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

July 14, 2016

WELL WORK PLUGGING PERMIT

Plugging

This permit, API Well Number: 47-4301722, 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: 2
Farm Name: NUNN, S. W.
API Well Number: 47-4301722
Permit Type: Plugging
Date Issued: 07/14/2016

Promoting a healthy environment.

4301722P

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.

4301722P

WW-4B
Rev. 2/01

1) Date February 11, 2016
2) Operator's Well No. S W Nunn 2
3) API Well No. 47-043-1722

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 1037' 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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WV Department of
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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 Jeffrey Smith Date 6-13-16

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WW-4B - Conti
Rev. 2/01

1) Date: February 11, 2016
2) Operator's Well Number
S W Nunn 2
3) API Well No: 47 - 043 - 1722
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: 1037' 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- 2,586' PBTO 2554'

Manners of plugging; SPOT GEL.
Plug #1 - 2450' - 2350'
Located above the highest perforation
Check for free-point at top of Big Lime (1842'), If pipe is free, part and pull. If pipe is not free, preforate for placement of plug #2.
Plug # 2 - Approx. 1900' - 1800'
Located at top of Big Lime - 4 1/2" casing stub
Plug #3 - 1100' - 1000'
Located at elevation, if pipe was not free at 1842', part and pull at elevation (1037')
If pipe isn't free at elevation, preforate for placement of plug #3, find first available free-point above elevation top, part and pull pipe. Set additional plug at 4 1/2" casing stub.
Plug #4 - 450' - 350'
Located at 8 5/8" casing shoe, below fresh water
Plug #5 - 100' - 0'
Surface

JS

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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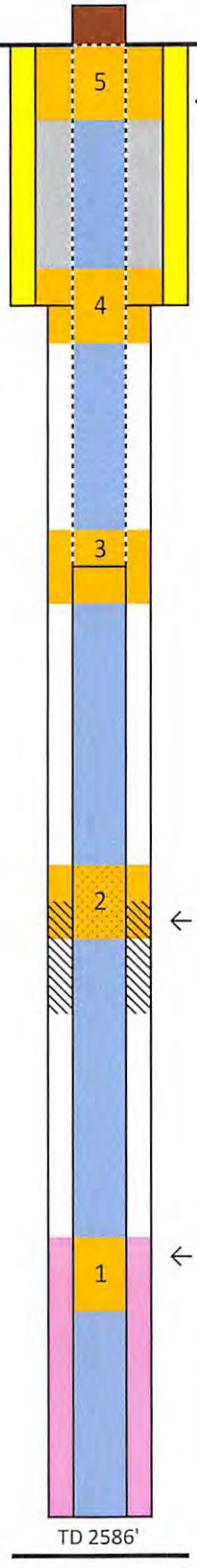
Well: S.W. Nunn #2
API: 47-43-1722
Elevation: 1037'

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"	406'	20#/ft.
4 1/2"	2584'	10.5#/ft.



275 sacks cement to surface

Freepoint Cut and Pull Casing	
Size	Approx. Depth
4 1/2	1842' or 1037'

Hole Size 6.75"

Cement Plugs		
N0.	Bottom	Top
1	2450	2350
2	1900	1800
3	1100	1000
4	450	350
5	100	0

Big Lime 1842' - 2020'

50 Sacks Cement T.O.C. 2308'

Highest Perforation 2529'

Bottom Hole Cement Level Calculations

# Sacks Used	Cement Depth
50	2308.167

Hole Size	Casing Size	Depth
6.75	4.5	2529

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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PENNZOIL COMPANY
Well Completion Report

Lease: S. W. NUNN Well No. 2 New Well X Old Well ___

District: Duval County: Lincoln State: West Virginia

Pool Name: Griffithsville Northeast Pool No. 57 Elevation 1045.74' KB:~~GL~~

Producing Formation: Berea Depth: From 2521' to 2542'

Date Drilled In: October 20, 1976 Pays: Oil: From 2521' to 2542'
From ___ to ___

Original Total Depth: 2583'

Gas: From 2521' to 2542'
From ___ to ___

Plug Back Depth: 2554'

Production	Initial	Present	After Fracture
Oil			
Gas			

Surface Csg. set @ 8-5/8" 411' KB:~~GL~~ Gr. H-40 New:Used Wt. 20# Collars ST&C

Cement Reg. Neat Amount 275 Sacks Plug Down @ 11:45 ~~AM~~:PM Date 10/15/76

Production Csg. set @ 4-1/2" 2575' KB:GL Gr. ERW New:Used Wt. 10.50# Collars ST&C

Cement 50/50 Posmix Amount 50 Sacks Plug Down @ 1:00 AM~~PM~~ Date 10/21/76

Logged by: Basin Surveys Date: October 20, 1976

Logs Used: Gamma Ray-Comp. Density-Caliper

Perforated by: McCullough Date: November 17, 1976

Perforations: 2529'-2534' - 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					15-N
Amount	550	27,000	500	55					2

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

Avg. Inj. Rate 29.0 BPM ISIP 1500 @ 3:25 ~~AM~~:PM 5 min. SIP 900

10 min. SIP 850 15 min. SIP 800 Other 1-1/4 hr. SIP 300#

EQUIPMENT USED

Service Company: Halliburton HHP 1706

By: Jeffrey M. Beardmore Date Fractured: 11/17/76

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430722P

Form No. 989 1M 2/66 M'G. 1917

PENNZOIL COMPANY

NEW WELL REPORT

Lease No. 46153-00 Acres

Working District Southe rn Area

Stone W. Nunn Farm

map 124-W

Well No. 2 N. S. 80 E. W. 72

Duval District or Township

Lincoln County

St. Albans Quad.

