



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 57th 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 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 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 4355465m Easting 511183m
Landing Point of Curve Northing 4355536.67m Easting 510971.65m
Bottom Hole Northing 4358323m Easting 510067m

Elevation (ft) 1117' 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 Farm name Roy A. Meredith Well number Sterling Unit 3H

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"	794'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2626'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16801'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6746'		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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	655 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	925 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	675sx (Lead) 14520sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.40 (Lead), 1.26 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 19500' MD, 7000' TVD (BHL), 7000' (Deepest Point Drilled) Loggers TD (ft) 19500' MD

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

Plug back procedure N/A

Kick off depth (ft) 6000'

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 - _____ Farm name Roy A. Meredith Well number Sterling Unit 3H

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 - _____ Farm name Roy A. Meredith Well number Sterling Unit 3H

PRODUCING FORMATION(S)	DEPTHS		
<u>Marcellus</u>	<u>6823' (TOP)</u>	<u>TVD</u>	<u>6493' (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 6534 mcfpd Oil 48 bpd NGL --- bpd Water 247 bpd GAS MEASURED BY Estimated Orifice Pilot

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

***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	8/8/2019	16644.2	16697.7	60	Marcellus
2	8/8/2019	16444.68571	16612.9476	60	Marcellus
3	8/9/2019	16245.17143	16413.4333	60	Marcellus
4	8/9/2019	16045.65714	16213.919	60	Marcellus
5	8/10/2019	15846.14286	16014.4048	60	Marcellus
6	8/10/2019	15646.62857	15814.8905	60	Marcellus
7	8/11/2019	15447.11429	15615.3762	60	Marcellus
8	8/11/2019	15247.6	15415.8619	60	Marcellus
9	8/12/2019	15048.08571	15216.3476	60	Marcellus
10	8/12/2019	14848.57143	15016.8333	60	Marcellus
11	8/13/2019	14649.05714	14817.319	60	Marcellus
12	8/14/2019	14449.54286	14617.8048	60	Marcellus
13	8/14/2019	14250.02857	14418.2905	60	Marcellus
14	8/14/2019	14050.51429	14218.7762	60	Marcellus
15	8/15/2019	13851	14019.2619	60	Marcellus
16	8/15/2019	13651.48571	13819.7476	60	Marcellus
17	8/15/2019	13451.97143	13620.2333	60	Marcellus
18	8/16/2019	13252.45714	13420.719	60	Marcellus
19	8/17/2019	13052.94286	13221.2048	60	Marcellus
20	8/17/2019	12853.42857	13021.6905	60	Marcellus
21	8/18/2019	12653.91429	12822.1762	60	Marcellus
22	8/18/2019	12454.4	12622.6619	60	Marcellus
23	8/19/2019	12254.88571	12423.1476	60	Marcellus
24	8/19/2019	12055.37143	12223.6333	60	Marcellus
25	8/19/2019	11855.85714	12024.119	60	Marcellus
26	8/20/2019	11656.34286	11824.6048	60	Marcellus
27	8/21/2019	11456.82857	11625.0905	60	Marcellus
28	8/21/2019	11257.31429	11425.5762	60	Marcellus
29	8/21/2019	11057.8	11226.0619	60	Marcellus
30	8/22/2019	10858.28571	11026.5476	60	Marcellus
31	8/22/2019	10658.77143	10827.0333	60	Marcellus
32	8/23/2019	10459.25714	10627.519	60	Marcellus
33	8/23/2019	10259.74286	10428.0048	60	Marcellus
34	8/24/2019	10060.22857	10228.4905	60	Marcellus
35	8/24/2019	9860.714286	10028.9762	60	Marcellus
36	8/25/2019	9661.2	9829.4619	60	Marcellus
37	8/25/2019	9461.685714	9629.94762	60	Marcellus
38	8/26/2019	9262.171429	9430.43333	60	Marcellus
39	8/26/2019	9062.657143	9230.91905	60	Marcellus
40	8/27/2019	8863.142857	9031.40476	60	Marcellus
41	8/27/2019	8663.628571	8831.89048	60	Marcellus
42	8/27/2019	8464.114286	8632.37619	60	Marcellus
43	8/28/2019	8264.6	8432.8619	60	Marcellus
44	8/28/2019	8065.085714	8233.34762	60	Marcellus
45	8/29/2019	7865.571429	8033.83333	60	Marcellus
46	8/29/2019	7666.057143	7834.31905	60	Marcellus
47	8/30/2019	7466.542857	7634.80476	60	Marcellus
48	8/30/2019	7267.028571	7435.29048	60	Marcellus
49	8/31/2019	7067.514286	7235.77619	60	Marcellus
50	9/1/2019	6868	7036.2619	60	Marcellus

