

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

API 47 - 095 - 02708 County Tyler District Ellsworth
Quad Porter Falls 7.5' Pad Name Margery Pad Field/Pool Name -----
Farm name Kayla Leek Well Number Grapevine Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

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As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4374194m Easting 514646m
Landing Point of Curve Northing 4374296.15m Easting 514568.57m
Bottom Hole Northing 4377574m Easting 513464m

MAR 28 2023
WV Department of
Environmental Protection

Elevation (ft) 1042' 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 9/23/2020 Date drilling commenced 11/14/2020 Date drilling ceased 12/2/2020
Date completion activities began 2/3/2021 Date completion activities ceased 3/16/2021
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 102' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1998' 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:

API 47- 095 - 02708 Farm name Kayla Leek Well number Grapevine Unit 2H

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"	106'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	369'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2599'	New	40#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18462'	New	20#, P-110	N/A	Y
Tubing		2-3/8"	6804'		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	285 sx	15.6	1.18	60	0'	8 Hrs.
Surface	Class A	431 sx	15.6	1.20	92	0'	8 Hrs.
Coal							
Intermediate 1	Class A	882 sx	15.6	1.19	187	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	792 sx (Lead) 2833 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.4 (Lead), 1.26 (Tail)	636	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18481' MD, 6551' TVD (BHL), 6620' (Deepest Point Drilled) Loggers TD (ft) 18481' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

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Kick off depth (ft) 5769'

WV Department of Environmental Protection

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 - 02708 Farm name Kayla Leek Well number Grapevine Unit 2H

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 (bbl)	Amount of Nitrogen/other (units)
*PLEASE SEE ATTACHED EXHIBIT 2						RECEIVED MAR 28 2023 Office of Oil and Gas WV Department of Environmental Protection		

Please insert additional pages as applicable.

API 47- 095 - 02708 Farm name Kayla Leek Well number Grapevine Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6569' (TOP)</u> TVD	<u>6874" (TOP)</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

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 1655 mcfpd Oil 105 bpd NGL --- bpd Water 2351 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 ₂ S, ETC)
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***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

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

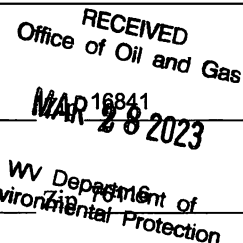
Logging Company Nine Energy Services
Address 6500 West Fwy City Fort Worth State TX

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 Carly Marvel Telephone 303-357-7373
Signature Carly Marvel Title Permitting Agent Date 3/27/2023