Location Made August 30, 19 76

Drilling Commenced October 14, 19 76

Drilling Equipment Used ☐ Spudder ☒ Rotary ☐

Drilling Completed October 21, 19 76

Drilling Equipment Furnished By FWA Drilling Co.

Total Depth 2583 Sand Berea

Elevation: Floor 1045.74

Drilling Contractor FWA Drilling Co.

Elevation: Ground 1037.74

Work Order No.

FORMATION RECORD

Kind	Top	Bottom	Steel Line Meas.	Test	Kind	Top	Bottom	Steel Line Meas.	Test
Substructure	0	8							
Sand & Shale	8	972							
Shale	972	1042							
Shaly Sand	1042	1160							
Salt Sand	1160	1419							
Shale	1419	1500							
Salt Sand	1500	1715							
Shale	1715	1760							
Salt Sand	1760	1810							
Little Lime	1810	1837							
Pencil Cave	1837	1842							
Big Lime	1842	2020							
McCrady Shale	2020	2047							
Big Injun	2047	2100							
Shale	2100	2170							
Wier Sand	2170	2230							
Shale	2230	2500							
Coffee Shale	2500	2520							
Berea	2520	2543							
Shale	2543	2583							
Total Depth		2583	PBD	2554					

Logged By Basin Surveys 10-20-76 to 2586

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(OVER)

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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 IN
8 5/8		406	34			
4 1/2		2564	08			

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	411	RKB 10-15-76
Guide Shoe	4 1/2		

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.)

573 Bbl. Crude Oil
27,000 Lbs. 20/40 Sand
500 Gal 15% HCl

BREAKDOWN PRESSURE 1500

PUMPING PRESSURE Max 3300 Min 2400

AVERAGE PUMPING RATE/MINUTE 28.4 BPM

PUMPING TIME _____

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

ROCK PRESSURE AFTER TREATMENT _____ LBS.

CASING CEMENTED

8 5/8 SIZE 411 FT. RKB 10-15-76 D.
BAGS USED 275 sks. Neat Cement 3% cc 1/ flocel

4 1/2 SIZE 2575 FT. RKB 10-21-76 D.
BAGS USED 500 Gal Mud-Flush 50 sks. 50 Poz-mix 2% cc 1/8# flocele

SIZE _____ FT. _____ D.
BAGS USED _____

SIZE _____ FT. _____ D.
BAGS USED _____

TOP DEPTH OF CEMENT SHOWN BY TEMPERATURE LO

REMARKS:

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APPROVED
B. A. Radintec
SUPERINTENDENT

4301722P

WW-4A
Revised 6-07

1) Date: February 11, 2016
2) Operator's Well Number
S. W. Nunn 2

3) API Well No.: 47 - 043 - 1722

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: Orville Nunn
Address: 2340 Garrett's Bend Road
Sod, WV 25564
(b) Name
Address
(c) Name
Address

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

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

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
TYLER RITCHIE
499 Dale Drive
Mineral Wells, WV 26150
My Commission Expires June 23, 2020

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

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JUN 30 2016
WV Department of
Environmental Protection

Subscribed and sworn before me this 11th day of February, 2016
Tyler Ritchie Notary Public
My Commission Expires June 23, 2020

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.

4301722P

WW-9
(5/16)

API Number 47 - 043 - 1722
Operator's Well No. S W Nunn 2

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) Hazlett 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: _____

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

Proposed Disposal Method For Treated Pit Wastes:

- ____ Land Application (if selected provide a completed form WW-9-GPP)
- ____ Underground Injection (UIC Permit Number _____)
- ____ Reuse (at API Number _____)
- ■ Off Site Disposal (Supply form WW-9 for disposal location)
- ____ Other (Explain Any fluids will be hauled for off site disposal at an authorized site to be determined at the time the well is plugged

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) _____

-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 April 1, 2016, 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 Agent

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WV Department of
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OFFICIAL SEAL
Notary Public, State Of West Virginia
TYLER RITCHIE
499 Dale Drive
Mineral Wells, WV 26150
My Commission Expires June 23, 2020

Subscribed and sworn before me this 11st day of February, 2016

Tyler Ritchie Notary Public

My commission expires June 23, 2020

4301722 P

Form WW-9

Operator's Well No. S W Nunn 2

HG Energy, LLC

Proposed Revegetation Treatment: Acres Disturbed 1.0 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: Jeffrey Smith

