



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

August 05, 2015

WELL WORK PERMIT
Secondary Recovery Well

This permit, API Well Number: 47-4303520, 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.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: EDNA MAY 150
Farm Name: COOPER, JOHNNY ET AL
API Well Number: 47-4303520
Permit Type: Secondary Recovery Well
Date Issued: 08/05/2015

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. 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 §22-6-20, 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 fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
2. Pursuant to 35 CSR 4-19.1.a, at the request of the surface owner all water wells or springs within 1000 feet of the proposed well that are actually utilized for human consumption, domestic animals or other general use shall be sampled and analyzed.
3. Pursuant to 35 CSR 4-19.1.c, if the operator is unable to sample and analyze any water well or spring with one thousand (1,000) feet of the permitted well location, the Office of Oil and Gas requires the operator to sample, at a minimum, one water well or spring located between one thousand (1,000) feet and two thousand (2,000) feet of the permitted well location.
4. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
5. 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.
6. During the surface casing and cementing process, in the event cement does not return to the surface, or any other casing string that is permitted to circulate cement to the surface and does not return to the surface, the oil and gas inspector shall be notified within twenty-four (24) hours
7. Well work activities shall not constitute a hazard to the safety of persons.
8. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

43 035 205

FORM WW-3 (B)
1/12



1) Date: 06/17/2015
2) Operator's Well No. Edna May 150
3) API Well No.: 47 - Lincoln - s
State County Permit
4) UIC Permit No. UIC2R04301AP

STATE OF WEST VIRGINIA
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
FOR THE DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

5) WELL TYPE: Liquid Injection / Gas Injection (not storage) / Waste Disposal
6) LOCATION: Elevation: 804' Watershed: Bear Fork
District: Duval County Lincoln Quadrangle Griffithsville 7.5'
7) WELL OPERATOR: HG Energy, LLC 8) DESIGNATED AGENT Diane White
Address 5260 Dupont Road Address 5260 Dupont Road
Parkersburg, WV 26101 Parkersburg, WV 26101
9) OIL & GAS INSPECTOR TO BE NOTIFIED 10) DRILLING CONTRACTOR
Name Ralph Triplett Name To Be Determined Upon Approval of Permit
Address 5539 McClellan Hwy Address
Branchland, WV 25506
11) PROPOSED WELL WORK Drill / Drill deeper / Redrill / Stimulate
Plug off old formation / Perforate new formation / Convert
Other physical change in well (specify)
12) GEOLOGIC TARGET FORMATION Berea Depth 2709 Feet (top) to 2727 Feet (bottom)
13) Estimated Depth of Completed Well, (or actual depth of existing well): 2951 TMD Feet
14) Approximate water strata depths: Fresh 180' Feet Salt 1030' Feet
15) Approximate coal seam depths: 230'
16) Is coal being mined in the area? Yes No
17) Virgin reservoir pressure in target formation 1250 psig Source Estimated
18) Estimated reservoir fracture pressure 2650 psig (BHFP)
19) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour 25 BBL Bottom hole pressure 2400 PSI
20) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES Fresh water, produced
water, bactericides and other chemicals as needed to maintain water quality and improve oil recovery
21) FILTERS (IF ANY) Cartridge filters and/or coal bed filters
22) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

23) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS					FOOTAGE INTERVALS		CEMENT FILL-UP OR SACKS (CU. FT.)	PACKERS
	Size	Grade	Weight per ft.	New	Used	For Drilling	Left In Well		
Conductor									Kinds
Fresh Water	7"	LS	17#	X		330	330	CTS	
Coal									Sizes
Intermediate									2 3/8" x 4.5"
Production	4 1/2"	J-55	10.5#	X		2901	2901	450	Depths set
Tubing	2 3/8"	J-55	4.6#	X		2509	2509		Perforations
Liners									Top Bottom

