February 26, 2016

WELL WORK PLUGGING PERMIT

Plugging

This permit, API Well Number: 47-5100270, issued to COLUMBIA GAS TRANSMISSION, 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 penalties 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: 2-4272
Farm Name: STEELE, IDA
API Well Number: 47-5100270
Permit Type: Plugging
Date Issued: 02/26/2016

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. 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.
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 _____/ Gas X / Liquid injection _____/ Waste disposal _____/
   (If "Gas, Production _____ or Underground storage X") Deep _____ / Shallow X

5) Location: Elevation 1060.4 ft (323.21 m)
   District Webster
   Watershed Wheeling Creek
   County Marshall
   Quadrangle Majorsville, WV

6) Well Operator Columbia Gas Transmission
   Address 1700 MacCorkle Ave SE
   Charleston, WV 25325-1273
   Designated Agent Paul Amick
   Address 1700 MacCorkle Ave SE
   Charleston, WV 25325-1273

8) Oil and Gas Inspector to be notified
   Name James Nicholson
   Address PO Box 44
   Moundsville, WV 26041

9) Plugging Contractor
   Name Hagen Well Services
   Address 2285 Eagle Pass Blvd
   Wooster, OH 44691

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

   * refer to "before P&A" and "proposed post P&A" wellbore schematics

   Kill well. Obtain CBL. Clean to TD. Spot bottom cement plug from TD to 50' above 5-1/2" csg shoe. Install mechanical bridge plug above cement plug. Based on CBL, perforate and squeeze cement all zones that (based on CBL) are not sealed and have potential for containing fluid or gas (these include all formations from Gas Sand down to the Fifty Foot). Cut and fish all free casing except for 10-3/4", 13-3/8", and 16": removing these casing strings may result in loss of wellbore due to formation instability (ie. Red Rock). Cover all perforations, cuts, and casing stubs with minimum 100' cement plugs. Perforate and squeeze cement 10-3/4" csg below Pittsburgh Coal if CBL does not indicate that coal is sealed. Repeat as needed above Pittsburgh Coal and across fresh water zones.

   All casings appear to be cemented to surface. If you are able to pull casing to expose the 15% it would be possible to squeeze cement to make sure the Pittsburgh coal is covered with cement.

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

Work order approved by inspector

02/26/2016
Majorsville Deep Well 4272
Well and Well Line Abandonment Prognosis

Drilled in 1953 by ML&H
Marshall Co, WV

Casing Info

<table>
<thead>
<tr>
<th>Casing Size</th>
<th>Depth</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>16” conductor</td>
<td>@ 6’</td>
<td>(no record of cement)</td>
</tr>
<tr>
<td>13-3/8” surface</td>
<td>@ 164’</td>
<td>(125 sx cmt – calc fillup 75’ – cmt top should be +/-90’) (May be cts)</td>
</tr>
<tr>
<td>10-3/4” coal</td>
<td>@ 528’</td>
<td>(170 sx cmt – calc fillup 700’ – cmt top should be at surface with 30% excess)</td>
</tr>
<tr>
<td>8-5/8” csg</td>
<td>@ 845’</td>
<td>(150 sx cmt – calc fillup 1400’ – cmt top should be at surface with 65% excess)</td>
</tr>
<tr>
<td>7” csg</td>
<td>@ 1204’</td>
<td>(130 sx cmt – calc fillup 1700’ – cmt top should be at surface with 40% excess)</td>
</tr>
<tr>
<td>5-1/2” csg</td>
<td>@ 1660’</td>
<td>(125 sx cmt – calc fillup 2200’ – cmt top should be at surface with 30% excess)</td>
</tr>
</tbody>
</table>

