



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Monday, August 27, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

HG ENERGY II APPALACHIA, LLC
5260 DUPONT ROAD

PARKERSBURG, WV 26101

Re: Permit approval for MND 20 CU
47-051-02013-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: MND 20 CU
Farm Name: CONSOLIDATION COAL COM
U.S. WELL NUMBER: 47-051-02013-00-00
Horizontal 6A New Drill
Date Issued: 8/27/2018

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-926-0499 Ext 1274

Barry K. Lay, Chairman
dep.wv.gov

August 20, 2018

Department of Environmental Protection
Office of Oil and Gas
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-02013

COMPANY: HG Energy II Appalachia, LLC

FARM: HG Energy II Appalachia, LLC MND 20 CU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

The deep well review of the application for the above company is **Approved to drill to Point Pleasant for completion.**

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: MND 20 DU; 47-051-02014
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Susan Rose
Administrator

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: HG Energy II Appalachia, L

<u>494519932</u>	<u>Marshall</u>	<u>Franklin</u>	<u>Powhatan Point</u>
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Operator ID County District Quadrangle

2) Operator's Well Number: MND20 CU Well Pad Name: MND20

3) Farm Name/Surface Owner: Murray Energy Corp Public Road Access: SLS 2/1

4) Elevation, current ground: 1079' Elevation, proposed post-construction: 1058'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

JNB 8/24/18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant 10662' - 10782' / 120' Thick / 9668 psi

8) Proposed Total Vertical Depth: 10,700'

9) Formation at Total Vertical Depth: Point Pleasant

10) Proposed Total Measured Depth: 27,370'

11) Proposed Horizontal Leg Length: 16,212'

12) Approximate Fresh Water Strata Depths: 445, 708', 805'

13) Method to Determine Fresh Water Depths: Nearest offset well

14) Approximate Saltwater Depths: NA

15) Approximate Coal Seam Depths: 526' - 536'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated, drilling in pillar

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: Wells are located in abandoned area of McElroy Mine
Depth: 526' - 536'
Seam: Pittsburgh #8
Owner: Consol Mining Company, LLC

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	New	LS	157.5#	60'	60'	NA
Fresh Water	20"	New	J-55	94#	950'	950'	CTS
Coal	13 3/8"	New	J-55	54.5#	2300'	2300'	CTS
Intermediate	9 5/8"	New	P-110	47#	9143'	9143'	CTS
Production	5 1/2"	New	P-110	23#	27370'	27370'	20% excess, yield = 1.7669, CTS
Tubing							
Liners							

JN 8/24/18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	30"	0.5"			Class A	CTS
Fresh Water	20"	26"	0.438"	2110 psi		Class A	40% Excess Yield = 1.1924, CTS
Coal	13 3/8"	17.5"	0.380"	2730 psi		Class A	30% Excess Yield = 1.18, CTS
Intermediate	9 5/8"	12.25"	0.472"	9440 psi		Stage 1, Class H, Stage	30% Excess Yield = 1.1744, CTS
Production	5 1/2"	8.5"	0.361"	14520 psi	11,500	Class H	20% Excess Yield = 1.7669, CTS
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

JN 8/24/18

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill the vertical depth to the Point Pleasant at an estimated total vertical depth of approximately 10,700 feet. Drill horizontal leg - stimulate and produce the Point Pleasant Formation. Should we encounter formation issues, set the 20" into next competent formation but not deeper than elevation. Should we encounter an unanticipated void we will install a minimum of 20' of casing below the void but not more than 100' below the void, set a basket and grout to surface.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water and chemicals. Maximum pressure not to exceed 10,000 psi.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 17.39

22) Area to be disturbed for well pad only, less access road (acres): 3.8

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used. Fresh Water/Surface - Centralizers every 3 joints to surface. 1st Intermediate - Bow spring on first 2 joints then every third joint to 100' from surface. Intermediate - Bow spring on first 8 joints then every third joint to 100' from surface. Production - 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. See Attached Schematic for more detail.

24) Describe all cement additives associated with each cement type:

Conductor - N/A, Casing to be drilled in w/ Dual Rotary Rig
Surface/Fresh Water - 15.0 ppg PHE-1, Class A + 2.5% bwoc CaCl₂ 40% Excess Yield = 1.1924 / CTS
1st Intermediate - Lead: 15.0 ppg Class A, 2.5% bwoc CaCl₂ 30% Excess, Yield=1.2903 Tail: 15.0 ppg / Class A / 2.5% bwoc CaCl₂ 30% Excess, Yield=1.18 CTS
2nd Intermediate - Stage 1: 15.2 ppg PHE-1+2.5% bwoc CaCl₂, 35.05 Class H, 30% Excess, Yield=1.1313 / Stage 2: 14.5 ppg PHE-1+2.5% bwoc CaCl₂, 30.50 Class A, 30% Excess, Yield=1.1744 CTS
Production - Lead: 15.0 ppg, 35.05 Class H +0.75 gal/bk FR-13L +0.3%bwoc MPA-250 +0.35% bwoc RS, 20% Excess, Yield=1.1475 Tail: 5.6 ppg, Class H - Acid Soluble +0.75 gal/bk FR-13L + .05% bwoc MPA-250 + 0.2% bwoc RS + 30% bwoc ASA301, 20% Excess / Yield=1.7600 CTS
See Attached Casing Schematic for more detail

25) Proposed borehole conditioning procedures:

Conductor - Ensure the hole is clean at TD. Surface/Fresh Water - Once casing is at setting depth, circulate a minimum of one hole volume with Fresh Water prior to pumping cement.
1st Intermediate - Once casing is at setting depth, circulate and condition at TD. Circulate a minimum of one hole volume prior to pumping cement. 2nd Intermediate - Once casing is at setting depth, circulate and condition mud at TD. Circulate a minimum of one hole volume prior to pumping cement. Production - Once on bottom/TD with casing, circulate at max allowable pump rate for at least 2x bottoms up, or until returns and pump pressures indicate the hole is clean. Circulate a minimum of one hole volume prior to pumping cement. See Attached Schematic for more detail.

*Note: Attach additional sheets as needed.



MND20CUHS
Utica Shale Horizontal
Marshall County, WV

Ground Elevation		1058'		MND20CUHS SHL				494946.59N 1634115.63E			
Azm		144.906°		MND20CUHS LP				494735.62N 1634115.51E			
WELLBORE DIAGRAM		144.906°		MND20CUHS BHL				481470.43N 1643436.36E			
HOLE	CASING	GEOLOGY	TOP	BASE	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS		
30"	30" 157.5# LS	Conductor	0	60	AIR	N/A. Casing to be drilled in w/ Dual Rotary Rig	N/A	Ensure the hole is clean at TD.	Conductor casing = 0.5" wall thickness		
26"	20" 94# J-55	Fresh Water Pittsburgh Coal Surface Casing	445, 708, 805 526 0	536 950	AIR	15.6 ppg Class A 40% Excess Yield = 1.1924 / CTS	Centralized every 3 joints to surface	Once casing is at setting depth, circulate a minimum of one hole volume with Fresh Water prior to pumping cement.	Surface casing = 0.438" wall thickness Burst=2110 psi		
17.5"	13-3/8" 54.5# J-55 BTC	Big Lime Big Injun 1st Intermediate Casing	1625 1741 0	1741 1854 2300	AIR	Lead: 15.0 ppg / Class A / 30% Excess / Yield=1.2863 Tail: 15.6 ppg / Class A / 30% Excess / Yield=1.18 CTS	Bow Spring on first 2 joints then every third joint to 100' form surface	Once casing is at setting depth, Circulate and condition at TD. Circulate a minimum of one hole volume prior to pumping cement.	Intermediate casing = 0.380" wall thickness Burst=2730 psi		
12.25"	9-5/8" 47# P-110 BTC	5th Sand Speechley Warren Java Pipe Creek Angola Rhinstreet Cashaqua Middlesox West River Burkett Tully LS Hamilton Marcellus Onondaga Huntersville Oriskany Helderburg Bass Island Salina G Salina F Lockport Rochester Packer Shell Clinton Medina Queenston 2nd Intermediate	2599 3156 3770 4707 4802 4889 5471 5792 5864 5887 5948 5973 5997 6032 6087 6095 6309 6421 6681 6760 6960 7759 8081 8385 8492 8492 8575 8874 0	3156 3770 4707 4802 4889 5471 5792 5864 5887 5948 5973 6032 6087 6095 6309 6421 6681 6760 6960 7759 8081 8385 8492 8492 8575 8874 9143	AIR / KCL Salt Polymer / 9.0ppg SOBM	Stage 1: 15.2 ppg / 35:65 Class H / 30% Excess / Yield=1.1313 Stage 2: 14.5 ppg / 50:50 Class A / 30% Excess / Yield=1.1744 CTS	Bow Spring on first 8 joints then every third joint to 100' form surface	Once casing is at setting depth, Circulate and condition mud at TD. Circulate a minimum of one hole volume prior to pumping cement.	Intermediate casing = 0.472" wall thickness Burst=9440 psi		
8.5" Curve and 8.5" Lateral	5-1/2" 23# P-110 HC CDC HTQ	Reedsville Utica Point Pleasant Target	9431 10049 10662 10700	10049 10662 10782 10700	10.5ppg-14.5ppg SOBM	Lead: 15.0 ppg / 35:65 Class H / 20% Excess / Yield=1.1475 Tail: 15.6 ppg / Class H Acid Soluble / 20% Excess / Yield=1.7569 CTS	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.	Once on bottom/TD with casing, circulate at max allowable pump rate for at least 2x bottoms up, or until returns and pump pressures indicate the hole is clean. Circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions		

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Office of Oil and Gas

MAY 20 2018

WV Department of
Environmental Protection

LP @ 10700' TVD / 11158' MD

8.5" Hole - Cemented Long String
5-1/2" 23# P-110 HC CDC HTQ

+/-16212' fl Lateral

TD @ +/-10700' TVD
+/-27370' MD

X=centralizers

4705102013

**EXISTING WELLS LOCATED WITHIN THE AREA OF REVIEW FOR:
MND20 PAD AND PROPOSED WELLS AU, BU, CU, DU & EU**

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FEB 16 2018
WV Department of
Environmental Protection

CT	API	COUNTY	FARM	OPERATOR NAME	FORMATION NAME	WELL TYPE	TVD	STATUS	LATITUDE	LONGITUDE
1	4705100086	MARSHALL	Mike & Ethel Meszner 1	Ruckman, J. C.	Conemaugh Group	Gas	471	ABANDONED	39.853035	-80.788942
2	4705100101	MARSHALL	E L Denny Hrs 1	Ruckman, J. C.	UNKNOWN	not available	-	NEVER DRILLED	39.85294	-80.787437
3	4705100150	MARSHALL	Guy McDowell 1	Dinsmoore, D. H.	Allegheny Fm	Dry w/ Gas Show	1517	PLUGGED	39.845205	-80.764859
4	4705100168	MARSHALL	D H & Genevieve Mason 2	Tedrow & Moore	Big Injun (Price&eq)	Dry	1947	ABANDONED	39.843465	-80.771254
5	4705100551	MARSHALL	Ralph Chaplin 1	Kentucky Central & Co.	Pittsburgh Coal	Coal Bed Methane	-	ABANDONED	39.844335	-80.76373
6	4705100868	MARSHALL	Consol Coal Co 1	CNX Gas Co. LLC (North)	Pittsburgh Coal	Coal Bed Methane	141	ABANDONED	39.856225	-80.790825
7	4705100869	MARSHALL	Consol Coal Co	CNX Gas Co. LLC (North)	Pittsburgh Coal	Coal Bed Methane	193	ABANDONED	39.851295	-80.787436
8	4705100870	MARSHALL	Consol Coal Co 1	CNX Gas Co. LLC (North)	Pittsburgh Coal	Coal Bed Methane	184	ABANDONED	39.850424	-80.808222
9	4705100871	MARSHALL	Ireland Gob Well No X-West	CNX Gas Co. LLC (North)	Pittsburgh Coal	Coal Bed Methane	525	ABANDONED	39.856225	-80.795429
10	4705100952	MARSHALL	Consol Coal Co	CNX Gas Co. LLC (North)	Pittsburgh Coal	Coal Bed Methane	-	ABANDONED	39.851295	-80.787436
11	4705101026	MARSHALL	Rae Mac Corp	CNX Gas Co. LLC (North)	Pittsburgh Coal	Coal Bed Methane	-	ABANDONED	39.845495	-80.756017
12	4705170215	MARSHALL	Eva Sims 1	ORPHAN PROJECT WELL	UNKNOWN	not available	-	UNKNOWN	39.85144	-80.788
13	4705170811	MARSHALL	Lemuel Yoho 1	Manufacturers Light & Heat Co.	UNKNOWN	not available	-	UNKNOWN	39.810623	-80.791363
14	4705170813	MARSHALL	T R Kelly 1	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.812219	-80.774254
15	4705170814	MARSHALL	Joseph Arnold	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.814252	-80.760715
16	4705170815	MARSHALL	John C Cain	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.818751	-80.772561
17	4705170816	MARSHALL	Andrew J Gatts	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.827894	-80.782714
18	4705170817	MARSHALL	Mary L Gatts	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.831087	-80.782338
19	4705170818	MARSHALL	T S Biersford 1	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.832248	-80.775569
20	4705170819	MARSHALL	Wesley Bonar	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.833856	-80.76222
21	4705170820	MARSHALL	John Gallaher	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.83763	-80.778954
22	4705170821	MARSHALL	S T Yoho	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.839226	-80.788542
23	4705170822	MARSHALL	T B McFarland	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.846483	-80.792983
24	4705170823	MARSHALL	R H McFarland	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.850112	-80.78779
25	4705170824	MARSHALL	E R Potts 1	ORPHAN PROJECT WELL	UNKNOWN	not available	-	UNKNOWN	39.857949	-80.792419
26	4705170825	MARSHALL	Adaline Hammond 2	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.860852	-80.79223
27	4705170826	MARSHALL	Adaline Hammond	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.862303	-80.790046
28	4705170827	MARSHALL	Adaline Hammond	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.862593	-80.79061
29	4705170828	MARSHALL	J Nightler Hrs	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.863029	-80.790046
30	4705170829	MARSHALL	J Nightler Hrs 2	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.86419	-80.789294
31	4705170830	MARSHALL	J Nightler Hrs 1	UNKNOWN	UNKNOWN	not available	-	UNKNOWN	39.865351	-80.788542

