

## **Natural Resources Committee**

**September 6, 2011**

**Lynn D. Helms, Director  
Department of Mineral Resources  
North Dakota Industrial Commission**



United States  
Environmental Protection  
Agency

Office of Water  
(4606)  
Washington, DC 20460

EPA 816-H-10-001  
November 2010  
<http://water.epa.gov/drink>

# Safe Drinking Water Act

## Underground Injection Control (UIC) Program

### Protecting Public Health and Drinking Water Resources

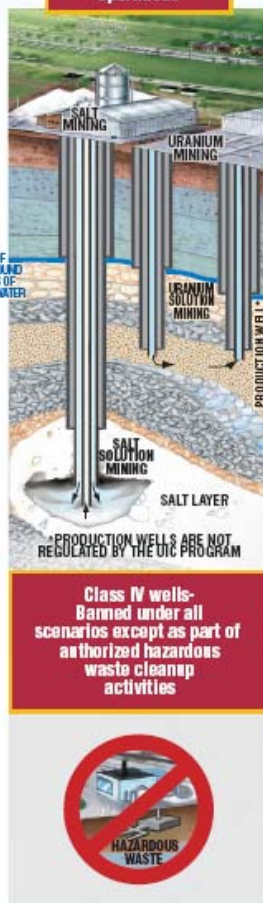
**Class I wells-**  
Isolate hazardous,  
industrial and municipal  
wastes through  
deep injection



**Class II wells-**  
Inject oil and gas  
production fluids



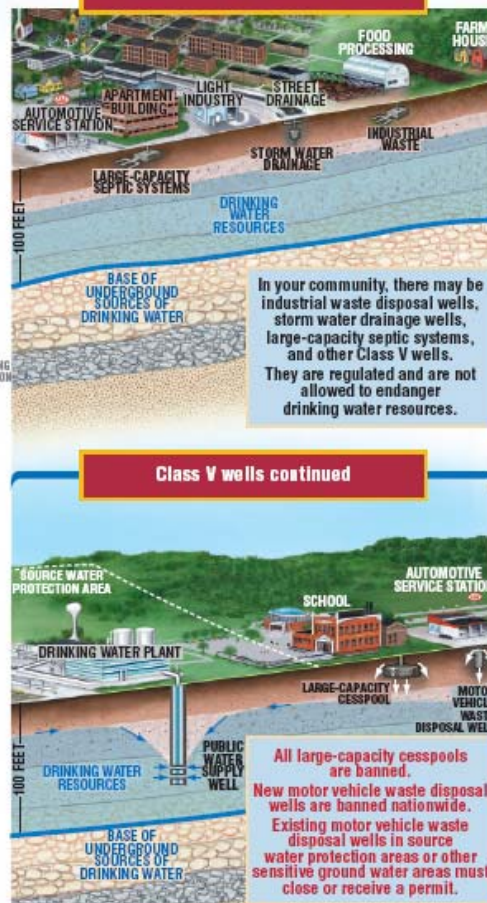
**Class III wells-**  
Minimize  
environmental impacts  
from solution mining  
operations



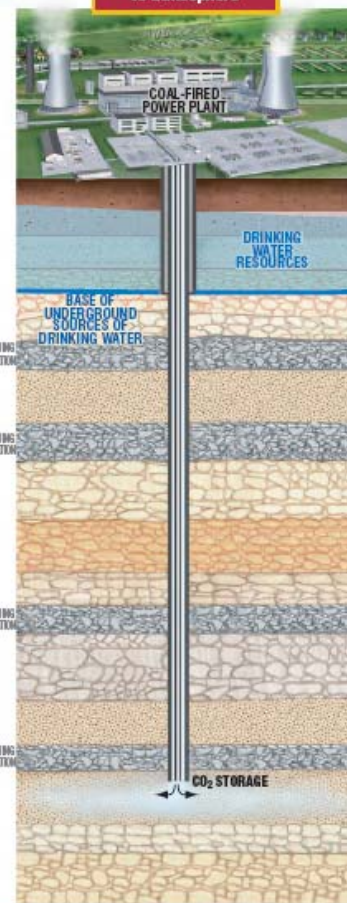
**Class IV wells-**  
Banned under all  
scenarios except as part  
of authorized hazardous  
waste cleanup  
activities



**Class V wells-**  
Manage the shallow injection  
of all other fluids to prevent  
contamination of drinking water resources



**Class VI wells-**  
Inject CO<sub>2</sub> for  
long-term storage to  
reduce emissions  
to atmosphere



Not drawn to scale

# North Dakota 1425 Program Description

- o **The North Dakota Industrial Commission, Oil and Gas Division** has authority to regulate **Class II injection wells**, which are included in the 1425 UIC Program. The rules which govern Class II injection wells are found in *Chapter 43-02-05* of the North Dakota Administrative Code.