24) APPLICANT'S OPERATING RIGHTS were acquired from Vera May Drebs, et al
by deed / lease x / other contract / dated 02/07/1973 of record in the
Lincoln County Clerk's office in lease Book 35 Page 154

08/07/2015

WW-2B1
(5-12)

Well No. Edna May 150

West Virginia Department of Environmental Protection
Office of Oil and Gas

NOTICE TO SURFACE OWNERS

The well operator named below is preparing to file for a permit from the state to drill a new well. Before a well work permit can be filed with the Chief of the Office of Oil and Gas, the well operator is required to have given notice of the right to request water well or spring analytical testing. This notice shall be given to the owners or occupants of land which have a water well or spring being utilized for human consumption, domestic animals, or other general use and which is located within 1000 feet of the proposed well site.

With this form, the operator is giving you notice of your right to request analytical testing. The operator is required to sample and analyze the water wells or springs of all owners or occupants who request it. Therefore, if you wish to have your water well or spring tested, contact the operator named below.

All sampling shall be completed prior to drilling. Within thirty (30) days of the receipt of such sample analyses the operator shall submit the results to the Chief of the Office of Oil and Gas and to the owners or occupants who may have requested them.

Be advised, you have the right to sample and analyze any water supply at your own expense.

Listed below is the laboratory chosen by operator to perform analysis, and contractor chosen to collect sample.

Certified Laboratory Name	<u>Sturm Environmental Lab</u>
Sampling Contractor	<u>Sturm Environmental Lab</u>

Well Operator	<u>HG Energy, LLC</u>
Address	<u>5260 Dupont Road</u>
	<u>Parkersburg, WV 26101</u>
Telephone	<u>304-420-1119</u>

FOR OPERATOR'S USE ONLY: Below, or on an attached page, list those persons which were given this notice. Place an asterisk beside the one(s) that contacted you and requested sampling and analyses. If there were no requests made, indicate by underling which one you have selected to sample and analyze. If there are no water wells or springs within 1000 feet of the proposed site, the Chief may require the operator to test wells up to 2000 feet from the proposed site.

JUL 06 2015

- See Attached Sheet -

08/07/2015

West Virginia Department of Environmental Protection
Office of Oil and Gas

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Surface Owners Identified With Water Sources to be Sampled and Tested:

- | | |
|--|---|
| * Michael Cooper
P. O. Box 32
Yawkey, WV 25573 | * Johnny Cooper
P. O. Box 32
Yawkey, WV 25573 |
| * Angela Stump
5172 Midway Road
Yawkey, WV 25573 | * Gloria Dingess
5109 Straight Fork Road
Griffithsville, WV 25521 |
| * Jonathan Johnson
5 Bethel Drive
Yawkey, WV 25573 | * Tammy Mahone
6 Anchor Drive
Yawkey, WV 25573 |
| * Dwight Lovejoy
5 Bethel Drive
Yawkey, WV 25573 | * Carolyn Brogan
4553 Midway Road
Yawkey, WV 25573 |
| * Robert Wright
P. O. Box 166
Griffithsville, WV 25521 | * David Terlikowski
P. O. Box 173
Griffithsville, WV 25521 |
| * John Chandler
62 Bear Fork Road
Yawkey, WV 25573 | * Davy Pauley
72 Sunset Drive
Sumarco, WV 25567 |

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

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name HG Energy, LLC OP Code 494497948

Watershed Bear Fork Quadrangle Griffithsville 7.5'

Elevation 804' County Lincoln District Duval

Description of anticipated Pit Waste: Fluids encountered while drilling subject shallow well

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

Will a synthetic liner be used in the pit? Yes If so, what mil.? 20 mil

Proposed Disposal Method For Treated Pit Wastes:

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

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air, Fresh Water

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

Additives to be used? Water, Soap, KCl

Will closed loop system be used? No

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

-If left in pit and plan to solidify what medium will be used? Cement, lime, sawdust Native soil, cement, lime

