

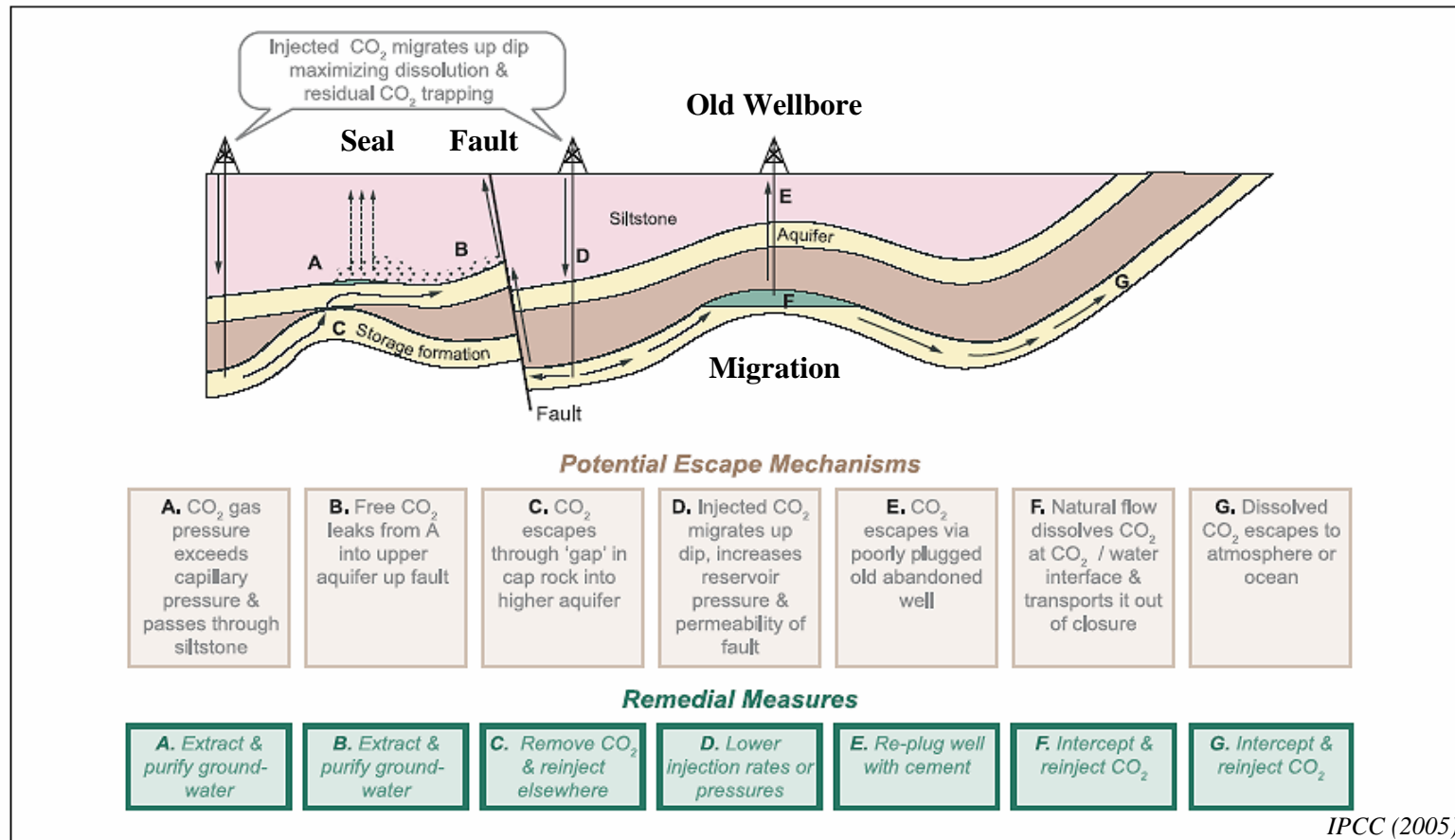
# **Western Kentucky CO<sub>2</sub> Storage Potential: Hancock and Breckenridge Counties**

