













Tripple Rig



Regulatory Responsibility



MAJOR FOCUS and PROTECTION

- Surface Waters of West Virginia
- Fresh Ground Water Horizons
- Mineral and Natural Gas Resources
- Well Control Management
- Public Health / Safety and Properties
- Waste of produced sources, Generated Waste, and Water Management
- Publicly Owned Lands and Resources

Office of Oil and Gas

WV Code Chapter 22 Environmental Resources

Legislative Rules Title 35

Common Areas Regulated

- **Permit activities, well maintenance and processes – drilling, completion, plugging, work over, others,**
 - Well bore casings, cements, and well standards,
 - Construction disturbances and e & s controls,
 - Reclamation and records management,
 - Large Pits, FW Impoundment, and Centralized Pits.
- **Existing wells and Gathering System (producing and abandoned), compliance and plugging commitment, problem well mitigations, and sites and access road maintenance,**
 - Gathering pipelines
- **Waste generated from activities, and fluid handling.**



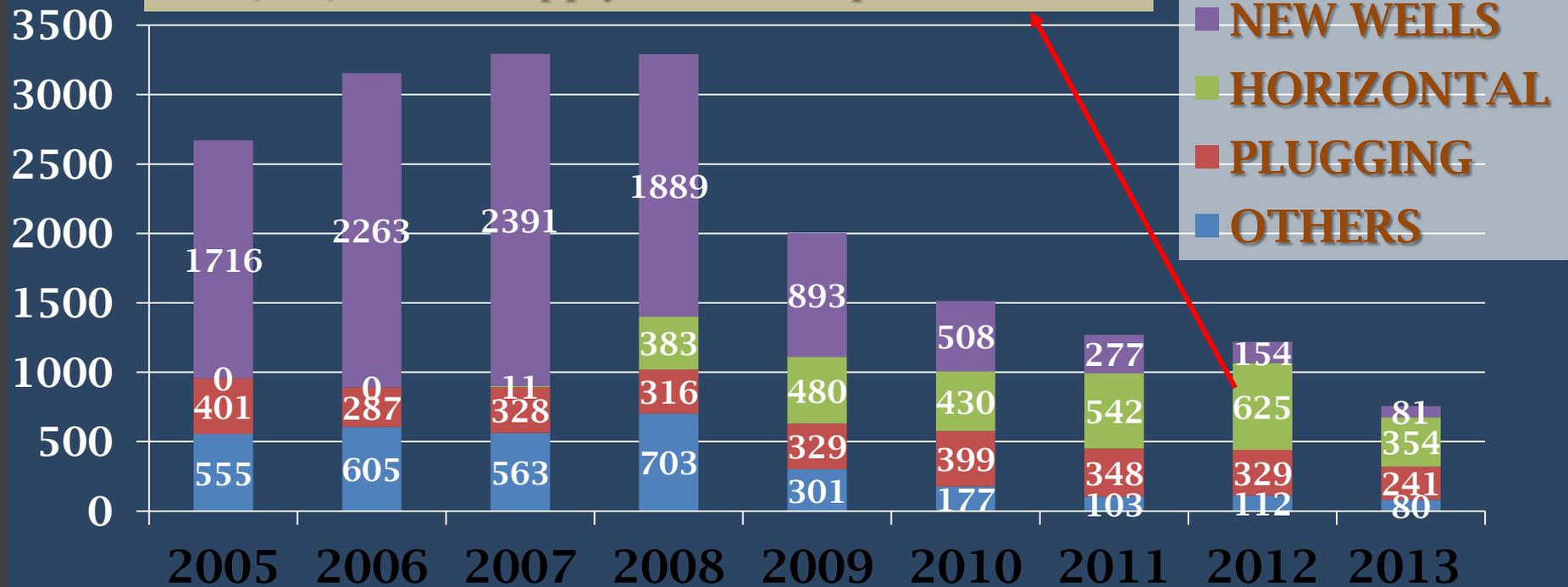
Complexity
Well pads, Ground disturbances,
Pipelines, and Impoundments

