

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

API 47-085-10089 County Ritchie District Clay  
Quad Pullman 7.5' Pad Name Edwin Field/Pool Name ----  
Farm name Quimby, Franklin P. Well Number Miracle Unit 2H  
Operator (as registered with the OOG) Antero Resources Corporation  
Address 1615 Wynkoop St. 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 4342363m Easting 508388m  
Landing Point of Curve Northing 4342343.38m Easting 508805.23m  
Bottom Hole Northing 4339673m Easting 509989m

Elevation (ft) 1191' 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 3/28/2014 Date drilling commenced 12/3/2014 Date drilling ceased 8/1/2015  
Date completion activities began 10/18/2015 Date completion activities ceased 4/6/2016  
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

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Freshwater depth(s) ft 49' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No  
Coal depth(s) ft 1287' Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

**APPROVED**

NAME: Michael Hoff  
DATE: 12-21-2016

Reviewed by: \_\_\_\_\_

API 47-085 - 10089 Farm name Quimby, Franklin P. Well number Miracle 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	30"	20"	40'	New	94# H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	378'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2521'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	16940'	New	20# P-110	N/A	Y
Tubing		2-3/8"	6869'		4.7# N-80	N/A	
Packer type and depth set		N/A					

Comment Details Sidetrack #1 @ 7151'  
Sidetrack #2 @ 10945'. Top of fish @ 11488', unable to retrieve.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	209 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	453 sx	15.6	1.18	263	0'	8 Hrs.
Coal							
Intermediate 1	Class A	984 sx	15.6	1.18	790	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1061 sx (Lead) 1817 sx (Tail)	13.5 Lead 15.2 Tail	1.44 Lead 1.80 Tail	3418	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16940' MD, 6641' TVD (BHL), 6667' (Deepest Point Drilled) Loggers TD (ft) 16888'  
Deepest formation penetrated Marcellus Plug back to (ft) N/A  
Plug back procedure N/A

Kick off depth (ft) 6184'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Hornet Unit 1H API #47-085-10062). Please reference the wireline logs submitted with Form WR-35 for Hornet Unit 1H. 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

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WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS JUL 05 2016

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

API 47- 085 - 10089

Farm name Quimby, Franklin P.

Well number Miracle 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 (bbls)	Amount of Nitrogen/other (units)

**\*PLEASE SEE ATTACHED EXHIBIT 2**

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Please insert additional pages as applicable.

API 47- 085 - 10089 Farm name Quimby, Franklin P. Well number Miracle Unit 2H

PRODUCING FORMATION(S)	DEPTHS	
<u>Marcellus</u>	<u>6596' (TOP)</u> TVD	<u>6982' (TOP)</u> MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 11264 mcfpd Oil 234 bpd NGL --- bpd Water 269 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 <sub>2</sub> S, ETC)
	<u>0</u>		<u>0</u>		
<b>*PLEASE SEE ATTACHED EXHIBIT 3</b>					

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP  
Address 2640 Reach Rd. City Williamsport State PA Zip 17701

Logging Company Rush Wellsite Services  
Address 60 Alpha Dr. City Canonsburg State PA Zip 15317

Cementing Company Allied Oil & Gas Services, LLC  
Address 1036 East Main St. City Bridgeport State WV Zip 26330

Stimulating Company US Well Services  
Address 533 Industrial Park Dr. City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233  
Signature *Kara Quackenbush* Title Permit Representative Date 7/1/2016

