

APPROVED

WR-35
Rev. 8/23/13

NAME: *Denzil C. Spencer*

Page ___ of ___

DATE: 8/10/13

State of West Virginia

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

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API 47-017-06427 County Doddridge District Grant
Quad Smithburg 7.5' Pad Name Misery Pad Field/Pool Name -----
Farm name Denzil C. Spencer et al Well Number Michelle Unit 2H
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 4356841m Easting 521635m
Landing Point of Curve Northing 4357071.620m Easting 521745.838m
Bottom Hole Northing 4360216m Easting 520474m

Elevation (ft) 1001' 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 01/21/2014 Date drilling commenced 03/24/2015 Date drilling ceased 02/18/2016
Date completion activities began 08/12/2016 Date completion activities ceased 11/21/2016
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 475' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1477', 1511', 1675' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 177', 257', 1542' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

09/15/2017

API 47- 017 - 06427 Farm name Denzil C. Spencer et al Well number Michelle 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"	53'	New	94, # J-55	N/A	Y
Surface	17-1/2"	13-3/8"	553'	New	48, # H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2511'	New	36, # J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18619'	New	23, # P-110	N/A	Y
Tubing		2-3/8"	7018'		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	193 sx	15.6	1.19	230	0'	8 Hrs.
Surface	Class A	657 sx	15.6	1.19	782	0'	8 Hrs.
Coal							
Intermediate 1	Class A	969 sx	15.6	1.18	1143	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	874 sx (Lead) 1885 sx (Tail)	13.62 (Lead), 15.2 (Tail)	1.44 (Lead), 1.83 (Tail)	4708	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18619' MD, 6754' TVD (BHL) & 6815' TVD (Deepest Point Drilled) Loggers TD (ft) 18570' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6026'

**** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Anne Unit 2H API #47-017-06374). Please reference the wireline logs submitted with Form WR-35 for Anne Unit 2H. A Cement Bond Log has been included with this submittal.**

