

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

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Office of Oil and Gas

MAR 16 2020

WV Department of
Environmental Protection

API 47-021-05794 County Gilmer District Dekalb
Quad Burnt House Pad Name Riddle 1301 Field/Pool Name _____
Farm name Fred Riddle Well Number Riddle 1301 S-3H
Operator (as registered with the OOG) HG Energy II Appalachia, LLC
Address 5260 Dupont Road City Parkersburg State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4320681.680 Easting 505592.739
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing 4318092.494 Easting 506377.551

Elevation (ft) 1237' 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)
Synthetic Oil Base Mud, Additives - Lime, Calcium Chloride, Gilsonite, Asphalt, Barite, Emulsifier, Base Oil

Date permit issued 8/28/18 Date drilling commenced 1/23/19 Date drilling ceased 5/21/19
Date completion activities began 5/24/19 Date completion activities ceased 7/1/19
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft not observed Open mine(s) (Y/N) depths N
Salt water depth(s) ft not observed Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1076, 1230 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Dan Miller

Reviewed by: _____

API 47-021 - 05794 Farm name Fred Riddle Well number Riddle 1301 S-3H

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	26"	20"	145'	N	94#		
Surface	17 1/2"	13 3/8"	1147'	N	54.5#		
Coal							
Intermediate 1	12 1/4"	9 5/8"	2875'	N	40#		
Intermediate 2	8.5"	7"	6389'	N	23#		
Intermediate 3							
Production	6 1/8"	5"	14892"	N	15.1#		
Tubing							
Packer type and depth set							

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							
Surface	Class A	910	15.6	1.20			8 hrs
Coal							
Intermediate 1	Class A	1076	15.4	1.23			8 hrs
Intermediate 2	Class A	700	15.6	1.18			8 hrs
Intermediate 3							
Production	Class A	1358	15.6	1.19			8 hrs
Tubing							

Drillers TD (ft) 6626' Pilot, lateral: 14892' MD Loggers TD (ft) 14860' Pilot

Deepest formation penetrated Marcellus Plug back to (ft) _____

Plug back procedure _____

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Kick off depth (ft) 6300' MD

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Environmental Protection

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Conductor - NA

Surface Casing - Bow Springs (over collars) on first 2 joints then every third joint to 100' from surface

Intermediate Casing - Bow Springs (over collars) on first 12 joints, then every third joint to 100' from surface

Production Casing - Run 1 spiral centralizer every 5 joints from the top of the curve to surface. Run 1 spiral centralizer every 3 joints from the 1st 5.5" long joint to the top of the curve.

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 _____

Riddle 1301 S-3H
Perforation Record

1 8

Stage No.	Perforation Date	Perforated from MD ft	Perforated to MD ft	# of Perforations	Formation
1	5/31/2019	14680		48	
2	6/1/2019	14,642	14,477	32	
3	6/1/2019	14,455	14,280	32	
4	6/1/2019	14,258	14,083	32	
5	6/5/2019	14,061	13,886	32	
6	6/5/2019	13,864	13,689	32	
7	6/5/2019	13,667	13,492	32	
8	6/6/2019	13,470	13,295	32	
9	6/6/2019	13,273	13,098	32	
10	6/6/2019	13,076	12,901	32	
11	6/6/2019	12,879	12,704	32	
12	6/7/2019	12,682	12,507	32	
13	6/7/2019	12,485	12,310	32	
14	6/7/2019	12,288	12,113	32	
15	6/7/2019	12,091	11,916	32	
16	6/8/2019	11,894	11,719	32	
16B	6/8/2019	11,894	11,719	64	
17	6/8/2019	11,645	11,498	32	
18	6/9/2019	11,476	11,329	32	
19	6/9/2019	11,303	11,128	32	
20	6/9/2019	11,106	10,931	32	
21	6/9/2019	10,908	10,733	32	
22	6/9/2019	10,709	10,534	32	
23	6/10/2019	10,510	10,335	32	
24	6/10/2019	10,311	10,136	32	
25	6/10/2019	10,112	9,937	32	
26	6/10/2019	9,913	9,738	32	
27	6/11/2019	9,714	9,539	32	
28	6/11/2019	9,515	9,340	32	
29	6/11/2019	9,316	9,141	32	
30	6/11/2019	9,117	8,942	32	
31	6/11/2019	8,918	8,743	32	
32	6/12/2019	8,719	8,544	32	
33	6/12/2019	8,520	8,345	32	
34	6/12/2019	8,321	8,146	32	
35	6/12/2019	8,122	7,947	32	
36	6/12/2019	7,923	7,748	32	
37	6/13/2019	7,724	7,549	32	
38	6/13/2019	7,525	7,350	32	
39	6/13/2019	7,326	7,151	32	
39B	6/13/2019	7,326	7,151	64	
40	6/13/2019	7,065	6,918	32	
41	6/14/2019	6,896	6,742	32	

