Underground Injection Control (UIC) Program

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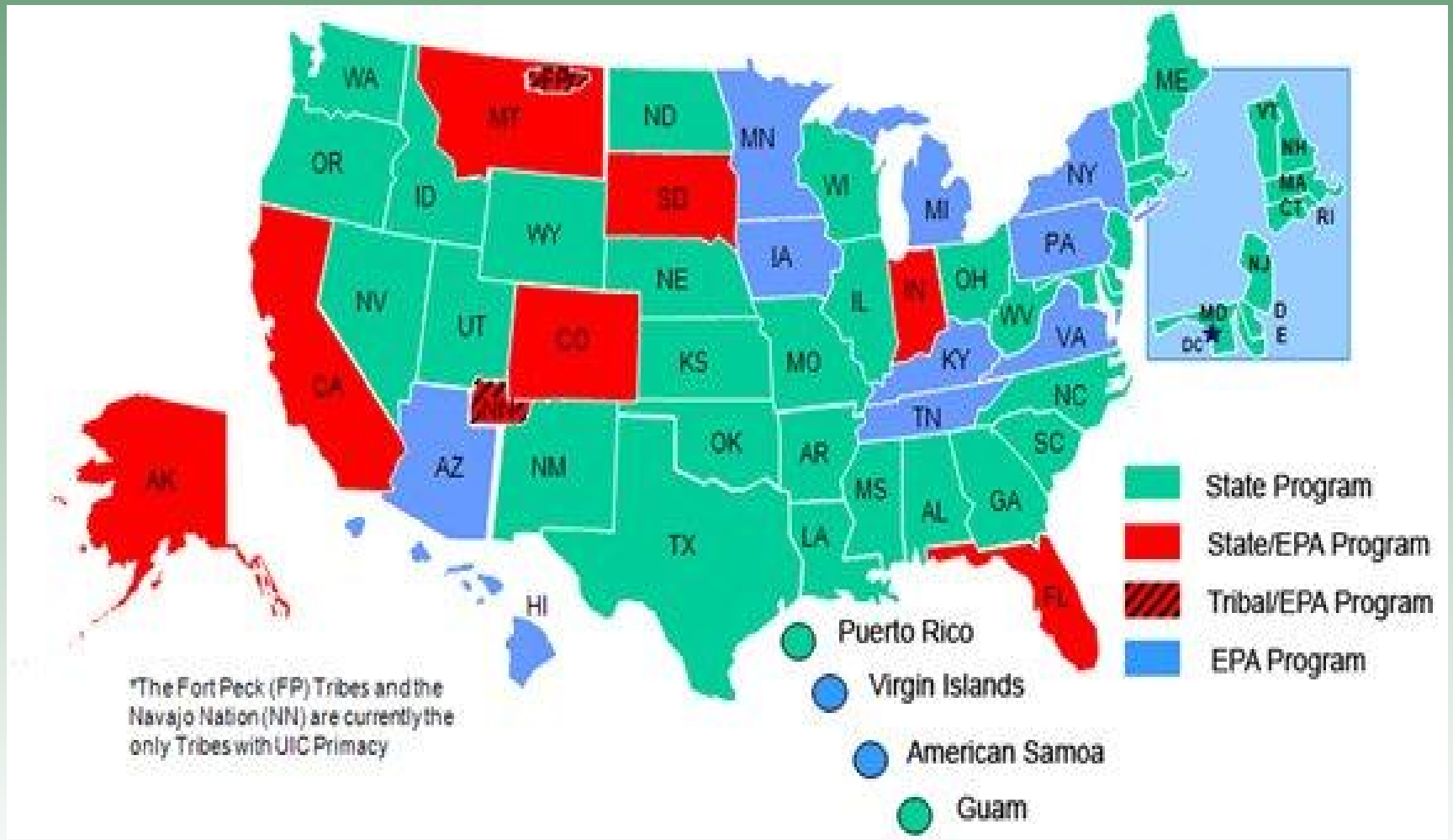
Office of Oil and Gas

1974 Safe Drinking Water Act

- Requires EPA to promulgate regulations to protect drinking sources from contamination from underground injection
  - 40CFR Part 145/146
  - 47CSR13 / 35CSR4

PRIMACY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Tribal/EPA Program
EPA Program
*The Fort Peck (FP) Tribes and the Navajo Nation (NN) are currently the only Tribes with UIC Primacy

