



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

June 3, 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 **Dawson Pad**:

- Dierkes Unit 1H-2H
- Kirk Hadley Unit 1H
- Treasury Unit 1H-2H
- Weese Unit 1H-2H

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 "Megan Griffith", with a long horizontal flourish extending to the right.

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 - 02554 County Tyler District Meade
Quad Middlebourne 7.5' Pad Name Kirk Hadley Pad Field/Pool Name -----
Farm name Kirk L. Hadley Well Number Kirk Hadley 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 4368211.139m Easting 505841.531m
Landing Point of Curve Northing 4366782.44m Easting 505892.12m
Bottom Hole Northing 4365792.951m Easting 506269.350m

Elevation (ft) 912' 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 1/30/2019 Date drilling commenced 8/10/2019 Date drilling ceased 9/14/2019
Date completion activities began 2/8/2020 Date completion activities ceased 3/15/2020
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 142', 242', 349' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1225', 1691', 2032' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 527', 681' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

API 47- 095 - 02554 Farm name Kirk L. Hadley Well number Kirk Hadley Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	105'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	477'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2632'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	14309'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6517'		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	240 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	400 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	907 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	320 sx (Lead) 2077 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14328' MD, 6257' TVD (BHL), 6258' (Deepest Point Drilled) Loggers TD (ft) 14328' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5500'

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 - 02554 Farm name Kirk L. Hadley Well number Kirk Hadley Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6118' (TOP)</u> TVD	<u>6719' (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 5391 mcfpd Oil 175 bpd NGL --- bpd Water 494 bpd GAS MEASURED BY Estimated Orifice Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>	<u>BOTTOM</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</u>	<u>DEPTH IN FT</u>	<u>DEPTH IN FT</u>	<u>DEPTH IN FT</u>	
	<u>NAME</u>	<u>TVD</u>	<u>MD</u>	<u>MD</u>	

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Patterson UTI Drilling
Address 1660 Wynkoop Street, Suite 1100 City Denver State CO Zip 80202

Logging Company KLX Energy Services
Address 3040 Post Oak Boulevard City Houston State TX Zip 77056

Cementing Company Halliburton Energy Services
Address 1125 17th Street City Denver State CO Zip 80202

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 [Signature] Title Permitting Agent Date 6/3/20

API 47-095-02554 Farm Name Kirk L. Hadley Well Number Kirk Hadley Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	12/23/2019	14176.4	14131.9	60	Marcellus
2	12/24/2019	14094.84781	13931.5868	60	Marcellus
3	12/24/2019	13896.53465	13733.2737	60	Marcellus
4	12/25/2019	13698.22149	13534.9605	60	Marcellus
5	12/25/2019	13499.90833	13336.6474	60	Marcellus
6	12/26/2019	13301.59518	13138.3342	60	Marcellus
7	12/27/2019	13103.28202	12940.0211	60	Marcellus
8	12/27/2019	12904.96886	12741.7079	60	Marcellus
9	12/27/2019	12706.6557	12543.3947	60	Marcellus
10	12/28/2019	12508.34254	12345.0816	60	Marcellus
11	12/28/2019	12310.02939	12146.7684	60	Marcellus
12	12/29/2019	12111.71623	11948.4553	60	Marcellus
13	12/29/2019	11913.40307	11750.1421	60	Marcellus
14	12/30/2019	11715.08991	11551.8289	60	Marcellus
15	12/30/2019	11516.77675	11353.5158	60	Marcellus
16	12/31/2019	11318.4636	11155.2026	60	Marcellus
17	1/1/2020	11120.15044	10956.8895	60	Marcellus
18	1/1/2020	10921.83728	10758.5763	60	Marcellus
19	1/1/2020	10723.52412	10560.2632	60	Marcellus
20	1/2/2020	10525.21096	10361.95	60	Marcellus
21	1/2/2020	10326.89781	10163.6368	60	Marcellus
22	1/2/2020	10128.58465	9965.32368	60	Marcellus
23	1/3/2020	9930.271491	9767.01053	60	Marcellus
24	1/3/2020	9731.958333	9568.69737	60	Marcellus
25	1/4/2020	9533.645175	9370.38421	60	Marcellus
26	1/4/2020	9335.332018	9172.07105	60	Marcellus
27	1/4/2020	9137.01886	8973.75789	60	Marcellus
28	1/5/2020	8938.705702	8775.44474	60	Marcellus
29	1/5/2020	8740.392544	8577.13158	60	Marcellus
30	1/5/2020	8542.079386	8378.81842	60	Marcellus
31	1/6/2020	8343.766228	8180.50526	60	Marcellus
32	1/6/2020	8145.45307	7982.19211	60	Marcellus
33	1/7/2020	7947.139912	7783.87895	60	Marcellus
34	1/7/2020	7748.826754	7585.56579	60	Marcellus
35	1/7/2020	7550.513596	7387.25263	60	Marcellus
36	1/8/2020	7352.200439	7188.93947	60	Marcellus
37	1/8/2020	7153.887281	6990.62632	60	Marcellus
38	1/8/2020	6955.574123	6792.31316	60	Marcellus
39	1/9/2020	6757.260965	6594	60	Marcellus