-Landfill or offsite name/permit number? _____

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 Agent

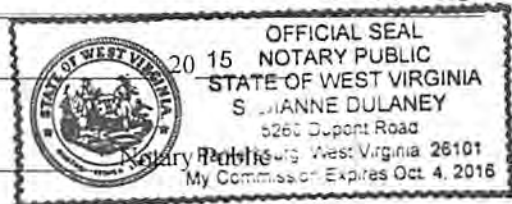
Received
Office of Oil & Gas

JUL 06 2015

Subscribed and sworn before me this 17th day of June

[Signature]

My commission expires Oct. 4, 2016



08/07/2015

LEGEND

- Property Boundary
- Road
- Existing Fence
- Planned Fence
- Stream
- Open Ditch
- Rock
- North
- Buildings
- Water wells
- Drill site

- Diversion
- Spring
- Wet Spot
- Drain Pipe with size in inches
- Waterway
- Cross Drain
- Artificial Filter Strip
- Pit: cut walls
- Pit: compacted fill walls
- Area for Land Application of Pit Waste

Proposed Revegetation Treatment: Acres Disturbed 1.00 acres Prevegetation pH _____

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch Straw 2 Tons/acre

Seed Mixtures

Seed Type	Area I	lbs/acre
Tall Fescue		40
Ladino Clover		5

Seed Type	Area II	lbs/acre
Tall Fescue		40
Ladino Clover		5

**** Sediment control to be Maintained at all times****

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Joseph D. Triplett

Received
Office of Oil & Gas

Comments: _____

JUL 06 2015

Title: District Inspector

Date: June 26, 2015

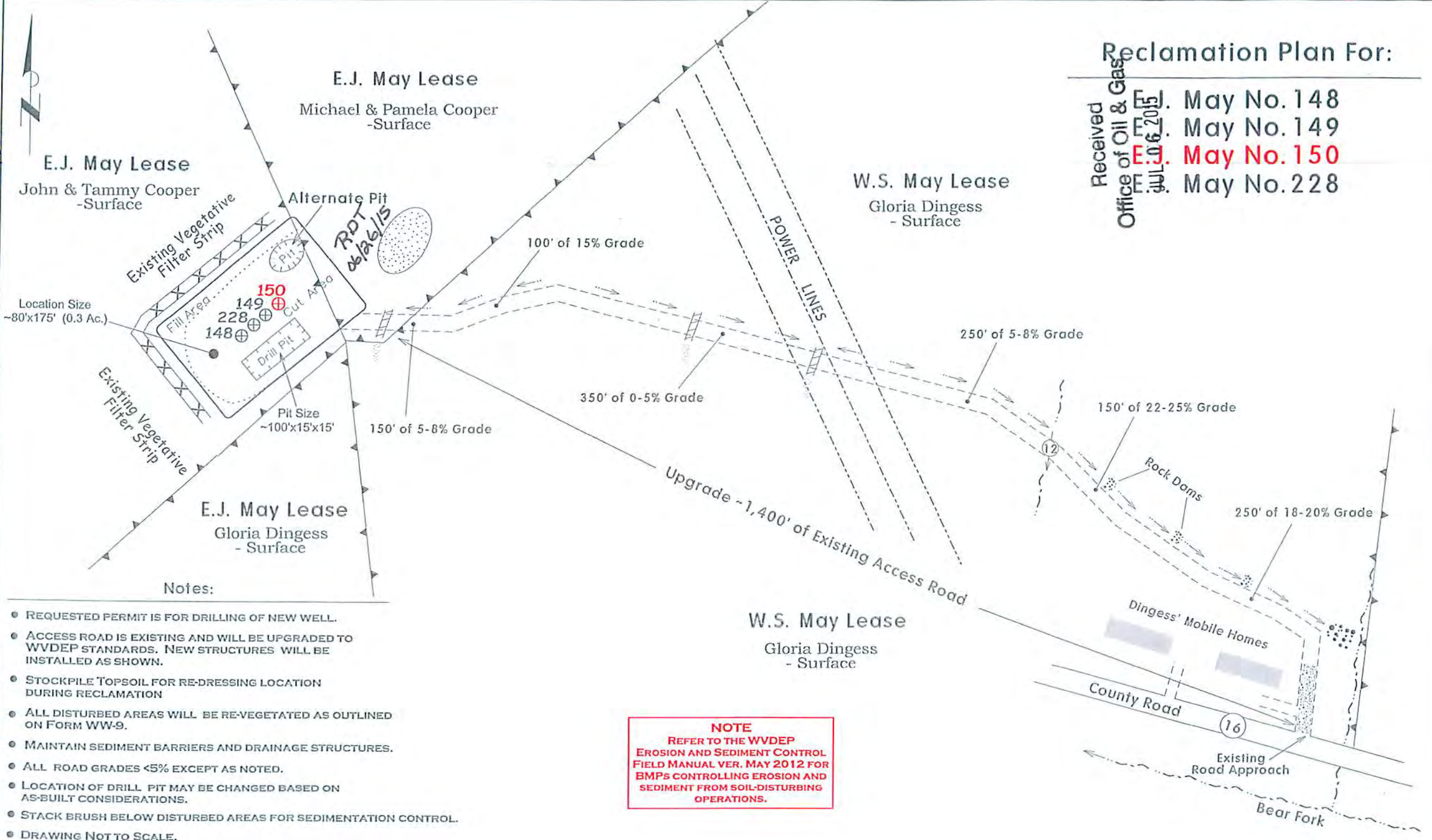
Field Reviewed? (Lincoln) Yes No

43035205

Reclamation Plan For:

