March 25, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-5101737, issued to NOBLE ENERGY, INC., 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: MND 3 AHS
Farm Name: CONSOL MINING CO., LLC
API Well Number: 47-5101737
Permit Type: Horizontal 6A Well
Date Issued: 03/25/2014

Promoting a healthy environment.
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 (USACOE). Through this permit, you are hereby being advised to consult with USACOE 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 fifty (50) 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 fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95% compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. 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. 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.

8. 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.
STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

Operator ID: 494501907  
County: Marshall  
District: Franklin  
Quadrangle: Powhatan Point

2) Operator’s Well Number: MND 3 AHS  
Well Pad Name: MND 3

3) Farm Name/Surface Owner: Consol Mining Co., LLC  
Public Road Access: CR 2/1

4) Elevation, current ground: 1128.39’  
Elevation, proposed post-construction: 1112’

5) Well Type  
(a) Gas  
(b) Oil  
Underground Storage

6) Existing Pad: Yes or No  
yes-building now

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Marcellus at 6226’ and 53’ in thickness, pressure 4427#. Burket at 6170’, 27’ in thickness, 3887# pressure. Hamilton at 6205’, 21’ in thickness, 3909# pressure.

8) Proposed Total Vertical Depth: 6279’

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14,071’

11) Proposed Horizontal Leg Length: 9,378’

12) Approximate Fresh Water Strata Depths: 165’ and 298’

13) Method to Determine Fresh Water Depths: Offset well data

14) Approximate Saltwater Depths: None noted in offsets

15) Approximate Coal Seam Depths: 612’ Pittsburgh Base

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

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: Ireland Mine  
Depth: Base at 612’ at deepest point

Seam: Pittsburgh  
Owner: Murray American Energy (Previously Consol)

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FEB 18 2014

WV Department of Environmental Protection  

Page 1 of 3  
03/28/2014
### CASING AND TUBING PROGRAM

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<th>TYPE</th>
<th>Size</th>
<th>New or Used</th>
<th>Grade</th>
<th>Weight per ft. (lb/ft)</th>
<th>FOOTAGE: For Drilling</th>
<th>INTERVALS: Left in Well</th>
<th>CEMENT: Fill-up (Cu. Ft.)</th>
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<th>Burst Pressure</th>
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### PACKERS

| Kind: | | | | |
| Sizes: | | | | REECEIVED |
| Depths Set: | | | | Office of Oil and Gas |

WV Department of Environmental Protection

FEB 18 2014

03/28/2014
19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6279 feet. Drill Horizontal leg to stimulate and produce the Marcellus Formation. If we should encounter an unanticipated void we will install casing at a minimum of 20’ 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. Stickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. See attached list. Maximum pressure not to exceed 10,000 lb.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 15.6

22) Area to be disturbed for well pad only, less access road (acres): 9.1

23) Describe centralizer placement for each casing string:

No centralizers will be used with conductor casing. Surface casing will have bow spring centralizers on first 2 joints then every third joint to 100’ from surface. Intermediate casing will have bow spring centralizers on first 2 joints then every third joint to 100’ from surface. Production string will have a rigid bow spring every joint to KOP, rigid bow spring every third joint from KOP to top of cement.

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

Conductor-1.15% CaCl *Surface and Coal (Intermediate)- Class A Portland Cement CaCl 2%, 2% Accelerator, 0.2% Antifoam and 0.125#/sk Flake. Excess Yield=1.18 Production- 14.8 ppg class A 25:75:0 System +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer 15% Excess Yield=1.27 TOC greater or equal to 200' above 9.625" shoe.

*Surface and Coal string WVDEP approved variance attached.

25) Proposed borehole conditioning procedures:

Conductor-The hole is drilled w/air and casing is run on air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Surface-The hole is drilled w/air and casing is run on air. Freshwater is used. Once drilled to TD. Once casing is set at setting depth, circulate a minimum of one hole volume of Freshwater based cement. Intermediate-The hole is drilled w/air and casing is run on air. Circulate a minimum of one hole volume of Freshwater based cement. Once casing is set at TD, circulate a minimum of one hole volume of Freshwater based cement. Once casing is set at setting depth, the hole is filled w/KCl water and a minimum of one hole volume is circulated prior to pumping cement. Intermediate-Once surface casing is set and cemented, intermediate hole is drilled either on air or SOBM and filled with KCl water once drilled to TD. Production-The hole is drilled with SOBM and once to TD, circulated at maximum allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.