API 47-095-02708 Farm Name Kavla Leek Well Number Grapevine Unit 2H

Exhibit 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/3/2021	18356	18309	36	Marcellus
2	2/4/2021	18269.12202	18101.7321	36	Marcellus
3	2/5/2021	18065.85417	17898.4643	36	Marcellus
4	2/6/2021	17862.58631	17695.1964	36	Marcellus
5	2/6/2021	17659.31845	17491.9286	36	Marcellus
6	2/6/2021	17456.0506	17288.6607	36	Marcellus
7	2/7/2021	17252.78274	17085.3929	36	Marcellus
8	2/7/2021	17049.51488	16882.125	36	Marcellus
9	2/8/2021	16846.24702	16678.8571	36	Marcellus
10	2/8/2021	16642.97917	16475.5893	36	Marcellus
11	2/9/2021	16439.71131	16272.3214	36	Marcellus
12	2/10/2021	16236.44345	16069.0536	36	Marcellus
13	2/10/2021	16033.1756	15865.7857	36	Marcellus
14	2/10/2021	15829.90774	15662.5179	36	Marcellus
15	2/11/2021	15626.63988	15459.25	36	Marcellus
16	2/11/2021	15423.37202	15255.9821	36	Marcellus
17	2/12/2021	15220.10417	15052.7143	36	Marcellus
18	2/12/2021	15016.83631	14849.4464	36	Marcellus
19	2/13/2021	14813.56845	14646.1786	36	Marcellus
20	2/14/2021	14610.3006	14442.9107	36	Marcellus
21	2/14/2021	14407.03274	14239.6429	36	Marcellus
22	2/15/2021	14203.76488	14036.375	36	Marcellus
23	2/15/2021	14000.49702	13833.1071	36	Marcellus
24	2/16/2021	13797.22917	13629.8393	36	Marcellus
25	2/17/2021	13593.96131	13426.5714	36	Marcellus
26	2/18/2021	13390.69345	13223.3036	36	Marcellus
27	2/19/2021	13187.4256	13020.0357	36	Marcellus
28	2/19/2021	12984.15774	12816.7679	36	Marcellus
29	2/20/2021	12780.88988	12613.5	36	Marcellus
30	2/20/2021	12577.62202	12410.2321	36	Marcellus
31	2/21/2021	12374.35417	12206.9643	36	Marcellus
32	2/21/2021	12171.08631	12003.6964	36	Marcellus
33	2/22/2021	11967.81845	11800.4286	36	Marcellus
34	2/22/2021	11764.5506	11597.1607	36	Marcellus
35	2/23/2021	11561.28274	11393.8929	36	Marcellus
36	2/23/2021	11358.01488	11190.625	36	Marcellus
37	2/24/2021	11154.74702	10987.3571	36	Marcellus
38	2/24/2021	10951.47917	10784.0893	36	Marcellus
39	2/25/2021	10748.21131	10580.8214	36	Marcellus
40	2/25/2021	10544.94345	10377.5536	36	Marcellus
41	2/26/2021	10341.6756	10174.2857	36	Marcellus
42	2/26/2021	10138.40774	9971.01786	36	Marcellus
43	2/26/2021	9935.139881	9767.75	36	Marcellus
44	2/26/2021	9731.872024	9564.48214	36	Marcellus
45	2/27/2021	9528.604167	9361.21429	36	Marcellus
46	2/27/2021	9325.33631	9157.94643	36	Marcellus
47	2/27/2021	9122.068452	8954.67857	36	Marcellus
48	2/27/2021	8918.800595	8751.41071	36	Marcellus
49	2/28/2021	8715.532738	8548.14286	36	Marcellus
50	2/28/2021	8512.264881	8344.875	36	Marcellus
51	2/28/2021	8308.997024	8141.60714	36	Marcellus
52	3/1/2021	8105.729167	7938.33929	36	Marcellus
53	3/1/2021	7902.46131	7735.07143	36	Marcellus
54	3/1/2021	7699.193452	7531.80357	36	Marcellus
55	3/2/2021	7495.925595	7328.53571	36	Marcellus
56	3/2/2021	7292.657738	7125.26786	36	Marcellus
57	3/2/2021	7089.389881	6922	36	Marcellus

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API 47-095-02708 Farm Name Kavla Leek Well Number Grapevine Unit 2H

