

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

API 47-095-02604 County Tyler District McElroy
Quad Shirley 7.5' Pad Name Colorado East Pad Field/Pool Name -----
Farm name Antero Resources Corporation Well Number Avalanche 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 4361519m Easting 518254m
Landing Point of Curve Northing 4361455.97m Easting 518288.50m
Bottom Hole Northing 4358396m Easting 519686m

Elevation (ft) 743' 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 4/30/2019 Date drilling commenced 11/4/2019 Date drilling ceased 12/25/2019
Date completion activities began 4/12/2020 Date completion activities ceased 6/6/2020
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 235', 241', 298' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 970' Void(s) encountered (Y/N) depths No
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

JCB
1/27/2021

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Office of Oil and Gas
JAN 04 2020

WV Department of
Environmental Protection
12/25/2019

API 47- 095 - 02604 Farm name Antero Resources Corporation Well number Avalanche 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"	105'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	432'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2648'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18067'	New	23#, HCP-110	N/A	Y
Tubing		2-3/8"	6768'		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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	284 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	372 sx	15.6	1.20	635	0'	8 Hrs.
Coal							
Intermediate 1	Class A	899 sx	15.6	1.19	1082	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	792 sx (Lead) 2770 sx (Tail)	14.5 (Lead), 15.2(Tail)	1.4 (Lead), 1.6 (Tail)	3003	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18131' MD, 6436' TVD (BHL), 6458' (Deepest Point Drilled) Loggers TD (ft) 18131' MD

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

Plug back procedure N/A

Kick off depth (ft) 5816'

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 - 02604 Farm name Antero Resources Corporation Well number Avalanche 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 - 02604 Farm name Antero Resources Corporation Well number Avalanche Unit 3H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6392' (TOP)</u>	<u>TVD</u>	<u>6808' (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 3169 mcfpd Oil 337 bpd NGL --- bpd Water 187 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, H₂S, 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
Address 1660 Wynkoop Street City Denver State CO Zip 80202

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

Cementing Company Schlumberger Oilfield Services
Address 300 Schlumberger Dr City Sugarland State TX Zip 77478

Stimulating Company Halliburton
Address 3000 W. Sam Houston Pkwy City Houston State TX Zip 76114

Please insert additional pages as applicable.

Completed by Brandi Hankins Telephone 303-357-7223
Signature _____ Title Completions Technician Date _____

API 47-095-02604 Farm Name Antero Resources Corporation Well Number Avalanche Unit 3H

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4/8/2020	17961.6	17917.9	60	Marcellus
2	4/9/2020	17880.38212	17714.7927	60	Marcellus
3	4/9/2020	17679.27485	17513.6855	60	Marcellus
4	4/9/2020	17478.16758	17312.5782	60	Marcellus
5	4/9/2020	17277.0603	17111.4709	60	Marcellus
6	4/10/2020	17075.95303	16910.3636	60	Marcellus
7	4/10/2020	16874.84576	16709.2564	60	Marcellus
8	4/10/2020	16673.73848	16508.1491	60	Marcellus
9	4/11/2020	16472.63121	16307.0418	60	Marcellus
10	4/11/2020	16271.52394	16105.9345	60	Marcellus
11	4/11/2020	16070.41667	15904.8273	60	Marcellus
12	4/12/2020	15869.30939	15703.72	60	Marcellus
13	4/12/2020	15668.20212	15502.6127	60	Marcellus
14	4/12/2020	15467.09485	15301.5055	60	Marcellus
15	4/13/2020	15265.98758	15100.3982	60	Marcellus
16	4/13/2020	15064.8803	14899.2909	60	Marcellus
17	4/14/2020	14863.77303	14698.1836	60	Marcellus
18	4/14/2020	14662.66576	14497.0764	60	Marcellus
19	4/14/2020	14461.55848	14295.9691	60	Marcellus
20	4/14/2020	14260.45121	14094.8618	60	Marcellus
21	4/15/2020	14059.34394	13893.7545	60	Marcellus
22	4/15/2020	13858.23667	13692.6473	60	Marcellus
23	4/15/2020	13657.12939	13491.54	60	Marcellus
24	4/16/2020	13456.02212	13290.4327	60	Marcellus
25	4/16/2020	13254.91485	13089.3255	60	Marcellus
26	4/16/2020	13053.80758	12888.2182	60	Marcellus
27	4/17/2020	12852.7003	12687.1109	60	Marcellus
28	4/17/2020	12651.59303	12486.0036	60	Marcellus
29	4/17/2020	12450.48576	12284.8964	60	Marcellus
30	4/18/2020	12249.37848	12083.7891	60	Marcellus
31	4/18/2020	12048.27121	11882.6818	60	Marcellus
32	4/18/2020	11847.16394	11681.5745	60	Marcellus
33	4/18/2020	11646.05667	11480.4673	60	Marcellus
34	4/19/2020	11444.94939	11279.36	60	Marcellus
35	4/19/2020	11243.84212	11078.2527	60	Marcellus
36	4/19/2020	11042.73485	10877.1455	60	Marcellus
37	4/20/2020	10841.62758	10676.0382	60	Marcellus
38	4/20/2020	10640.5203	10474.9309	60	Marcellus
39	4/20/2020	10439.41303	10273.8236	60	Marcellus
40	4/20/2020	10238.30576	10072.7164	60	Marcellus
41	4/21/2020	10037.19848	9871.60909	60	Marcellus
42	4/21/2020	9836.091212	9670.50182	60	Marcellus
43	4/21/2020	9634.983939	9469.39455	61	Marcellus
44	4/22/2020	9433.876667	9268.28727	62	Marcellus
45	4/22/2020	9232.769394	9067.18	63	Marcellus
46	4/22/2020	9031.662121	8866.07273	64	Marcellus
47	4/22/2020	8830.554848	8664.96545	65	Marcellus
48	4/23/2020	8629.447576	8463.85818	66	Marcellus
49	4/23/2020	8428.340303	8262.75091	67	Marcellus
50	4/23/2020	8227.23303	8061.64364	68	Marcellus
51	4/23/2020	8026.125758	7860.53636	69	Marcellus
52	4/24/2020	7825.018485	7659.42909	70	Marcellus
53	4/24/2020	7623.911212	7458.32182	71	Marcellus
54	4/24/2020	7422.803939	7257.21455	72	Marcellus
55	4/25/2020	7221.696667	7056.10727	73	Marcellus
56	4/25/2020	7020.589394	6855	74	Marcellus

