October 28, 2002

Joan Harrigan-Farrelly, Chief
Underground Injection Control Prevention Program
Office of Ground Water and Drinking Water
Environmental Protection Agency
Water Docket ID No. W-01-09-II
Mail Code 4101
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Ms. Harrigan-Farrelly:

The Western Organization of Resource Councils (WORC) and its member groups are pleased to submit these comments in response to the U.S. Environmental Protection Agency's (EPA's) request for public comments regarding its draft report entitled, "Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coal Bed Methane Reservoirs."

WORC is a network of grassroots organizations from seven states - Idaho, Montana, Wyoming, Colorado, North Dakota, South Dakota and Oregon - that include 7,000 members and 46 local chapters. Our roots go back to the early 1970s when the Rocky Mountains and Great Plains were targeted as a "National Sacrifice Area" for energy production, and we continue to organize people today on a wide range of energy policy issues. Many of our members are directly impacted by oil and gas development.

We gratefully acknowledge the Oil and Gas Accountability Project, Natural Resources Defense Council and Rep. Henry A. Waxman for their contributions to these written comments.

Coal Bed Methane Development in the West

Approximately 7.5 percent of the total natural gas production in the United States is comprised of coal bed methane. At least 12,000 coal bed methane wells have already been drilled in the Powder River Basin in Wyoming and Montana, and the Bureau of Land Management is expecting 51,000 coal bed methane wells to be drilled in the entire basin by 2010. For comparison, there are only about 1 million operating oil and gas wells in the entire United States. Clearly, the Powder River Basin is a center piece of the Bush/Cheney energy plan.

However, the Powder River Basin is not the only region in the West that will be hard hit by coal bed methane development. The San Juan Basin is the United States' premier coal bed methane field in terms of daily production volumes, and the Raton, Uinta, Wind River and Piceance Basins are significant sources of coal bed methane as well. It's not an over statement to say that the West is ground zero for coal bed methane development.

Hydraulic Fracturing Has the Potential to Contaminate Groundwater

As you know, hydraulic fracturing (hereafter referred to as "fracing") is used widely throughout the oil and gas industry. Fracing involves the high pressure injection of water, sand and toxic fluids into a rock or coal formation to enhance oil and gas production. While fracing is an effective technique for increasing oil and gas production, it also has the potential to cause environmental harm.

This is especially true when fracing is used to stimulate coal bed methane production. The porosity and permeability that makes many coal formations effective receptacles for methane gas also allows them to hold large quantities of groundwater, which serves as an important source of irrigation and drinking water.

The injection of fracing fluids into underground sources of drinking water risks permanent contamination of these valuable resources. Some of these fracing fluids contain substantial quantities of highly toxic chemicals.

For example, diesel fuel is commonly used as a fracing fluid. Diesel fuel contains a variety of toxic chemicals, many of which are known to be suspected carcinogens, including benzene and toluene.

An Oil and Gas Environmental Impact Statement prepared by the Bureau of Land Management in Colorado in 1998 lists the following toxic substances that may be used as gelling agents: benzene, polycyclic aromatic hydrocarbons, ethyl benzene, toluene, xylene, naphthalene, methanol, sodium hydroxide and MTBE. Gelling agents are added to improve the ability of fracing fluids to transport sand particles into fractures. The 950 gallons of gelling agents used in each well account for about 71 percent of the fracturing materials by volume (not including sand). Very small quantities of toxic chemicals such as benzene can contaminate millions of gallons of water.

Another study by three Amoco scientists discovered that a significant volume of fracing fluids is not withdrawn. They found that the gelling agents remained in coal samples in spite of efforts to flush them with water and strong acids. The gelling agents in fracing fluids actually decreased the permeability of the coal samples. They concluded that the reduced permeability caused by fracing fluids could negate most of the benefits of hydraulic fracturing. More importantly, since these chemicals are not fully recovered, they could serve as continuous sources of groundwater contamination.