Rick Bowersox  
February 21, 2008

# Outline

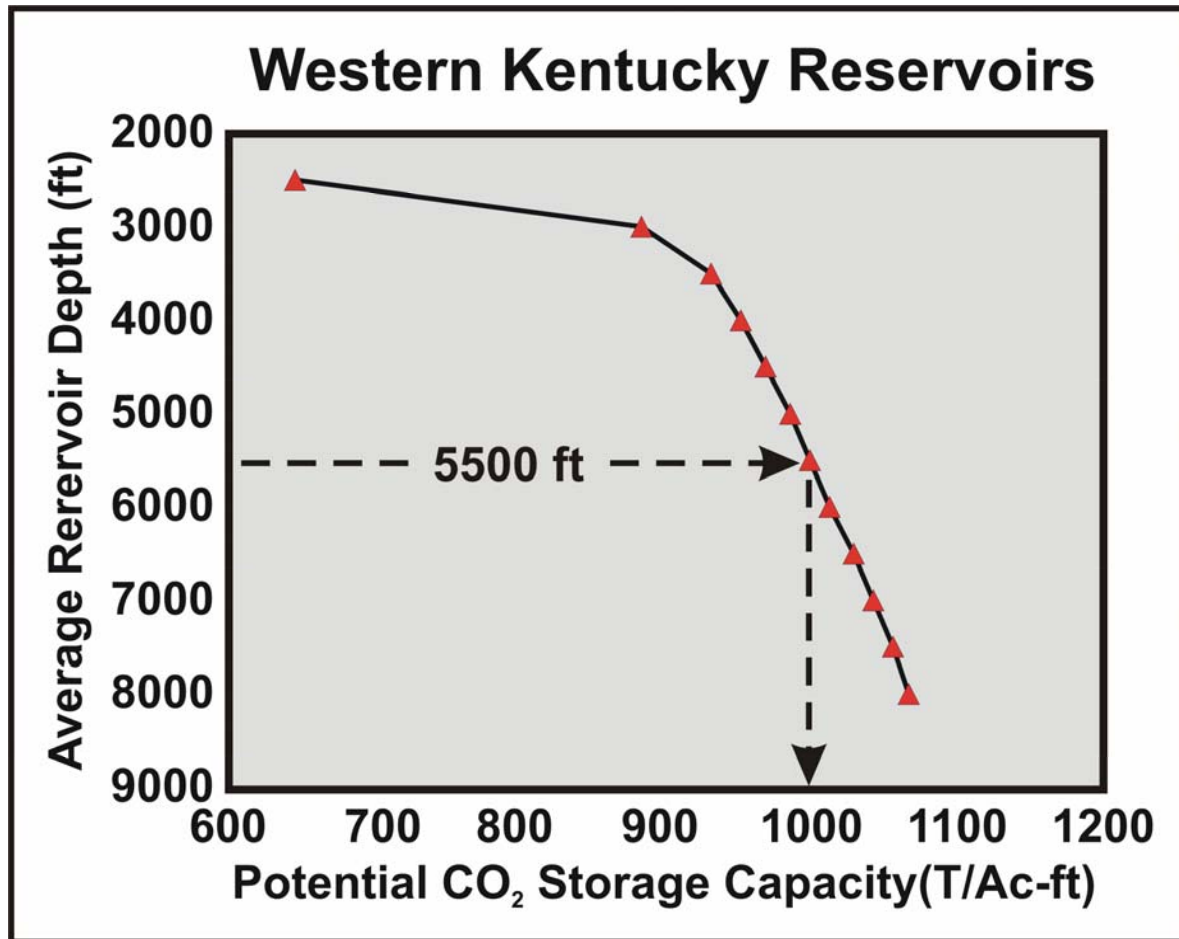
- Review siting issues
  - CO<sub>2</sub> storage
  - Western Kentucky area of interest
  - Mt Simon Sandstone
  - Knox Group carbonates
- Re-entry well candidates
  - Hancock County
  - Breckenridge County
  - Muhlenberg County

# CO<sub>2</sub> Storage Issues



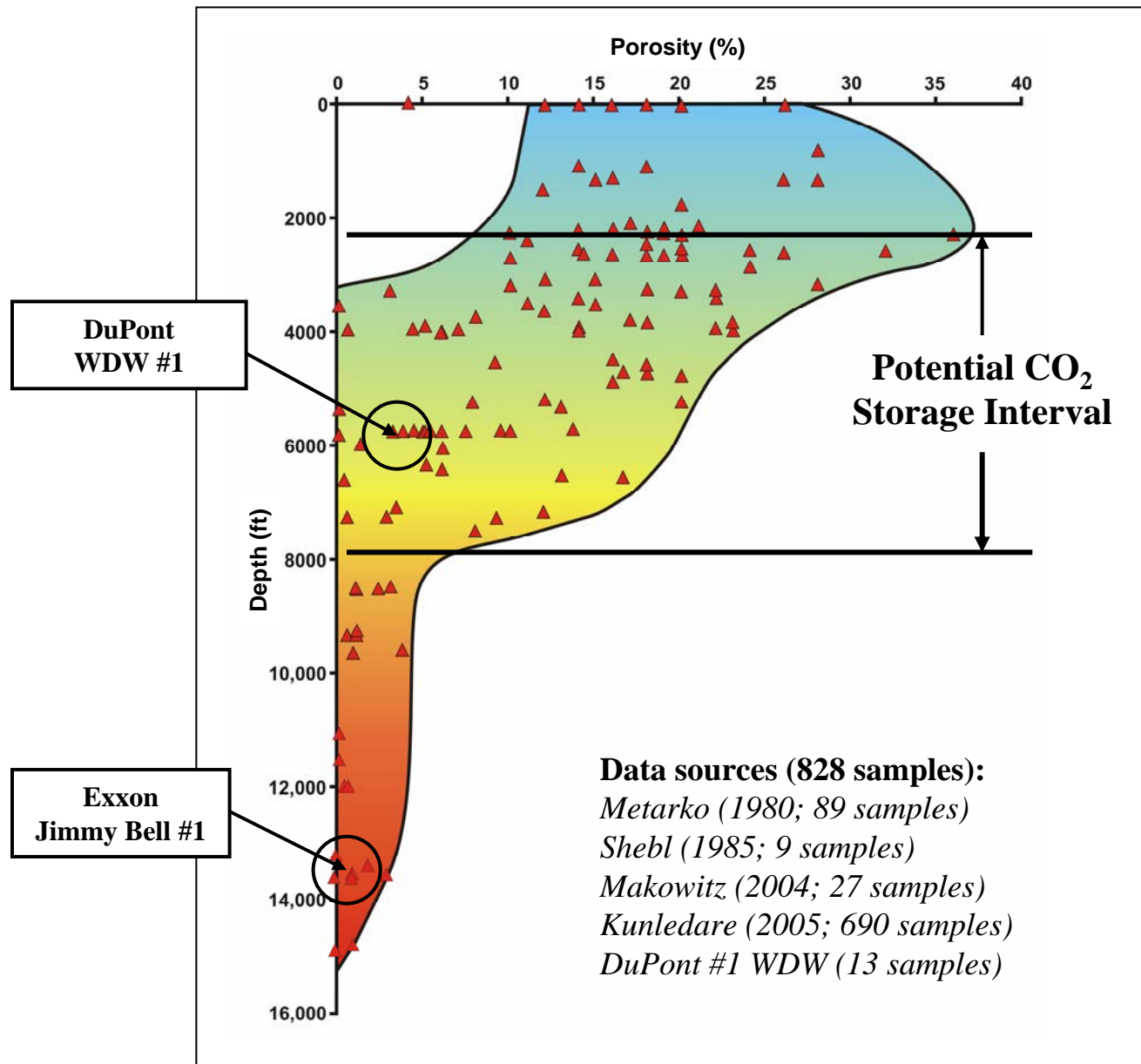
**Figure TS.8.** Potential leakage routes and remediation techniques for CO<sub>2</sub> injected into saline formations. The remediation technique would depend on the potential leakage routes identified in a reservoir (Courtesy CO2CRC).

