

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

API 47-095-02689 County Tyler District Ellsworth
Quad Shirley & Porter Falls Pad Name Blizzard Field/Pool Name -----
Farm name Roger D Blizzard & Ruth E Spencer Well Number Kerns 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Office 80202 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 4372176m Easting 512873m
Landing Point of Curve Northing 4372629.43m Easting 513550.84m
Bottom Hole Northing 4377137m Easting 512016m

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Elevation (ft) 1004' 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 3/20/2020 Date drilling commenced 5/24/2020 Date drilling ceased 8/1/2020
Date completion activities began 9/25/2020 Date completion activities ceased 10/28/2020
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 16' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1430', 1813' 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

APPROVED

Reviewed by: [Signature]
3/13/23

API 47-095 - 02689 Farm name Roger D Blizzard & Ruth E Spencer Well number Kerns 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"	80'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	488'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2753'	New	36#, K-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	23273'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7353'		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	204 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	566 sx	15.6	1.20	635	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1066 sx	15.6	1.19	1082	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	792 sx (Lead) 3573 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.4 (Lead), 1.6 (Tail)	3003	~500' into Intermediate Casing	8 Hrs.
Tubing							

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Drillers TD (ft) 23319' MD, 6438' TVD (BHL), 6543' (Deepest Point Drilled) Loggers TD (ft) 23319' MD

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

Plug back procedure N/A

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Kick off depth (ft) 6375'

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

SMY
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API 47-095 - 02689 Farm name Roger D Blizzard & Ruth E Spencer Well number Kerns 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.

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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.

*SMW
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API 47- 095 - 02689 Farm name Roger D Blizzard & Ruth E Spencer Well number Kerns 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6496' (TOP)</u>	<u>TVD</u>	<u>7420' (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 1234 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 16884 mcfpd Oil 509 bpd NGL --- bpd Water 509 bpd GAS MEASURED BY Estimated Orifice Pilot

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

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

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

Logging Company KLX Energy
Address 1415 Louisiana St, Suite 2900 City Houston State TX Zip 77002