SOURCE: WVGES DATASET (2017) and WVDEP WEBSITE

AOR

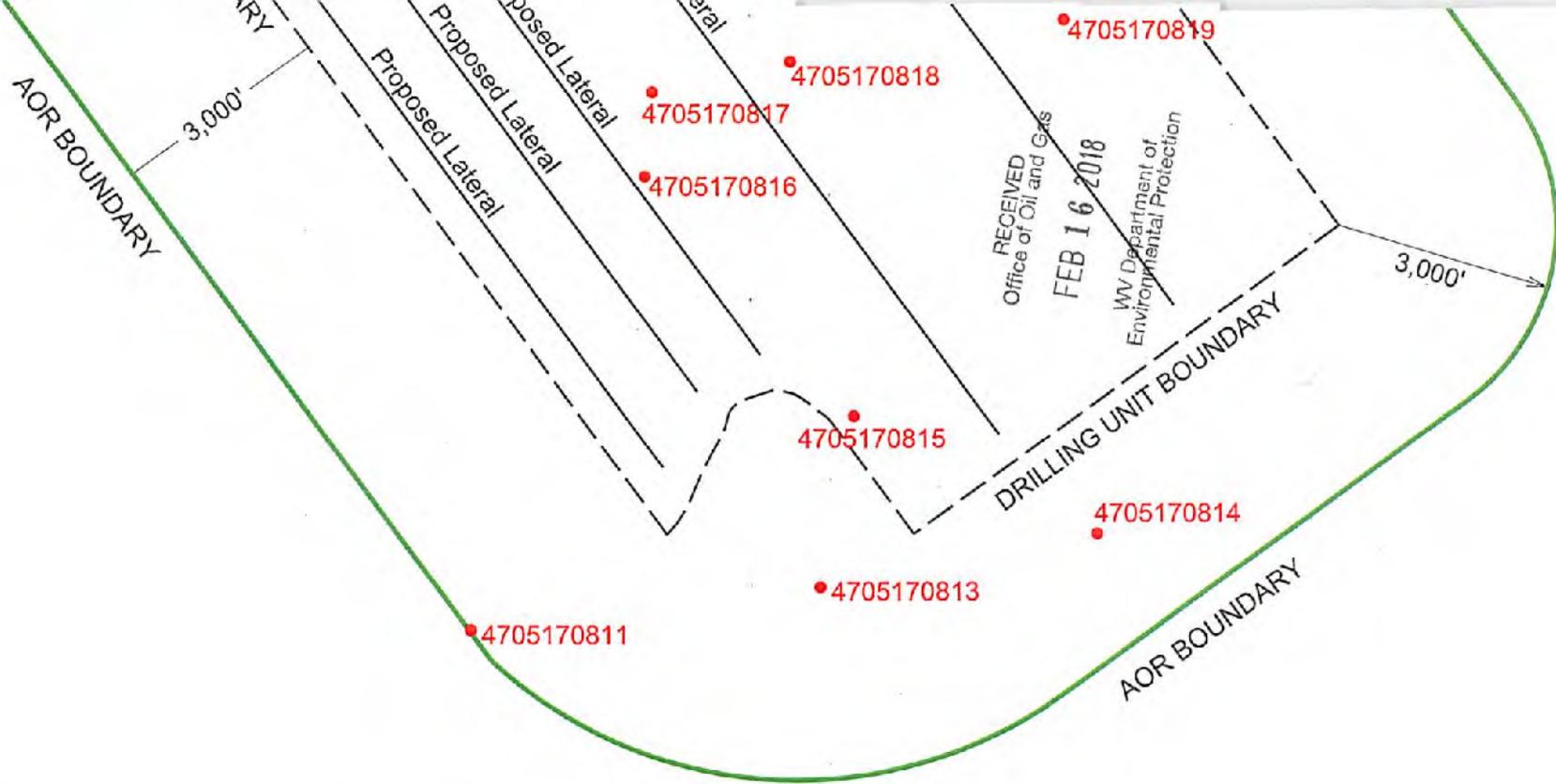


NOTE:
See Attached Spreadsheet for Well Data

DATA SOURCES:
WVGES Data Disk - 2017
WVDEP Web Site



4705102013



RECEIVED
Office of Oil and Gas
FEB 16 2018
WV Department of
Environmental Protection

NOTE:
NO KNOWN DEEP WELLS ARE LOCATED WITHIN 3,000'
OF PROPOSED WELL BORES OR DRILLING UNIT.

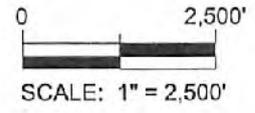


Area of Review for:

MND20 PAD

- MND20 AU Wellbore
- MND20 BU Wellbore
- MND20 CU Well bore
- MND20 DU Wellbore
- MND20 EU Wellbore

Franklin District, Marshall County, W.Va.



HG Energy II Appalachia, LLC
MND20 Well Pad (AU,BU,CU,DU,EU)
Cement Additives

Material Name	Material Type	Material Description	CAS #																		
Premium NE-1	Portland Cement	Premium NE-1 is a portland cement with early compressive strength properties.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Portland cement</td> <td>90 - 100</td> <td>65997-15-1</td> </tr> <tr> <td>Calcium oxide</td> <td>1 - 5</td> <td>1305-78-8</td> </tr> <tr> <td>Magnesium oxide</td> <td>1 - 5</td> <td>1309-48-4</td> </tr> <tr> <td>Crystalline silica: Quartz (SiO2)</td> <td>0.1 - 1</td> <td>14808-60-7</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Portland cement	90 - 100	65997-15-1	Calcium oxide	1 - 5	1305-78-8	Magnesium oxide	1 - 5	1309-48-4	Crystalline silica: Quartz (SiO2)	0.1 - 1	14808-60-7			
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Magnesium oxide	1 - 5	1309-48-4																			
Crystalline silica: Quartz (SiO2)	0.1 - 1	14808-60-7																			
Bentonite	Extender	Commonly called gel, it is a clay material used as a cement extender and to control excessive free water.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>bentonite</td> <td>90 - 100</td> <td>1302-78-9</td> </tr> <tr> <td>Crystalline silica: Quartz (SiO2)</td> <td>5 - 10</td> <td>14808-60-7</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	bentonite	90 - 100	1302-78-9	Crystalline silica: Quartz (SiO2)	5 - 10	14808-60-7									
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bentonite	90 - 100	1302-78-9																			
Crystalline silica: Quartz (SiO2)	5 - 10	14808-60-7																			
Calcium Chloride	Accelerator	A powdered, flaked or pelletized material used to decrease thickening time and increase the rate of strength development.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Calcium chloride</td> <td>90 - 100</td> <td>10043-52-4</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Calcium chloride	90 - 100	10043-52-4												
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Calcium chloride	90 - 100	10043-52-4																			
Cello Flake	Lost Circulation	Graded (5/8 to 3/4 inch) cellophane flakes used as a lost circulation material.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>No hazardous ingredient</td> <td></td> <td></td> </tr> </tbody> </table>	Ingredient name	%	CAS number	No hazardous ingredient														
			Ingredient name	%	CAS number																
No hazardous ingredient																					
FP-13L	Foam Preventer	FP-13L is a clear liquid organic phosphate antifoaming agent used in cementing operations. It is very effective minimizing air entrapment and preventing foaming tendencies of latex systems.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Tributyl phosphate</td> <td>90 - 100</td> <td>128-73-8</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Tributyl phosphate	90 - 100	128-73-8												
			Ingredient name	%	CAS number																
Tributyl phosphate	90 - 100	128-73-8																			
Granulated Sugar	Retarder	Used to retard cement returns at surface. A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Sucrose</td> <td>90 - 100</td> <td>57-50-1</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Sucrose	90 - 100	57-50-1												
			Ingredient name	%	CAS number																
Sucrose	90 - 100	57-50-1																			
EC-1	Gas Migration	Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>No hazardous ingredient</td> <td></td> <td></td> </tr> </tbody> </table>	Ingredient name	%	CAS number	No hazardous ingredient														
			Ingredient name	%	CAS number																
No hazardous ingredient																					
Poz (Fly Ash)	Base	A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement slurries used as either a filler slurry or a sulfate resistant completion cement.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Crystalline silica: Quartz (SiO2)</td> <td>5 - 10</td> <td>14808-60-7</td> </tr> <tr> <td>Calcium oxide</td> <td>1 - 5</td> <td>1305-78-8</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Crystalline silica: Quartz (SiO2)	5 - 10	14808-60-7	Calcium oxide	1 - 5	1305-78-8									
			Ingredient name	%	CAS number																
Crystalline silica: Quartz (SiO2)	5 - 10	14808-60-7																			
Calcium oxide	1 - 5	1305-78-8																			
R-3	Retarder	A low temperature retarder used in a wide range of slurry formulations to extend the slurry thickening time.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Organic acid salt</td> <td>40 - 50</td> <td>Trade secret.</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Organic acid salt	40 - 50	Trade secret.												
			Ingredient name	%	CAS number																
Organic acid salt	40 - 50	Trade secret.																			
S-5	Surfactant	Used to water wet casing and formation to facilitate cement bonding.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>2-Butoxyethanol</td> <td>20 - 30</td> <td>111-76-2</td> </tr> <tr> <td>Proprietary surfactant</td> <td>10 - 20</td> <td>Trade secret.</td> </tr> <tr> <td>D-Glucoopyranose, oligomeric, C10-16-alkyl glycosides</td> <td>5 - 10</td> <td>110615-47-9</td> </tr> <tr> <td>Alkylarylsulfonate amine salt</td> <td>1 - 5</td> <td>Trade secret.</td> </tr> <tr> <td>Polyoxyalkylenes</td> <td>0.1 - 1</td> <td>Trade secret.</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	2-Butoxyethanol	20 - 30	111-76-2	Proprietary surfactant	10 - 20	Trade secret.	D-Glucoopyranose, oligomeric, C10-16-alkyl glycosides	5 - 10	110615-47-9	Alkylarylsulfonate amine salt	1 - 5	Trade secret.	Polyoxyalkylenes	0.1 - 1	Trade secret.
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Alkylarylsulfonate amine salt	1 - 5	Trade secret.																			
Polyoxyalkylenes	0.1 - 1	Trade secret.																			

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HG Energy II Appalachia, LLC
List of Frac Additives by Chemical Name and CAS #
MND20 Well Pad (AU,BU,CU,DU,EU)

Chemical Name	CAS #	Multiple CAS #'s
Pro Shale Slik 405	Mixture	68551-12-2
		7647-14-5
		12125-02-9
		64742-47-8
Pro Hib II	Mixture	68412-54-4
		68607-28-3
		107-21-1
		111-76-2
		67-56-1
		107-19-7
Silica Sand and Ground Sand	Mixture	14808-60-7
		1344-28-1
		1309-37-1
		13463-67-7
Hydrochloric Acid 22 DEG BE	7647-01-0	
PROGEL - 4.5	64742-96-7	
BIO CLEAR 2000	Mixture	25322-68-3
		10222-01-2
SCALE CLEAR SI 112	107-21-1	
PROBREAK 4	Mixture	57-50-1
		107-21-1
Sulfamic Acid	5329-14-6	
PRO - Flow - 102-N	Mixture	67-63-0
		68439-45-2
		2687-96-9
PROGEL - 4	9000-30-0	

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MND20CUHS
Utica Shale Horizontal
Marshall County, WV

		MND20CUHS SHL	494946.59N 1634115.63E
Ground Elevation	1058'	MND20CUHS LP	494735.62N 1634115.51E
Azm	144.906°	MND20CUHS BHL	481470.43N 1643436.36E

WELLBORE DIAGRAM	HOLE	CASING	GEOLOGY	TOP	BASE	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
	30"	30" 157.5# LS	Conductor	0	60	AIR	N/A. Casing to be drilled in w/ Dual Rotary Rig	N/A	Ensure the hole is clean at TD.	Conductor casing = 0.5" wall thickness
	26"	20" 94# J-55	Fresh Water Pittsburgh Coal Surface Casing	445, 708, 805 526 0	60 536 950	AIR	15.6 ppg Class A 40% Excess Yield = 1.1924 / CTS	Centralized every 3 joints to surface	Once casing is at setting depth, circulate a minimum of one hole volume with Fresh Water prior to pumping cement.	Surface casing = 0.438" wall thickness Burst=2110 psi
	17.5"	13-3/8" 54.5# J-55 BTC	Big Lime Big Injun 1st Intermediate Casing	1625 1741 0	1741 1854 2300	AIR	Lead: 15.0 ppg / Class A / 30% Excess / Yield=1.2953 Tail: 15.6 ppg / Class A / 30% Excess / Yield=1.18 CTS	Bow Spring on first 2 joints then every third joint to 100' form surface	Once casing is at setting depth, Circulate and condition at TD. Circulate a minimum of one hole volume prior to pumping cement.	Intermediate casing = 0.380" wall thickness Burst=2730 psi
	12.25"	9-5/8" 47# P-110 BTC	5th Sand	2599	3156	AIR / KCL - Salt Polymer / 9.0ppg SCBM	Stage 1: 15.2 ppg / 35:65 Class H / 30% Excess / Yield=1.1313 Stage 2: 14.5 ppg / 50:50 Class A / 30% Excess / Yield=1.1744 CTS	Bow Spring on first 8 joints then every third joint to 100' form surface	Once casing is at setting depth, Circulate and condition mud at TD. Circulate a minimum of one hole volume prior to pumping cement.	Intermediate casing = 0.472" wall thickness Burst=9440 psi
			Speechley	3156	3770					
			Warren	3770	4707					
			Java	4707	4802					
			Pipe Creek	4802	4889					
			Angela	4889	5471					
			Rhinestreet	5471	5792					
			Cashaqua	5792	5864					
			Middlesox	5864	5887					
			West River	5887	5948					
			Burkett	5948	5973					
			Tully LS	5973	5997					
			Hamilton	5997	6032					
			Marcelus	6032	6087					
			Onondaga	6087	6095					
			Huntersville	6095	6309					
			Oriskany	6309	6421					
Helderburg	6421	6681								
Bass Island	6681	6760								
Salina G	6760	6960								
Salina F	6960	7759								
Lockport	7759	8081								
Rochester	8081	8385								
Packer Shell	8385	8492								
Clinton	8492	8575								
Medina	8575	8874								
Queenston	8874	9431								
		2nd Intermediate	0	9000 TVD						
8.5" Curve and 8.5" Lateral	5-1/2" 23# P-110 HC CDC HTQ	Reedsville	9431	10049	10.5ppg-14.5ppg SCBM	Lead: 15.0 ppg / 35:65 Class H / 20% Excess / Yield=1.1475 Tail: 15.6 ppg / Class H Acid Soluble / 20% Excess / Yield=1.7669 CTS	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.	Once on bottom/TD with casing, circulate at max allowable pump rate for at least 2x bottoms up, or until returns and pump pressures indicate the hole is clean. Circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions	
		Utica	10049	10662						
		Point Pleasant	10662	10782						
		Target	10700	10700						

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LP @ 10700' TVD / 11158' MD 8.5" Hole - Cemented Long String 5-1/2" 23# P-110 HC CDC HTQ +/-16212' fl Lateral TD @ +/-10700' TVD +/-27370' MD X=centralizers

WW-9
(4/16)

API Number 47 - _____ - _____
Operator's Well No. MND20 CU

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name HG Energy II Appalachia, LLC OP Code 494519932

Watershed (HUC 10) Short Creek - Ohio River (HUC 10) Quadrangle Powhatan Point

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: NA

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number TBD - At next anticipated well)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air and freshwater

-If oil based, what type? Synthetic, petroleum, etc. NA

Additives to be used in drilling medium? Water, soap, KCl, barite

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Approved landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) NA

-Landfill or offsite name/permit number? See Attached List

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto 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 or imprisonment.