PERMIT TREND

PERMITS ISSUED

Horizontal 22-6A Permits - 20 Operators

(416) Permits apply to H6A Requirements



Approximately 250 Marcellus Wells Drilled/Completed YEARLY

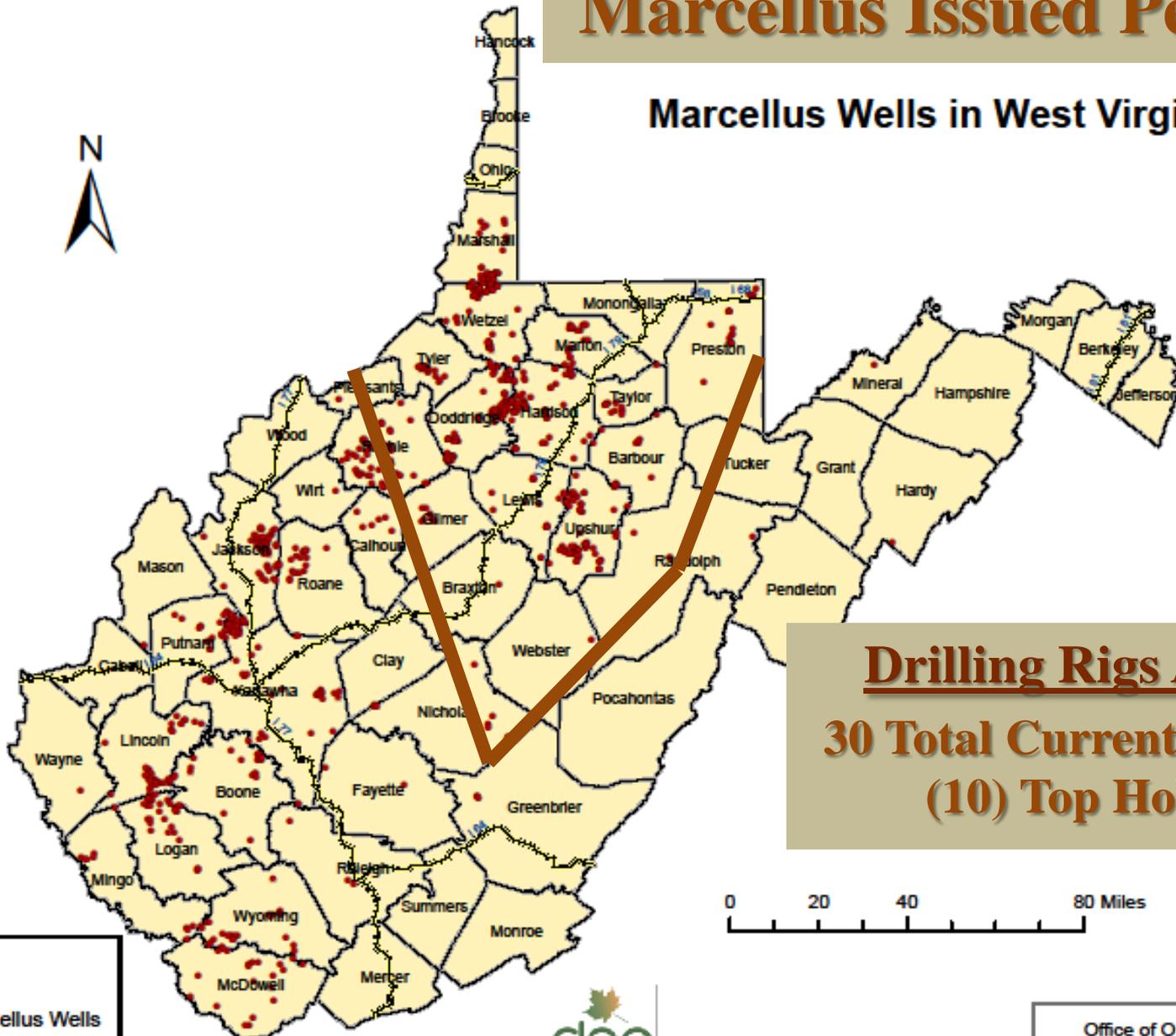
July
10th

Drilling Rigs Statewide Currently

45 Total Reported (30) Marcellus Operations

Marcellus Issued Permits

Marcellus Wells in West Virginia



Drilling Rigs Active

**30 Total Current Reports
(10) Top Hole Rigs**

Legend

- Marcellus Wells
- WV Interstates



West Virginia Department of Environmental Protection

Office of Oil and Gas

March 2010



West Virginia Department of Environmental Protection



General Site Construction



- **Construction/Reclamation Plan**

- Surface water protection
- Properties protection.

- **Erosion and Sediment Control Manual**

- BMPs for construction and reclamation
- Reclamation maintenance
- §22-6-6(d) code reference.