Received
Office of Oil & Gas
E.O. 12812
JUL 06 2015

- May No. 148
- May No. 149
- May No. 150**
- May No. 228

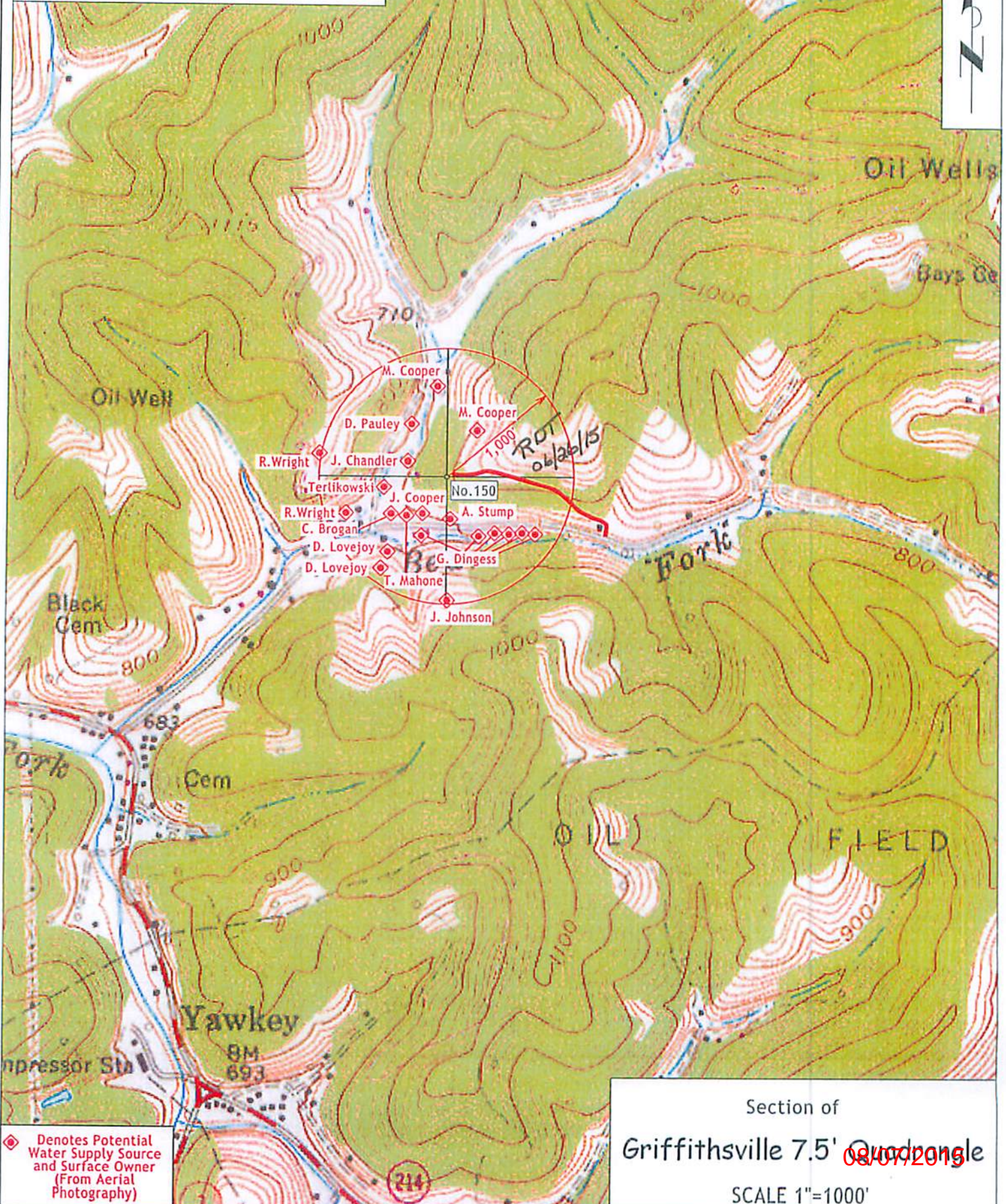


Notes:

- REQUESTED PERMIT IS FOR DRILLING OF NEW WELL.
- ACCESS ROAD IS EXISTING AND WILL BE UPGRADED TO WVDEP STANDARDS. NEW STRUCTURES WILL BE INSTALLED AS SHOWN.
- STOCKPILE TOPSOIL FOR RE-DRESSING LOCATION DURING RECLAMATION
- ALL DISTURBED AREAS WILL BE RE-VEGETATED AS OUTLINED ON FORM WW-9.
- MAINTAIN SEDIMENT BARRIERS AND DRAINAGE STRUCTURES.
- ALL ROAD GRADES <5% EXCEPT AS NOTED.
- LOCATION OF DRILL PIT MAY BE CHANGED BASED ON AS-BUILT CONSIDERATIONS.
- STACK BRUSH BELOW DISTURBED AREAS FOR SEDIMENTATION CONTROL.
- DRAWING NOT TO SCALE.

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

SUBJECT WELL
E.J. May No.150



Section of
 Griffithsville 7.5' Quadrangle
 SCALE 1"=1000'

◆ Denotes Potential Water Supply Source and Surface Owner (From Aerial Photography)

(BOT. HL: LON:-81°57'29.7") LON: -81°57'32.3" 185'

LAT:38°15'00"

LON:81°57'30"

4295'

LAT:38°14'17.6"

(BOTTOM HOLE: LAT:38°14'22.0")

SURVEY NOTES

1 - Well ties and Latitude and Longitude were measured by DGPS (Sub-meter Mapping Grade). Bearings are referenced to UTM Grid North (Zone 17 North - NAD 1983).

2 - Surface owners and adjacent information obtained from the Lincoln County Assessor's tax records.

3 - No Title Opinion was provided to the Surveyor during this survey. This survey is subject to a complete Title Opinion.

