

DRBC Natural Gas Regulations

Water Management In Marcellus Shale Gas Exploration and
Production Session

NJWEA

May 9, 2011

Delaware River Basin Commission

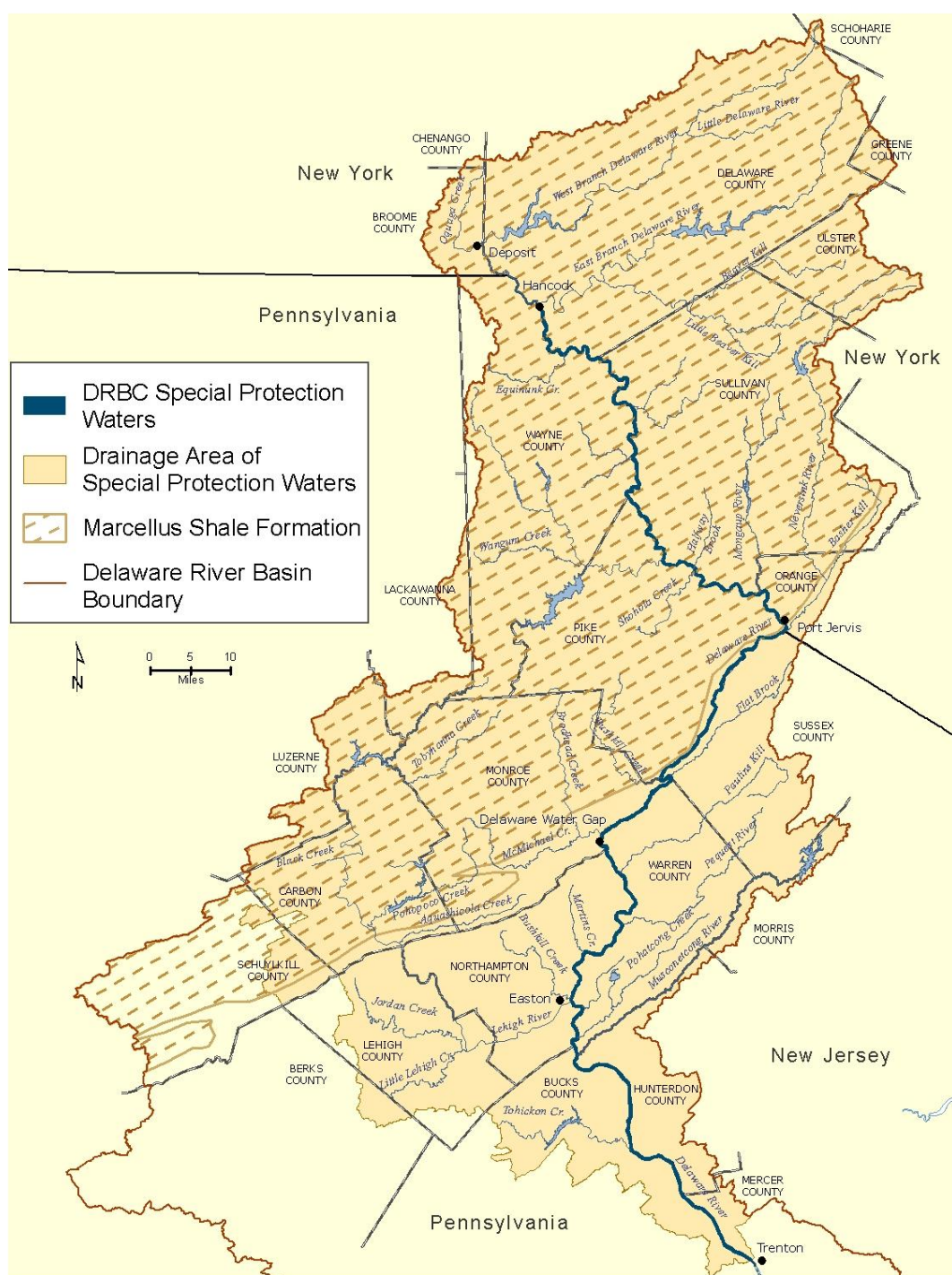
- Founded in 1961
- Five Members:
 - Delaware
 - New Jersey
 - Pennsylvania
 - New York State
 - Federal Government