Office of Oil and Gas
Charleston, WV



west virginia department of environmental protection

7 day - 24 hour Operations

Blenders - Fluid-Sand Mixing
Average Two Blender Units
Blending - Frac Fluids, Sands, & Additives

Bulk Sand Storage
Combined Pneumatic and Gravity Systems

Boom Unit Alternative

Frac Fluid Storage

Frac Pumper Series
Average Nine Units
Approximate 800 to 1000 H-Hp Each

Pad Lining and Containment

Electric Line Wellbore Service

Multiple Diesel Driven Units

Complexity Well-formation Fracturing and Fluid Volumes



- Line Heater Treatments,
- Dehydration Units,
- Gas-Fluid-Sand Separators,
- Tank Battery Collection-Recovery (Retained flow-back fluids, condensate, produced fluids, and vapor recovery/combustion stacks),
- Flaring on many sites,
- Emergency Shut-in Devices (ESD's)

Complexity Production Facilities

SAMPLING EFFORTS ON CASE BASIS

PARAMETER AND ANALYSES INITIATIVES

Office Personnel assist and support with
SPECIAL INSPECTIONS, MONITORING AND INVESTIGATIONS

Chain of Custody Procedures

Site Specific Reviews



35CSR8 Rules Governing – Horizontal Well Development

Filed on May 6, 2013

Effective July 1, 2013

- Operational rules to protect water quality and quantity
- Public notice requirements
- Permit application requirements, Plats and Contents
- Erosion and Sediment Control Plan
- Site Construction Plan
- Certified by PE Engineer – Well Pads, Impoundments, Pits
- Site Safety Plan and Operational Criteria
- Well Pad Storm Water Protection and Pollution Containments
- Water Management Plan
- Water Supply Testing and Parameters
- Casing and Cement Standards

Hydroseeding





Slope Tracking @ Hydroseed





Compost Sock Sediment Barrier



Culvert @ level spreader



Location Construction



Sediment controls



Questions?

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Well Application Plans

- Erosion and Sediment Control Plan
- Site Construction Plan
- Well Site Safety Plan
- Water Management Plan
 - Listing of anticipated additives that may be used in completion water including CAS #s.
 - Listing of additives that were actually used shall be submitted with the well record.
 - Identify any public water intake within 1 mile downstream of the withdraw site.

Notes:

- All plans to be designed by a registered engineer.
- All plans to be reviewed by OOG and will be mailed by OOG to the respective inspector.
- Reminder likely notifications with US Corp of Engineers on 404 issues.
- Reminder to check with Flood Plain Coordinator

General Requirements

- Bonding increase to \$250,000.
- Permit fee increase to \$10,000 (Initial well) & \$5,000 (Additional well on same pad).
- Commenting period is 30 days.
- Install API # and Operator's contact phone number after completion.
- Stimulation description.
- Proposed angle & direction of the well.
- DOH Certification 22-6A-20.
Submit with each application a letter of certification from the DOH that the operator has entered into a road agreement or that no such agreement is required.

22-6A-8g5

- **All drill cuttings and associated drilling mud shall be disposed of in an approved solid waste facility.**
- **Register all water supply wells with OOG.**

If surface owner consents, cuttings may be managed on site in a manner approved by the secretary.

All drinking water wells within 1,500 ft. of a water supply well shall be flow tested and quality tested if requested by the water well owner.

Rules shall be proposed to:

- Establish a designated karst region.
- Establish standards for drilling in regions of karst.

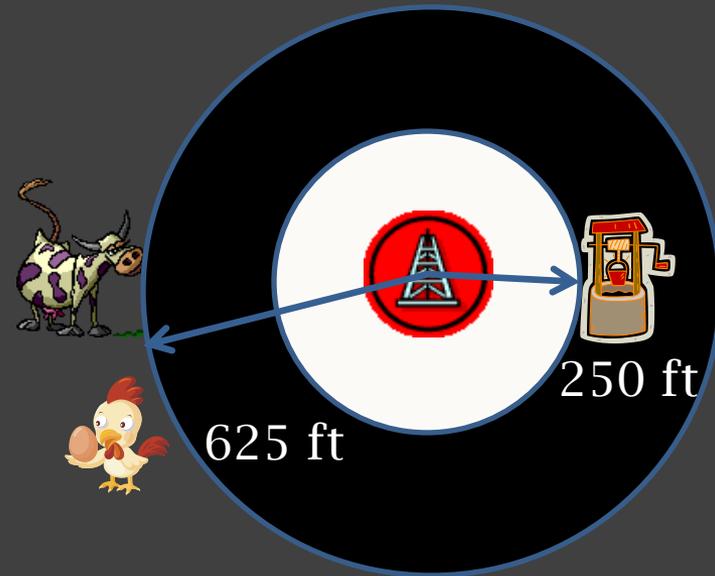
Minimum requirements

- Perform predrilling testing to check for caves, other voids, faults, etc.
- Check for surface features such as sinkholes.
- May include baseline water testing around the site.