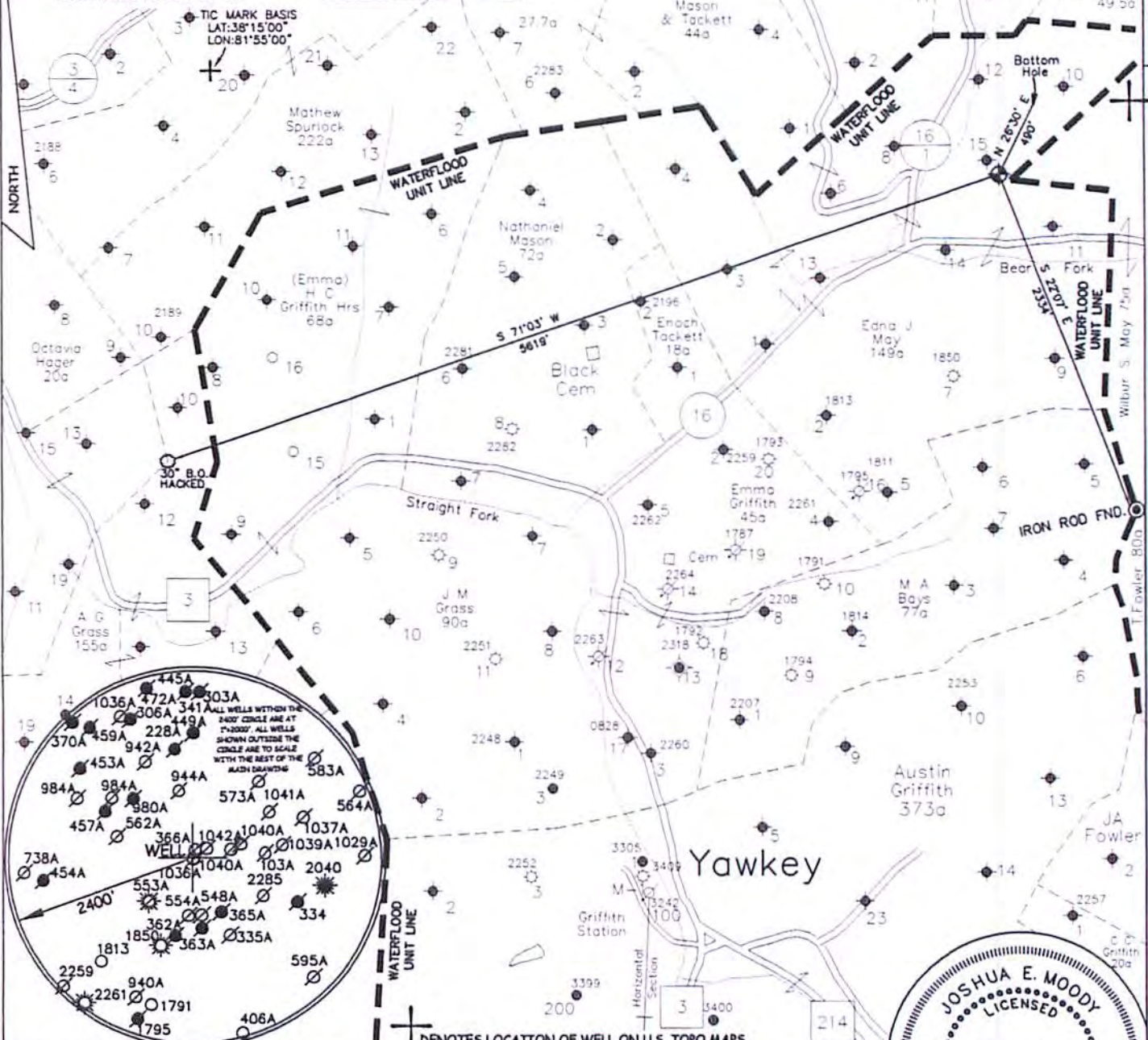
UTM Coordinates (Zone 17N-NAD 1983)	
Surface	N-4,232,693m. E-416,089m.
Bottom Hole	N-4,232,826m. E-416,156m.