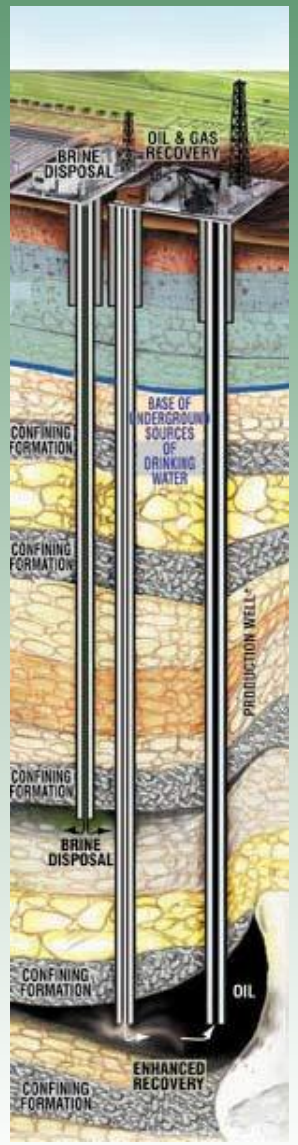
Six UIC Well Classes WVDEP/ OOG Does not regulate

- Class 1 Hazardous Waste (inject hazardous waste below USDWs).
- Class 4 Hazardous Waste/Banned Class Radioactive Waste (Inject waste into or above USDWs).
- Class 5 Injection wells not included in all other classes (Ex. Cesspools, Septic)
- Class 6 CO2 Sequestration (New)

WVDEP/OOG Regulates

- Class 2 Disposal Wells/Enhanced Recovery

- Class 3 Solution Mining Wells



Purpose of Class 2 UIC Disposal Wells

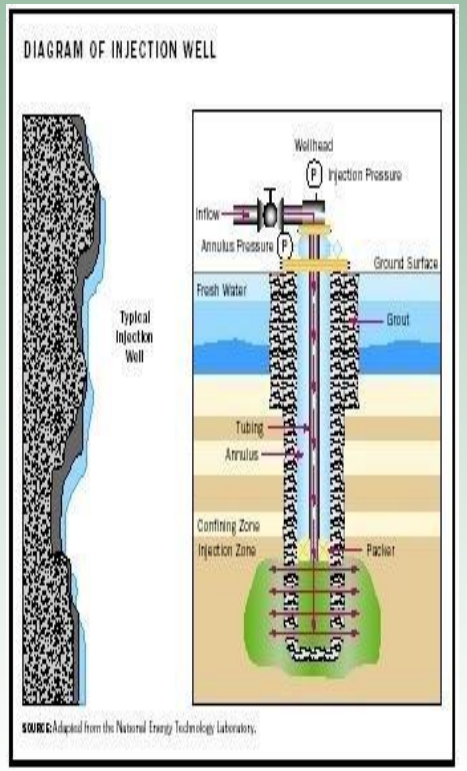
- Injection of fluids associated with oil and natural gas development/production which may be commingled with waste waters from gas plants into underground formation(s).
- Ensure fluids injected do not migrate into Underground Sources of Drinking Water.

- Injection preferred into deeper formation(s) than it originated.

- Good disposal method of oil and gas waste fluids.

Class2/3 UIC Well Construction

- Must have tubing and packer arrangement.
- Must have surface casing with cement circulated to surface.
- Must have long string/production casing cemented at least 100 feet above top of injection formation.



Permit Requirements

- Must submit 2 complete permit packages (available on website).
- UIC permit application and Well Work Permit.
- Need a Well Work Permit whether drilling new well or converting to UIC.

Permit Requirements cont.'d

- Area of Review Investigation (1/4 mile radius around injection well or project)
- Records for all wells (active, plugged/ abandoned) potential conduits within 1/4 mile radius
- Topo map all water wells/springs (drinking) within 1 mile radius
- Test all water wells/springs (drinking)

Permit Requirements cont.'d

- Structural Contour Map (Confining layer, Injection Formation)
- Isopach Map of injection formation.
- Wells logs (Cement bond, lithology, geophysical, etc.)
- Analyses of private water wells and injection fluids
- Listing of wells to be serviced by proposed UIC

Permit Requirements cont.'d

- Schematic of proposed well
- Fault investigation
- Plume prediction mode
- Description of confining layers (thickness, permeability, porosity, etc)
- Description of any additives to be injected