# Regulatory Challenges of 1425 program

- Public acceptance of commercial salt water disposal facilities

- Funding

  - The program costs approximately \$400,000 per biennium

  - In 2010 the EPA grant funded approximately 1/3 of cost

    - In 1983 during primacy application EPA indicated the Class II grants would cover approximately 75% of cost

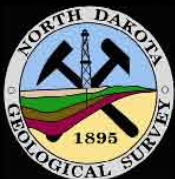
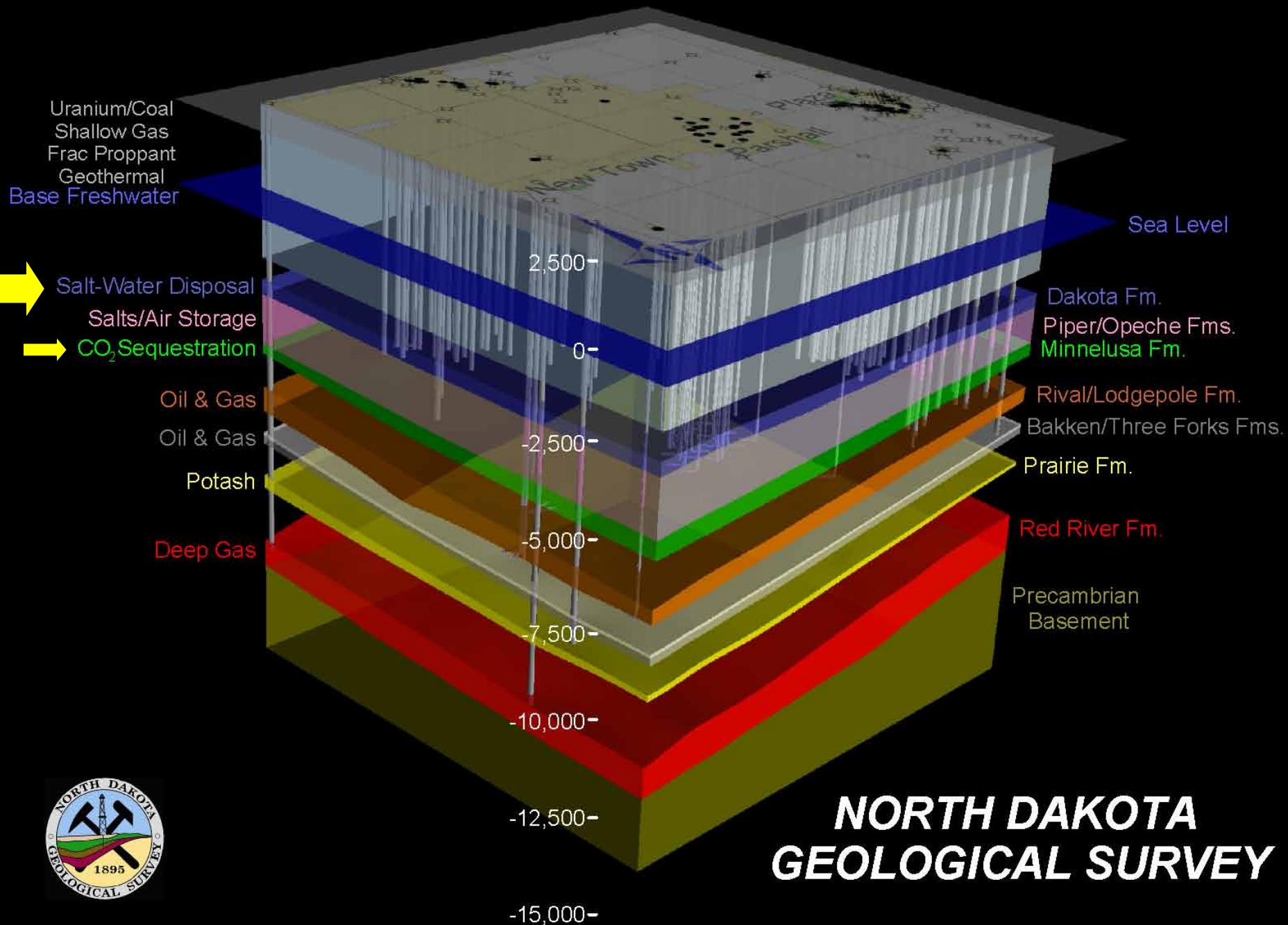
- Permitting and Site selection:

  - Geology

  - Surface facility and pipeline spill prevention



# Three-Dimensional Geologic Model of the Parshall Area



# North Dakota 1422 Program Description

- o The state of North Dakota received program implementation primacy in 1984, and has since operated in an EPA-approved UIC program. Amendments to the Federal UIC program on December 10, 2010 have resulted in the revision of the state UIC rules and program description.
- o **The North Dakota Department of Health, Division of Water Quality** has been designated as the lead agency for coordination of the 1422 UIC program. The Division of Water Quality has authority to regulate [Class I \(hazardous and nonhazardous\)](#), [Class IV](#), and [Class V injection wells](#), as identified, under *Chapter 33-25-01* of the North Dakota Administrative Code
- o **The North Dakota Geological Survey, a division of the State Industrial Commission**, has authority to regulate [Class III injection wells](#), as identified, under Chapter 38-12 of the North Dakota Century Code and *Chapter 43-02-02.1* of the North Dakota Administrative code.
- o **The North Dakota Industrial Commission, Oil and Gas Division** is currently revising the 1422 program description to include [Class VI injection wells](#). The North Dakota Administrative code *Chapter 43-05-01 Geologic Storage of Carbon Dioxide* must be amended to meet the stringency of the EPA rules and regulations. A requirement to qualify for Class VI primacy.

# Why Class VI Primacy

- Carbon Dioxide Capture and Storage (CCS) will be essential for utilizing North Dakota coal reserves if future reductions in greenhouse gas emissions are mandated.
- Carbon Storage (CS) technology is in place. Every aspect of the Carbon Storage process is currently being performed in North Dakota.
- Carbon Dioxide can be safely and permanently stored in North Dakota.

## AMERICA'S POWER

### Coal Provides Jobs and Affordable Electricity

### *Coal in North Dakota*

#### *In North Dakota:*

Coal provided 87.4 percent of North Dakota's electric power generation in 2009. North Dakota used 25 million short tons of coal to generate 29.8 billion kilowatt hours of electricity.

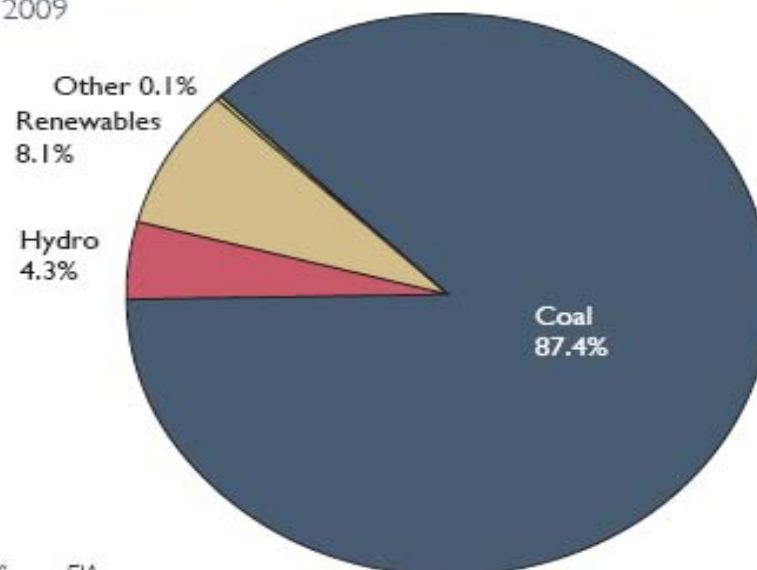
Based on cost of electricity, North Dakota ranks #7 in the nation in energy affordability, according to EIA. North Dakota ranks #9 in the nation in coal production and #14 in the nation in coal use.

North Dakota produced 29.9 million short tons of coal in 2009 from an estimated recoverable reserve base of 6.82 billion short tons.

Direct and indirect employment generated by U.S. coal mining in North Dakota accounts for 3,860 jobs, for a combined payroll of \$190 million.

	North Dakota	U.S.
Coal Production (Million Short Tons)	29.9	1,072.8
Estimated Recoverable Coal Reserves (Billion Short Tons)	6.82	261.57
Total Coal Consumption for Power Generation (Million Short Tons)	25.0	938.1
Total Net Electricity from Coal (Billion kWh)	29.81	1,764.5
Direct Coal Mining Employment	1,295	133,799
Electricity Cost per kWh	6.81¢	9.89¢

North Dakota: Power Sector Generation by Fuel Type, 2009



Source: EIA



# Regulatory Challenges of CCS

- o Public acceptance
- o Funding
  - o \$0.01/ton for administrative fund
  - o \$0.05/ton for trust fund
- o Permitting and Site selection:
  - Geology specific sites
  - Amalgamation of ownership
- o Environmental risks:
  - Protecting Underground Sources of Drinking Water
  - Injection of Carbon Dioxide:
  - Monitoring of Carbon Dioxide plume
  - Maximum Injection pressures
  - Monitoring Sequestration sites after their closure
- o EPA rule:
  - Not compatible with NDAC 43-05-09 through 43-05-11
  - January 2011 EPA-NDIC Crosswalk has 67 pages of required changes
  - EPA rule evolving – 8 guidance documents to date totaling 872 pages

# Three-Dimensional Geologic Model of the Parshall Area