# CO<sub>2</sub> Storage Capacity



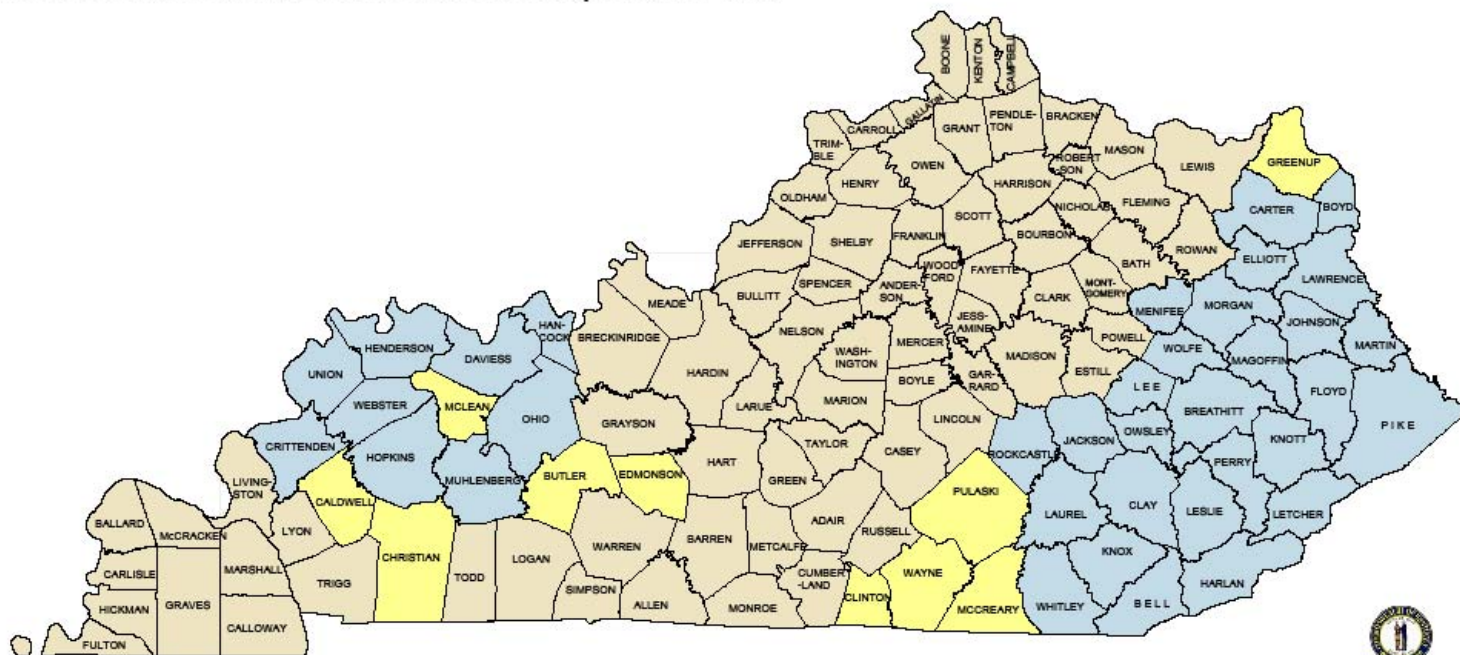
- Additional considerations
  - CO<sub>2</sub> viscosity-temperature relationship
  - CO<sub>2</sub> solubility-water salinity relationship
  - CO<sub>2</sub> -mineral reaction rates