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

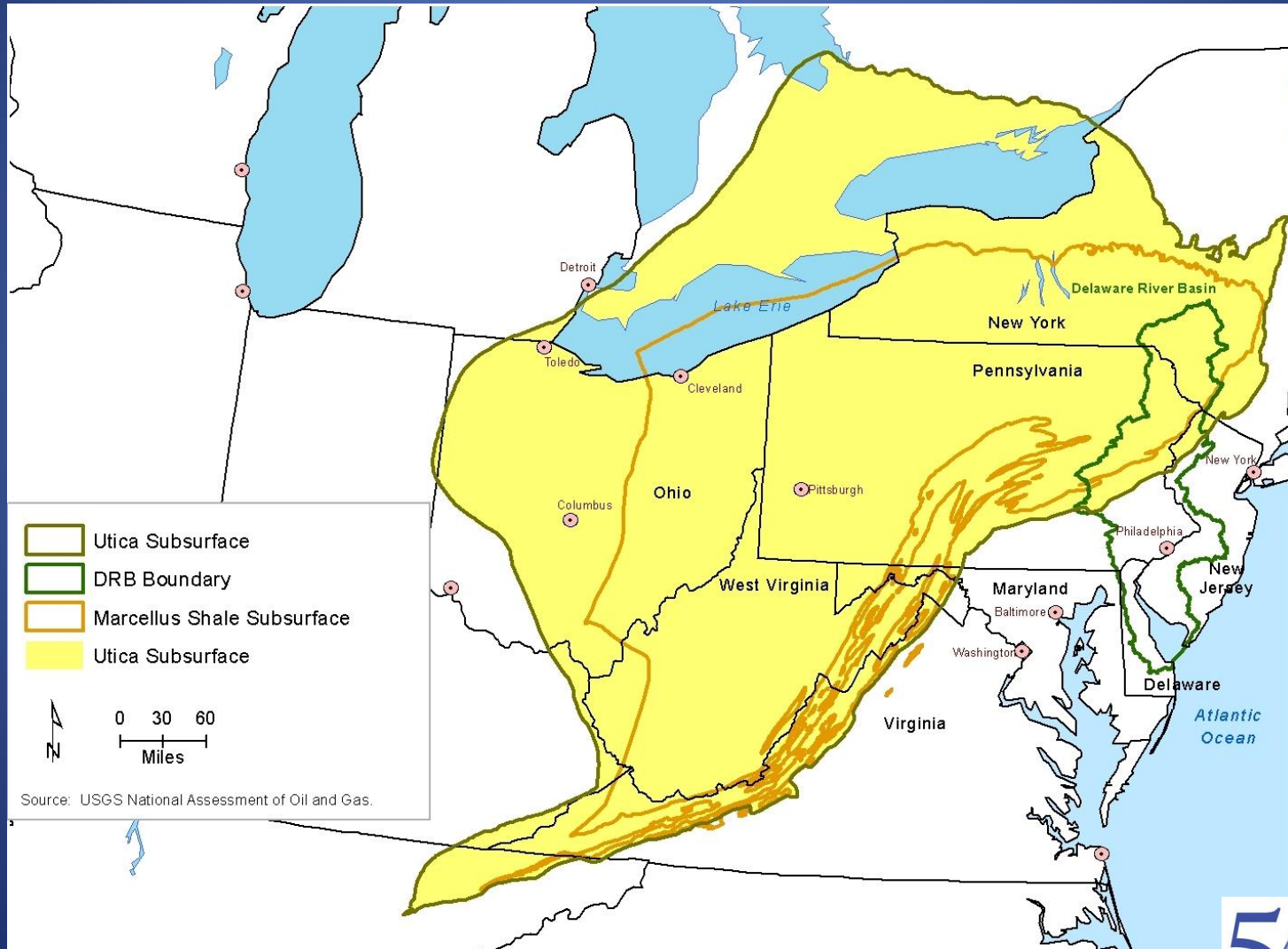
- **Comply with Compact Requirements**
 - Regulations implement statutory authority that is granted in the **DRBC Compact** by the signatory parties
 - Supplements Commission's **Comprehensive Plan**
 - Fulfills requirements of existing Commission Regulations
 - Groundwater Section 3.40 - Special Protection 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