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

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EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	8/12/2016	18385	18528	60	Marcellus
2	9/5/2016	18185	18353	60	Marcellus
3	9/6/2016	17985	18153	60	Marcellus
4	9/6/2016	17785	17954	60	Marcellus
5	9/6/2016	17585	17754	60	Marcellus
6	9/7/2016	17386	17554	60	Marcellus
7	9/7/2016	17186	17354	60	Marcellus
8	9/7/2016	16986	17155	60	Marcellus
9	9/8/2016	16786	16955	60	Marcellus
10	9/8/2016	16587	16755	60	Marcellus
11	9/8/2016	16387	16555	60	Marcellus
12	9/9/2016	16187	16356	60	Marcellus
13	9/9/2016	15987	16156	60	Marcellus
14	9/9/2016	15788	15956	60	Marcellus
15	9/10/2016	15588	15756	60	Marcellus
16	9/10/2016	15388	15556	60	Marcellus
17	9/10/2016	15188	15357	60	Marcellus
18	9/11/2016	14988	15157	60	Marcellus
19	9/11/2016	14789	14957	60	Marcellus
20	9/11/2016	14589	14757	60	Marcellus
21	9/11/2016	14389	14558	60	Marcellus
22	9/11/2016	14189	14358	60	Marcellus
23	9/12/2016	13990	14158	60	Marcellus
24	9/12/2016	13790	13958	60	Marcellus
25	9/12/2016	13590	13759	60	Marcellus
26	9/13/2016	13390	13559	60	Marcellus
27	9/13/2016	13191	13359	60	Marcellus
28	9/13/2016	12991	13159	60	Marcellus
29	9/13/2016	12791	12959	60	Marcellus
30	9/14/2016	12591	12760	60	Marcellus
31	9/14/2016	12391	12560	60	Marcellus
32	9/14/2016	12192	12360	60	Marcellus
33	9/14/2016	11992	12160	60	Marcellus
34	9/15/2016	11792	11961	60	Marcellus
35	9/16/2016	11592	11761	60	Marcellus
36	9/16/2016	11393	11561	60	Marcellus
37	9/17/2016	11193	11361	60	Marcellus
38	9/17/2016	10993	11162	60	Marcellus
39	9/17/2016	10793	10962	60	Marcellus
40	9/17/2016	10593	10762	60	Marcellus
41	9/17/2016	10394	10562	60	Marcellus
42	9/18/2016	10194	10362	60	Marcellus
43	9/18/2016	9994	10163	60	Marcellus
44	9/18/2016	9794	9963	60	Marcellus
45	9/18/2016	9595	9763	60	Marcellus
46	9/18/2016	9395	9563	60	Marcellus
47	9/19/2016	9195	9364	60	Marcellus
48	9/19/2016	8995	9164	60	Marcellus
49	9/19/2016	8796	8964	60	Marcellus
50	9/19/2016	8596	8764	60	Marcellus
51	9/20/2016	8396	8565	60	Marcellus
52	9/20/2016	8196	8365	60	Marcellus
53	9/20/2016	7996	8165	60	Marcellus
54	9/20/2016	7797	7965	60	Marcellus
55	9/20/2016	7597	7765	60	Marcellus
56	9/21/2016	7397	7566	60	Marcellus
57	9/21/2016	7197	7366	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 (bbls)	Amount of Nitrogen/ other (units)
1	9/5/2016	64.1	7633	0	5209	309300	9392	N/A
2	9/5/2016	66.0	7812	5305	4585	309700	7923	N/A
3	9/6/2016	67.0	8055	5306	5147	307650	7912	N/A
4	9/6/2016	70.4	7899	5817	5429	307400	8004	N/A
5	9/6/2016	69.1	7816	5933	5223	306550	8629	N/A
6	9/7/2016	74.0	8005	5906	5057	308650	9410	N/A
7	9/7/2016	74.4	7991	6406	4985	307100	8475	N/A
8	9/7/2016	72.9	7839	6006	5377	305800	7839	N/A
9	9/8/2016	75.6	7939	6069	5464	308200	7818	N/A
10	9/8/2016	74.6	8102	6080	5420	307700	7812	N/A
11	9/8/2016	75.7	8094	5904	5790	311950	7974	N/A
12	9/9/2016	75.3	7955	5902	5314	309550	7798	N/A
13	9/9/2016	76.5	7862	6520	4982	310000	7794	N/A
14	9/9/2016	77.5	7842	6015	5648	310400	7990	N/A
15	9/10/2016	74.8	7659	6032	5385	313150	8467	N/A
16	9/10/2016	72.1	8008	6024	4576	310630	7782	N/A
17	9/10/2016	75.6	7888	6225	5577	309930	7797	N/A
18	9/11/2016	76.1	7766	6302	5588	311600	7907	N/A
19	9/11/2016	72.5	7896	5671	5345	311260	7745	N/A
20	9/11/2016	76.1	7865	5676	5595	309880	7753	N/A
21	9/11/2016	74.5	7862	5687	4973	309910	7733	N/A
22	9/11/2016	75.1	7893	5850	5397	311520	7735	N/A
23	9/12/2016	77.0	7641	5543	5376	311950	7969	N/A
24	9/12/2016	79.7	7762	5431	4789	311460	7592	N/A
25	9/12/2016	79.1	7800	5844	5091	310855	7587	N/A
26	9/13/2016	79.0	7646	6018	5314	309760	7627	N/A
27	9/13/2016	76.0	7695	5984	5112	310000	8037	N/A
28	9/13/2016	79.2	7735	5857	5298	310350	7558	N/A
29	9/13/2016	78.4	7714	5904	5662	310450	7539	N/A
30	9/14/2016	81.0	8121	5399	5175	311740	7587	N/A
31	9/14/2016	77.7	7914	5939	5482	310100	7528	N/A
32	9/14/2016	78.3	7628	5790	5634	310700	7524	N/A
33	9/14/2016	76.0	7377	5860	4278	311580	7564	N/A
34	9/15/2016	79.7	7445	5813	5491	319850	8862	N/A
35	9/16/2016	77.0	7620	6498	5405	309600	10616	N/A
36	9/16/2016	77.0	7671	6593	4496	310050	7621	N/A
37	9/17/2016	74.0	7794	6288	5093	309920	7473	N/A
38	9/17/2016	72.0	7322	5918	5483	310750	7486	N/A
39	9/17/2016	77.5	7750	6171	5622	310300	7472	N/A
40	9/17/2016	78.5	7713	6575	4850	309700	7452	N/A
41	9/17/2016	77.0	7767	5919	5375	309920	7764	N/A
42	9/18/2016	79.0	7814	5802	4952	310390	7447	N/A
43	9/18/2016	79.8	7621	6331	5426	310500	7436	N/A
44	9/18/2016	77.4	7699	5799	5633	311700	7492	N/A
45	9/18/2016	80.0	7628	5716	5337	310300	8395	N/A
46	9/18/2016	76.0	7905	6024	4861	301200	7453	N/A
47	9/19/2016	74.0	7647	5870	5662	310210	7799	N/A
48	9/19/2016	77.9	7529	5710	4683	309240	7432	N/A
49	9/19/2016	77.6	7576	5788	5548	309050	7384	N/A
50	9/19/2016	75.0	7173	5725	5257	308020	8635	N/A
51	9/20/2016	77.0	7460	5802	4894	308370	8353	N/A
52	9/20/2016	75.0	7704	5698	4489	308550	7453	N/A
53	9/20/2016	77.9	7118	5929	5329	309200	7445	N/A
54	9/20/2016	76.7	6841	5521	4997	310160	7378	N/A
55	9/20/2016	76.0	7624	5950	5453	308420	7570	N/A
56	9/21/2016	64.9	7237	5590	5049	257510	9231	N/A
57	9/21/2016	75.2	6623	5756	3918	309290	7313	N/A
AVG=		75.5	7,702	5,807	5,203	17,608,975	7,908	TOTAL

