

Minutes of January 6, 2014, meeting of the Marcellus Shale Safe Drilling Initiative Advisory Commission
Approved February 10, 2014.

The Commission held its 24th meeting at Allegany College on January 6, 2014 at 10:00 am. Because of severe weather in Garrett County, a conference line was set up shortly before the meeting. In attendance were Chairman David Vanko and Commission members Senator George Edwards, Commissioner James Raley, Commissioner William Valentine, Mayor Peggy Jamison, Shawn Bender, Ann Bristow, Steve Bunker, Jeff Kupfer, Cliff Mitchell, and Harry Weiss. Commissioners Dominick Murray, Paul Roberts and Nicholas Weber attended by conference call. Also in attendance were staff of state agencies and members of the public.

Chairman Vanko called the meeting to order and welcomed Ann Bristow, a newly appointed Commissioner. The Commissioners introduced themselves.

Minutes of the November 20 minutes were approved with two changes. At a later stage of the meeting, Commissioner Weber requested a third change, which was also approved.

As discussed at the previous meeting, subject matter experts would be invited to provide the Commission with additional information on certain topics. Jay Sakai, Director of the Water Management Administration at the Maryland Department of the Environment, provided information on MDE's water appropriation program and the stormwater management program. A copy of the presentation slides is [available](#). Mr. Sakai explained the Department's statutory authority, the "reasonable use" doctrine, the criteria used to assess "reasonableness," specific application of the program to hydraulic fracturing, and measures to protect the resource and other users. The following points were made by Mr. Sakai, Commissioners, or members of the public concerning water appropriation:

- The water appropriation permit does not limit the permittee's ability to sell water, but upon permit renewal, or even earlier, MDE could reevaluate the permittee's allocation.
- MDE directs applicants to use sources that are least impactful and most sustainable. In western Maryland, groundwater would generally not be the least impactful or most sustainable.
- Trout streams and small streams are probably flow-limited in a way that would prohibit additional withdrawals. Protection of these streams is considered in the permit process.
- MDE's approach is conservative. It determines flowby by a different method than that used by the Susquehanna River Basin Commission.
- It would benefit the applicants and the Department if suitable source waters were identified. There may be a trade-off between using large rivers as opposed to streams located closer to the drill site if using water from large rivers required more truck traffic.
- The Department uses historic flow data to evaluate the use of surface water, not just data from one or two years.
- Mr. Sakai is not aware of an industry in Maryland with water needs similar to hydraulic fracturing, but Maryland's water appropriation program can adequately regulate all water withdrawals.

- High quality treated wastewater could be used in place of fresh water for hydraulic fracturing; there are municipal wastewater treatment plants in western Maryland that might be able to provide such water.
- Acid mine drainage is a potential source for fracking water and it has been used in Pennsylvania. Senator Edwards noted that there are abundant sources of acid mine drainage in western Maryland. Commissioner Kupfer noted that acid mine drainage is chemically appropriate for fracking fluid, but that there are difficult issues relating to liability that discourage the use of acid mine drainage. Ms. Kenney noted that Pennsylvania has issued a white paper on the use of water from mines for natural gas extraction activities that suggests potential solutions to the liability issues.
- Water appropriation permits to withdraw water from multiple sources place limits on the withdrawal from each source.
- Permits are usually issued for a term of 12 years, which is reasonable because of the planning horizon for municipalities and other water suppliers. Permits can be issued for shorter terms and can be modified during their terms.
- Permittees have to report on the amounts of water they withdraw.
- Frostburg sold water to a company that was hydraulically fracturing a well in Pennsylvania and may have contracted to supply water for a gas well in Maryland, but that well was not drilled. The amounts were within Frostburg's allocation, so MDE did not have reason to review Frostburg's decision. The sale could be taken into account when determining Frostburg's future allocations.
- Before issuing a permit, MDE considers whether the water is returned to the watershed or used consumptively.
- There is a question on the permit application regarding disposal of wastewater, but the water appropriation permit does not regulate that disposal. The purpose of the question is to get information on consumptive use.
- The State has historic data from stream gauging stations, but coverage is not complete. At this time, MDE is not considering any special gauging requirements for gas development.
- The State uses the best data available. The fractured rock study recommended by the Wolman Commission would provide additional data.
- Delegate Beitzel asked about allocations for the Upper Potomac Regulatory Commission, the Washington Suburban Sanitary Commission, and Baltimore City. MDE does not issue permits for the WSSC or for Baltimore City. Baltimore City has a statutory right to use water from the Gunpowder River and certain other sources. The City's withdrawal from the pool above the Conowingo Dam is regulated by the Susquehanna River Basin Commission. Although Baltimore's population has declined, water service has been extended to nearby counties.
- Even though MDE has imposed restrictions on water use in western Maryland, that part of the state is not regulated more stringently. The water appropriation permit for the Deep Creek Hydroelectric Power Plant was negotiated to protect all the users of Deep Creek Lake water. It

