.01340
					Goethite	1310-14-1	0.10000	0.01340
					Apatite	64476-38-6	0.10000	0.01340
					Guar gum	9000-30-0	60.00000	0.01277
					Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.01277
					Polyethylene glycol mixture	25322-68-3	54.50000	0.00548
					Ammonium chloride	12125-02-9	11.00000	0.00494
					2,2-Dibromo-3-Nitriopropanamide	10222-01-2	20.00000	0.00201
					Sorbitan monooleate	1338-43-8	4.00000	0.00179
					Polyethylene glycol monooleate	9004-96-0	3.00000	0.00135
					Quaternary ammonium compounds, bis (hydrogenated tallow alkyldimethyl, salts with bentonite	68953-58-2	5.00000	0.00106
					Sorbitol tetraoleate	61723-83-9	2.00000	0.00090
					Citric acid	77-92-9	60.00000	0.00057
					Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00045
					Sodium bromide	7647-15-6	4.00000	0.00040
					Ammonium Persulfate	7727-54-0	100.00000	0.00033

					37251-67-5	1.50000	0.00032	
				Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether				
				Dibromoacetonitrile	3252-43-5	3.00000	0.00030	
				Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00022	
				Vinylidene chloride-methyl acrylate copolymer	25038-72-6	20.00000	0.00007	
				Acrylamide	79-06-1	0.10000	0.00004	
				Ethylene Glycol	107-21-1	40.00000	0.00003	
				Diethylene glycol, monomethyl ether	34590-94-8	20.00000	0.00002	
				Tar bases, quinolone derivs, benzyl chloride- quaternized	72480-70-7	10.00000	0.00001	
				Ethoxylated Alcohols	68131-39-5	10.00000	0.00001	
				Formic acid	64-18-6	10.00000	0.00001	
				Cinnamaldehyde	104-55-2	10.00000	0.00001	
				Isopropyl alcohol	67-63-0	5.00000	0.00001	
				Organic Acid Salts	9003-04-7			Proprietary Additive Concentration
				Glycol	57-55-6			Proprietary Additive Concentration

\* 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)



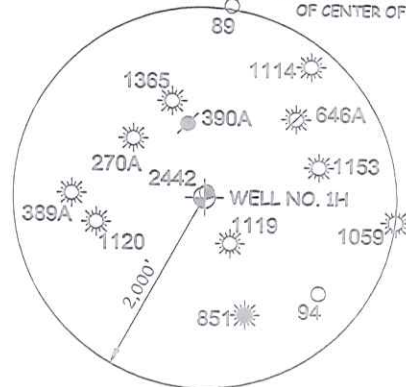
LATITUDE 39°22'30"

10,509'

4,138' TO BOTTOM HOLE  
LATITUDE 39°22'30"

Antero Resources Corporation  
Well No. Sterling Unit 1H  
47-095-02520

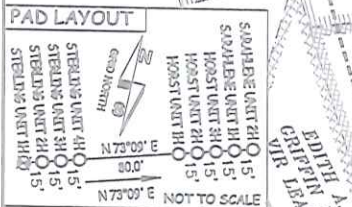
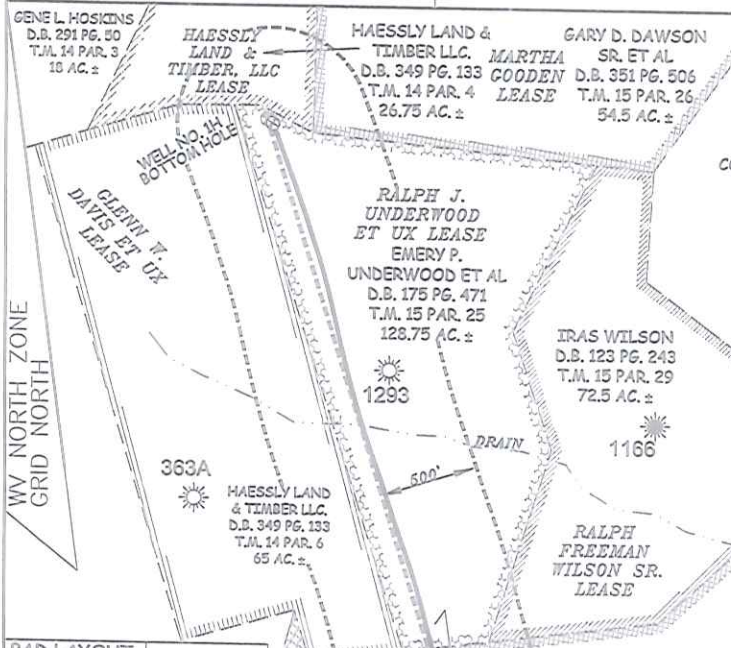
NOTE:  
NO WATER WELLS WERE  
LOCATED WITHIN 2000'  
OF CENTER OF PAD



56' TO BOTTOM HOLE LONGITUDE 80°52'30"

9,671'

LONGITUDE 80°50'00"



47	095	02520
STATE	COUNTY	PERMIT
JOB #	17-012WA	
DRAWING #	STERLING1HAD	
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		

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

DOUGLAS R. ROWE P.S. 2202  
DATE 02/18/20  
OPERATOR'S WELL # STERLING 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 MASONIC AVE. PENNSBORO  
WEST VIRGINIA 26415

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL   
 (IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW   
 LOCATION: ELEVATION 1,111' - AS DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK  
 QUADRANGLE TH - WEST UNION 7.5 BH - PENNSBORO 7.5 DISTRICT CENTERTVILLE COUNTY TYLER  
 SURFACE OWNER ROY A. MEREDITH ACREAGE 59.39 ACRES +/-  
 OIL & GAS ROYALTY OWNER ROY A. MEREDITH ET UX; LARRY F. HADLEY ET UX; JANICE L. HURST; WACO OIL & GAS;  
 KAREN SUE KUSKO; JOSEPH E. MICHAEL ET UX; O. W. GRIFFIN ET UX; AMP FUND II LP; EDITH A. GRIFFIN ET VIR;  
 RALPH J. UNDERWOOD ET UX; RALPH J. UNDERWOOD ET UX  
 LEASE ACREAGE 80 AC±; 54.41 AC±; 97.63 AC±; 24.5 AC±; 46.54 AC±; 125 AC±; 08 AC±; 21 AC±; 100 AC±; 56.25 AC±; 72.5 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  
 TARGET FORMATION MARCELLUS PLUG & ABANDON CLEAN OUT & REPLUG  
 WELL OPERATOR ANTERO RESOURCES CORP. ESTIMATED DEPTH 6,541' TVD 17,844' MD  
 ADDRESS 1815 WYNKOOP ST. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
 FORM WW-6 DENVER, CO 80202 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

**AS DRILLED DATA:**  
 WELL 1H TOP HOLE INFORMATION:  
 N: 311,978ft E: 1,612,438ft  
 LAT: 39°20'54.41" LON: 80°52'13.77"  
 BOTTOM HOLE INFORMATION:  
 N: 321,676ft E: 1,607,173ft  
 LAT: 39°22'29.45" LON: 80°53'22.70"  
 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 1H TOP HOLE INFORMATION:  
 N: 4,355,462m E: 511,174m  
 BOTTOM HOLE INFORMATION:  
 N: 4,358,399m E: 509,520m

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

