

**Meeting Minutes of the Environmental Standards Committee of the
North Carolina Mining and Energy Commission
June 27, 2013**

1. Preliminary Matters

Committee Chairman Mr. George Howard called the meeting to order at 1:00 p.m. He read the ethics statement and asked Committee members whether or not they had conflicts of interest with respect to any action items on the agenda. None were expressed. Chairman Howard invited members of the public who wished to formally address the Committee to sign their names to the “public speakers” sign-in sheet.

The following persons were in attendance for all or part of the meeting:

Committee Members Present

Mr. George Howard, Chairman
Dr. Ray Covington, Vice Chair
Dr. Kenneth Taylor
Ms. Amy Pickle
Ms. Charlotte Mitchell
Dr. Marva Price, By Phone

Committee Members Absent

Dr. Vikram Rao

Other Committee Members Present

Mr. Jim Womack

Attorney General’s Office

Jennie Wilhelm Hauser

DENR Staff Members

Layla Cummings, Office of the Secretary
Mell Nevils, Division of Energy, Mineral and Land Resources (DEMLR)
Walt Haven, DEMLR
Katherine Marciniak, DEMLR
Ryan Channell, DEMLR
Rosalind Harris, DEMLR
Debra Godwin, DEMLR

Others in Attendance

Refer to the meeting sign in sheets (attached to these minutes).

2. Background and Introduction - George Howard, Chairman

Chairman Howard provided a recap on the status of the Baseline Sampling Rule and briefly went over the agenda. He provided a Chairman’s Mark Document for the Baseline and Subsequent Sampling Rule that incorporated previously submitted amendments from Ms. Mitchell and proposed “tracer” language submitted by Ms. Pickle (see attached document).

3. Approval of Minutes from Last Meeting

Ms. Mitchell made a motion to approve the minutes, Dr. Covington seconded the motion. The motion passed.

4. Discussion of Draft Baseline Testing Rule - Ryan Channell (See attached document)

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The following motions were made by the Committee during discussion of the Baseline and Subsequent Testing Rule:

- To approve and accept all amendments submitted by Ms. Mitchell that were incorporated into the Chairman's Mark Document, including all wording and technical changes;
- To strike rule sections 05H. 0XX3 and 05H. 0XX4(f)- rule text for DAQ testing and reporting;
- In 05H.0XX2(b)- staff to complete sentence;
- In 05H.0XX2 (c)- strike the following text in lines 33 and 34, "may require the well operator to replace the water supply or provide an equivalent water supply and";
- The Committee added ethane and propane to baseline and 1st round of subsequent sampling; sodium was added to 1st round of subsequent sampling;
- Motion to use EPA guidelines and analytical procedures, with reference to USGS if EPA does not have prescribed guidelines or analytical procedures;
- Amendment from Ms. Pickle to include tracers as an innovative technology
- The Baseline and Subsequent Sampling rule as written and amended was moved to the Rules Committee.

5. Discussion of Indicator Parameters- Dr. Nancy Coleman, Chesapeake Energy Corporation

Chairman Howard provided a brief introduction for Dr. Coleman explaining that she was contacted to provide her professional opinion of the draft baseline sampling, abbreviated sampling list, and guidance on how Chesapeake Energy commonly operates.

Dr. Coleman provided feedback based on the following talking points and questions compiled by Staff:

- What is basis for sampling list?
 - Typically they have researched what is the likelihood of seeing a particular constituent in produced water due to the mobility and behavior in the soil and bedrock systems. For these reasons chloride, divalent cations, and total dissolved solids (TDS) are the most widely applicable "indicators". She further explained the purpose of hydraulic fracturing fluids is to stay where they are injected and to not migrate in the soil or bedrock system. They have investigated other tracers, but they tend to falter due to the associated temperatures and pressures and analytical techniques.
- Do companies collect additional baseline samples or undertake subsequent sampling in states that have an established presumptive liability requirement?
 - Sampling beyond the state established radii is commonly done due to site specific conditions for baseline investigations. Most states do not require subsequent sampling, and therefore is not voluntarily done due to costs. They do respond to complaint and investigation request as they are received; which are typically only conducted at domestic water supplies.
 - Chairman Howard asked if they had seen any groundwater contamination resulting from hydraulic fracturing fluids. Dr. Coleman replied that they have only had surface contamination found due to surface spills or leaks, and much of the contamination seen in the PA investigations is due to stray gas migration. The stray gas incidents are investigated and

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usually linked back to orphan/legacy wells that were not properly constructed or ever properly abandoned.

- The stray gases methane, ethane and propane are not toxic because they readily degas, but do present safety hazards if the gasses are allowed to build up in an area. Chairman Womack asked if testing for ethane and propane would be better indicators due to their source being from the deposit versus biogenic zones- Dr. Coleman explained that Chesapeake tests for methane, and if the threshold set by the company is exceeded then a full gas analysis is conducted.
- If additional testing is done, what constituents are added?
 - This is a site specific determination, but the internal baseline analytical list is more comprehensive than some other states that have prescribed testing requirements, such as Colorado. The only deviations from Chesapeake's analytical list come up when a state lists additional parameters or constituents.
- What are the "action levels" for divalent cations that would indicate there had been contamination?
 - The action levels are difficult to determine, and they typically rely on federal or state established guidelines.
- What are some reliable constituents for subsequent sampling?
 - Again chloride, divalent cations, and total dissolved solids (TDS) would be best basic list.
- What are some cost effective and reliable measurements that could be conducted in the field?
 - Field measurements typically include TDS, pH, temperature, specific conductance, dissolved oxygen, and turbidity; sometimes they include methane and hydrogen sulfide (HS) by FID. If turbidity is above company threshold the samples are automatically analyzed for metals.

6. Presentation of Setbacks- Katherine Marciniak, DEMLR

The Committee ran out of time for this agenda item. Presentation has been postponed to the next meeting of the Environmental Standards Committee.

7. Public Comment- No one signed up for public comment.

8. Discussion

No further discussion.

8. Adjournment

The Environmental Standards Committee adjourned the meeting at 2:56 pm.

DENR Staff Contact for this Committee: Mr. Walt Haven, DEMLR