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Fresh Water	488'	N/A	488'	N/A
Shale/ Siltstone	0	177	0	177
Shale/ Trace Coal	est. 177	207	est. 177	207
Shale/ Siltstone	est. 207	257	est. 207	257
Shale/ Trace Coal	est. 257	277	est. 257	277
Shale/ Sandstone	est. 277	657	est. 277	657
Limestone/ Siltstone	est. 657	967	est. 657	967
Sandstone	est. 967	987	est. 967	987
Shale/ Limestone/ Siltstone	est. 987	1117	est. 987	1117
Siltstone/ Sandstone	est. 1117	1177	est. 1117	1177
Shale/ Siltstone	est. 1177	1237	est. 1177	1237
Sandstone	est. 1237	1257	est. 1237	1257
Shale/ Siltstone	est. 1257	1397	est. 1257	1397
Sandstone/ Siltstone	est. 1397	1542	est. 1397	1542
Sandstone/ Coal	est. 1542	1602	est. 1542	1602
Siltstone/ Shale	est. 1602	1932	est. 1602	1934
Big Lime	1932	2051	1934	2053
Big Injun	2051	2485	2053	2487
Gantz Sand	2485	2608	2487	2610
Fifty Foot Sandstone	2608	2668	2610	2670
Gordon	2668	3014	2670	3016
Fifth Sandstone	3014	3065	3016	3067
Bayard	3065	3416	3067	3418
Warren	3416	3801	3418	3803
Speechley	3801	4520	3803	4522
Bradford	4520	4985	4522	4987
Benson	4985	5238	4987	5240
Alexander	5238	5431	5240	5433
Elk	5431	6016	5433	6018
Rhinestreet	6016	6358	6018	6404
Sycamore	6358	6537	6404	6687
Middlesex	6537	6677	6687	6941
Burkett	6677	6705	6941	7004
Tully	6705	6758	7004	7159
Marcellus	6758	N/A	7159	N/A

*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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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/5/2016
Job End Date:	9/21/2016
State:	West Virginia
County:	Doddridge
API Number:	47-017-06427-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Michelle 2H
Latitude:	39.36067222
Longitude:	-80.74903611
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,815
Total Base Water Volume (gal):	19,796,034
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
Water	Antero Resources	Carrier/Base Fluid	Water	7732-18-5	100.00000	90.12021	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	9.61196	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.14906	
			Hydrogen Chloride	7647-01-0	17.50000	0.03466	
WFRA-405	U.S. Well Services, LLC	Friction Reducer	2-Propenoic acid, polymer with 2-propenamide	9003-06-9	30.00000	0.02107	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01696	
LGC-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.01673	
			Petroleum Distillates	64742-47-8	60.00000	0.01584	
			Suspending agent (solid)	14808-60-7	3.00000	0.00256	
			Surfactant	68439-51-0	3.00000	0.00100	