MECHANICAL INTEGRITY TESTING (MIT)

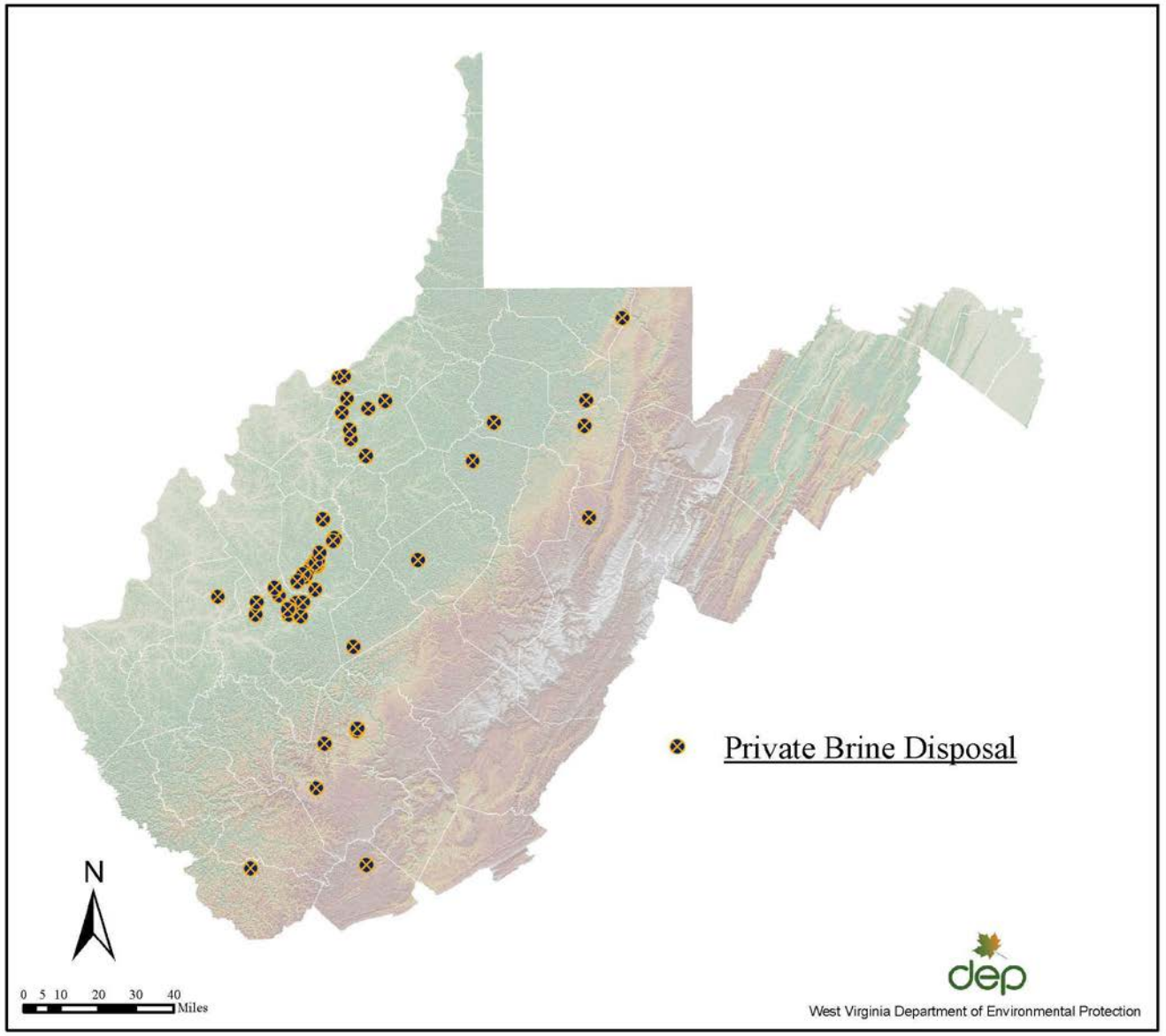
- INTERNAL TEST
  - Pressure Test
  - Annulus Monitoring
- EXTERNAL TEST
  - Temperature
  - Noise
  - Cement Bond Logs

Monitoring and Testing Requirements

- Daily monitoring for injection pressures, rates, volumes, etc. (Reported monthly on WR-40 Form)
- Integrity tested at least once every five years (MIT) testing casing, tubing, and packer.
- Some Commercial Class 2 Disposal well facilities required to sample fluids before disposal