was necessary to deny a groundwater appropriation permit for additional building at WISP because those withdrawals would have damaged Hoyes Run.

- Oil and gas extraction is exempt from certain provisions of the Clean Water Act, but Maryland has independent authority, beyond that delegated to it from the federal government, to regulate water use and water discharges.
- DNR role in water appropriation permits is to comment to MDE on applications.

The following points were made by Mr. Sakai, Commissioners, or members of the public concerning erosion and sediment control and stormwater management:

- Maryland's stormwater management program is among the most stringent in the nation. It is based upon requiring that a certain amount of precipitation be infiltrated into the ground rather than being allowed to run off.
- The amount of rainfall that must be managed onsite varies slightly across the state from about 2.3 inches to 2.7 inches per 24 hour period. This level was chosen to mimic "woods in good condition" and protects stream channels from damage from the 2-year, 24 hour storm event. Protecting against the 10-year, 24 hour storm event would require managing 4" of rainfall, and would require well drillers to construct a higher berm around the pad.
- Industrial stormwater permits are required for facilities in certain Standard Industrial Classification Codes. Oil and gas production facilities are not included.
- Industrial stormwater permits generally require the preparation of a stormwater pollution prevention plan and a spill prevention, control and countermeasures plan.
- Facilities not already required to obtain industrial stormwater permits can be specially designated as "hotspots" if they present a risk that their stormwater would be contaminated by chemicals and therefore should not be allowed to infiltrate the ground. This designation means that local jurisdictions, when approving stormwater management plans, should require collection and treatment of contaminated stormwater rather than infiltration.
- Under the draft Best Practices report, as long as any chemicals were present on the pad site, no discharge from the pad site would be permitted. This essentially treats the well pad as if it were a "hotspot."
- In the future, a seller of real property may have to disclose information about gas well activities on the property. The Public Information Act would be the mechanism for obtaining information about inspection reports and incidents.
- A permit for the discharge of stormwater associated with construction activity is required under Maryland law for any project that disturbs one acre or more of earth. This would apply to the construction of pads, roads, pipelines, and compressor stations.
- The permit for the discharge of stormwater associated with construction activity terminates when the construction is completed, whereas the permit to drill and operate a gas well, issued by MDE's mining program, last through well closure. Regulating stormwater through provisions in the gas well permit, therefore, could provide protection throughout the life of the well. In the interest of time, a presentation on Trade Secrets was postponed to a future meeting. Following

a break, David Bolton of the Maryland Geological Survey (MGS) presented a report on Baseline Methane Concentrations in Drinking Water Wells in the Appalachian Plateau Province of Western Maryland. A copy of the presentation slides is [available](#). The following points were made by Mr. Bolton, Commissioners, or members of the public concerning the presentation:

- Dissolved methane concentrations ranged from less than 1.5 to 8,550 micrograms per liter ($\mu\text{g/L}$).
- Thirty-four of 78 wells (44%) contained measureable methane (detection limit 1.5 $\mu\text{g/L}$).
- Forty-four of 78 wells (56%) had no methane (detection limit 1.5 $\mu\text{g/L}$).
- Four wells exceeded 1,000 $\mu\text{g/L}$ of dissolved methane; no wells exceeded the 10,000 $\mu\text{g/L}$ recommended action level for dissolved methane.
- As found in a Pennsylvania study, wells in valleys were likely to have higher methane concentrations than wells on hilltops and hillsides.
- Wells in coal basins were more likely to have dissolved methane than wells not in coal basins.
- The protocols used in this study and others are comparable. Duplicates were sent to one lab with acceptable results. The laboratory that performed the isotopic analysis also measured dissolved methane. Those results were higher than the concentrations measured in the other lab for the same well, but this might be because the isotopic analysis samples were never exposed to air, whereas the samples sent to other labs were exposed to air for a very short time.
- Samples were sent for analysis to outside labs. The isotopic analysis was done by the same laboratory used in the Duke University study described in the presentation.
- The isotopic analysis requires interpretation. Where isotopic analysis was done, it appears that the gas was thermogenic rather than biogenic, but was less thermally mature than samples of Marcellus Shale gas from Pennsylvania. The samples could represent mixtures of thermogenic and biogenic methane. The source may be coalbed methane.
- It would be instructive to obtain samples of coalbed methane for isotopic analysis.
- If, in the course of performing the pre-drilling background sampling, levels of methane greater than 1,000 $\mu\text{g/L}$ were detected, it would be possible to perform the isotopic analysis.
- Commissioner Weber asked what level of methane should cause concern. Methane is not a regulated constituent in drinking water, but it has been recommended that dissolved methane levels higher than 10 mg/L (10,000 $\mu\text{g/L}$) should be addressed because of the risk of asphyxiation and explosive conditions in confined spaces.
- Commissioner Weber asked whether the presence of methane could be an early warning that a gas well was leaking.
- In response to a question about whether MGS had reviewed the data in the PNAS article by Jackson and others, Mr. Bolton said that the Jackson data suggested that proximity to a gas well is related to increased concentration of dissolved methane in drinking water wells, but that additional analysis of the wells having more than 10 mg/L methane would have provided more support for the authors' hypothesis.

- DNR and MDE continue to review the Jackson data and the data from the University of Texas – Arlington and will advise the Commission in the future of its evaluation.
- MDE has not discussed the Jackson research and data with industry representatives.
- MGS would be interested in learning about any wells in Garrett or Allegany Counties that have high methane concentrations.

There was discussion at the end of the meeting on two additional subjects. Commissioner Weber noted that the public comments on the draft Best Practices report had been summarized under 26 topics, and that only two topics had been covered at today's meeting. He asked when we would discuss the other 24.

Ms. Kenney noted that at the November meeting, seven topics had been identified on which the Commission needed additional substantive briefings. She invited Commissioners to identify additional issues, but had received no suggestions. Three topics had been put on the agenda for the January meeting, but time did not permit a consideration of trade secrets. The plan is to have substantive presentations on the remaining five issues at the February meeting.

She said that her preference would be to present the Commissioners with the agencies' proposed response to comments for review in advance of a meeting and then allow the Commissioners to discuss whatever comments and responses they choose at a meeting. The Commissioners' comments on the best practices will be included in an appendix to the final Best Practices report.

Commissioner Kupfer said that he thought that was a reasonable plan.

Commissioner Roberts suggested that we consider inviting the authors of the Duke study (Jackson or Vengosh) or one of the authors of the UT-Arlington study to a Commission meeting.

Dr. Mitchell reminded the Commission and the audience that the detailed scoping report for the health study has been posted for public comment. The comment period ends January 24. There was a request that MDE put a link to the public health study on its web page.

The meeting adjourned about 1:15 pm.