Bioclear 2000	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00389	
			Deionized Water	7732-18-5	28.00000	0.00222	
SI-1100s	U.S. Well Services, LLC	Scale Inhibitor					
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00150	
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	3.00000	0.00051	
			Phosphino carboxylic acid polymer	71050-62-9	3.00000	0.00050	
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	3.00000	0.00050	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00044	
AI-302	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Water	7732-18-5	95.00000	0.00032	
			2-Propyn-1-olcompound with methyloxirane	38172-91-7	15.00000	0.00005	

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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 DEPARTMENT OF ENERGY
 DIVISION OF OIL AND GAS STATE COUNTY PERMIT
 WASTE DISPOSAL DEEP SHALLOW X
 LOCATION: ELEVATION 1,020'-ORIG. 1,001'-PROP. WATERFRESH MCKERAY CREEK
 QUADRANGLE SMITHBURG 7.5 (TH) SHIRLEY 7.5 (RD) DISTRICT GRANT
 SURFACE OWNER DENZIL C. SPENCER ET AL ACREAGE 91 ACRES +/-
 OIL & GAS ROVARY OWNER ARTHUR DOKA ET UX; WILLMER G. KNIGHT ET AL; CHARLES N. COSTLOW; DOMINION TRANSMISSION INC.; KENNETH R. MASON ET UX;
 FRANK W. COOK JR. ET UX; EMORY KIMBALL; ELAINE Y. BURGE; DAVID E. BOYER; S.A. SMITH ET AL; GEMUNDY COMPANY; WILLIAM BALL; LAMONEY SWEENEY

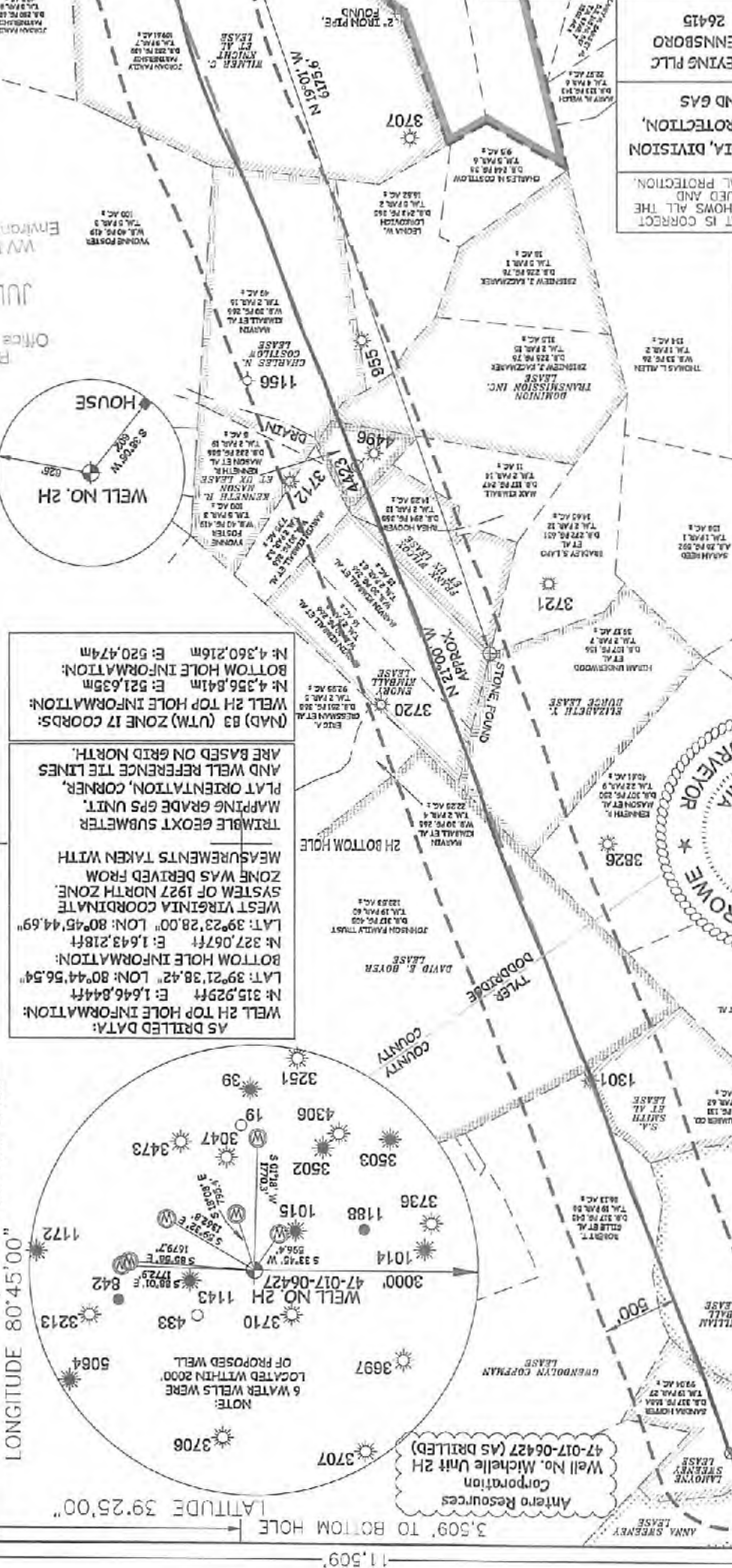
JOB # 13-064WA
 DRAWING # MICHELLEUNIT2ADR
 SCALE 1" = 100'
 MINIMUM DEGREE OF ACCURACY
 PROVEN SOURCE OF ELEV. SUBMETER
 SUBMETER MAPPING GRADE GPS

