west virginia department of environmental protection

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

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

May 09, 2016

WELL WORK PLUGGING PERMIT

Plugging

This permit, API Well Number: 47-4301697, issued to HG ENERGY, LLC, 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 all 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.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. The above named operator will also file, as required in WV Code 22-6-23, an affidavit on form WR-38 by two experienced persons in the operator's employment and the Oil and Gas inspector that the work authorized under this permit was performed and a description given. Failure to abide by all statutory and regulatory provisions governing all duties and operations here under may result in suspensions or revocation of this permit and in addition may result in civil and/or criminal penalities being imposed upon the operator.

This permit will expire in two (2) years from date of issue. If there are any questions, please free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: A. A. WOODRUM 5
Farm Name: HUGHES, JAMES E.
API Well Number: 47-4301697
Permit Type: Plugging
Date Issued: 05/09/2016

Promoting a healthy environment.

4301697P

PERMIT CONDITIONS

West Virginia Code §22-6-11 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. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.
4. This well is under a consent order and must be plugged under the terms of that agreement.

4301697P

WW-4B
Rev. 2/01

1) Date February 11, 2016
2) Operator's Well No. A A Woodrum 5
3) API Well No. 47- 043 - 1697

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

4) Well Type: Oil x / Gas x / Liquid injection ____ / Waste disposal ____ /
(If "Gas, Production ____ or Underground storage ____) Deep ____ / Shallow x

5) Location: Elevation 885' Watershed Hayzlett Fork
District Duval County Lincoln Quadrangle Garrett's Bend 7.5'

6) Well Operator HG Energy, LLC
Address 5260 Dupont Road
Parkersburg, WV 26101

7) Designated Agent Diane White
Address 5260 Dupont Road
Parkersburg, WV 26101

8) Oil and Gas Inspector to be notified
Name Jeremy James
Address PO Box 36
Clendenin, WV 25045

9) Plugging Contractor
Name To Be Determined Upon Approval of Permit
Address

10) Work Order: The work order for the manner of plugging this well is as follows:

** See Attached Sheet **

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Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector [signature] Date 3-1-16

4301697P

WW-4B - Conti
Rev. 2/01

1) Date: February 11, 2016
2) Operator's Well Number
AA Woodrum 5
3) API Well No: 47 - 043 - 1697
State County Permit

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

4) WELL TYPE: Oil x Gas x Liquid Injection ____ Waste Disposal ____
(If "Gas", Production ____ Underground Storage ____) Deep ____ Shallow x

5) LOCATION: Elevation: 885' Watershed: Hayzlett Fork
District: Duval County: Lincoln Quadrangle Garrett's Bend 7.5'

6) WELL OPERATOR: HG Energy, LLC 494497948
Address 5260 Dupont Road
Parkersburg, WV 26101

7) DESIGNATED AGENT Diane White
Address 5260 Dupont Road
Parkersburg, WV 26101

8) OIL & GAS INSPECTOR TO BE NOTIFIED
Name Jeremy James
Address P. O. Box 36
Clendenin, WV 25045

9) PLUGGING CONTRACTOR
Name To Be Determined Upon Approval of Permit
Address

10) WORK ORDER: The work order for the manner of plugging this well is as follows:

TD- 2,439'

Manners of plugging:
Plug #1 - 2350' - 2250'
Located above the highest perforation
Check for free-point at top of Big Lime (1688'), If pipe is free, part and pull. If pipe is not free, preforate for placement of plug #2.
Plug # 2 - Approx. 1730' - 1630'
Located at top of Big Lime - 4 1/2" casing stub
Plug #3 - 950' - 850'
Located at elevation, if pipe was not free at 1688', part and pull at elevation (885') below 885
Plug #4 - 350' - 250'
Located at 8 5/8" casing shoe, below fresh water
Plug #5 - 100' - 0'
Located at Surface

Recover all possible casing. If casing can not be recovered, perforate for plug placement.

