

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

API 47-103-03636 County Wetzel District Green  
Quad Porter Falls 7.5' Pad Name Fluharty Field/Pool Name -----  
Farm name Antero Resources Corporation Well Number Howell 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 4380215m Easting 515944m  
Landing Point of Curve Northing 4380340m Easting 515741m  
Bottom Hole Northing 4385119m Easting 514121m

Elevation (ft) 1181' 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

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Date permit issued 1/2/2024 Date drilling commenced 1/27/2024 Date drilling ceased 4/7/2024  
Date completion activities began 6/15/2024 Date completion activities ceased 9/5/2024  
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

WV Department of  
Environmental Protection  
4/7/2024

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

Freshwater depth(s) ft 307' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 2289' Void(s) encountered (Y/N) depths No  
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

**APPROVED**

Reviewed by: [Signature]  
02/28/2025  
2/16/25

API 47-103 - 03636 Farm name Antero Resources Corporation Well number Howell 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	28"	20"	125.5'	New	94#, J-55	N/A	Y
Surface	17-1/2"	13-3/8"	420'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	3093'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" /8-1/2"	5-1/2"	24040	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6811'		4.7#, P-110		
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	250 sx	15.6	1.18	295	0'	8 Hrs.
Surface	Class A	368 sx	15.6	1.19	438	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1142 sx	15.6	1.18	1348	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	4140 sx (Tail)	13.5 (Spacer), 15.2(Tail)	1.26 (Tail)	5216	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 24040' MD, 6766' TVD (BHL), 6813' TVD (Deepest Point Drilled) Loggers TD (ft) 24010' MD

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

Plug back procedure N/A

Kick off depth (ft) 6117'

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- 103 - 03636 Farm name Antero Resources Corporation Well number Howell Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
<b>*PLEASE SEE ATTACHED EXHIBIT 1</b>					

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)
<b>*PLEASE SEE ATTACHED EXHIBIT 2</b>								

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02/28/2025 *5*

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6763' (TOP)</u>	<u>TVD</u>	<u>7015' (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 \_\_\_\_\_ psi Bottom Hole -- psi DURATION OF TEST -- hrs

OPEN FLOW Gas Oil NGL Water GAS MEASURED BY  
14861.73 mcfpd 814.87 bpd -- bpd 1154.37 bpd  Estimated  Orifice  Pilot

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

**\*PLEASE SEE ATTACHED EXHIBIT 3**

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Please insert additional pages as applicable.

Drilling Contractor H & P Drilling  
 Address 912 N Eagle Valley Rd City Howard State PA Zip 16841

Logging Company Nine Energy Services  
 Address 6500 West Fwy City Fort Worth State TX Zip 76116

Cementing Company Schlumberger  
 Address 5599 San Felipe St. Fl 17 City Houston State TX Zip 77056

Stimulating Company Halliburton  
 Address 3000 N Sam Houston Pkwy E. City Houston State TX Zip 77032

Please insert additional pages as applicable.

Completed by Stefan Gaspar Telephone 303-357-6959  
 Signature S Gaspar Title Permitting Agent Date 12/18/24