API 47-095- Farm Name Roy A. Meredith Well Number Sterling Unit 3H

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	8/8/2019	69.29229	7661.201	7049	3627	170100	4647	N/A
2	8/8/2019	64.88567	7510.858	5964	4591	410750	8286	N/A
3	8/9/2019	76.96349	7983.931	5681	4105	410450	7199	N/A
4	8/9/2019	78.44804	7632.554	5671	4228	410150	7143	N/A
5	8/10/2019	76.27221	7661.679	5676	4401	410500	7072	N/A
6	8/10/2019	75.91704	7612.508	5772	3650	410200	8421	N/A
7	8/11/2019	76.40698	7776.644	6807	3287	410650	7158	N/A
8	8/11/2019	80.97962	8109.634	6497	3608	410250	7207	N/A
9	8/12/2019	79.24673	8189.291	6147	3488	410150	7144	N/A
10	8/12/2019	76.09577	7759.275	5856	3557	410650	7083	N/A
11	8/13/2019	65.99388	7864.912	6170	3766	412250	9411	N/A
12	8/14/2019	72.9147	7835.676	6109	3284	410600	7079.1	N/A
13	8/14/2019	79.16232	7515.217	6400	3481	410400	7244	N/A
14	8/14/2019	81.82218	8449.658	6251	3457	410350	7121.4	N/A
15	8/15/2019	75.73186	7881.059	6187	3370	410150	7065.8	N/A
16	8/15/2019	81.28981	8035.406	6020	3520	410100	7033.5	N/A
17	8/15/2019	77.26662	7914.527	6570	3340	410500	6991.5	N/A
18	8/16/2019	80.20777	8169.57	6920	3733	410250	8768.5	N/A
19	8/17/2019	71.23049	7996.494	6371	4007	410450	7955.1	N/A
20	8/17/2019	75.8562	7504.671	5910	3553	411300	6990.6	N/A
21	8/18/2019	77.6352	7271.587	6061	3571	410600	7342.5	N/A
22	8/18/2019	77.91576	7625.943	6232	3307	410250	6931.9	N/A
23	8/19/2019	78.98364	7838.934	5565	3929	410900	7028.6	N/A
24	8/19/2019	75.62304	7667.288	6407	3489	411000	6862.4	N/A
25	8/19/2019	83.88003	7895.349	5809	3391	410700	7013.4	N/A
26	8/20/2019	80.75987	7982.305	6521	3176	410650	7100	N/A
27	8/21/2019	79.98218	7925.996	6525	3208	410800	7042	N/A
28	8/21/2019	80.0317	7899.023	6586	3372	410750	6968	N/A
29	8/21/2019	83.01221	7938.55	1737	3248	411100	6998	N/A
30	8/22/2019	81.98131	7806.601	6904	3406	410700	6869	N/A
31	8/22/2019	68.72509	7859.324	7031	3128	411100	7906	N/A
32	8/23/2019	82.3649	7756.782	7155	3691	410450	7300	N/A
33	8/23/2019	81.94067	7703.856	7030	3731	410400	6890	N/A
34	8/24/2019	58.20243	8080.527	6480	4137	410400	13927	N/A
35	8/24/2019	86.31623	7777.975	6336	3764	411800	6904	N/A
36	8/25/2019	85.57649	7724.18	6517	4003	412900	7005	N/A
37	8/25/2019	82.26409	7557.819	6829	3591	410400	6776	N/A
38	8/26/2019	75.45988	6954.196	6755	3385	410900	6942	N/A
39	8/26/2019	78.13289	7060.761	6359	3711	410600	7854	N/A
40	8/27/2019	86.58058	7251.204	5780	3487	412100	6882	N/A
41	8/27/2019	84.3402	7634.074	6728	3526	411300	6724	N/A
42	8/27/2019	86.92084	7404.184	6225	3620	410900	6850	N/A
43	8/28/2019	85.2679	7214.017	6944	4106	410150	6882	N/A
44	8/28/2019	84.31933	7227.35	7349	3588	409950	6938	N/A
45	8/29/2019	82.74667	7250.798	7347	3624	410800	6925	N/A
46	8/29/2019	79.61335	6890.804	7304	3933	410350	6915	N/A
47	8/30/2019	84.7087	7122.603	6844	3663	410800	6940	N/A
48	8/30/2019	84.30625	6979.113	6393	3552	410650	6788	N/A
49	8/31/2019	86.25488	7023.801	6491	4006	410400	6855	N/A
50	9/1/2019	83.70868	6739.201	6151	3890	410200	7055	N/A
	AVG	78.3	7,719	6,294	3,628	18,241,800	329,881	TOTAL