LEGEND
 Surface Owner Boundary Lines +/-
 Interior Surface Tracts +/-
 Found monument, as noted
 Proposed Well Path
 As Drilled Well Path

NOT TO SCALE
 PAD LAYOUT
 Rexal Unit 2H
 Arthur Unit 1H
 Michelle Unit 1H
 Anne Unit 2H
 Anne Unit 1H
 Hardin Unit 2H
 Hardin Unit 1H
 Deemo Unit 2H

PROFESSIONAL SURVEYOR
 STATE OF WEST VIRGINIA
 DOUGLAS R. ROWE
 LICENSED
 No. 2202

FORM MW-6
 DENVER, CO 80202
 1615 WYNKOOP STREET
 ANTERO RESOURCES CORP.
 DESIGNATED AGENT
 CT CORPORATION SYSTEM-DIANNA STAMPER
 5400 D BIG TYLER ROAD
 CHARLESTON, WV 25313



AS DRILLED DATA:
 WELL 2H TOP HOLE INFORMATION:
 N: 315.929ft E: 1,646.844ft
 LAT: 39°21'38.42" LON: 80°44'56.54"
 BOTTOM HOLE INFORMATION:
 N: 327.067ft E: 1,643.218ft
 LAT: 39°23'28.00" LON: 80°45'44.69"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE
 ZONE WAS DERIVED FROM
 TRIANGLE GEODT SUBMETER
 MAPPING GRADE GPS UNIT.
 AND WELL REFERENCE TIE LINES
 ARE BASED ON GRID NORTH.

NOTE:
 6 WATER WELLS WERE
 LOCATED WITHIN 2000'
 OF PROPOSED WELL
 3706 3707 3697 3710 3713 3714 3715 3716 3717 3718 3719 3720 3721 3722 3723 3724 3725 3726 3727 3728 3729 3730 3731 3732 3733 3734 3735 3736 3737 3738 3739 3740 3741 3742 3743 3744 3745 3746 3747 3748 3749 3750 3751 3752 3753 3754 3755 3756 3757 3758 3759 3760 3761 3762 3763 3764 3765 3766 3767 3768 3769 3770 3771 3772 3773 3774 3775 3776 3777 3778 3779 3780 3781 3782 3783 3784 3785 3786 3787 3788 3789 3790 3791 3792 3793 3794 3795 3796 3797 3798 3799 3800 3801 3802 3803 3804 3805 3806 3807 3808 3809 3810 3811 3812 3813 3814 3815 3816 3817 3818 3819 3820 3821 3822 3823 3824 3825 3826 3827 3828 3829 3830 3831 3832 3833 3834 3835 3836 3837 3838 3839 3840 3841 3842 3843 3844 3845 3846 3847 3848 3849 3850 3851 3852 3853 3854 3855 3856 3857 3858 3859 3860 3861 3862 3863 3864 3865 3866 3867 3868 3869 3870 3871 3872 3873 3874 3875 3876 3877 3878 3879 3880 3881 3882 3883 3884 3885 3886 3887 3888 3889 3890 3891 3892 3893 3894 3895 3896 3897 3898 3899 3900 3901 3902 3903 3904 3905 3906 3907 3908 3909 3910 3911 3912 3913 3914 3915 3916 3917 3918 3919 3920 3921 3922 3923 3924 3925 3926 3927 3928 3929 3930 3931 3932 3933 3934 3935 3936 3937 3938 3939 3940 3941 3942 3943 3944 3945 3946 3947 3948 3949 3950 3951 3952 3953 3954 3955 3956 3957 3958 3959 3960 3961 3962 3963 3964 3965 3966 3967 3968 3969 3970 3971 3972 3973 3974 3975 3976 3977 3978 3979 3980 3981 3982 3983 3984 3985 3986 3987 3988 3989 3990 3991 3992 3993 3994 3995 3996 3997 3998 3999 4000