Company Official Signature Diane White

Company Official (Typed Name) Diane White

Company Official Title Accountant

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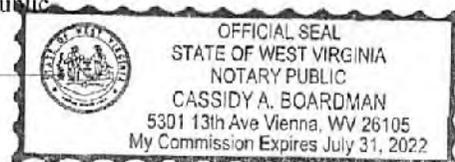
WV Department of
Environmental Protection

Subscribed and sworn before me this 26th day of January, 2018

Cassidy A. Boardman

Notary Public

My commission expires 7/31/2022



HG Energy II Appalachia, LLC

Proposed Revegetation Treatment: Acres Disturbed 17.39 Prevegetation pH _____

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch Hay 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	40	Tall Fescue	40
Ladino Clover	5	Ladino Clover	5

**** Pre-seed and mulch all cut area, maintain E&S standards during entire operation.**

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Justin Wehler*

Comments: _____

Title: Oil & Gas Inspector

Date: 2/5/18

Field Reviewed? Yes No

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Cuttings Disposal/Site Water

Cuttings - Haul off Company:

Eap Industries, Inc. DOT # 0876278
1575 Smith Two State Rd. Atlasburg, PA 15004
1-888-294-5227

Waste Management
200 Rangos Lane
Washington, PA 15301
724-222-3272

Environmental Coordination Services & Recycling (ECS&R)
3237 US Highway 19
Cochranon, PA 16314
814-425-7773

Disposal Locations:

Apex Environmental, LLC Permit # 06-08438
11 County Road 7B
Amsterdam, OH 43903
740-543-4389

Westmoreland Waste, LLC Permit # 100277
111 Conner Lane
Belle Vernon, PA 15012
724-929-7694

Sycamore Landfill Inc. Permit #R90-079001 05-2010
4301 Sycamore Ridge Road
Hurricane, WV 25526
304-562-2611

Max Environmental Technologies, Inc. Facility Permit # PAD004835146 / 301071
233 Max Lane
Yukon, PA 25968
724-722-3500

Max Environmental Technologies, Inc. Facility Permit # PAD05087072 / 301359
200 Max Drive
Bulger, PA 15019
724-796-1571

Waste Management Kelly Run Permit # 100663
1901 Park Side Drive
Elizabeth, PA 15037
412-384-7569

Waste Management South Hills (Arnoni) Permit # 100592
3100 Hill Road
Library, PA 15129
724-348-7013
412-384-7569

Waste Management Arden Permit # 100172
200 Rangos Lane
Washington, PA 15301
724-222-3272

Waste Management Meadowfill Permit # 1032
1488 Dawson Drive
Bridgeport, WV 26330

Brooke County Landfill Permit # SWF-103-87 / WV 0109029
Rd 2 Box 410
Colliers, WV 26035
304-748-0014

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Wetzel County Landfill Permit # SWF-1021-97 / WV 0109185
 Rt 1 Box 156A
 New Martinsville, WV 26035
 304-455-3800

Energy Solutions, LLC Permit # UT 2300249
 423 West 300 South
 Suite 200
 Salt Lake City, UT 84101

Energy Solutions Services, Inc. Permit # R-73006-L24
 1560 Bear Creek Road
 Oak Ridge, TN 37830

Northern A-1 Environmental Services Permit ID MID020906814
 3947 US 131 North, PO Box 1030
 Kalkaska, MI 49646
 231-258-9961

Water Haul off Companies:

Dynamic Structures, Clear Creek DOT # 720485
 3790 State Route 7
 New Waterford, OH 44445
 330-892-0164

Nabors Completion & Production Services Co.
 PO Box 975682
 Dallas, TX 75397-5682

Select Energy Services, LLC
 PO Box 203997
 Dallas, TX 75320-3997

Nuverra Environmental Solutions
 11942 Veterans Memorial Highway
 Masontown, WV 26542

Mustang Oilfield Services LLC
 PO Box 739
 St. Clairsville, OH 43950

Wilson's Outdoor Services, LLC
 456 Cracraft Road
 Washington, PA 15301

Disposal Locations:

Solidification
 Waste Management, Arden Landfill Permit # 100172
 200 Rangos Lane
 Washington, PA 15301
 724-225-1589

Solidification/Incineration
 Soil Remediation, Inc. Permit # 02-20753
 6065 Arrel-Smith Road
 Lowelville, OH 44436
 330-536-6825

Adams #1 (Buckeye Brine, LLC)
 Permit # 34-031-2-7177
 23986 Airport Road
 Coshocton, OH 43812
 740-575-4484
 512-478-6545

CMS of Delaware Inc. DBA CMS Oilfield Serv
 301 Commerce Drive
 Moorestown, NJ 08057

Force, Inc.
 1380 Rte. 286 Hwy. E, Suite 303
 Indiana, PA 15701

Solo Construction
 P.O. Box 544
 St. Mary's, WV 26170

Equipment Transport
 1 Tyler Court
 Carlisle, PA 17015

Myers Well Service, _____
 2001 Ballpark Court
 Export, PA 15632

Burns Drilling & Excavating
 618 Crabapple Road P.O. Box
 Wind Ridge, PA 15380

Nichols 1-A (SWIW #13)
 Permit # 3862
 300 Cherrington Pkwy, Suite 200
 Coraopolis, PA 15108
 412-329-7275

Groselle (SWIW #34)
 Permit # 4096
 Rt. 88
 Garrettsville, OH
 713-275-4816

Kemble 1-D Well
 Permit # 8780
 7675 East Pike
 Norwlich, Oh 43767
 614-648-8898
 740-796-6495

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Adams #2 (Buckeye Brine, LLC)
2205 Westover Road
Austin Tx 78703
Permit # 34-031-2-7178
740-575-4484
512-478-6545

Adams #3 (Buckeye Brine, LLC)
Permit #34-031-2-7241-00-00
2630 Exposition, Suite 117
Austin, TX 78703
512-478-6545

Mozena #1 Well (SWIW # 13)
Permit # 34-157-2-5511-00-00
5367 E. State Street
Newcomerstown, OH 43832
740-763-3966

Goff SWD #1 (SWIW # 27)
Permit # 34-119-2-8776-000
300 Cherrington Pkwy, Suite 200
Coraopolis, PA 15108
412-329-7275

SOS D#1 (SWIW #12)
Permit # 34-059-2-4202-00-00
Silcor Oilfield Services, Inc.
2939 Hubbard Road
Youngstown, OH 44505

Dudley #1 UIC (SWIW #1)
Permit # 34-121-2-2459-00-00
Select Energy Services, LLC
7994 S. Pleasants Hwy
St. Marys, WV 26170
304-665-2652

OH UIC #1 Bu keya UIC Barnesville 1 & 2
CNX Gas Company, LLC
1000 Consol Energy Drive
Permit # 34-013-2-0609-00-00
Permit # 34-013-2-0614-00-00
304-323-6568

US Steele 11385
Permit # 47-001-00561
200 Evergreen Drive
Waynesburg, PA 15730
304-323-6568

Chapln #7 UIC (SWIW #7)
Permit # 34-083-2-4137-00-00
Elkhead Gas & Oil Company
12163 Marne Rd. NE
Newark, OH 43055
740-763-3966

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HG Energy II Appalachia, LLC

Site Safety Plan

gm
2/5/18

**MND 20 Well Pad
2795 Taylors Ridge Rd
Moundsville, Marshall County, WV**

January 2018: Version 1

**For Submission to
West Virginia Department of Environmental Protection,
Office of Oil and Gas**

HG Energy II Appalachia, LLC.

**5260 Dupont Road
Parkersburg, WV 26101**

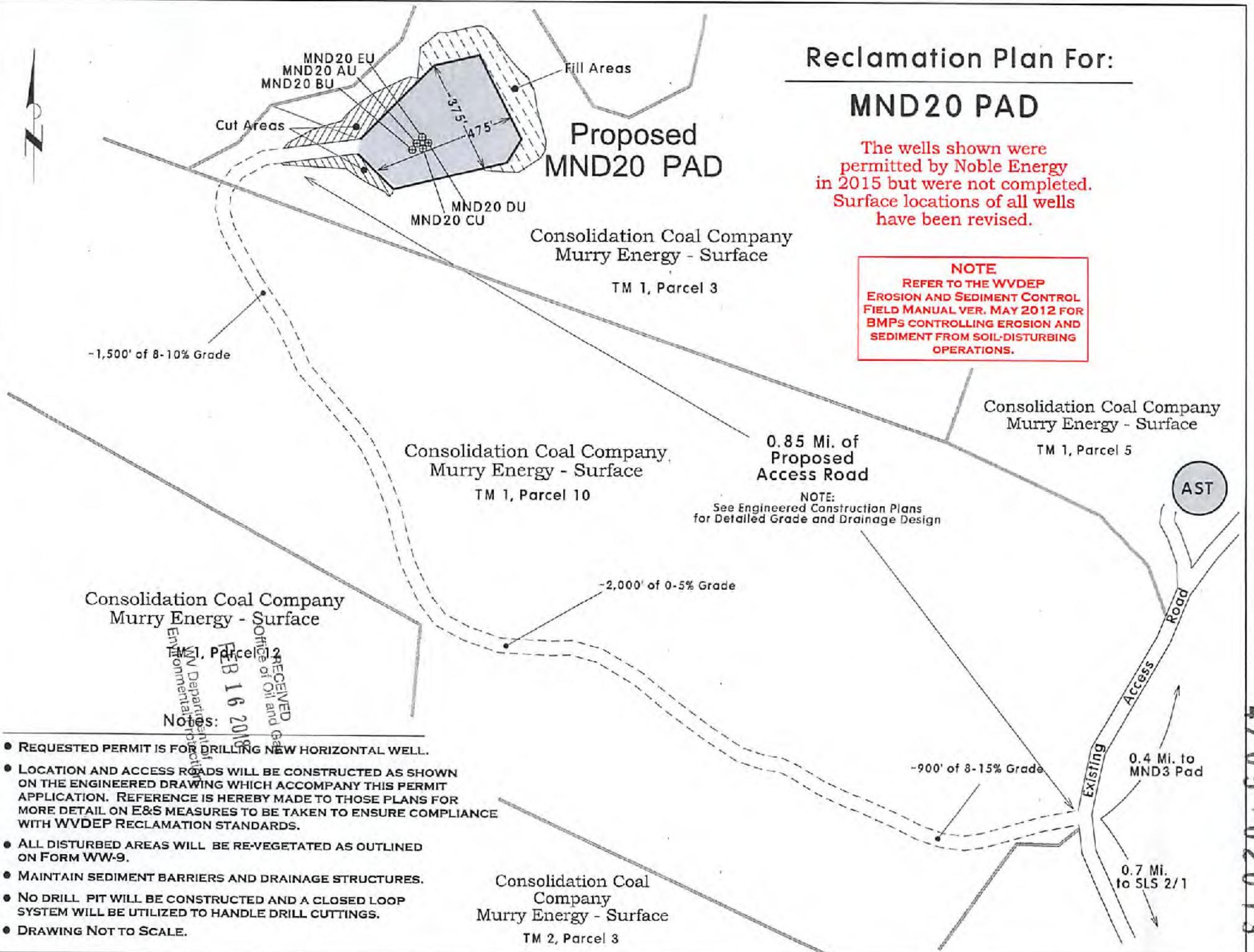
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Reclamation Plan For:

MND20 PAD

The wells shown were permitted by Noble Energy in 2015 but were not completed. Surface locations of all wells have been revised.

NOTE
REFER TO THE WVDEP EROSION AND SEDIMENT CONTROL FIELD MANUAL VER. MAY 2012 FOR BMPs CONTROLLING EROSION AND SEDIMENT FROM SOIL-DISTURBING OPERATIONS.



Proposed MND20 PAD

Consolidation Coal Company
Murry Energy - Surface
TM 1, Parcel 3

Consolidation Coal Company
Murry Energy - Surface
TM 1, Parcel 10

Consolidation Coal Company
Murry Energy - Surface
TM 1, Parcel 5

Consolidation Coal Company
Murry Energy - Surface
TM 2, Parcel 3

Consolidation Coal Company
Murry Energy - Surface
TM 1, Parcel 12

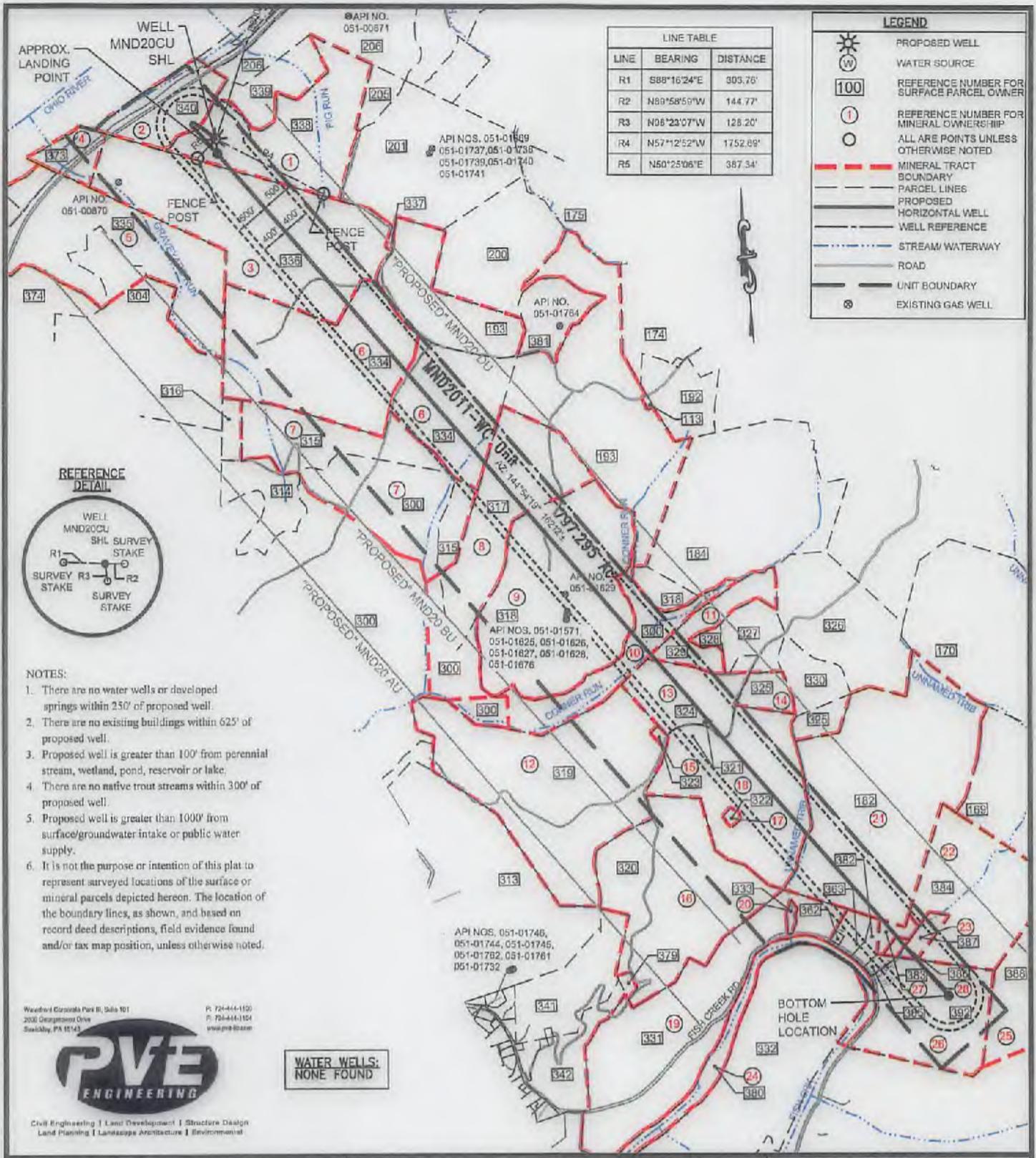
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Notes:

- REQUESTED PERMIT IS FOR DRILLING NEW HORIZONTAL WELL.
- LOCATION AND ACCESS ROADS WILL BE CONSTRUCTED AS SHOWN ON THE ENGINEERED DRAWING WHICH ACCOMPANY THIS PERMIT APPLICATION. REFERENCE IS HEREBY MADE TO THOSE PLANS FOR MORE DETAIL ON E&S MEASURES TO BE TAKEN TO ENSURE COMPLIANCE WITH WVDEP RECLAMATION STANDARDS.
- ALL DISTURBED AREAS WILL BE RE-VEGETATED AS OUTLINED ON FORM WW-9.
- MAINTAIN SEDIMENT BARRIERS AND DRAINAGE STRUCTURES.
- NO DRILL PIT WILL BE CONSTRUCTED AND A CLOSED LOOP SYSTEM WILL BE UTILIZED TO HANDLE DRILL CUTTINGS.
- DRAWING NOT TO SCALE.