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	1,972	1,725	2,006
Big Lime	1,987	2,865	1,962	2,890
Fifty Foot Sandstone	2,865	2,945	2,841	3,016
Gordon	2,945	3,106	2,922	3,172
Fifth Sandstone	3,106	3,314	3,084	3,374
Bayard	3,314	3,828	3,294	3,914
Speechley	3,828	4,080	3,821	4,178
Balltown	4,080	4,665	4,076	4,750
Bradford	4,665	4,997	4,683	5,154
Benson	4,997	5,254	5,026	5,424
Alexander	5,254	6,340	5,290	6,576
Sycamore	6,195	6,315	6,301	6,551
Middlesex	6,315	6,425	6,456	6,749
Burkett	6,425	6,459	6,639	6,827
Tully	6,459	6,493	6,717	6,936
Marcellus	6,493	NA	6,823	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: 47-095-02530 County: Tyler
District: Centerville Well No: Sterling Unit 3H
Farm Name: Roy A. Meredith et al
Discharge Date/s From:(MMDDYY) 11/19/19 To: (MMDDYY) 12/19/19
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 803,614
Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: _____ (Include a topographical map of the Area.)
(2) UIC: 83,106 Permit No. 3400923821, 3400923823, 3400923824, 3416729731
(3) Offsite Disposal: _____ Site Location: _____
(4) Reuse: 720,508 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:	8/8/2019
Job End Date:	9/1/2019
State:	West Virginia
County:	Tyler
API Number:	47-095-02530-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Sterling Unit 3H
Latitude:	39.34847200
Longitude:	-80.87039200
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,560
Total Base Water Volume (gal):	15,845,009
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	86.40690	
Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			

SaniFrac 8844	CWS	Biocide								
					Listed Below					
Sand (Proppant)	CWS	Propping Agent								
					Listed Below					
CalGel 4000	CWS	Gel Slurry								
					Listed Below					
DAP-103	CWS	Iron Control								
					Listed Below					
Calbreak 5501	CWS	Breaker								
					Listed Below					
DWP-641	CWS	Friction Reducer								
					Listed Below					
CI-9100G	CWS	Corrosion Inhibitor								
					Listed Below					
DAP-902	CWS	Scale 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	13.26282
					Illite	12173-60-3	1.00000	0.13262
					Hydrochloric acid	7647-01-0	37.00000	0.06505
					Polymer	26100-47-0	45.00000	0.02026
					Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01351
					Biotite	1302-27-8	0.10000	0.01326
					Ilmenite	98072-94-7	0.10000	0.01326
					Goethite	1310-14-1	0.10000	0.01326
					Apatite	64476-38-6	0.10000	0.01326
					Guar gum	9000-30-0	60.00000	0.01262
					Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.01262
					Polyethylene glycol mixture	25322-68-3	54.50000	0.00558
					Ammonium chloride	12125-02-9	11.00000	0.00495
					2,2-Dibromo-3-Nitripropionamide	10222-01-2	20.00000	0.00205
					Sorbitan monooleate	1338-43-8	4.00000	0.00180
					Polyethylene glycol monooleate	9004-96-0	3.00000	0.00135
					Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00105
					Sorbitol tetraoleate	61723-83-9	2.00000	0.00090
					Citric acid	77-92-9	60.00000	0.00059
					Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00045
					Sodium bromide	7647-15-6	4.00000	0.00041
					Ammonium Persulfate	7727-54-0	100.00000	0.00036