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 2/6/2023

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

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2/3/23*

Exhibit 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9/25/2020	23200.3	23156.2	60	Marcellus
2	9/25/2020	23117.48504	22951.9103	60	Marcellus
3	9/26/2020	22916.3953	22750.8205	60	Marcellus
4	9/26/2020	22715.30556	22549.7308	60	Marcellus
5	9/26/2020	22514.21581	22348.641	60	Marcellus
6	9/27/2020	22313.12607	22147.5513	60	Marcellus
7	9/27/2020	22112.03632	21946.4615	60	Marcellus
8	9/27/2020	21910.94658	21745.3718	60	Marcellus
9	9/28/2020	21709.85684	21544.2821	60	Marcellus
10	9/28/2020	21508.76709	21343.1923	60	Marcellus
11	9/28/2020	21307.67735	21142.1026	60	Marcellus
12	9/29/2020	21106.58761	20941.0128	60	Marcellus
13	9/29/2020	20905.49786	20739.9231	60	Marcellus
14	9/29/2020	20704.40812	20538.8333	60	Marcellus
15	9/30/2020	20503.31838	20337.7436	60	Marcellus
16	9/30/2020	20302.22863	20136.6538	60	Marcellus
17	10/1/2020	20101.13889	19935.5641	60	Marcellus
18	10/1/2020	19900.04915	19734.4744	60	Marcellus
19	10/1/2020	19698.9594	19533.3846	60	Marcellus
20	10/2/2020	19497.86966	19332.2949	60	Marcellus
21	10/2/2020	19296.77991	19131.2051	60	Marcellus
22	10/3/2020	19095.69017	18930.1154	60	Marcellus
23	10/3/2020	18894.60043	18729.0256	60	Marcellus
24	10/3/2020	18693.51068	18527.9359	60	Marcellus
25	10/4/2020	18492.42094	18326.8462	60	Marcellus
26	10/4/2020	18291.3312	18125.7564	60	Marcellus
27	10/5/2020	18090.24145	17924.6667	60	Marcellus
28	10/5/2020	17889.15171	17723.5769	60	Marcellus
29	10/5/2020	17688.06197	17522.4872	60	Marcellus
30	10/6/2020	17486.97222	17321.3974	60	Marcellus
31	10/6/2020	17285.88248	17120.3077	60	Marcellus
32	10/6/2020	17084.79274	16919.2179	60	Marcellus
33	10/7/2020	16883.70299	16718.1282	60	Marcellus
34	10/7/2020	16682.61325	16517.0385	60	Marcellus
35	10/8/2020	16481.5235	16315.9487	60	Marcellus
36	10/8/2020	16280.43376	16114.859	60	Marcellus
37	10/9/2020	16079.34402	15913.7692	60	Marcellus
38	10/9/2020	15878.25427	15712.6795	60	Marcellus
39	10/9/2020	15677.16453	15511.5897	60	Marcellus
40	10/10/2020	15476.07479	15310.5	60	Marcellus
41	10/10/2020	15274.98504	15109.4103	60	Marcellus
42	10/10/2020	15073.8953	14908.3205	60	Marcellus
43	10/11/2020	14872.80556	14707.2308	60	Marcellus
44	10/11/2020	14671.71581	14506.141	60	Marcellus
45	10/11/2020	14470.62607	14305.0513	60	Marcellus
46	10/12/2020	14269.53632	14103.9615	60	Marcellus
47	10/12/2020	14068.44658	13902.8718	60	Marcellus
48	10/13/2020	13867.35684	13701.7821	60	Marcellus
49	10/13/2020	13666.26709	13500.6923	60	Marcellus
50	10/13/2020	13465.17735	13299.6026	60	Marcellus
51	10/13/2020	13264.08761	13098.5128	60	Marcellus
52	10/13/2020	13062.99786	12897.4231	60	Marcellus
53	10/13/2020	12861.90812	12696.3333	60	Marcellus
54	10/14/2020	12660.81838	12495.2436	60	Marcellus
55	10/14/2020	12459.72863	12294.1538	60	Marcellus
56	10/14/2020	12258.63889	12093.0641	60	Marcellus
57	10/14/2020	12057.54915	11891.9744	60	Marcellus
58	10/15/2020	11856.4594	11690.8846	60	Marcellus
59	10/15/2020	11655.36966	11489.7949	60	Marcellus
60	10/15/2020	11454.27991	11288.7051	60	Marcellus
61	10/15/2020	11253.19017	11087.6154	60	Marcellus
62	10/15/2020	11052.10043	10886.5256	60	Marcellus
63	10/16/2020	10851.01068	10685.4359	60	Marcellus
64	10/16/2020	10649.92094	10484.3462	60	Marcellus
65	10/16/2020	10448.8312	10283.2564	60	Marcellus
66	10/16/2020	10247.74145	10082.1667	60	Marcellus
67	10/16/2020	10046.65171	9881.07692	60	Marcellus
68	10/16/2020	9845.561966	9679.98718	60	Marcellus
69	10/17/2020	9644.472222	9478.89744	60	Marcellus
70	10/17/2020	9443.382479	9277.80769	60	Marcellus
71	10/17/2020	9242.292735	9076.71795	60	Marcellus
72	10/17/2020	9041.202991	8875.62821	60	Marcellus
73	10/18/2020	8840.113248	8674.53846	60	Marcellus
74	10/18/2020	8639.023504	8473.44872	60	Marcellus
75	10/18/2020	8437.933761	8272.35897	60	Marcellus
76	10/18/2020	8236.844017	8071.26923	60	Marcellus
77	10/18/2020	8035.754274	7870.17949	60	Marcellus
78	10/18/2020	7834.66453	7669.08974	60	Marcellus
79	10/18/2020	7633.574786	7468	60	Marcellus