Monument -
6" minimum diameter metal pipe
30" above surface
10' in well below surface
Sealed with cement
API identification (1/2") height numbering

6% Gel between all plugs

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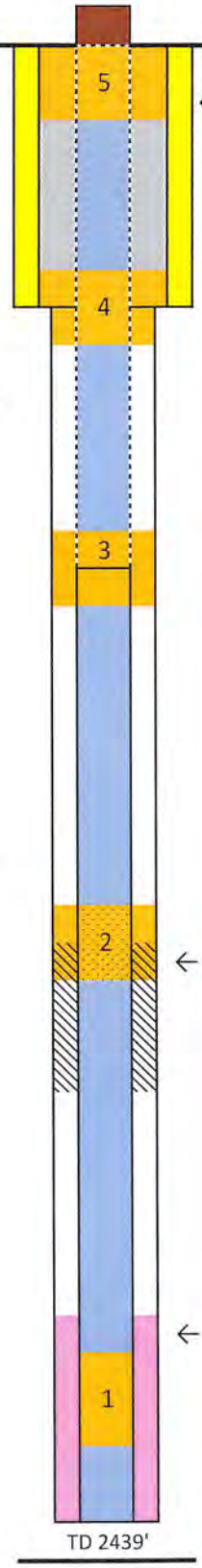
4301697P

Well: A.A. Woodrum #5
API: 47-43-1697
Elevation: 885'

Monument to extend 30" above surface. 10' into well. 6" min metal pipe, sealed with cement. API i.D.

Casing Information		
Size	Depth	Weight
8 5/8"	306'	20#/ft.
4 1/2"	2444'	10.5#/ft.



← 200 sacks cement to surface

Freepoint Cut and Pull Casing	
Size	Approx. Depth
4 1/2	1688' or 885'

Hole Size 6.75" →

Cement Plugs		
NO.	Bottom	Top
1	2350	2250
2	1730	1630
3	950	850
4	350	250
5	100	0

← Big Lime 1688' - 1880'

← 50 Sacks Cement T.O.C. 2218'

Highest Perforation 2378'

Bottom Hole Cement Level Calculations

# Sacks Used		Cement Depth
50		2218.167
Hole Size	**Casing Size**	**Depth**
6.75	4.5	2439

diameter delta	Conv. Factor	bbls / ft.
25.3125	1029.4	0.02459

cubic ft. per vertical ft. depth
0.138058122

Sacks per vertical ft. depth
0.226415321

Yield options

50/50 posmix 6% gel = 1.64
Neat w/ salt flakes = 1.19
50/50 w/ 2% gel = 1.27

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47-043-01697P

PENNZOIL COMPANY
Well Completion Report
75% DeArman - 25% Pennzoil

Lease: A. A. WOODRUM Well No. 5 New Well X Old Well ___

District: Duval County: Lincoln State: West Virginia

Pool Name: Griffithsville Northeast Pool No. 57 Elevation 893.81' KB:~~GL~~

Producing Formation: Berea Depth: From 2369' to 2392'

Date Drilled In: August 21, 1976 Pays: Oil: From 2369' to 2392'
From ___ to ___

Original Total Depth: 2439'

Gas: From 2369' to 2392'
From ___ to ___

Plug Back Depth: 2418'

Production	Initial	Present	After Fracture
Oil			
Gas			

Surface Csg. set @ 8-5/8" 313' KB:~~GL~~ Gr. H-40 New:Used Wt. 20# Collars ST&C

Cement Reg. Neat Amount 200 Sacks Plug Down @ 3:45 AM:~~PM~~ Date 8/18/76

Production Csg. set @ 4-1/2" 2435' KB:~~GL~~ Gr. E.R.W. New:Used Wt. 10.50# Collars ST&C

Cement 50/50 Posmix Amount 50 Sacks Plug Down @ 4:45 ~~AM~~:PM Date 8/21/76

Logged by: Basin Surveys Date: August 21, 1976

Logs Used: Gamma Ray-Comp. Density-Caliper

Perforated by: McCullough Date: August 30, 1976

Perforations: 2378'-2383' - 4 holes/ft. - 20 holes

Treatment Data

	Fluid	Sand	Acid	Solvent	Gel	Breaking Agent	Fluid Loss	F.R. Agent	N.E. Agent
Type	Lease Crude	20/40	15% HCl	Parathin				FR-5	15-N
Amount	581	24,200	750	55				1	2

Breakdown Pressure: 1500 Treating Pressure: Max. 2500 Min. 2300 Avg. 2400

Avg. Inj. Rate 30.5 BPM ISIP 1350 @ 12:03 ~~AM~~:PM 5 min. SIP 1150

10 min. SIP 1100 15 min. SIP 1050 Other 1-3/4 hr. SIP 520#

EQUIPMENT USED

Service Company: Halliburton HHP 1794

By: Jeff M. Beardmore Date Fractured: 8/30/76

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Form No. 989 1M 9/66 M'G. 1917

4301697P

PENNZOIL COMPANY

NEW WELL REPORT

Lease No. 79579-50 Acres

Working District Southern Area

A. A. Woodrum Farm

Map 124-W

Well No. 5 N. S. 79 E. W. 73

Duval District or Township

Lincoln County

St. Albans Quad.