					37251-67-5	1.50000	0.00032	
				Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether				
				Dibromoacetonitrile	3252-43-5	3.00000	0.00031	
				Alkylloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00023	
				Vinylidene chloride-methyl acrylate copolymer	25038-72-6	20.00000	0.00007	
				Acrylamide	79-06-1	0.10000	0.00005	
				Ethylene Glycol	107-21-1	40.00000	0.00004	
				Diethylene glycol, monomethyl ether	34590-94-8	20.00000	0.00002	
				Ethoxylated Alcohols	68131-39-5	10.00000	0.00001	
				Tar bases, quinolone derivs, benzyl chloride- quaternized	72480-70-7	10.00000	0.00001	
				Isopropyl alcohol	67-63-0	5.00000	0.00001	
				Formic acid	64-18-6	10.00000	0.00001	
				Cinnamaldehyde	104-55-2	10.00000	0.00001	
				Glycol	57-55-6			Proprietary Additive Concentration
				Organic Acid Salts	9003-04-7			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"

10,480'

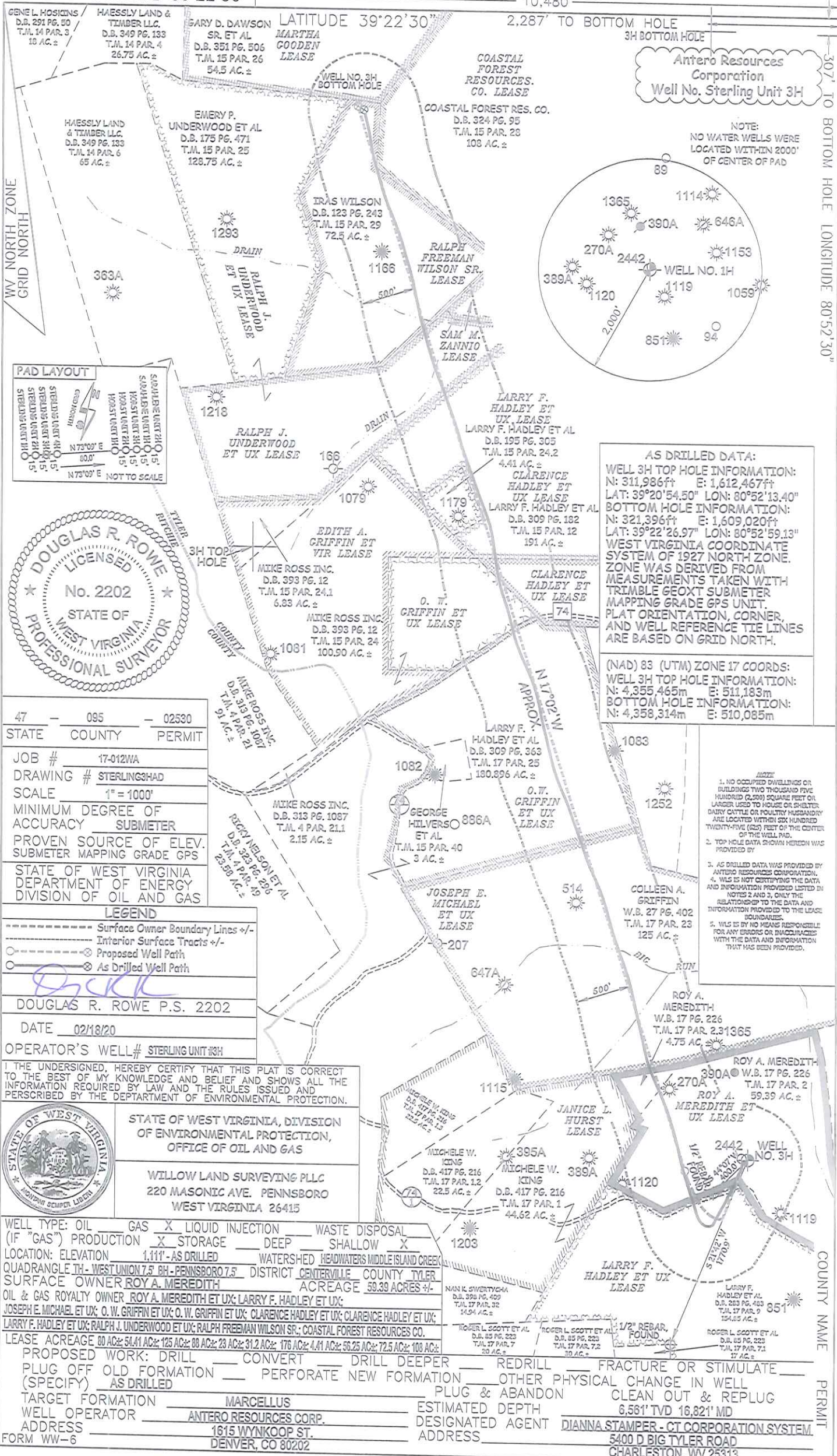
LATITUDE 39°22'30"

