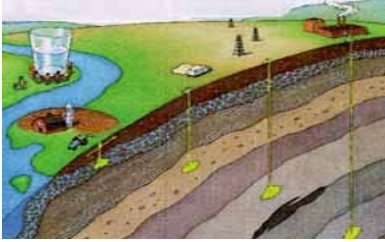


EPA Underground Injection Control (UIC) Permitting of Insitu Leaching (ISL)

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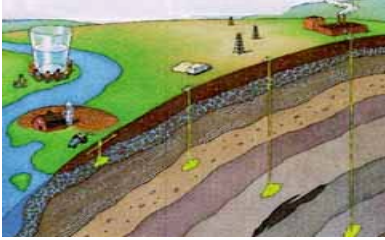


EPA Statutes and Regulations

Which EPA Statutes and Regulations apply to Uranium Mining Facilities ?

- Safe Drinking Water Act — regulate injection wells to protect groundwater
- Uranium Mill Tailings Radiation Control Act (UMTRCA) — developed standards, oversight by NRC/DOE with EPA concurrence
- Clean Water Act — regulate surface water discharges
- Clean Air Act — regulate radon emissions from mine, milling and impoundments. Most recently, ISL evaporation ponds are included
- National Environmental Policy Act (NEPA) — review EIS's and EA's for uranium mine and mill facility approvals and operations on Federal lands, and for State/Tribal lands as appropriate.
- CERCLA ("Superfund") — Authorizes EPA to take actions for uranium mine and mill operations which create imminent endangerment.





Safe Drinking Water Act (SDWA) and other Laws

The SDWA requires EPA to protect underground sources of drinking water (USDWs) from contamination by underground injection control (UIC)

Subpart A – UIC General Provisions 40 CFR §144.1 - §144.8, §146.1 – §146.10

§144.4 Considerations under Federal law. When any of these Federal laws apply, certain procedures must be followed prior to permit issuance:

The Wild and Scenic Rivers Act

The National Historic Preservation Act of 1966

The Endangered Species Act

The Coastal Zone Management Act

The Fish and Wildlife Coordination Act

Executive orders.





Selected UIC Terms

§§144.3, 146.3

Aquifer - a geological “formation,” group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

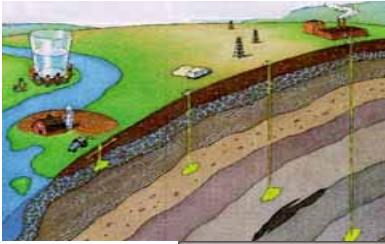
Contaminant - any physical, chemical, biological, or radiological substance or matter in water.

Exempted aquifer - an “aquifer” or its portion that meets the criteria in the definition of “underground source of drinking water” but which has been exempted according to the procedures in 40 CFR §144.7.