# Mt Simon Sandstone Porosity



# Coal Severance Tax

## Local Government Economic Development Fund



### Symbology

- Coal Eligible (36)
- Formerly Coal Eligible

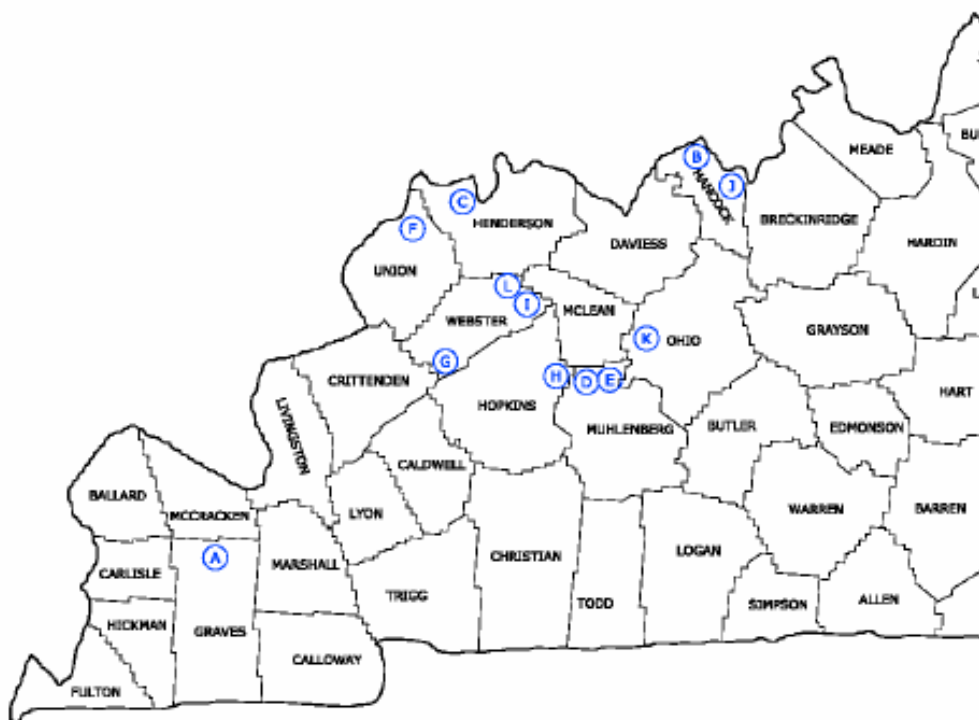
ELIGIBILITY: The minimum threshold for a county to be eligible for the fund is a minimum of 100 acres of coal land. The fund is also subject to a 10% cap on the number of counties that can be eligible in any one year. The fund is also subject to a 10% cap on the number of counties that can be eligible in any one year. The fund is also subject to a 10% cap on the number of counties that can be eligible in any one year.



Office of the Governor  
Governor's Office for Local Development  
1024 Capital Center Drive  
Frankfort, KY 40601  
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October 22, 2007