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


02/28/2025 



EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6/15/2024	23911	23866	36	Marcellus
2	6/16/2024	23827.61508	23662.6905	36	Marcellus
3	6/16/2024	23627.30556	23462.381	36	Marcellus
4	6/17/2024	23426.99603	23262.0714	36	Marcellus
5	6/18/2024	23226.68651	23061.7619	36	Marcellus
6	6/18/2024	23026.37698	22861.4524	36	Marcellus
7	6/19/2024	22826.06746	22661.1429	36	Marcellus
8	6/20/2024	22625.75794	22460.8333	36	Marcellus
9	6/21/2024	22425.44841	22260.5238	36	Marcellus
10	6/21/2024	22225.13889	22060.2143	36	Marcellus
11	6/22/2024	22024.82937	21859.9048	36	Marcellus
12	6/23/2024	21824.51984	21659.5952	36	Marcellus
13	6/24/2024	21624.21032	21459.2857	36	Marcellus
14	6/24/2024	21423.90079	21258.9762	36	Marcellus
15	6/25/2024	21223.59127	21058.6667	36	Marcellus
16	6/26/2024	21023.28175	20858.3571	36	Marcellus
17	6/27/2024	20822.97222	20658.0476	36	Marcellus
18	6/28/2024	20622.6627	20457.7381	36	Marcellus
19	6/28/2024	20422.35317	20257.4286	36	Marcellus
20	6/29/2024	20222.04365	20057.119	36	Marcellus
21	6/30/2024	20021.73413	19856.8095	36	Marcellus
22	7/1/2024	19821.4246	19656.5	36	Marcellus
23	7/2/2024	19621.11508	19456.1905	36	Marcellus
24	7/3/2024	19420.80556	19255.881	36	Marcellus
25	7/3/2024	19220.49603	19055.5714	36	Marcellus
26	7/4/2024	19020.18651	18855.2619	36	Marcellus
27	7/5/2024	18819.87698	18654.9524	36	Marcellus
28	7/6/2024	18619.56746	18454.6429	36	Marcellus
29	7/6/2024	18419.25794	18254.3333	36	Marcellus
30	7/7/2024	18218.94841	18054.0238	36	Marcellus
31	7/8/2024	18018.63889	17853.7143	36	Marcellus
32	7/9/2024	17818.32937	17653.4048	36	Marcellus
33	7/9/2024	17618.01984	17453.0952	36	Marcellus
34	7/10/2024	17417.71032	17252.7857	36	Marcellus
35	7/11/2024	17217.40079	17052.4762	36	Marcellus
36	7/11/2024	17017.09127	16852.1667	36	Marcellus
37	7/12/2024	16816.78175	16651.8571	36	Marcellus
38	7/13/2024	16616.47222	16451.5476	36	Marcellus
39	7/14/2024	16416.1627	16251.2381	36	Marcellus
40	7/14/2024	16215.85317	16050.9286	36	Marcellus
41	7/15/2024	16015.54365	15850.619	36	Marcellus
42	7/16/2024	15815.23413	15650.3095	36	Marcellus
43	7/16/2024	15614.9246	15450	36	Marcellus
44	7/16/2024	15414.61508	15249.6905	36	Marcellus
45	7/16/2024	15214.30556	15049.381	36	Marcellus
46	7/17/2024	15013.99603	14849.0714	36	Marcellus
47	7/18/2024	14813.68651	14648.7619	36	Marcellus
48	7/19/2024	14613.37698	14448.4524	36	Marcellus
49	7/19/2024	14413.06746	14248.1429	36	Marcellus
50	7/19/2024	14212.75794	14047.8333	36	Marcellus
51	7/20/2024	14012.44841	13847.5238	36	Marcellus
52	7/20/2024	13812.13889	13647.2143	36	Marcellus
53	7/20/2024	13611.82937	13446.9048	36	Marcellus
54	7/21/2024	13411.51984	13246.5952	36	Marcellus
55	7/21/2024	13211.21032	13046.2857	36	Marcellus
56	7/22/2024	13010.90079	12845.9762	36	Marcellus
57	7/22/2024	12810.59127	12645.6667	36	Marcellus
58	7/22/2024	12610.28175	12445.3571	36	Marcellus
59	7/23/2024	12409.97222	12245.0476	36	Marcellus
60	7/23/2024	12209.6627	12044.7381	36	Marcellus
61	7/24/2024	12009.35317	11844.4286	36	Marcellus
62	7/24/2024	11809.04365	11644.119	36	Marcellus
63	7/24/2024	11608.73413	11443.8095	36	Marcellus
64	7/25/2024	11408.4246	11243.5	36	Marcellus
65	7/25/2024	11208.11508	11043.1905	36	Marcellus
66	7/25/2024	11007.80556	10842.881	36	Marcellus