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

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**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	18-Oct-15	16,683	16,849	60	Marcellus
2	2-Dec-15	16,485	16,652	60	Marcellus
3	2-Dec-15	16,288	16,455	60	Marcellus
4	2-Dec-15	16,091	16,257	60	Marcellus
5	3-Dec-15	15,894	16,060	60	Marcellus
6	3-Dec-15	15,697	15,863	60	Marcellus
7	3-Dec-15	15,499	15,666	60	Marcellus
8	4-Dec-15	15,302	15,469	60	Marcellus
9	4-Dec-15	15,105	15,271	60	Marcellus
10	5-Dec-15	14,908	15,074	60	Marcellus
11	5-Dec-15	14,711	14,877	60	Marcellus
12	5-Dec-15	14,513	14,680	60	Marcellus
13	6-Dec-15	14,316	14,483	60	Marcellus
14	6-Dec-15	14,119	14,285	60	Marcellus
15	6-Dec-15	13,922	14,088	60	Marcellus
16	6-Dec-15	13,725	13,891	60	Marcellus
17	7-Dec-15	13,528	13,694	60	Marcellus
18	7-Dec-15	13,330	13,497	60	Marcellus
19	7-Dec-15	13,133	13,299	60	Marcellus
20	7-Dec-15	12,936	13,102	60	Marcellus
21	7-Dec-15	12,739	12,905	60	Marcellus
22	8-Dec-15	12,542	12,708	60	Marcellus
23	8-Dec-15	12,344	12,511	60	Marcellus
24	8-Dec-15	12,147	12,314	60	Marcellus
25	8-Dec-15	11,950	12,116	60	Marcellus
26	8-Dec-15	11,753	11,919	60	Marcellus
27	9-Dec-15	11,556	11,722	60	Marcellus
28	9-Dec-15	11,358	11,525	60	Marcellus
29	9-Dec-15	11,161	11,328	60	Marcellus
30	9-Dec-15	10,964	11,130	60	Marcellus
31	10-Dec-15	10,767	10,933	60	Marcellus
32	10-Dec-15	10,570	10,736	60	Marcellus
33	10-Dec-15	10,372	10,539	60	Marcellus
34	10-Dec-15	10,175	10,342	60	Marcellus
35	11-Dec-15	9,978	10,144	60	Marcellus
36	11-Dec-15	9,781	9,947	60	Marcellus
37	11-Dec-15	9,584	9,750	60	Marcellus
38	11-Dec-15	9,387	9,553	60	Marcellus
39	12-Dec-15	9,189	9,356	60	Marcellus
40	12-Dec-15	8,992	9,158	60	Marcellus
41	12-Dec-15	8,795	8,961	60	Marcellus
42	12-Dec-15	8,598	8,764	60	Marcellus
43	12-Dec-15	8,401	8,567	60	Marcellus
44	13-Dec-15	8,203	8,370	60	Marcellus
45	13-Dec-15	8,006	8,173	60	Marcellus
46	13-Dec-15	7,809	7,975	60	Marcellus
47	14-Dec-15	7,612	7,778	60	Marcellus
48	14-Dec-15	7,415	7,581	60	Marcellus
49	14-Dec-15	7,217	7,384	60	Marcellus
50	14-Dec-15	7,020	7,187	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	1-Dec-15	60.7	7,852	5,261	4,128	136,300	7,215	N/A
2	2-Dec-15	63.1	7,044	5,934	4,640	211,850	7,186	N/A
3	2-Dec-15	67.5	7,091	5,761	4,237	219,820	7,120	N/A
4	2-Dec-15	53.3	7,357	5,318	4,752	136,120	7,161	N/A
5	3-Dec-15	64.9	7,019	5,942	4,824	243,650	6,611	N/A
6	3-Dec-15	69.7	7,134	5,917	4,768	244,120	6,611	N/A
7	3-Dec-15	70.2	7,002	5,427	5,062	245,240	6,500	N/A
8	4-Dec-15	70.6	6,917	5,402	4,829	228,540	7,084	N/A
9	4-Dec-15	70.3	6,680	5,167	5,158	247,700	6,471	N/A
10	5-Dec-15	69.6	6,773	5,688	5,014	246,350	7,063	N/A
11	5-Dec-15	72.3	6,787	5,633	4,777	245,090	7,048	N/A
12	5-Dec-15	70.1	6,692	5,129	4,778	245,900	6,418	N/A
13	6-Dec-15	71.0	6,774	5,196	4,289	244,380	6,419	N/A
14	6-Dec-15	71.9	6,907	5,531	4,521	246,080	6,383	N/A
15	6-Dec-15	71.6	6,767	5,350	4,753	244,840	6,374	N/A
16	6-Dec-15	70.4	6,688	5,285	4,841	245,260	6,365	N/A
17	7-Dec-15	71.2	6,808	5,624	5,057	245,650	6,363	N/A
18	7-Dec-15	70.7	6,866	5,461	4,310	245,680	6,362	N/A
19	7-Dec-15	71.3	7,067	5,549	5,085	215,300	6,872	N/A
20	7-Dec-15	69.0	7,183	5,607	4,460	248,250	6,326	N/A
21	7-Dec-15	71.0	6,838	5,556	4,524	239,830	6,299	N/A
22	8-Dec-15	72.0	6,650	5,261	4,697	237,750	6,286	N/A
23	8-Dec-15	72.2	6,662	5,247	4,828	246,150	6,274	N/A
24	8-Dec-15	70.3	6,571	5,959	4,810	245,540	6,270	N/A
25	8-Dec-15	72.0	6,432	5,452	4,569	245,000	6,385	N/A
26	8-Dec-15	72.0	6,547	4,965	4,119	245,160	6,295	N/A
27	9-Dec-15	71.5	6,410	5,184	4,788	207,400	6,818	N/A
28	9-Dec-15	71.0	6,191	5,025	4,523	245,860	6,213	N/A
29	9-Dec-15	73.0	6,558	5,917	4,602	244,680	6,230	N/A
30	9-Dec-15	73.0	6,485	5,108	4,746	243,010	6,326	N/A
31	10-Dec-15	71.1	6,735	4,956	4,616	245,260	6,301	N/A
32	10-Dec-15	69.5	6,597	5,280	4,915	170,590	6,429	N/A
33	10-Dec-15	71.8	6,512	5,819	3,483	248,870	6,172	N/A
34	10-Dec-15	72.0	6,974	5,234	3,887	154,950	6,089	N/A
35	11-Dec-15	69.5	6,829	5,361	4,217	182,070	6,714	N/A
36	11-Dec-15	72.1	6,707	5,509	4,439	228,720	5,971	N/A
37	11-Dec-15	71.9	6,405	5,828	4,588	243,600	6,111	N/A
38	11-Dec-15	72.0	6,451	6,038	5,049	241,090	6,098	N/A
39	12-Dec-15	71.0	6,105	4,875	4,888	249,250	6,088	N/A
40	12-Dec-15	72.7	6,250	5,210	4,432	244,680	6,086	N/A
41	12-Dec-15	72.0	6,393	5,121	4,494	234,180	5,879	N/A
42	12-Dec-15	71.4	6,440	4,853	4,562	208,240	6,011	N/A
43	12-Dec-15	71.0	6,453	5,046	3,905	237,990	5,865	N/A
44	13-Dec-15	72.5	6,156	5,448	4,006	244,210	6,521	N/A
45	13-Dec-15	71.0	6,123	4,924	4,757	236,350	6,079	N/A
46	13-Dec-15	72.0	6,002	5,136	4,633	237,110	6,002	N/A
47	14-Dec-15	71.1	5,957	5,532	4,871	245,040	5,991	N/A
48	14-Dec-15	71.4	6,207	4,992	4,948	244,750	5,958	N/A
49	14-Dec-15	70.8	6,185	5,054	5,136	243,570	5,977	N/A
50	14-Dec-15	71.0	6,063	5,963	4,406	224,500	5,882	N/A
<b>AVG=</b>		<b>70.3</b>	<b>6,646</b>	<b>5,401</b>	<b>4,614</b>	<b>11,551,520</b>	<b>6,391</b>	<b>TOTAL</b>