Location Made July 29, 19 76

Drilling Commenced August 17, 19 76

Drilling Equipment Used ☐ Spudder ☒ Rotary

Drilling Completed August 21, 19 76

Drilling Equipment Furnished by FWA Drilling Company

Total Depth 2439 Sand Berea

Elevation: Floor 893.81

Drilling Contractor FWA Drilling Company

Elevation: Ground 885.81

Work Order No. 70-26820-1

FORMATION RECORD

Kind	Top	Bottom	Steel Line Meas.	Test	Kind	Top	Bottom	Steel Line Meas.	Test
Substructure	0	8							
Rock	8	215							
Shale	215	1004							
Salt Sand	1004	1454							
Shale	1454	1511							
Salt Sand	1511	1580							
Shale	1580	1616							
Salt Sand	1616	1650							
Little Lime	1650	1684							
Pencil Cave	1684	1688							
Big Lime	1688	1880							
McCrady Shale	1880	1895							
Big Injun	1895	1948							
Shale	1948	2024							
Sand	2024	2082							
Shale	2082	2349							
Coffee Shale	2349	2370							
Berea	2370	2392							
Shale	2392	2439							
Total Depth		2439							
Logged by Basin Surveys, Inc. 8-21-76 to 3439									
P.B.D.		2418							

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(OVER)

4301697A

NEW WELL REPORT – CONTINUED

INITIAL TORPEDO RECORD

Date of Shot

Name of Torpedo Co.

No. of Quarts

Length of Shell

Diameter of Shell

Length of Anchor

Top of Shot

Bottom of Shot

Feet of Fluid in Hole When Shot

Results:

CASING AND TUBING RECORD

SIZE	PUT IN WELL TRANSFER NO.	PUT IN WELL FEET	PUT IN WELL INCH	PULLED OUT TRANSFER NO.	PULLED OUT FEET	PULLED OUT INCH
8-5/8"		306.84				
4-1/2"		2444.43				

INITIAL PRODUCTION FIRST 24 HOURS

Open Flow /10ths Water in ____ Inch

____ /10ths Merc. in ____ Inch

Volume ____ Cu. Ft.

Rock Pressure ____ lbs. ____ hrs.

Oil ____ bbls., First 24 hrs.

PACKER RECORD

KIND	SIZE	DEPTH SET	DATE SET
Steel Shoe	8-5/8"	313 RKB	8-18-76
Guide Shoe	4-1/2"	2435 RKB	8-21-76

ACIDIZATION OR FRACTURING RECORD

DATE WELL ACIDIZED ____

DATE WELL FRACTURED ____

NAME OF COMPANY ____

(List below materials used in Acidizing or Fracturing, i.e., Sand, Crude Oil, Gasoline, Water, Kerosene, Mothballs, Acid, etc., giving gallons, barrels and pounds.)

581 Bbls. Crude Oil
2 4,200 Lbs. 20/40 Sand
750 Gal. 15% HCl

BREAKDOWN PRESSURE 1500

PUMPING PRESSURE Max. 2500 Min. 2300

AVERAGE PUMPING RATE/MINUTE 30.5 BPM

PUMPING TIME ____

RESULT AFTER TREATMENT { GAS ____ CU. FT. / OIL ____ BBLS.

ROCK PRESSURE AFTER TREATMENT ____ LBS.

CASING CEMENTED

8-5/8" SIZE 313 RKB FT. 8-18-76 DATE

BAGS USED 200 sks Neat Cement 3% CC

4-1/2" SIZE 2435RKB FT. 8-21-76 DATE

BAGS USED 50 sks 50/50 Pozmix 2% CC w/500 Gal. Mud Flush

SIZE ____ FT. ____ DATE

BAGS USED ____

SIZE ____ FT. ____ DATE

BAGS USED ____

TOP DEPTH OF CEMENT SHOWN BY TEMPERATURE LOG

REMARKS:

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APPROVED

SUPERINTENDENT

4301697P

WW-4A
Revised 6-07

1) Date: February 11, 2016
2) Operator's Well Number
A. A. Woodrum 5

3) API Well No.: 47 - 043 - 1697

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE 0F APPLICATION TO PLUG AND ABANDON A WELL