67	7/26/2024	10807.49603	10642.5714	36	Marcellus
68	7/26/2024	10607.18651	10442.2619	36	Marcellus
69	7/26/2024	10406.87698	10241.9524	36	Marcellus
70	7/27/2024	10206.56746	10041.6429	36	Marcellus
71	7/27/2024	10006.25794	9841.3333	36	Marcellus
72	7/27/2024	9805.94841	9641.0238	36	Marcellus
73	7/28/2024	9605.63889	9440.71429	36	Marcellus
74	7/28/2024	9405.329365	9240.40476	36	Marcellus
75	7/28/2024	9205.01984	9040.09524	36	Marcellus
76	7/29/2024	9004.710317	8839.78571	36	Marcellus
77	7/29/2024	8804.400794	8639.47619	36	Marcellus
78	7/29/2024	8604.09127	8439.16667	36	Marcellus
79	7/30/2024	8403.781746	8238.85714	36	Marcellus
80	7/30/2024	8203.472222	8038.54762	36	Marcellus
81	7/31/2024	8003.162698	7838.2381	36	Marcellus
82	7/31/2024	7802.853175	7637.92857	36	Marcellus
83	7/31/2024	7602.543651	7437.61905	36	Marcellus
84	7/31/2024	7402.234127	7237.30952	36	Marcellus
85	8/1/2024	7201.924603	7037	36	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	6/15/2024	78.98018	9432.683	5223.79	3245.089	168860	4900.0476	N/A
2	6/16/2024	87.70904	10080.38	7808	4276.585	420080	8140.5	N/A
3	6/16/2024	86.68332	10064.57	7240.32	4228	421460	7356.4286	N/A
4	6/17/2024	89.3181	10115.32	7266.62	3972	414780	7421.3571	N/A
5	6/18/2024	94.04852	10161.99	7197.28	4048	418120	7384.619	N/A
6	6/18/2024	95.69023	10274.77	7363.98	4672	420220	7203.8095	N/A
7	6/19/2024	92.93111	9984.68	6504.85	4242	422440	7301.4762	N/A
8	6/20/2024	89.13321	9450.332	7279.73	4183.153	423560	7452.7381	N/A
9	6/21/2024	94.77635	9993.166	7124.11	4187	413000	7510.0952	N/A
10	6/21/2024	93.39225	9623.984	6852.09	4653	419690	6988.8333	N/A
11	6/22/2024	84.67627	9275.825	6884.92	4321.893	417320	7349	N/A
12	6/23/2024	94.03704	9915.855	6592	4422.84	412420	7258.6667	N/A
13	6/24/2024	95.42306	9855.415	6601.98	4290.753	424940	7252.1429	N/A
14	6/24/2024	92.91045	10203.54	6376.5	4181.457	416800	6952.0952	N/A
15	6/25/2024	93.74589	9762.407	7028.64	4101.335	421200	7355.7143	N/A
16	6/26/2024	94.39492	9762.099	6734.92	4267.482	422240	7453.119	N/A
17	6/27/2024	94.80261	9562.248	7697.18	4248	418260	7470.2619	N/A
18	6/28/2024	96.03655	9943.449	7070.08	4466	421700	7350	N/A
19	6/28/2024	93.09075	9372.868	6839.96	4300.475	415960	7380.4762	N/A
20	6/29/2024	95.01045	9591.394	7660.77	4227	416800	7426.2381	N/A
21	6/30/2024	90.4816	8885.11	7229.87	4273.284	413760	7350.881	N/A
22	7/1/2024	95.39913	9348.773	7100.1	4144.286	398750	7134.4762	N/A
23	7/2/2024	95.4352	9227.398	7124.39	4209.988	425740	7415.6667	N/A
24	7/3/2024	94.81929	9546.223	7259.07	4364.496	420800	7310.4762	N/A
25	7/3/2024	96.17229	9526.921	7576.33	4175.866	400550	7080.0238	N/A
26	7/4/2024	97.2441	9904.238	7310.28	3691.76	414460	7229.3333	N/A
27	7/5/2024	97.00494	9968.815	7083.1	4041.386	401980	7152.9524	N/A
28	7/6/2024	96.95228	9555.269	6680.26	4010.471	400170	6758.2857	N/A
29	7/6/2024	96.77155	9669.724	6859.25	4023.581	398450	8659.4286	N/A
30	7/7/2024	97.59004	9927.005	7148.15	4243.25	401730	7012.119	N/A
31	7/8/2024	97.42037	9586.266	6693.65	3992	400060	7052.0238	N/A
32	7/9/2024	97.45313	9712.764	6208.94	3785.422	399370	7044.4524	N/A
33	7/9/2024	97.97425	9443.085	6354.41	3850.255	419860	7324.5952	N/A
34	7/10/2024	95.67678	9312.599	6758.38	4431	402270	6680.5476	N/A
35	7/11/2024	95.86962	9058.11	6828.09	4186.051	397310	6622.4048	N/A
36	7/11/2024	96.42863	9063.437	6467.15	4108.33	395130	6595.7143	N/A