API 47-095-02604 Farm Name Antero Resources Corporation Well Number Avalanche 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 (bbbls)	Amount of Nitrogen/ other (units)
1	4/8/2020	77.36	7968	8631	3556	162440	4925.429	N/A
2	4/9/2020	85.8	8447	5567	4595	408340	7387.286	N/A
3	4/9/2020	85.9	8288	5366	5096	404300	7304.095	N/A
4	4/9/2020	85.92	8281	5789	5055	408720	7297.667	N/A
5	4/9/2020	85.08	8567	5893	4701	406300	7309.786	N/A
6	4/10/2020	85.31	8448	4554	5214	408400	7325.429	N/A
7	4/10/2020	85.42	8595	6072	4863	405820	7329.833	N/A
8	4/10/2020	85.68	8521	6222	4616	406880	7243.619	N/A
9	4/11/2020	77.67	8197	6066	4694	408820	8340.833	
10	4/11/2020	85.64	8522	6403	4738	406800	7226.857	N/A
11	4/11/2020	85.2	8598	6431	4440	406060	7199.595	N/A
12	4/12/2020	84.74	8774	6287	4407	404420	7094.881	N/A
13	4/12/2020	85.55	8640	6079	4340	407540	7173.119	N/A
14	4/12/2020	84.25	8688	6087	4622	406560	7107.976	N/A
15	4/13/2020	84.15	8595	7077	4527	401020	7112.619	N/A
16	4/13/2020	85.82	8707	6283	4222	406560	7166	N/A
17	4/14/2020	84.9	8831	6362	4548	404660	7106.429	N/A
18	4/14/2020	85.82	8667	5943	4382	405960	7168.476	N/A
19	4/14/2020	85.9	8557	6298	4281	407680	6998.929	N/A
20	4/14/2020	83.76	8698	6850	4096	402880	6896.214	N/A
21	4/15/2020	85.6	8648	6121	4213	408480	6945.5	N/A
22	4/15/2020	85.85	8643	6051	4156	402240	6940.476	N/A
23	4/15/2020	85.83	8728	6147	4169	405500	6914.643	N/A
24	4/16/2020	85.52	8827	6260	4257	407020	6913.548	N/A
25	4/16/2020	93.77	8778	6459	4470	405900	6983.048	N/A
26	4/16/2020	94.13	8758	6834	4457	407900	6897.595	N/A
27	4/17/2020	85.89	8746	6095	4026	407080	6873.024	N/A
28	4/17/2020	85.91	8578	5717	4212	407220	7092.69	N/A
29	4/17/2020	95.7	8818	6136	4394	404360	6945.167	N/A
30	4/18/2020	95.23	8786	5785	4461	405500	6830.595	N/A
31	4/18/2020	96.02	8657	6220	4341	401980	6990.238	N/A
32	4/18/2020	95.86	8723	6096	4234	407340	6984	N/A
33	4/18/2020	95.21	8680	6198	4528	408920	6852.738	N/A
34	4/19/2020	95.4	8755	6185	3566	406240	6919.071	N/A
35	4/19/2020	95.89	8721	6134	4656	402340	6999.571	N/A
36	4/19/2020	95.9	8767	5924	4289	405500	6846.762	N/A
37	4/20/2020	95.75	8730	6286	4289	409200	6848.071	N/A
38	4/20/2020	95.9	8375	6015	4402	406706	6924.119	N/A
39	4/20/2020	95.88	8580	5685	4200	406820	6928.619	N/A
40	4/20/2020	95.5	8673	5614	4303	405920	6805.262	N/A
41	4/21/2020	96.04	8439	5812	4869	408280	6823.238	N/A
42	4/21/2020	95.48	8487	6012	4537	402280	6885.476	N/A
43	4/21/2020	95.94	8507	5784	4073	408120	6883.024	N/A
44	4/22/2020	95.83	8591	5986	4455	408180	6810.881	N/A
45	4/22/2020	95.56	8436	5491	4577	401280	6818.714	N/A
46	4/22/2020	85.91	7749	5992	4375	405080	6759.071	N/A
47	4/22/2020	95.52	8285	6184	4346	410680	6840.738	N/A
48	4/23/2020	95.59	8218	6139	4491	408480	6828.81	N/A
49	4/23/2020	95.95	8134	5988	4493	408960	6780.452	N/A
50	4/23/2020	95.94	8007	5838	4286	406900	6848.929	
51	4/23/2020	95.85	7798	5659	4098	405200	6708.714	N/A
52	4/24/2020	95.89	7805	6700	4012	404720	6731.738	N/A
53	4/24/2020	93.9	7717	5036	4102	405160	6788.357	N/A
54	4/24/2020	95.67	7600	6483	4097	405360	6744.143	N/A
55	4/25/2020	95.35	7765	5676	4265	409020	7452.833	N/A
56	4/25/2020	95.94	7930	5400	4361	406580	6808.976	N/A
	AVG=	90	8,465	6,079	4,394	22,506,606	390,664	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
Shale	0	310	0	310
Silty sandstone	310	460	310	460
Shale	460	700	460	700
Silty Shale	700	820	700	820
Shale with interbedded limestone	820	850	820	850
Shale	850	880	850	880
Shale w/ trace coal	880	910	880	910
Shaley Sandstone	910	1,180	910	1,180
Shale	1,180	1,240	1,180	1,240
Sandstone w/ interbedded coals	1,240	1,330	1,240	1,330
Sandstone w/ trace coal	1,330	1,480	1,330	1,480
Sandstone	1,480	1,510	1,480	1,510
Shale	1,510	1,627	1,510	1,650
Big Lime	1,627	2,340	1,650	2,387
Fifty Foot Sandstone	2,340	2,433	2,387	2,483
Gordon	2,433	2,729	2,483	2,787
Fifth Sandstone	2,729	2,778	2,787	2,838
Bayard	2,778	3,554	2,838	3,641
Speechley	3,554	3,766	3,641	3,858
Balltown	3,766	4,299	3,858	4,402
Bradford	4,299	4,731	4,402	4,852
Benson	4,731	4,975	4,852	5,109
Alexander	4,975	6,201	5,109	6,417
Sycamore	6,014	6,176	6,224	6,392
Middlesex	6,176	6,312	6,417	6,607
Burkett	6,312	6,341	6,632	6,666
Tully	6,341	6,392	6,691	6,808
Marcellus	6,392	NA	6,808	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.