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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
Fresh Water	49'	N/A	49'	N/A
Sandy Shale	0	187	0	187
Sandstone	est. 187	447	est. 187	447
Shale/Siltstone	est. 447	647	est. 447	647
Shaley Limestone	est. 647	727	est. 647	727
Shale/Siltstone	est. 727	1127	est. 727	1127
Shaley Limestone	est. 1127	1287	est. 1127	1287
Coal	est. 1287	1307	est. 1287	1307
Shaley Limestone (trace coal)	est. 1307	1627	est. 1307	1627
Shale/Siltstone	est. 1627	1787	est. 1627	1787
Sandstone/Siltstone	est. 1787	1827	est. 1787	1827
Sandstone/Siltstone with trace coal	est. 1827	2007	est. 1827	2007
Silty Sandstone	est. 2007	2159	est. 2007	2160
Big Lime	2159	2261	2160	2262
Big Injun	2261	2660	2262	2661
Gantz Sand	2660	2856	2661	2857
Fifty Foot Sandstone	2856	2917	2857	2918
Gordon	2917	3063	2918	3064
Fifth Sandstone	3063	3198	3064	3199
Bayard	3198	3634	3199	3635
Warren	3634	4030	3635	4033
Speechley	4030	4279	4033	4287
Baltown	4279	4714	4287	4746
Bradford	4714	5104	4746	5187
Benson	5104	5359	5187	5474
Alexander	5359	5573	5474	5716
Elk	5573	5977	5716	6165
Rhinstreet	5977	6276	6165	6494
Sycamore	6267	6428	6494	6697
Middlesex	6428	6539	6697	6863
Burkett	6539	6573	6863	6926
Tully	6573	6596	6926	6982
Marcellus	6596	NA	6982	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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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/1/2015
Job End Date:	12/14/2015
State:	West Virginia
County:	Ritchie
API Number:	47-085-10089-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Miracle 2H
Longitude:	-80 90281700
Latitude:	39 23052200
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,687
Total Base Water Volume (gal):	14,083,986
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
Water	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	90.70913	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	8.92069	
LC-15	U.S. Well Services	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.07748	
			Petroleum Distillates	64742-47-8	60.00000	0.07337	
			Suspending agent (solid)	14808-60-7	3.00000	0.01185	
			Surfactant	68439-51-0	3.00000	0.00465	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.08023	
			Hydrogen Chloride	7647-01-0	18.00000	0.01916	
WFRA-405	U.S. Well Services	Friction Reducer	Water	7732-18-5	60.00000	0.03909	
			2-Propanoic acid, polymer with 2-propanamide	29003-06-9	30.00000	0.01954	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01573	
			Ethoxylated alcohol blend	68002-87-1	4.00000	0.00261	