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	2/3/2021	68.4	8310	6650	3122	182133	237793	N/A
2	2/4/2021	75.64	8460	5997	3622	406350	321895	N/A
3	2/5/2021	78.28	8174	5666	4095	408031	317914	N/A
4	2/6/2021	77.94	8426	5995	3905	410090	312087	N/A
5	2/6/2021	80.45	8324	5167	4154	410363	309029	N/A
6	2/6/2021	81.54	8309	5532	3966	408400	311237	N/A
7	2/7/2021	80.96	8320	6142	4099.37	409200	314487	N/A
8	2/7/2021	78.96	8266	5984	4063	401630	297489	N/A
9	2/8/2021	79.38	8408	6293	4597	413110	304338	N/A
10	2/8/2021	76.98	8297	5607	4325	407750	302822	N/A
11	2/9/2021	77.51	8366	5936	4338	405720	302462	N/A
12	2/10/2021	79.6	8275	5492	3948	415220	306551	N/A
13	2/10/2021	77.34	8087	5246	3952	405900	302947	N/A
14	2/10/2021	80.39	8202	5329	4030	406547	308312	N/A
15	2/11/2021	81.42	8237	5239	3307	415567	304719	N/A
16	2/11/2021	77.03	7934	5432	3926	409950	298895	N/A
17	2/12/2021	79.88	8038	5653	3947	405910	304003	N/A
18	2/12/2021	78.78	7821	5486	4002	409283	296027	N/A
19	2/13/2021	81.09	8111	8372	3952	413480	299121	N/A
20	2/14/2021	77.81	7892	5611	4523	407400	396793	N/A
21	2/14/2021	80.22	7926	5035	4144	405785	297067	N/A
22	2/15/2021	81.27	7948	5473	4142	412160	301729	N/A
23	2/15/2021	81.53	7821	8238	4124	405440	295059	N/A
24	2/16/2021	84.26	8000	5525	4116	406030	303825	N/A
25	2/17/2021	81.86	7909	4191	3529	406100	299163	N/A
26	2/18/2021	81.02	8084	5619	4111	408962	299413	N/A
27	2/19/2021	84.15	8210	8363	4274	407760	294552	N/A
28	2/19/2021	83.52	7880	8201	4215	406753	297298	N/A
29	2/20/2021	81.34	8007	3875	3726	406900	306180	N/A
30	2/20/2021	84.86	8103	8344	4025	394979	300224	N/A
31	2/21/2021	80.81	7779	5305	4297	406282	295926	N/A
32	2/21/2021	83.93	8063	8622	4571	396259	294382	N/A
33	2/22/2021	81.62	7884	4048	3567	408770	298528	N/A
34	2/22/2021	84.13	7780	5388	4528	410650	296418	N/A
35	2/23/2021	81.31	7741	8282	4557	411970	297836	N/A
36	2/23/2021	84.73	7625	4582	4158	401890	356867	N/A
37	2/24/2021	85.22	7654	6281	4373	406380	294763	N/A
38	2/24/2021	84.71	7898	6261	4215	408060	296479	N/A
39	2/25/2021	83.38	8082	6359	4605	409020	293203	N/A
40	2/25/2021	84.37	8064	6229	4676	406990	296121	N/A
41	2/26/2021	84.19	8195	9038	4510	408920	296172	N/A
42	2/26/2021	80.81	8191	7168	4903	409400	293869	N/A
43	2/26/2021	84.51	7505	5888	4440	411890	292702	N/A
44	2/26/2021	84.88	7640	5653	4627	408420	294407	N/A
45	2/27/2021	84.54	7559	5516	4556	406280	295583	N/A
46	2/27/2021	85.63	7656	6230	4063	407110	289007	N/A
47	2/27/2021	84.52	7563	5623	4420	408740	292016	N/A
48	2/27/2021	84.23	7676	5915	5019	407010	293579	N/A
49	2/28/2021	84.68	7651	6239	4619	408000	289885	N/A
50	2/28/2021	83.96	7717	6465	4795	405730	285839	N/A
51	2/28/2021	84.53	7562	6981	4389	400580	280625	N/A
52	3/1/2021	83.35	6855	6684	4387	404730	293418	N/A
53	3/1/2021	83.68	7037	5970	4273	407790	291212	N/A
54	3/1/2021	83.12	7207	6519	4588	407660	369425	N/A
55	3/2/2021	84.25	7190	6503	4201	405975	291802	N/A
56	3/2/2021	83.88	7136	6101	4054	407420	282290	N/A
57	3/2/2021	81.74	7119	6172	4404	405908	294101	N/A
	AVG=	82	7,898	6,135	4,212	23,000,737	17,189,886	TOTAL

