

Good morning ladies and gentlemen I am honored to be here today. My name is Thom Kerr and I am the acting director of the Colorado Oil and Gas Conservation Commission.

I know you have many people to hear from today, so I will keep my remarks to the point.

In 1990 there were around 14,000 active wells in the state. Over the last two decades that well count has grown to over 47,000 wells with natural gas production increasing six fold from 250 billion cubic feet to over 1.6 trillion cubic feet produced and sold annually. At the same time oil production had dropped from 31 million barrels a year in 1990 to 19 million in 1999 and it has since recovered to over 31 million barrels. This dramatic increase in drilling and production is due to the success of exploration and development in unconventional oil and gas plays. A third of the increase in natural gas production is due to the success of coalbed methane extraction. The rest of the growth in production is from tight sand and shale reservoirs. In order for these tight sands to produce they must be hydraulically stimulated, frac'd. This growth in oil and gas production has resulted in a source of jobs and revenues that have helped the state buffer the economic cycles over this time period.

Colorado's arid climate, urban growth, agricultural economy, and world class outdoor recreation make it essential that this oil and gas development take place in a manner that is environmentally sensitive and protects our valuable water resources. This is a fundamental part of our regulatory mission, and something that our agency takes very seriously. To this end, the environmental professionals on our staff have investigated hundreds of groundwater complaints over the years. Since 2000 our agency has collected over 20,000 water samples from water wells and oil and gas wells to investigate and substantiate any claims of groundwater contamination. To date, we have found no verified instance of hydraulic fracturing contaminating groundwater. These investigations have been documented and are available on our website, and we would be pleased to share this information with you.

As a specific example of this is, since 2000 our Commission has required operators to collect baseline and periodic water quality samples for over 2,000 water wells in the San Juan Basin in Southwestern Colorado, which has historically been one of our most productive gas producing areas. Thousands of oil and gas wells in that Basin have been hydraulically fractured, and if fracturing fluids were reaching these water wells then you would expect changes in the chemical composition of the water. However, independent analysis of the data has found no statistically significant increase in chemical concentrations. The report documenting this analysis is likewise available on our website, and we would be pleased to share both it and the underlying data with you.

The Colorado legislature has directed this agency to update our regulations to address potential environmental problems several times since 1994. This legislation has resulted in significant rulemaking over this period with one of the most comprehensive being during 2007 and 2008. That rulemaking process lasted 16 months, included testimony from 160 party and staff witnesses, and 22 days of hearings.

In the summer of 2011, just to ensure our rules addressed the growing public concern raised about hydraulic fracturing impacts, we requested a STRONGER review. STRONGER is a multi-stakeholder organization that reviews agency regulations by using other state regulators, industry and public interest environmental organizations. This review found strength in our rules, yet identified some shortcoming regarding surface casing setting methodologies, additional details of formation treatment, data pertaining to Naturally Occurring Radioactive Materials NORM in formation fluids, and water availability. As a result, created a detailed response on the process to determine surface casing setting depth, made revisions to the well completion report requiring additional information about volumes and types of

fluids used; created a report with the Division of Water Resources on the availability of water resources for the hydraulic fracture stimulation process, the agency will perform NORM analysis on well samples in the future.

The last rulemaking, at the request of the Governor, the Commission adopted rules requiring the public disclosure of the chemicals used in hydraulic fracturing fluids.

The current rules strike a responsible balance between energy development and environmental protection, and they reflect input from local governments, oil and gas companies, environmental groups, and individual citizens from across the state.

Here are some examples of our rules that specifically address concerns associated with hydraulic fracturing, and are collectively intended to ensure that such activities do not harm our drinking water.

- Rule 205A specifically requires operators to disclose the chemicals used in the hydraulic fracturing process. This information is to be made publically available on the website FracFocus.org. Chemical information that is determined to be a trade secret may be protected, but the family of the chemical must still be disclosed, and the all chemical information, including trade secrets, must be released to health professionals and the COGCC when there is a complaint and upon request.
- Rule 316 requires operators to provide 48 hour notice to the Commission prior to hydraulic fracturing and the agency will provide notice to the local government.
- Rule 317 requires that casing must be run across all water bearing zones and hydrocarbon bearing zones. Surface casing must be run across all aquifers and cemented to the surface. Production casing must be run and cemented providing coverage at least 200 feet above any hydrocarbon zone. A cement bond log must be run on all production casing to confirm the integrity of the cement isolation. The casing must be pressure tested and subjected to any pressures that will be used in the completion operations.
- Rule 317B imposes mandatory setbacks and enhanced environmental precautions on oil and gas development occurring near surface waters and tributaries that are sources of public drinking water. These requirements provide an extra layer of protection for our public water supplies, and will help ensure that these critical water resources are not inadvertently contaminated by energy development.
- Rule 341 requires operators to monitor well pressures during stimulation, including hydraulic fracturing, and to promptly report any increases that could indicate a loss of stimulation fluids.
- Rule 608 requires operators developing coalbed methane wells to pressure test the wells and to sample nearby water wells before, during, and after operations to ensure that they are not contaminated by gas or other pollutants. And existing Rule 318A requires operators in the DJ Basin to sample water wells to establish baseline water quality before drilling. Rules like these and various Commission orders provide an extra layer of protection for water wells located near oil and gas development.
- Rules 903, 904, and 906 impose requirements for pit permitting, lining, monitoring, and secondary containment to ensure that fluids in pits do not contaminate soil, groundwater, or surface water. These requirements will help ensure that any flowback of hydraulic fracturing fluids is properly contained.
- Finally, Rule 906 also requires operators to promptly notify the Commission, the Environmental Release/Incident Report Hotline, and the landowner of any spill that threatens to impact any

water of the state. This too will help ensure that immediate action is taken in the event that a spill of hydraulic fracturing fluids threatens any state waters.

Together, these requirements help to ensure that ground water is protected and that prompt action is taken if conditions arise that could lead to the subsurface release of hydraulic fracturing fluids.

In short, I believe that our amended rules address many of the concerns raised about hydraulic fracturing by requiring operators to provide additional information and by establishing common-sense precautions against potential impacts.

I would be happy to speak with you about these or any of the COGCC rules.

Thom Kerr