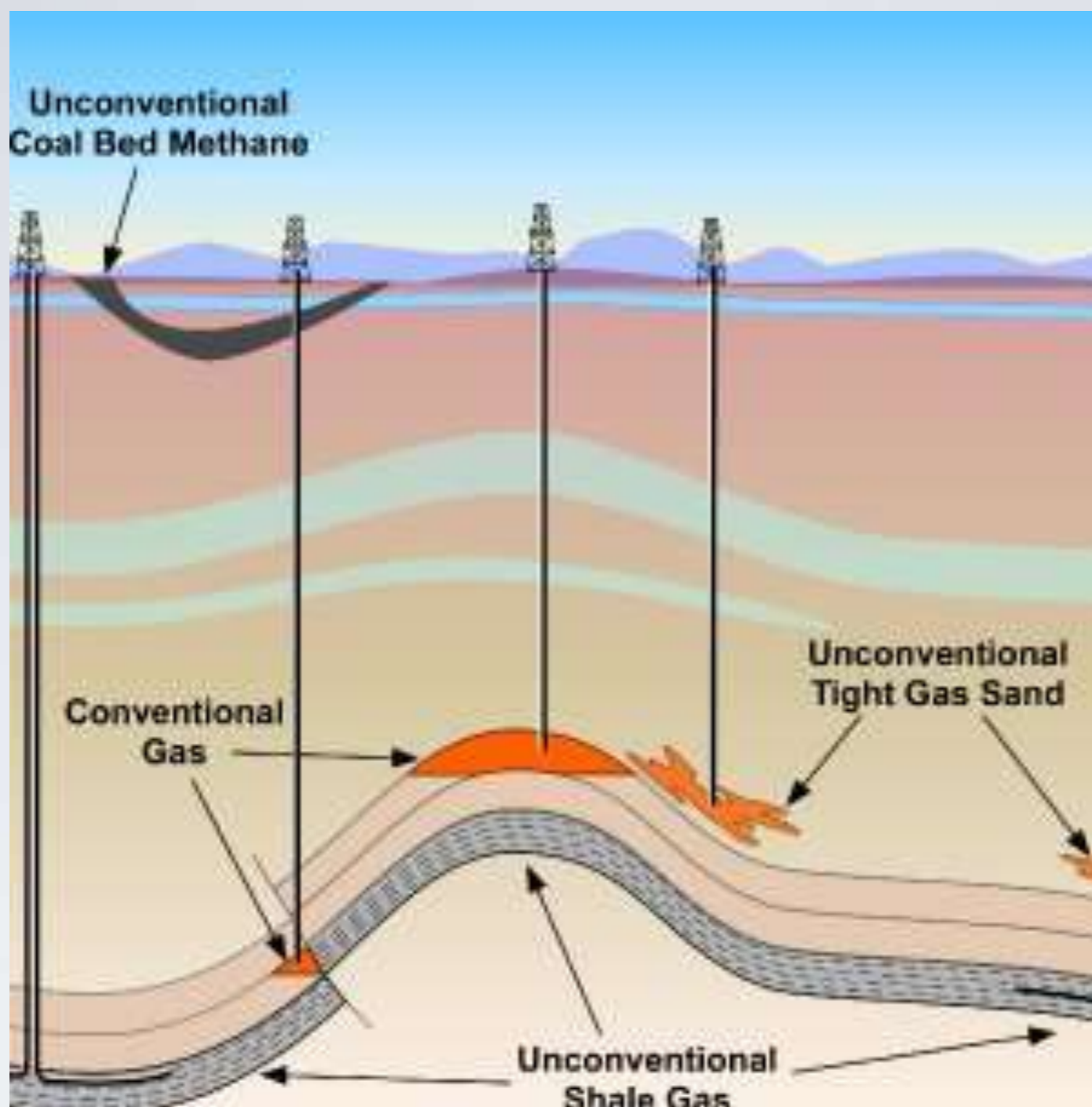
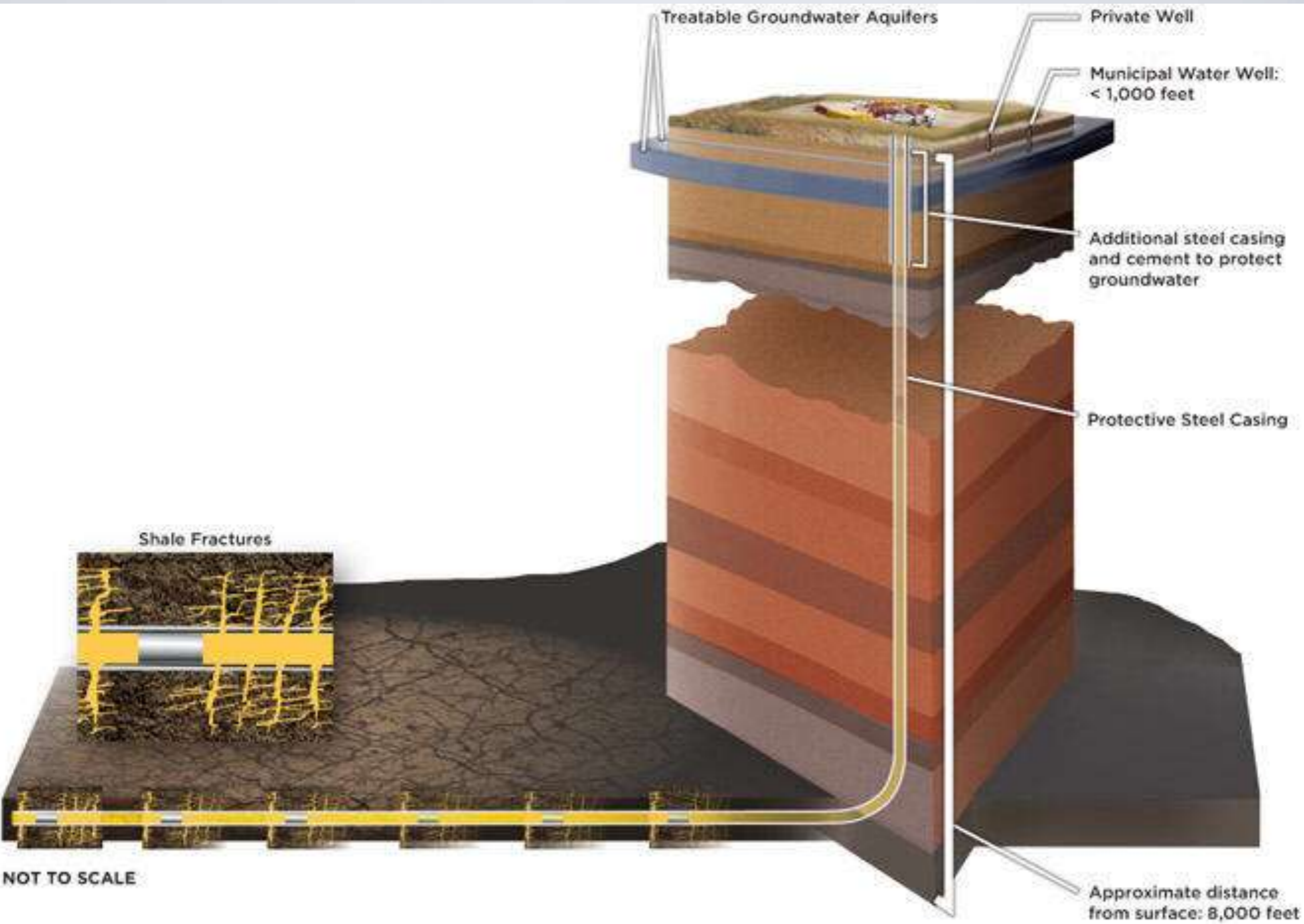