NOTE:
See Engineered Construction Plans for Detailed Grade and Drainage Design

4705402013



Weather Criteria Part II, July 101
 2002 Georgetown Drive
 Slickity, PA 15143

P: 724-444-1120
 F: 724-444-1154
 www.pve.com

PVE ENGINEERING

Civil Engineering | Land Development | Structure Design
 Land Planning | Landscape Architecture | Environmental

FILE #: MND 20 CU

DRAWING #: MND 20 CU

SCALE: 1"=2000'

MINIMUM DEGREE OF ACCURACY: 1/2500

PROVEN SOURCE: U.S.G.S. MONUMENT
 OF ELEVATION: H 138: 638.58'

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.

SIGNED: [Signature]

R.P.E.: 21452 L.L.S.: P.S. NO.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP

OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: SHORT CREEK-OHIO RIVER ELEVATION: 1058'

COUNTY/DISTRICT: MARSHALL / FRANKLIN QUADRANGLE: POWHATAN POINT, W. VA./OHIO

SURFACE OWNER: CONSOLIDATION COAL COMPANY/ MURRAY ENERGY ACREAGE: 70.55

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY ACREAGE: 70.55

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD

FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 10,700' ± TMD: 27,371±

WELL OPERATOR: HG ENERGY II APPALACHIA, LLC DESIGNATED AGENT: DIANE C. WHITE

Address: 5280 DUPONT ROAD Address: 5280 DUPONT ROAD

City PARKERSBURG State WV Zip Code 26101 City PARKERSBURG State WV Zip Code 26101



DATE: AUGUST 19, 2015 - REV: MAY 11, 2018

OPERATOR'S WELL #: MND 20 CU

API WELL # 47 051 02013
 STATE COUNTY PERMIT

PAGE: 1 OF 4 H6A

Bottom Hole is located on topo map 6,654 feet south of Latitude: 39° 50' 00"
 Well is located on topo map 8,519 feet south of Latitude: 39° 52' 30"

Bottom Hole is located on topo map 5,385 feet west of Longitude: 80° 45' 00"
 Well is located on topo map 3,247 feet west of Longitude: 80° 47' 30"

SURFACE HOLE LOCATION (SHL)

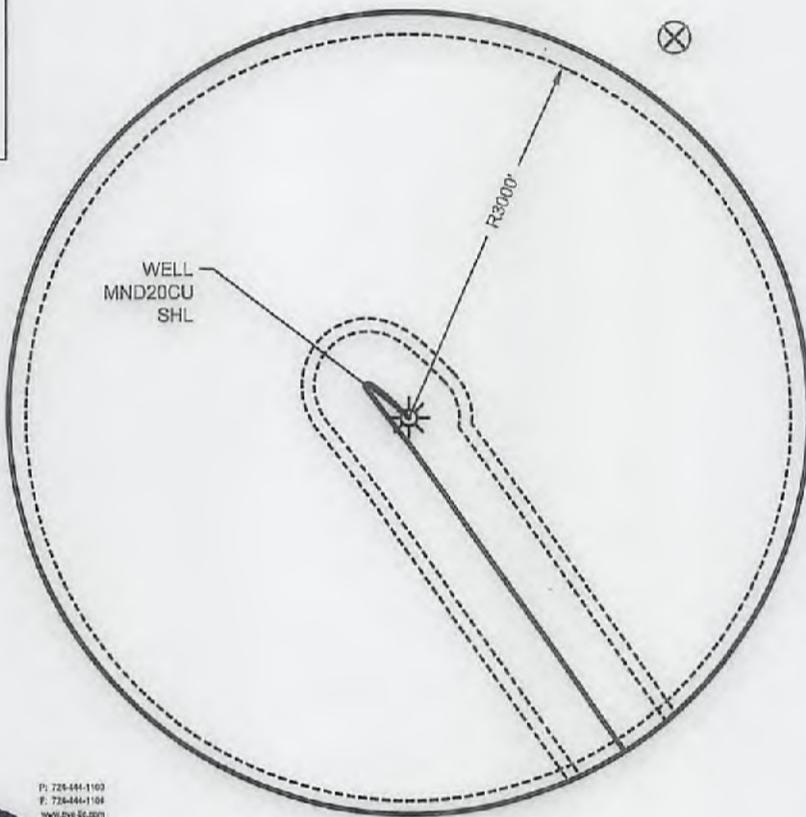
UTM 17 - NAD83(m)
 N: 4411315.138
 E: 516848.426
 NAD27, WV NORTH
 N: 494946.489
 E: 1634115.623
 LAT/LON DATUM-NAD83
 LAT: 39.851891
 LON: -80.803044

APPROX. LANDING POINT

UTM 17 - NAD83(m)
 N: 4411250.878
 E: 516849.423
 NAD27, WV NORTH
 N: 494735.565
 E: 1634115.375
 LAT/LON DATUM-NAD83
 LAT: 39.851112
 LON: -80.803034

BOTTOM HOLE LOCATION

UTM 17 - NAD83(m)
 N: 4407257.054
 E: 519756.641
 NAD27, WV NORTH
 N: 481470.248
 E: 1643435.413
 LAT/LON DATUM-NAD83
 LAT: 39.815065
 LON: -80.769170



DETAIL:
 SCALE: 1"=1,500'

LEGEND	
	TOPO MAP POINT
	TOPO MAP BOTTOM HOLE

Waterford Corporate Park II, Suite 121
 2000 Georgetown Circle
 Sewickley, PA 15143

P: 724-441-1100
 F: 724-441-1104
 www.pve.com



Civil Engineering | Land Development | Structural Design
 Land Planning | Landscape Architecture | Environmental

FILE #: MND 20 CU

DRAWING #: MND 20 CU

SCALE: 1"=2000'

MINIMUM DEGREE OF ACCURACY: 1/2500

PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT H 138: 638.58'

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.

SIGNED:

R.P.E.: 21452 L.L.S.: P.S. NO. _____



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP

OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: AUGUST 19, 2015 - REV: MAY 11, 2018

OPERATOR'S WELL #: MND 20 CU

API WELL # 47 051 02013H6A
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: SHORT CREEK-OHIO RIVER

ELEVATION: 1058'

COUNTY/DISTRICT: MARSHALL / FRANKLIN

QUADRANGLE: POWHATAN POINT, W. VA./OHIO

SURFACE OWNER: CONSOLIDATION COAL COMPANY/ MURRAY ENERGY

ACREAGE: 70.55

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY

ACREAGE: 70.55

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD
 FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: POINT PLEASANT

ESTIMATED DEPTH: TVD: 10,700' ± TMD: 27,371 ±

WELL OPERATOR: HG ENERGY II APPALACHIA, LLC

DESIGNATED AGENT: DIANE C. WHITE

Address: 5280 DUPONT ROAD

Address: 5280 DUPONT ROAD

City PARKERSBURG State WV Zip Code 26101

City PARKERSBURG State WV Zip Code 26101

113	ZION M.E. CHURCH	TAX MAP NO. 05-0002-0008-0001-0000
165	AEP GENERATION RESOURCES, INC.	TAX MAP NO. 05-0004-0015-0000-0000
170	AEP GENERATION RESOURCES, INC.	TAX MAP NO. 05-0004-0001-0000-0000
174	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0024-0000-0000
175	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0007-0007-0000-0000
182	AEP GENERATION RESOURCES, INC.	TAX MAP NO. 05-0005-0012-0000-0000
184	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0002-0012-0000-0000
189	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0002-0005-0000-0000
200	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0007-0000-0000
201	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0005-0000-0000
205	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0004-0000-0000
206	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0001-0000-0000
300	OHIO POWER CO.	TAX MAP NO. 05-0006-0003-0000-0000
301	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0006-0005-0000-0000
302	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0006-0006-0000-0000
303	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0006-0001-0000-0000
304	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0016-0000-0000
305	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0013-0000-0000
306	OHIO POWER CO.	TAX MAP NO. 05-0006-0010-0000-0000
307	CNX GAS COMPANY LLC.	TAX MAP NO. 05-0007-0005-0000-0000
308	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0007-0002-0000-0000
309	WV ECONOMIC DEV. AUTHORITY	TAX MAP NO. 05-0007-0003-0004-0000
310	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0007-0004-0000-0000
311	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0006-0004-0000-0000
312	CNX GAS COMPANY LLC.	TAX MAP NO. 05-0007-0005-0000-0000
313	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0006-0002-0000-0000
314	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0006-0002-0000-0000
315	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0002-0002-0000-0000
316	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0002-0001-0000-0000
317	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0005-0001-0000-0000
318	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0005-0002-0000-0000
319	OHIO POWER CO.	TAX MAP NO. 05-0005-0003-0000-0000
320	SANCHEZ GENEVA BASSETT	TAX MAP NO. 05-0005-0004-0000-0000
321	OHIO POWER CO.	TAX MAP NO. 05-0005-0005-0000-0000
322	AEP GENERATION RESOURCES INC.	TAX MAP NO. 05-0005-0005-0000-0000
323	AEP GENERATION RESOURCES INC.	TAX MAP NO. 05-0005-0003-0001-0000
324	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0005-0006-0001-0000
325	AEP GENERATION RESOURCES INC.	TAX MAP NO. 05-0005-0007-0000-0000
326	AEP GENERATION RESOURCES INC.	TAX MAP NO. 05-0005-0008-0000-0000
327	AEP GENERATION RESOURCES INC.	TAX MAP NO. 05-0005-0009-0000-0000
328	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0005-0009-0002-0000
329	CONSOL MINING COMPANY LLC.	TAX MAP NO. 05-0005-0009-0001-0000
331	GATTS RICHARD L. - LIFE	TAX MAP NO. 05-0008-0005-0000-0000
332	MILLER EDWIN C.	TAX MAP NO. 05-0008-0007-0000-0000
333	GATTS RICHARD L. - LIFE	TAX MAP NO. 05-0008-0008-0000-0000
334	MURRAY ENERGY C/O LAND DEPT.	TAX MAP NO. 05-0002-0003-0000-0000
335	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0012-0000-0000
336	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0010-0000-0000
337	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0009-0000-0000
338	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0003-0000-0000
339	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0002-0000-0000
340	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0002-0001-0000
341	MITCHELL TAMMY L.	TAX MAP NO. 05-0008-0003-0000-0000
342	BERISFORD C. WAYNE	TAX MAP NO. 05-0008-0004-0000-0000
343	SHIELDS ROBERT L. & DONALD	TAX MAP NO. 05-0008-0023-0000-0000
344	BELLS JARED C.	TAX MAP NO. 06-0008-0035-0000-0000

345	JOHNSON NORMAN G. ET. UX. - LIFE	TAX MAP NO. 05-0008-0034-0000-0000
346	BOARD OF EDUCATION	TAX MAP NO. 05-0008-0035-0000-0000
347	RUCKMAN LETHA I	TAX MAP NO. 05-0008-0013-0000-0000
348	RUCKMAN MARY D.	TAX MAP NO. 05-0008-0012-0000-0000
349	WHITE GLORIA JEAN	TAX MAP NO. 05-0008-0011-0000-0000
350	NOBEL ENERGY INC.	TAX MAP NO. 05-0008-0055-0000-0000
351	WALLACE KEVIN W.	TAX MAP NO. 05-0008-0045-0000-0000
352	GOUDY JOGN JOSEPH	TAX MAP NO. 05-0008-0046-0000-0000
353	KLEM ANNE C.	TAX MAP NO. 05-0008-0047-0000-0000
354	PERSINGER CLAYTON LEE ET. UX.	TAX MAP NO. 05-0008-0048-0000-0000
355	PERSINGER CLAYTON LEE ET. UX.	TAX MAP NO. 05-0008-0050-0000-0000
356	SCOTT RAYMOND A. JR. & LARRIETTE	TAX MAP NO. 05-0008-0048-0000-0000
357	VANSOYOC ISAAC LUKE	TAX MAP NO. 05-0008-0017-0000-0000
358	MORRIS JUNE	TAX MAP NO. 05-0008-0044-0000-0000
359	FROMHART JON DAVID	TAX MAP NO. 05-0008-0016-0000-0000
360	NIEMAN FRANCES E.	TAX MAP NO. 05-0008-0004-0001-0000
361	CLARK BEVERLY E.	TAX MAP NO. 05-0009-0001-0001-0000
362	RUCKMAN SHELDON R. ET. AL.	TAX MAP NO. 05-0009-0001-0004-0000
363	CALVARY M. E. CHURCH & CEMETERY	TAX MAP NO. 05-0008-0052-0000-0000
364	CALVARY M. E. CHURCH & CEMETERY	TAX MAP NO. 05-0008-0053-0000-0000
365	CALVARY M. E. CHURCH & CEMETERY	TAX MAP NO. 05-0008-0051-0000-0000
366	OHIO POWER COMPANY	TAX MAP NO. 05-0001-0015-0001-0500
367	OHIO POWER COMPANY	TAX MAP NO. 05-0001-0020-0000-0500
368	OHIO POWER COMPANY	TAX MAP NO. 05-0001-0021-0000-0500
369	OHIO POWER COMPANY	TAX MAP NO. 05-0001-0014-0000-0000
370	OHIO POWER COMPANY	TAX MAP NO. 05-0001-0015-0000-0500
371	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0011-0000-0000
372	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0001-0024-0000-0000
373	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0007-0007-0000-0000
374	JACKSON NORMAN THOMAS ET. AL.	TAX MAP NO. 05-0007-0009-0000-0000
375	ARRUDA JOHN F. ET. UX.	TAX MAP NO. 05-0005-0004-0001-0000
376	WV DIVISION OF NATURAL RESOURCES	REFERENCE NO. Q-091880000
377	CONSOLIDATION COAL COMPANY	TAX MAP NO. 05-0002-0004-0000-0000
378	RUCKMAN MARVIN E ET. UX.	TAX MAP NO. 05-0009-0001-0003-0000
379	MAXWELL WILLIAM JR.	TAX MAP NO. 05-0004-0016-0000-0000
380	JPM PROPERTIES LLC.	TAX MAP NO. 05-0004-0016-0000-0000
381	RUCKMAN MARVIN E	TAX MAP NO. 05-0009-0001-0002-0000
382	MAXWELL WILLIAM JR.	TAX MAP NO. 05-0004-0019-0000-0000
383	JPM PROPERTIES LLC	TAX MAP NO. 05-0004-0017-0000-0000
384	HOLSTINE BERNARD W & ROXANN L	TAX MAP NO. 05-0004-0014-0000-0000
385	RUCKMAN JESSIE GLADYS - LIFE	TAX MAP NO. 05-0009-0001-0000-0000