Karst

Well Location Restrictions

- **250'** – Distance from well head to existing water wells or developed springs.
- **625'** – Distance from center of pad to occupied dwelling, or a building used for cattle or poultry that is 2500 ft² or larger.



- *These limitations are applicable to what was in existence on the date notice given for planned entry or notice of intent to drill.*
- *Dwellings under construction prior to this date also apply.*
- *Waiver may be obtained from surface owner.*
- *Operator can request a variance from Secretary, if granted conditions which may include insurance, bonding, indemnification & tech requirements.*

Well Location Restrictions

(Continued)

- **100' – Distance from pad to any perennial stream, natural or artificial lake, pond or reservoir, or wetland.**
- **300' – Distance from pad to naturally reproducing trout stream.**
- **1000' – Distance from pad to surface / groundwater intake or public water supply.**
 - Surface intake on a lake or reservoir measured from the border.
 - Surface water intake on a flowing stream measured in a semi-circular radius extending upstream of the intake.
 - Groundwater source measured from water well head.

Note 1: May apply for a variance from DEP to waive these restrictions.

- Condition Permit per waiver.

Note 2: These restrictions will not apply to wells on a multiple pad if at least one (1) well was permitted or has an application on file prior to Dec. 14, 2011.

Restrictions on new pads

Plans to define the Limit of Disturbance (LOD)



New Pad/Well applications received after December 14, 2011 then restrictions apply



Office of Oil and Gas
and
Oil and Gas Conservation Commission

**New Shallow Well Definition -
*Well drilled no deeper than one hundred feet
below the top of the “Onondaga Group”.***

**DEEP WELL DRILLING PROCEDURES
and SITE SAFETY PLAN REQUIREMENTS**

***Site Safety Plans required for
ALL - DEEP PERMITTED WELLS***

§35-8-3.4a Well Site Safety Plans

Required with applications

Well site safety plans drafted in accordance with standards developed by the Office of Oil and Gas

August 25th, 2011

Well Site Safety Plan Standards

Chief, Office of Oil and Gas

SSP Standards

Summary of Criteria

- Siting: site descriptions, topographic view
- Safety meetings, contacts, evacuations
- MSDS availability and where
- Well bore program, casing/cementing
- Strata incl. abnormal expectations
- Well control & BOP equipment
- Testing measures and schedules, training
- Well flaring operations & kill procedures
- H2S operations and handling
- Notification method and protection zones

Site Safety Plans

- Prevention measures
- Protection procedures
- Action protocols necessary

§22-6A-7 Horizontal well permit required; well site safety plan

- Every permit application filed shall contain . . .

well site safety plan to address proper safety measures to be employed for the protection of persons on the site as well as the general public.

§22-6A-7 Horizontal well permit required; well site safety plan

- Encompass all aspects of the operation including actual well work, completion activities, and production activities
- Provide emergency point of contact
- Provide copy to the *LEPC at least 7 days prior to well work or site construction

**WV HSEM information – booklets
1(304)558-5380*

**Extended durations thirty days or more of
Flaring operations**

Please contact the
Division of Air Quality* WVDAQ
WVDEP

***New Source Review Permitting**
Phone: 304 926 0475 · Fax: 304 926 0479

§35-8 Rules governing horizontal well development Casing and Cementing Standards

The operator shall construct the well and conduct casing and cementing activities of all horizontal wells in accordance with standards developed by the Office of Oil and Gas.

Standards available on the Office Oil and Gas website

§35-8 Rules governing horizontal well development

Casing and Cementing Standards . . .