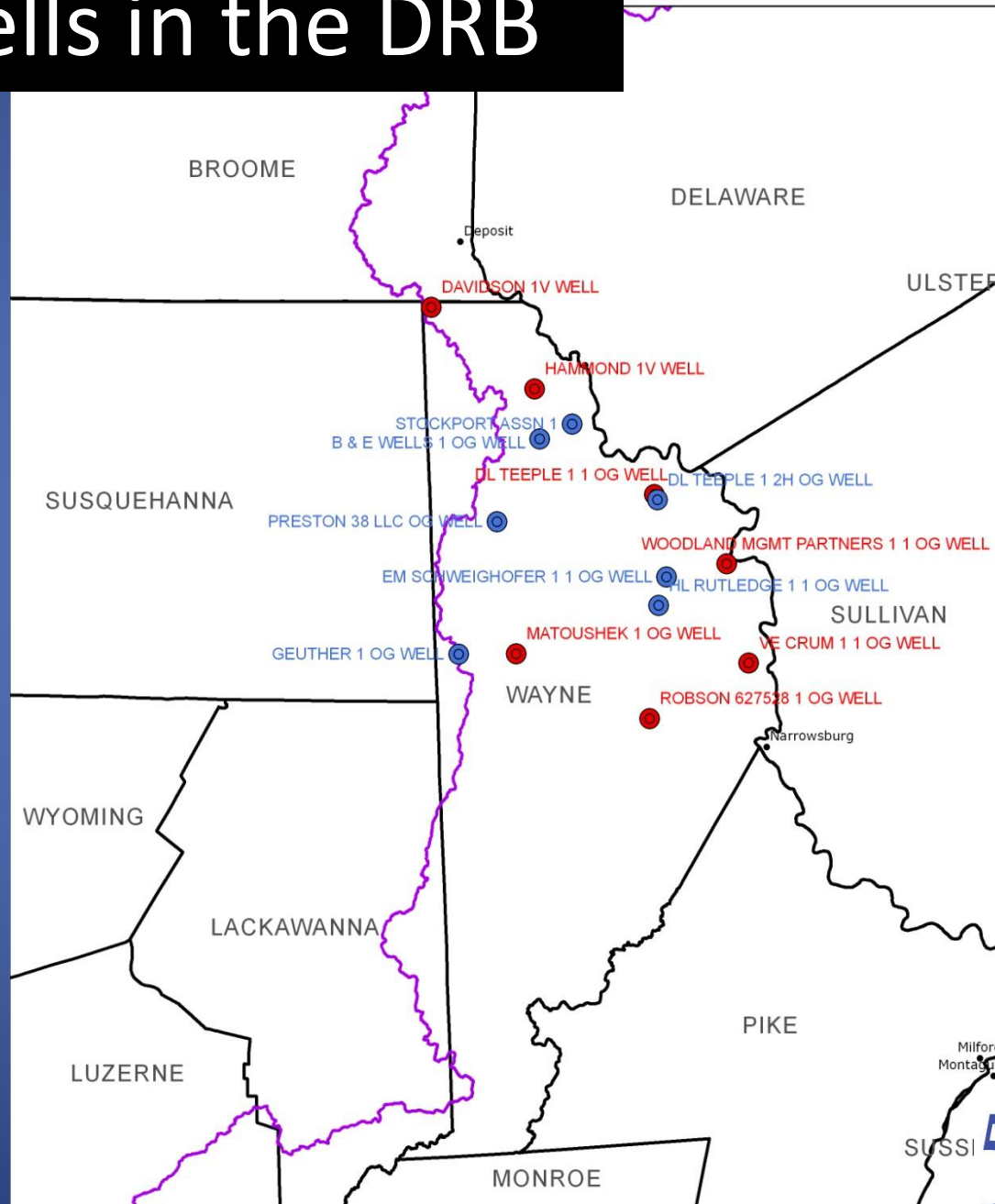
Marcellus & Utica Shales, Delaware Basin Boundary