Formation Tops

<table>
<thead>
<tr>
<th>Formation</th>
<th>Depth</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>Pittsburgh Coal</td>
<td>501 – 507’</td>
<td>elog</td>
</tr>
<tr>
<td>Big Dunkard</td>
<td>1043 – 1091’</td>
<td>elog</td>
</tr>
<tr>
<td>Gas Sand</td>
<td>1138 – 1185’</td>
<td>elog</td>
</tr>
<tr>
<td>Salt Sand 1</td>
<td>1280 – 1301’</td>
<td>elog</td>
</tr>
<tr>
<td>Salt Sand 2</td>
<td>1373 – 1396’</td>
<td>elog</td>
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<tr>
<td>Maxton</td>
<td>1514 – 1563’</td>
<td>elog</td>
</tr>
<tr>
<td>Big Lime</td>
<td>1620 – 1645’</td>
<td>elog</td>
</tr>
<tr>
<td>Loyalhanna Big</td>
<td>1695 – 1800’</td>
<td>1800’ is bottom of elog</td>
</tr>
<tr>
<td>Injun</td>
<td>2360 – ?? ??’</td>
<td>driller</td>
</tr>
<tr>
<td>Fifty Foot Sand</td>
<td>2377’</td>
<td>driller</td>
</tr>
<tr>
<td>TD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* CPG geologist indicates there is always a potential for gas to be contained in all porous formations from the Gas Sand to the Fifth Sand

P&A Procedure

1. Kill well.
2. Obtain CBL.
3. NU annular BOP and clean to TD (if necessary).
4. Spot bottom cement plug from TD to 1610’. WOC and tag.
5. Install mechanical bridge plug.
6. Based on CBL, perforate and squeeze cement all zones that are not cemented and have potential for containing water, gas, or oil (Gas Sand down to Fifty Foot).
7. Free pt, cut, and remove all free casing EXCEPT FOR 10-3/4”, 13-3/8” and 16” – REMOVING THESE CASING STRINGS MAY RESULT IN LOSS OF WELLBORE DUE TO FORMATION INSTABILITY, AND SERVES TO FACILITATE RE-ENTRY OF WELLBORE IF NEEDED.
8. Cover all perforations, cuts, casing stubs, with minimum 100’ cement plugs.
9. If CBL indicates possibility of no cement across the Pittsburgh Coal, perforate below coal and perform injection test. If injection or circulation established, squeeze cement. Repeat as necessary up-hole to surface.
**DISCUSS WITH STATE INSPECTOR TO DETERMINE NEXT OPTIONS (10A or 10B below) FOR COMPLETING P&A. Option 10A is the preferred method due to Markwest's plans to excavate and possibly build structures above wellbore.** 

10A. Install cement plug from top of last plug to surface inside the 10-3/4" most casing and install monument, or

10B. Evacuate/swab all fluid from inside 10-3/4" casing and install vent.
Majorsville Deep well 4272
(prior to P&A)
7/2/15
~ not to scale ~

16" conductor @ 6'
(no record of cement)

13-3/8" csg @ 164'
(125 sx cement – calc fillup 75')

10-3/4" csg @ 528'
(170 sx cement – calc fillup 700')

8-5/8" csg @ 845'
(150 sx cement – calc fillup 1400')

7" csg @ 1204'
(130 sx cement – calc fillup 1700')

5-1/2" csg set @ 1660'
(125 sx cement – calc fillup 2200')

TD 2377'
# The Manufacturers Light & Heat Company

## Division: 5

### Record of well No. 1-272

- **Location:** Maumee, Ohio
- **Date:** 02/26/2016

### Farm: 36

- **Acres:** 19
- **County:** Marshall
- **State:** Pennsylvania

### Driller's Name

- **Name:** E.C. Burnside & Sons

### Casing and Tubing Record

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<tr>
<th>Diameter (in)</th>
<th>12&quot;</th>
<th>10&quot;</th>
<th>8 1/4&quot;</th>
<th>7&quot;</th>
<th>6 5/8&quot;</th>
<th>5 7/8&quot;</th>
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<tr>
<td>Used in Prior</td>
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<td>1660</td>
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### PACKER RECORD

- **Depth:** 6
- **Type:** 1660
- **Date:** 02/26/10

### SHOOTING RECORD

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<th>Volume</th>
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### VOLUME AND PRESSURE

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</thead>
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<td>550</td>
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### TOTAL INITIAL OPEN FLOW

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<th>Formation</th>
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<th>Bottom</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Pittsburg Coal</td>
<td>507</td>
<td>507</td>
<td>12&quot; Cemented in with 125 Bag Cement</td>
</tr>
<tr>
<td>Dune Sand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ig Denard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ig Sand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ig Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### FIELD Superintendee of Inspection