4) Surface Owner(s) to be served:
(a) Name James E. Hughes
Address 2062 Garrett's Bend Road
Sod, WV 25564

(b) Name
Address

(c) Name
Address

6) Inspector Jeremy James
Address P. O. Box 36
Clendenin, WV 25045
Telephone 304-951-2596

5) (a) Coal Operator
Name NA
Address

(b) Coal Owner(s) with Declaration
Name NA
Address

Name
Address

(c) Coal Lessee with Declaration
Name NA
Address

TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:

(1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
(2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side. However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
DIANE WHITE
96 Turning Leaf Lane
Williamstown, West Virginia 26187
My Commission Expires July 11, 2022

Well Operator HG Energy, LLC
By: Diane White
Its: Agent
Address 5260 Dupont Road
Parkersburg, WV 26101
Telephone 304-420-1119

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Office of Oil and Gas
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WV Department of
Environmental Protection

Subscribed and sworn before me this 11th day of February, 2016
Diane White Notary Public
My Commission Expires July 11, 2022

Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a 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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyoffier@wv.gov.

4301697P

WW-9
(2/15)

API Number 47 - 043 - 1697
Operator's Well No. A A Woodrum 5

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name HG Energy, LLC OP Code 494497948

Watershed (HUC 10) Hayzlett Fork Quadrangle Garrett's Bend 7.5'

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: Fluids encountered while plugging subject well

Will a synthetic liner be used in the pit? Yes ☑ No ☐ If so, what ml.? 30 mil

Proposed Disposal Method For Treated Pit Wastes:

- ■ ~~Land Application~~ No Land Application
- ____ Underground Injection (UIC Permit Number ____)
- ____ Reuse (at API Number ____)
- ____ Off Site Disposal (Supply form WW-9 for disposal location)
- ____ Other (Explain ____

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

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

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

Additives to be used in drilling medium? NA

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

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

-Landfill or offsite name/permit number? ____

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

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Company Official (Typed Name) Diane White

Company Official Title Agent

Subscribed and sworn before me this 11th day of February, 2016, 20 16

Diane White Notary Public

My commission expires July 11, 2022

4-3016977P

Form WW-9

Operator's Well No. A A Woodrum 5

HG Energy, LLC

Proposed Revegetation Treatment: Acres Disturbed 0.9 acres Prevegetation pH _____

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20 or equivalent

Fertilizer amount 500 lbs/acre

Mulch Straw 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

Attach:
Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

** Sediment Control Will Be In Place At All Times **

Plan Approved by: _____

Comments: _____

Title: inspector OOG Date: 4-7-16

Field Reviewed? (_____) Yes (_____) No

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Westbrook, Joshua P

From: Diane White <dwhite@hgenergyllc.com>
Sent: Friday, May 06, 2016 9:49 AM
To: Westbrook, Joshua P
Subject: Pit Fluids

Josh,
As per our discussion, HG does not intend to treat pit fluids for the following new well drill sites and plugging sites. HG will contract hauling the pit fluids to an authorized disposal site.

New Drill Sites:
CB Ferrell 218
Jackson Long 220
Jackson Long 129
Jackson Long 130
AW Edgell 127
IB Butcher 128