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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	9/25/2020	84.21	10683	7112	4050	169900	5594.1905	N/A
2	9/25/2020	85.37	10085	6136	4408	404620	7366.6667	N/A
3	9/26/2020	87.05	9943	7925	4353	405440	7350.2619	N/A
4	9/26/2020	83.85	10084	7735	4447	400530	7327.3333	N/A
5	9/26/2020	84.75	9806	5282	4099	407310	7334.7143	N/A
6	9/27/2020	81.68	10082	6717	4028	407700	7136.2143	N/A
7	9/27/2020	89.22	9982	10140	4386	404080	7276.2619	N/A
8	9/27/2020	88.61	9911	4094	4434	413330	7605.6905	N/A
9	9/28/2020	89.94	9751.88	7580.03	4094.57	410198	7272.2857	N/A
10	9/28/2020	93.96	9980	8162	4450	405620	7175.9048	N/A
11	9/28/2020	89.57	10011	5181	4302	413430	7338.2381	N/A
12	9/29/2020	89.55	10047	9596	4127	414260	7511.8095	N/A
13	9/29/2020	90.14	10077	6209	4476	412230	7088.3571	N/A
14	9/29/2020	86.81	10000.15	4990	3838	412060	7100.881	N/A
15	9/30/2020	90.11	10044	5383	4196	419630	6982.6429	N/A
16	9/30/2020	94.7	10018	5487	4137	404710	7152.3333	N/A
17	10/1/2020	91.41	9815	4635	3695.16	414220	7059.9048	N/A
18	10/1/2020	94.19	10045	5370	4048	412540	7100.3571	N/A
19	10/1/2020	87.95	9699	5337	3902	416520	7341.9524	N/A
20	10/2/2020	90.99	9874	5380	4048	420100	7115.2857	N/A
21	10/2/2020	92.04	10056	10179	4096	417630	7085.119	N/A
22	10/3/2020	92.74	9616	4496	4240	412240	7010.0952	N/A
23	10/3/2020	84.89	10038	10414	3701	418830	6872.0714	N/A
24	10/3/2020	91.2	9840	5164	4006	417020	6994.2857	N/A
25	10/4/2020	90.97	10033	10357	4128	418730	6862.881	N/A
26	10/4/2020	91.74	9704	5404	3632	414160	7013.6667	N/A
27	10/5/2020	90.68	9762	5098	3933	419790	6920.7143	N/A
28	10/5/2020	92.3	9295	9825	4522	419330	6897.095	N/A
29	10/5/2020	95.63	9787	10704	3835	418620	6815.095	N/A
30	10/6/2020	94.27	9571	4499	3890	415270	6915.476	N/A
31	10/6/2020	93.59	9721	9133	3921	404730	6979.738	N/A
32	10/6/2020	94.13	9549	5603	4113	408300	6967.976	N/A
33	10/7/2020	69.18	9069	8834	4217	408100	8929.762	N/A
34	10/7/2020	95.83	9725	4696	3522	414780	6930.5	N/A
35	10/8/2020	94.09	9700	9725	3727	418460	6833.476	N/A
36	10/8/2020	93.55	9115	5514	4333	413150	7068.619	N/A
37	10/9/2020	90.72	9780	9249	3682	415640	6850.31	N/A
38	10/9/2020	92.74	9087	4827	4110	407190	6848.167	N/A
39	10/9/2020	95.27	8910	9138	3676	414350	6750.69	N/A
40	10/10/2020	96.73	9199	5503	3971	412670	6803.571	N/A
41	10/10/2020	96.54	9043	8904	3790	417230	6902.405	N/A
42	10/10/2020	96.35	9005	5733	3752	414550	6877.643	N/A
43	10/11/2020	96.29	8923	9893	4004	416000	6720.857	N/A
44	10/11/2020	97.09	9000	5579	3976	418660	6921.429	N/A
45	10/11/2020	94.93	8808	9145	4051	415380	6696.643	N/A
46	10/12/2020	96.29	8954	5508	3950.06	413460	6715.881	N/A
47	10/12/2020	93.81	8893	9324	4412	415810	6707.881	N/A
48	10/13/2020	95.33	9083	6025	4237	413080	6799.119	N/A
49	10/13/2020	76.23	10003	10699	5206	420920	7881.167	N/A
50	10/13/2020	96.25	8956	4865	4114	415580	6879.714	N/A