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	12/23/2019	78.46	8552	9251	3473	161880	4820.405	N/A
2	12/24/2019	84.07	8026	5916	3882	406320	7357.833	N/A
3	12/24/2019	83.49	7946	5849	4073	398695	7205.667	N/A
4	12/25/2019	85.74	8408	5655	3504	408740	7327.429	N/A
5	12/25/2019	85.16	8106	6161	3426	410080	7292.476	N/A
6	12/26/2019	85.56	7999	5951	3743	406680	7336.976	N/A
7	12/27/2019	84.4	8332	5873	3499	409940	7189.119	N/A
8	12/27/2019	84.66	8029	6253	3883	410060	7264.024	N/A
9	12/27/2019	85.65	8132	5565	3594	407840	7244.786	N/A
10	12/28/2019	84.54	7927	5980	3623	405020	7089.071	N/A
11	12/28/2019	85.25	8137	6500	4009	402260	7002.048	N/A
12	12/29/2019	84.84	8462	5276	3680	401540	7092.119	N/A
13	12/29/2019	83.7	7654	6202	3514	402260	7030.452	N/A
14	12/30/2019	84.83	7948	5987	3438	401350	7067.976	N/A
15	12/30/2019	85.59	7485	6738	3644	401180	7049.405	N/A
16	12/31/2019	85.19	7847	6012	3494	400660	7068.69	N/A
17	1/1/2020	81.21	7602	6369	3714	402900	7024.333	N/A
18	1/1/2020	79.29	7803	5909	3724	399860	7157.69	N/A
19	1/1/2020	79.91	7578	5690	3503	402880	6876.571	N/A
20	1/2/2020	78.4	7380	5493	3363	406980	6962.714	N/A
21	1/2/2020	85.9	8389	5680	3381	407580	7145.952	N/A
22	1/2/2020	80.66	7293	5767	3403	409440	6951.786	N/A
23	1/3/2020	83.7	7694	6275	3497	403640	7141.571	N/A
24	1/3/2020	80.9	7637	5964	3402	403760	6990.762	N/A
25	1/4/2020	80.63	7552	4896	3335	405540	6830.524	N/A
26	1/4/2020	85.72	7855	5931	3260	405800	7113.048	N/A
27	1/4/2020	82.92	7214	5938	3443	406060	6977.667	N/A
28	1/5/2020	84.6	7187	6046	3454	406080	6895.714	N/A
29	1/5/2020	85.94	7448	5793	3441	405260	6911.952	N/A
30	1/5/2020	86.23	7440	6017	3457	403310	6859.619	N/A
31	1/6/2020	85.9	7461	5342	3372	401860	6965.452	N/A
32	1/6/2020	85.56	7563	6436	3337	409660	6884.31	N/A
33	1/7/2020	79.02	6818	6353	3300	402420	6822.31	N/A
34	1/7/2020	85.83	7237	6365	3372	398720	6783.5	N/A
35	1/7/2020	85.79	7260	6103	3064	402720	6899.429	N/A
36	1/8/2020	82.62	6803	6321	3164	402760	6859.81	N/A
37	1/8/2020	85.92	7031	6094	3383	403460	6903.976	N/A
38	1/8/2020	81.37	6682	6096	3159	407480	6853.571	N/A
39	1/9/2020	85.9	6857	6003	2599	405380	6885.548	N/A
	AVG.	83.7	7,682	6,054	3,500	15,132,675	265,251	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	From Surface	From Surface	From Surface	From Surface
Siltstone	75	175	75	175	75	175	75	175
Silty Sandstone	175	295	175	295	175	295	175	295
Siltstone	295	455	295	455	295	455	295	455
Shaly Siltstone	455	555	455	555	455	555	455	555
Siltstone	555	715	555	715	555	715	555	715
Sandstone	715	755	715	755	715	755	715	755
Siltstone	755	985	755	985	755	985	755	985
Silty Sandstone	985	1,095	985	1,095	985	1,095	985	1,095
Sandstone	1,095	1,255	1,095	1,255	1,095	1,255	1,095	1,255
Silty Sandstone	1,255	1,485	1,255	1,485	1,255	1,485	1,255	1,485
Sandy Siltstone	1,485	1,555	1,485	1,555	1,485	1,555	1,485	1,555
Sandstone	1,555	1,625	1,555	1,625	1,555	1,625	1,555	1,625
Siltstone	1,625	1,699	1,625	1,699	1,625	1,755	1,625	1,755
Big Lime	1,724	2,251	1,730	2,298	1,730	2,298	1,730	2,298
Fifty Foot Sandstone	2,251	2,479	2,273	2,533	2,273	2,533	2,273	2,533
Gordon	2,479	2,782	2,508	2,845	2,508	2,845	2,508	2,845
Fifth Sandstone	2,782	2,876	2,820	2,943	2,820	2,943	2,820	2,943
Bayard	2,876	3,710	2,918	3,803	2,918	3,803	2,918	3,803
Speechley	3,710	3,867	3,778	3,965	3,778	3,965	3,778	3,965
Balltown	3,867	4,354	3,940	4,471	3,940	4,471	3,940	4,471
Bradford	4,354	4,662	4,446	4,790	4,446	4,790	4,446	4,790
Benson	4,662	5,038	4,765	5,177	4,765	5,177	4,765	5,177
Alexander	5,038	6,021	5,152	6,278	5,152	6,278	5,152	6,278
Sycamore	5,893	5,996	6,109	6,253	6,109	6,253	6,109	6,253
Middlesex	5,996	6,082	6,253	6,423	6,253	6,423	6,253	6,423
Burkett	6,082	6,106	6,423	6,497	6,423	6,497	6,423	6,497
Tully	6,106	6,118	6,497	6,719	6,497	6,719	6,497	6,719
Marcellus	6,118	NA	6,719	NA	6,719	NA	6,719	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: 47-095-02554 County: Tyler
District: Meade Well No: Kirk Hadley Unit 1H
Farm Name: Kirk L. Hadley
Discharge Date/s From:(MMDDYY) 04/13/20 To: (MMDDYY) 05/13/20
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 765,688
Disposal Option(s) Utilized (write volumes in gallons):

