



MARYLAND
Department of the Environment



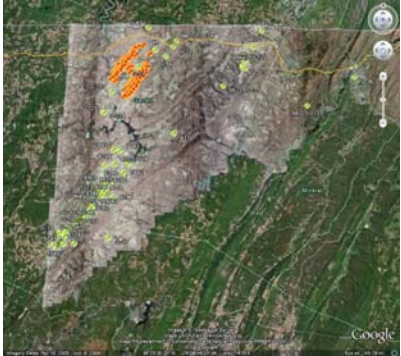
The Marcellus Shale Safe Drilling Initiative: An Update

Western Maryland Local Government Exchange
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May 9, 2014



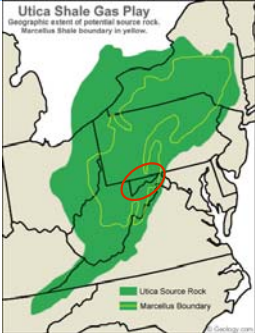
MDE **Drilling Activity in Maryland**

- Gas drilling in Maryland is not a new activity
- Several hundred producing wells were drilled in Western Maryland in the 1950's and 60's (yellow)
- 7 Gas production wells are currently permitted
- Approximately 90 permitted sites are being used for gas storage (orange)



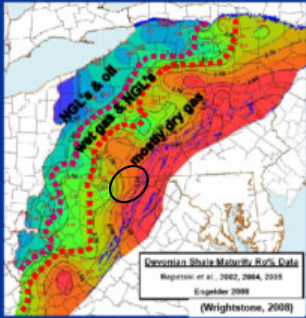
MDE **The Marcellus Shale**

- Found throughout the Allegheny Plateau region of the northern Appalachian Basin
- In Maryland, it is found in Garrett County and part of Allegany County
- Recovering gas from the Marcellus became economically feasible
 - Advances in horizontal drilling and hydraulic fracturing
 - Higher wellhead prices for gas, but prices have fallen



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Devonian Shale Thermal Maturity

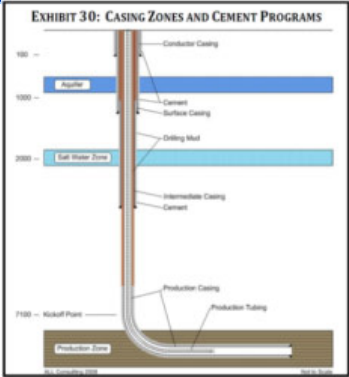


USGS

Devonian Shale Maturity Data
Ruppel et al., 2002, 2004, 2005
Engelder 2009
(Wrightstone, 2008)

MDE **Typical Well**

EXHIBIT 30: CASING ZONES AND CEMENT PROGRAMS



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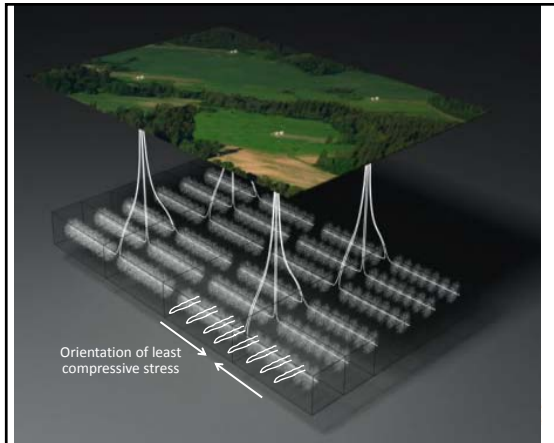
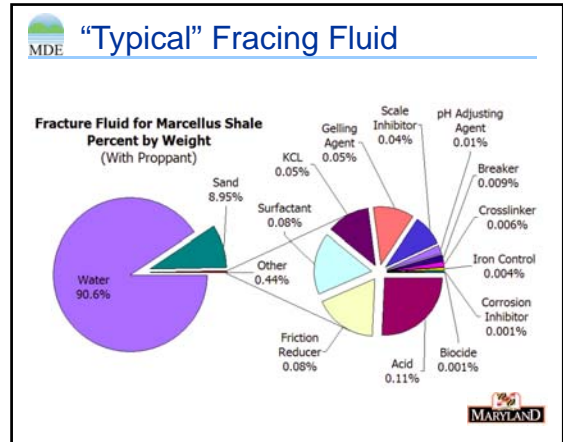
STAGE 1 - PERFORATION

An electric current is sent to work to perforating gun's gun. The charge shoots small holes through the casing, cement, and a short distance into the shale.



<http://exploreshale.org/>

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Gov. O'Malley's Executive Order

- Issued June 2011
- Directs MDE and DNR, in consultation with Advisory Commission, to conduct a study and issue reports on:
 - the short-term, long-term and cumulative effects of natural gas exploration in the Marcellus Shale
 - Best Practices
 - Appropriate changes, if any, to the laws and regulations concerning oil and gas
- Whether and how gas development can be accomplished without unacceptable risks

Issues of Concern

- Contamination of drinking water supplies by migrating gas and fracturing fluid
- Damage to aquatic living resources
- Fragmentation of forest and habitat
- Spills, leaks or improper disposal of fuel, fracturing fluids, flowback, cuttings
- Air pollution
- Impact on traffic, roads and bridges
- Community impacts



Reducing the Risks

- Comprehensive Gas Development Plan
- Strong regulations
 - Air emissions controls
 - Cement and casing standards
 - Containment and SPCC Plan
 - Setbacks to protect people and sensitive areas
- Robust inspection and enforcement
- Surface Owners Protection Act



Current Focus

- Best Practices report
 - Public comment period on draft closed September 10, 2013
 - Response to comments and final report this month
- Economic Report (RESI)
- Public Health Report (MIAEH)
- Wrapping up other issues, such as traffic and emergency response
- Final Report likely in the Fall of 2014
 - Will integrate the results of work since June 2011
 - Make findings and recommendations



A WV Home and Well Site



Drilling Site in West Virginia



Hydrofracturing Site



Source: Chesapeake Energy Corporation, 2008
Hydraulic Fracturing of a Marcellus Shale Well, West Virginia



Completed Well Site, PA