37	7/12/2024	92.03033	9016.577	7109.53	3934.63	419200	7007.1667	N/A
38	7/13/2024	94.10329	8862.69	6276.11	4129	398760	6540.7143	N/A
39	7/14/2024	96.76797	9219.471	6700.79	3952.126	419300	6801.3571	N/A
40	7/14/2024	91.66087	9029.351	6172.38	3807.24	416820	6739.5	N/A
41	7/15/2024	81.93887	8550.304	6050.83	3962.754	419620	8267.9762	N/A
42	7/16/2024	92.50715	8972.772	6811.9	4027.476	419920	6831.8333	N/A
43	7/16/2024	97.9545	9196.056	6157.06	4105	423400	6836.3095	N/A
44	7/16/2024	97.11399	9033.234	6646.14	4288	416240	6848.5714	N/A
45	7/16/2024	98.04866	9036.665	6272.76	3683	425400	6861.1905	N/A
46	7/17/2024	98.11298	9329.053	6410.45	3685.555	419580	6790.8095	N/A
47	7/18/2024	96.79478	9574.888	6643.78	3820.496	413700	6805.2619	N/A
48	7/19/2024	98.43066	9291.086	6442.79	3988	425040	6707.8333	N/A
49	7/19/2024	98.88737	9064.758	6201.26	3777.511	419080	6728.619	N/A
50	7/19/2024	97.41535	8996.605	6598.04	3981	422620	6737.9762	N/A
51	7/20/2024	97.6404	9071.651	6724.21	3726.816	423280	6769.4524	N/A
52	7/20/2024	96.956	8935.322	6394.97	4255	416780	6353.8571	N/A
53	7/20/2024	97.56937	8916.977	6020.69	3670	417300	6781.9762	N/A
54	7/21/2024	96.93158	8796.373	6672.26	3558	416760	6724.619	N/A
55	7/21/2024	99.09358	8685.617	6558.91	3580	419000	6686.6429	N/A
56	7/22/2024	98.07889	8605.542	6545	3569.691	427390	6772.381	N/A
57	7/22/2024	79.3706	7661.531	6194.58	3613.519	416600	8484.619	N/A
58	7/22/2024	97.15273	8249.705	6092.03	3494.105	422860	7259.5952	N/A
59	7/23/2024	98.15251	8381.73	6274.62	3660.758	422540	6777.7143	N/A
60	7/23/2024	96.88447	8218.98	6200	3682	422620	6918.4048	N/A
61	7/24/2024	97.11305	8257.924	7055.84	3774.816	420800	6565.0714	N/A
62	7/24/2024	97.34072	8165.675	6604.03	3456	418180	6863.0238	N/A
63	7/24/2024	97.33911	8141.077	7027	3862	422500	6487.0714	N/A
64	7/25/2024	97.89569	8211.249	6633.56	3716.353	421220	6811.2143	N/A
65	7/25/2024	97.6881	8195.968	6772.29	3579	418540	6835.7143	N/A
66	7/25/2024	97.84327	8090.345	6523.05	3466.977	421240	6461.4048	N/A
67	7/26/2024	97.88215	8207.265	7323.44	3590.337	424520	6847.4524	N/A
68	7/26/2024	97.30727	7967.879	7156.73	3900	431500	6973.9524	N/A
69	7/26/2024	97.45174	7928.204	7243.82	3761.169	419800	6672.1905	N/A
70	7/27/2024	97.37242	7826.744	6639.59	3953.741	421040	6576.4524	N/A
71	7/27/2024	96.87625	7847.833	6684.49	3800.549	421370	6804.4048	N/A
72	7/27/2024	97.91846	7681.921	6304.4	3904.688	422580	6551.381	N/A
73	7/28/2024	97.49684	7573.434	6786.26	3848.01	417320	6747.4048	N/A
74	7/28/2024	97.35668	7542.604	6358.73	3807.205	418900	6739.3095	N/A
75	7/28/2024	97.37792	7451.427	6704.95	3824.833	420120	6594.7619	N/A
76	7/29/2024	96.90742	7722.51	6321	3858.229	417720	6840.2143	N/A
77	7/29/2024	96.92905	7670.368	6618.72	4027	422000	6589.9286	N/A
78	7/29/2024	97.80403	7393.627	5909.11	3927	416340	6769.619	N/A
79	7/30/2024	97.69385	7428.546	6674.2	3918.52	414560	6699.1905	N/A
80	7/30/2024	98.15245	7154.041	6243.66	4277.676	419920	7557.5476	N/A
81	7/31/2024	96.59306	7230.643	6300.43	4256.955	421000	6599.3095	N/A
82	7/31/2024	96.93019	7170.789	6849.26	3870.518	420360	6720.2143	N/A
83	7/31/2024	96.38581	7370.604	7613.34	4120	422188	6787.7143	N/A
84	7/31/2024	96.25642	7048.017	7624.57	4008.236	419880	6578.7619	N/A
85	8/1/2024	94.8481	6915.995	6626.11	3779.318	419960	6691.7381	N/A
AVERAGE		95.2	8,858	6,740	3,980	35,195,608	593,724	0

