GRAHAM SUSTAINABILITY INSTITUTE
UNIVERSITY OF MICHIGAN

Hydraulic Fracturing in Michigan Integrated Assessment

Draft Final Report Release & Public Comment Webinar
February 26, 2015
Attendee Questions & Comments

1. When will we be able to download the PowerPoint presentation?

The presentation audio/video, PowerPoint presentation slides, and a Q&A document will be posted within a few days of the webinar.

2. Who should be responsible for additional monitoring and testing? Should that be done by operators/developers or is there a need for third-party oversight?

Chapter 3 (Water Resources) presents an option for private monitoring of available water volumes that could be used in conducting a site-specific review (SSR). This would be paid for by members of the community and would require rules from the DEQ regarding data collection, testing, and reporting standards. This would expand the sources of information associated with SSRs to those from neighboring water users.

Chapter 4 (Chemical Use) includes analysis of an option whereby operators would be responsible for conducting monitoring in adherence with a set of criteria about how to perform the sampling and analysis. This would be paid for by operator, and the results would be reported to the state and nearby landowners. This is the approach most states have taken. Illinois requires operators to hire independent third parties that sample under the supervision of a professional engineer or geologist, and to send the samples to independent third party laboratories.

3. You previously mentioned that this draft is not a "consensus document." Since it is only designed to provide options, not recommendations, what is the role of consensus in the process?

Refer to the IA plan for detailed information about who is involved and the process. When we talk about consensus, we are referring to agreement among the report authors and the representatives of the four participating University of Michigan units (referred to as the Integration Team). We also wanted to make it clear that the draft report does not yet reflect detailed input from a peer review panel, the Advisory Committee, or the general public. Those reviews and public comment processes are currently underway and will be fully considered as the Graham Institute prepares the final version of the report. As with preparation of the technical reports, all decisions regarding content of project analyses and reports will be determined by the IA Report and Integration Teams–not a consensus decision of the Advisory Committee.

4. What is your view on the fact that the DEQ is promulgating its rule before this report is finalized?

We respect that the DEQ has its own process that it is following. We have worked closely with DEQ throughout the integrated assessment. They have communicated with us about the proposed rules, many of which were in the 2011 Supervisor of Wells Instruction, and we have tried to incorporate them into the report as they have been made available, including the January 2015 revisions. We see this as part of working on an issue that is developing, and we hope to continue the coordination with the State moving forward.

5. Is fracking really necessary and beneficial in the face of global climate change and new research about the potential of renewable energy?

Refer to Chapter 6 (Broader Context) for discussion of the relationship between shale gas development and renewable energy development and climate change.

6. One of the reports indicated that hydraulic fracturing (HF) has been going on since the early 1940's, but very limited data is available. What type of data is not available? It seems strange that very little data is available.

One of the challenges to data availability is that the recording keeping, monitoring, and reporting that may be performed currently was not necessarily performed previously. There has not yet been a comprehensive assessment of ecological or public health impacts. With regard to scientific studies looking at chemical use in HF specifically, many studies did not begin until the recent use of directional drilling and high-volume hydraulic fracturing practices. There are ongoing studies, but it will take time to get data from those. A challenge noted in the draft IA and technical reports is the absence of baseline data—on water quality, ecosystem, and public health—which is necessary to assess the potential impact(s) of HVHF.

7. Some see the state's water withdrawal tool as being inadequate. How is that concern address in the report?

When the current version of the water withdrawal assessment tool (WWAT) was developed, the intention was for it to be adapted over time to future uses and realities. In their final report of December 12, 2014, the DEQ's Water Use Advisory Council recognized that HF and high-volume hydraulic fracturing (HVHF) pose a different withdrawal signature than what was originally considered when the WWAT was developed, and they have suggested that a future version of the WWAT be improved in order to have the capacity to assess the differential impacts of HF and HVHF. We are not aware of substantive updates to the underlying science that drives the tool.

A significant portion of Chapter 3 (Water Resources) discusses the need to update the tool in general and how these updates would improve the governance of water withdrawals in general and withdrawals specifically for HVHF.

8. Could we consider extending the public comment?

A 30 day public comment period has been the plan for quite some time. We apologize for it being a short period, but we plan to adhere to the 30 days.

9. Do any of the report options concern making air/water testing data from private companies available publicly?

Yes. Chapter 4 (Chemical Use) discusses groundwater monitoring and testing and does consider the option of having that information available publicly. Illinois is one state that makes that information available and linked to the particular site.