(1) Land Application: 0 (Include a topographical map of the Area.)
(2) UIC: 43,505 Permit No. 3400923821; 3416729543; 3412123995; 3410523619
(3) Offsite Disposal: 205 Site Location: Mud Masters
(4) Reuse: 721,978 Alternate Permit Number: _____
(5) Centralized Facility: 0 Permit No. _____
(6) Other method: 0 (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: Sr. Environmental & Regulatory Manager

Date Completed: 05/28/2020

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.

Gretchen Kohler

Digitally signed by Gretchen Kohler
Date: 2020.05.28 17:18:53 -06'00'

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:	12/23/2019
Job End Date:	1/9/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02554-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Kirk Hadley 1H
Latitude:	39.46337780
Longitude:	-80.93226380
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,252
Total Base Water Volume (gal):	11,981,351
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 Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.60460	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.16332	

OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker											
					Listed Below								
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant											
					Listed Below								
HYDROCHLORI C ACID, 22 BAUME	Halliburton	Solvent											
					Listed Below								
FDP-S1296-17	Halliburton	Acid Corrosion Inhibitor											
					Listed Below								
MC B-8614	Halliburton	Biocide											
					Listed Below								
LD-2950	MultiChem	Friction Reducer											
					Listed Below								
WG-36 GELLING AGENT	Halliburton	Gelling Agent											
					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					13.21336		
				Hydrochloric acid	7647-01-0	30.00000					0.04098		
				Complex Amine Compound	Proprietary	60.00000					0.01844		

				Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.00922	
				Guar gum	9000-30-0	100.00000	0.00606	
				Glutaraldehyde	111-30-8	30.00000	0.00249	
				Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00041	
				Methanol	67-56-1	100.00000	0.00033	
				Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00031	
				Ethoxylated alcohols	Proprietary	1.00000	0.00031	
				Adipic acid	124-04-9	1.00000	0.00031	
				Ammonium persulfate	7727-54-0	100.00000	0.00013	
				Ethanol	64-17-5	1.00000	0.00008	
				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	
				Ethoxylated alcohols	Proprietary	5.00000	0.00001	
				Propargyl alcohol	107-19-7	5.00000	0.00001	
				Hexadecene	629-73-2	5.00000	0.00001	
				Phosphoric acid	7664-38-2	0.10000	0.00001	
				C.I. pigment Orange 5	3468-63-1	1.00000	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)

ANTERO RESOURCES CORPORATION

Location: Tyler County, WV
 Field: Tyler

Slot: Slot #09
 Well: Kirk Hadley Unit 1H
 Wellbore: Kirk Hadley Unit 1H PWB

Plot reference wellbore is Kirk Hadley Unit 1H PWB Rev-A.0
True vertical depths are referenced to Patterson 342 (RKB)
Measured depths are referenced to Patterson 342 (RKB)
Patterson 342 (RKB) to Mean Sea Level: 937 feet
Mean Sea Level to Ground level (At Slot #09): -912 feet
Coordinates are in feet referenced to Slot

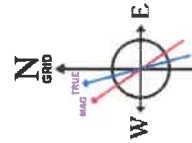
Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Kirk Hadley Pad	1659520.650	14330570.820	80°55'58.320"W
Slot	Local N (ft)	Local E (ft)	Local S (ft)
Slot #09	76.67	13.55	1659534.222
Patterson 342 (RKB) to Ground level (At Slot #09)	261		
Mean Sea Level to Ground level (At Slot #09)	-912ft		
Patterson 342 (RKB) to Mean Sea Level	937ft		

Well Profile Data						
Design Comment	MD (ft)	Inc (°)	Az (°)	Local N (ft)	Local E (ft)	VS (ft)
Tie On	5683.00	26.290	165.210	5712.07	-146.41	-1236.95
Pro. To Bottom	5960.00	31.480	177.270	5779.49	-163.51	-1237.54
End of 3rd Arc	6170.04	42.386	168.201	5947.25	-308.08	-1229.39
POE	6505.29	72.014	161.226	6127.00	-575.85	-1144.20
Landing Pt.	6730.12	90.000	161.226	6162.00	-785.23	-1073.03
BHL	14292.88	90.000	161.226	6162.00	-7945.82	1360.95