ANTERO RESOURCES CORPORATION

Location: Tyler County, WV
 Field: Tyler
 Facility: Colorado East Pad

Slot: Slot #05
 Well: Avalanche Unit 3H
 Wellbore: Avalanche Unit 3H PWB



Plot reference wellpath is Avalanche Unit 3H PWP Rev-B.1	Grid System: NAD27 / UTM Zone 17 North, US feet
True vertical depths are referenced to Patterson 342 (RKB)	North Reference: Grid north
Reference wellpath measured depths are referenced to Patterson 342 (RKB)	Scale: True distance
Patterson 342 (RKB) to Mean Sea Level: 769 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot: Slot #05): -743 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: delaset on 2019-12-27; Database: WA, MFI, EasternUS, Dain

Location Information

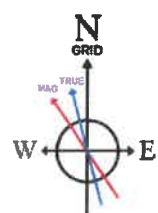
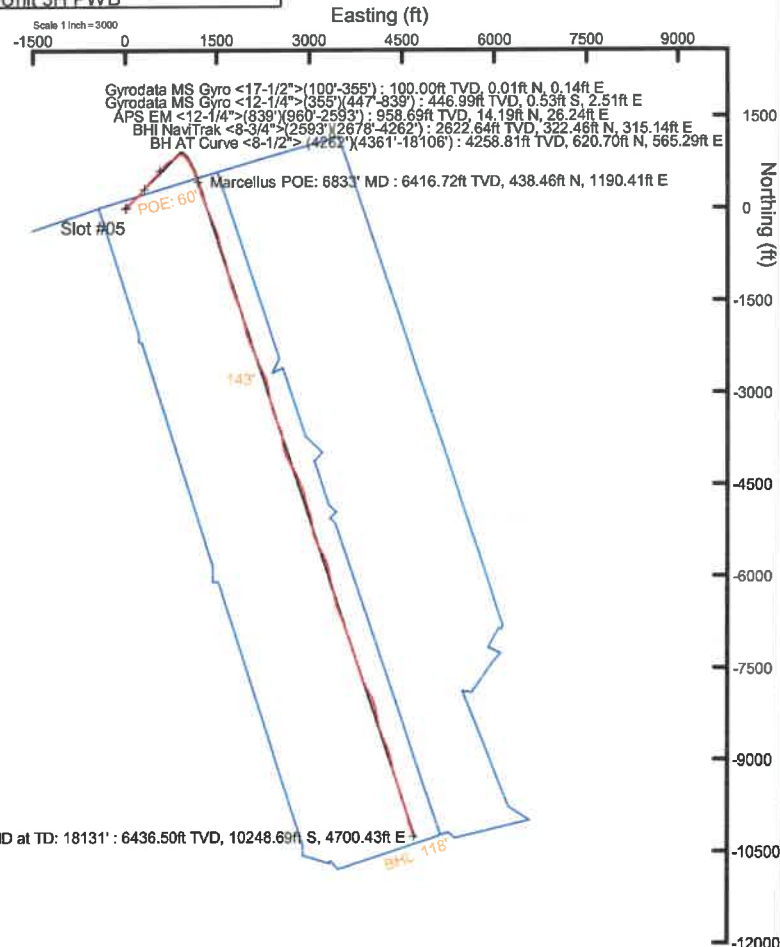
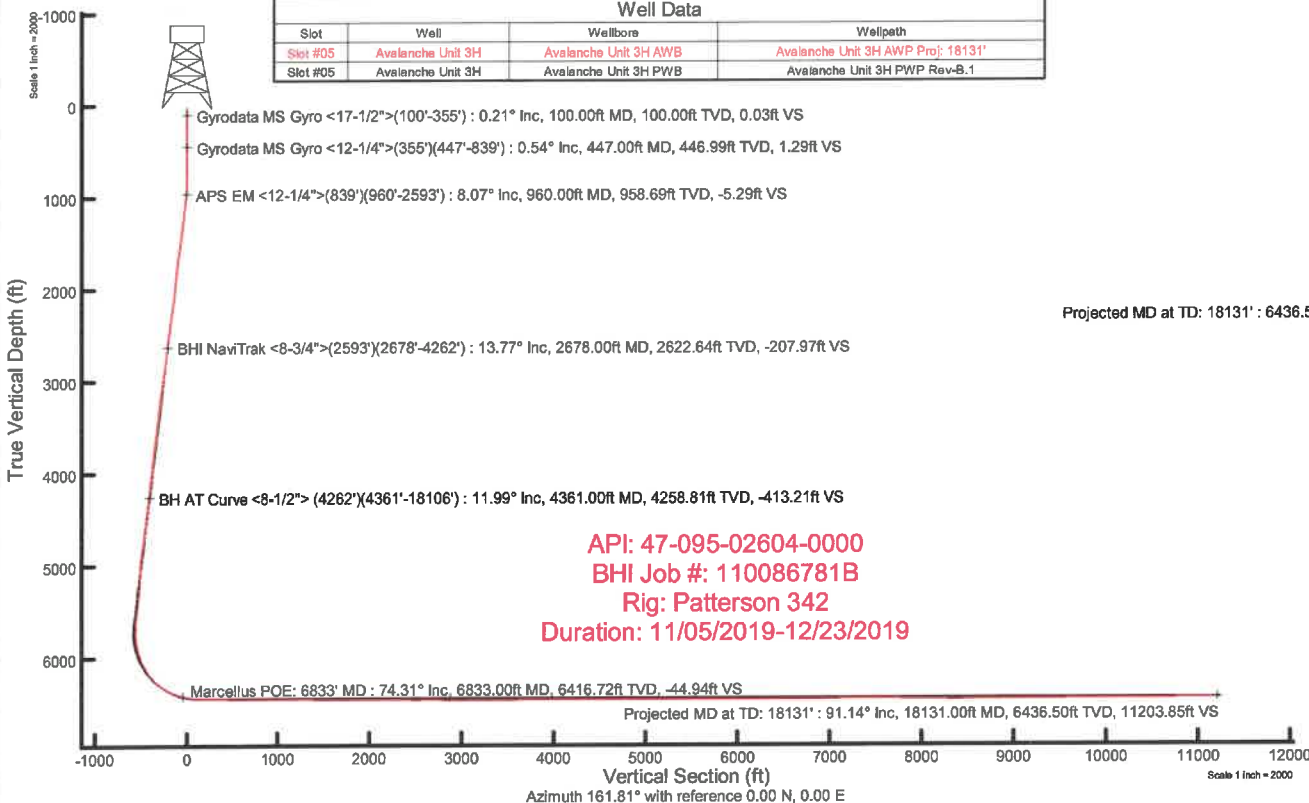
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Colorado East Pad	1700256.680	14308700.560	39°24'10.4301"N	80°47'17.3694"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot #05	0.00	0.00	1700256.680	14308700.560
			39°24'10.4301"N	80°47'17.3694"W
Patterson 342 (RKB) to Ground level (At Slot: Slot #05)	25ft			
Mean Sea Level to Ground level (At Slot: Slot #05)	-743ft			
Patterson 342 (RKB) to Mean Sea Level	788ft			