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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	74	134	74	134
Shaley Siltstone	134	194	134	194
Shaley Sandstone	194	344	194	344
Shaley Siltstone	344	734	344	734
Sandy Siltstone	734	854	734	854
Shaley Siltstone, Tr Limestone	854	1,334	854	1,334
Shaley Sandstone	1,334	1,454	1,334	1,454
Sandstone, Tr Shale	1,454	1,634	1,454	1,634
Silty Shale	1,634	1,784	1,634	1,784
Shaley Siltstone	1,784	1,844	1,784	1,844
Sandy Shale	1,844	1,874	1,844	1,874
Shale, Tr Limestone	1,874	1,904	1,874	1,904
Shaley Limestone	1,904	1,898	1,904	1,899
Big Lime	1,924	2,595	1,925	2,595
Fifty Foot Sandstone	2,595	2,765	2,595	2,765
Gordon	2,765	3,072	2,765	3,072
Fifth Sandstone	3,072	3,138	3,072	3,139
Bayard	3,138	3,924	3,139	3,935
Speechley	3,924	4,236	3,935	4,250
Balltown	4,236	4,615	4,250	4,634
Bradford	4,615	5,043	4,634	5,067
Benson	5,043	5,259	5,067	5,284
Alexander	5,259	6,419	5,284	6,525
Sycamore	6,284	6,393	6,346	6,499
Middlesex	6,393	6,490	6,499	6,660
Burkett	6,490	6,513	6,660	6,706
Tully	6,513	6,569	6,706	6,874
Marcellus	6,569	NA	6,874	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.

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LATITUDE 39°32'30"

10,755'

LATITUDE 39°35'00"

←2,858' TO BOTTOM HOLE

Antero Resources Corporation Well No. Grapevine Unit 2H

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 4,374,194m E: 514,646m
BOTTOM HOLE INFORMATION:
N: 4,377,574m E: 513,464m

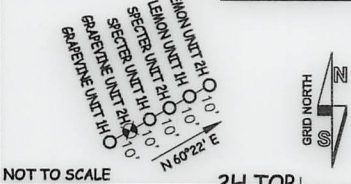
NOTES:
WELL 2H TOP HOLE INFORMATION:
N: 373,255ft E: 1,624,857ft
LAT: 39°31'01.85" LON: 80°49'47.25"
BOTTOM HOLE INFORMATION:
N: 384,413ft E: 1,621,164ft
LAT: 39°32'51.58" LON: 80°50'36.49"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

LINE	BEARING	DISTANCE
L1	N 72°40' W	1638.0'
L2	N 64°54' W	1582.1'
L3	N 61°22' W	1537.8'
L4	N 34°54' W	1512.5'
L5	N 27°19' W	1636.7'
L6	N 21°11' W	1650.6'
L7	N 06°24' W	1392.9'
L8	N 05°00' W	1521.3'
L9	N 00°15' W	1911.8'
L10	N 03°26' E	1913.5'
L11	N 25°08' E	1338.5'
L12	N 49°41' E	1592.6'