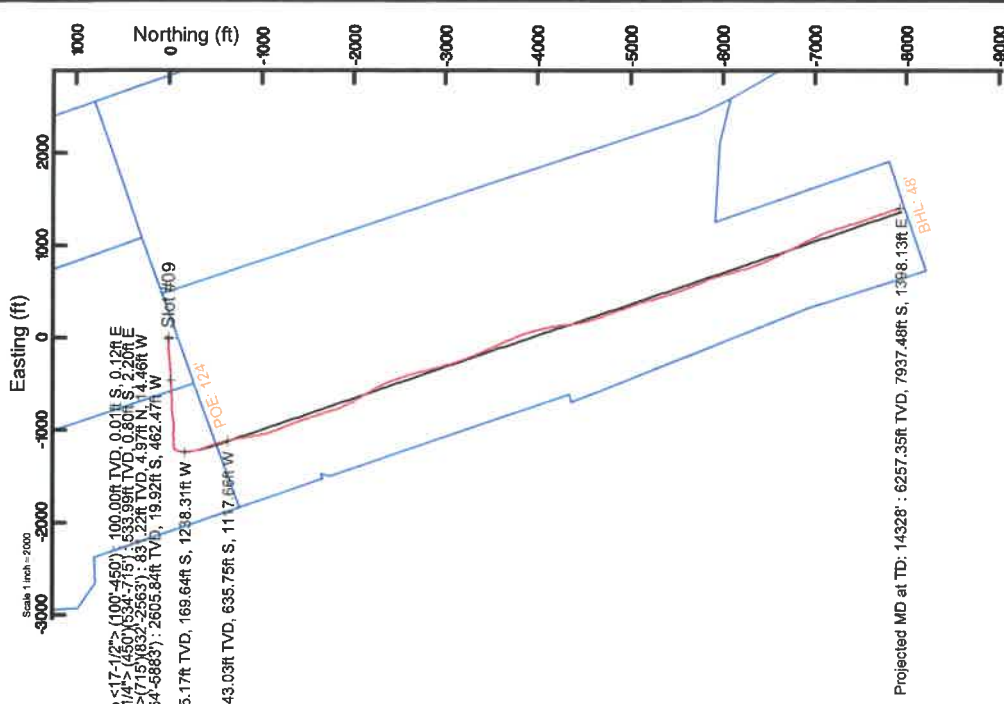
Gyrodata MS Gyro <17-1/2"> (100'-450') : 0.18° Inc, 100.00ft MD, 100.00ft TVD, 0.05ft VS
 Gyrodata MS Gyro <12-1/4"> (450')(534'-715') : 0.20° Inc, 534.00ft MD, 533.99ft TVD, 1.46ft VS
 WFT EM <12-1/4"> (715')(832'-2563') : 7.60° Inc, 832.00ft MD, 831.22ft TVD, -9.35ft VS

Well Data		
Slot	Well	Wellbore
Slot #09	Kirk Hadley Unit 1H	Kirk Hadley Unit 1H AWB
Slot #09	Kirk Hadley Unit 1H	Kirk Hadley Unit 1H PWB
		Kirk Hadley Unit 1H PWP Rev-A.0

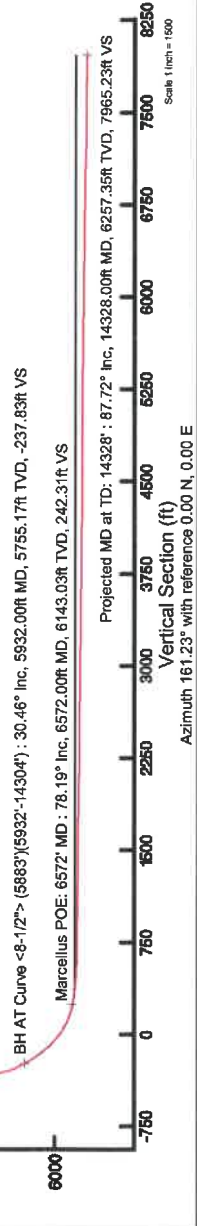
WFT EM <8-3/4"> (2563')(2664'-5883') : 14.40° Inc, 2664.00ft MD, 2605.84ft TVD, -129.95ft VS
 BH AT Curve <8-1/2"> (5883')(5932'-14304') : 30.46° Inc, 5932.00ft MD, 5755.17ft TVD, -237.83ft VS
 Marcellus POE: 6572' MD : 78.19° Inc, 6572.00ft MD, 6143.03ft TVD, 242.31ft VS