# Shale Oil from the Niobrara, Water Demand High, Impacts Unstudied

Wes Wilson, EPA (retired)  
South Platte River Forum  
Longmont, Colorado  
October 20, 2011



No dry wells in shale and tight sands



# Pathways from bad wells and accidents

— [ Bad well construction (“bad wells gone bad”)

— [ Spills – especially spills of undiluted fluids

— [ Leaking Pits – about 2/3 of the frack fluids are returned to reserve pit

— [ Production fluids mismanagement - frack fluids are either injected, treated and discharged, or land managed

# Pathways that are systemic

- [ “Good wells gone bad” -pathway allowed by brittle geology or an unplugged abandoned well
- [ Air pathways from pits and condensate tanks to a community or ecosystem
- Evaporation of toxic frack fluids and VOCs from reserve pits
- VOCs could later condense and ‘rain’ on an ecosystem

# Duke University study

— [*Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing*

— [Stephen G. Osborne, Avner Vengosh, Nathaniel R. Warner, and Robert B. Jackson

# EPA 2004 study flawed

— [ Federal Court - EPA regulate fracking under Safe Drinking Water Act

— [ EPA fracking study said toxics, including diesel, were injected and remained underground, yet posed no “little or no risk”

— [ No need to study further

— [ Leads to “Halliburton Loophole” exempt fracking from SDWA

# 2011 -- EPA conducting a new study

- EPA will investigate fracking affects on drinking water
  - budgeted at \$12 million over 4 years
  - Full Life Cycle study from manufacture, to frack, to disposal
  - No field data analysis until 2014
  - Impacts from water demands, but not air pathways

# Natural gas more harmful to climate than coal

— [ Climate effects -- Methane traps 25-105 times more heat than CO<sub>2</sub>

— [ Methane production leaks 3.6 to 7.9 percent

— [ So U.S. natural gas causes climate warming equal to or twice as much as coal-fired power plants\*

— \*source Dr. Robert Howarth, Cornell University

# Lack of academic freedom to study the oil and gas industry

- Prof. Conrad Voltz, Univ. of Pittsburg
- Prof. Robert Howarth, Cornell University
- Health Impact Assessment in Garfield County by CU cancelled
  - the county liaison, Judy Jordan, was fired

