

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

RECEIVED
Office Of Oil and Gas

OCT 10 2023

API # 47 - 051 - 02416 County Marshall District Clay **WV Department of Environmental Protection**
Quad Powhatan Point, WV/OH Pad Name MND1 Field/Pool Name _____
Farm name CCC/Murray Energy Well Number MND1HHS
Operator (as registered with the OOG) HG Energy II Appalachia, LLC
Address 5260 Dupont Rd. 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 4411127.6 Easting 519314.1
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing 4413811.0 Easting 518591.0

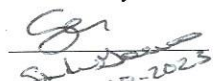
Elevation (ft) 1150 GL _____ Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution 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/ OBM
Barite, Lime, CaCL, base oil, Gilsonite, Asphalt, clay, Emulsifier, sulfatone, safevert FLG, safevert WA

Date permit issued 10/25/2021 Date drilling commenced 10/29/2021 Date drilling ceased 2/20/2022
Date completion activities began 2/25/2022 Date completion activities ceased 5/20/2022
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 521' 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 622,694 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

10-18-2023

API 47-051 - 02416 Farm name CCC/Murray Energy Well number MND1HHS

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	28"	20"	40	New	94 lbs/ft J55		Yes, 16bbl pumped*
Surface	18.5"	13.375"	1135	New	54.5 lbs/ft J-55		Yes, 69 bbl to surface
Coal							
Intermediate 1	12.25"	9.625"	2601	New	40 lbs/ft J55		Yes, 35 bbl to surface
Intermediate 2							
Intermediate 3							
Production	8.5	5.5	16325	New	23 lbs/ft P-110 CDC HTQ		No, no returns to surface
Tubing	4.67	2.375	7779	New	4.7 lbs/ft J55		not cemented
Packer type and depth set							

Comment Details 16 bbls of 2% calcium class A cement pumped by lightning Energy Services to surface

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	75	15.6	N/A		Surface	
Surface	Class A	1180	15.6	1.19	1174.8	Surface	8
Coal							
Intermediate 1	Class A	895	15.6	1.18	875.5	Surface	8
Intermediate 2							
Intermediate 3							
Production	Class A	3605	15.6	1.19	3609.37	2600'	8
Tubing							

Drillers TD (ft) 16362 Loggers TD (ft) _____
 Deepest formation penetrated Marcellus Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) 6754

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 _____

13.375" casing: centralizer run every joint to 20" casing then placed every 3 joints to surface
 9.625" casing: Centralizers run every other joint to 13.375" casing then placed every 3 joints to surface
 5.5" casing: Centralizer run every joint to top of curve (KOP) then centralizers placed every 3 joints to surface

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 _____

API 47- 051 - 02416 Farm name CCC/Murray Energy Well number MND1HHS

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6198-6255	TVD 6615-15389 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 2886 psi Bottom Hole _____ psi DURATION OF TEST 982 hrs
 OPEN FLOW Gas 7440 mcfpd Oil _____ bpd NGL _____ bpd Water 2280 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 ₂ S, ETC)
	0		0		

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling
 Address 10350 Richmond Ave, Suite 700 City Houston State TX Zip 77042
 Logging Company Renegade Wireline Services
 Address 191 Earnhardt Rd. City Hunker State PA Zip 15639
 Cementing Company Schlumberger
 Address 300 Schlumberger Dr. City Sugar Land State TX Zip 77478
 Stimulating Company Producers Service Corp
 Address 109 Graham St City Zanesville State OH Zip 43701

Please insert additional pages as applicable.

Completed by Diane White Telephone 304-420-1119
 Signature Diane White Title _____ Date 3/3/2023