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Riddle 1301 S-3H
Stimulation Information Per Stage

WV Department of
Environmental Protection X

Stage No.	Perforation Date	Avg Pump Rate (BPM)	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (BBLS)	Amount of Nitrogen/Other (units)
1	5/31/2019	62.0	10857	7300	5980	28.0	3585	2031
2	6/1/2019	69.0	9,982	6,832	6,050	3,808.6	10,823	2,064
3	6/1/2019	68.0	9,412	6,680	4,130	4,300.2	12,172	2,016
4	6/1/2019	66.0	9,161	6,613	4,649	7,083.0	14,049	2,000
5	6/5/2019	69.1	9,446	6,700	4,862	6,598.0	14,345	2,079
6	6/5/2019	66.0	8,808	6,344	3,867	7,090.4	14,181	1,008
7	6/5/2019	68.5	9,236	7,297	3,351	7,024.0	14,158	1,848
8	6/6/2019	72.0	9,207	7,037	4,153	7,021.8	14,024	1,008
9	6/6/2019	70.0	8,655	6,905	4,478	7,024.6	14,173	1,008
10	6/6/2019	69.7	8,991	6,313	4,211	7,054.0	13,519	1,081
11	6/6/2019	73.1	9,609	6,249	4,252	6,939.0	13,225	998
12	6/7/2019	71.0	9,024	6,222	3,640	7,030.6	12,333	995
13	6/7/2019	74.0	9,558	6,127	3,962	6,918.4	12,722	996
14	6/7/2019	34.0	10,090	5,970	6,445	807.3	4,187	2,006
15	6/7/2019	72.7	9,097	6,085	5,399	7,033.9	11,965	998
16	6/8/2019	62.6	11,061	6,153	N/A	13.8	1,581	998
16B	6/8/2019	65.0	8,981	6,153	5,230	3,532.4	12,743	998
17	6/8/2019	65.5	8,286	5,998	3,239	7,002.6	12,232	1,996
18	6/9/2019	64.5	8,548	5,748	5,047	6,991.6	11,972	1,976
19	6/9/2019	66.0	8,058	5,953	3,336	7,057.0	12,114	998
20	6/9/2019	72.0	9,053	6,212	4,440	5,935.0	11,783	998
21	6/9/2019	72.2	9,232	5,780	2,910	7,028.0	12,291	998
22	6/9/2019	74.2	8,792	5,659	3,384	7,047.0	12,093	998
23	6/10/2019	74.5	8,547	5,806	5,195	7,051.0	12,069	998
24	6/10/2019	73.0	9,109	5,820	5,160	7,062.2	12,253	998
25	6/10/2019	79.0	8,812	5,739	3,229	6,974.0	12,518	998
26	6/10/2019	75.9	8,709	5,673	3,298	6,995.0	11,955	998
27	6/11/2019	74.1	8,827	5,679	4,813	3,853.0	9,664	998
28	6/11/2019	75.5	8,762	5,618	5,039	6,554.0	11,555	1,005
29	6/11/2019	79.0	8,591	5,420	3,176	7,010.4	11,991	998
30	6/11/2019	78.0	8,701	5,538	3,047	7,007.4	12,546	998
31	6/11/2019	77.0	8,666	6,039	3,470	7,011.0	11,847	998
32	6/12/2019	76.5	8,685	5,711	6,170	6,409.0	12,389	1,081
33	6/12/2019	78.0	8,440	6,392	3,505	7,005.6	12,051	998
34	6/12/2019	79.0	8,245	6,105	3,656	6,887.8	11,822	998
35	6/12/2019	78.0	8,336	6,192	5,462	6,931.4	12,044	998
36	6/12/2019	74.5	8,370	5,574	5,725	7,001.0	12,651	998
37	6/13/2019	73.6	8,033	5,105	5,020	6,990.0	11,885	998
38	6/13/2019	75.0	7,965	5,720	4,652	5,990.6	11,609	998
39	6/13/2019	46.0	6,863	6,181	5,480	495.0	5,327	998
39B	6/13/2019	70.4	7,707	5,880	3,284	6,761.0	10,857	989
40	6/13/2019	69.2	7,282	5,947	3,600	4,609.0	10,565	1,081
41	6/14/2019	71.9	7,046	6,030	3,280	7,391.0	13,599	1,081