51	10/13/2020	93.44	8855	8346	4073	421240	6978.548	N/A
52	10/13/2020	95.03	8829	5951	4224	418560	6864.714	N/A
53	10/13/2020	93.26	9069	8585	4053	416900	6666.81	N/A
54	10/14/2020	96.21	8619	5765	3942	418510	6850.405	N/A
55	10/14/2020	94.23	8982	8689	3873	420030	6703.976	N/A
56	10/14/2020	89.73	8436	5898	3736	415380	6709.024	N/A
57	10/14/2020	91.96	8728	9259	3696	406310	6724.762	N/A
58	10/15/2020	96.22	8737	4685	3988	405980	6809.833	N/A
59	10/15/2020	73.44	9641	9095	5845	408400	8145.976	N/A
60	10/15/2020	97.21	8873	5749	4097	407770	6716.167	N/A
61	10/15/2020	90.24	8279.82	8275.45	3995.55	407610	6635.31	N/A
62	10/15/2020	97.11	8395	5732	3863	405860	6685.881	N/A
63	10/16/2020	95.11	8681	8252	4173	404940	6603.333	N/A
64	10/16/2020	96.58	8642	5817	4102	407440	6716.262	N/A
65	10/16/2020	93.48	8292	9512	3667	412600	6695.286	N/A
66	10/16/2020	96.14	7835	5791	4049	411390	6747.19	N/A
67	10/16/2020	97.04	8233	8322	4299	409780	6587.881	N/A
68	10/16/2020	96.14	8233	6374	4534	409090	6675.429	N/A
69	10/17/2020	96.66	8117	8699	3975	411340	6511.143	N/A
70	10/17/2020	97.07	7961	6341	4380	412690	6614.214	N/A
71	10/17/2020	97.7	7986	6467	4395	408510	6600.048	N/A
72	10/17/2020	97.51	7768	5723	4087	410960	6710.31	N/A
73	10/18/2020	96.97	7843	5776	3804	412020	6591.024	N/A
74	10/18/2020	97.55	8007	6395	3930	408900	6545.357	N/A
75	10/18/2020	96.64	7647	5820	4160	412060	6574.381	N/A
76	10/18/2020	95.24	7645.36	6055.98	4142.87	410720	6547.548	N/A
77	10/18/2020	95.58	7548	5904	4063	409680	6547.571	N/A
78	10/18/2020	96.29	7469	4331	3971	414020	6606.881	N/A
79	10/18/2020	93.63	7533	5577	4345	411340	6537.952	N/A
	AVG=	92	9,152	6,958	4,097	32,348,118	547,581	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
Shaley Sandstone	74	214	74	214
Sandy Shale	214	364	214	364
Shaley Sandstone	364	514	364	514
Limestone, Tr Shale	514	544	514	544
Sandstone	544	664	544	664
Limestone, Tr Coal	664	694	664	694
Shaley Sandstone, Tr Coal	694	784	694	784
Shale, Tr Sandstone	784	1,204	784	1,204
Sandy Shale, Limestone, Tr Coal	1,204	1,354	1,204	1,354
Sandy Shale	1,354	1,504	1,354	1,504
Sandstone, Tr Shale, Tr Coal	1,504	1,624	1,504	1,624
Sandy Shale	1,624	1,834	1,624	1,834
Shaly Sandstone, Tr coal	1,834	1,858	1,834	1,947
Big Lime	1,884	2,593	1,973	2,765
Fifty Foot Sandstone	2,593	2,700	2,765	2,884
Gordon	2,700	3,001	2,884	3,220
Fifth Sandstone	3,001	3,066	3,220	3,295
Bayard	3,066	3,867	3,295	4,183
Speechley	3,867	4,178	4,183	4,534
Balltown	4,178	4,545	4,534	4,941
Bradford	4,545	4,962	4,941	5,403
Benson	4,962	5,185	5,403	5,652
Alexander	5,185	6,349	5,652	6,998
Sycamore	6,210	6,323	6,808	6,972
Middlesex	6,323	6,419	6,972	7,159
Burkett	6,419	6,443	7,159	7,225
Tully	6,443	6,496	7,225	7,420
Marcellus	6,496	NA	7,420	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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Antero Resources
Well No. Kerns 2H
As-Drilled
Antero Resources Corporation