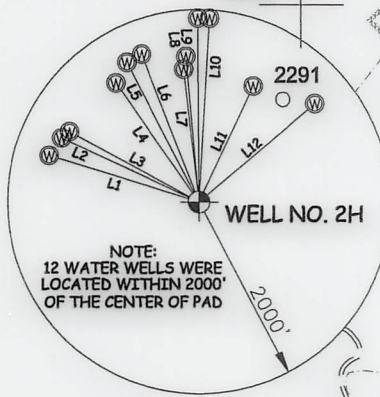
WV NORTH ZONE
GRID NORTH

WELL 2H
BOTTOM HOLE

PAD LAYOUT



2H TOP HOLE



WELL NO. 2H

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

A1-LEE ROY HOWELL D.B. 170408 TM 11-41 1.87 AC
B1-ROBERT D. MILLER D.B. 300401 TM 11-42 2.707 AC
D1-LEE ROY HOWELL D.B. 254937 TM 11-42 0.18 AC
F1-ROBERT D. MILLER D.B. 370832 TM 11-40 3.244 AC
E1-JOHN E. KEPLER D.B. 33842 TM 11-40 1.08 AC
F1-ROBERT D. MILLER D.B. 402206 TM 11-44 4.26 AC
G1-CHARLES R. FERRELL D.B. 210928 TM 11-44 0.5 AC
H1-RICHARD J. FERRELL D.B. 240003 TM 11-42 15.08 AC
I1-CHARLES R. FERRELL D.B. 341726 TM 11-44 1.892 AC
J1-RICHARD J. FERRELL D.B. 422006 TM 11-45 2.4 AC
K1-SARAH E. PITTMAN D.B. 214506 TM 11-45 2.4 AC
L1-RICHARD J. FERRELL D.B. 421878 TM 11-40 1.13 AC

JOB # 20-006WA

DRAWING # GRAPEVINE2HAD

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

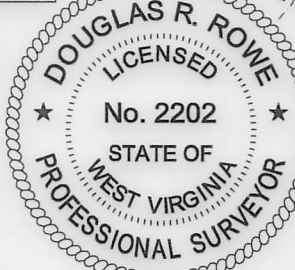
D.R. Rowe

DOUGLAS R. ROWE P.S. 2202

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

DATE 06/09/21

OPERATOR'S WELL # GRAPEVINE UNIT #2H



- NOTES
- 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 HEREON WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 - AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 - WELLS 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 INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL API WELL # 47 - 095 - 02708

(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT

LOCATION: ELEVATION 1,042' AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK

QUADRANGLE PORTER FALLS 7.5' DISTRICT ELLSWORTH COUNTY TYLER

SURFACE OWNER KAYLA LEEK ACREAGE 69.06 ACRES +/-

OIL & GAS ROYALTY OWNER RIDGETOP CAPITAL LP; BRC APPALACHIAN I, LLC; LEASE ACREAGE 69.06 AC.±; 61.73 AC.±;

RICHARD J. FERRELL, ET UX; LOUELLA HOSKINS ET UX; ROBERT D. MILLER ET UX; MELISSA DAWN PILANT; 15.08 AC.±; 1.13 AC.±; 2.71 AC.±; 51.49 AC.±;

PATHFINDER RESOURCES II, LLC; DARWIN MARTIN ET UX; RIDGETOP CAPITAL II, LP; JOHN E. KEPLER; JERRY R. BROWN; 22.5 AC.±; 60.66 AC.±; 70 AC.±; 38 AC.±; 5 AC.±;

CARR FAMILY TRUST; WACO OIL & GAS COMPANY, INC; BRC APPALACHIAN MINERALS I LLC; HERITAGE RESOURCES-MARCELLUS MINERALS, LLC 64.81 AC.±; 50.25 AC.±; 55 AC.±; 61.52 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 6,551' TVD 18,481' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM

ADDRESS 1615 WYNKOOP ST. DENVER, CO 80202 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

12,994' TO BOTTOM HOLE

8,919'

LONGITUDE 80°47'30"

LONGITUDE 80°50'00"

COUNTY NAME

PERMIT

LATITUDE 39°32'30"

10,755'

LATITUDE 39°35'00"

←2,858' TO BOTTOM HOLE

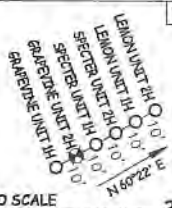
Antero Resources Corporation Well No. Grapevine Unit 2H

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 4,374,194m E: 514,646m
BOTTOM HOLE INFORMATION:
N: 4,377,574m E: 513,464m