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

HG Energy II Appalachia, LLC

MND1 HHS

Perforation Record

Stage #	Perf Date	Perforation from Depth	Perforation to Depth	Number of Perforations	Formation
Sleeve/1	4/9/2022	16285	16266	2	Marcellus
2	4/9/2022	16212	16044	28	Marcellus
3	4/11/2022	16025	15868	28	Marcellus
4	4/13/2022	15840	15672	28	Marcellus
5	4/14/2022	15644	15476	28	Marcellus
6	4/14/2022	15448	15280	28	Marcellus
7	4/17/2022	15252	15084	28	Marcellus
8	4/19/2022	15056	14888	28	Marcellus
9	4/20/2022	14860	14692	28	Marcellus
10	4/20/2022	14664	14496	28	Marcellus
11	4/21/2022	14468	14300	28	Marcellus
12	4/21/2022	14272	14104	28	Marcellus
13	4/22/2022	14076	13908	28	Marcellus
14	4/23/2022	13880	13712	28	Marcellus
15	4/25/2022	13684	13516	28	Marcellus
16	4/26/2022	13488	13320	28	Marcellus
17	4/26/2022	13292	13124	28	Marcellus
18	4/26/2022	13096	12928	28	Marcellus
19	4/27/2022	12900	12732	28	Marcellus
20	4/27/2022	12704	12536	28	Marcellus
21	4/27/2022	12508	12340	28	Marcellus
22	4/28/2022	12312	12144	28	Marcellus
23	4/28/2022	12116	11948	28	Marcellus
24	4/28/2022	11920	11752	28	Marcellus
25	4/29/2022	11724	11556	28	Marcellus
26	4/29/2022	11528	11360	28	Marcellus
27	4/30/2022	11331	11163	28	Marcellus
28	4/30/2022	11133	10965	28	Marcellus
29	4/30/2022	10935	10767	28	Marcellus
30	4/30/2022	10737	10569	28	Marcellus
31	5/1/2022	10539	10371	28	Marcellus
32	5/1/2022	10341	10173	28	Marcellus
33	5/1/2022	10143	9975	28	Marcellus
34	5/2/2022	9945	9777	28	Marcellus
35	5/2/2022	9747	9579	28	Marcellus
36	5/2/2022	9549	9381	28	Marcellus
37	5/3/2022	9351	9183	28	Marcellus
38	5/3/2022	9153	8985	28	Marcellus
39	5/3/2022	8955	8787	28	Marcellus
40	5/4/2022	8757	8589	28	Marcellus
41	5/4/2022	8559	8391	28	Marcellus
42	5/4/2022	8361	8193	28	Marcellus
43	5/5/2022	8163	7995	28	Marcellus
44	5/5/2022	7965	7797	28	Marcellus

HG Energy II Appalachia, LLC

MND1 HHS

Stimulation Record

Stage #	Date	Ave pump rate (BPM)	Ave Treatment Press (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Proppant (LBS)	Water (BBLs)
Sleeve/1	4/9/2022	86.0	7688	8178	3395	270770	10,020
2	4/9/2022	92.0	7,666	5,369	4,390	634870	13,764
3	4/11/2022	92.0	7,924	5,972	4,517	665900	12,988
4	4/13/2022	89.0	7,596	5,587	4,816	556440	11,216
5	4/14/2022	95.0	8,003	5,622	4,421	661040	9,539
6	4/14/2022	88.0	7,669	5,056	4,780	652000	8,971
7	4/17/2022	84.0	7,516	5,606	4,952	631200	10,423
8	4/19/2022	88.0	7,337	5,169	5,030	630700	9,149
9	4/20/2022	94.0	7,493	5,432	4,869	635600	9,357
10	4/20/2022	89.0	7,573	5,411	4,915	631750	9,259
11	4/21/2022	88.0	7,395	5,305	4,780	623400	9,975
12	4/21/2022	90.0	7,816	5,340	4,757	607120	9,039
13	4/22/2022	67.0	7,392	4,574	5,116	630060	14,774
14	4/23/2022	87.0	7,261	5,227	5,162	646430	10,494
15	4/25/2022	88.0	7,268	5,293	5,194	637240	8,287
16	4/26/2022	90.0	7,261	4,763	5,224	629120	9,187
17	4/26/2022	96.0	7,755	5,172	4,877	631070	8,880
18	4/26/2022	91.0	7,446	4,999	4,779	630700	8,396
19	4/27/2022	98.0	7,703	4,899	4,776	629930	9,456
20	4/27/2022	97.0	7,657	5,122	5,474	631450	8,856
21	4/27/2022	95.0	7,470	5,106	4,860	629590	8,702
22	4/28/2022	93.0	7,450	5,474	4,818	543180	8,904
23	4/28/2022	95.0	7,534	5,035	4,347	631530	9,425
24	4/28/2022	96.0	7,599	5,080	4,690	632130	9,335
25	4/29/2022	88.0	7,083	5,275	4,957	630320	10,064
26	4/29/2022	94.0	7,172	5,031	4,693	632920	10,141
27	4/30/2022	94.0	7,174	3,597	5,022	630820	9,202
28	4/30/2022	88.0	7,165	5,547	5,053	630430	9,831
29	4/30/2022	92.0	7,400	5,535	5,299	649350	8,689
30	4/30/2022	96.0	7,357	5,312	5,004	633250	8,121
31	5/1/2022	97.0	7,405	5,454	5,073	587810	8,742
32	5/1/2022	98.0	7,089	4,919	5,413	641350	9,045
33	5/1/2022	99.0	7,010	5,322	5,096	628190	11,149
34	5/2/2022	96.0	7,207	5,078	5,032	631050	10,626
35	5/2/2022	97.0	7,034	5,294	4,933	635260	9,220
36	5/2/2022	96.0	7,114	5,156	5,042	629710	10,139
37	5/3/2022	96.0	7,040	5,317	4,674	630660	9,606
38	5/3/2022	93.0	7,433	5,234	5,166	631350	10,876
39	5/3/2022	98.0	7,155	5,101	4,994	630760	9,188
40	5/4/2022	98.0	7,060	5,510	5,415	633440	9,340
41	5/4/2022	95.0	6,893	5,087	4,970	629440	9,758
42	5/4/2022	93.0	6,685	4,480	5,056	631120	9,358
43	5/5/2022	95.0	6,556	4,356	4,941	631200	9,408
44	5/5/2022	95.0	6,720	5,975	4,160	658150	9,992