- Casing specifications
- Cementing specification & performance
- Conductor casing
- Surface casing
- Coal protection casing
- Intermediate casing
- Production casing

Highpoints of the emergency rule within §22-6A-24

Promulgated rules forthcoming

Water Management Requirements

- **Fracture Flow Back and Production Water:**
 - Quantity of flow-back water from fracturing.
 - Quantity of produced water.
 - Method of management or disposal of produced and flow-back water.
- **Transportation activities shall be maintained and recorded by the operator:**
 - Quantity of water transported.
 - Collection, delivery or disposal locations.
 - Water handling company name.
- **Keep on file for three (3) years after withdraw activity.**

Record Keeping / Reporting
(To be retained by the operator)



Water Use Section DWWM

Management activities

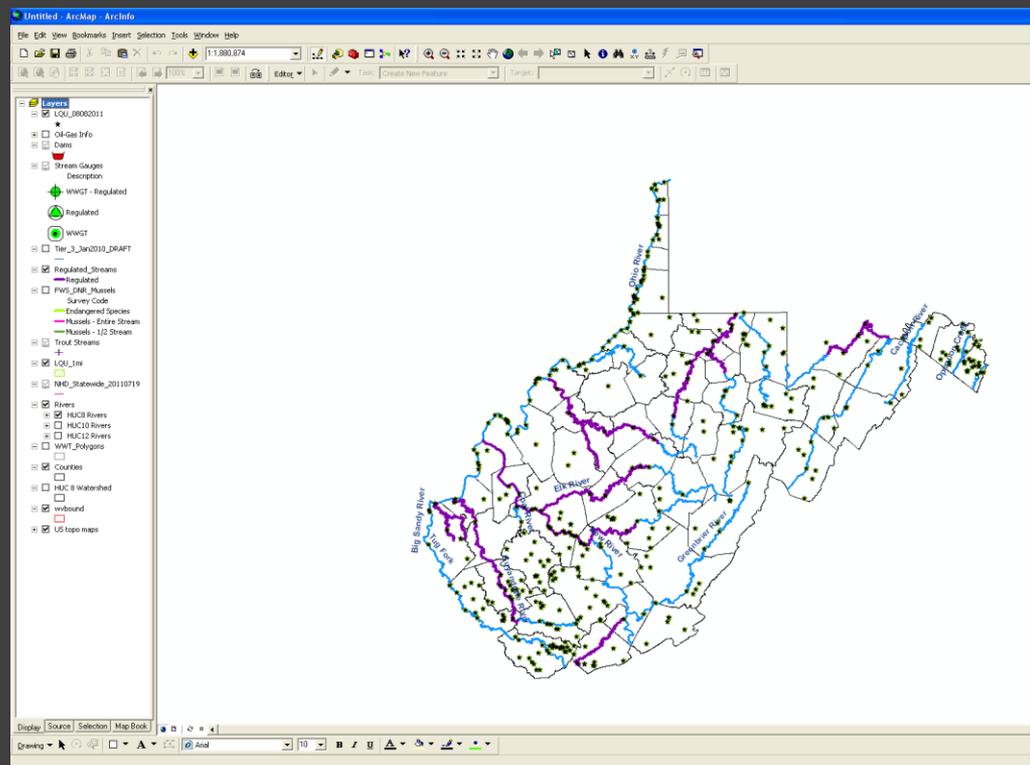
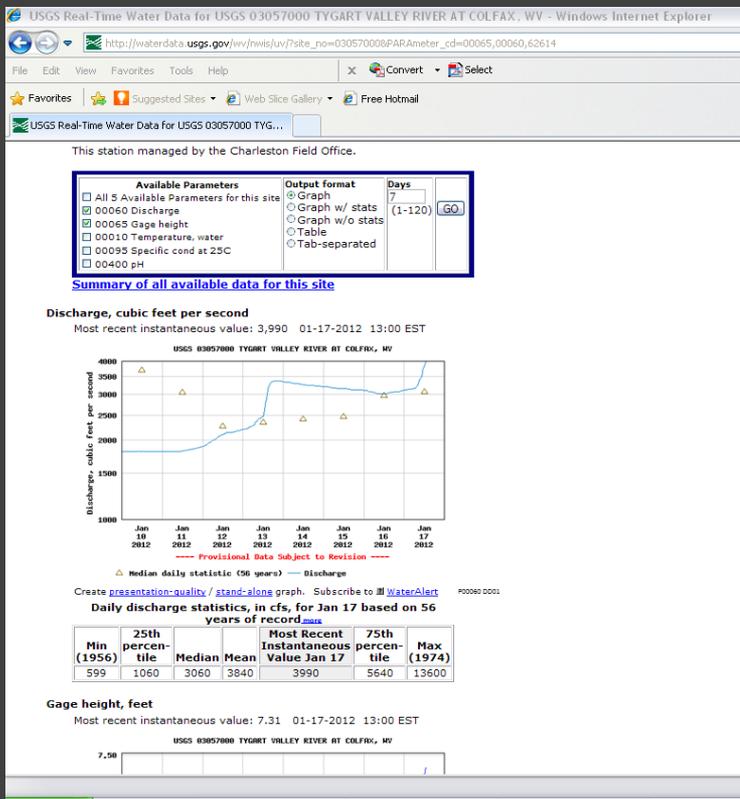
- Statewide Water Management Plan
- Large quantity user registration
- Stream Flow, GW Map & Mine Pool study
- Water Withdrawal Guidance Tool update
- Marcellus frac water tracking
- Stream gauge network enhancement
- Review Water Management Plans