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SI-1100	U.S. Well Services	Scale Inhibitor						
		Water	7732-18-5		80.00000		0.00383	
		Ethylene Glycol	107-21-1		25.00000		0.00347	
		Copolymer of Maleic and Acrylic acid	62255-49-9		10.00000		0.00145	
		Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8		7.50000		0.00124	
		Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1		5.00000		0.00080	
		Phosphino carboxylic acid polymer	71050-62-9		5.00000		0.00080	
		Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5		2.00000		0.00032	
K-BAC 1020	U.S. Well Services	Anti-Bacterial Agent						
		2,2-dibromo-3-nitropropionamide	10222-01-2		20.00000		0.00390	
		Deionized Water	7732-18-5		28.00000		0.00223	
AP One	U.S. Well Services	Jet Breakers						
		Ammonium Persulfate	7727-54-0		100.00000		0.00203	
AI-302	U.S. Well Services	Acid Corrosion Inhibitors						
		Water	7732-18-5		95.00000		0.00035	
		2-Propyn-1-ol compound with methylloxirane	38172-91-7		15.00000		0.00006	

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)



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

July 1, 2016

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
Attn: John Kearney  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Mr. Kearney:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report) and corresponding logs for the following well:

- Berry Unit 1H (API# 47-095-02188) – Coastal 1 Pad
- Berry Unit 2H (API# 47-095-02189) – Coastal 1 Pad
- **Miracle Unit 2H (API# 47-085-00089) – Edwin Pad**
- Miracle Unit 3H (API# 47-085-00140) – Edwin Pad
- Hawkeye Unit 1H (API# 47-095-02181) – Weigle East Pad

If you have any questions please feel free to contact me at (303) 357-7233.

Sincerely,

A handwritten signature in blue ink that reads "Kara Quackenbush".