LOCATION REFERENCES	
MAGNETIC BEARING	
N 69° E 129' SD	DROP POLE
N 39° E 124' SD	POWER POLE

MAP OF H.G. ENERGY, LLC -WATERFLOOD UNIT- EDNA MAY 150



THERE POTENTIALLY APPROXIMATELY 40 POTABLE WATER SOURCES WITHIN 1000' OF THE PROPOSED WELL. FURTHER INVESTIGATION DURING THE WATER SAMPLING PROCESS SHOULD BE DONE TO ENSURE ALL WATER SOURCES ARE ACCOUNTED FOR.

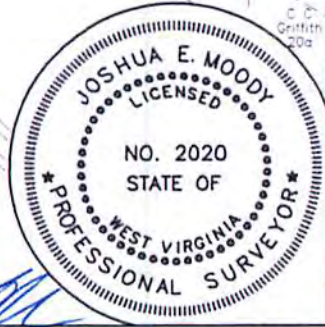


JOB # 14-023
DRAWING # 15HG LC FOLDER
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY 1/200
PROVEN SOURCE OF ELEV. MAPPING GRADE GPS

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 PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



CESO, INC
211 WASHINGTON STREET
ST. MARYS, WV 26170



JOSHUA E. MOODY, P.S. 2020
DATE 6/11/15
OPERATOR'S WELL
EDNA MAY # 150

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL HORIZONTAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION 804' WATERSHED BEAR FORK
 DISTRICT DUVAL COUNTY LINCOLN
 QUADRANGLE GRIFFITHSVILLE 7.5'
 SURFACE OWNER JOHNNY COOPER ETAL ACREAGE 6 ACRES +/-
 OIL & GAS ROYALTY OWNER HG ENERGY, LLC ET AL LEASE ACREAGE 6 ACRES +/-
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR
 STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
 OTHER PHYSICAL CHANGE IN WELL (SPECIFY) WELL WILL BE DRILLED DIRECTIONALLY (N 26°30' E 490')
 PLUG & ABANDON CLEAN OUT & REPLUG
 TARGET FORMATION BEREA
 WELL OPERATOR H.G. ENERGY, LLC
 ADDRESS 5260 DuPONT ROAD PARKERSBURG, WV 26101
 ESTIMATED DEPTH TVD=2,445' MD=2,951'
 DESIGNATED AGENT D. WHITE
 ADDRESS 5260 DuPONT ROAD PARKERSBURG, WV 26101

API WELL # 47
 Received # 035205
 STATE COUNTY & GAS PERMIT
 Office of Oil & Gas
 JUN 16 2015

08/07/2015

(BOT. HL: LON:-81°57'29.7") LON: -81°57'32.3"

185'

LAT:38°15'00"

LON:81°57'30"

4285'

LAT:38°14'17.6" (BOTTOM HOLE: LAT:38°14'22.0")

- SURVEY NOTES**
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Surface	N-4,232,693m. E-416,089m.
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LOCATION REFERENCES	
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211 WASHINGTON STREET
ST. MARYS, WV 26170



JOSHUA E. MOODY, P.S. 2020
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EDNA MAY # 150

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL HORIZONTAL
(IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
LOCATION: ELEVATION 804' WATERSHED BEAR FORK API WELL # 47-043-03520 S
DISTRICT DUVAL COUNTY LINCOLN STATE WV COUNTY PERMIT

SURFACE OWNER JOHNNY COOPER ETAL ACREAGE 6 ACRES +/-
OIL & GAS ROYALTY OWNER HG ENERGY, LLC ET AL LEASE ACREAGE 149 ACRES +/-
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
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PARKERSBURG, WV 26101 PARKERSBURG, WV 26101

08/07/2015