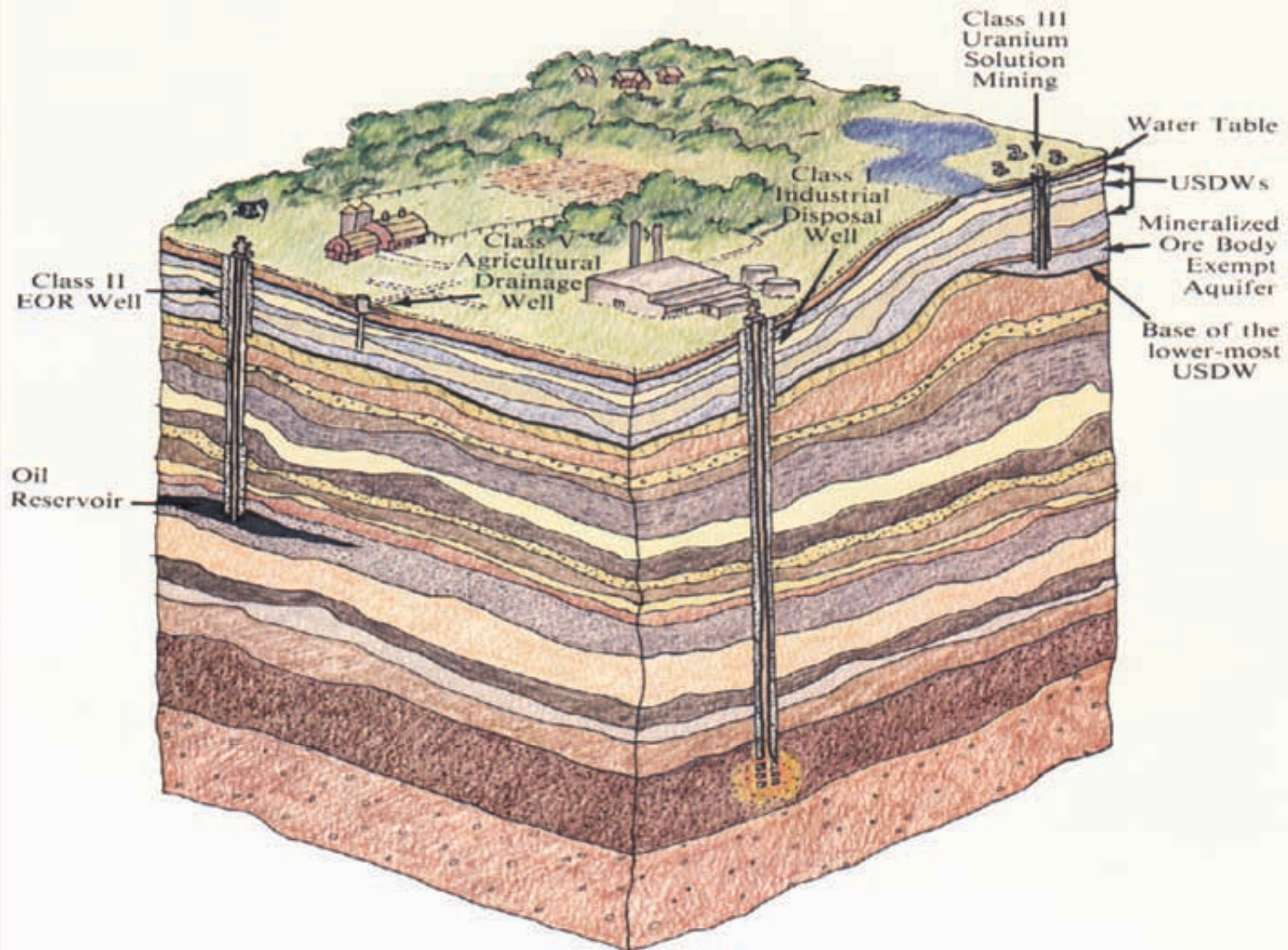
Underground source of drinking water (USDW) - an aquifer or its portion:

- (a)(1) Which supplies any public water system; or
- (2) Which contains a sufficient quantity of ground water to supply a public water system; and
 - (i) Currently supplies drinking water for human consumption; or
 - (ii) Contains **fewer than 10,000 mg/l total dissolved solids**; and
- (b) Which is not an exempted aquifer.





UIC Well Classification, §§144.6, 146.5



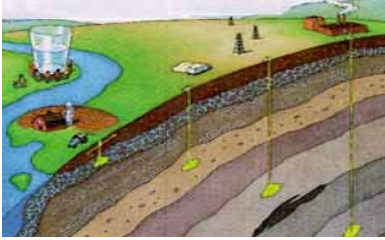


UIC Aquifer Exemption

§144.7 Identification of underground sources of drinking water and exempted aquifers.