Wells in the DRB

Red well symbol denotes drilled well

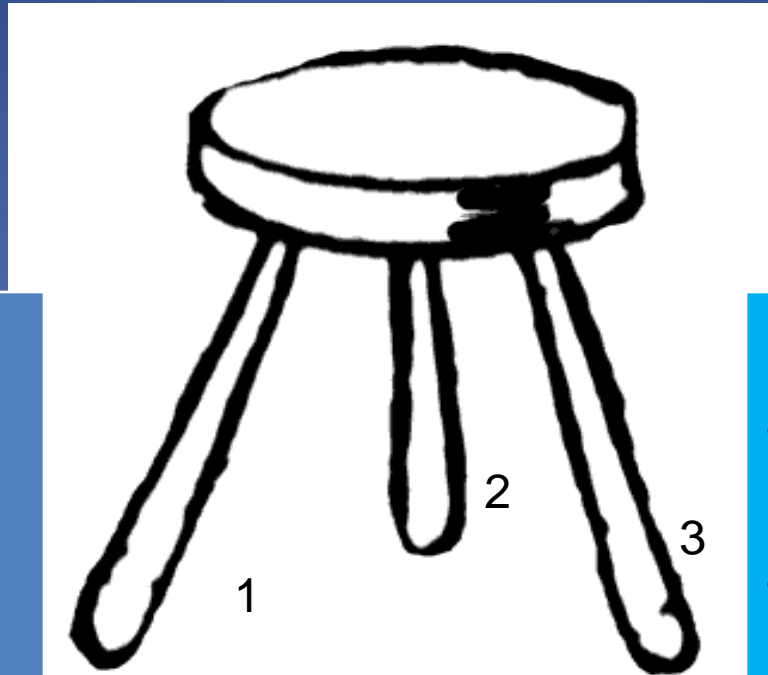
Blue well symbol denotes well not yet drilled



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

DRBC Natural Gas Regulatory Strategy



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



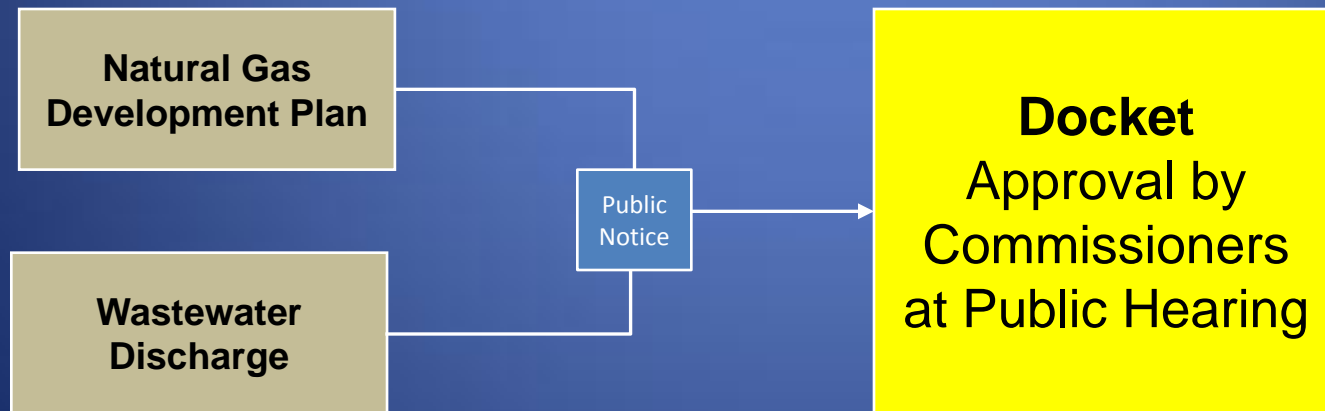
Framework of Draft NG Reg's

- **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 Withdrawal and Use Approvals