386	TAX MAP NO. 05-0008-0034-0000-0000
387	TAX MAP NO. 05-0008-0035-0000-0000
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398	TAX MAP NO. 05-0008-0017-0000-0000
399	TAX MAP NO. 05-0008-0044-0000-0000
400	TAX MAP NO. 05-0008-0016-0000-0000
401	TAX MAP NO. 05-0008-0004-0001-0000
402	TAX MAP NO. 05-0009-0001-0001-0000
403	TAX MAP NO. 05-0009-0001-0004-0000
404	TAX MAP NO. 05-0008-0052-0000-0000
405	TAX MAP NO. 05-0008-0053-0000-0000
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412	TAX MAP NO. 05-0001-0011-0000-0000
413	TAX MAP NO. 05-0001-0024-0000-0000
414	TAX MAP NO. 05-0007-0007-0000-0000
415	TAX MAP NO. 05-0007-0009-0000-0000
416	TAX MAP NO. 05-0005-0004-0001-0000
417	REFERENCE NO. Q-091880000
418	TAX MAP NO. 05-0002-0004-0000-0000
419	TAX MAP NO. 05-0009-0001-0003-0000
420	TAX MAP NO. 05-0004-0016-0000-0000
421	TAX MAP NO. 05-0004-0016-0000-0000
422	TAX MAP NO. 05-0009-0001-0002-0000
423	TAX MAP NO. 05-0004-0019-0000-0000
424	TAX MAP NO. 05-0004-0017-0000-0000
425	TAX MAP NO. 05-0004-0014-0000-0000
426	TAX MAP NO. 05-0009-0001-0000-0000

Whitcomb Corporate Park II, Suite 101
2200 Georges Run Drive
Sandy, PA 15143

PVE
ENGINEERING

Civil Engineering | Land Development | Structure Design
Land Planning | Landscape Architecture | Environmental

LEGEND	
100	REFERENCE NUMBER FOR SURFACE PARCEL OWNERSHIP
①	REFERENCE NUMBER FOR MINERAL OWNERSHIP

FILE #: MND 20 CU

DRAWING #: MND 20 CU

SCALE: 1"=2000'

MINIMUM DEGREE OF ACCURACY: 1/2500

PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT H 138: 638.58'

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

SIGNED: [Signature]

R.P.E.: 21452 L.L.S.: P.S. NO.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304



DATE: AUGUST 19, 2015 - REV: MAY 11, 2018

OPERATOR'S WELL #: MND 20 CU

API WELL # 47 051 02013H6A

STATE COUNTY PERMIT

PAGE: 3 OF 4

Well Type: Oil Waste Disposal Production Deep Gas Liquid Injection Storage Shallow

WATERSHED: SHORT CREEK-OHIO RIVER ELEVATION: 1056'

COUNTY/DISTRICT: MARSHALL / FRANKLIN QUADRANGLE: POWHATAN POINT, W. VA / OHIO

SURFACE OWNER: CONSOLIDATION COAL COMPANY/ MURRAY ENERGY ACREAGE: 70.55

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY ACREAGE: 70.55

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD

FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 10,700' ± TMD: 27,371 ±

WELL OPERATOR: HG ENERGY II APPALACHIA, LLC DESIGNATED AGENT: DIANE C. WHITE

Address: 5260 DUPONT ROAD Address: 5260 DUPONT ROAD

City PARKERSBURG State WV Zip Code 26101 City PARKERSBURG State WV Zip Code 26101

HG Plat Number	MPID	Royalty Owner	Surface Ref. Num.
1	05-0001-0003-0000-0000	Belinda Eddy fka Belinda Page Hoover, a married woman dealing in her sole and separate property	338
		Dara Warner and Douglas D. Warner, both individually and as wife and husband	
		Jessica McNabb fka Jessica Faye Hoover, a married woman dealing in her sole and separate property	
		Cheryl Sullivan, a single woman	
		George H. Wells and Nancy Eklund Wells, both individually and as husband and wife	
		William C.M. Wilson and Hiram C. Wilson, as Trustees of The Nancy L. Wilson Revocable Trust	
		Wayland W. Bowser, a married man dealing in his sole and separate property	
		Barbara G. Mathews, by Gay L. Mathews, Her Attorney In Fact	
		HG Energy, LLC	
2	05-0001-0002-0001-0000	HG Energy, LLC	340
3	05-0001-0010-0003-0000	Ruth Ann Ferris	336
		Larry F. Jefferson	
		Noble Marcellus, LP	
		Anacapi Holdings, LLC	
		HG Energy, LLC	
4	05-0001-0011-0000-0000	HG Energy, LLC	373
5	05-0001-0012-0000-0000	Susan Witten Neal Meyers AKA Susan Neal Ifield Meyers, Individually, and as Susan N. Meyers, Trustee of the Susan N. Meyers Revocable Trust	335
	05-0001-0015-0000-0000	Mary Witten Neal Wiseman FKA Mary Witten Neal	
		Mary Witten Hart Ehlers	
		Margery L. Witten	
		Joseph Moore Neal	
		Jane Witten Voth	
		Frances Gale Neal	
		Dorothy Ann Neal by her POA Jerry L. Berthold	
		Donald R. Hart Jr.	
		Cathy Hart Price	
		Ann Alexander	
		Jane R. Peterseim AKA Jane Peterseim	
		HG Energy, LLC	
6	05-0002-0003-0000-0000	HG Energy, LLC	334
7	05-0002-0002-0000-0000	HG Energy, LLC	315
	05-0006-0003-0000-0000		
8	05-0005-0003-0000-0000	HG Energy, LLC	300
	05-0005-0001-0000-0000		317
9	05-0005-0002-0000-0000	Margaret Games	318
		Elizabeth Patterson	
		Charles J. Wiesner	
		John Wisner	
		Kenneth Schmitt	
		Mary Ellen Sedon	
		Alfred Kaczorowski, Jr., & Sharon M. Kaczorowski, his wife	
10	05-0006-0003-0000-0000	HG Energy, LLC	300
11	05-0005-0009-0001-0000	HG Energy, LLC	329
12	05-0005-0003-0000-0000	AEP Generation Resources Inc. and Kentucky Power Company	319
13	05-0005-0006-0001-0000	AEP Generation Resources Inc. and Kentucky Power Company	324
14	05-0005-0007-0000-0000	AEP Generation Resources Inc. and Kentucky Power Company	325
15	05-0005-0003-0001-0000	AEP Generation Resources Inc. and Kentucky Power Company	323
16	05-0005-0004-0000-0000	Barbara Kay Ewing and Wilber E. Ewing	320
		Charles Howard Bassett JR and Ruby D. Bassett	
		Cynthia P. Hopkins, as Trustee of the Cynthia P. Hopkins Revocable Trust	
		Elizabeth A. Strausbaugh and James R. Strausbaugh	
		Janet and John Blankenship	
		Jean C. Thomas	
		Mary E. Bassett	
		Robert B. and Violet Thomas	

		Roger B. and Inken P. Rosa	
		Ruth Ann and Furman F. Wallace	
		Ruth E. Bassett Meadows and O.W. Meadows Jr	
		Geneva Bassett Sanchez	
17	05-0005-0005-0000-0000	JAMES E ROBBINS ET UX	322
18	05-0005-0005-0000-0000	AEP Generation Resources Inc. and Kentucky Power Company	321
19	05-0005-0005-0000-0000	Richard J. Gatts	331
20	05-0005-0005-0000-0000	Richard J. Gatts	333
21	05-0005-0012-0000-0000	AEP Generation Resources Inc. and Kentucky Power Company	182
22	05-0004-0015-0000-0000	Terry Holman	384
23	05-0004-0017-0000-0000	Terry Holman	387
24	No Tract ID #	WV Division of Natural Resources	380
25	05-0004-0014-0000-0000	MILLER CHARLES W	388
		PARSONS PAUL ET UX	
		RUSSEL SHARON LYN	
		HUFF TIMOTHY ET UX	
		ARNOLD LLOYD C ET UX	
		CRONIN MARY JO	
		KURPIL RICHARD ET UX	
		CLIFTON CLARA MAE	
		EDWARDS GEORGE ET UX	
		KYLE DONNA FAE	
		CONNER JUDITH MAY	
		SCHIEBELHOOD PAUL ET AL	
		SLOUGH ANITA L ET AL	
26	05-0009-0001-0000-0000	Jess Gladys Ruckman Et Al	392
	05-0009-0001-0001-0000		362
	05-0009-0001-0002-0000		385
	05-0009-0001-0003-0000		382
	05-0009-0001-0005-0000		363
27	05-0004-0018-0000-0000	William L. Maxwell JR	383
28	05-0004-0019-0000-0000	William L. Maxwell JR	385

LEGEND	
100	REFERENCE NUMBER FOR SURFACE PARCEL OWNERS
1	REFERENCE NUMBER FOR MINERAL OWNERSHIP

FILE #: MND 20 CU
DRAWING #: MND 20 CU
SCALE: 1"=2000'
MINIMUM DEGREE OF ACCURACY: 1/2500
PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT H 138: 638.58'

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SIGNED: [Signature]
R.P.E.: 21452 L.L.S.: P.S. NO. _____



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25304



DATE: AUGUST 19, 2015 - REV: MAY 11, 2018

OPERATOR'S WELL #: MND 20 CU

API WELL # 47 051 02013 H6A
STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: SHORT CREEK-OHIO RIVER ELEVATION: 1058'

COUNTY/DISTRICT: MARSHALL / FRANKLIN QUADRANGLE: POWHATAN POINT, W. VA./OHIO

SURFACE OWNER: MURRAY ENERGY ACREAGE: 70.55

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY ACREAGE: 70.55

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 10,700' ± TMD: 27,371' ±

WELL OPERATOR: HG ENERGY II APPALACHIA, LLC DESIGNATED AGENT: DIANE C. WHITE

Address: 5280 DUPONT ROAD Address: 5280 DUPONT ROAD

City PARKERSBURG State WV Zip Code 26101 City PARKERSBURG State WV Zip Code 26101

WW-6A1
(5/13)

Operator's Well No. MND20 CU

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
-------------------------	-----------------------	-----------------------	---------	-----------

** See Attached **

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

RECEIVED
Office of Oil and Gas

MAY 20 2018

WV Department of
Environmental Protection

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: HG Energy II Appalachia, LLC
 By: Diane White *Diane White*
 Its: Agent

**HG Energy II Appalachia, LLC
MND20 CU Lease Chains**

HG Plat Number	MP/D	Original Lessor	Original Lessee	Royalty	Book	Page
1)	05-0001-0003-0000-0000	Belinda Eddy fka Belinda Page Hoover, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	794	55
		Dara Marner and Douglas D. Marner, both individually and as wife and husband	CNX Gas Company, LLC	Not less than 1/8	794	43
		Jessica McNabb fka Jessica Faye Hoover, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	794	49
		Cheryl Sullivan, a single woman	CNX Gas Company, LLC	Not less than 1/8	794	46
		George H. Wells and Nancy Eklund Wells, both individually and as husband and wife	CNX Gas Company, LLC	Not less than 1/8	794	58
		William C.M. Wilson and Hiram C. Wilson, as Trustees of The Nancy L. Wilson Revocable Trust	CNX Gas Company, LLC	Not less than 1/8	800	626
		Wayland W. Bowser, a married man dealing in his sole and separate property	CNX Gas Company, LLC	Not less than 1/8	794	52
2)	05-0001-0002-0001-0000	Barbara G. Mathews, by Gay L. Mathews, Her Attorney in Fact	CNX Gas Company, LLC	Not less than 1/8	831	148
		CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
		Noble Energy, Inc.	APPALACHIA, LLC	Fee	39	1
3)	05-0001-0010-0000-0000		HG ENERGY II APPALACHIA, LLC	Fee	39	1
		Ruth Ann Ferris	CNX Gas Company, LLC	Not less than 1/8	776	535
		Larry F. Jefferson	CNX Gas Company, LLC	Not less than 1/8	776	539
		Noble Marcellus, LP	Anacapa Holdings, LLC	Not less than 1/8	781	267
		Anacapa Holdings, LLC	Noble Energy, Inc.	Not less than 1/8	28	275
		Consolidation Coal Company	CNX Gas Company, LLC	Fee	646	493
4)	05-0001-0011-0000-0000	CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
			HG ENERGY II APPALACHIA, LLC	Fee	39	1
			APPALACHIA, LLC	Fee	646	493
5)	05-0001-0012-0000-0000	Consolidation Coal Company	CNX Gas Company, LLC	Fee	646	493
			Noble Energy, Inc.	Fee	752	66
			HG ENERGY II APPALACHIA, LLC	Fee	39	1
		Susan Witten Neal Meyers AKA Susan Neal Ilfeld Meyeres, individually, and as Susan N. Meyers, Trustee of the Susan N. Meyers Revocable Trust	Noble Energy, Inc.	Not less than 1/8	789	538
		Mary Witten Neal Wiseman FKA Mary Witten Neal	Noble Energy, Inc.	Not less than 1/8	789	564
		Mary Witten Hart Ehlers	Noble Energy, Inc.	Not less than 1/8	789	552
		Margery J. Witten	Noble Energy, Inc.	Not less than 1/8	789	543
		Joseph Moore Neal	Noble Energy, Inc.	Not less than 1/8	789	545
		Jane Witten Voth	Noble Energy, Inc.	Not less than 1/8	789	559
		Frances Gale Neal	Noble Energy, Inc.	Not less than 1/8	789	536
Dorothy Ann Neal by her POA Jerry L. Berthold	Noble Energy, Inc.	Not less than 1/8	789	547		