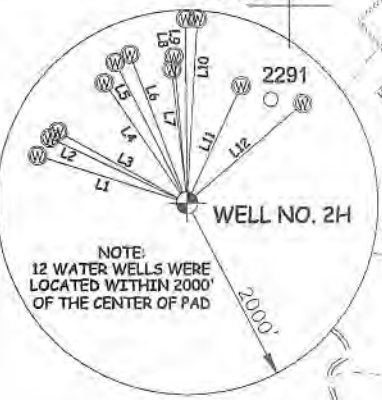
NOTES:
WELL 2H TOP HOLE INFORMATION:
N: 373,255ft E: 1,624,857ft
LAT: 39°31'01.85" LON: 80°49'47.25"
BOTTOM HOLE INFORMATION:
N: 384,413ft E: 1,621,164ft
LAT: 39°32'51.58" LON: 80°50'36.49"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

LINE	BEARING	DISTANCE
L1	N 72°40' W	1638.0'
L2	N 84°54' W	1582.1'
L3	N 61°22' W	1537.8'
L4	N 34°54' W	1512.5'
L5	N 27°19' W	1636.7'
L6	N 21°11' W	1650.6'
L7	N 06°24' W	1392.9'
L8	N 05°00' W	1521.3'
L9	N 00°15' W	1911.8'
L10	N 03°26' E	1913.5'
L11	N 25°08' E	1338.5'
L12	N 49°41' E	1592.6'

PAD LAYOUT



2H-TOP HOLE



2H-BOTTOM HOLE

A1	LEE ROY HOWELL ET UX	1.83 ACRES±
B1	ROBERT D. MILLER ET UX	2.71 ACRES±
D1	LOUELLA HOSKINS ET UX	4.87 ACRES±
E1	MARY C. GRIMES	1.08 ACRES±
F1	ROBERT R. JONES	4.38 ACRES±
G1	CHARLES R. FERRELL ET UX	0.5 ACRES±
H1	LOUELLA HOSKINS ET UX	4.87 ACRES±
I1	CHARLES R. FERRELL ET UX	2.0 ACRES±
K1	ROBERT PITTMAN ET UX	2.4 ACRES±
L1	LOUELLA HOSKINS ET UX	1.13 ACRES±
B	JERRY R. BROWN	5.0 ACRES±
C	ROSE ENTERPRISES, LLC	19.84 ACRES±
D	CHARLES RAY JOBES	470.5 ACRES±
F	HERITAGE RESOURCES-MARCELLUS MINERALS, LLC	61.52 ACRES±
G	BRC APPALACHIAN MINERALS I LLC	55 ACRES±
H	WACO OIL & GAS COMPANY, INC.	50.25 ACRES±
T	FISHER OIL COMPANY	38 ACRES±
J	HELEN M. KARCINSKI ET AL	50.5 ACRES±
K	CARR FAMILY TRUST	64.81 ACRES±
L	FISHER OIL COMPANY	45.67 ACRES±
M	HELEN M. KARCINSKI ET AL	59.9 ACRES±
N	RIDGETOP CAPITAL II, LP	70 ACRES±
O	JOHN E. KEPLER	38 ACRES±
P	DARWIN MARTIN ET UX	60.66 ACRES±
Q	RALPH D. THACKER	64.29 ACRES±
R	PATHFINDER RESOURCES II, LLC	22.5 ACRES±
S	GARY A. SOLE	92.5 ACRES±
T	MELISSA DAWN PILANT	51.49 ACRES±
U	REITA JANE HALL	21.39 ACRES±
V	RICHARD J. FERRELL, ET UX	15.08 ACRES±
W	DAVID LEEK	34.38 ACRES±
X	RIDGETOP CAPITAL LP	69.06 ACRES±
Y	BRC APPALACHIAN MINERALS I LLC	61.73 ACRES±
Z	BRC APPALACHIAN MINERALS I LLC	58.56 ACRES±