Policymakers are considering the removal of MTBE from reformulated gasoline because it has contaminated drinking water sources across the country, yet ironically fracing fluids that contain MTBE may be injected directly into underground sources of drinking water without appropriate federal regulation under the Safe Drinking Water Act. The difficulty in cleaning up MTBE contaminated drinking water could foreshadow even more serious problems if drinking water is contaminated via fracing of coal bed methane wells.

Finally, citizens in Alabama, Virginia, Colorado, Wyoming and Montana have complained about the adverse impacts that fracing of coal bed methane wells has had on the quality and quantity of their drinking water, as well as the impacts of discharging fracing fluids on the ground. **We**

understand that the investigation of these complaints has often been too little, too late, and we urge the EPA to thoroughly and professionally investigate these complaints in a timely manner, using the best science available.

EPA's Conclusion is Not Supportable

After several years of work, the EPA issued a draft report for public comment in August 2002 on the potential threats to public health from fracing in coal bed methane wells. In this report, the EPA concluded that "the potential threats to USDW [underground sources of drinking water] posed by hydraulic fracturing of CBM wells appear to be low and do not justify additional study."

However, the report also demonstrates clear risks to underground sources of drinking water that undermine this conclusion. For example, the report:

- Acknowledges that most coal bed methane wells are subjected to multiple hydraulic fracturing procedures, and alarming concentrations of toxic chemicals are used in fracing fluids,
- Suggests that benzene and other chemicals still exceed drinking water standards, even with the EPA's questionable dilution calculations,
- Cites studies indicating that 39-75 percent of fracing fluids remain in the ground,
- Reveals that 10 out of 11 coal bed methane producing basins in the United States lie, at least in part, within underground sources of drinking water, and
- Urges the industry to refrain from using toxic chemicals in injection fluids, and especially to discontinue the use of diesel fuel.

In an October 1, 2002 letter to EPA, Rep. Henry A. Waxman offers further evidence that the report's conclusion is not supported by the available evidence.

EPA estimated that a number of toxic chemicals are injected into underground drinking water sources at concentrations that far exceed federal standards for drinking water or state standards for groundwater clean-up...For example, EPA estimated benzene concentrations of 313 ug/L at the point of injection when diesel-based fracturing fluids are used. The drinking water standard for benzene is 5 ug/L.

EPA then estimated that after accounting for recapture of the drilling fluids and dilution "the concentrations of constituents at the edge of the fracture zone are approximately 30 times lower than when introduced at the point of injection." EPA stated that "[i]n many cases, constituent concentrations were reduced to at or below ground water standards." EPA did not find, however, that all of the toxic chemicals introduced by hydraulic fracturing were reduced to at or below drinking water standards.

According to Rep. Waxman, "congressional staff indicated that applying EPA's estimate that concentrations are reduced by a factor of 30 at the edge of the fracture zone, benzene concentrations at the fracture zone would still be above ground water standards. In fact, applying

EPA's methodology laid out in the report, benzene concentrations would be projected at 10.44 ug/L even after dilution, which is double the drinking water standard."

Therefore, we find the conclusion of the draft report inconsistent with its findings and urge the EPA to withdraw this conclusion immediately. Further, we urge the EPA to move ahead with Phase 2 of its study and begin sampling, testing and monitoring underground sources of drinking water in the vicinity of coal bed methane wells where fracing procedures are being conducted.

Industry Pressure Alters EPA's Scientific and Policy Conclusions

It is our understanding that EPA provided revised data on hydraulic fracturing to congressional staff on September 23. According to Rep. Waxman:

In the new analysis, EPA confirmed that the calculations EPA used for the August 2002 report produced an estimate for benzene concentrations after dilution that were above the drinking water standard. However, the new analysis changed this calculation to produce a new estimate for benzene concentrations after dilution of 2.62 ug/L, which is below the drinking water standard.