- **Contractor:**

**NOTE:** The above blank must be filled out carefully by the contractor, with a complete and accurate record of the well and apparatus, when presented for payment of the bill for drilling. All formations and known sands must be given in this manner, and under the title of Remarks must be recorded the date, time, and the quality of the sand and thickness of pay.
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL

4) Surface Owner(s) to be served:
(a) Name MarkWest Liberty Midstream & Resources, LLC
(b) Name Att: Tim Miller
(c) Name
Address 4600 J. Barry Ct., Suite 500
Canonsburg, PA 15317

5) (a) Coal Operator
Name The Ohio County Coal Company (aka Shoemaker Mine)
Address 46226 National Rd W
St Clairsville, OH 43950
(b) Coal Owner(s) with Declaration
Name Murray American Energy
Address 46226 National Rd W
St Clairsville, OH 43950
(c) Coal Lessee with Declaration
Name N/A
Address

6) Inspector
Name James Nicholson
Address PO Box 44
Moundsville, WV 26041
Telephone 304-552-3874

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-1B, which sets out the parties involved in the work and describes the well site 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 reverse 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.

Well Operator: Columbia Gas Transmission
By: James E Amos
Senior Well Services Engineer
Address 1700 MacCorkle Ave SE
Charleston, WV 25325-1273
Telephone 304-483-0073

Subscribed and sworn before me this 19th day of July, 2015
My Commission Expires 3/22/2020

Oil and Gas Privacy Notice
The Office of Oil and Gas processes your personal information, such as name, address and phone number, for regulatory duties. Your personal information may be disclosed to other State agencies or third parties to perform our duties 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.
February 2, 2016

The Ohio County Coal Company (aka Shoemaker Mine)
46226 National Rd W
St. Clairsville, OH 43950

Columbia Pipeline Group, an underground natural gas storage operator, is planning to plug and abandon their Majorsville Deep storage well 3992. The well is located in Marshall County, WV, and records indicate that The Ohio County Coal Company (aka Shoemaker Mine) is the coal operator on subject property.

To comply with WV DEP Office of Oil & Gas permit application requirements, Columbia is required to provide the coal operator a copy of the permit application enclosed.

Please refer to form WW-4B Instructions to Coal Operators for an explanation of your rights to be present during plugging operations and to decide whether to follow up with a request that the well be plugged according to 22-6-24(d).

If The Ohio County Coal Company has no objection to the abandonment, please sign, date, and return the Instructions to Coal Operators form to:

Columbia Gas
48 Columbia Gas Rd
Sandyville, WV 25275
Att: Jim Amos

If you have questions, feel free to call.

Regards,

Jim Amos
Senior Well Services Engineer
Columbia Gas Transmission, LLC
jamos@cpg.com
off: 304-373-2412
cell: 304-483-0073
February 2, 2016

Murray American Energy
46226 National Rd W
St. Clairsville, OH 43950

Columbia Pipeline Group, an underground natural gas storage operator, is planning to plug and abandon their Majorsville Deep storage well 3992. The well is located in Marshall County, WV, and records indicate that Murray American Energy owns the coal on subject property.

To comply with WV DEP Office of Oil & Gas permit application requirements, Columbia is required to provide the coal owner a copy of the permit application enclosed.

Please refer to form WW-4B Instructions to Coal Operators for an explanation of your rights to be present during plugging operations and to decide whether to follow up with a request that the well be plugged according to 22-6-24(d).

If Murray American Energy has no objection to the abandonment, please sign, date, and return the Instructions to Coal Operators form to:

    Columbia Gas
    48 Columbia Gas Rd
    Sandyville, WV 25275
    Att: Jim Amos

If you have questions, feel free to call.

Regards,

Jim Amos
Senior Well Services Engineer
Columbia Gas Transmission, LLC
jamos@cpg.com
off: 304-373-2412
cell: 304-483-0073
February 2, 2016

MarkWest Liberty Midstream & Resources
4600 J. Barry Ct., Suite 500
Canonsburg, PA 15317
Att: Tim Miller

Tim, enclosed is a copy of the WV DEP Office of Oil & Gas permit application to plug and abandon Columbia's Majorsville Deep well 3992. This is provided to MarkWest to comply with WV DEP permit application requirements.