10. What is your view on the DEQ taking over the prime responsibility for Class II wells from the EPA? You indicate in your report that the DEQ does not have the resources to do what they do now.

Chapter 3 (Water Resources) explains that in Michigan the primary method for disposal of wastewater from HF operations is injection into Class II wells. The report mentions that the DEQ has made motions to submit an application to assume primacy for regulation of Class II injection wells, but the chapter does assess the impacts of such as change.

Appendix B (Additional Options) presents information on the Office of Oil, Gas, and Minerals' staffing and budget, as well as the ways in which the State of Michigan receives and allocates revenue from gas extraction. The appendix notes that agencies in various states have faced different types of challenges

related to the capacity to carry out their responsibilities. It does not, however, include an assessment of whether or not existing resources are sufficient as that is beyond the scope of the report.

11. Does the report discuss the potential for earthquakes due to hydraulic fracturing?

Potential seismic impacts are not discussed in the draft IA report but are mentioned in the Geology/Hydrogeology Technical Report. The issue is not the potential for seismic impacts due to hydraulic fracturing, but rather the risk of induced seismicity due to disposal of wastewater via deep well injection. In Michigan, brine disposal wells have been injecting fluids for many years without reported incidents of induced seismicity. Although there have been reports in other states, it has not been an issue in Michigan and is, therefore, not included in the IA report.

12. If the DEQ and DNR are member of the Advisory Committee, why did they only receive the draft report for review at the very last minute? And why were many of their suggestions to correct errors and misrepresentations in the report ignored?

The Report Team, Integration Team, and Advisory Committee met twice over the past 18 months to discuss the scope of the IA report–including the identification of the three focus areas; public engagement, water resources, and chemical use. The Advisory Committee received an earlier version of the draft report in January. We worked with them for several weeks to get their feedback. We asked for identification of major factual errors or things they identified as wrong. We received comments from the entire Advisory Committee, and prior to the public release of the draft report in February we provided a detailed response explaining how their comments were or were not addressed. At this stage, we are hoping for additional input from the Advisory Committee as we also receive input from an expert peer review panel and from the public comment period. After careful consideration of the feedback received from the peer review panel, Advisory Committee, and public comments, the Report Team will prepare the Final Integrated Assessment Report.

13. Why does the water resources section not define large volume water withdrawals? That is, those withdrawals greater than 100,000 gallons per day averaged over a 30 time frame. Not all HVHF well completions result in what is considered a large volume water withdrawal subject to running the WWAT.

Chapter 3 (Water Resources) defines large volume water withdrawals in Table 3.1, complete with the relevant water withdrawal volumes and average withdrawal periods for registration and permit obtainment. These numbers form the basis for subsequent discussions of water withdrawal regulations in the chapter. Regarding the water withdrawal rates, all regulatory water withdrawal rates after Table 3.1 have been converted to gallons per minute (gpm) in the text; endnotes always describe the cited withdrawal rates in the language of the relevant regulation. These conversions were done to be in accord with how water withdrawal rates are discussed by many traditional water users. Finally, regarding the temporal requirement of "averaged over a 30-day period," the chapter explicitly states Michigan's current requirement and makes explicit comparisons of this temporal threshold when comparing the Michigan standards with those of other states and regions.

The chapter does recognize that "not all HVHF well completions result in what is considered a large volume water withdrawal subject to running the WWAT," and a comparison of water withdrawals associated with different types of hydraulic fracturing, including two types of HVHF, is shown on Table 3.2. (Note: Table 3.2 makes the assumption that water withdrawals are done over 7 days.) The definition for HVHF is the use of 100,000 gallons of water or more ***in total***. In comparison, WWAT use is required for any water withdrawal of 100,000 gallons of water or more ***per day averaged over a 30-day period***. Between these two definitions, some HVHF well completions will not withdraw enough water to be considered a large volume water withdrawal.

14. Several years ago a company had a leak in a retention pond in Ann Arbor causing leaching into the ground water. The State of Michigan followed the underground pollution and was surprised how far and

how fast the pollutant traveled. It is necessary that the companies be required to set up reserve funds for accidents. The Kalamazoo River clean-up cost the company involved $1.2B according to their documents.