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

A1	LEE ROY HOWELL, D.B. 2196, TM 11-41, 1.83 AC
B1	ROBERT D. MILLER, D.B. 2000, TM 11-42, 2.71 AC
C1	LEE ROY HOWELL, D.B. 2000, TM 11-41, 1.83 AC
D1	ROBERT D. MILLER, D.B. 2000, TM 11-42, 2.71 AC
E1	JOHN E. KEPLER, D.B. 2000, TM 11-43, 3.8 AC
F1	ROBERT R. JONES, D.B. 2000, TM 11-44, 4.38 AC
G1	CHARLES R. FERRELL, D.B. 2196, TM 11-41, 0.5 AC
H1	LOUELLA HOSKINS, D.B. 2000, TM 11-42, 4.87 AC
I1	CHARLES R. FERRELL, D.B. 2196, TM 11-41, 2.0 AC
J1	HELEN M. KARCINSKI, D.B. 2000, TM 11-43, 50.5 AC
K1	ROBERT PITTMAN, D.B. 2196, TM 11-41, 2.4 AC
L1	LOUELLA HOSKINS, D.B. 2000, TM 11-42, 1.13 AC

JOB # 20-006WA
DRAWING # GRAPEVINE2HAD
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

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

DATE 06/09/21
OPERATOR'S WELL# GRAPEVINE UNIT #2H

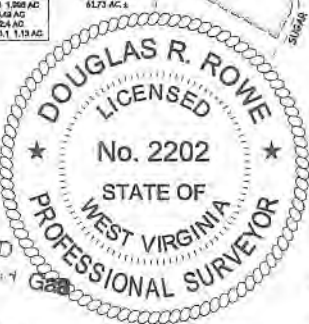
WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 - 095 - 02708
(IF "GAS") PRODUCTION X STORAGE DEE SHALLOW X STATE COUNTY PERMIT
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ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313



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12,994' TO BOTTOM HOLE

8,919'

LONGITUDE 80°47'30"

LONGITUDE 80°50'00"

COUNTY NAME PERMIT

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/3/2021
Job End Date:	3/2/2021
State:	West Virginia
County:	Tyler
API Number:	47-095-02708-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Grapevine 2H
Latitude:	39.51718000
Longitude:	-80.82979000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,620
Total Base Water Volume (gal):	17,916,783
Total Base Non Water Volume:	0



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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 Water Mixture	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.69453	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.17035	

WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
Excelerate LX-15	Halliburton	Friction Reducer					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica, quartz	14808-60-7	100.00000	13.10762	
			Hydrochloric acid	7647-01-0	30.00000	0.03840	
			Complex Amine Compound	Proprietary	60.00000	0.03378	

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			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01689	
			Guar gum	9000-30-0	100.00000	0.00463	
			Surfactant	Proprietary	5.00000	0.00282	
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00282	
			Glutaraldehyde	111-30-8	30.00000	0.00258	
			Ethoxylated alcohols	Proprietary	5.00000	0.00058	
			Organic chloride compound	Proprietary	1.00000	0.00056	
			Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00056	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00043	
			Methanol	67-56-1	100.00000	0.00033	
			Ammonium persulfate	7727-54-0	100.00000	0.00012	
			Ethanol	64-17-5	1.00000	0.00009	
			Modified thiourea polymer	Proprietary	30.00000	0.00007	
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007	
			Oxylated phenolic resin	Proprietary	30.00000	0.00004	
			Hexadecene	629-73-2	5.00000	0.00001	
			Propargyl alcohol	107-19-7	5.00000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Sodium glycolate	2836-32-0	0.01000	0.00001	
			Organic salt #1	Proprietary	0.01000	0.00001	
			Nitrated acetate salt	Proprietary	0.01000	0.00001	
			Sodium hydroxide	1310-73-2	0.01000	0.00001	
			Acrylamide	79-06-1	0.01000	0.00001	
			Formaldehyde	50-00-0	0.01000	0.00001	
			Organic salt #2	Proprietary	0.01000	0.00001	

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 Gas

		C.I. pigment Orange 5	3468-63-1	1.00000	0.00000	
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* 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)

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