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**EXHIBIT 3**

<b>LITHOLOGY/ FORMATION</b>	<b>TOP DEPTH (TVD) From Surface</b>	<b>BOTTOM DEPTH (TVD) From Surface</b>	<b>TOP DEPTH (MD) From Surface</b>	<b>BOTTOM DEPTH (MD) From Surface</b>
Sandy Siltstone, tr Shale	104	204	104	204
Silty Shale	204	354	204	354
Shale, Occ Siltstone, rr Sandstone	354	504	354	504
Shaley Siltstone, occ Sandstone	404	604	404	604
Sandy Siltstone, occ Shale	504	604	504	604
Silty Sandstone	604	804	604	804
Sandstone, tr Siltstone	804	954	804	954
Silty Sanstone, rr Shale	954	1,154	954	1,154
Sandstone, tr Siltstone	1,154	1,354	1,154	1,354
Sandy Siltstone	1,354	1,554	1,354	1,554
Siltstone, rr Sandstone	1,554	1,654	1,554	1,654
Silty Sandstone	1,654	1,854	1,654	1,854
Sandstone, occ Shale	1,854	2,054	1,854	2,054
Sandy Siltstone, occ Shale, tr coal	2,054	2,104	2,054	2,104
Sandy Siltstone, tr Shale	2,104	2,088	2,104	2,092
Big Lime	2,114	2,853	2,092	2,858
Fifty Foot Sandstone	2,853	2,946	2,832	2,951
Gordon	2,946	3,189	2,925	3,194
Fifth Sandstone	3,189	3,421	3,168	3,426
Bayard	3,421	3,911	3,400	3,921
Speechley	3,911	4,147	3,895	4,158
Balltown	4,147	4,624	4,132	4,640
Bradford	4,624	5,101	4,614	5,122
Benson	5,101	5,489	5,096	5,515
Alexander	5,489	6,583	5,489	6,654
Sycamore	6,444	6,557	6,492	6,628
Middlesex	6,557	6,645	6,628	6,760
Burkett	6,645	6,666	6,760	6,796
Tully	6666	6737	6796	6989
Marcellus	6737	NA	6989	NA

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Environmental Protection

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LATITUDE 39°35'00" 6,451'  
 LATITUDE 39°37'30" 656' TO BOTTOM HOLE

Antero Resources Corporation  
 Well No. Howell #1H

A1	BRC APPALACHIAN MINERALS I, LLC.	H	CSX TRANSPORTATION, INC.
A2	BRC APPALACHIAN MINERALS I, LLC.	H1	J. WELLS BAKIN, ET AL
A3	BRC APPALACHIAN MINERALS I, LLC.	H2	J. WELLS BAKIN, ET AL
B1	PATRICIA HADDY	J	DAVID R. THOMAS ET UX
B2	PATRICIA HADDY	K	BENJAMIN R. YOHO
C	WYDRA	L	COASTAL FOREST RESOURCES COMPANY
D	SHIBEN ESTATES, INC.	M	BENJAMIN R. YOHO
E	JACOB P. MORGAN, III AND SYLVIA A. MORGAN	N	ABRAHAM C. CATHROP AND MARGY E. CATHROP
F	NANCY LOU O'NEIL LASURE	O	JOHN MAYHEW STALRY
G1	WILL E. MORRIS HEIRS TRUST	P	DAVID LEE SMITH
G2	WILL E. MORRIS HEIRS TRUST	Q	DAVID LEE SMITH
		AA	MICHAEL RUCHNE SMITH
		AB	ROBERT HARRY MYERS, SR.