HG Energy II Appalachia, LLC
MND1 HHS
Geological Information

Elevation - 1177 Formation	Tops			Base	
	MD	TVD		MD	TVD
Pittsburgh Coal	694	694		699	699
Surface casing set	1165		drill	1135	
Greenbrier Big Lime	1733	1731		1760	1758
Loyalhanna Big Injun	1821	1821		1863	1861
Pocono Big Injun (Price Form	1908	1906		2063	2061
5th sand/Weir	2165	2162		2182	2179
Intermdiate casing set	2641		drill	2601	
Speechley	3310	3263		3360	3304
Java	5437	4787	5157' air to	5544	4863
Angola	5798	5043		6000	5186
Rhinstreet	6797	5740		7179	6021
Cashaqua	7179	6021		7295	6094
Middlesex	7295	6094		7332	6116
West River	7332	6116		7452	6180
Burket	7452	6180		7483	6195
Tully	7483	6195		7573	6231
Hamilton	7573	6231		7721	6274
Marcellus shale	7721	6274		16362	6220

AS DRILLED PLAT

6,854' to Top Hole

39° 52' 30"

WELL: MND1 HHS Coordinates

WV SPC North (NAD 27)
SURFACE LOCATION
N - 494,195.8
E - 1,642,196.2

LANDING POINT
N - 495,954
E - 1,644,894

BOTTOM HOLE
N - 503,040
E - 1,639,970

UTM NAD 83 (mtr)
SURFACE LOCATION
N - 4,411,127.6
E - 519,314.1

BOTTOM HOLE
N - 4,413,811
E - 518,591

LAT/LONG (NAD 83)
SURFACE LOCATION
39.849949°
80.774227°

BOTTOM HOLE
39.874140°
80.782604°

Powhatan Point, OH

OHIO RIVER

Captina Island (USA)

Bottom Hole 7.5' Spot

9,202' to Bottom Hole

NOTES ON SURVEY

- No water supply wells or developed springs are located within 1,500' of proposed well
- No occupied dwellings or buildings 2500 sq. ft. or larger are located within 625' of proposed well.
- Latitude/Longitude offset measurements are referenced to NAD 1927. Well tie lines are referenced to UTM Zone 17 North (NAD 83).
- The location of boundary lines shown hereon are based on deed descriptions and boundary data supplied by PVE as shown on the original plats submitted with permit applications in 2015 and 2018. This plat is not intended to represent a boundary survey as defined in W.Va. SRC §30-13A-3 (c).
- Lease Boundaries shown hereon are located as described in the provided Certified Title Opinions.

