Wednesday, January 31, 2018
WELL WORK PERMIT
Vertical / Rework

EAGLE NATRIUM LLC
POST OFFICE BOX 191
NEW MARTINSVILLE, WV 26155

Re: Permit approval for 28
47-051-01381-00-00

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 4.52.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.

Operator’s Well Number: 28
Farm Name: PPG INDUSTRIES, INC.
U.S. WELL NUMBER: 47-051-01381-00-00
Vertical / Rework
Date Issued: 01/31/2018

Promoting a healthy environment.
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, drilling ceased, 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 within 30 days of commencement of drilling.
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Eagle Natrium LLC 39600 Marshall Franklin New Martinsville
Operator ID County District Quadrangle

2) Operator's Well Number: #28 well 3) Elevation: 633'

4) Well Type: (a) Oil _____ or Gas _______
(b) If Gas: Production _____ / Underground Storage _______
Deep _______ / Shallow _______

5) Proposed Target Formation(s): Salina Proposed Target Depth: 6700
6) Proposed Total Depth: 5800 Feet Formation at Proposed Total Depth: Salina
7) Approximate fresh water strata depths: Less than 60'
8) Approximate salt water depths: N/A

9) Approximate coal seam depths: 252 to 258 ft.

10) Approximate void depths, (coal, Karst, other): N/A

11) Does land contain coal seams tributary to active mine? No

12) Describe proposed well work and fracturing methods in detail (attach additional sheets if needed)
The current well has a 7" liner that extends approximately 67" into the Salina formation. We believe the well is currently plugged at the bottom of the liner or the casing has been damaged from shifting in the cavern. We would like to cut the bottom 65' of liner off to make room to continue injecting at the top of formation.

13) CASING AND TUBING PROGRAM

<table>
<thead>
<tr>
<th>TYPE</th>
<th>SPECIFICATIONS</th>
<th>FOOTAGE</th>
<th>INTERVALS</th>
<th>CEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductor</td>
<td>30&quot; A53 CS</td>
<td>118.7 lb/ft.</td>
<td>100'</td>
<td>100'</td>
</tr>
<tr>
<td>Fresh Water</td>
<td>20&quot; API 5L</td>
<td>94 lb/ft</td>
<td>200'</td>
<td>200'</td>
</tr>
<tr>
<td>Coal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate</td>
<td>13 3/8&quot; J-55</td>
<td>54.5 lb/ft</td>
<td>2200'</td>
<td>2200'</td>
</tr>
<tr>
<td>Production</td>
<td>9 5/8&quot; L-80</td>
<td>53.5 lb/ft</td>
<td>6200'</td>
<td>6200'</td>
</tr>
<tr>
<td>Tubing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liners</td>
<td>7&quot; L-80</td>
<td>32 lb/ft</td>
<td>1224'</td>
<td>1224'</td>
</tr>
</tbody>
</table>

Packers: Kind: 7" X 9 5/8" Model HSCP Hydraulic Liner Hanger w/intergral single element packer
Sizes: 7 1/2" ID X 6" Tie-Back Receptacle
Depths Set: Approximately 5600'
State of West Virginia  
Department of Environmental Protection  
Office of Oil and Gas  
Well Operator's Report of Well Work

**Farm name:** PPG Industries, Inc.  
**Operator Well No.:** #28 Brine Well  
**LOCATION:**  
- **Elevation:** 634.0 ft.  
- **Quadrangle:** New Martinsville, WV

**District:** Franklin  
**County:** Marshall  
**Latitude:** 39°30' Feet South of 39 Deg. 45 Min. 00 Sec.  
**Longitude:** 80°00' Feet West of 80 Deg. 50 Min. 00 Sec.