Chapter 4 (Chemical Use) includes a number of response policy options pertaining to the cleanup of spills and releases, and liability for contamination. These options include: eliminating blanket bonds, increasing the individual bond amount for an HVHF operator, requiring liability insurance, imposing a presumption of liability on operators, and enacting specific clean-up standards.

15. Was there any consideration given to setbacks from residential structures and the risks that there may be to the public based on the current MDEQ setbacks? If so, what recommendations were made regarding residential setbacks?

Chapter 4 (Chemical Use) addresses setbacks, presenting information about requirements in Michigan and the other states reviewed by the authors. The chapter includes various options for setbacks from water sources, sensitive features, and protected areas, but it does not address residential structures specifically.

It is important to note that the report does not make recommendations. Rather, it presents an analysis of options to help support informed decision-making.

16. Can landowners prevent fracking under their property, and are there ways around this for adjacent landowners?

As the Law/Policy technical report explains, landowners may own the property right in oil and gas underneath the surface or may own only the surface. A landowner that owns the oil and gas rights may choose not to develop those minerals, in which case DEQ's proposed rules state that an oil and gas operator may not drill a well underneath the person's property or use the surface without an agreement. The state has the authority to require the owner to "pool" the oil and/or gas with surrounding minerals to ensure that adjacent owners can develop their minerals and meet the state's required spacing of wells. If an owner's oil and/or gas has been pooled, the DEQ's proposed rules state that an operator may drill a well underneath the property but may not use the surface without an agreement.

A landowner who owns only the surface does not have the right to prohibit the mineral owner from extracting oil or gas. Oil and gas operators must use only the surface that is reasonably necessary.

17. How are they planning to retain or clean the massive amounts of water that will be used in the new processes? Are there any studies on the results of drinking water from similar past processes?

As mentioned above, Chapter 3 (Water Resources) explains that in Michigan the primary method for disposal of wastewater from all HF operations is injection into Class II disposal wells. This involves injecting the waste fluids deep underground below the layers of groundwater associated with drinking water supply and environmental connectivity.

Reports suggest the greatest hazards of deep well injection are the contamination of surface soil, surface water, shallow groundwater by accidental spillage at the wellhead, and contamination of underground source of drinking water by migration or escape of waste components and displaced formation water. The transport of waste to the disposal site poses some potential impact on surface environments. However, subsurface injection has shown to have low potential impact on underground sources of drinking water.

Although not common in Michigan, reuse/recycling of wastewater from HF operations is occurring in other parts of the country. Chapter 3 discusses and considers options for wastewater recycling, including the potential strengths (e.g., reduced use of clean groundwater) and weaknesses (e.g., potential surface spills, costs, disposal of waste products of treatment).

18. How difficult was it for you to obtain information on proprietary chemicals used in fracking fluids? This seems to be a major concern with fracking in 2015, as opposed to the materials used in the 40's and 50's.

The treatment of trade secret claims for the chemical additives used in HVHF operations is a contentious issue. Integrated Assessments work with existing available data, and the project did not attempt to obtain information on proprietary chemicals.

Chapter 4 (Chemical Use) describes the ways in which a number of states handle trade secret claims and presents options for Michigan. All of the states surveyed by the authors allow well operators to protect information about a chemical from public disclosure if the information is deemed a trade secret. States vary in the information they allow to be withheld (e.g., chemical identity only, concentration) and their treatment of the trade secret claim (e.g., whether the claim is reviewed, subject to challenge, or waived for healthcare professionals under certain conditions).

Michigan's current disclosure policy does not directly address trade secrets; however, suppliers may withhold information about proprietary chemical constituents from the MSDS under federal worker safety law. The proposed rules in Michigan would allow an operator to withhold the specific chemical identity, Chemical Abstract Service (CAS) identifying number, and concentration of a constituent from disclosure as a trade secret. On the permit application and FracFocus form, the operator would be required to replace the withheld information with the chemical family name or a similar description, and state that a claim of trade secret protection has been made. The state would not gather or review the protected information.

19. How to be most effective in influencing policy decision makers to develop more rigorous protective standards?

A wide range of factors influence the development of environmental standards, and public policy in general. These include, but are not limited to, public opinion, scientific discoveries, economic factors, interest groups, lobbying, and other political activity.

The purpose of this Integrated Assessment is not to advocate for a single course of action. Rather, the aim of the IA is to serve as an honest broker by presenting information that expands and clarifies the scope of policy options in a way that allows decision-makers to make choices based on their preferences and values.

Updated March 6, 2015