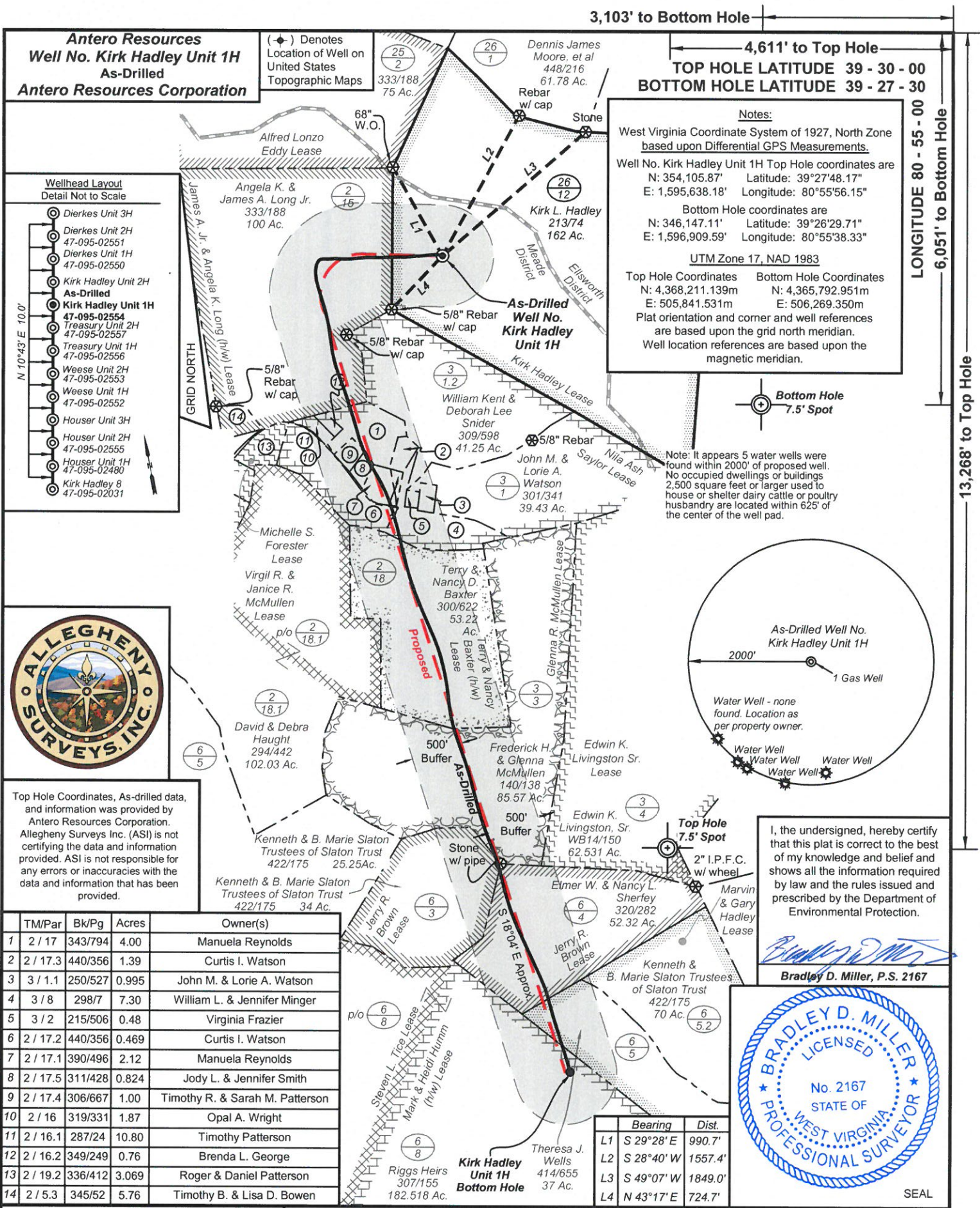


Users specified (upcom) Dir: 68.58° Field: 51748 AT
 Magnetic North is 7.64 degrees East of True North (at 9/7/2019)
 Grid North is 0.04 degrees East of True North
 To correct azimuth from True to Grid subtract 0.04 degrees
 To correct azimuth from Magnetic to Grid subtract 68.58 degrees



API: 47-095-02554-0000
 BHI Job #: 109995030A
 Rig: Patterson 342
 Duration: 09/10/2019-09/12/2019





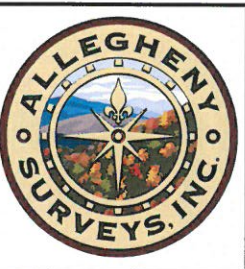
Antero Resources
Well No. Kirk Hadley Unit 1H
As-Drilled
Antero Resources Corporation

(+/-) Denotes
 Location of Well on
 United States
 Topographic Maps

3,103' to Bottom Hole
 4,611' to Top Hole
TOP HOLE LATITUDE 39 - 30 - 00
BOTTOM HOLE LATITUDE 39 - 27 - 30

Notes:
 West Virginia Coordinate System of 1927, North Zone
 based upon Differential GPS Measurements.
 Well No. Kirk Hadley Unit 1H Top Hole coordinates are
 N: 354,105.87' Latitude: 39°27'48.17"
 E: 1,595,638.18' Longitude: 80°55'56.15"
 Bottom Hole coordinates are
 N: 346,147.11' Latitude: 39°26'29.71"
 E: 1,596,909.59' Longitude: 80°55'38.33"
UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,368,211.139m N: 4,365,792.951m
 E: 505,841.531m E: 506,269.350m
 Plat orientation and corner and well references
 are based upon the grid north meridian.
 Well location references are based upon the
 magnetic meridian.