WV UIC Class 2 and 3 Permits

- 54 Non-Commercial Disposal Well Permits
- 16 Commercial Disposal Well Permits
- 12 Enhanced Recovery (Waterflood) Permits
- 1 Solution Mining Permit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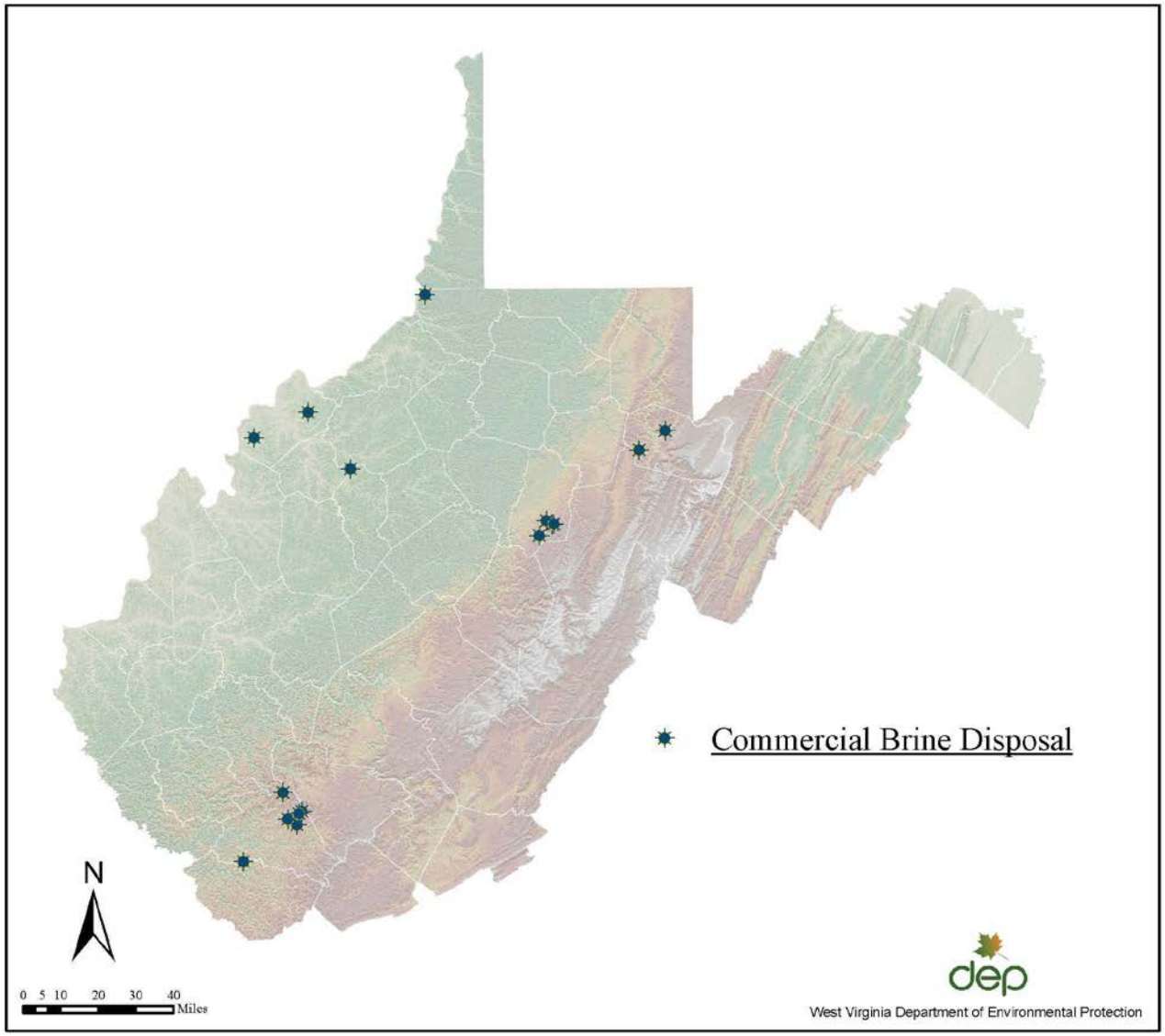
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Commercial and Non-Commercial Disposal Wells

- Similar regulations
- Commercial (major difference)
  - Increased security
  - Fluid sampling if third party haulers used

Questions?