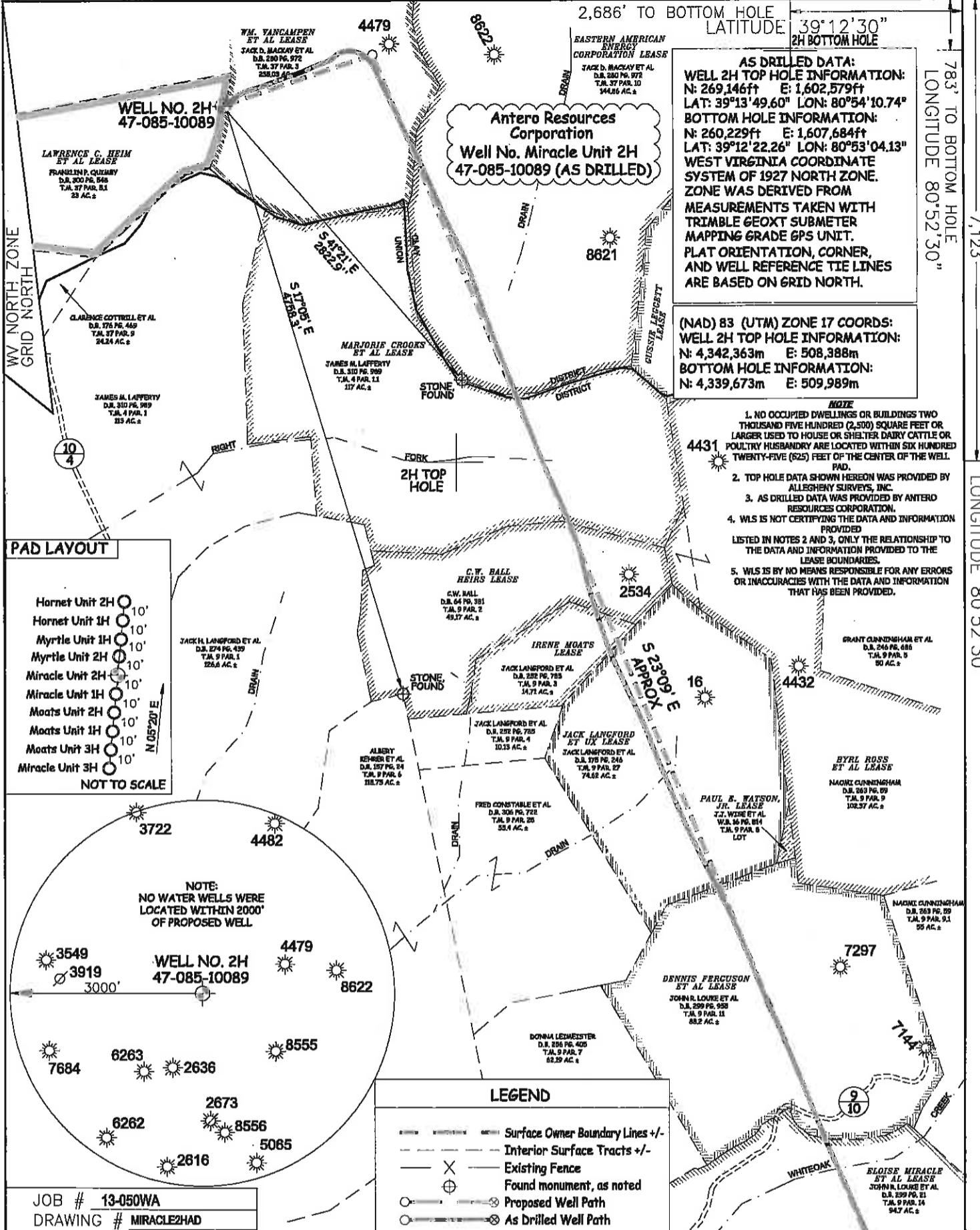
Kara Quackenbush  
Permitting Agent  
Antero Resources Corporation

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Enclosures

LATITUDE 39°15'00"

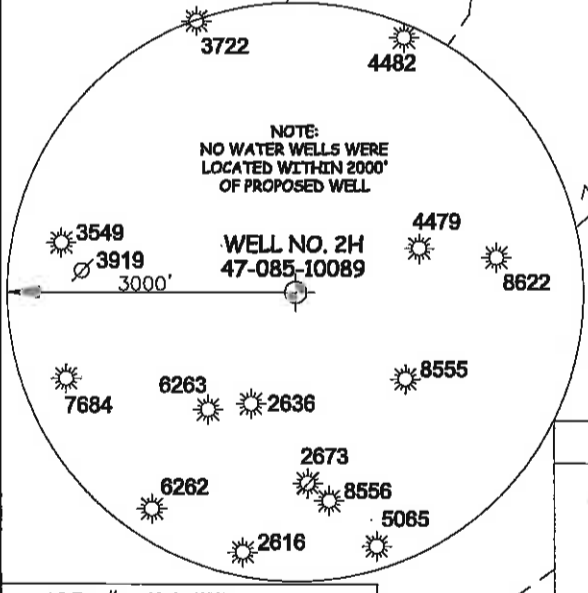
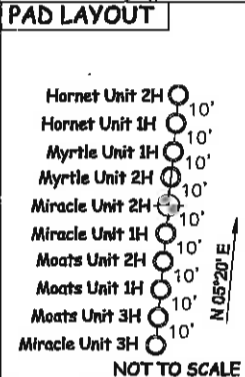
7,927'