To expedite the permit approval process, if MarkWest has no objection to the proposed abandonment, please sign, date, and return the Surface Owner Waiver to:

    Columbia Gas
    48 Columbia Gas Rd
    Sandyville, WV 25275
    Att: Jim Amos

If MarkWest wants to file comments or object to the permit application, instructions are outlined on the Surface Owner Waiver form.

If you have questions, feel free to call.

Regards,

Jim Amos
Senior Well Services Engineer
Columbia Gas Transmission, LLC
jamos@cpg.com
off: 304-373-2412
cell: 304-483-0073

RECEIVED
Office of Oil and Gas
FEB 04 2016
WV Department of Environmental Protection
STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS  

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN  

Operator Name: Columbia Gas Transmission  
Op Code: 307032  

Watershed (HUC 10): Wheeling Creek  
Quadrangle: Majorsville, WV  

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  
- Underground Injection (UIC Permit Number: 34-121-02459, 34-059-20965)  
- Reuse (at API Number)  
- Off Site Disposal (Supply form WW-9 for disposal location)  
- Other (Explain): Rumple Beech Hollow Landfill  
Wellison, OH  

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

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

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

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 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:  

Company Official (Typed Name):  James E Amos  
Company Official Title: Senior Well Services Engineer  

Subscribed and sworn before me this 29th day of July, 2015.  

Mary Marie C nederland  
Notary Public  
Columbia Gas Transmission

Proposed Revegetation Treatment: Acres Disturbed < 0.7  Prevegetation pH 6.5

Lime 2 Tons/acre or to correct to pH 7.0

Fertilizer type 10-10-10

Fertilizer amount 600 lbs/acre

Mulch 2 Tons/acre

Seed Mixtures

<table>
<thead>
<tr>
<th>Temporary</th>
<th>Permanent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Type</td>
<td>Seed Type</td>
</tr>
<tr>
<td>Annual Rye</td>
<td>Orchard Grass and/or Tall Fescue</td>
</tr>
<tr>
<td>Mulch</td>
<td>Birdsfoot Trefoil (empire)</td>
</tr>
<tr>
<td>Straw</td>
<td>Annual Rye</td>
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<tr>
<td>40</td>
<td>29</td>
</tr>
<tr>
<td>6000</td>
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</tbody>
</table>

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.

Plan Approved by: [Signature]

Comments: _______________________________________________________________________________________

Title: 0.1 Gas Inspector  Date: 8/3/15

Field Reviewed? ( ) Yes ( ) No
Majorsville Deep storage well 4272 Plug & Abandonment

WV DEP Reclamation Plan 1 of 2 - Overview
- BMPs to be utilized per CPG WV Environmental Construction Standards, site specific
  CPG Environmental Management & Construction Plan, and WV DEP guidelines
- Drainage, diversions, etc. to be maintained on existing lease road
- crushed limestone to be applied to existing lease road as needed to maintain integrity
tree outside of LOD needs cut due to overhanging canopy above wellhead - no earth disturbance anticipated
Majorsville Deep storage well 4272 Plug & Abandonment

WV DEP Reclamation Plan 2 of 2 - Site Detail
- BMPs to be utilized per CPG WV Environmental Construction Standards, site specific
  CPG Environmental Management & Construction Plan, and WV DEP guidelines
- Drainage, diversions, etc. to be maintained on existing lease road
- Crushed limestone to be applied to existing lease road as needed to maintain integrity
West Virginia Department of Environmental Protection
Office of Oil and Gas

WELL LOCATION FORM: GPS

API: 47-051-00270             WELL NO.: 4272

FARM NAME: Steele, Ida (WV DEP records)

RESPONSIBLE PARTY NAME: Columbia Gas Transmission

COUNTY: Marshall              DISTRICT: Webster

QUADRANGLE: Majorsville, WV

SURFACE OWNER: MarkWest Liberty Midstream & Resources, LLC

ROYALTY OWNER: Richard E. Steele et al (storage lease 3022047-001)

UTM GPS NORTHING: 4423084.53 m         1060.4 ft

UTM GPS EASTING: 540690.14 m           GPS ELEVATION: 323.21 m

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

2. Accuracy to Datum – 3.05 meters
3. Data Collection Method:
   Survey grade GPS: Post Processed Differential

4. Letter size copy of the topography map showing the well location.
   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.

Signature: ___________________________  Title: Senior Well Services Engineer  Date: 7/20/15

02/26/2016