*Note: Attach additional sheets as needed.
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name  Noble Energy, Inc.  OP Code  494501907

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

Elevation  721' Post Construction  County  Marshall  District  Franklin

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:  Closed Loop-No pit will be utilized

Will a synthetic liner be used in the pit?  Yes  ____  No  ____  If so, what mtl.  ________________

Proposed Disposal Method For Treated Pit Wastes:
- Underground Injection  (UIC Permit Number  
- Reuse (at API Number TBD-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 thru coal string, then SOBM

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

Additives to be used in drilling medium?  Please see attached

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

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

- Landfill or offsite name/permit number?  Please see attached

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  Laura Ackens  RECEIVED  Office of Oil and Gas

Company Official (Typed Name)  Laura Ackens  FEB 18 2014

Company Official Title  Regulatory Analyst

Subscribed and sworn before me this 17th day of FEBRUARY, 2014  

My commission expires 9/3/2014
Chemical List Including CAS#s

Type: Friction Reducer (DWP-612)
Chemical Component as listed on MSDS: Long Chain Polyacrylamide
CAS: N/A

Type: Biocide (DWP-944)
1st Chemical Component as listed on MSDS: 2,2-Dibromo-3-nitrilopropionamide
CAS: 10222-01-2
2nd Chemical Component as listed on MSDS: Polyethylene Glycol Mixture
CAS: 25322-68-3

Type: Scale Inhibitor (DAP-901)
1st Chemical Component as listed on MSDS: Methanol
CAS: 67-66-1
2nd Chemical Component as listed on MSDS: Phosphoric Acid Ammonium Salt
CAS: Trade Secret
3rd Chemical Component as listed on MSDS: Ammonium Chloride
CAS: 12125-02-9
4th Chemical Component as listed on MSDS: Organic Phosphonate
CAS: Trade Secret
5th Chemical Component as listed on MSDS: Amine Salt
CAS: Trade Secret
6th Chemical Component as listed on MSDS: Oleylalkylated Polyamine
CAS: Trade Secret

Type: Surfactant (DWP-988)
Chemical Component as listed on MSDS: Soap
CAS: N/A

Type: Hydrochloric Acid
Chemical Component as listed on MSDS: Hydrochloric Acid
CAS: 7647-37-9

Type: PA Breaker (DWP-690)
Chemical Component as listed on MSDS: Hydrogen Peroxide
CAS: Trade Secret

Type: Gel Slurry (DWP-111)
Chemical Component as listed on MSDS: Viscosifier
CAS: N/A

Type: Oxidizer Breaker (DWP-901)
Chemical Component as listed on MSDS: Ammonium Persulfate
CAS: 7772-54-0

Type: Buffer (DWP-204)
Chemical Component as listed on MSDS: Formic Acid
CAS: 64-18-6
Site Water/Cuttings Disposal

**Cuttings**
Haul off Company:

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

MAX Environmental Technology
233 Max Lane
Yukon, PA 25698
PAD004835146

**Disposal Locations:**

Apex Environmental, LLC  Permit # 06-08438
11 County Road 78
Amsterdam, OH  43903
740-543-4389

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

Sycamore Landfill (Allied Waste) R30-07900105-2010
4301 Sycamore Ridge Road
Hurricane, WV  25526
304-562-2611

**Water**
Haul off Company:

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

**Disposal Location:**

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
Form WW-9

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed 15.6 acres
Prevegetation pH

Lime 2 to 3 Tons/acre or to correct to pH
10-20-20
Fertilizer type
Fertilizer amount 500 lbs/acre
Mulch Hay or straw at 2 Tons/acre

Seed Mixtures

<table>
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<tr>
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<th>Permanenyt</th>
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<tr>
<td>Seed Type</td>
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<tr>
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<tr>
<td>See site plans for full list</td>
<td>See site plans for full list</td>
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</tbody>
</table>

Attachment:
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.

Plan Approved by: Jim Nicholson WVOOG State Inspector

Comments:

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Office of Oil and Gas
FEB 18 2014

Title: Oil & Gas Inspector
Date: 3/28/14

Field Reviewed? (X) Yes ( ) No

WV Department of Environmental Protection