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		Donald R. Hart Jr.	Noble Energy, Inc.	Not less than 1/8	789	554
		Cathy Hart Price	Noble Energy, Inc.	Not less than 1/8	789	534
		Ann Alexander	Noble Energy, Inc.	Not less than 1/8	789	541
		Jane R. Peterseim AKA Jane Peterseim	CNX Gas Company, LLC	Not less than 1/8	781	37
		Consolidation Coal Company	CNX Gas Company, LLC	Fee	646	493
		CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
6)	05-0002-0003-0000-0000	Consolidation Coal Company	CNX Gas Company, LLC	Fee	646	493
		CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
7)	05-0002-0002-0000-0000	Consolidation Coal Company	CNX Gas Company, LLC	Fee	646	493
	05-0006-0003-0000-0000	CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
8)	05-0006-0003-0000-0000	Consolidation Coal Company	CNX Gas Company, LLC	Fee	646	493
	05-0005-0001-0000-0000	CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
9)	05-0005-0002-0000-0000	Margaret Games	CNX Gas Company, LLC	Not less than 1/8	763	441
		Elizabeth Patterson	CNX Gas Company, LLC	Not less than 1/8	763	437
		Charles J. Wiesner	CNX Gas Company, LLC	Not less than 1/8	763	429
		John Wiesner	CNX Gas Company, LLC	Not less than 1/8	763	433
		Kenneth Schmitt	CNX Gas Company, LLC	Not less than 1/8	763	421
		Mary Ellen Sedon	CNX Gas Company, LLC	Not less than 1/8	763	417
		Alfred Kaczorowski, Jr., & Sharon M. Kaczorowski, his wife	CNX Gas Company, LLC	Not less than 1/8	763	425
		CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
10)	05-0006-0003-0000-0000	Consolidation Coal Company	CNX Gas Company, LLC	Fee	646	493
		CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
11)	05-0005-0009-0001-0000	Consolidation Coal Company	CNX Gas Company, LLC	Fee	646	493
		CNX Gas Company, LLC	Noble Energy, Inc.	Fee	752	66
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
12)	05-0005-0003-0000-0000	AEP Generation Resources Inc. and Kentucky Power Company	Noble Energy, Inc.	Not less than 1/8	829	157
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
13)	05-0005-0006-0001-0000	AEP Generation Resources Inc. and Kentucky Power Company	Noble Energy, Inc.	Not less than 1/8	829	157
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
14)	05-0005-0007-0000-0000	AEP Generation Resources Inc. and Kentucky Power Company	Noble Energy, Inc.	Not less than 1/8	829	157
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
15)	05-0005-0003-0001-0000	AEP Generation Resources Inc. and Kentucky Power Company	Noble Energy, Inc.	Not less than 1/8	829	157
		NOBLE ENERGY INC	HG ENERGY II APPALACHIA, LLC	Fee	39	1
16)	05-0005-0004-0000-0000	Barbara Kay Ewing and Wilber E. Ewing	NOBLE ENERGY INC	Not less than 1/8	842	34

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		Charles Howard Bassett JR and Ruby D. Bassett	NOBLE ENERGY INC	Not less than 1/8	842	1
		Cynthia P. Hopkins, as Trustee of the Cynthia P. Hopkins Revocable Trust	NOBLE ENERGY INC	Not less than 1/8	841	366
		Elizabeth A. Strusbaugh and James R. Strausbaugh	NOBLE ENERGY INC	Not less than 1/8	841	370
		Janet and John Blankenship	NOBLE ENERGY INC	Not less than 1/8	841	368
		Jean C. Thomas	NOBLE ENERGY INC	Not less than 1/8	841	449
		Mary E. Bassett	NOBLE ENERGY INC	Not less than 1/8	841	362
		Robert B. and Violet Thomas	NOBLE ENERGY INC	Not less than 1/8	842	28
		Roger B. and Inken P. Rose	NOBLE ENERGY INC	Not less than 1/8	841	358
		Ruth Ann and Furman F. Wallace	NOBLE ENERGY INC	Not less than 1/8	841	364
		Ruth E. Bassett Meadows and O.W. Meadows Jr	NOBLE ENERGY INC	Not less than 1/8	842	38
		NOBLE ENERGY INC	HG ENERGY II			
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
		Geneva Bassett Sanchez	Chevron USA INC	Not less than 1/8	814	399
		Chevron USA INC	HG ENERGY II	Not less than		
		Chevron USA INC	APPALACHIA, LLC	1/8	41	154
17)	05-0005-0005-0000-0000	JAMES E ROBBINS ET UX	Noble Energy, Inc.	Not less than 1/8	833	357
		NOBLE ENERGY INC	HG ENERGY II			
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
18)	05-0005-0006-0000-0000	AEP Generation Resources Inc. and Kentucky Power Company	Noble Energy, Inc.	Not less than 1/8	829	157
		NOBLE ENERGY INC	HG ENERGY II			
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
19)	05-0008-0005-0000-0000	Richard J. Gatts	Chevron USA INC	Not less than 1/8	899	479
		Chevron USA INC	HG ENERGY II	Not less than		
		Chevron USA INC	APPALACHIA, LLC	1/8	41	154
20)	05-0008-0006-0000-0000	Richard J. Gatts	Chevron USA INC	Not less than 1/8	899	479
		Chevron USA INC	HG ENERGY II	Not less than		
		Chevron USA INC	APPALACHIA, LLC	1/8	41	154
21)	05-0005-0012-0000-0000	AEP Generation Resources Inc. and Kentucky Power Company	Noble Energy, Inc.	Not less than 1/8	829	157
		NOBLE ENERGY INC	HG ENERGY II			
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
22)	05-0004-0016-0000-0000	Terry Holman	TriEnergy Holdings	Not less than 1/8	721	557
		TriEnergy Holdings	Chevron USA INC		28	239
		Chevron USA INC	HG ENERGY II			
		Chevron USA INC	APPALACHIA, LLC		41	154
23)	05-0004-0017-0000-0000	Terry Holman	TriEnergy Holdings	Not less than 1/8	721	557
		TriEnergy Holdings	Chevron USA INC		28	239
		Chevron USA INC	HG ENERGY II			
		Chevron USA INC	APPALACHIA, LLC		41	154
24)	No Tract ID #	WV Division of Natural Resources	Noble Energy, Inc.	Not less than 1/8	865	558
		NOBLE ENERGY INC	HG ENERGY II			
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
25)	05-0004-0014-0000-0000	MILLER CHARLES W	CHEVRON USA INC	Not less than 1/8	853	59
		PARSONS PAUL ET UX	CHEVRON USA INC	Not less than 1/8	853	430
		RUSSELL SHARON LYN	CHEVRON USA INC	Not less than 1/8	853	422

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		HUFF TIMOTHY ET UX	CHEVRON USA INC	Not less than 1/8	846	47
		ARNOLD LLOYD C ET UX	CHEVRON USA INC	Not less than 1/8	846	39
		CRONIN MARY JO	CHEVRON USA INC	Not less than 1/8	846	43
		KURPIL RICHARD ET UX	CHEVRON USA INC	Not less than 1/8	863	594
		CLIFTON CLARA MAE	CHEVRON USA INC	Not less than 1/8	853	426
		EDWARDS GEORGE ET UX	CHEVRON USA INC	Not less than 1/8	853	418
		KYLE DONNA FAE	CHEVRON USA INC	Not less than 1/8	853	449
		CONNER JUDITH MAY	CHEVRON USA INC	Not less than 1/8	853	445
		SCHEIBELHOOD PAUL ET AL	AB RESOURCES LLC	Not less than 1/8	695	629
		AB RESOURCES LLC	NPAR LLC		25	484
		NPAR LLC	Chevron USA INC		756	332
		Chevron USA INC	HG ENERGY II		41	154
		SLOUGH ANITA L ET AL	APPALACHIA, LLC			
			AB RESOURCES LLC	Not less than 1/8	696	7
		AB RESOURCES LLC	NPAR LLC		25	484
		NPAR LLC	Chevron USA INC		756	332
		Chevron USA INC	HG ENERGY II		41	154
		Chevron USA INC	APPALACHIA, LLC		41	154
26)	05-0009-0001-0000-0000, 05-0009-0001-0001-0000, 05-0009-0001-0002-0000, 05-0009-0001-0003-0000, 05-0009-0001-0004-0000	Jessi Gladys Ruckman Et Al	Noble Energy, Inc. HG ENERGY II	Not less than 1/8	730	646
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
27)	05-0004-0018-0000-0000	William L, Maxwell JR TriEnergy Holdings	TriEnergy Holdings Chevron USA INC HG ENERGY II	Not less than 1/8	730	644
		Chevron USA INC	APPALACHIA, LLC		28	239
					41	154
28)	05-0004-0019-0000-0000	William L, Maxwell JR TriEnergy Holdings	TriEnergy Holdings Chevron USA INC HG ENERGY II	Not less than 1/8	730	644
		Chevron USA INC	APPALACHIA, LLC		28	239
					41	154

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HG Energy, LLC
5260 Dupont Road
Parkersburg, WV 26101
(304) 420-1100 - Office
(304) 863-3172 - Fax

January 23, 2018

Laura Adkins
WV DEP
Division of Oil & Gas
601 57th Street
Charleston, WV 25304

RE: Drilling Under Roads – MND20 CU
Franklin District, Marshall County
West Virginia

Dear Ms. Adkins:

HG Energy II Appalachia, LLC, has the right to drill, stimulate and produce wells that are drilled under the County and State Roads as designated on the plats.

Should you have any questions or desire further information, please contact me at dwhite@hgenergyllc.com or 304-420-1119.

Very truly yours,

Diane White

Diane C. White

Enclosures

CC: Jim Nicholson - Inspector

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WW-6AC
(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 01/23/2018

API No. 47- _____ - _____
Operator's Well No. MND20 CU
Well Pad Name: MND20

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>516847.5</u>
County:	<u>Marshall</u>		Northing:	<u>4411324.4</u>
District:	<u>Franklin</u>	Public Road Access:		<u>SLS 2/1</u>
Quadrangle:	<u>Powhatan Point</u>	Generally used farm name:		<u>CONSOL</u>
Watershed:	<u>Short Creek - Ohio River (HUC 10)</u>			

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following: *PLEASE CHECK ALL THAT APPLY <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED
--	--	--

Required Attachments:

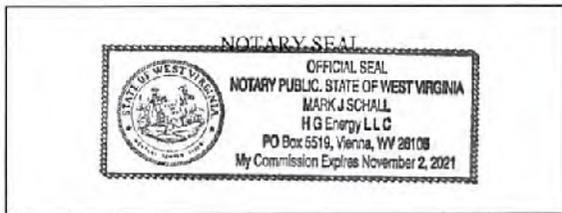
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II **RECEIVED** Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and **Office of Oil and Gas** Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service **FEB 16 2018** the return receipt card or other postal receipt for certified mailing.

WW-6AC
(1/12)

Certification of Notice is hereby given:

THEREFORE, I Diane White, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all 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.

Well Operator:	<u>HG Energy II Appalachia, LLC</u>	Address:	<u>5260 Dupont Road</u>
By:	<u>Diane White <i>Diane White</i></u>		<u>Parkersburg, WV 26101</u>
Its:	<u>Agent</u>	Facsimile:	<u>304-863-3172</u>
Telephone:	<u>304-420-1119</u>	Email:	<u>dwhite@hgenergyllc.com</u>



Subscribed and sworn before me this 23rd day of January.

Mark J. Schall Notary Public

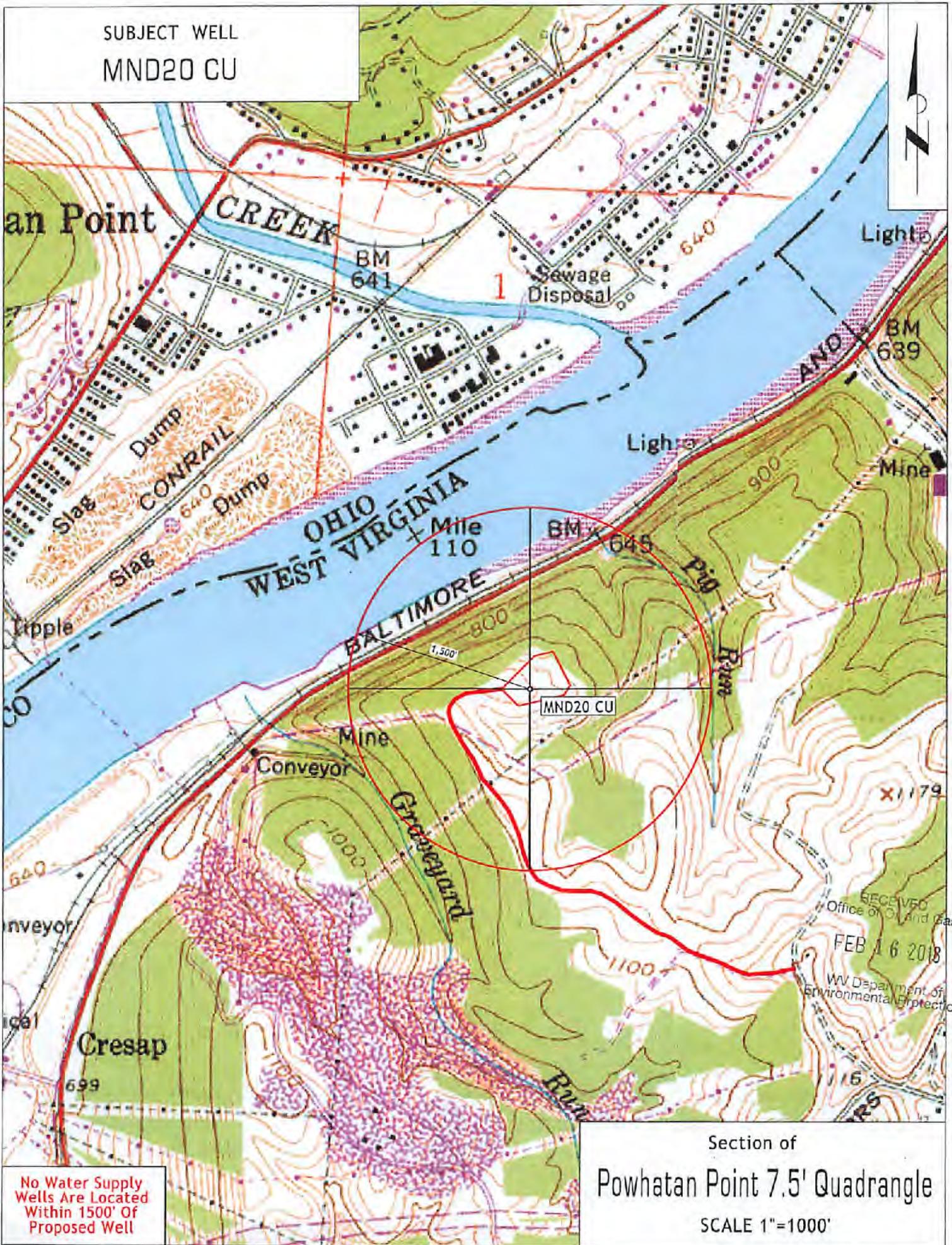
My Commission Expires 11/2/2021

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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SUBJECT WELL
MND20 CU