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	2593.00	14.080	40.050	2540.13	308.72	302.08	2.38	-197.09
Proj. To Bottom	2663.00	14.080	40.050	2608.03	319.76	313.04	0.00	-206.06
Drill Out Casing	2763.00	14.080	40.050	2705.03	338.38	328.69	0.00	-218.86
Hold Tangent	2849.39	15.210	45.225	2788.61	354.41	343.50	2.00	-229.47
Curve KOP	5816.88	15.210	45.225	5652.15	902.75	896.17	0.00	-577.88
POE	6838.03	74.514	161.811	6415.00	450.26	1197.76	8.00	-53.86
Landing Pt.	7031.60	90.000	161.811	6441.00	268.59	1257.45	8.00	137.37
BHL	18120.04	90.000	161.811	6441.00	-10265.79	4718.73	0.00	11225.81

Well Data

Slot	Well	Wellbore	Wellpath
Slot #05	Avalanche Unit 3H	Avalanche Unit 3H AWB	Avalanche Unit 3H AWP Proj: 18131'
Slot #05	Avalanche Unit 3H	Avalanche Unit 3H PWB	Avalanche Unit 3H PWP Rev-B.1



User specified (HDGM) Dip: 66.46° Field: 51906 nT
 Magnetic North is 7.64 degrees West of True North (at 12/13/2019)
 Grid North is 0.13 degrees East of True North
 To correct azimuth from True to Grid subtract 0.13 degrees
 To correct azimuth from Magnetic to Grid subtract 7.77 degrees

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/8/2020
Job End Date:	4/25/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02604-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Avalanche 3H
Latitude:	39.40290000
Longitude:	-80.78816000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,458
Total Base Water Volume (gal):	17,107,029
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
Produced Mixture	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.43428	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.16590	

HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
Legend LD-2990	MultiChem	Friction Reducer					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
Legend LD-2555	MultiChem	Additive					
				Listed Below			

PCL XL error
Error: IllegalOperatorSequence
Operator: 0xe3
Position: 3727

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/8/2020
Job End Date:	4/25/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02604-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Avalanche 3H
Latitude:	39.40290000
Longitude:	-80.78816000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,458
Total Base Water Volume (gal):	17,107,029
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
Produced Mixture	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.43428	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.16590	

HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
Legend LD-2990	MultiChem	Friction Reducer					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
Legend LD-2555	MultiChem	Additive					
				Listed Below			

LD-2950	MultiChem	Friction Reducer					
				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	13.37836	
			Hydrochloric acid	7647-01-0	30.00000	0.03891	
			Complex Amine Compound	Proprietary	60.00000	0.02005	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01299	
			Complex Amine Compound	Proprietary	60.00000	0.00593	
			Guar gum	9000-30-0	100.00000	0.00375	
			Glutaraldehyde	111-30-8	30.00000	0.00251	
			Ethoxylated alcohols	Proprietary	5.00000	0.00167	
			Polyethoxylated fatty amine salt	61791-26-2	30.00000	0.00056	
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00049	
			Surfactant	Proprietary	5.00000	0.00049	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00042	
			Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00033	
			Adipic acid	124-04-9	1.00000	0.00033	
			Methanol	67-56-1	100.00000	0.00033	
			Ammonium persulfate	7727-54-0	100.00000	0.00016	
			Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00010	
			Organic chloridie compound	Proprietary	1.00000	0.00010	
			Ethoxylated alcohols	Proprietary	1.00000	0.00010	
			Ethanol	64-17-5	1.00000	0.00008	