Comments:

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Title: Oil & Gas Inspector Date: 6-13-16

Field Reviewed? (✓) Yes ( ) No

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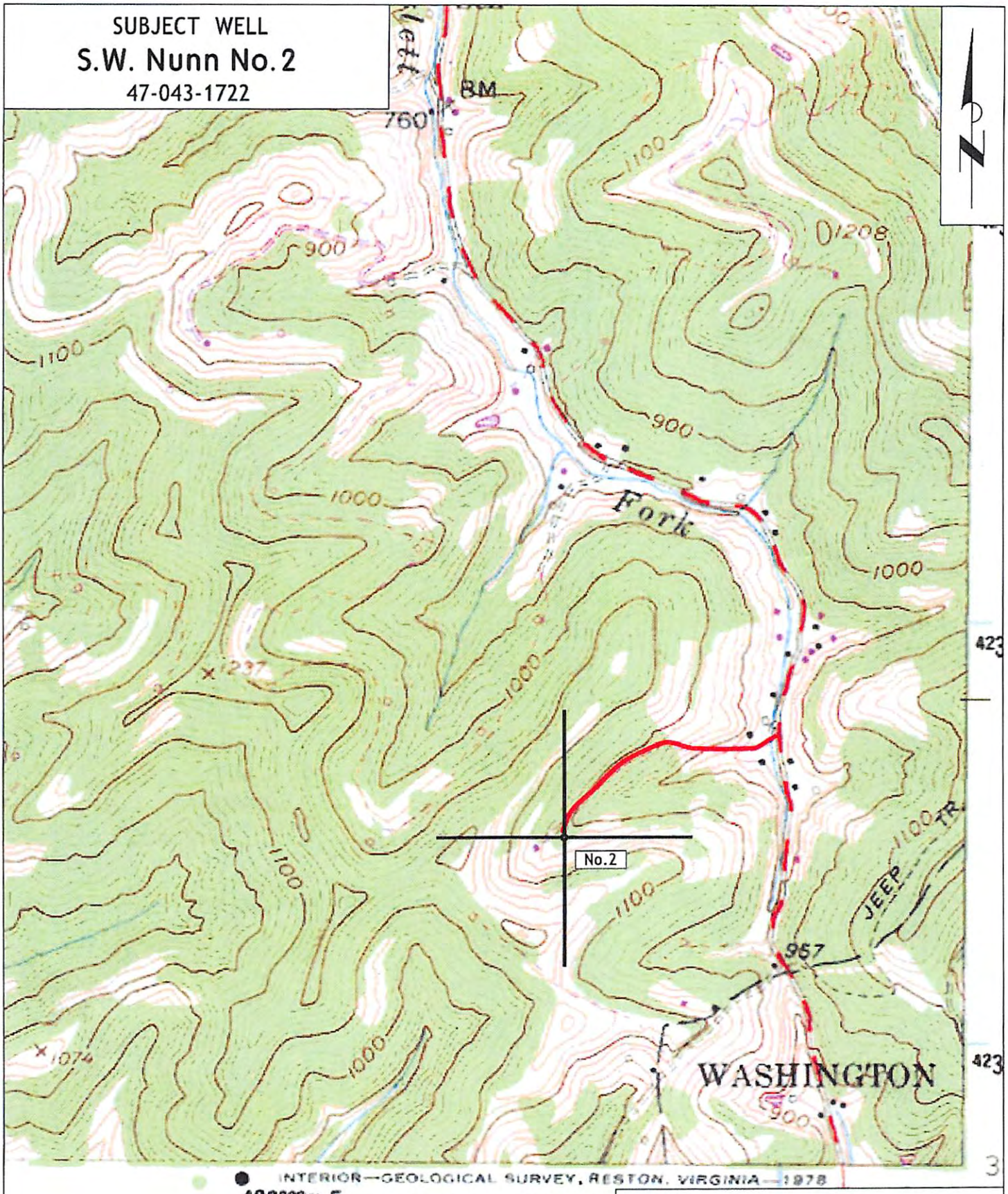

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1978

ROAD CLASSIF

Section of

Garrett's Bend 7.5' Quadrangle

SCALE 1"=1000'

4301722 P

WW-7
5-02

West Virginia Department of Environmental Protection
Office of Oil & Gas

WELL LOCATION FORM: GPS

API: 47- 043 - 1722 **WELL NO:** 2

FARM NAME: S.W. Nunn No.2

RESPONSIBLE PARTY NAME: H.G. Energy, LLC

COUNTY: Lincoln **DISTRICT:** Duval

QUADRANGLE: Garrett's Bend 7.5'

SURFACE OWNER: Orville Nunn

ROYALTY OWNER: HG Energy, LLC, et al.

UTM GPS NORTHING: 4,234,714 (NAD 83)

UTM GPS EASTING: 422,510 (NAD 83) **GPS ELEVATION:** 316 m. - 1037 ft

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.

Diane White Diane C. White — Designated Agent

Signature — Title

June 30, 2016

Date