Riddle 1301 3H tops for Completion report
Lithology/Formation Information

Lithology/formation	Top Depth in FT nam	Bottom Depth TVD	Top Depth MD	Bottom Depth MD	Bottom Depth MD	Rock type, type of fluid, gas, oil
Red rock	0	1076	0		1076	Red/Brown SLTST, SH, SS: no gas/water observed
Coal	1076	1090	1076		1090	Coal no gas/water observed
	1090	1230	1090		1230	SH and SS
Coal	1230	1240	1230		1240	Coal no gas/water observed
	1240	2096	1240		2096	SH/SLTST/SS
Little Lime	2096	2142	2096		2142	Limestone
Big Lime	2142	2206	2142		2206	Limestone
Big Injun	2206	2296	2206		2296	Sandstone
Weir	2245	2540	2446		2541	Sandstone/Siltstone
Berea	2588	2594	2589		2595	Sandstone
Devonian	2594	3524	2595		3526	Shale/Siltstone
Warren	3524	3564	3526		3566	Shale
Balltown	3925	3952	3927		3954	Shale/Siltstone
Riley	4633	4643	4645		4656	Siltstone
Benson	4980	4987	5012		5020	Sandstone
Alexander	5178	5243	5226		5292	Sandstone/Siltstone
Cement Plug back to 4230'		5840			5916	
MD due to losses		6351	6345		6512	Shale 750 units gas
Cashaqua	6221	6351	6345		6610	Shale, 850 unit gas
Middlesex	6351	6418	6512		6654	Shale, 1200 units gas
Geneseo	6418	6443	6610		6728	Shale, 2600 units gas
Burket	6443	6479	6654		6741	Limestone
Tully	6479	6483	6728		14892	Shale 1000-3000 units gas
Marcellus	6483	6542	6741			



Fracture Start Date/Time:	6/1/19 12:05
Fracture End Date/Time:	6/14/19 15:00
State:	West Virginia
County:	Gilmer
API Number:	47-021-05794-0000
Operator Name:	HG Energy
Well Name:	Riddle 3H
Federal Well:	Yes
Tribal Well:	No
Longitude:	39.0351
Latitude:	-80.9347
Long/Lat Projection:	NAD27
True Vertical Depth (TVD):	6,535'
Total Clean Fluid Volume (gal):	500,299

Additive	Specific Gravity	Additive Quantity	Mass (lbs)
Water	1.00	500,299	4,174,995
Sand (100 Mesh Proppant)	2.65	3,896,940	3,896,940
Sand (40/70 Proppant)	2.65	21,615,280	21,615,280
Hydrochloric Acid (28%)	1.12	26,833	250,792
NEFE-180	0.99	184	1,522
Total Slurry Mass (Lbs)			29,959,529