			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007	
			Modified thiourea polymer	Proprietary	30.00000	0.00007	
			Oxylated phenolic resin	Proprietary	30.00000	0.00005	
			Ethoxylated alcohols	Proprietary	5.00000	0.00001	
			Hexadecene	629-73-2	5.00000	0.00001	
			Propargyl alcohol	107-19-7	5.00000	0.00001	
			Acrylamide	79-06-1	0.10000	0.00001	
			Organic salt #1	Proprietary	0.10000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			C.I. pigment Orange 5	3468-63-1	1.00000	0.00000	
			Organic salt #2	Proprietary	0.01000	0.00000	
			Nitrated acetate salt	Proprietary	0.01000	0.00000	
			Organic salt #3	Proprietary	0.01000	0.00000	
			Formaldehyde	50-00-0	0.01000	0.00000	
			Sodium hydroxide	1310-73-2	0.01000	0.00000	
			Sodium glycollate	2836-32-0	0.01000	0.00000	
			Ethylene oxide	75-21-8	0.01000	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)

LATITUDE 39°25'00"

10,784'

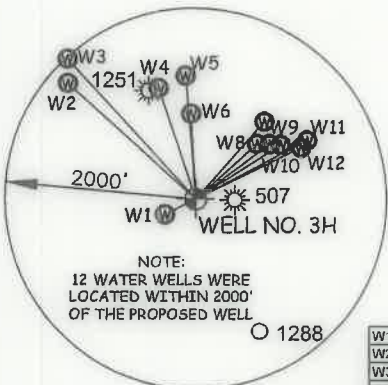
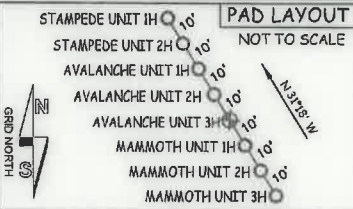
LATITUDE 39°22'30" 6,113' TO BOTTOM HOLE

BH BOTTOM HOLE

Antero Resources Corporation Well No. Avalanche Unit 3H

AS DRILLED DATA: WELL 3H TOP HOLE INFORMATION: N: 331,463ft E: 1,636,002ft LAT: 39°24'10.43" LON: 80°47'17.39" BOTTOM HOLE INFORMATION: N: 321,138ft E: 1,640,531ft LAT: 39°22'29.03" LON: 80°46'17.85" 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: 4,361,519m E: 518,254m BOTTOM HOLE INFORMATION: N: 4,358,396m E: 519,686m



W1	S 63°23' W	359.2'
W2	N 47°45' W	1801.9'
W3	N 42°23' W	1983.8'
W4	N 18°18' W	1224.0'
W5	N 04°30' W	1295.6'
W6	N 02°57' W	893.2'
W7	N 41°39' E	1085.6'
W8	N 48°02' E	886.0'
W9	N 53°22' E	966.3'
W10	N 57°24' E	1057.5'
W11	N 62°09' E	1320.5'
W12	N 63°56' E	1228.5'

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 PRESCRIBED 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 # 17-038WA
DRAWING # AVALANCHE3HAD
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

DOUGLAS R. ROWE P.S. 2202

DATE 09/03/20
OPERATOR'S WELL# AVALANCHE UNIT #3H

- 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.
 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 47 095 02604
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
LOCATION: ELEVATION 743' - AS BUILT WATERSHED McELROY CREEK STATE COUNTY PERMIT
QUADRANGLE TH-SHIRLEY 7.5' BH-WEST UNION 7.5' DISTRICT McELROY COUNTY TYLER

SURFACE OWNER ANTERO RESOURCES CORPORATION ACREAGE 127.86 ACRES +/-
OIL & GAS ROYALTY OWNER B.F. REED ET UX; K & D HOLDINGS, LLC; MARK A. BURNETT; LEASE ACREAGE 130 AC.±; 219.39 AC.±; 256 AC.±;
MELISSA SMITH; R.E. SMITH ET UX; NOBLE ENERGY INC.; GLENN D. SMITH; FANNY D. DAVIS ET AL; 57.63 AC.±; 50.5 AC.±; 55 AC.±; 32 AC.±; 74 AC.±;
UNION NATIONAL BANK OF W.V.; CARL B. & NORMA JEAN PRITCHARD; EDWARD LEWIS CASE; LINDA J. DESCHER; JOHN GEURIN 25.5 AC.±; 32.57 AC.±; 50 AC.±; 76 AC.±; 7 AC.±;
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,436' TVD 18,131' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

