DRBC Natural Gas Regulations

Water Management In Marcellus Shale Gas Exploration and Production Session
NJWEA
May 9, 2011
Delaware River Basin Commission

- Founded in 1961
- Five Members:
  - Delaware
  - New Jersey
  - Pennsylvania
  - New York State
  - Federal Government
Purpose of Natural Gas Regulations

- Manage the Water Resources of the Basin
  - Basin provides water to over 15 million people
  - Incredible natural resource to mid-Atlantic metropolitan area
  - Three quarters of the non-tidal river is designated in the National Wild and Scenic Rivers System
  - Exceptional water quality is protected by the DRBC Special Protection Waters Program

- Comply with Compact Requirements
  - Regulations implement statutory authority that is granted in the DRBC Compact by the signatory parties
  - Supplements Commission’s Comprehensive Plan
  - Fulfills requirements of existing Commission Regulations
    - Groundwater Section 3.40 - Special Protection Waters
    - Flood Plains - Water Withdrawal and Water Quality
Marcellus Shale and Special Protection Waters

36% (4,937 mi²) of the Delaware Basin is underlain by the Marcellus Shale
Marcellus & Utica Shales, Delaware Basin Boundary
Red well symbol denotes drilled well

Blue well symbol denotes well not yet drilled
Existing DRBC Regulations

1. Special Protection Waters
   • Non-Point Source Pollution Control Plans
     • Erosion & Sediment and Stormwater Controls
     • Non-degradation of Surface Water

2. Section 3.40 - Groundwater Protection
   • Injection and extraction

3. Floodplain Regulations-Resolution 76-16
   • Construction activities within floodway and flood fringe

4. Water Withdrawal Requirements

5. Wastewater Disposal Requirements

6. Water Quality Regulations
1. Water Withdrawal
- Protect surface and groundwater supplies
- Preserve ecological flows
- Ensure assimilative capacity for discharges

2. Well Pads and Ancillary Infrastructure
- Natural Gas Development Plan
- Manage water use & disposal
- Monitor and protect surface water & groundwater

3. Wastewater Disposal
- Protect receiving water bodies
- Track wastewater production, reuse, and disposal
- Ensure adequate treatment is available for expected waste stream
Expected Natural Gas Well Development

• 15,000-18,000 horizontal wells
• Does not include vertical wells
• 2,000-2,200 well pads
• 10,000-12,000 acres (well pads)
• Additional acres for support infrastructure
Expected Water Needs

- 5 million gallons per horizontal well stimulated
- 90 BG - no reuse
- 72 BG – 90% reuse
- Over 10-20 year development
Wastewater Treatment & Disposal

- Flowback – water 20% frac volume
- 1 MG per well
- 18 BG over 10-20 years
- Treatment capacity and capability
Framework of Draft NG Reg’s

- Section 7.1 Purpose, Authority, Scope and Relationship to other Requirements and Rules
- Section 7.2 Definitions
- Section 7.3 Administration
- Section 7.4 Water Sources for Uses Related to Natural Gas Development
- Section 7.5 Well Pads for Natural Gas Activities
- Section 7.6 Wastewater Generated by Natural Gas Development
- Appendix: Wording of Financial Assurance Instruments
Natural Gas Regulations

- Consolidate requirements in one WQR Section- Article 7
- Include rules for water withdrawals; well pads and natural gas development plans; wastewater disposal
- Provide transparency and certainty to the industry and the public
- Include approval by rule process for water sources and well pads
- Rely on NY/PA programs and expertise to regulate well construction and operations
- Applies to all natural gas target formations
Types of Approvals

- **Water Use / Withdrawal**
  - Public Notice
  - Approval by Rule (ABR) Approval by Executive Director
  - Docket Approval by Commissioners at Public Hearing

- **Well Pad**
  - Public Notice
  - Approval by Rule (ABR) Approval by Executive Director
  - Docket Approval by Commissioners at Public Hearing