Ingredients Section:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Mass per Component (LBS)	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	HG Energy	Carrier/Base Fluid	Water	7732-18-5	100.00%	4,174,995	13.94476%	
Sand (100 Mesh Proppant)	US Silica	Proppant	Silica Substrate	14808-60-7	100.00%	3,896,940	72.19646%	
Sand (40/70 Proppant)	US Silica	Proppant	Silica Substrate	14808-60-7	100.00%	21,615,280	0.30156%	
Hydrochloric Acid (28%)	Dover	Acidizing	Hydrochloric Acid (Hydrogen Chloride)	7732-18-5	36.00%	90,285	0.53610%	
NEFE-180	Dover	Corrosion Inhibitor/Iron Control	Water	7732-18-5	64.00%	1,354	0.00452%	
			Acetic acid	64-19-7	89.00%	609	0.00203%	
			Methanol	67-56-1	40.00%	152	0.00051%	
			2-Ethylhexanol	104-76-7	10.00%	76	0.00025%	
			Fatty acids, tall oil	61790-12-3	5.00%	76	0.00025%	
			Coconut oil acid diethanolamine	68603-42-9	5.00%	76	0.00025%	
			Alcohols, C14-15, ethoxylated	68951-67-7	5.00%	76	0.00025%	
			2-Propyn-1-ol	107-19-7	5.00%	76	0.00025%	

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MAR 16 2020
WV Department of
Environmental Protection

HG Energy II Appalachia, LLC
As-Drilled
Well No. Riddle 1301 S-3H

Notes:
 Well No. Riddle 1301 S-3H
 WVSPC NAD 1927
 Top Hole Coordinates
 N: 741,078.49' E: 2,018,308.85'
 Landing Point Coordinates
 N: 740,157.99' E: 2,017,952.98'
 Bottom Hole Coordinates
 N: 732,579.99' E: 2,020,884.62'

Legend

- ⊙ Proposed gas well
- ⊙ Well Reference, as noted
- ⊙ Monument, as noted
- ⊙ Existing Well, as noted
- ⊙ Existing Plugged Well, as noted
- ⊙ Digitized Well, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)



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.