McElroy District - Tyler County

TM-Par	Surface Owner
16-08	June Griffin
16-8.1	Roger Griffin
16-8.2	Roger Griffin
16-16	Harry Vannoy
16-17	Charles Straight
16-17.3	Charles Kimball
16-18	Albert Babee
16-19	Todd Orr
19-02	Antero Resources Corp.
19-03	Larry Stevens
19-04	John Owens
19-05	Paul Weekley
19-06	Paul Weekley
19-07	Patricia Montgomery
19-08	John Lewis Jr.
19-09	Robert Walsh
19-10	Judith Malloy
19-27	Harvey Burns
19-42	Anna Barrola
19-45	Terrence Fraser
19-46	Terrence Fraser
19-47	Ronnie Wilson Jr.
19-48	Lloyd Talkington
19-50	Ronald Cumberland
19-51	Randall Anderson
19-52	Harold Vost
19-53.1	Larry Marable
19-61	Kenneth Mason
19-63	Jacqueline Wichman Trust
19-64	Kenneth Mason
19-64.1	Michael Kimball
19-65	Bobby Griffin
19-66	Matthew March
19-67	Smith Morris Trust
19-68	Randall Clujston
19-69	Randall Clujston
19-70	Ronald Cumberland
19-73	Dena Pratt
19-74	Randall Clujston
22-04	Jacqueline Wichman Trust
22-05	William Middleton
22-06	Thomas Allen
22-07	Thomas Allen
22-08	George Kithau
22-10	Thomas Allen
22-12	Terry Dotson
22-12.1	Margaret Dotson
22-13	Warren Putnam
22-13.1	Jacqueline Wichman
Grant District - Doddridge County	
01-01	Steven Reed
04-01	Warren Putnam

99' TO BOTTOM HOLE LONGITUDE 80°45'00"

5,015' LONGITUDE 80°45'00"

LATITUDE 39°25'00"

10,784'

LATITUDE 39°22'30" 6,113' TO BOTTOM HOLE

BH BOTTOM HOLE

Antero Resources Corporation Well No. Avalanche Unit 3H

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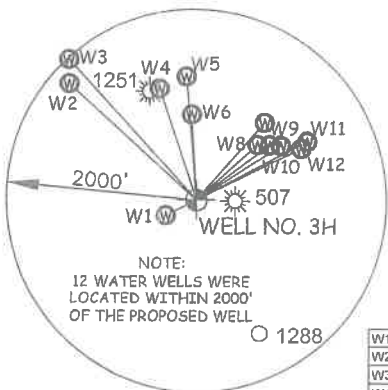
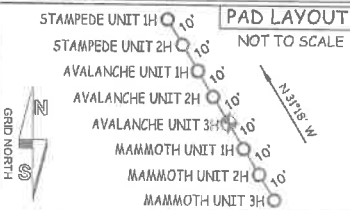


Table with 3 columns: Well ID, S/E coordinates, and distance. Lists wells W1 through W12 with their respective coordinates and distances from the proposed well.

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.



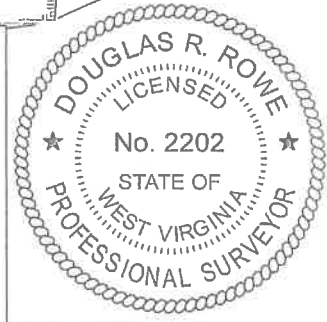
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