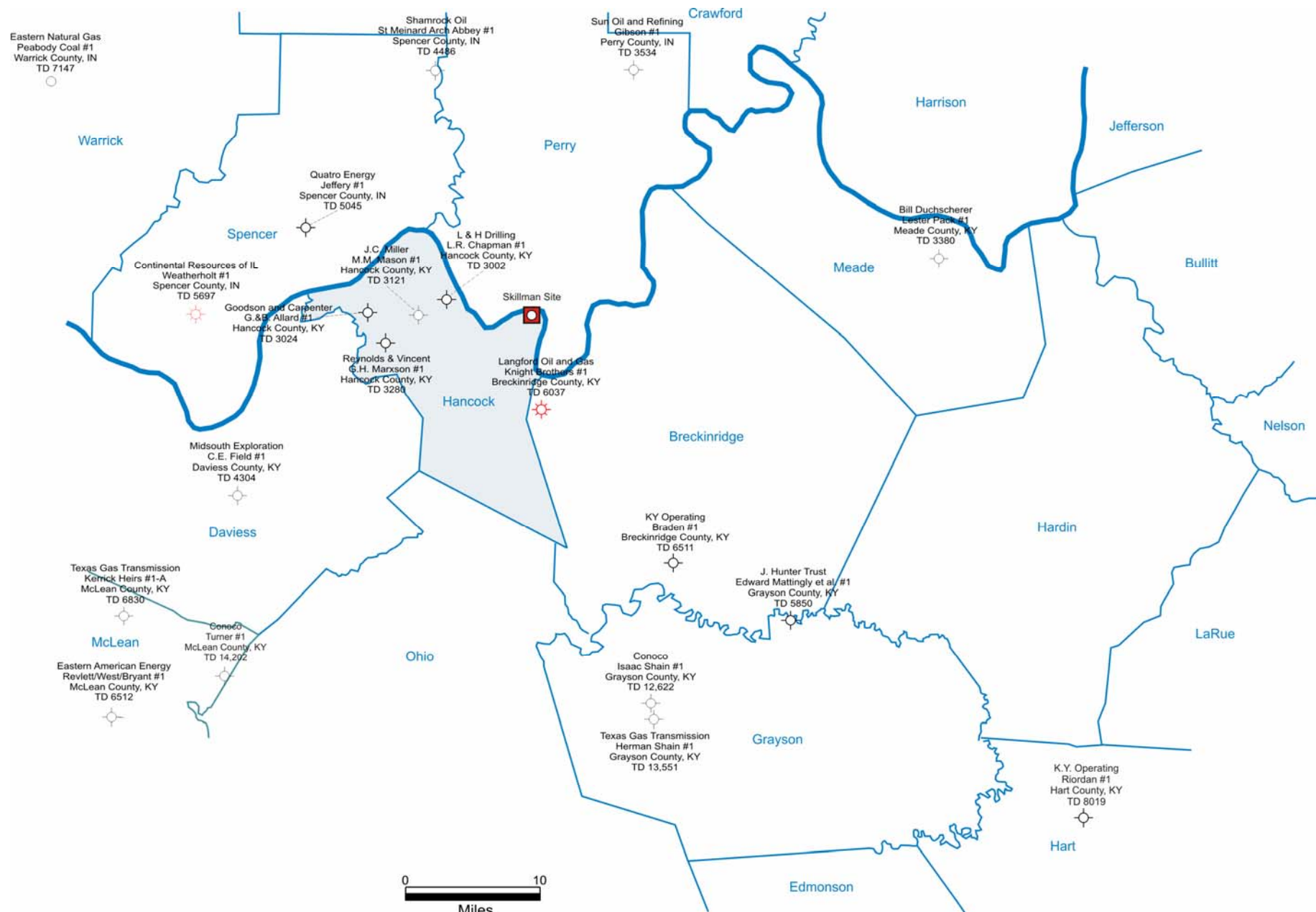




## Kentucky Site Bank Locations

PROPOSED PROPERTIES FOR SITE BANK	
A	PURCHASE REGIONAL INDUSTRIAL PARK
B	HANCOCK COUNTY - LEWISPORT
C	AMERICAN ELECTRIC POWER - HENDERSON
D	BRIER CREEK - KENAMERICAN COAL
E	PARADISE MINE - KENAMERICAN COAL
F	RIVER VIEW COAL - ALLIANCE
G	WEBSTER COUNTY - ALLIANCE
H	HOPKINS COUNTY - ALLIANCE
I	STEAMPORT, ALLIED RESOURCES
J	HANCOCK COUNTY - SKILLMAN BOTTOM
K	D.B. WILSON POWER STATION
L	ADJACENT PROPERTY - REID-GREEN POWER STATION
M	CHISHOLM MINE, PHELPS
N	TECO COAL - PREMIER ELKHORN, MYRA
O	CLAY COUNTY INDUSTRIAL PARK
P	TECO COAL - PERRY COUNTY COAL - HAZARD
Q	J.K. SMITH POWER STATION
R	SOUTH SHORE - GREENUP COUNTY
S	CH DEVELOPMENT - CORBIN







## Western Kentucky Re-entry Candidates

- Five candidate abandoned wells have been identified as possible candidates for re-entry, deepening, and testing for CO<sub>2</sub> storage:
  - **Hancock County**
    - L.R. Chapman #1
    - G.H. Marxson #1
    - G.&B. Allard #1
  - **Breckinridge County**
    - Knight Brothers #1
  - Muhlenberg County
    - Peabody Coal #14