Dwayne P. Matheny
 Dwayne P. Matheny, P.S. 2070

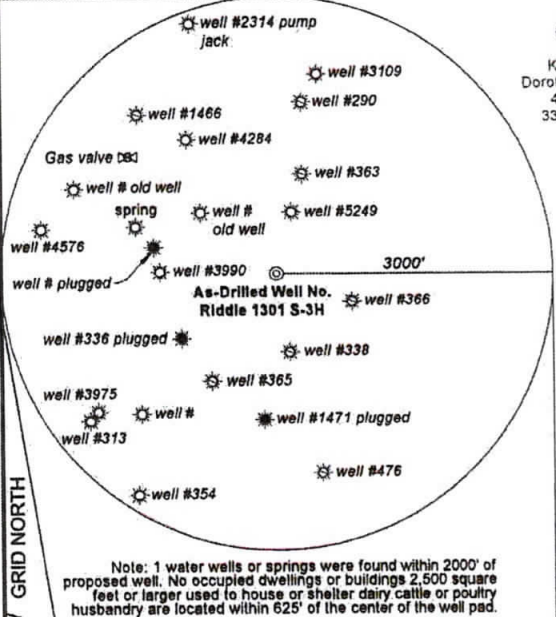
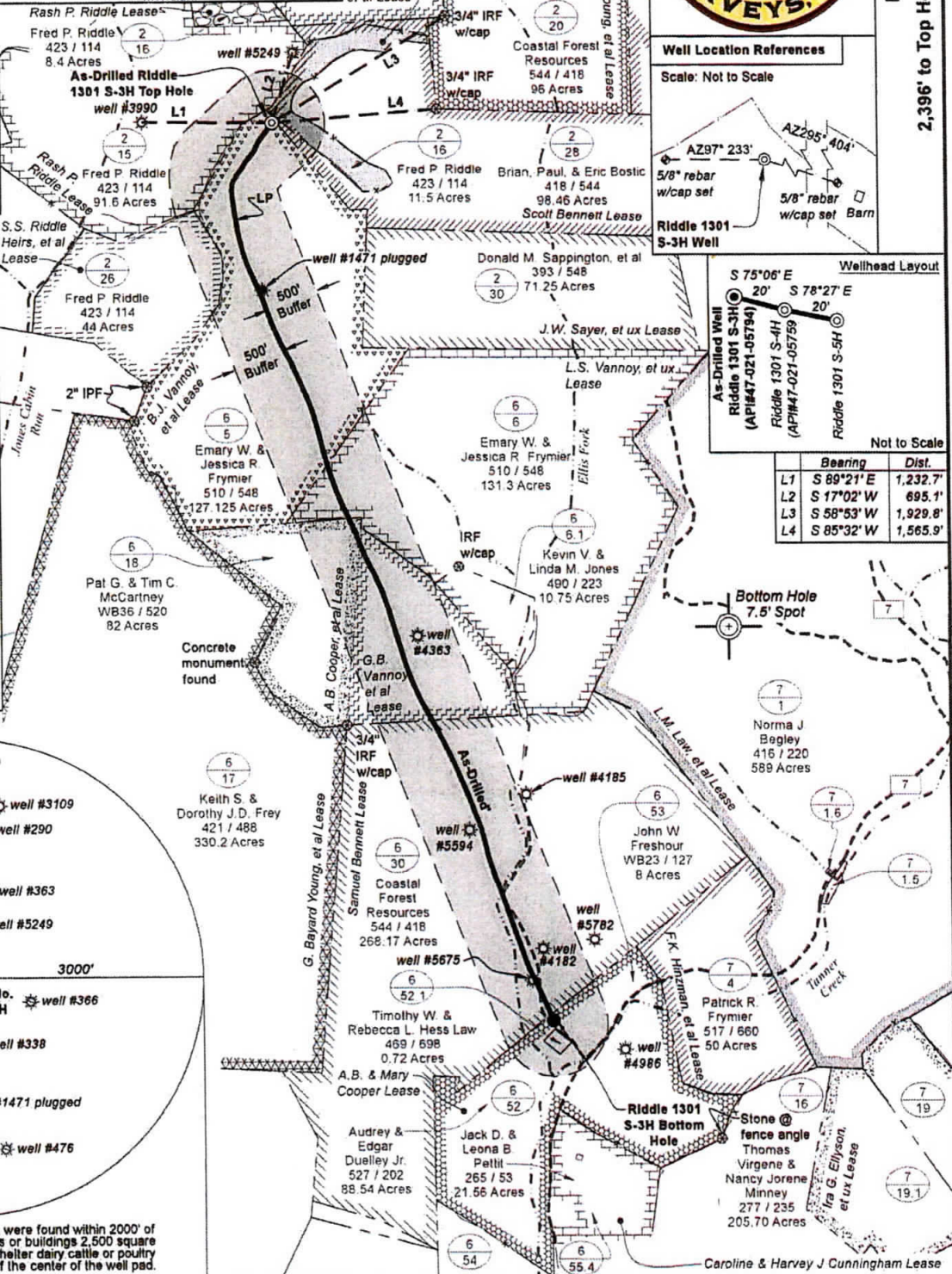
Notes:
 Well No. Riddle 1301 S-3H
 West Virginia Coordinate System of 1927, South Zone based upon Differential GPS Measurements.
 Top Hole coordinates Bottom Hole coordinates
 Latitude: 39°02'06.31" Latitude: 39°00'42.29"
 Longitude: 80°56'07.98" Longitude: 80°55'35.43"
 UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,320,681.680m N: 4,318,092.494m
 E: 505,592.739m E: 506,377.551m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

Joy E. Gragg
 WB22 / 107
 75.88 Acres

S.S. Riddle,
 et al Lease

P.P. Gragg,
 et al Lease

G. Bayard Young,
 et al Lease



FILE NO: 11-19-D-18
 DRAWING NO: Riddle 1301 S-3H As-Drilled Plat
 SCALE: 1" = 1500'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: CORS, Harrisville, WV