The only explanation for this change was that, "based on feedback," from unidentified "industry sources," EPA "changed the point-of-injection concentration to more accurately reflect the actual density of the gel-water mixture. In the August 2002 report, which EPA had spent several years developing and which had been peer reviewed by industry experts, EPA estimated the density of the gel/water mixture to be 1g/mL. In its September 23 submission, EPA apparently changed that estimate, but EPA did not state the new assumed density of the gel/water mixture or provide any technical justification for the change.

We are gravely disappointed that the EPA would apparently change its scientific and policy conclusions under pressure from industry. If in fact this allegation by Rep. Waxman is true, it continues a disturbing trend within the Bush Administration of withholding and altering information based on the industry's agenda.

Oil and Gas Industry Dominates Peer Review Panel

Adding insult to injury, the peer review panel assembled to provide a credible and independent review of the EPA study is dominated by the oil and gas industry. Three of the seven panelists are employed by the oil and gas industry, and two are former oil and gas industry employees.

One of the peer review panelists is employed by Halliburton, a company which pioneered hydraulic fracturing technology and conducts approximately 67 percent of all fracing operations in the United States. According to an article in the Los Angeles Times, Halliburton has filed legal papers opposing EPA regulation of hydraulic fracturing on the grounds that it would "have a significant adverse effect" on Halliburton's business. As the saying goes, those who pay the piper call the tune. If this is the Bush Administration's idea of sound science, we would gladly do without it.

We encourage the EPA to disband the existing peer review panel, and reconstitute it with people who are not in the employ of, and do not hold any official or financial relationship with, any corporation or person in the oil and gas development business.

Alternatives Exist to the Use of Toxic Hydraulic Fracturing Fluids

According to the EPA's draft report, water based alternatives exist to the use of diesel fuel in fracturing fluids (which introduces the majority of toxic chemicals into drinking water), "and from an environmental perspective these water-based products are preferable." We urge the EPA to require the use of such water-based products.

Hydraulic Fracturing Must be Regulated Under the SDWA

In many ways, the oil and gas industry today is in the same place as the coal mining industry in the 1960s and early 1970s. New methods of extraction such as coal bed methane development are devastating landscapes, polluting water, destroying family homes and farms, and threatening fragile ecosystems. State governments are ill-equipped to prevent the environmental degradation that is taking place, and mostly incapable of protecting underground sources of drinking water.

In order to protect public health and the environment, the hydraulic fracturing of coal bed methane wells must be regulated under the federal Safe Drinking Water Act (SDWA). Alabama now regulates fracing as the result of a successful lawsuit brought by the Legal Environmental Assistance Foundation, but there are currently no controls on fracing under the SDWA in any other state. The potential for toxic chemicals used in fracing fluids to contaminate underground sources of drinking water is significant, and it is also important to prevent damage to soil and surface water caused by the discharge of fracing fluids and produced water removed from coal bed methane wells.

Conclusion

To reiterate, and in conclusion, WORC and its member groups request that the EPA:

1. thoroughly and professionally investigate all citizen complaints about hydraulic fracturing in a timely manner, using the best science available,

2. immediately withdraw its conclusion that any additional study of hydraulic fracturing and its impacts on underground sources of drinking water is not justified,

3. move ahead with Phase 2 of its study and begin sampling, testing and monitoring underground sources of drinking water in the vicinity of coal bed methane wells where fracing procedures are being conducted,

4. disband the existing peer review panel, and reconstitute it with people who are not in the employ of, and do not hold any official or financial relationship with, any corporation or person in the oil and gas development industry,

5. require the use of water-based products as a substitute for diesel fuel in the hydraulic fracturing process, and

6. regulate the hydraulic fracturing of coal bed methane wells under the federal Safe Drinking Water Act (SDWA), in order to protect public health and the environment.

We are hopeful that the EPA can provide some real leadership in the above mentioned areas. Please keep us informed of the EPA's activities to address hydraulic fracturing.

Sincerely,

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