### Company:

<table>
<thead>
<tr>
<th>Address:</th>
<th>Casing &amp; Tubing</th>
<th>Used in drilling</th>
<th>Left in well</th>
<th>Cement fill up Cu. Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPG Industries, Inc., N. St. Rt. 2, New Martinsville, WV 26155</td>
<td>30&quot; C.S.</td>
<td>67 ft.</td>
<td>67 ft.</td>
<td>316</td>
</tr>
<tr>
<td>Agent: J. Thomas Horan</td>
<td>20&quot; J-55</td>
<td>174 ft.</td>
<td>174 ft.</td>
<td>387</td>
</tr>
<tr>
<td>Date Permit Issued: September 15, 2010</td>
<td>9-5/8&quot; L-80</td>
<td>6278 ft.</td>
<td>6278 ft.</td>
<td>1701</td>
</tr>
<tr>
<td>Date Well WorkCommenced: Sept. 24, 2010</td>
<td>7&quot; L-80</td>
<td>1289 ft.</td>
<td>1289 ft.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Date Well Work Completed: March 21, 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal Plugging: Not Applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date Permission granted on:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Rotary X Cable Rig**

| Total Vertical Depth (ft): | 6785 ft. |
| Total Measured Depth (ft): | 6785 ft. |
| Fresh Water Depth (ft): |  |
| Salt Water Depth (ft): | 6683 ft. (solid) |

- Is coal being mined in area (N/Y)? N
- Coal Depths (ft):  
- Void(s) encountered (N/Y) Depth(s):  

**OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)**

- Producing formation: Not Applicable
- Pay zone depth (ft):  
- Gas: Initial open flow _______ MCF/d Oil: Initial open flow _______ Bbl/d
- Final open flow _______ MCF/d Final open flow _______ Bbl/d
- Time of open flow between initial and final tests _______ Hours  
- Static rock Pressure _______ psig (surface pressure) after _______ Hours

- Second producing formation: Not Applicable
- Pay zone depth (ft):  
- Gas: Initial open flow _______ MCF/d Oil: Initial open flow _______ Bbl/d
- Final open flow _______ MCF/d Final open flow _______ Bbl/d
- Time of open flow between initial and final tests _______ Hours  
- Static rock Pressure _______ psig (surface pressure) after _______ Hours

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the 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.

**Signature**  
**Date**
Were core samples taken? Yes X No _____

Were cuttings caught during drilling? Yes X No _____

Were Y Electrical, N Mechanical, or Geophysical logs recorded on this well?

Y/N Y/N Y/N

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing, or Stimulating:

Perforation, fracturing, and stimulating not performed. Log for geological record not performed.

Formations Encountered: Top Depth / Bottom Depth

Surface:

RECEIVED
Office of Oil and Gas
JAN 2 2 2018

WV Department of Environmental Protection
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE AND APPLICATION FOR A WELL WORK PERMIT

4) Surface Owner(s) to be served:
(a) Name: Eagle Natrium LLC
Address: PO Box 191
         New Martinsville, WV 26155
(b) Name:
Address:
(c) Name:
Address:

5) Coal Operator
(a) Name:
Address:
(b) Coal Owner(s) with Declaration
Name:
Address:
(c) Coal Lessee with Declaration
Name:
Address:

TO THE PERSONS NAMED ABOVE TAKE NOTICE THAT:

Included is the lease or leases or other continuing contract or contracts by which I hold the right to extract oil and gas

OR

Included is the information required by Chapter 22, Article 6, Section 8(d) of the Code of West Virginia (see page 2)

I certify that as required under Chapter 22-6 of the West Virginia Code I have served copies of this notice and application, a location plat, and accompanying documents pages 1 through ___ on the above named parties by:

Personal Service (Affidavit attached)
Certified Mail (Postmarked postal receipt attached)
Publication (Notice of Publication attached)

I have read and understand Chapter 22-6 and 35 CSR 4, and I agree to the terms and conditions of any permit issued under this application.