2,287' TO BOTTOM HOLE
3H BOTTOM HOLE

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

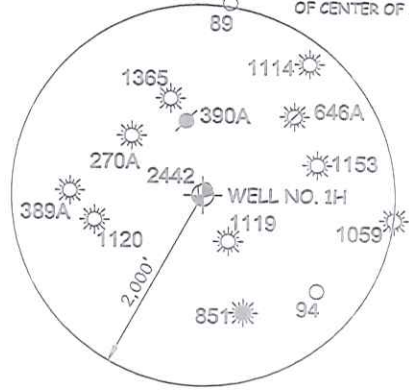
9,662'

LONGITUDE 80°50'00"



Antero Resources Corporation
Well No. Sterling Unit 3H

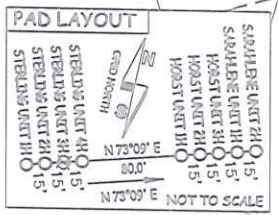
NOTE:
NO WATER WELLS WERE
LOCATED WITHIN 2000'
OF CENTER OF PAD



AS DRILLED DATA:
WELL 3H TOP HOLE INFORMATION:
N: 311,986ft E: 1,612,467ft
LAT: 39°20'54.50" LON: 80°52'13.40"
BOTTOM HOLE INFORMATION:
N: 321,396ft E: 1,609,020ft
LAT: 39°22'26.97" LON: 80°52'59.13"
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 3H TOP HOLE INFORMATION:
N: 4,355,465m E: 511,183m
BOTTOM HOLE INFORMATION:
N: 4,358,314m E: 510,085m

- 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.
- TOP HOLE DATA SHOWN HEREIN WAS PROVIDED BY
- AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
- 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.
- WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



47	095	02530
STATE	COUNTY	PERMIT
JOB #	17-012WA	
DRAWING #	STERLING3HAD	
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 #3H		

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 CENTERVILLE 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;
JOSEPH E. MICHAEL ET UX; O. W. GRIFFIN ET UX; O. W. GRIFFIN ET UX; CLARENCE HADLEY ET UX; CLARENCE HADLEY ET UX;
LARRY F. HADLEY ET UX; RALPH J. UNDERWOOD ET UX; RALPH FREEMAN WILSON SR.; COASTAL FOREST RESOURCES CO.

LEASE ACREAGE 80 AC±; 54.41 AC±; 125 AC±; 88 AC±; 23 AC±; 31.2 AC±; 176 AC±; 4.41 AC±; 58.25 AC±; 72.5 AC±; 108 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 6,561' TVD 16,821' 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