341' to Bottom Hole
80° 45' 00"

9,152' to Top Hole

LEGEND

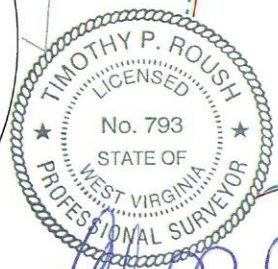
- 100 Surface Parcel No.
- 2 Lease Reference No.
- Lease Boundary
- Surface Boundary
- Proposed Horizontal Lateral
- Proposed Curve Section
- Stream

North

Top Hole 7.5' Spot

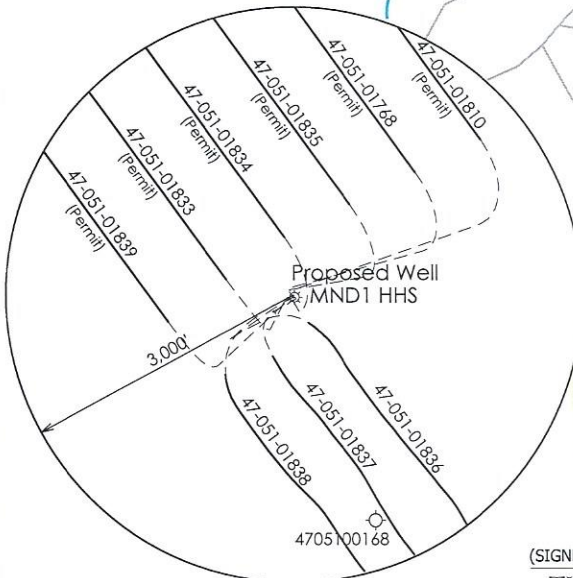
MND1 HHS Top Hole

MARSHALL COUNTY COAL RESOURCES, Inc. - Surface Owner



(SIGNED) *Timothy P. Roush*
TIMOTHY P. ROUSH PS 793

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



--- DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

FILE NO. _____
SCALE: **1" = 1,500'**
MINIMUM DEGREE OF ACCURACY: **Sub-Meter**
PROVEN SOURCE OF ELEVATION: **DGPS Survey**



WEST VIRGINIA
Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, West Virginia 25301

DATE **March 3, 2023**
WELL NAME **MND1 HHS**
API WELL NO. **47 - 051 - 02126**
State County Permit

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

LOCATION: ELEVATION **1,150'** WATERSHED **Hog Run**
DISTRICT: **Clay** COUNTY: **Marshall** QUADRANGLE: **Powhatan Point 7.5'**
SURFACE OWNER: **Marshall County Coal Resources, Inc.** ACREAGE: **128.32 Ac.**
OIL & GAS ROYALTY OWNER: **HG Energy II Appalachia, LLC** LEASE ACREAGE: **128.32 Ac.** LEASE NO. _____
PROPOSED WORK: DRILL **X** CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE **X** PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) **As Drilled Plat**
PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ TARGET FORMATION **Marcellus Shale** ESTIMATED DEPTH **6,220' TVD**
16,362' TMD

WELL OPERATOR: **HG Energy II Appalachia, LLC** ADDRESS: **5260 DuPont Road Parkersburg, WV 26101**
DESIGNATED AGENT: **Diane White** ADDRESS: **5260 DuPont Road Parkersburg, WV 26101**

WELL: MND1 HHS Coordinates

AS DRILLED PLAT

WV SPC North (NAD 27)

SURFACE LOCATION
N - 494,195.8
E - 1,642,196.2

LANDING POINT

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BOTTOM HOLE

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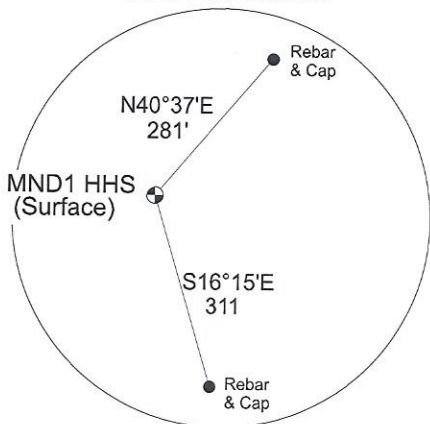
LAT/LONG (NAD 83)

