Land and Water Inventory Guide for Landowners in Areas of Coal Bed Methane Development

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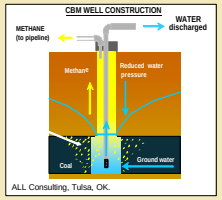
Region 8 CSREES partners

What is Coal Bed Methane (CBM)?

Coal bed methane is natural gas found in coal seams.



To remove methane from a coal seam, water is pumped from the seam, thus reducing hydrostatic pressure. Methane migrates with the water stream up the well, where it is separated from the water.

By-product water is either injected back into the ground, or is discharged onto the surface. Water discharged onto the surface is generally slightly saline and moderately to strongly sodic.

CBM development is expanding rapidly on a global scale. The majority of CBM development in the U.S. is occurring in the West, South, and Midwest. Over half of CBM production in the U.S. occurs in the West.

Landowners and CBM

Split Estates:
In the western U.S., property is divided into the "surface estate" and the "mineral estate" which can be owned by one individual or by different parties. The owner of the mineral estate has the right to enter the surface estate to develop the minerals.

CBM infrastructure and development raise resource concerns among many landowners. Natural resource impacts associated with CBM development facing landowners generally fall into 3 categories:

- Surface landscape issues from road, pipeline, and well pad construction.
- Impacts of water withdrawals on groundwater resources.
- Quality and quantity impacts of sodic by-product water discharged into stream channels, evaporation ponds, or used for irrigation.

Due to concerns about long and short-term impacts of CBM development, landowners have requested guidance regarding soil, water, and range management. When CBM development reaches a landowner's property, a well-documented farm and ranch baseline inventory and plan of action will help minimize problems associated with development.

The CBM Guide

CSREES Northern Plains and Mountains Regional Water Program has developed a concise and timely inventory guide for landowners and resource managers throughout the region. This guide was pilot tested by landowners in Colorado, Montana, and Wyoming and was extensively reviewed by natural resource managers throughout the region.

Natural resource documentation

Instructions for collecting objective baseline data and for implementing a consistent monitoring program are outlined in the guide.

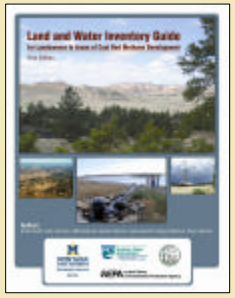


Photo-monitoring: uses repeated photographs over time to document changes in range, water, and cultural resources.

Well and infrastructure monitoring: creates a record of CBM infrastructure conditions.

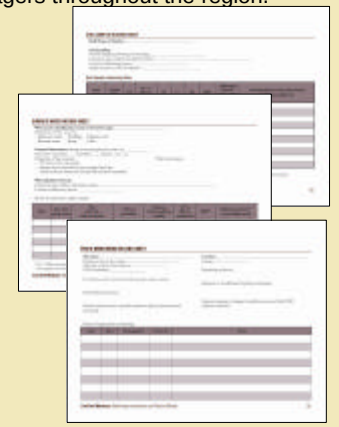
Surface water monitoring: for areas where large volumes of CBM product water are discharged onto the landscape.

Soil monitoring: for monitoring salinity and sodicity of soils irrigated with CBM product water.

CBM irrigation water quality monitoring: for determining the suitability of CBM product water for irrigation purposes.

Crop production monitoring record sheets: for tracking the production of crops irrigated with CBM product water.

Ground water monitoring: for landowners concerned about water table elevation and ground water quality



Funding provided by: EPA Region 8 Regional Geographic Initiative, Prairie Cty. Conservation District, Dept. of Energy, and USDA CSREES Region 8 Water Program