

Coal Bed Methane Development - An Emerging Water Quality Issue -



Aerial view of coal bed methane development in the Powder River Basin.

The Issues

Coal bed methane (CBM) is natural gas produced from underground coal seams. Extensive coal seams that have produced or have the potential to produce CBM are located in the Northern Plains and Mountains region. To produce CBM, water is removed from the coal seam allowing the pressure to drop enough for the gas to flow. As the coal seam is dewatered, both methane gas and water are brought to the surface in separate pipes. One CBM well can produce approximately 5 to 100 gallons per minute initially and may sustain 2 to 5 gallons per minute at long-term rates. Based on increased interest in CBM as an important near term energy source, and the thousands of wells proposed, a tremendous amount of water of variable quality will be introduced into semi-arid environments.

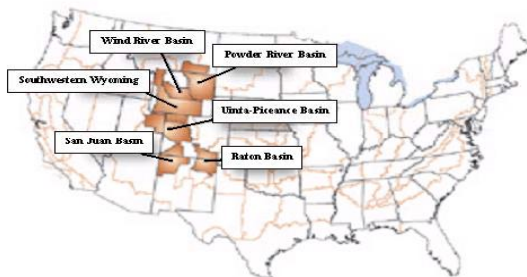
One issue of significant concern is the quality and management of the water that is produced during CBM development. CBM water is generally moderately saline-sodic, which makes sustainable management of large quantities of this water essential.

Other issues of concern due to CBM development include:

- Long-term effects of CBM pumping on aquifer recharge and groundwater resources.
- Impacts on irrigated cropland and grazing lands.
- Construction effects and dust emission from drilling, roads, pipelines, and water disposal facilities.
- Changes in vegetative communities.

Overview

The Northern Plains and Mountains Regional Water Quality Program has coordinated extensive research focusing on the management and beneficial use of CBM product water. The six states in the region have coordinated efforts to share resources, conduct objective science, agency, and student education, and provide public assistance and education about CBM development and management of CBM product water.



Major CBM production areas in the Northern Plains and Mountains region.

Regional CBM Research, Education, Outreach and
Coordination

Montana State University has provided leadership for water quality research and education about the impacts and management of waters from coal bed methane development in the Powder River Basin. Researchers at MSU are currently conducting a series of greenhouse and field experiments to find positive solutions for the management and beneficial use of CBM product water. Information about coal bed methane product water resource management is available at:

<http://waterquality.montana.edu/docs/methane.shtml>

In addition, surface water quality standards for irrigable waters of Montana were adopted by the Montana Department of Environmental Quality based on research at MSU. In Colorado, two workshops were presented to address landowner concerns and rights regarding CBM development. At the University of Wyoming, CBM research has investigated pond storage of CBM water; stream channel sediment and CBM product water interaction; and plant species interactions with CBM product water.

The Environmental Protection Agency recently funded a project to empower landowners and tribal members within CBM production areas of Montana, Utah, Wyoming, and Colorado to initiate a watershed approach for monitoring soil, water, wetland and riparian resources to:

- Understand baseline water quality and conditions of land and water resources within the watershed.
- Understand the potential impact of CBM development prior to contracting with a CBM developer.
- Monitor resource changes as a result of CBM development.

For More Information:

More detailed information about the Northern Plains and Mountains Regional Water Quality Coordination Project can be found at the NP&M Regional Web Site:

<http://waterq.ndsu.nodak.edu/>

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