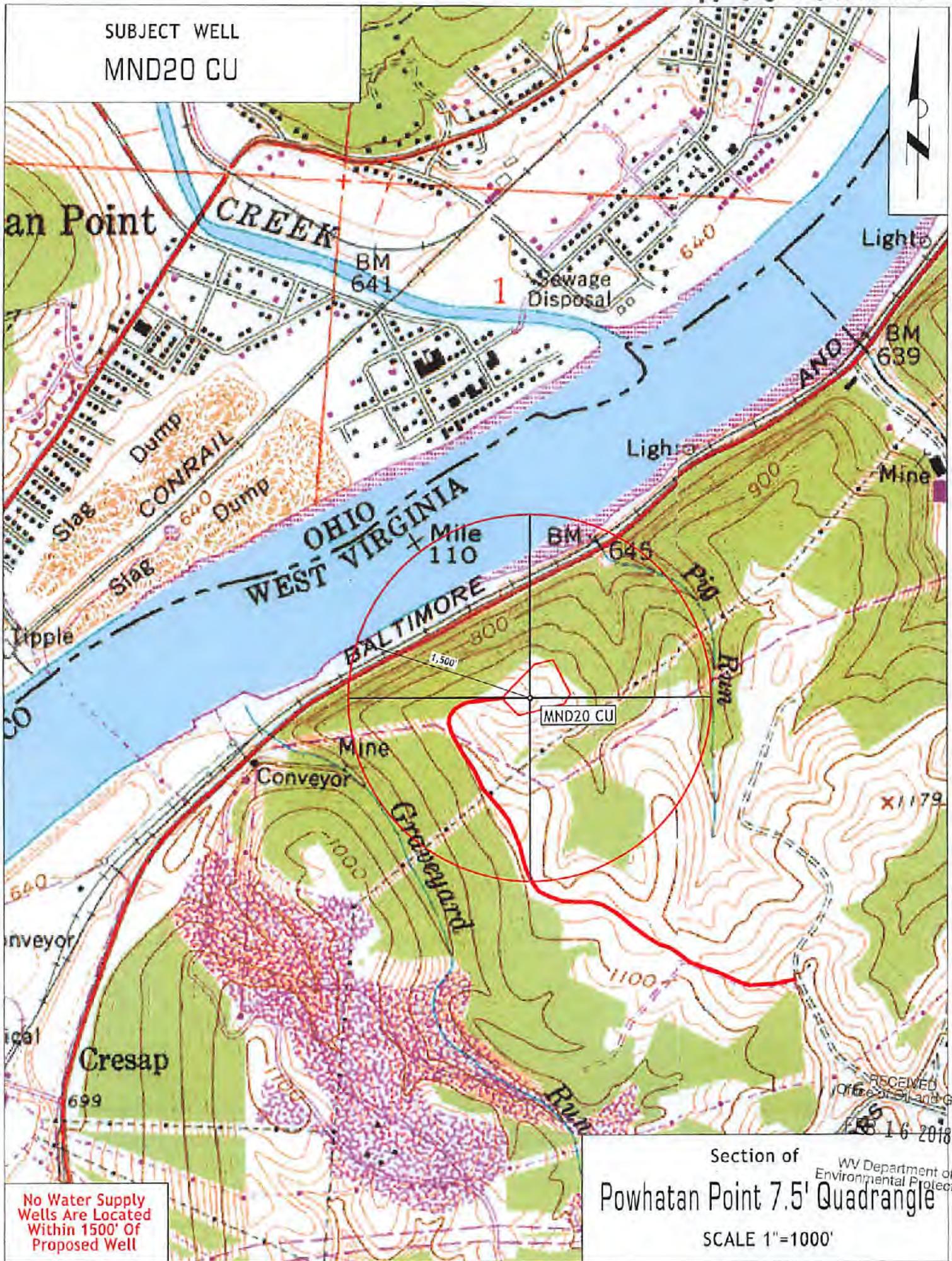


No Water Supply Wells Are Located Within 1500' Of Proposed Well

Section of
Powhatan Point 7.5' Quadrangle
SCALE 1"=1000'

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SUBJECT WELL
MND20 CU



No Water Supply Wells Are Located Within 1500' Of Proposed Well

Section of
Powhatan Point 7.5' Quadrangle
SCALE 1"=1000'
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**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION**

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 1/29/2018 **Date Permit Application Filed:** 2/06/2018

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Murray Energy Corporation - Alex O'Neill
Address: 46228 National Road
Saint Clairsville, OH 43950

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: Same as Surface Owner
Address: _____

COAL OPERATOR

Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

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*Please attach additional forms if necessary

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Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.e, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

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WV Department of Environmental Protection

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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WV Department of
Environmental Protection

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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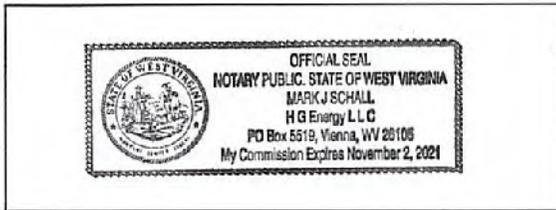
Notice is hereby given by:

Well Operator: HG Energy II Appalachia, LLC Diane White
Telephone: 304-420-1119
Email: dwhite@hgenergyllc.com

Address: 5260 Dupont Road
Parkersburg, WV 26101
Facsimile: 304-863-3172

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



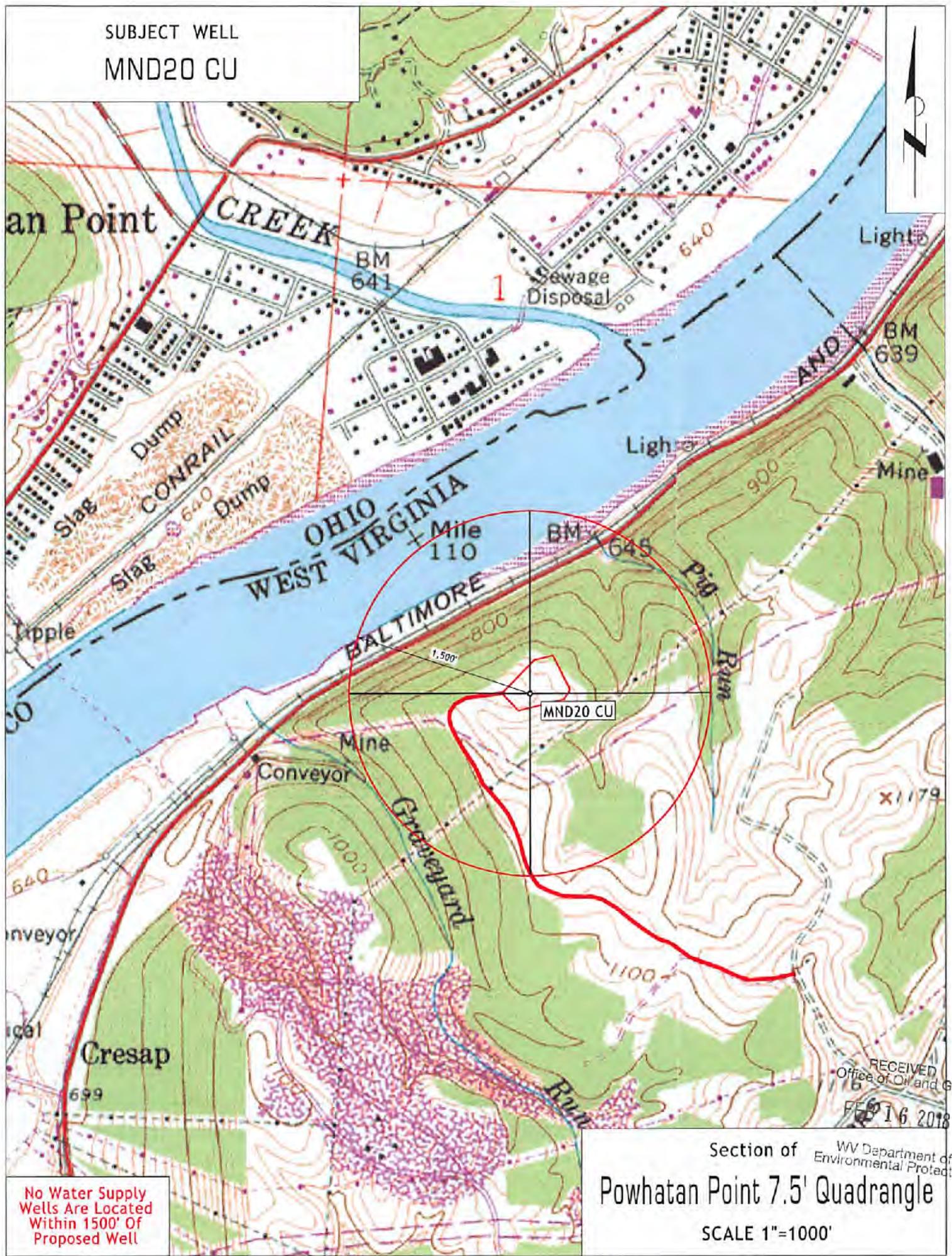
Subscribed and sworn before me this 29th day of January, 2018.

[Signature] Notary Public

My Commission Expires 11/2/2021

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SUBJECT WELL
MND20 CU



No Water Supply Wells Are Located Within 1500' Of Proposed Well

Section of WV Department of Environmental Protection
Powhatan Point 7.5' Quadrangle
SCALE 1"=1000'

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FEB 16 2018



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Jim Justice
Governor

Thomas J. Smith, P. E.
Secretary of Transportation/
Commissioner of Highways

July 28, 2017 ✓

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the MND-20 Well Pad, Marshall County ✓

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2012-0609 for the subject site to HG Energy, LLC. for access to the State Road for the well sites located off of Marshall County Route 2/1 SLS.

The operator has signed an OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton P.E.
Regional Maintenance Engineer
Central Office Oil & Gas Coordinator

Cc: Diane White
H G Energy, LLC
CH, OM, D-6
File

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Environmental Protection

51-02013

HG Energy II Appalachia, LLC
List of Frac Additives by Chemical Name and CAS #
MND20 Well Pad (AU,BU,CU,DU,EU)

Chemical Name	CAS #	Multiple CAS #'s
Pro Shale Slik 405	Mixture	68551-12-2
		7647-14-5
		12125-02-9
		64742-47-8
Pro Hib II	Mixture	68412-54-4
		68607-28-3
		107-21-1
		111-76-2
		67-56-1
		107-19-7
Silica Sand and Ground Sand	Mixture	14808-60-7
		1344-28-1
		1309-37-1
		13463-67-7
Hydrochloric Acid 22 DEG BE	7647-01-0	
PROGEL - 4.5	64742-96-7	
BIO CLEAR 2000	Mixture	25322-68-3
		10222-01-2
SCALE CLEAR SI 112	107-21-1	
PROBREAK 4	Mixture	57-50-1
		107-21-1
Sulfamic Acid	5329-14-6	
PRO - Flow - 102-N	Mixture	67-63-0
		68439-45-2
		2687-96-9
PROGEL - 4	9000-30-0	

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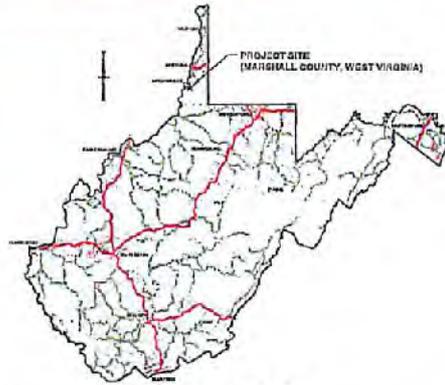
WV Department of
Environmental Protection

APPROVED
WVDEP OOG
WV 13 3/13/2018

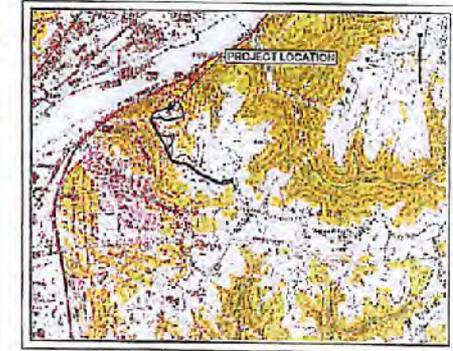
MND 20 WELL PAD ISSUED FOR CONSTRUCTION

FRANKLIN DISTRICT, MARSHALL COUNTY WEST VIRGINIA FOR

HG ENERGY II, APPALACHIA LLC
5260 DUPONT ROAD
PARKERSBURG, WEST VIRGINIA
(304) 420-1100



VICINITY MAP
N.T.S.



LOCATION MAP

NAME	DEED ACADASH	LIMIT OF CLEARANCE	CLEAR & OPEN (BORDER)	CLEAR & OPEN (NON FORESTED)	TOTAL CLEAR & OPEN
MINERAL INTEREST/OWNER DATA					
CR - 2001-0003-0000-0000	18.58	8.58	97.4	0.00	8.58
CR - 2001-0010-0000-0000	18.20	8.58	2.38	4.20	6.78
CR - 2001-0004-0000-0000	18.58	8.58	8.60	0.00	8.60
DOGMA MINING CO. LLC					
CR - 2001-0003-0000-0000	18.60	8.57	8.44	0.33	3.27
TOTAL					17.28

BARREN/OPEN BOUNDARY	FEET	FEET
WELL PAD ACCESS ROAD	11.888	4.846
WELL PAD	23.175	25.832
TOTAL CLEARANCE	35.063	30.678
TOTAL FACILITIES CLEARANCE	22.817	23.782
OPTIONAL OIL W/STOCKPILE #1	-	1.420
OPTIONAL OIL W/STOCKPILE #2	-	3.180
OPTIONAL STOCKPILE #3	-	15.417



THE WEST VIRGINIA 811 SERIAL NUMBER FOR THIS PROJECT IS: 1510522029

ISSUED FOR CONSTRUCTION

SHEET	DATE	TITLE
1	FEBRUARY 2016	COVER SHEET
2	FEBRUARY 2016	EXISTING CONDITIONS PLAN (WITH ORTHO PHOTOGRAPHY)
3	FEBRUARY 2016	INDEX SHEET
4	FEBRUARY 2016	DRAINAGE AREAS AND SOILS MAP
5	FEBRUARY 2016	EROSION AND SEDIMENTATION CONTROL PLAN
6	FEBRUARY 2016	EROSION AND SEDIMENTATION CONTROL PLAN
7	FEBRUARY 2016	EROSION AND SEDIMENTATION CONTROL PLAN
8	FEBRUARY 2016	EROSION AND SEDIMENTATION CONTROL PLAN
9	FEBRUARY 2016	COORDINATE GEOMETRY PLAN
10	FEBRUARY 2016	COORDINATE GEOMETRY PLAN
11	FEBRUARY 2016	COORDINATE GEOMETRY PLAN
12	FEBRUARY 2016	COORDINATE GEOMETRY PLAN
13	FEBRUARY 2016	ACCESS ROAD SITE PLAN AND PROFILE
14	FEBRUARY 2016	ACCESS ROAD SITE PLAN AND PROFILE
15	FEBRUARY 2016	ACCESS ROAD SITE PLAN AND PROFILE
16	FEBRUARY 2016	ACCESS ROAD SITE PLAN AND PROFILE
17	FEBRUARY 2016	ACCESS ROAD CENTERLINE HORIZONTAL GEOMETRY
18	FEBRUARY 2016	ACCESS ROAD CROSS SECTIONS
19	FEBRUARY 2016	ACCESS ROAD CROSS SECTIONS
20	FEBRUARY 2016	ACCESS ROAD CROSS SECTIONS
21	FEBRUARY 2016	WELL PAD AND ROADWAY CROSS SECTIONS
22	FEBRUARY 2016	SEEDING AND LINING PLAN
23	FEBRUARY 2016	SEEDING AND LINING PLAN
24	FEBRUARY 2016	WELL PAD RECLAMATION PLAN
25	FEBRUARY 2016	SITE CONSTRUCTION DETAILS
26	FEBRUARY 2016	SITE CONSTRUCTION DETAILS
27	FEBRUARY 2016	EROSION AND SEDIMENTATION CONTROL NOTES
28	FEBRUARY 2016	EROSION AND SEDIMENTATION CONTROL NOTES
29	FEBRUARY 2016	EROSION AND SEDIMENTATION CONTROL DETAILS
30	FEBRUARY 2016	EROSION AND SEDIMENTATION CONTROL DETAILS