- **EPA takes all aquifer exemptions very seriously**
- **No exemption is final until approved by the EPA as a program revision, after notice and opportunity for a public hearing; delegated state/tribe may recommend, EPA must concur**
- **Substantial vs non-Substantial - most aquifer exemptions are approved as non-substantial by regions without Federal Register Notice**
 - Substantial (“Major”) – not part of a permitting action, aquifer water < 3,000 mg/l TDS (total dissolved solids), and meet 146.4(b) criteria, requires Federal Register Notice, and EPA Administrator must concur.
 - Non-substantial (“Minor”) – all others; requires regular public notice, may become final if EPA Regional Administrator does not disapprove within 45 days. Region 9 will typically disapprove unless delegated programs have worked closely with us prior to their recommendation.





Aquifer Exemption Criteria, §146.4

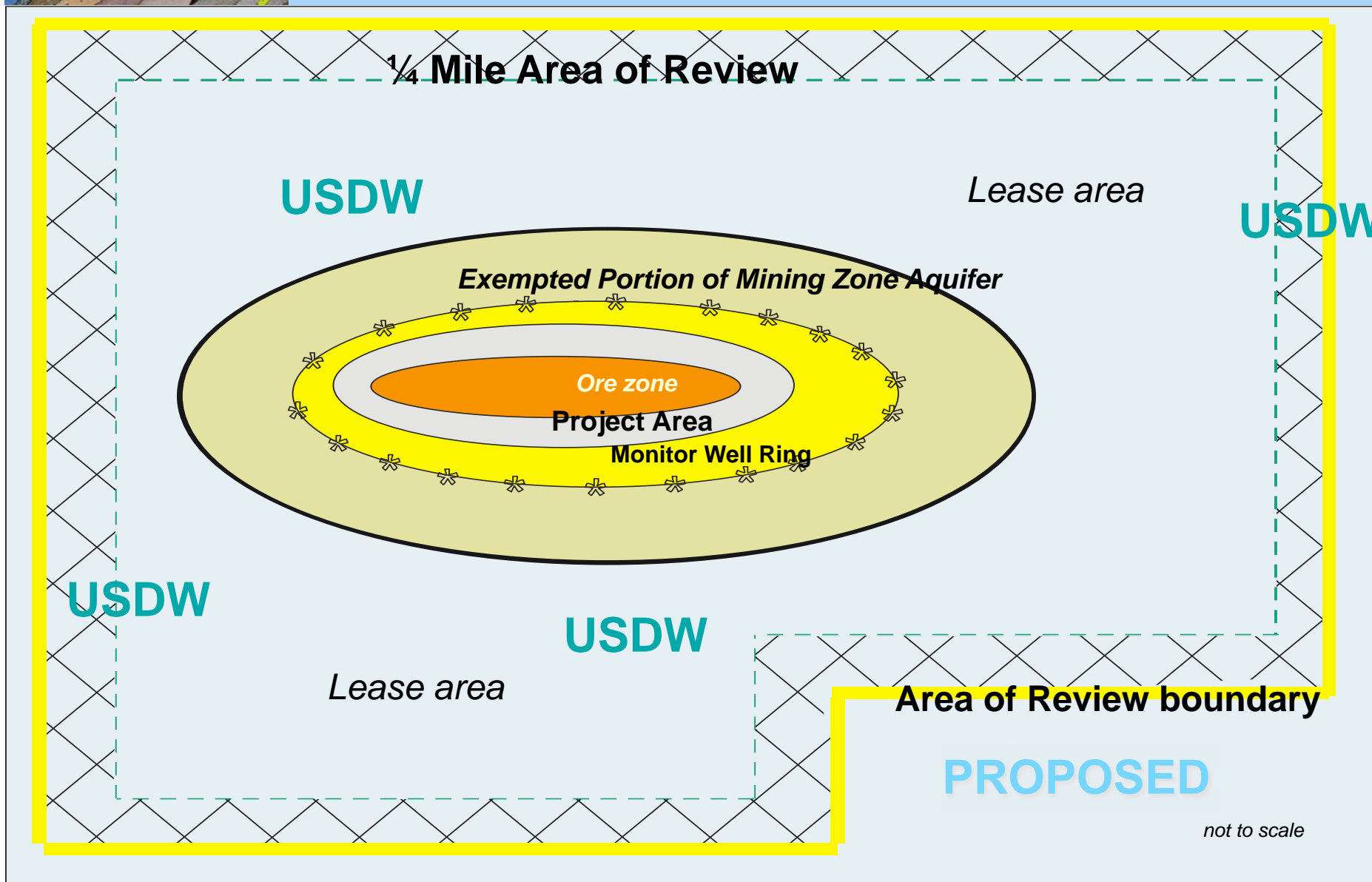
KEY POINTS:

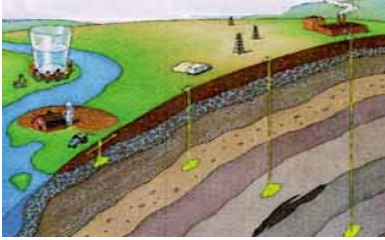
- **Aquifer OR PORTION of aquifer...**
- **CANNOT currently serve as drinking water source (not limited to public water system)**
- **Contains commercially producible resources**
- **Under UMTRCA requirements there is no definition of an exempted aquifer and groundwater restoration may be required to take place in the well field regardless of this classification.**





Region 9 Aquifer Exemption Project Area, AOR, Exempted Area





UIC Authorization by Permit

Authorization by Permit, Subpart D — §144.31 – §144.41

§144.31 Application and Authorization by permit - Unless authorized by rule, **all injection activities including construction of an injection well are prohibited until authorized by permit.**

§§144.33, 144.41 Area permits and Minor Modifications are allowed

§144.36 Permit Duration - issued for a period up to the operating life of the facility. EPA shall review permits at least once every 5 years





UIC Permit Conditions

Permit Conditions, Subpart E — §144.51 – §144.55

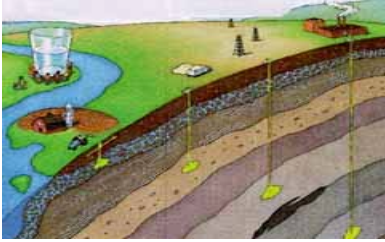
§144.51 Conditions Applicable to all permits - Duty to comply/provide information, Proper operation and maintenance, Inspection and Entry, Monitoring and Records, Reporting, Plugging and Abandonment (§146.10), Mechanical Integrity (§146.8)

§144.52 Specific conditions - Construction and Operation requirements, Financial responsibility (demonstrate and maintain financial assurance to close, plug, and abandon in an approved manner)

§144.55, §146.7 Corrective Action - Identify improperly sealed, completed, or abandoned wells within the area of review (AOR, §144.6) which penetrate the injection zone, and submit a plan to prevent movement of fluid into or between USDWs.

Establish maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the part 146 operating requirements.





UIC Permit Criteria and Standards

Class III Wells Criteria and Standards Subpart D, §146.31 – §146.34

§146.32 Construction requirements – Casing, cementing, logs and tests, determination/ calculation of fluid pressure, fracture pressure and formation fluid physical and chemical characteristics, monitoring wells if formation water is less than 10,000 mg/l TDS