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, 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: Eagle Natrium LLC.
By: ____________________________
   Manager, Environmental Control
Address: P.O. Box 191
         New Martinsville, WV 26155
Telephone: 304-455-2200
Email: ____________________________
       ____________________________
       ____________________________

Subscribed and sworn before me this 18th day of January 2018
                                      Eagle Natrium LLC.

My Commission Expires April 13, 2021

Notary Public

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 depprivacyofficer@wv.gov
INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6, Section 8(d)
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:

<table>
<thead>
<tr>
<th>Grantor, Lessor, etc.</th>
<th>Grantee, Lessee, etc.</th>
<th>Royalty</th>
<th>Book/Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EAGLE NATRIUM LLC owns all surface and subsurface mineral rights for the location of #28 Brine Well.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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:
By: Its:

**Eagle Natrium LLC**
Agent
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name: Eagle Natium LLC.  
OP Code: 39600  
Watershed (HUC 10): Ohio River  
Quadrangle: New Martinsville  

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)  

Will closed loop system be used? If so, describe: N/A  
Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. N/A  
   - If oil based, what type? Synthetic, petroleum, etc. N/A  
Additives to be used in drilling medium? N/A  
Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. N/A  
   - 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 wastewater 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:  
Company Official (Typed Name): Mi Thomas Horan  
Company Official Title: Manager Environmental  

Subscribed and sworn before me this 18 day of January, 2018  
Notary Public:  
My commission expires April 13, 2021

OFFICIAL SEAL:
NOTARY PUBLIC
STATE OF WEST VIRGINIA
KAREN SAPP
555 South Third Avenue
Hackett City, West Virginia 26159
My Commission Expires Apr. 13, 2021
Proposed Revegetation Treatment: Acres Disturbed 1 acre gravel lot. Prevegetation pH

- Lime
- Tons/acre or to correct to pH

- Fertilizer type
- Fertilizer amount
- lbs/acre

- Mulch
- Tons/acre

### Seed Mixtures

<table>
<thead>
<tr>
<th>Temporary</th>
<th></th>
<th>Permanent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Type</td>
<td>lbs/acre</td>
<td>Seed Type</td>
<td>lbs/acre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

**Plan Approved by:**

**Comments:**

---

**Field Reviewed?** (_____ Yes (_______) No
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
GROUNDWATER PROTECTION PLAN

Operator Name: Eagle Natrium LLC.
Watershed (HUC 10): Ohio River
Quad: New Martinsville
Farm Name:

1. List the procedures used for the treatment and discharge of fluids. Include a list of all operations that could contaminate the groundwater.

A coil tube unit will be used to clean the I.D. of the well casing. Any return fluid will be a brine solution. This fluid will be collected in a 200 barrel frack tank for re-injection at a later date.

2. Describe procedures and equipment used to protect groundwater quality from the list of potential contaminant sources above.

The pumps and tanks will be located in sufficient containment, and will capable to collect any lost fluid while making hose or piping connections.

3. List the closest water body, distance to closest water body, and distance from closest Well Head Protection Area to the discharge area.

Ohio River < 1/4 mile.

4. Summarize all activities at your facility that are already regulated for groundwater protection.

The Westlake Natrium Plant is a NPDES regulated facility for discharge into the Ohio River (Permit no. WV0004359). The plant is also covered by the WV AST Rule (Registration no. 2014-0002939)

5. Discuss any existing groundwater quality data for your facility or an adjacent property.
The ground water at the Natrium plant is contaminated due to historical operations. The plant is covered under a corrective action permit (No. WVD 004336343).

6. Provide a statement that no waste material will be used for deicing or fill material on the property.

No waste material will be used for deicing or fill material on the property.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

Westlake supervision will provide training to employees discussing the requirement to prevent ground contamination. Training to include spill containment requirements for all oils and fuels.

8. Provide provisions and frequency for inspections of all GPP elements and equipment.

24/7 supervision will be required during all well work operations. Ongoing inspections will be performed to prevent groundwater contamination.

Signature: [Signature]

Date: 1/10/18
#28 BRINE WELL