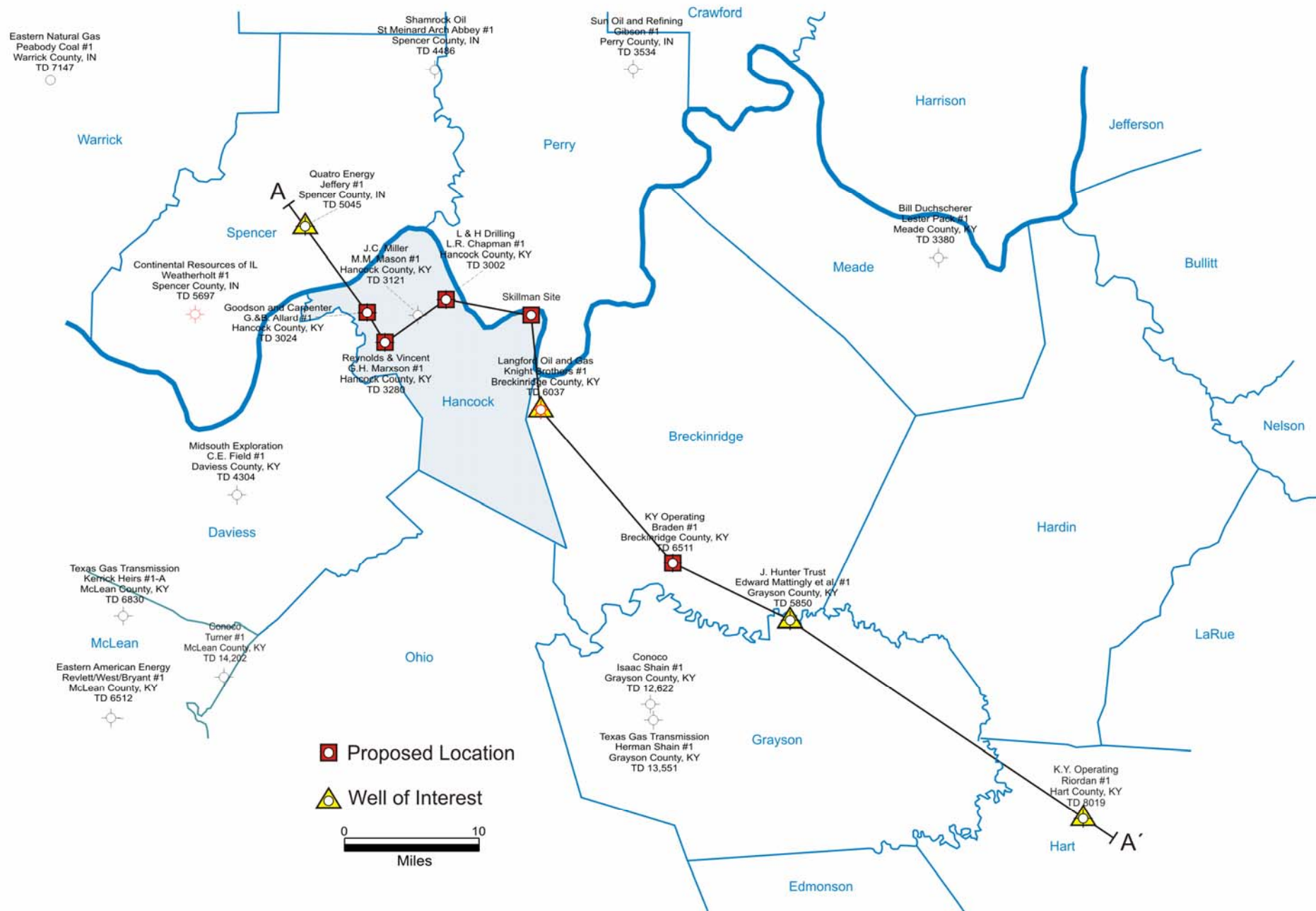
# Hancock County

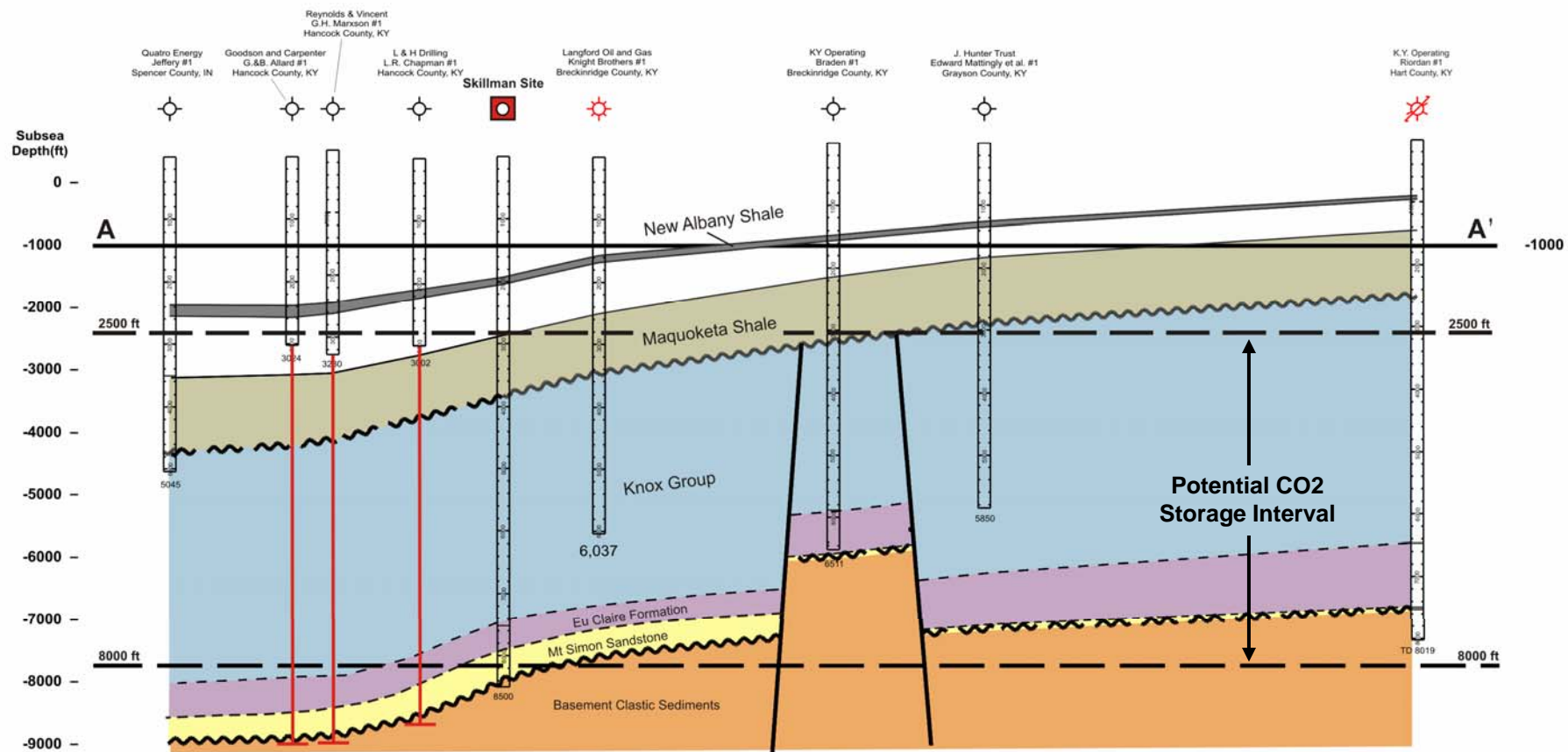
- L.R. Chapman #1
  - Drilled to 3002 ft (01/1969), TD in lower Devonian
  - 10-3/4 inch casing at 85 ft, 7-7/8 inch open hole to TD
- G.H. Marxson #1
  - Drilled to 3280 ft (07/1975), TD in lower Devonian
  - 8-5/8 inch casing at 50 ft, 7-7/8 inch open hole to TD
- G.&B. Allard #1
  - Drilled to 3025 ft (11/1989), TD in lower Devonian
  - 8-5/8 inch casing at 70 ft, 7-7/8? inch open hole to TD

# Breckinridge County

- Braden #1
  - Drilled to 6511 ft (01/1997), TD in Eu Claire Formation
  - 9-5/8 inch casing at 1701 ft, 7-7/8 inch open hole to TD