Water Management Plans Criteria



- ✓ Public Intakes
- ✓ Adequate Pass-by flow
- ✓ Designated Uses
- ✓ Protect Aquatic Life
- ✓ Signage
- ✓ 24-48 hour Notification

*The Water Management Plan becomes
'Enforceable as a permit condition'*



Important:

For each proposed surface water intake location (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

Pits and Impoundments

- Scope of Legislation
- Applicability to Impoundments
- Policies
- Procedures
- Implementation

05/31/2011

Scope of Legislation

as it relates to Impoundments and Pits

Three Sections:

§22-6A-9. Certificate of Approval

- Establishes rules for Pits and Impoundments not associated with a specific well work permit (Centralized).
- Mandated Centralized Impoundments receive a - **Certificate of Approval**
- Dam Safety Rules apply
- Other terms and conditions the secretary prescribes.

05/31/2011

Scope of Legislation

as it relates to Impoundments and Pits,
continued.

§22-6A-10. Notice to property owners.

- Requires notification of centralized impoundment to owners of surface tract, mineral tract owners, coal owners, spring owners, storage field operators. Also requires survey of water well and spring users within 1,500' and the requirement of offering quality and quantity testing.

§22-6A-23. Impoundment and pit safety study; rulemaking.

- Mandates that by January 1, 2013, DEP reports to the Legislature on the safety of pits and impoundments utilized pursuant to section nine of this section.
- Upon a finding that greater monitoring, safety and design requirements or other specialized permit conditions are necessary, the secretary shall propose for promulgation legislative rules establishing these new requirements.

Required Plans

With an Impoundment Certificate of Approval application, you will include:

- Engineered Construction Plans
- Erosion and Sediment Control Plan
- A Reclamation Plan - Post-Construction and Post-Use.
- Impoundment Monitoring Plan - *New*
- Impoundment Maintenance and Emergency Plan - *New*
- Water Management Plan. How will you fill it? You will reference this water management plan once water begins moving to satellite well pads.

Notifications: - See §22-6A-10:

- To surface owner, mineral owners, coal owners, water well and spring owners, storage field operators. Copies of proof of delivery will be included with application.
- Also notice the above people within 7 days, but not less than 2 days, of the start of construction.
- You must give water well and spring owners, within 1,500 feet, the opportunity to have their wells tested, flow and quantity tested.

05/31/2011

Permit Application Requirements

- **Site Construction Plan:** For sites 3 ac. or more disturbed, excluding pipelines and roads, plans must be **certified by a registered engineer.**
- **Vicinity map** locating the site in relation to the surrounding area and roads.
- **Plan view of site on a scale of (1"-100') or greater**, that provides existing topographic information on a contour interval that affords sufficient detail.
- **Identifies proposed cut and fill areas with slope ratios.**

Site Construction Criteria:



WEST VIRGINIA

EROSION AND SEDIMENT
CONTROL
FIELD MANUAL

Office of Oil and Gas
Charleston, WV



west virginia department of environmental protection

- Clear all woody material, brush, and trees from the site keeping clearing to the minimum necessary for construction.
- Topsoil shall be removed from construction areas and stockpiled for reuse during reclamation.
- Fill material shall be clean mineral soil, free of roots, stumps, sod, large rocks, frozen soil etc.
- Fill material will be placed in lifts over the entire length of the fill. Lift thickness shall be as thin as the suitable random excavated material will allow, typically from 6 to 12 inches.
- Each lift shall be compacted to a standard proctor density of at least 95% by compaction equipment or the hauling equipment.
- At the base of a fill slope a toe foundation will be constructed, and with each (50) vertical feet of slope a terraced bench shall be constructed.

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