SURFACE LOCATION
39.849949°
80.774227°

BOTTOM HOLE

39.874140°
80.782604°

WELL REFERENCES



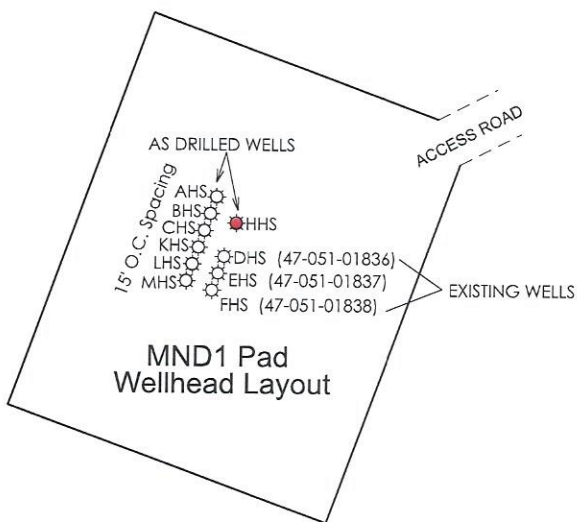
LEASE TABLE

1	HG ENERGY II APPALACHIA, LLC	TMP 04-14-10
2	HG ENERGY II APPALACHIA, LLC	TMP 04-14-09
3	HG ENERGY II APPALACHIA, LLC	TMP 04-14-08
4	EUGENE C. & ELIZABETH A. ESTEP	TMP 04-13-02
5	WENDELL B. & CAROLYN S. RINE	TMP 04-14-07
7	BRENDA K. DUFFORD	TMP 04-07-18.02
8	MOUNTAINEER NATURAL GAS CO.	TMP 04-07-18
17	PAUL J. & JULIE D. MAIDENS	TMP 04-07-14; 07-17; 07-03
28	RANDOLPH BRUNNER	TMP 04-07-15.05
29	MILLARD BONNETTE, JR.	TMP 04-07-15.08

SURFACE PARCEL TABLE

100	Marshall County Coal Resources, Inc.	TMP 04-14-09
101	Marshall County Coal Resources, Inc.	TMP 04-14-10
109	W.Va. Department of Highways	TMP 04-07-15
113	Carmella Faye & Michael Rose	TMP 04-07-18
114	Paul J. & Julie D. Maidens	TMP 04-07-17
116	Marshall County Coal Resources, Inc.	TMP 04-14-08
118	W.Va. Department of Highways	TMP 04-07-15.02
119	W.Va. Department of Highways	TMP 04-15-10
120	W.Va. Department of Highways	TMP 04-07-15.07
121	W.Va. Department of Highways	TMP 04-07-15.01
122	W.Va. Department of Highways	TMP 04-07-15.05
123	W.Va. Department of Highways	TMP 04-07-15.08
124	Eugene C. & Elizabeth A. Estep	TMP 04-13-02
125	Wendell B. & Carolyn S. Rine	TMP 04-14-07
128	John T. Wilson Jr.	TMP 04-06-07
129	Lloyd Rutan - Life Est.	TMP 04-07-18.01
130	Raymond Rutan	TMP 04-07-18.02
131	Carmella Faye & Michael Rose	TMP 04-07-18
132	Cathy J. & Carl F. Petrucci Jr.	TMP 04-07-19
133	Eugene C. & Elizabeth A. Estep	TMP 04-13-01
134	Paul J. & Julie D. Maidens	TMP 04-07-13
135	Paul J. & Julie D. Maidens	TMP 04-07-03
136	Cathy J. & Carl F. Petrucci Jr.	TMP 04-07-03.01
142	U.S.A.	TMP 04-06-07.1
143	Shawn T. & Kelly J. Donahey	TMP 04-13-04

North



+ - DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

FILE NO. _____
SCALE: 1" = 1,500'
MINIMUM DEGREE OF ACCURACY: Sub-Meter
PROVEN SOURCE OF ELEVATION: DGPS Survey



WEST VIRGINIA
Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, West Virginia 25301

DATE March 3, 2023
WELL NAME MND1 HHS
API WELL NO. 47 - 051 - 02126
State County Permit

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

LOCATION: ELEVATION 1,150' WATERSHED Hog Run

DISTRICT: Clay COUNTY: Marshall QUADRANGLE: Powhatan Point 7.5'

SURFACE OWNER: Marshall County Coal Resources, Inc. ACREAGE: 128.32 Ac.

OIL & GAS ROYALTY OWNER: HG Energy II Appalachia, LLC LEASE ACREAGE: 128.32 Ac. LEASE NO. _____

PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___

PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As Drilled Plat

PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ TARGET FORMATION Marcellus Shale ESTIMATED DEPTH 6,220' TVD
16,362' TMD

WELL OPERATOR: HG Energy II Appalachia, LLC
ADDRESS: 5260 DuPont Road
Parkersburg, WV 26101

DESIGNATED AGENT: Diane White
ADDRESS: 5260 DuPont Road
Parkersburg, WV 26101