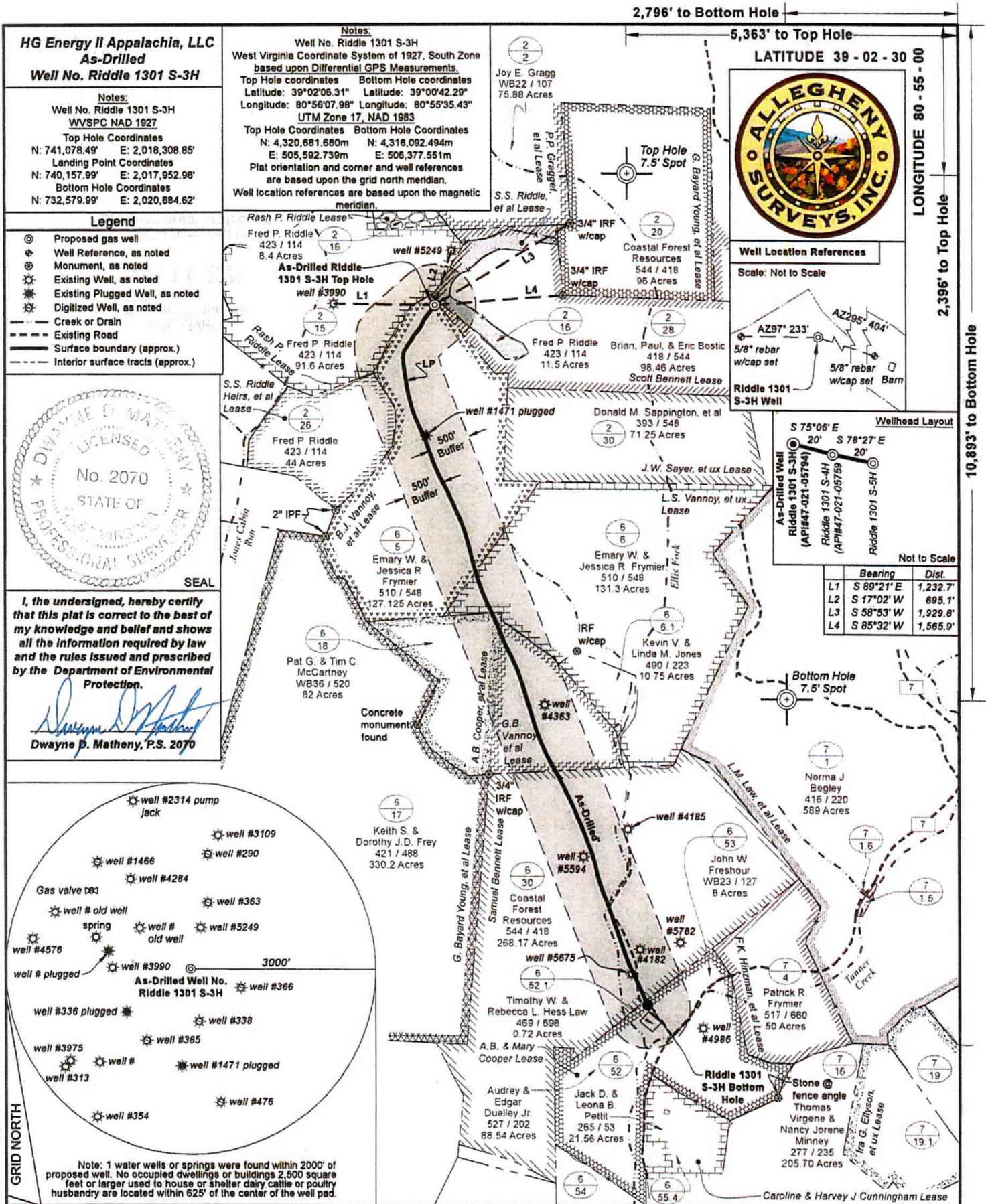
STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: November 7 2019
 OPERATOR'S WELL NO. Riddle 1301 S-3H
 API WELL NO
 47 - 021 - 05794
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: 1,237' WATERSHED: Ellis Fork QUADRANGLE: Burnt House
 DISTRICT: Dekalb Fred P. Riddle, COUNTY: Gilmer
 SURFACE OWNER: Emary W. & Jessica R. Frymier ACREAGE: 127.125 / 11.50
 ROYALTY OWNER: B. J. Vannoy; S. S. Riddle, et al LEASE NO: 260204000 260352000 ACREAGE: 127.125 / 11.50
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 14,892' MD 6,542' TVD