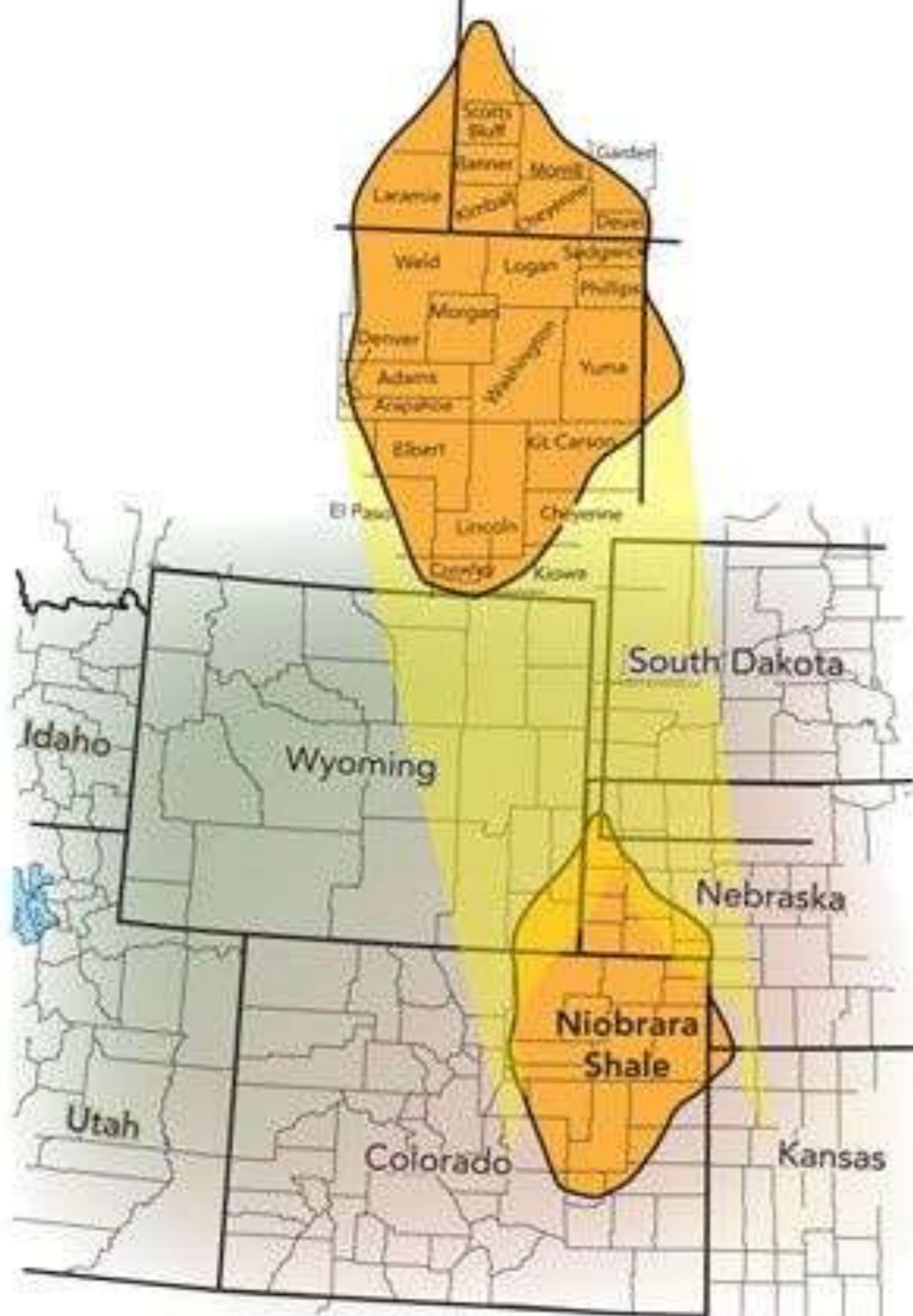
# Need for federal investigation

- When an airplane crashes, the NTSB investigates -- so when an oil well crashes, the nation needs an **Oil and Gas Safety Board** to provide oversight
- When an oil/gas well blows out, state or in the case on the Gulf BP disaster, both Dept. of Interior and Congress investigate
- When an oil/gas well causes public health or environmental pollution, States do not investigate the cause or the pollution pathway
- If a property owner succeeds with a tort claim = no public information

# Niobrara well blow out -- Wyoming

— October 2010





\* Approximate

# Total water demand for shale oil in Colorado

Potential: 100,000 wells in next twenty years  
43,000 active wells in Colorado today

## Assumptions:

15 to 30 acre feet for each frack job, 5 fracks per well  
50% of water stays in formation, other 50% treated and  
reused

each well needs 45 to 90 acre-feet over 20 years  
Total demand 4.5 to 9.0 million acre feet over 20 years  
Annual demand 225,000 to 450,000 acre feet per year

annual water demand would supply 2 to 4 million