AS DRILLED DATA:  
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 N: 392,941ft E: 1,629,445ft  
 LAT: 39°34'17.07" LON: 80°48'52.38"  
 BOTTOM HOLE INFORMATION:  
 N: 409,135ft E: 1,623,733ft  
 LAT: 39°36'56.28" LON: 80°50'08.39"  
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.  
 ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER  
 MAPPING GRADE GPS UNIT. HOLE PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

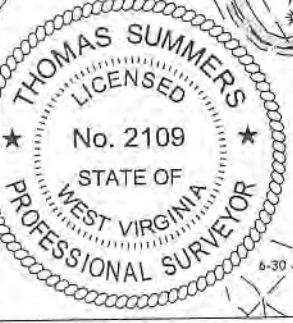
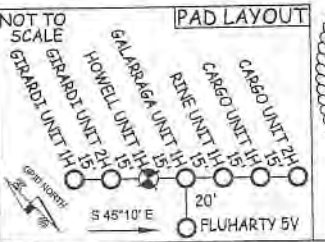
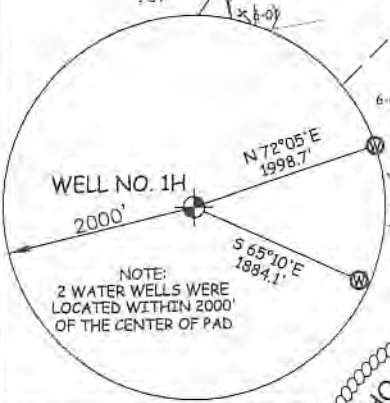
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 N: 4,380,215m E: 515,944m  
 BOTTOM HOLE INFORMATION:  
 N: 4,385,119m E: 514,121m

(NAD) 27 (UTM) ZONE 17 COORDS:  
 WELL 1H TOP HOLE INFORMATION:  
 N: 14,370,039ft E: 1,692,676ft  
 POINT OF ENTRY INFORMATION:  
 N: 14,370,033ft E: 1,692,209ft  
 BOTTOM HOLE INFORMATION:  
 N: 14,386,131ft E: 1,686,697ft

MAGNOLIA DISTRICT	
12-104.1	TERRY SANDS
12-105	WASHAL CO COOPERATIVE INC.
12-119	NANCY LASURE
12-128	JACOB MORGAN
13-13	RUTH BLAKE
13-13.1	WSD PROPERTIES LLC
13-14	WVDOH
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11-13	KENNETH RINE EST.
11-16	MICHAEL SMITH
11-23	FLUHARTY FAMILY TRUST

WV NORTH ZONE GRID NORTH

4,344'  
 3,411' TO BOTTOM HOLE  
 LONGITUDE 80°47'30"



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 # 21-011WA  
 DRAWING # HOWELL1HAD  
 SCALE 1" = 2000'  
 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 11/22/24  
 OPERATOR'S WELL# HOWELL UNIT #1H  
 47 - 103 - 03636  
 STATE COUNTY PERMIT

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X  
 LOCATION: ELEVATION 1,181' WATERSHED FISHING CREEK  
 QUADRANGLE PORTER FALLS 7.5' DISTRICT GREEN COUNTY WETZEL  
 SURFACE OWNER ANTERO RESOURCES CORPORATION ACREAGE 46.95 ACRES±  
 OIL & GAS ROYALTY OWNER DAVID L. SMITH LEASE ACREAGE 67 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 6,786' TVD 24,040' MD  
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT KEVIN ELLIS  
 ADDRESS 1615 WYNKOOP ST. ADDRESS 535 WHITE OAK BLVD.  
 DENVER, CO 80202 BRIDGEPORT, WV 26330

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 ANTERO RESOURCES CORPORATION.  
 3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.  
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COUNTY NAME PERMIT



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6,451'

LATITUDE 39°37'30"