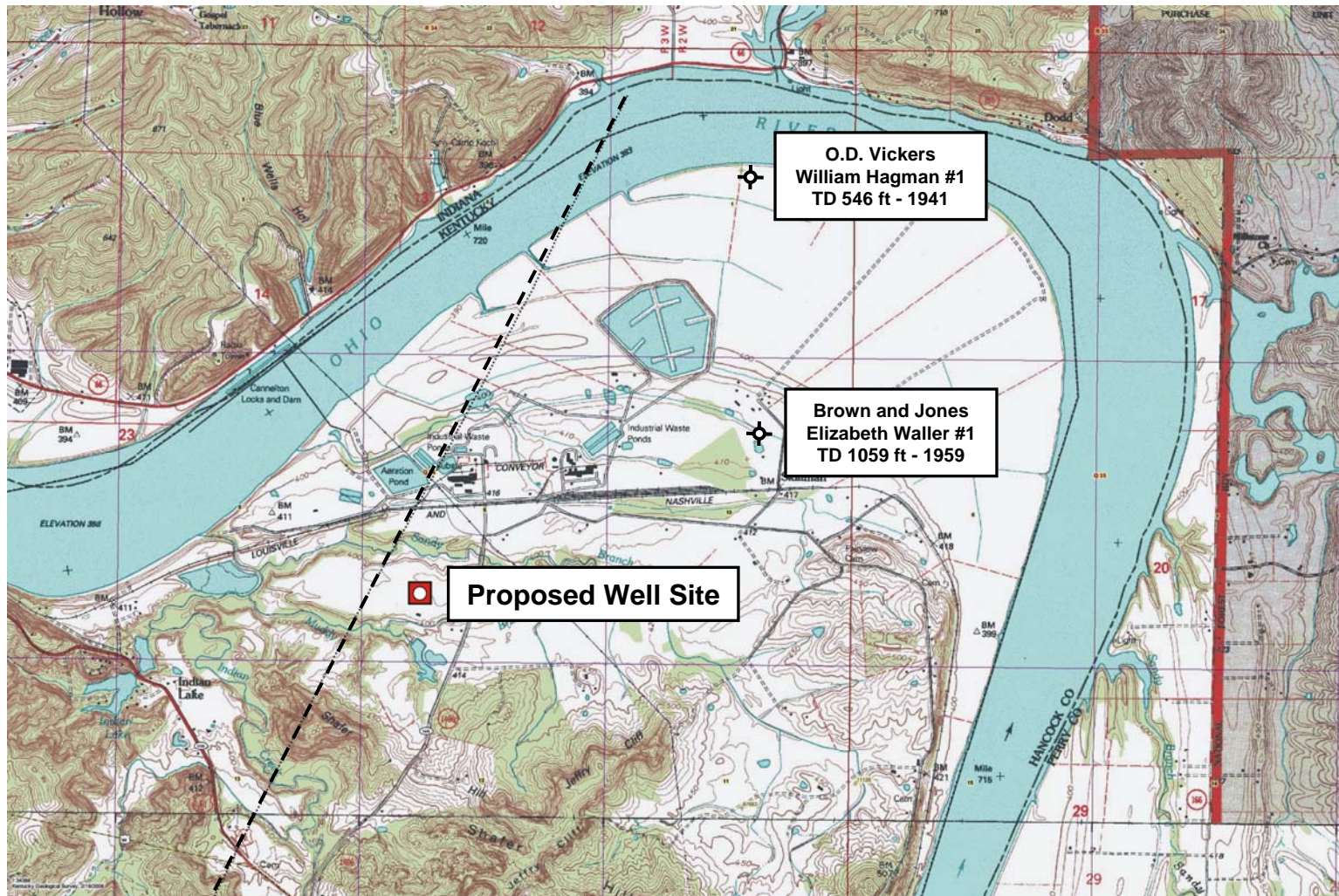


# Skillman Site, Hancock County

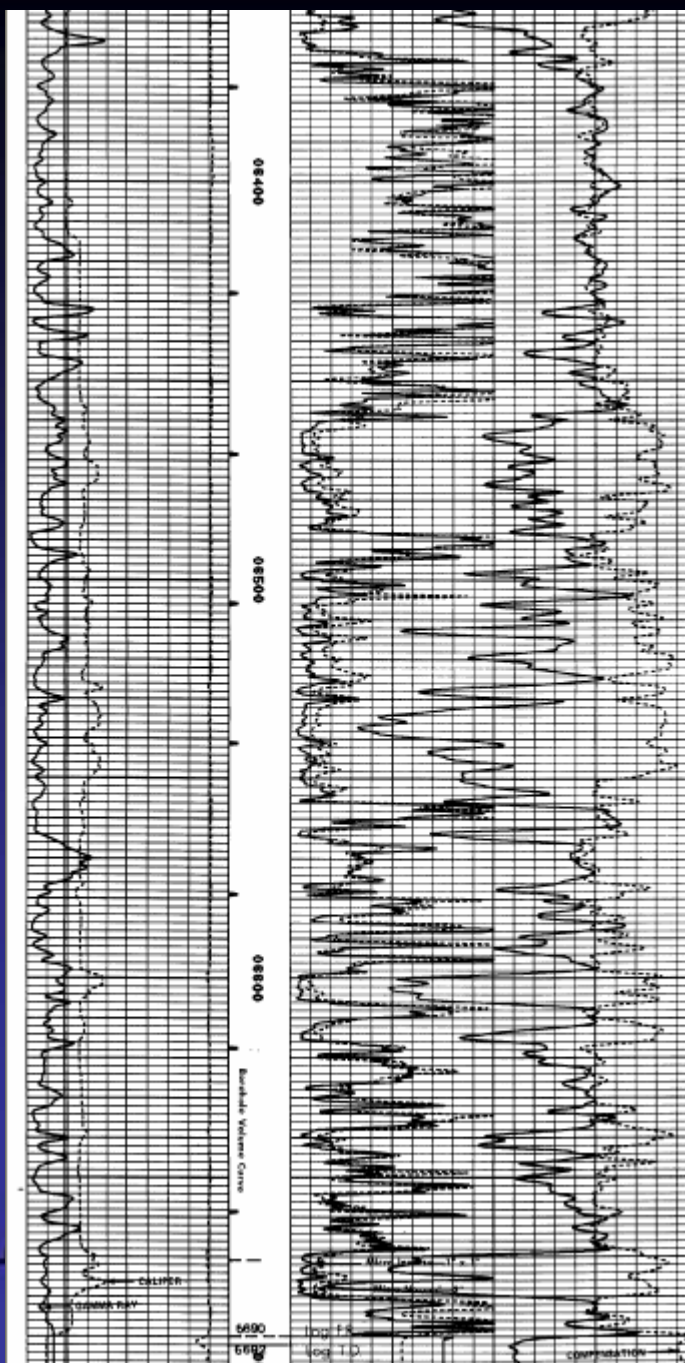




# Skillman Site, Hancock County





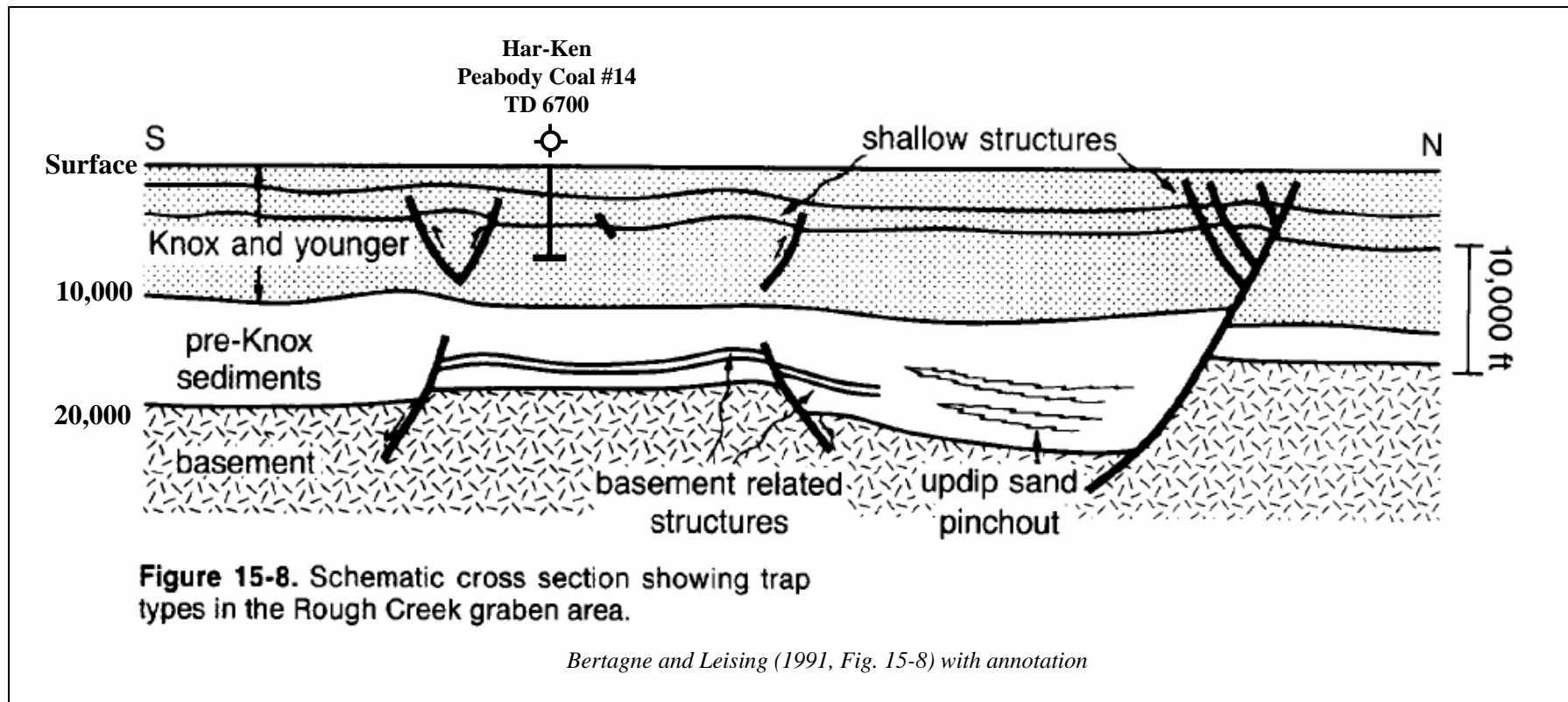


# Re-entry Candidate

## Har-Ken well Peabody Coal #14 Muhlenberg County

- **Drilled to 6700 ft in March 1985**
  - 16 inch conductor pipe at 30 ft
  - 10<sup>3</sup>/<sub>4</sub> inch casing cemented at 184 ft
  - 7 <sup>7</sup>/<sub>8</sub> inch hole drilled to TD
- **Nine intervals tested by open hole**
  - Top of Knox Group at 6264 ft
  - DST 1540-2842 ft
- **Plugged and abandoned in April 1985**
  - Casing cut off 3 ft below surface
  - Cement plug 3-80 ft
  - Mud 80-360 ft
  - Cement plug 360-400 ft
  - Mud 400-1350 ft
  - Cement plug 1350-1750 ft
  - Mud 1750-6700 ft TD

# Rough Creek Graben



# Muhlenberg County



- Peabody Coal #14
  - Drilled to 6700 ft (03/1985), TD in Knox Group
  - 10-3/4 inch casing at 184 ft, 7-7/8 inch open hole to TD



**KYCCS.ORG**