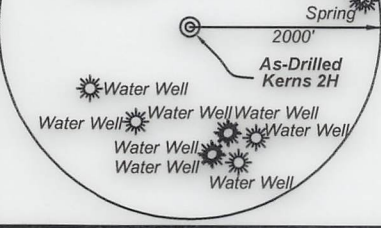
Kerns Unit 2H
POE Coordinates
West Virginia
Coordinate System
of 1927, North Zone
N: 368,209.38'
E: 1,621,227.42'
Latitude: 39°30'11.45"
Longitude: 80°50'32.59"
UTM Zone 17, NAD 1983
N: 4,372,638.190m
E: 513,565.646m

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



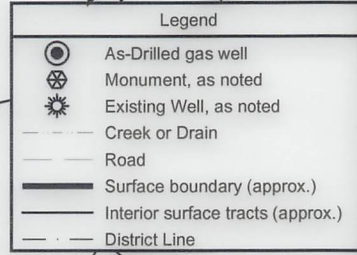
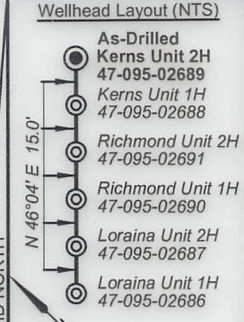
Note: 8 water wells and 2
springs were found within 2000'
of proposed well. No occupied
dwellings or buildings 2,500
square feet or larger used to
house or shelter dairy cattle or
poultry husbandry are located
within 625' of the center of the
well pad.



7,613' to Bottom Hole
4,830' to Top Hole
TOP HOLE LATITUDE 39 - 30 - 00
BTM HOLE LATITUDE 39 - 35 - 00

Notes
West Virginia Coordinate System
of 1927, North Zone
based upon Differential GPS Measurements.
Well No. Kerns Unit 2H Top Hole coordinates are
N: 366,732.12' Longitude: 80°51'01.61"
Latitude: 39°29'56.51"
Bottom Hole coordinates are
N: 383,056.15' Longitude: 80°51'37.18"
Latitude: 39°32'37.46"
E: 1,616,388.93' Longitude: 80°51'37.18"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,372,176.432m N: 4,377,136.714m
E: 512,873.318m E: 512,016.219m
Plat orientation and corner and well references
are based upon the grid north meridian.
Well location references are based upon the magnetic
meridian.

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.



Bearing	Dist.
L1 S 38°28' E	899.9'
L2 N 26°43' W	1,695.2'
L3 N 41°28' E	1,436.4'
L4 N 66°56' E	1,212.3'

FILE NO: 46-54-E-19
DRAWING NO: Kerns 2H As-Drilled
SCALE: 1" = 2000'
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: December 28 2020
OPERATOR'S WELL NO. Kerns 2H
API WELL NO
47 - 095 - 02689
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls 47; 45;
DISTRICT: Ellsworth COUNTY: Tyler 90.168; 79.919;
SURFACE OWNER: Roger D. Blizard & Ruth E. Spencer Charles Eugene Friend, et ux; B&C Oil and Gas Company; BRC Appalachian Minerals I, LLC (2); 177; 3.3; 29.7;
James Mathess; Joseph Showmaker; Allen Smith; Helen E. Boggs; 101.38; 20; 34.13;
ROYALTY OWNER: Heritage Resources-Marcellus Minerals, LLC; Dennis R. & Clista A. Heintzman; Bruce Winkelman; Joseph L. Sitko, et ux; Roger D. Blizard; Samuel Rogers; Bounty Minerals, LLC; ACREAGE: 102.62 20; 29.1151; 70;
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION 22.1188; 68.86;
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled LEASE NO: ACREAGE: 119; 100; 29.13;
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 23,319' MD 6,438' TVD

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



ID	TM/Par	Owner	Bk/Pg	Acres
1	15-33	Roger D. Blizzard, et al	340/170	90.17
2	15-32	William S. & Opal Marie Nash	335/187	76.92
3	16-54	David M. & Amanda B. Trimble	447/110	1.00
4	16-60	Rodney & Candis Nash	378/815	0.56
5	15-38	Rodney A. & Candis L. Nash	351/701	85.48
6	16-44.1	Carl Straight	543/598	3.70
7	16-23.1	Bruce Winkelmann	334/234	3.30
8	15-31	Roger D. Blizzard, et al	342/782	25.00
9	16-23	Joseph L. & Karen Sitko	314/462	29.70
10	15-30.1	Roger D. Blizzard, et al	343/427	101.38
11	15-10	Darrell J. Sole	617/739	34.13
12	15-11	Roger Matthes, et al	528/764	115.47
13	15-7	Roger Matthes, et al	528/764	41.72
14	15-6	Eric D. Wykert, et al	632/832	59.50
15	15-8	William A. & Joyce L. Caputo	245/485	14.00
16	10-56	Mary K. Neff	413/731	22.06
17	10-58	Jeffery A. & Cheryl A. Ferrell	325/334	66.66
18	10-54	Michael W. & Brenda S. Schmidt	244/409	14.06
19	10-55	Shirley E. Neff	218/46	1.47
20	10-57	Charles E. & Laura L. Friend	334/836	68.86
21	10-49	Charles E. & Laura Lynn Friend	334/839	71.52
22	10-48	Charles E. & Laura Lynn Friend	334/839	1.40
23	10-46	Opal Carol Tallman	282/383	115.52
24	10-46.1	Opal Carol Tallman	282/383	1.36
25	10-46.2	William F. Ferrell	W47/233	0.50

