



Water-Energy
Sustainability

EFFECTIVE DATA MANAGEMENT IS CRUCIAL TO MANAGING FRAGILE RESOURCES.

RBDMS reduces barriers to data exchange between industry and state and federal agencies by offering easy-to-use Web and desktop applications. Its flexible development framework helps regulators fulfill mission-critical tasks despite regional differences in geology and widely varying statutory requirements.

Industry also benefits from RBDMS Web applications. RBDMS Data Mining's GIS interface opens agency data stores for Internet prospecting. Also, through RBDMS eForms, operators can obtain quicker approval of routine permits and increase their compliance with permit conditions so drilling programs can be managed with efficiency and environmental safety. Automating monthly regulatory reports through RBDMS eReport also frees staff for other work.

The efficiencies derived from RBDMS and the GWPC's peer support network can be measured by state agencies' consistent matching of Federal support for continued program development. In 2009, state agencies contributed \$1.5 million in direct match and in-kind support for RBDMS.

Nationwide, much environmental compliance monitoring data is not yet in electronic format. We must share and validate data across agency jurisdictions, with the regulated industries, and for public access. Only then can we accurately assess trends in energy production, source water quality and supply, and the delicate balance of the two resources.

RBDMS is unlocking vast amounts of stored data for trend analyses and interpretation of the environmental effects of fossil fuel and mineral extraction operations. Supporting the GWPC's RBDMS initiative will help give environmental managers working in both regulatory agencies and industry clear guidance for confident decisions to protect the country's source waters.

OUR MISSION

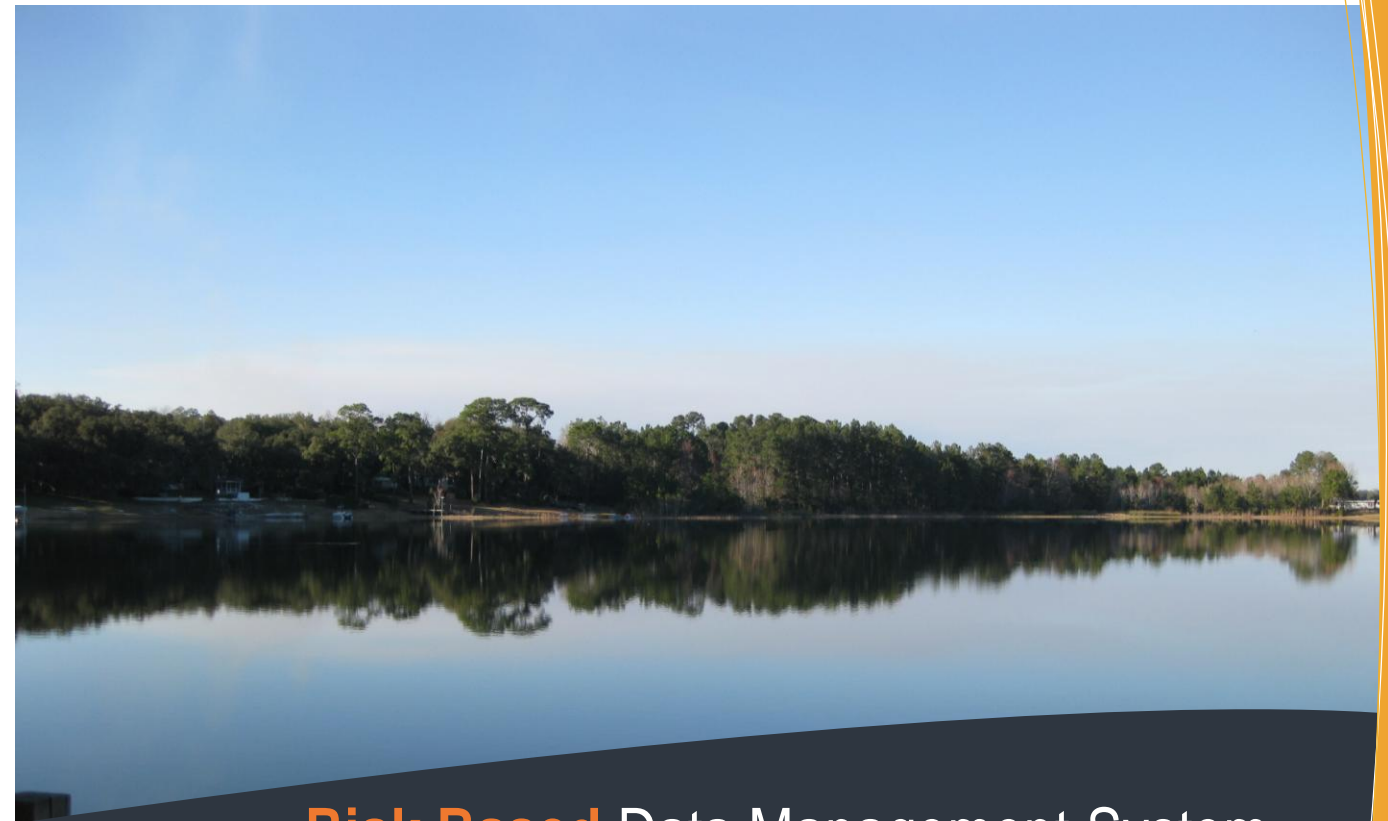
The GWPC is a national association of state ground water and underground injection control agencies whose mission is to promote the protection and conservation of ground water resources for all beneficial uses, recognizing ground water as a critical component of the ecosystem.

The GWPC provides a forum for stakeholder communication and research in order to improve governments' role in the protection and conservation of ground water.