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

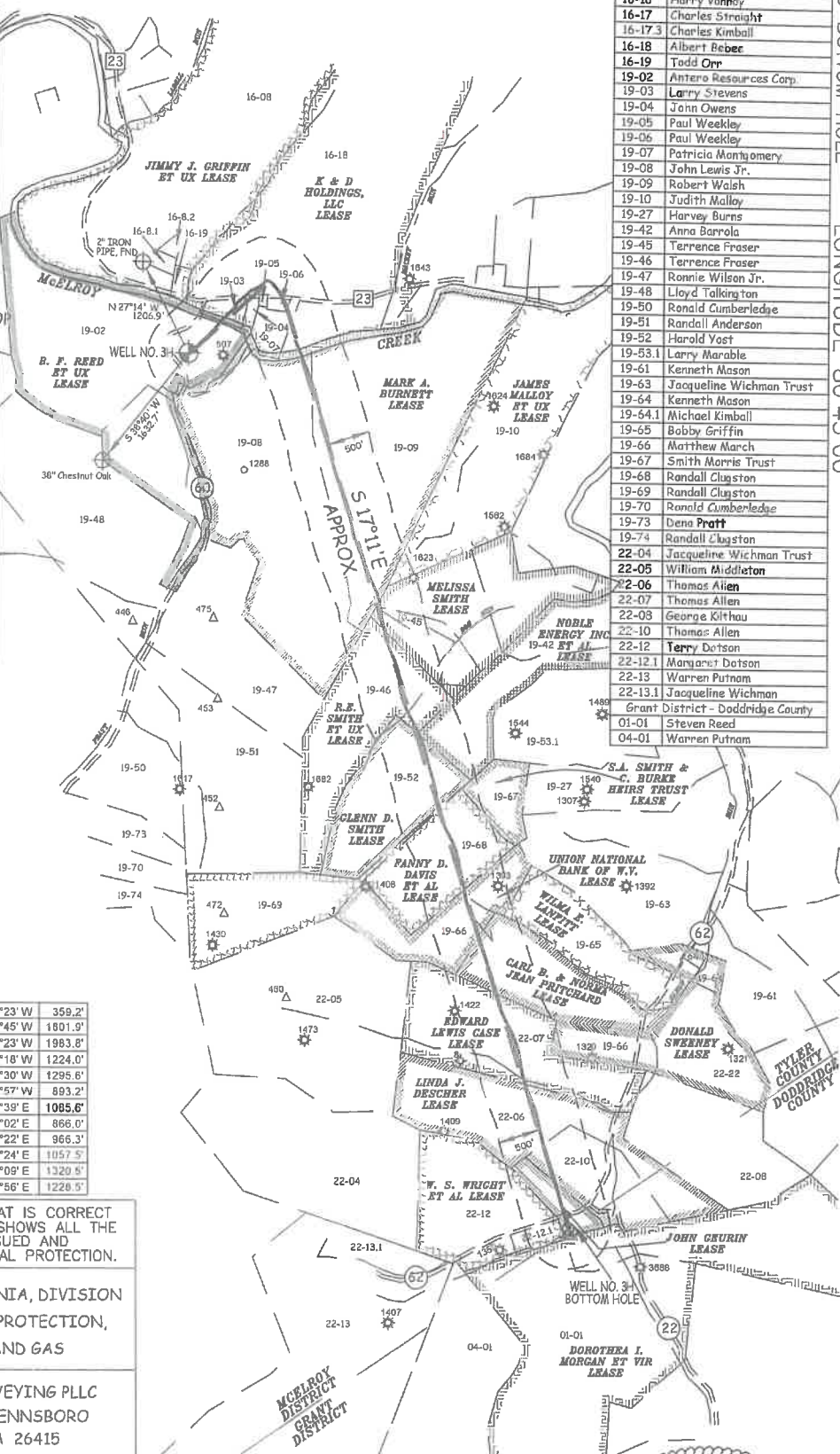
JOB # 17-038WA DRAWING # AVALANCHE3HAD SCALE 1" = 2000' MINIMUM DEGREE OF ACCURACY SUBMETER PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND: Surface Owner Boundary Lines +/-, Interior Surface Tracts +/-, Proposed Well Path, As Drilled Well Path. Signature of Douglas R. Rowe, P.S. 2202, DATE 09/03/20, OPERATOR'S WELL # AVALANCHE UNIT #3H

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. 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.



McElroy District - Tyler County list of well owners and lease numbers, including names like Roger Griffin, Harry Vannoy, Charles Straight, etc.



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02604 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT LOCATION: ELEVATION 743' - AS BUILT WATERSHED McELROY CREEK QUADRANGLE TH - SHIRLEY 7.5' BH - WEST UNION 7.5' DISTRICT McELROY COUNTY TYLER SURFACE OWNER ANTERO RESOURCES CORPORATION ACREAGE 127.86 ACRES +/- OIL & GAS ROYALTY OWNER B.F. REED ET UX; K & D HOLDINGS, LLC; MARK A. BURNETT; MELISSA SMITH; R.E. SMITH ET UX; NOBLE ENERGY INC.; GLENN D. SMITH; FANNY D. DAVIS ET AL; LEASE ACREAGE 130 AC.±; 219.39 AC.±; 256 AC.±; 57.63 AC.±; 50.5 AC.±; 55 AC.±; 32 AC.±; 74 AC.±; UNION NATIONAL BANK OF W.V.; CARL B. & NORMA JEAN PRITCHARD; EDWARD LEWIS CASE; LINDA J. DESCHER; JOHN GEURIN 25.5 AC.±; 32.57 AC.±; 50 AC.±; 76 AC.±; 7 AC.± PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,436' TVD 18,131' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM ADDRESS 1615 WYNNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313 FORM WW-6 DENVER, CO 80202

93' TO BOTTOM HOLE 5,015' LONGITUDE 80°45'00" LONGITUDE 80°45'00"