ID	TM/Par	Owner	Bk/Pg	Acres
26	10-47	William F. Ferrell	W47/233	0.72
27	10-43	Kevin S. & Melinda S. Goff	431/799	100.00
28	10-45.3	Patricia Spencer	345/134	0.04
29	10-45.1	Richard S. & Clara Sue Baker	345/134	0.65
30	10-43.1	Patricia Spencer	345/134	1.76
31	10-45	Richard S. & Clara Sue Baker	342/536	0.25
32	10-45.2	Michael E. & Mary B. Neff	532/812	0.71
33	10-44	James R. Dawson	AR48/228	0.40
34	10-10.3	Paul Richard Baker	612/603	1.32
35	10-10.1	William F. & Paula S. Ferrell	312/454	1.23
36	10-44.1	Nile Dean Harris	290/234	0.71
37	10-10.2	Sandra K. Metz	376/458	0.15
38	10-10	Ronald D. & Sandra Sue Martin	344/279	58.36
39	10-12	Sandra K. Metz	376/458	30.50
40	10-13.1	Brian E. & Barbara J. Courtney	377/792	1.90
41	10-14.1	Triad Energy Corp. of WV Inc.	329/604	1.00
42	10-14.3	Elk Fork Church	299/126	1.49
43	10-14.2	Triad Energy Corp. of WV Inc.	329/604	0.17
44	10-11	J.R. Schamp	318/543	30.00
45	10-13	Kevin S. & Melinda S. Goff	597/808	87.19
46	10-14	Kevin S. & Melinda S. Goff	597/808	96.84
47	10-3	Kevin S. & Melinda S. Goff	597/808	53.75
48	10-4	Stefan L. & Alberta B. Smolski	356/467	56.08
49	6-49	Dennis & Clista A. Heintzman	297/637	45.00
50	6-36	Dennis & Clista Heintzman	297/640	417.6
51	15-9	Antero Midstream LLC	586/544	153.90



Leases	
A	Heritage Resources Marcellus Minerals, LLC
B	William S. Nash, et al
C	Helen E. Boggs
D	Bruce Winkelmann
E	Jerry R. Brown
F	Joseph L. Silko, et ux
G	Roger D. Blizzard
H	Samuel Rogers
I	BRC Appalachian Mineral I LLC
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K	James Matthes
L	Dale E. Pipes
M	Trustees of James L. Newsom Revocable Trust
N	Will E. Morris Heirs Trust
O	Joseph Shoemaker
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S	Charles Eugene Friend, et ux
T	Allen Smith
U	Susan Ertel
V	B&C Oil and Gas Company
Y	Elk Fork Church of Christ
Z	Will E. Morris Heirs
AA	Dennis M. Strode
AB	BRC Appalachian Minerals I, LLC
AC	Sharon Rose Faini
AD	Bounty Minerals, LLC
AE	Nina & Phillip Whitefield
AF	Nina Whitefield
AG	Dennis R. & Clista Heintzman
AH	Rose Enterprises, LLC
AI	Michael W. Schmidt, et ux

FILE NO: 46-54-E-19
 DRAWING NO: Kerns 2H As-Drilled
 SCALE: 1" = 2000'
 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: December 28 2020
 OPERATOR'S WELL NO. Kerns 2H
 API WELL NO
 47 - 095 - 02689
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: As-Built 1,004' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Porter Falls
 DISTRICT: Ellsworth COUNTY: Tyler
 SURFACE OWNER: Roger D. Blizzard & Ruth E. Spencer ACREAGE: 102.62
 ROYALTY OWNER: Heritage Resources-Marcellus Minerals, LLC; Dennis R. & Clista A. Heintzman LEASE NO: _____ ACREAGE: _____

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 6,438' TVD 23,319' 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