**AS DRILLED DATA:**  
**WELL 2H TOP HOLE INFORMATION:**  
 N: 269,146ft E: 1,602,579ft  
 LAT: 39°13'49.60" LON: 80°54'10.74"  
**BOTTOM HOLE INFORMATION:**  
 N: 260,229ft E: 1,607,684ft  
 LAT: 39°12'22.26" LON: 80°53'04.13"  
**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: 4,342,363m E: 508,388m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,339,673m E: 509,989m

- NOTE**
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
  2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY 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 TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
  5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



**LEGEND**

- Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
- X Existing Fence
- ⊕ Found monument, as noted
- Proposed Well Path
- ⊗ As Drilled Well Path

JOB # **13-050WA**  
 DRAWING # **MIRACLE2HAD**  
 SCALE **1" = 1000'**  
 MINIMUM DEGREE OF ACCURACY **SUBMETER**  
 PROVEN SOURCE OF ELEV. **SUBMETER MAPPING GRADE GPS**



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

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

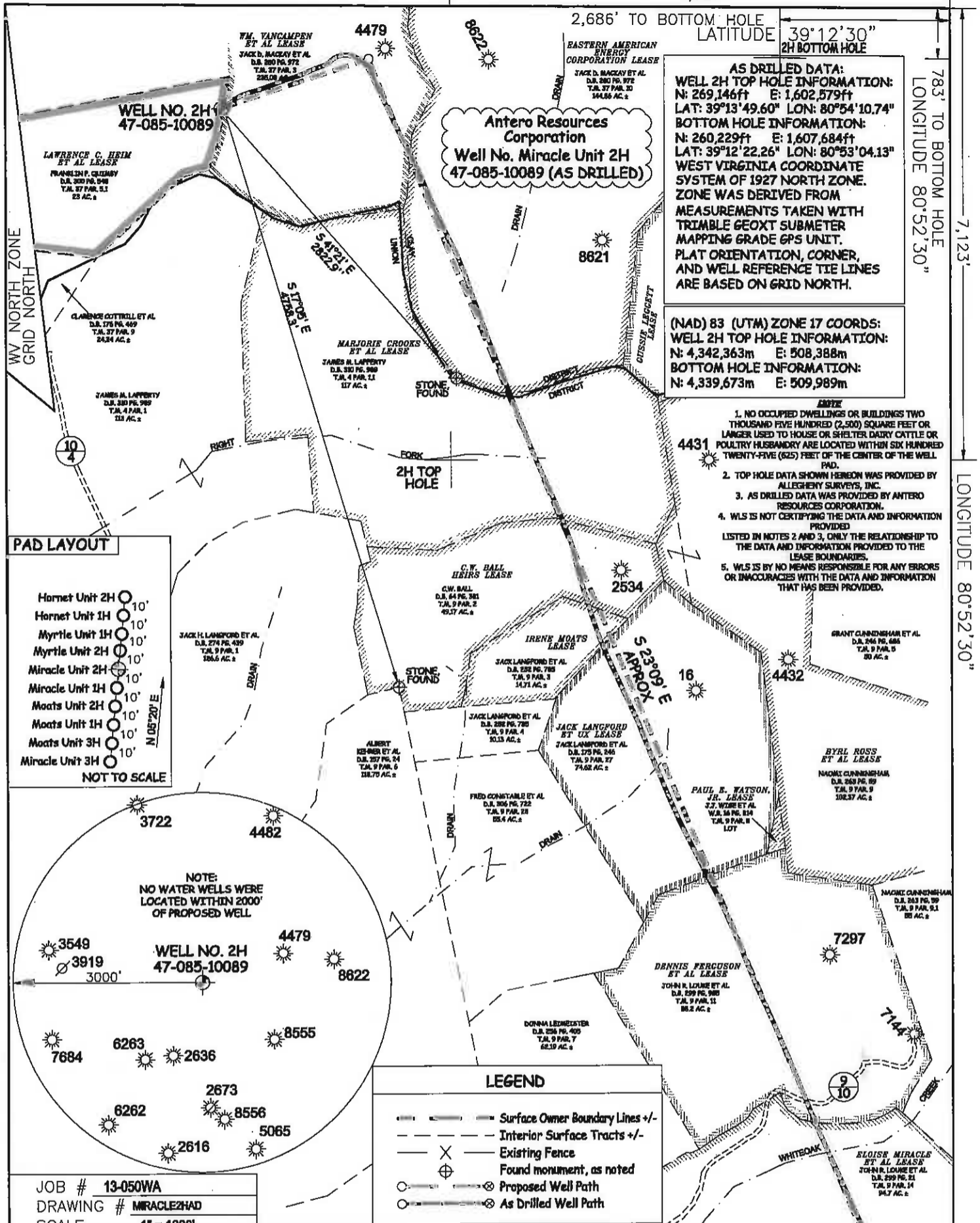
DATE **2/24/2016**  
 OPERATOR'S WELL # **MIRACLE UNIT #2H**  
 API WELL # **47-085-10089**  
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS  
 WELL TYPE: OIL \_\_\_ GAS **X** LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS") PRODUCTION **X** STORAGE \_\_\_ DEEP \_\_\_ SHALLOW **X**  
 LOCATION: ELEVATION **1,216' ORIGINAL - 1,191' AS DRILLED** WATERSHED **NORTH FORK HUGHES RIVER**  
 QUADRANGLE **PULLMAN 7.5** DISTRICT **CLAY (TH) UNION (BH)** COUNTY **RITCHIE**  
 SURFACE OWNER **FRANKLIN P. QUMBY** ACREAGE **23 ACRES +/-**  
 OIL & GAS ROYALTY OWNER **LAWRENCE C. HEIM ET AL; WM. VAN CAMPEN ET AL; EASTERN AMERICAN ENERGY CORP.; MARJORIE CROOKS ET AL; C.W. BALL HEIRS; IRENE MOATS; JACK LANGFORD ET UX; DENNIS FERGUSON ET AL; ELOISE MIRACLE ET AL** LEASE ACREAGE **53 AC±; 312 AC±; 145 AC±; 117 AC±; 49.27 AC±; 14.71 AC±; 74 AC±; 88 AC±; 116 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 **6,841' TVD 16,940' MD**  
 WELL OPERATOR **ANTERO RESOURCES CORP.** DESIGNATED AGENT **DIANNA STAMPER**  
 ADDRESS **1815 WYNKOOP STREET** ADDRESS **5400 D BIG TYLER ROAD**  
**DENVER, CO 80202** **CHARLESTON, WV 25313**