- Wellhead Layout**
 Detail Not to Scale
- Dierkes Unit 3H
 - Dierkes Unit 2H 47-095-02551
 - Dierkes Unit 1H 47-095-02550
 - Kirk Hadley Unit 2H
 - **Kirk Hadley Unit 1H 47-095-02554**
 - Treasury Unit 2H 47-095-02557
 - Treasury Unit 1H 47-095-02556
 - Weese Unit 2H 47-095-02553
 - Weese Unit 1H 47-095-02552
 - Houser Unit 3H
 - Houser Unit 2H 47-095-02555
 - Houser Unit 1H 47-095-02460
 - Kirk Hadley 8 47-095-02031

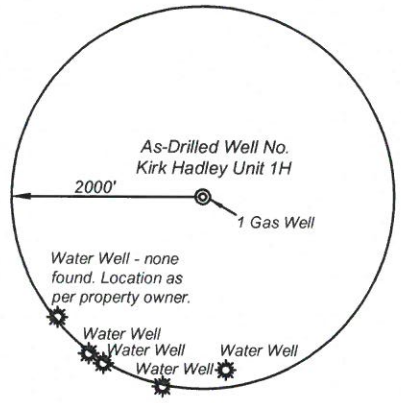


Top Hole Coordinates, As-drilled data, and information was provided by Antero Resources Corporation. Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

TM/Par	Bk/Pg	Acres	Owner(s)	
1	2 / 17	343/794	4.00	Manuela Reynolds
2	2 / 17.3	440/356	1.39	Curtis I. Watson
3	3 / 1.1	250/527	0.995	John M. & Lorie A. Watson
4	3 / 8	298/7	7.30	William L. & Jennifer Minger
5	3 / 2	215/506	0.48	Virginia Frazier
6	2 / 17.2	440/356	0.469	Curtis I. Watson
7	2 / 17.1	390/496	2.12	Manuela Reynolds
8	2 / 17.5	311/428	0.824	Jody L. & Jennifer Smith
9	2 / 17.4	306/667	1.00	Timothy R. & Sarah M. Patterson
10	2 / 16	319/331	1.87	Opal A. Wright
11	2 / 16.1	287/24	10.80	Timothy Patterson
12	2 / 16.2	349/249	0.76	Brenda L. George
13	2 / 19.2	336/412	3.069	Roger & Daniel Patterson
14	2 / 5.3	345/52	5.76	Timothy B. & Lisa D. Bowen

Bottom Hole 7.5' Spot

Note: It appears 5 water wells were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.



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.

Bradley D. Miller
Bradley D. Miller, P.S. 2167



	Bearing	Dist.
L1	S 29°28' E	990.7'
L2	S 28°40' W	1557.4'
L3	S 49°07' W	1849.0'
L4	N 43°17' E	724.7'

FILE NO: 219-54-M-16
 DRAWING NO: Kirk Hadley 1H-As-Drilled
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY:
 Submeter
 PROVEN SOURCE OF ELEVATION:
 WVDOT, Harrisville, WV

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: April 23 20 20
 OPERATOR'S WELL NO. Kirk Hadley Unit 1H
 API WELL NO
 47 - 095 - 02554
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: As-Built 912' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Middlebourne
 DISTRICT: Meade COUNTY: Tyler 55; 100; 202;
 SURFACE OWNER: Kirk L. Hadley Glenna R. McMullen; Nila Ash Saylor; 125.93; 119;
 ROYALTY OWNER: Kirk Hadley; Angela K. & James A. Long Jr. (h/w); Jerry R. Brown (2); Terry & Nancy Baxter (h/w); Mark & Heidi Humm (h/w); ACREAGE: 162 85.57; 166.09;
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,257' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 14,328' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313