656' TO BOTTOM HOLE

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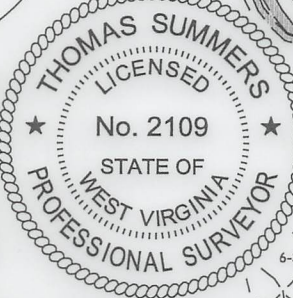
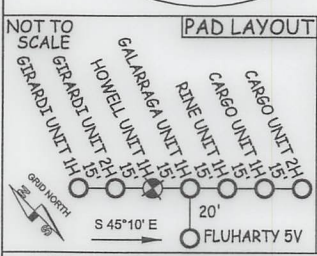
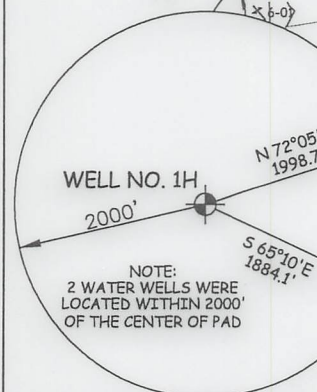
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⊗ As Drilled Well Path

THOMAS SUMMERS P.S. 2109

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

DATE 11/22/24  
OPERATOR'S WELL# HOWELL UNIT #1H  
47 - 103 - 03636  
STATE COUNTY PERMIT

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## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	06/15/2024
Job End Date:	08/01/2024
State:	West Virginia
County:	Wetzel
API Number:	47-103-03636-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	HOWELL UNIT 1H
Latitude:	39.57149
Longitude:	-80.814381
Datum:	WGS84
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6813
Total Base Water Volume (gal)*:	26072216
Total Base Non Water Volume:	0



Water Source	Percent
Produced Water	100.00%

### 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
Excelerate LX-21	Halliburton	Friction Reducer					
FDP-S1470-23	Halliburton	Friction Reducer					
HAI-501	Halliburton	Acid Corrosion Inhibitor					
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
MC B-8123	MultiChem	Biocide					
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
Produced Water (Density 8.8)	Operator	Base Fluid					
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					

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WG-36 GELLING AGENT	Halliburton	Gelling Agent					
Items above are Trade Names. Items below are the individual ingredients.							
			Water	7732-18-5	100.00000	86.53824	None
			Crystalline silica, quartz	14808-60-7	100.00000	13.27506	None
			Water	7732-18-5	100.00000	0.15379	None
			Hydrochloric acid	7647-01-0	30.00000	0.03721	None
			Complex amine compound	Proprietary	60.00000	0.01894	None
			Ethanaminium, N,N,N-trimethyl-2-(1-oxo-2-propen-1-yl)oxy-, chloride (1:1), polymer with 2-propenamide	69418-26-4	60.00000	0.01034	None
			Hydrotreated distillate	Proprietary	30.00000	0.00947	None
			Guar gum	9000-30-0	100.00000	0.00545	None
			Hydrotreated light petroleum distillates	64742-47-8	30.00000	0.00517	None
			Ammonium chloride	12125-02-9	5.00000	0.00244	None
			Glutaraldehyde	111-30-8	30.00000	0.00243	None
			Ethoxylated alcohol	Proprietary	5.00000	0.00158	None
			Fatty nitrogen derived amides	Proprietary	5.00000	0.00158	None
			Amides, tall-oil fatty, N,N-bis(hydroxyethyl)	68155-20-4	5.00000	0.00086	None
			Ethoxylated branched C13 alcohol	78330-21-9	5.00000	0.00086	None
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	1.00000	0.00049	None
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6	1.00000	0.00049	None
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	5.00000	0.00040	None
			Methanol	67-56-1	100.00000	0.00023	None
			Ammonium persulfate	7727-54-0	100.00000	0.00013	None
			Citric acid	77-92-9	1.00000	0.00008	None
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007	None
			Modified thiourea polymer	Proprietary	30.00000	0.00007	None
			Oxylated phenolic resin	Proprietary	30.00000	0.00004	None

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			Propargyl alcohol	107-19-7	5.00000	0.00001	None
			Hexadecene	629-73-2	5.00000	0.00001	None
			Ethoxylated alcohols	Proprietary	5.00000	0.00001	None
			C.I. pigment Orange 5	3468-63-1	1.00000	0.00000	None

\* 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%

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)

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