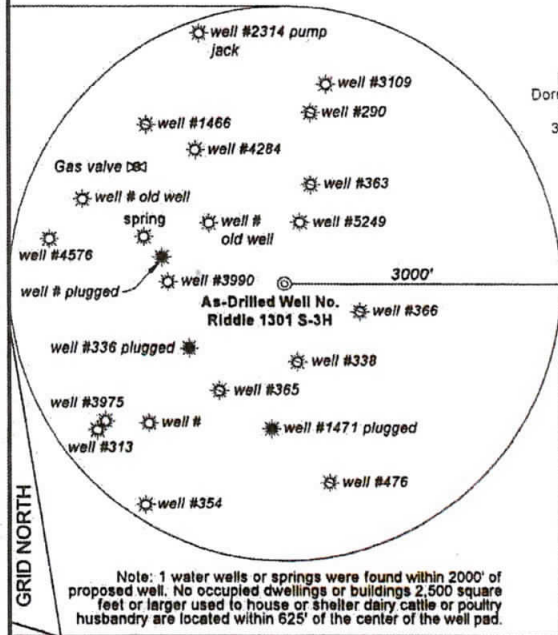
WELL OPERATOR: HG Energy II Appalachia, LLC DESIGNATED AGENT: Diane C. White
 ADDRESS: 5260 Dupont Road ADDRESS: 5260 Dupont Road
 Parkersburg, WV 26101 Parkersburg, WV 26101



SEAL

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Dwayne D. Matheny
Dwayne D. Matheny, P.S. 2070



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 PROVEN SOURCE OF ELEVATION: CORS, Harrisville, WV

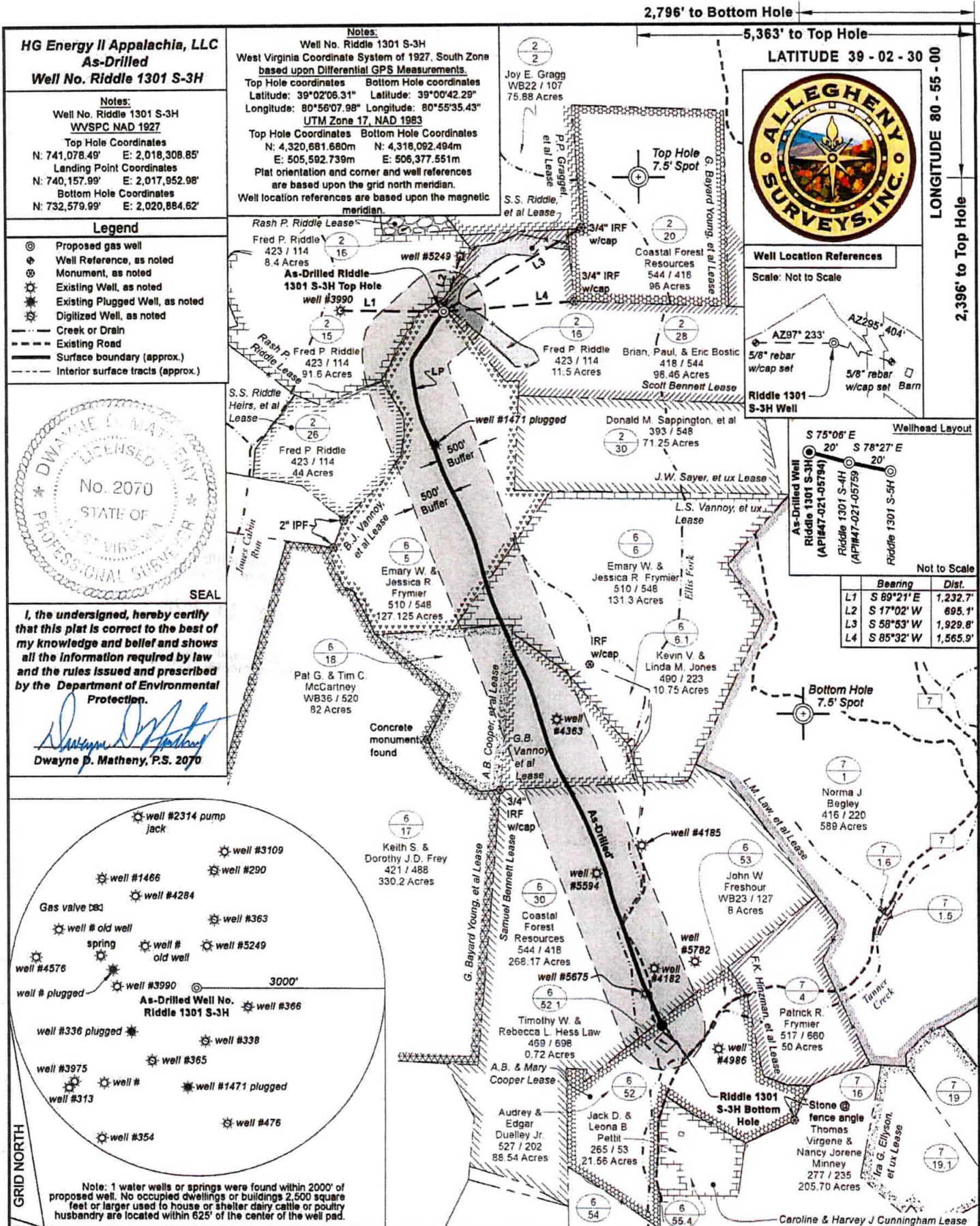
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 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 6,542' TVD
 14,892' MD