LATITUDE 39.2230" LONGITUDE 80.42130"
 3,509' TO BOTTOM HOLE
 9,309' TO BOTTOM HOLE
 5,219'

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11/2015/60

LATITUDE 39°22'30"

11,509'

3,509' TO BOTTOM HOLE

LATITUDE 39°25'00"

LONGITUDE 80°45'00"

5,219'

9,309' TO BOTTOM HOLE

LONGITUDE 80°42'30"

WV NORTH ZONE
GRID NORTH

Antero Resources Corporation
Well No. Michelle Unit 2H
47-017-06427 (AS DRILLED)

NOTE:
6 WATER WELLS WERE
LOCATED WITHIN 2000'
OF PROPOSED WELL

WELL NO. 2H
47-017-06427

AS DRILLED DATA:
WELL 2H TOP HOLE INFORMATION:
N: 315,929ft E: 1,646,844ft
LAT: 39°21'38.42" LON: 80°44'56.54"
BOTTOM HOLE INFORMATION:
N: 327,067ft E: 1,643,218ft
LAT: 39°23'28.00" LON: 80°45'44.69"
WEST VIRGINIA COORDINATE
SYSTEM OF 1927 NORTH ZONE.
ZONE WAS DERIVED FROM
MEASUREMENTS TAKEN WITH

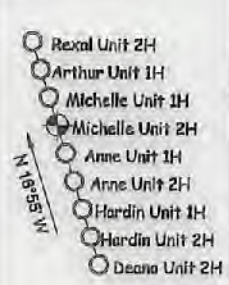
TRIMBLE GEOXT SUBMETER
MAPPING GRADE GPS UNIT.
PLAT ORIENTATION, CORNER,
AND WELL REFERENCE TIE LINES
ARE BASED ON GRID NORTH.

(NAD 83 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 4,356,841m E: 521,635m
BOTTOM HOLE INFORMATION:
N: 4,360,216m E: 520,474m

11/07/16
09/15/2016

- NOTE
1. ONE OCCUPIED DWELLING OR BUILDING TWO THOUSAND FIVE HUNDRED (2,000) SQUARE FEET OR LARGER USED TO HOUSE OR SHEPHERD 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 ALBERTSON SURVEYS, INC.
 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 OF 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.

PAD LAYOUT



NOT TO SCALE



JOB # 13-064WA
DRAWING # MICHELLEUNIT2HADR
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Found monument, as noted
- Proposed Well Path
- As Drilled Well Path

D.R. Rowe
DOUGLAS R. ROWE P.S. 2202
DATE 07/03/17
OPERATOR'S WELL# MICHELLE UNIT #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

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

API WELL # 47 - 017 - 06427

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

LOCATION: ELEVATION 1,020' - ORIG. 1,001' - PROP. WATERSHED MCELROY CREEK

QUADRANGLE SMITHBURG 7.5 (TH) SHIRLEY 7.5 (BH) DISTRICT GRANT COUNTY DODDRIDGE

SURFACE OWNER DENZIL C. SPENCER ET AL ACREAGE 91 ACRES +/-

OIL & GAS ROYALTY OWNER: ARTHUR DOAK ET UX; WILMER G. KNIGHT ET AL; CHARLES N. COSTILOW; DOMINION TRANSMISSION INC.; KENNETH R. MASON ET UX; FRANK WILCOX JR. ET UX; EMORY KIMBALL; ELIZABETH Y. BURGE; DAVID E. BOYER; S.A. SMITH ET AL; GWENDOLYN COFFMAN; WILLIAM BALL; LAMOYNE SWEENEY