- **Natural Gas Development Plan**
  - Public Notice
  - Approval by Rule (ABR) Approval by Executive Director
  - Docket Approval by Commissioners at Public Hearing

- **Wastewater Discharge**
  - Public Notice
  - Approval by Rule (ABR) Approval by Executive Director
  - Docket Approval by Commissioners at Public Hearing

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**Commissioners**

**Rule**
Rule Features

- On-site new water sources and recovered flowback reuse can be approved as condition in Natural Gas Development Plan (NGDP)
- Existing approved sources can get ABR to provide water for natural gas development
- Water tracking and reporting requirements
- Aquifer testing requirements
- Pass-by flow requirements
Well Pad and Natural Gas Development Plan Approvals

Well Pad
Low volume hydraulically fractured wells and exploratory wells and
High volume hydraulically fractured wells

Natural Gas Development Plan (NGDP)

Rule Features
- Siting restrictions and setbacks
- ABR available for well pad that meet siting restrictions and setbacks and as part of approved NGDP
- Water and wastewater tracking and reporting requirements
- Background groundwater and surface water monitoring and sampling
- Drought, metering, invasive species plans
- Planning requirements
- Recovered flowback reuse can be approved as condition in well pad approval and NGDP
- Consumptive water use charges
- Financial assurance requirements
- Flowback storage in tanks
- Off-site drill cuttings disposal
- Modified public noticing procedures
Natural Gas Development Plan (NGDP) Application

Lease Area Map (TLAB)

Landscape Map
Ortho and Topographic Base Maps with overlays and delineated areas

- Existing Features map
- Hydrology map
- Geology map
- Soils map
- SW and GW monitoring plan map

Well Pad Siting Restrictions and Setback Requirements

- 500’ from water bodies
- 500’ from wetlands
- 500’ reservoir/intake
- State setbacks

Constraints Analysis Map
(Composite of Landscape Map and well pad siting and restrictions)

Circulation Plan

NGDP
Wastewater Discharge Approvals

Rule Features

• Applies to all treatment facilities to accept non-domestic wastewaters

• Treatability study requirement

• Site specific discharge requirements

• Non-exceedance of EPA Primary and Secondary Drinking Water Standards

• Analysis for DRBC Zone Specific Water Quality Criteria – Tables 3 – 7 of the WQRs

• Analysis for Acute and Chronic Toxicity per Section 7.6 (e)( 1)

• Analysis for TDS Stream Quality Objectives

• NMC to EWQ analysis required
Six Public Hearings Were Held

<table>
<thead>
<tr>
<th>Tuesday February 22</th>
<th>Thursday February 24</th>
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<tbody>
<tr>
<td>Honesdale High School</td>
<td>Patriots Theater at the War Memorial</td>
</tr>
<tr>
<td>459 Terrace St.</td>
<td>1 Memorial Drive</td>
</tr>
<tr>
<td>Honesdale, PA 18431</td>
<td>Trenton, NJ 08608</td>
</tr>
<tr>
<td>Liberty High School</td>
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<tr>
<td>125 Buckley St.</td>
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<tr>
<td>Liberty, NY 12754</td>
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Two three-hour sessions were held at each venue (18 hours total).
377 people testified
1,000 people attended
120-day comment period on Draft Natural Gas Development Regulations closed April 15, 2011.

Comments were accepted by the following two methods:

**Electronic submission** using PEPC through [www.drbc.net](http://www.drbc.net)

**Paper submissions** mailed or delivered to DRBC Commission Secretary. Paper submissions were also accepted at the three public hearings.
Comments Received

• 13,634 thousand responses
• Translating to 26,543 comments
• Elected officials, public, industry, NGOS
Written Comments* on DRBC DRAFT
Natural Gas Regulations by Commenter’s Zip Code

*Entered into PEPC System as of 4/26/2011
Questions?

Contacts at DRBC:
Bill Muszynski
David Kovach
Eric Engle
609-883-9500 ext. 216

Existing and proposed regulations, applications, and updates are available on the Commission’s website:

www.drbc.net

Thank you.