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

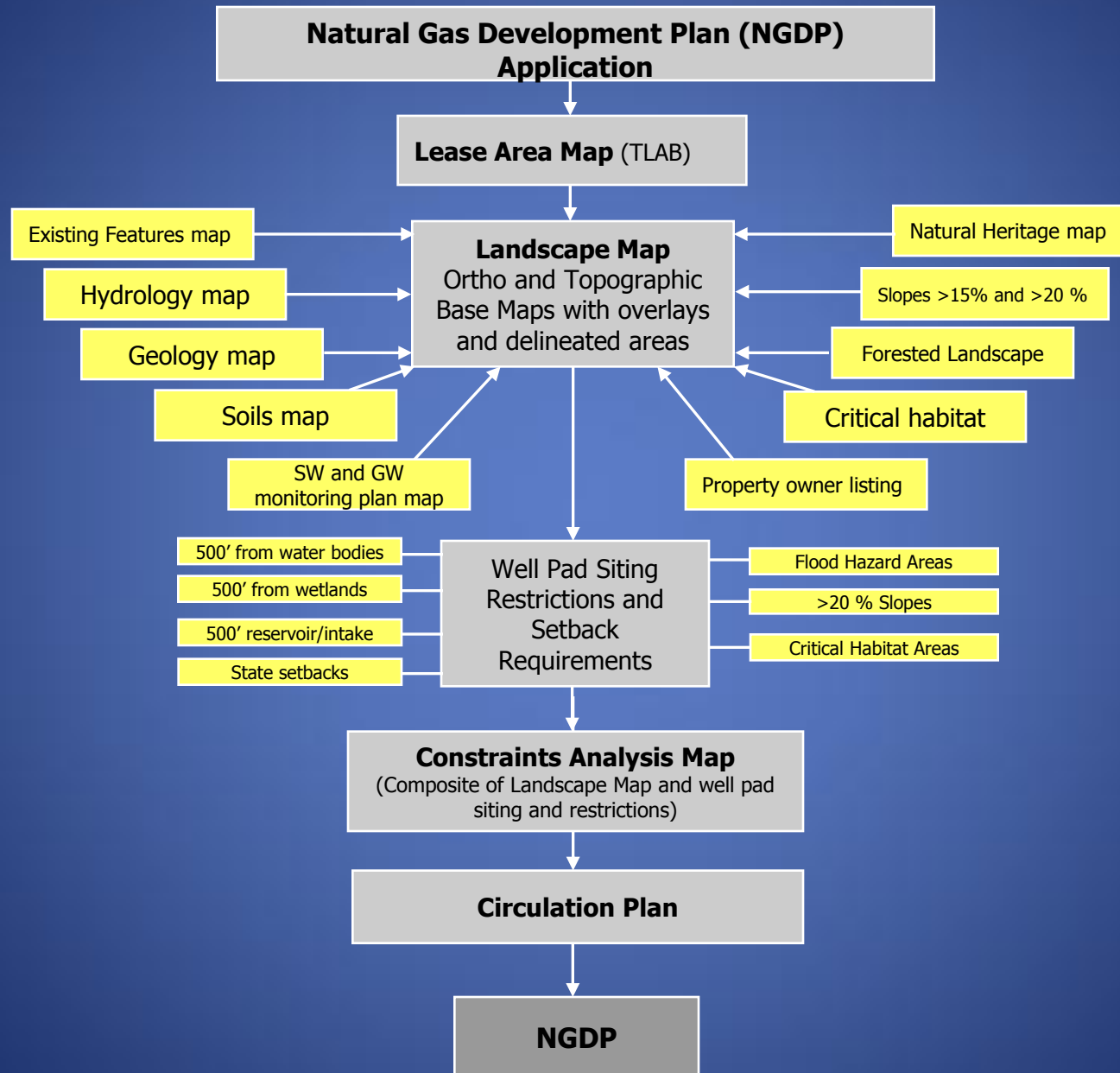
Natural Gas Development Plan (NGDP)