WELL OPERATOR: HG Energy II Appalachia, LLC DESIGNATED AGENT: Diane C. White
 ADDRESS: 5260 Dupont Road ADDRESS: 5260 Dupont Road
 Parkersburg, WV 26101 Parkersburg, WV 26101



HG Energy II Appalachia, LLC
As-Drilled
Well No. Riddle 1301 S-3H

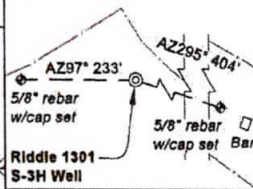
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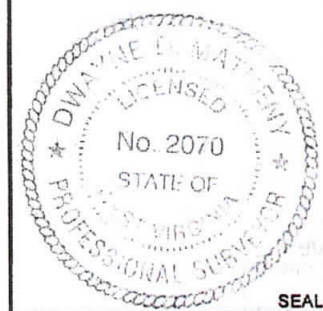


Well Location References
 Scale: Not to Scale



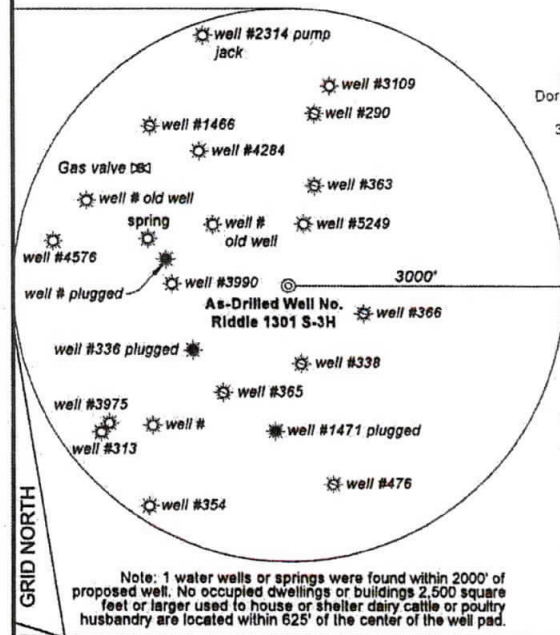
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- Existing Plugged Well, as noted
- Digitized Well, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)



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.

Dwayne P. Matheny
 Dwayne P. Matheny, P.S. 2070



FILE NO: 11-19-D-18
 DRAWING NO: Riddle 1301 S-3H As-Drilled Plat
 SCALE: 1" = 1500'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: CORS, Harrisville, WV

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

DATE: November 7 20 19
 OPERATOR'S WELL NO. Riddle 1301 S-3H
 API WELL NO
 47 - 021 - 05794
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION: 1,237' WATERSHED: Ellis Fork
 DISTRICT: Dekalb Fred P. Riddle,
 SURFACE OWNER: Emary W. & Jessica R. Frymier
 ROYALTY OWNER: B. J. Vannoy; S. S. Riddle, et al LEASE NO: 260204000 260352000 ACREAGE: 127.125 / 11.50

PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 14,892' MD 6,542' TVD

WELL OPERATOR: HG Energy II Appalachia, LLC DESIGNATED AGENT: Diane C. White
 ADDRESS: 5260 Dupont Road ADDRESS: 5260 Dupont Road
 Parkersburg, WV 26101 Parkersburg, WV 26101