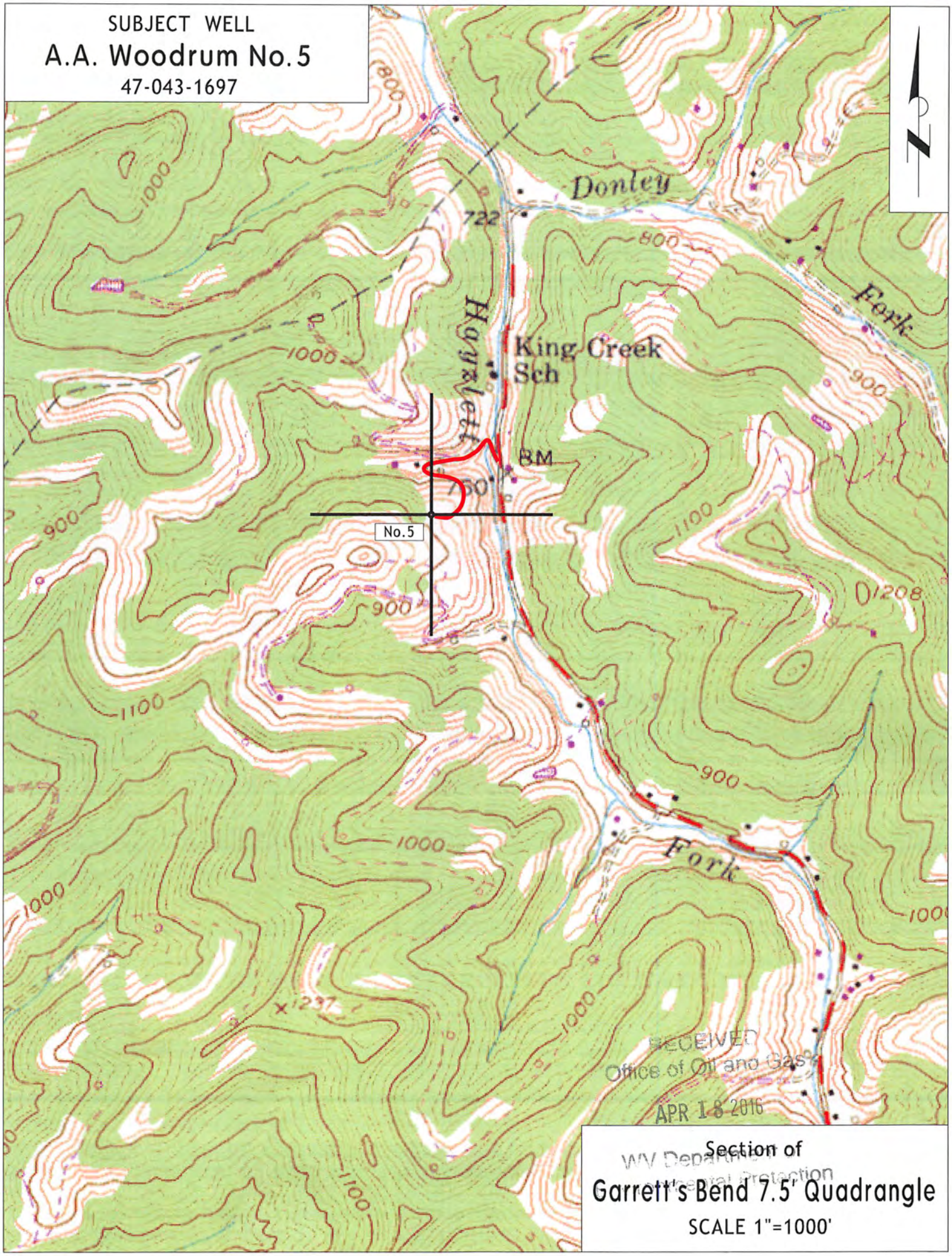
Wells to be plugged:
Stowers Heirs 6
Samuel Bowman 2
AA Woodrum 5
Woodrum Daniels 2
SW Nunn 1
SW Nunn 2

Please let me know if I should provide more information.
Thanks,
Diane

Diane C. White

HG Energy, LLC
5260 Dupont Road
Parkersburg, WV 26101
304-420-1119 (O)
304-482-0108 (C)
304-863-3172 (F)
dwhite@hgenergyllc.com

4301697P



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Section of
Garrett's Bend 7.5' Quadrangle
SCALE 1"=1000'

4301697 P

WW-7
5-02

West Virginia Department of Environmental Protection
Office of Oil & Gas
WELL LOCATION FORM: GPS

API: 47- 043 - 1697 **WELL NO:** 5

FARM NAME: A.A. Woodrum No.5

RESPONSIBLE PARTY NAME: H.G. Energy, LLC

COUNTY: Lincoln **DISTRICT:** Duval

QUADRANGLE: Garrett's Bend 7.5'

SURFACE OWNER: James E. Hughes

ROYALTY OWNER: H.G. Energy, LLC et al.

UTM GPS NORTHING: 4,236,350 (NAD 83)

UTM GPS EASTING: 422,040 (NAD 83) **GPS ELEVATION:** 270 m. (885.6')

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit on the above well. The Office of Oil & Gas will not accept GPS coordinates that do not meet the following requirements:

1. Datum: NAD 1983, Zone:17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) - meters.
2. Accuracy to Datum - 3.05 meters
3. Data Collection Method:

Survey Grade GPS	___	Post Processed Differential	___
		Real-Time Differential	___
Mapping Grade GPS	X	Post Processed Differential	X
		Real-Time Differential	___

I the undersigned, hereby certify this data 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 Office of Oil and Gas.

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WV Department of
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Diane White — Diane C. White — Designated Agent
Signature — Title

November 24, 2015
Date