*Dedicated to Protecting the Nation's
Ground Water*

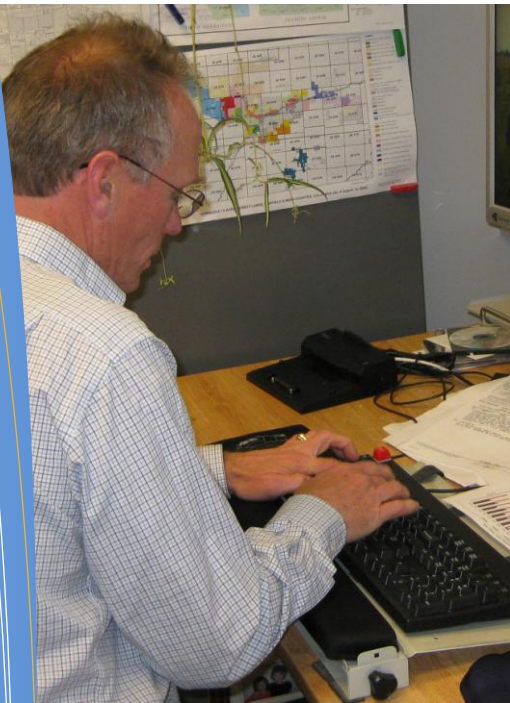
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Risk Based Data Management System

2011 RBDMS Program Goals

1. Expand RBDMS to track data from well stimulations, including hydraulic fracturing, and to prevent possible environmental impacts.
2. Expand RBDMS to monitor the effects of CO₂ geo-sequestration on the environment.
3. Continue to automate permitting, environmental reporting, and data access.
4. Automate the transfer of industry's laboratory data to agency servers to evaluate the effectiveness of oil and gas and other mineral extraction regulations in protecting watersheds.
5. Continue to track national trends in oil and gas production.
6. Develop a Web site to promote oil and gas best management practices for pollution prevention.



RBDMS DEPLOYMENTS, 2010-2011:

RBDMS STIMULATIONS: NY, PA

RBDMS.NET: MS, OK, PA

RBDMS WATER: OH PH 2

RBDMS CLASSIC: IL

EPERMIT: CO, MS, OK, AL, NY

EREPORT: MS, PA

EINSPECT: KS, MS, NE, OK, NY

EPA UIC NODE: IL

Web Technology to Protect Source Water

CONNECTING REGULATORS, INDUSTRY OPERATORS, AND THE PUBLIC ON THE WEB

Water and energy consumption rates are in a delicate balance with the hydrologic cycle. Stresses on the hydrologic cycle from environmental, population, and economic pressures, consumptive uses of water (municipal, agricultural, and industrial), and the choices made in energy production processes ultimately will take their toll. Whether the United States will be able to provide sustainable sources of affordable energy and clean water depends greatly on resource management policy decisions and practices.

The GWPC's RBDMS program is now an

integral tool in 22 states in managing oil and gas activity and evaluating the risk to source water posed by fossil fuel and mineral extraction operations. RBDMS is now being expanded to monitor the effects of the more unconventional resource plays and formation stimulation techniques industry is using to increase production. Two of these processes have posed new challenges for the agencies: high-volume hydraulic fracturing (HF) and the geologic sequestration of carbon dioxide (CO₂ geosequestration) and its use for enhanced oil recovery.



flexible solutions to meet state business rules

The GWPC is developing the RBDMS Stimulations module so that agencies can develop protective measures for source water without over-regulating well stimulation procedures. The following data may be tracked for HF stimulations:

- The quantities and quality of water used to support extraction methods and the sentinel indicators of effects on watersheds
- The methods and locations used to dispose of flow-back from the wells
- The chemical constituents of fracturing fluids where required by states
- Down-hole pressures within wells and formations
- The mechanical integrity of stimulated wells
- Other pertinent information such as operator, location, and injection volumes

The following data may be tracked for CO₂ geosequestration and its use for enhanced oil recovery:

- Miscibility effects and reservoir characteristics for evaluating the CO₂ flooding potential of oil fields
- Calculations of the CO₂ storage capability of oil fields
- Sampling results from monitoring wells in both the receiving formation and in overlying drinking water aquifers

- Geology including faults, penetrations, plugged drill holes, and the condition of the overlying impermeable layers
- Other pertinent information such as operator, location, and injection volumes

RBDMS PROVIDES THE DATA REGULATORS AND INDUSTRY NEED TO MAKE INFORMED ENVIRONMENTAL DECISIONS.



The GWPC also will update its RBDMS well schematic diagramming utility to generate drawings of well construction details that include notations of stratigraphy and location of the stimulation zone. The results will be queryable via the Web.

RBDMS Stimulations will help regulators to assess the fate and potential transport of stimulation fluids, to calculate the risk to drinking water aquifers and to

regulate the disposal of flowback.

As additional information about these stimulation techniques is collected, agencies will be able to make permitting processes more transparent and will be better able to investigate complaints.



CUSTOM SOLUTIONS

RBDMS desktop and field inspection applications are customizable to fit the requirements of state business rules, which vary significantly from agency to agency by statutory mandate, local geology, and watershed usage.



WEB SOLUTIONS

RBDMS Web applications are powered by SQL Server and feature full-text searching, integrated GIS, highly granular security, multiple tiers of data quality control, public comment forums, an alerts/workflow system, and two-way data exchange with industry. Support is furnished through the GWPC's nationwide peer network.



ELECTRONIC BUSINESS SOLUTIONS

RBDMS connects industry and agencies to automate permitting, well completion reporting, production and injection reporting, laboratory sample results reporting, and data mining. The immediate data access allows users to analyze area trends, to track well and mine history (ownership, bonding, permitting, location, construction, inspection, production, and plugging/ restoration), and to monitor regulatory compliance.