MND 20 WELL PAD TOP-HOLE COORDINATES

WELL NUMBER	WVDEP N EASTING	WVDEP N NORTHING	WVDEP N EASTING	WVDEP N NORTHING	WVDEP N EASTING	WVDEP N NORTHING	UTM-17 EASTING (M)	UTM-17 NORTHING (M)	UTM-17 EASTING (M)	UTM-17 NORTHING (M)
MND20-1	39.451740811	60.808294721	49.975.792	162920.388	60.851552513	60.812345444	49492.540	124129.030	611937.587	61.9071.671
MND20-2	39.452358706	60.808294157	49.976.000	162920.369	60.851552513	60.808215941	49496.590	124118.600	611938.169	61.9072.622
MND20-3	39.453174444	60.808294167	49.976.100	162920.396	60.851552513	60.808215944	49496.518	124118.370	611938.374	61.9072.648
MND20-4	39.453714000	60.808294183	49.976.800	162920.375	60.851552513	60.808215939	49496.276	124069.120	611939.022	61.9073.548
MND20-5	39.454692318	60.808294200	49.978.100	162921.761	60.851552513	60.808294206	49498.418	124088.120	611939.589	61.9074.143
ROAD ENTRANCE	39.455669200	60.795711920	49.979.400	162920.065	60.851552513	60.795527545	49320.355	124048.930	61.9068.211	61.9075.078
WELL PAD CENTER	39.453174000	60.808294000	49.976.000	162920.384	60.851552513	60.808294000	49496.272	124118.386	611939.666	61.9074.154

DIRECTIONS TO MND 20 WELL PAD:
FROM MOUNDSVILLE, WV HEAD WEST ONTO WV-2 S (1 MI), TURN LEFT ONTO STATE ROUTE 2 ALT. TURN LEFT IMMEDIATELY ONTO ROBERTS RIDGE ROAD (2.8 MI), CONTINUE ONTO ROBERTS RIDGE ST JOSEPH ROAD (1.0 MI), SLIGHT RIGHT ON TAYLORS RIDGE ROAD (1.2 MI), TURN RIGHT ONTO THE MND 20 ACCESS ROAD (0.25 MI). TURN LEFT ONTO THE MND 20 ACCESS ROAD. THE WELL PAD WILL BE LOCATED APPROXIMATELY 0.70 MI FROM THIS INTERSECTION.

DIRECTIONS TO MND 20 WELL PAD FOR HEAVY EQUIPMENT:
FROM WV ROUTE 2 SOUTH AT TRAFFIC SIGNAL, MAKE A LEFT TURN ONTO WV ALTERNATE 2 (ROUND BOTTOM HILL ROAD) AND TRAVEL 1.54 MILES TO CR 88/5 (LINDSAY LANE), MAKE A RIGHT ONTO LINDSAY LANE AND TRAVEL 1.77 MILES TO CR 21 (ROBERTS RIDGE ROAD), MAKE A RIGHT ONTO ROBERTS RIDGE ROAD AND TRAVEL 3.38 MILES TO CR 2/1 (TAYLORS RIDGE/MCFARLAND RUN), MAKE A RIGHT ONTO TAYLORS RIDGE/MCFARLAND RUN ROAD AND TRAVEL 1.25 MILES TO INTERSECTION, MAKE A RIGHT AND FOLLOW ROAD UNTIL YOU REACH A GATE. TRAVEL THROUGH THE GATE TO INTERSECTION, MAKE A RIGHT AND TRAVEL FOR 800 FEET TO THE LEASE ROAD ON THE RIGHT.

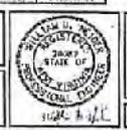
RECEIVING WATERWAY:
PIG RUN
CLASS BY - WARM WATER (AQUATIC)
RESIDING IN UPPER OHIO SOUTH WATERSHED

REV	BY	DATE	REVISION

DESIGNED	ML	NORTH
DRAWN	ML	
CHECKED	BAI	
REVIEWED	CMT	
S.C.	11112	

HG ENERGY II, APPALACHIA LLC
PARKERSBURG, WEST VIRGINIA

Michael Baker INTERNATIONAL
MICHAEL BAKER INTERNATIONAL
CONSULTING ENGINEERS
1800 TOWNSHIP, PENNSYLVANIA



MND 20 CONSTRUCTION PLANS

COVER SHEET

FRANKLIN DISTRICT
MARSHALL COUNTY, WEST VIRGINIA

SCALE: AS SHOWN DATE: FEBRUARY, 2016

SHEET NO. **1** OF 30

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MAR 8 2018
WV Department of
Environmental Protection

51-02013

NOTES:

1. MAPPING AND TOPOGRAPHY PROVIDED BY BLUE MOUNTAIN AERIAL SURVEYS 11023 MASON DIXON HIGHWAY SURVEY, WEST VIRGINIA 26562 (PHONE) (304) 662-2528 FAX (304) 662-6801 DATE OF PHOTOGRAPHY 4-15-14 CONTOUR INTERVAL 2 FEET.
2. STATIONS SHOWN REPRESENT HORIZONTAL DISTANCE ALONG ALIGNMENTS.
3. WELL PAD AREA = 18.4(18) AC.
4. LIMIT OF DISTURBANCE = 17.29 ACRES
5. PROPERTY LINE DATA PROVIDED BY NOBLE ENERGY
6. FILL COMPACTED TO 95% OF STANDARD PROCTOR DENSITY (ASTM D-2922). FILL WILL BE FREE OF DISINTEGRABLE MATERIAL NOTING LARGER THAN 2". ROCK LITS WILL BE NO GREATER THAN 3".



CALL BEFORE YOU DIG
 811 OR 1-800-4-A-DAVE
 WWW.811.VA.GOV

THE WEST VIRGINIA BTL LOCATED REQUEST TICKET NUMBER FOR THIS PROJECT IS: 181922014

LEGEND

EXISTING

- X 1414 - EXISTING SPOT ELEVATION
- 110 --- EXISTING POWER CONDUIT
- EXISTING STREAM
- EXISTING FENCE LINE
- EXISTING TREE
- EXISTING TREELINE
- EXISTING GASLINE
- EXISTING UTILITY POLE
- EXISTING TOWER AND OVERHEAD ELECTRIC LINE
- EXISTING PIPELINE & MARKER
- PROPERTY LINE
- STREAM BUFFER
- SOIL BOUNDARY AND TYPE
- SURVEY CONTROL MONUMENT
- CLASSIFIED PERENNIAL STREAM
- CLASSIFIED INTERMITTENT STREAM
- CLASSIFIED EPHEMERAL STREAM
- PERM DELIMITED WETLAND
- PFD DELIMITED WETLAND
- PDS DELIMITED WETLAND

PROPOSED

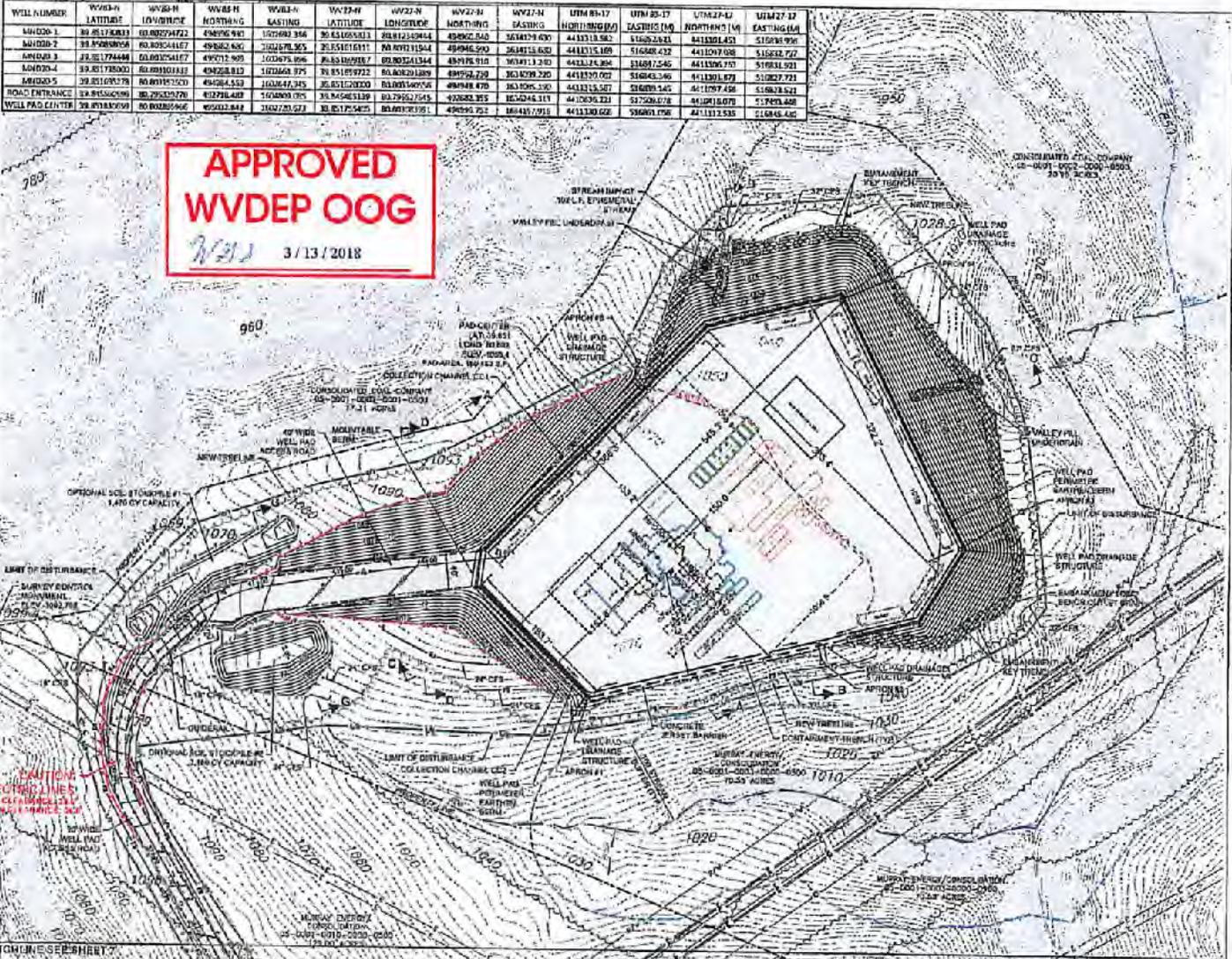
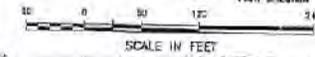
- PROPOSED INDEX CONTOUR
- PROPOSED INTERIM CONTOUR
- LIMIT OF CUT
- LIMIT OF FILL
- LIMIT OF DISTURBANCE
- NEW FENCE LINE
- CONDUIT FILTER SOCK
- SOIL STABILIZATION
- EROSION CONTROL BLANKET
- COLLECTION CHANNEL
- DRAINAGE PIPE
- ROCK BARRIERS
- FLOW RESTRICTION

WELL NUMBER	WV22-N LATITUDE	WV22-N LONGITUDE	WV22-N NORTHING	WV22-N EASTING	WV22-N LATITUDE	WV22-N LONGITUDE	WV22-N NORTHING	WV22-N EASTING	UTM 83-17 NORTHING (M)	UTM 83-17 EASTING (M)	UTM 22-42 NORTHING (M)	UTM 22-42 EASTING (M)
WV2200-1	39.85132833	80.80079472	49876.945	100940.394	39.85169503	80.81243044	49862.540	100947.600	4418319.562	516682.611	4418319.561	516682.611
WV2200-2	39.85289008	80.80544167	49862.850	100978.265	39.85161811	80.80911044	49896.590	100943.600	4418319.562	516682.611	4418319.561	516682.611
WV2200-3	39.85177448	80.80305417	49972.905	100978.265	39.85169503	80.80221344	49916.910	100943.600	4418319.562	516682.611	4418319.561	516682.611
WV2200-4	39.85178000	80.80930433	49828.812	100964.375	39.85169503	80.80221344	49916.910	100943.600	4418319.562	516682.611	4418319.561	516682.611
WV2200-5	39.85109378	80.81019300	49804.553	100964.375	39.85169503	80.80221344	49916.910	100943.600	4418319.562	516682.611	4418319.561	516682.611
WV2200-6	39.85156276	80.79924276	49781.483	100964.375	39.85169503	80.79924276	49868.870	100943.600	4418319.562	516682.611	4418319.561	516682.611
WELL PAD CENTER	39.85183009	80.80829066	49822.844	100970.023	39.85175545	80.80829066	49899.751	100943.600	4418319.562	516682.611	4418319.561	516682.611

APPROVED WVDEP OOG
 3/13/2018

AQUATIC IMPACTS

- WETLAND (D1) AC
- PERENNIAL STREAM: 0 L.F.
- INTERMITTENT STREAM: 0 L.F.
- EPHEMERAL STREAM: 100 L.F.



ISSUED FOR CONSTRUCTION

REVISIONS	DATE	DESCRIPTION

APPROVED	SDO
DRAWN	ML
CHECKED	SLR
DESIGNED	CAF
S.D.	14884

HG ENERGY II, APPALACHIA LLC
 PARKERSBURG, WEST VIRGINIA

Michael Baker International
 MICHAEL BAKER INTERNATIONAL
 CONSULTING ENGINEERS
 MOON TOWNSHIP, PENNSYLVANIA



MND 20 CONSTRUCTION PLANS
EROSION AND SEDIMENTATION CONTROL PLAN

FRANKLIN DISTRICT
 MARSHALL COUNTY, WEST VIRGINIA

SCALE AS SHOWN DATE: FEBRUARY, 2018

SHEET NO.	8
OF	30

RECEIVED
 Office of Oil and Gas

MAR 8 2018

WV Department of Environmental Protection