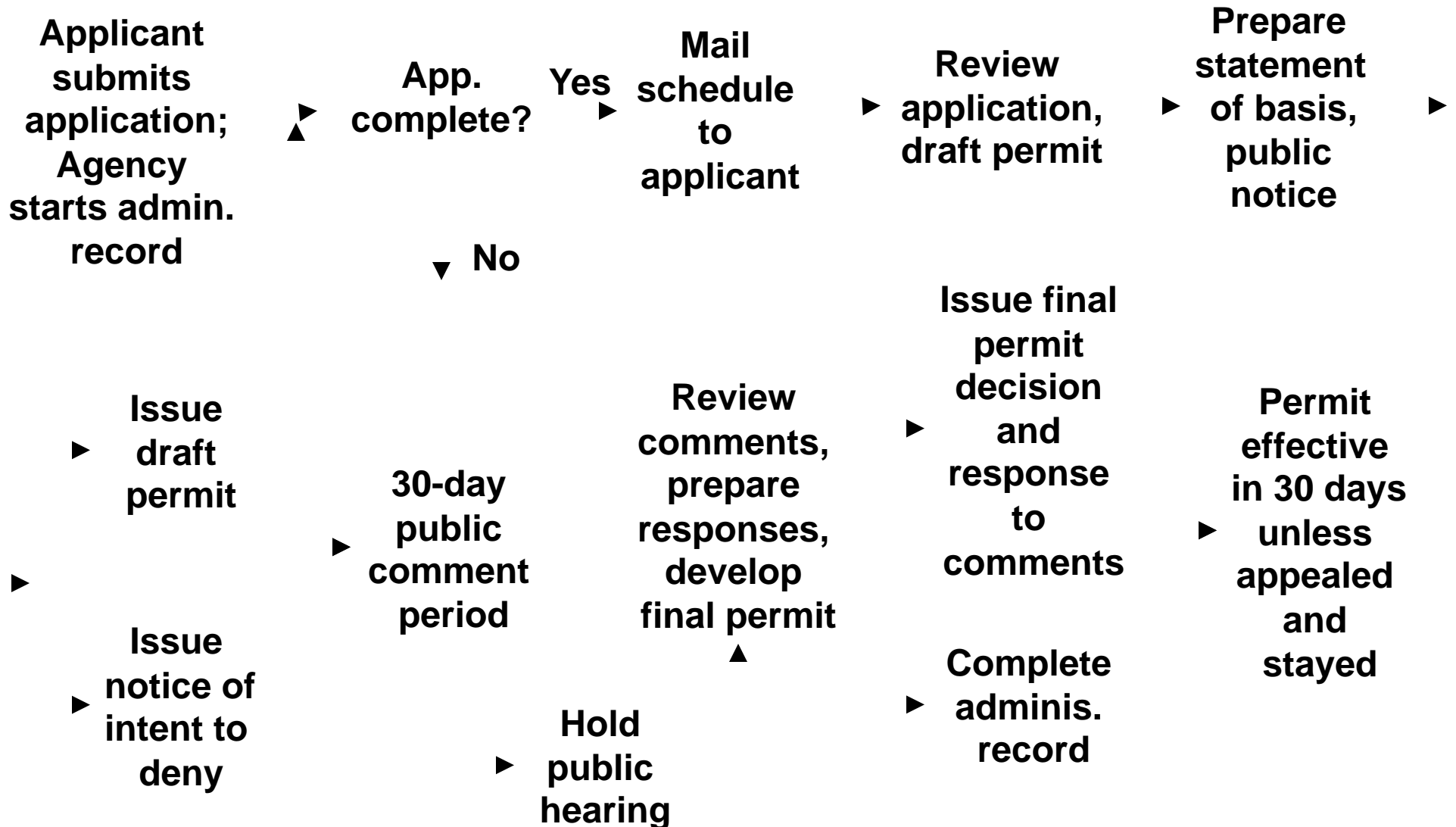
§146.33 Operating, monitoring, and reporting requirements - Establish maximum injection volumes/pressures to **assure fractures are not initiated in the confining zone, that injected fluids/formation fluids do not migrate into any USDW.**

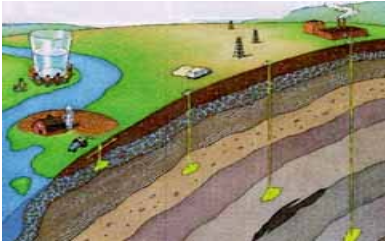
§146.34 Information to be considered by the Director -

- Maps and cross sections with vertical limits of all USDWs within the area of review, position relative to injection formation, and direction of water movement;
- Local area geologic structure maps and cross sections;
- Regional geologic map and cross sections;
- Expected changes in pressure, native fluid displacement, direction of injection fluid movement;
- Formation testing program results;



Public Participation in UIC Permitting (40 CFR Part 124)





Thank You!

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