COUNTY NAME PERMIT

LATITUDE 39°15'00"

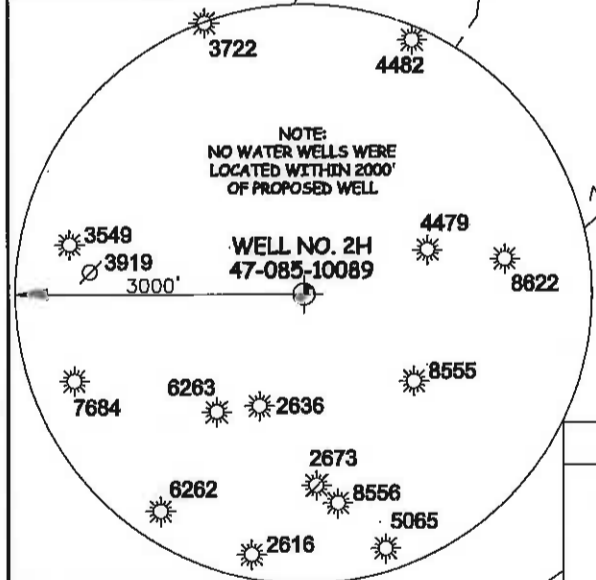
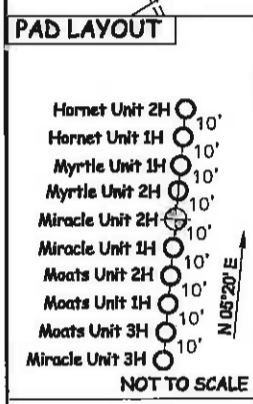
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**WILLOW LAND SURVEYING PLLC**  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

DATE **2/24/2016**  
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