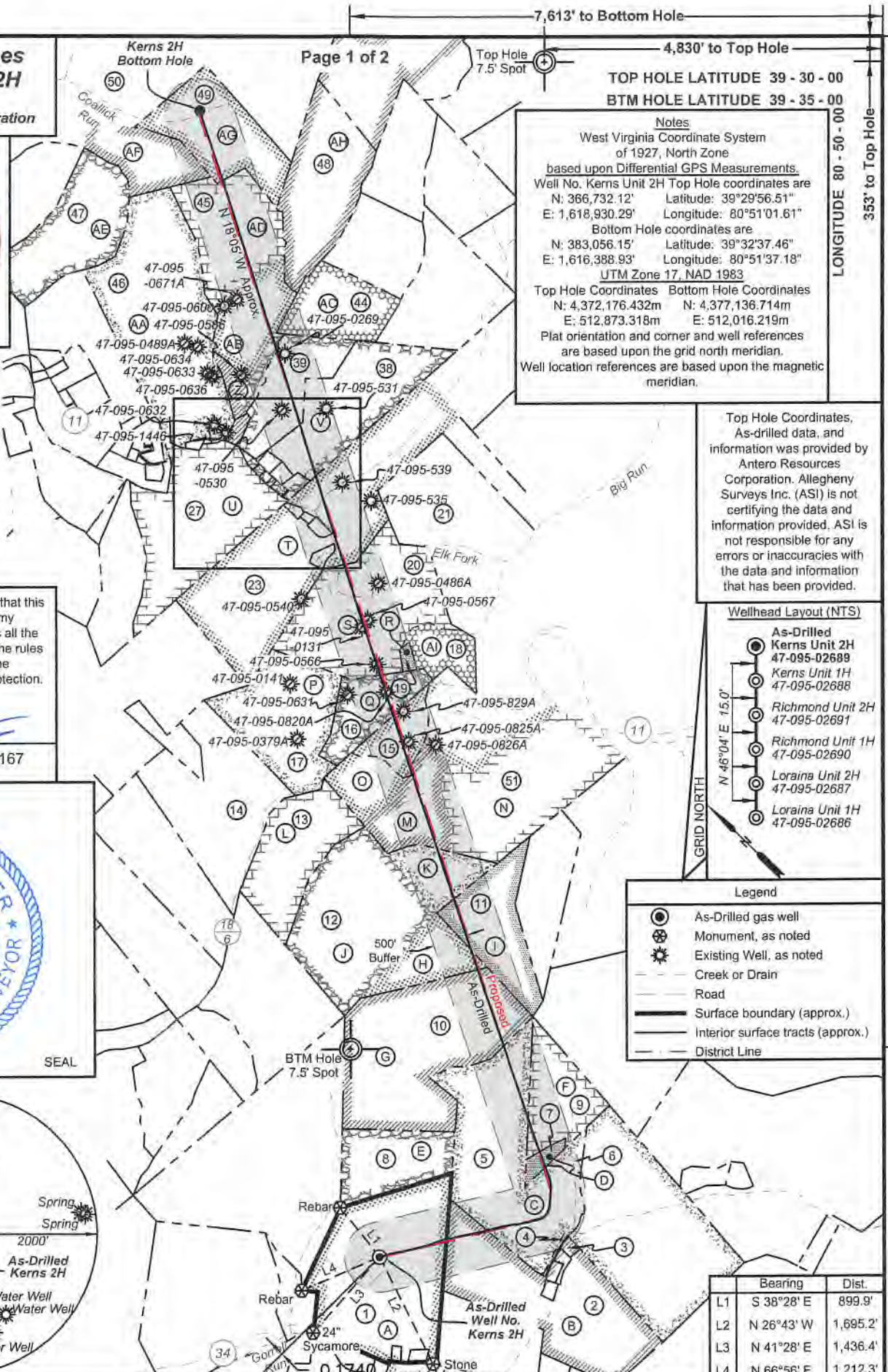
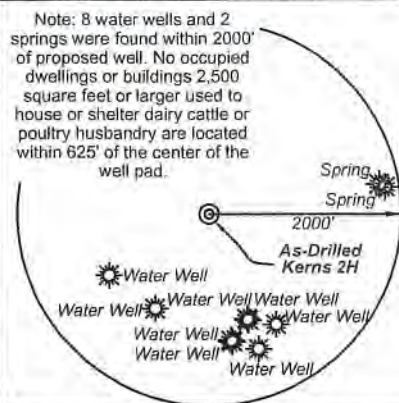
Antero Resources
Well No. Kerns 2H
 As-Drilled
 Antero Resources Corporation