LEASE ACREAGE 191 AC±; 110 AC±; 46.41 AC±; 49.5 AC±; 5 AC±; 14 AC±; 39.75 AC±; 39.17 AC±; 102.48 AC±; 28.13 AC±; 68.13 AC±; 39 AC±; 16 AC±

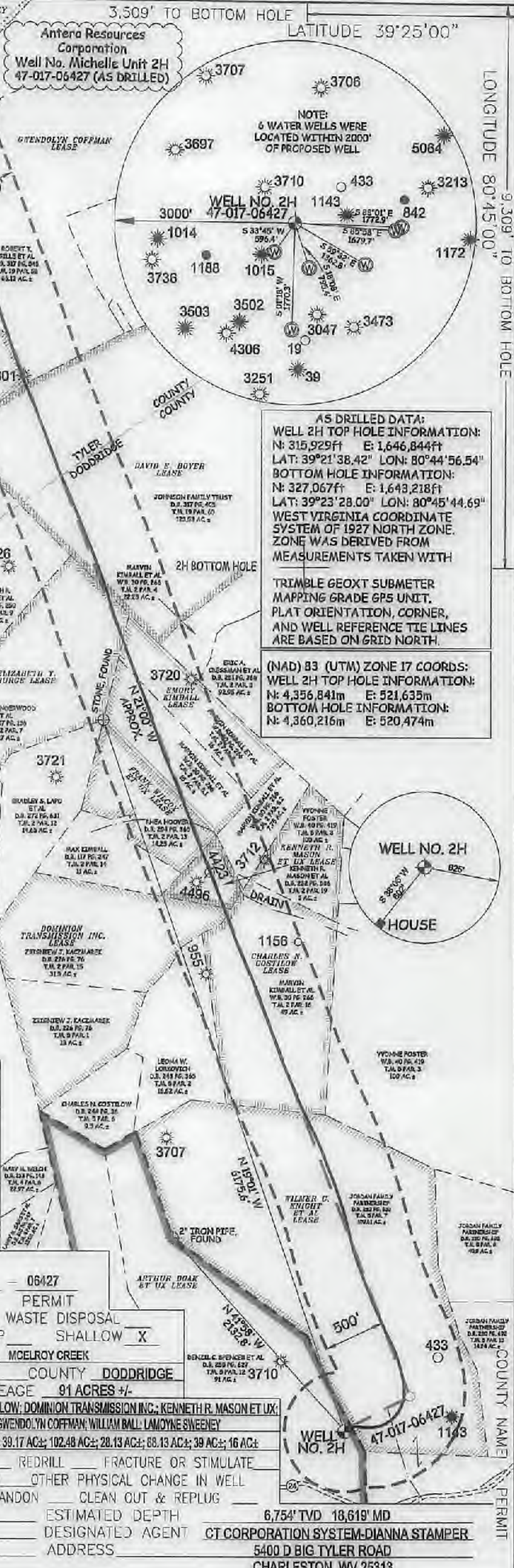
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG

TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,754' TVD 18,619' MD

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

ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD

FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313



JUL 11 2017

WV Department of
Environmental Protection

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: 47-017-06427 County: Doddridge
District: Grant Well No: Michelle Unit 2H
Farm Name: Denzil C. Spencer, et al
Discharge Date/s From:(MMDDYY) 12/09/16 To: (MMDDYY) 01/08/17
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 420,000

Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: _____ (Include a topographical map of the Area.)
- (2) UIC: 383,276 Permit No. 3400923821, 3416729731, 4708509721, 3410523619, 3400923761, 3416729543, 3416729464, 3416729445, 3412123995
- (3) Offsite Disposal: 578 Site Location: Petta
- (4) Reuse: 36,146 Alternate Permit Number: _____
- (5) Centralized Facility: _____ Permit No. _____
- (6) Other method: _____ (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: Environmental & Regulatory Manager
Date Completed: 01/2/17

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
Signature of a Principal Exec. Officer or Authorized agent.

09/15/2017

Category 1
Sampling Results
API No : _____

JUL 11 2017

WV Department of
Environmental Protection

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.

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Category 4
Sampling Results

API No: _____

WV Department of
Environmental Protection

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: _____

09/15/2017