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 Process



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

Tuesday February 22

Honesdale High School

459 Terrace St.

Honesdale, PA 18431

Liberty High School

125 Buckley St.

Liberty, NY 12754

Thursday February 24

Patriots Theater at the War Memorial

1 Memorial Drive

Trenton, NJ 08608

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



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

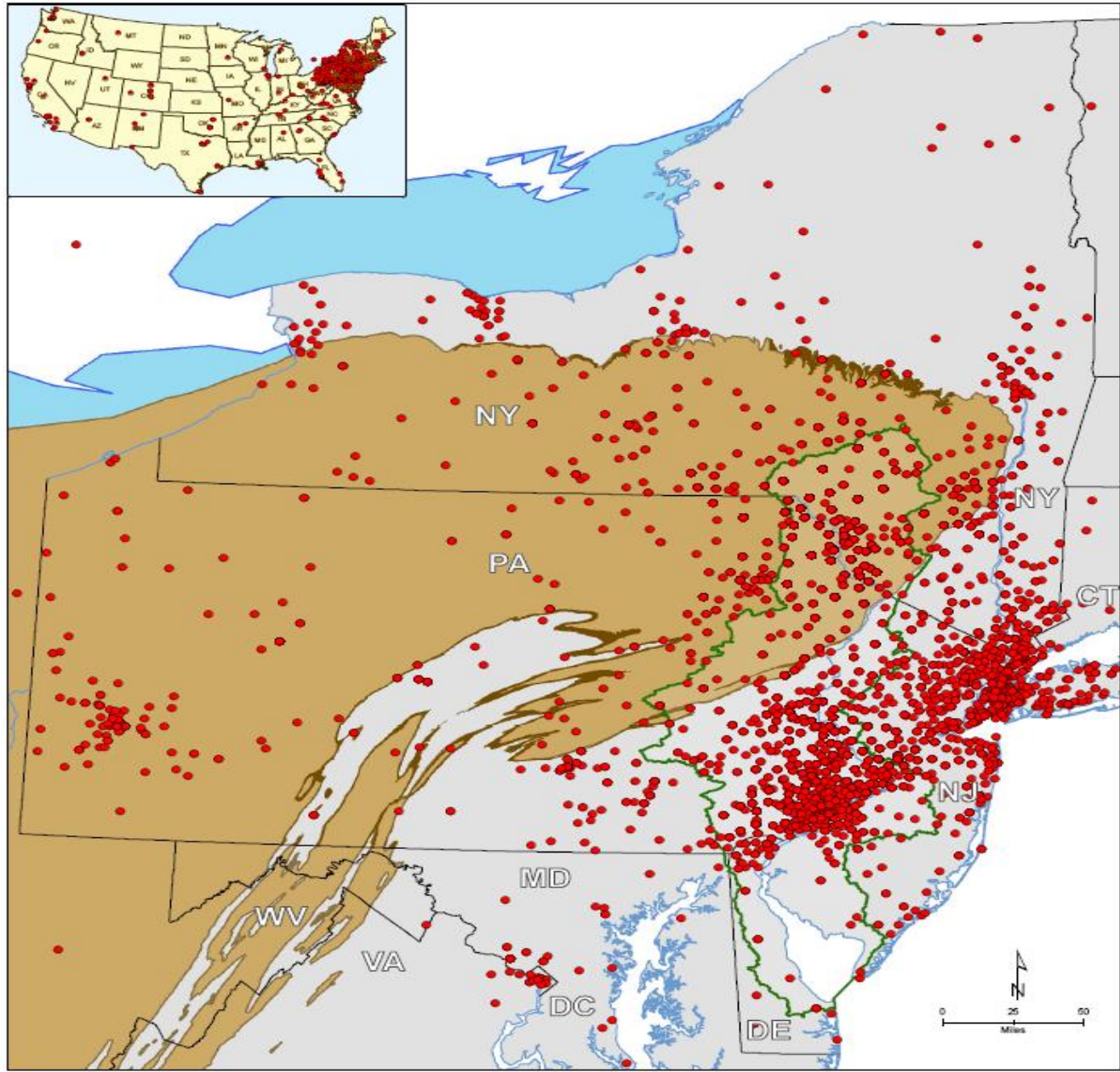
Comments Received

- 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

- Commenter's ZIP Code
- DRB Boundary
- Marcellus Shale Subsurface



Questions?



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

www.drbc.net

Thank you.