Kerns Unit 2H
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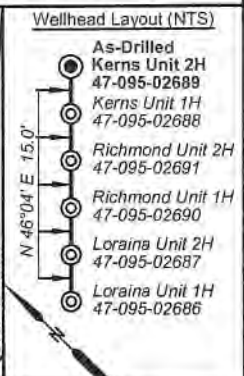
I, the undersigned, hereby certify that this
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Bradley D. Miller
 Bradley D. Miller, P.S. 2167



Notes
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 has been provided.



Legend

- As-Drilled gas well
- ⊗ Monument, as noted
- ⊙ Existing Well, as noted
- Creek or Drain
- Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)
- District Line

Bearing	Dist.
L1 S 38°28' E	899.9'
L2 N 26°43' W	1,695.2'
L3 N 41°28' E	1,436.4'
L4 N 66°56' E	1,212.3'

FILE NO: 46-54-E-19
 DRAWING NO: Kerns 2H As-Drilled
 SCALE: 1" = 2000'
 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: December 28 2020
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 API WELL NO
 47 - 095 - 02689
 STATE COUNTY PERMIT

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 James Mathess; Joseph Showmaker; Allen Smith; Helen E. Boggs; ACREAGE: 102.62
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 6,438' TVD

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

JMM
2/3/23



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19	10-55	Shirley E. Neff	218/46	1.47
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36	10-44.1	Nile Dean Harris	290/234	0.71
37	10-10.2	Sandra K. Metz	376/458	0.15
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U	Allen Smith
V	Susan Ertel
Y	B&C Oil and Gas Company
Z	Elk Fork Church of Christ
AA	Will E. Morris Heirs
AB	Dennis M. Strode
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AD	Sharon Rose Faini
AE	Bounty Minerals, LLC
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AG	Nina Whitefield
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FILE NO: 46-54-E-19
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DATE: December 28 2020
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 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/25/2020
Job End Date:	10/18/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02689-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Kerns 2H
Latitude:	39.49903000
Longitude:	-80.85045000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,543
Total Base Water Volume (gal):	24,215,162
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	86.26035	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.12640	

Jz

Excelerate LX-15	Halliburton	Friction Reducer					
				Listed Below			
Sand-Premium White-40/70	Halliburton	Proppant					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
FLUID Enviro-Syn HCR-7000-WL	Fluid Energy Group	Acid Replacement					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			

Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				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	13.55692	
			Complex Amine Compound	Proprietary	60.00000	0.03471	
			Hydrochloric acid	7647-01-0	30.00000	0.02502	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01736	
			Proprietary	Proprietary	20.00000	0.00564	
			Guar gum	9000-30-0	100.00000	0.00471	
			Sobitan, mono-9- octadecenoate, (Z)	1338-43-8	5.00000	0.00289	
			Surfactant	Proprietary	5.00000	0.00289	
			Proprietary	Proprietary	10.00000	0.00282	
			Glutaraldehyde	111-30-8	30.00000	0.00249	
			Ethoxylated alcohols	Proprietary	5.00000	0.00059	
			Organic chloride compound	Proprietary	1.00000	0.00058	
			Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00058	
			Quaternary ammonium compounds, benzyl-C12- 16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00041	
			Methanol	67-56-1	100.00000	0.00024	
			Ammonium persulfate	7727-54-0	100.00000	0.00012	
			Ethanol	64-17-5	1.00000	0.00008	
			Modified thiourea polymer	Proprietary	30.00000	0.00005	
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00005	

			Oxylated phenolic resin	Proprietary	30.00000	0.00004	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Propargyl alcohol	107-19-7	5.00000	0.00001	
			Hexadecene	629-73-2	5.00000	0.00001	
			Nitrated acetate salt	Proprietary	0.01000	0.00001	
			Acrylamide	79-06-1	0.01000	0.00001	
			Formaldehyde	50-00-0	0.01000	0.00001	
			Sodium hydroxide	1310-73-2	0.01000	0.00001	
			Organic salt #2	Proprietary	0.01000	0.00001	
			Organic salt #1	Proprietary	0.01000	0.00001	
			Sodium glycolate	2836-32-0	0.01000	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)