

U.S. DEPARTMENT OF ENERGY  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

**NUCLEAR WASTE TECHNICAL REVIEW BOARD  
PANEL ON STRUCTURAL GEOLOGY & GEOENGINEERING**

**SUBJECT: PERFORMANCE ASSESSMENT  
AND THE SEALING PROGRAM**

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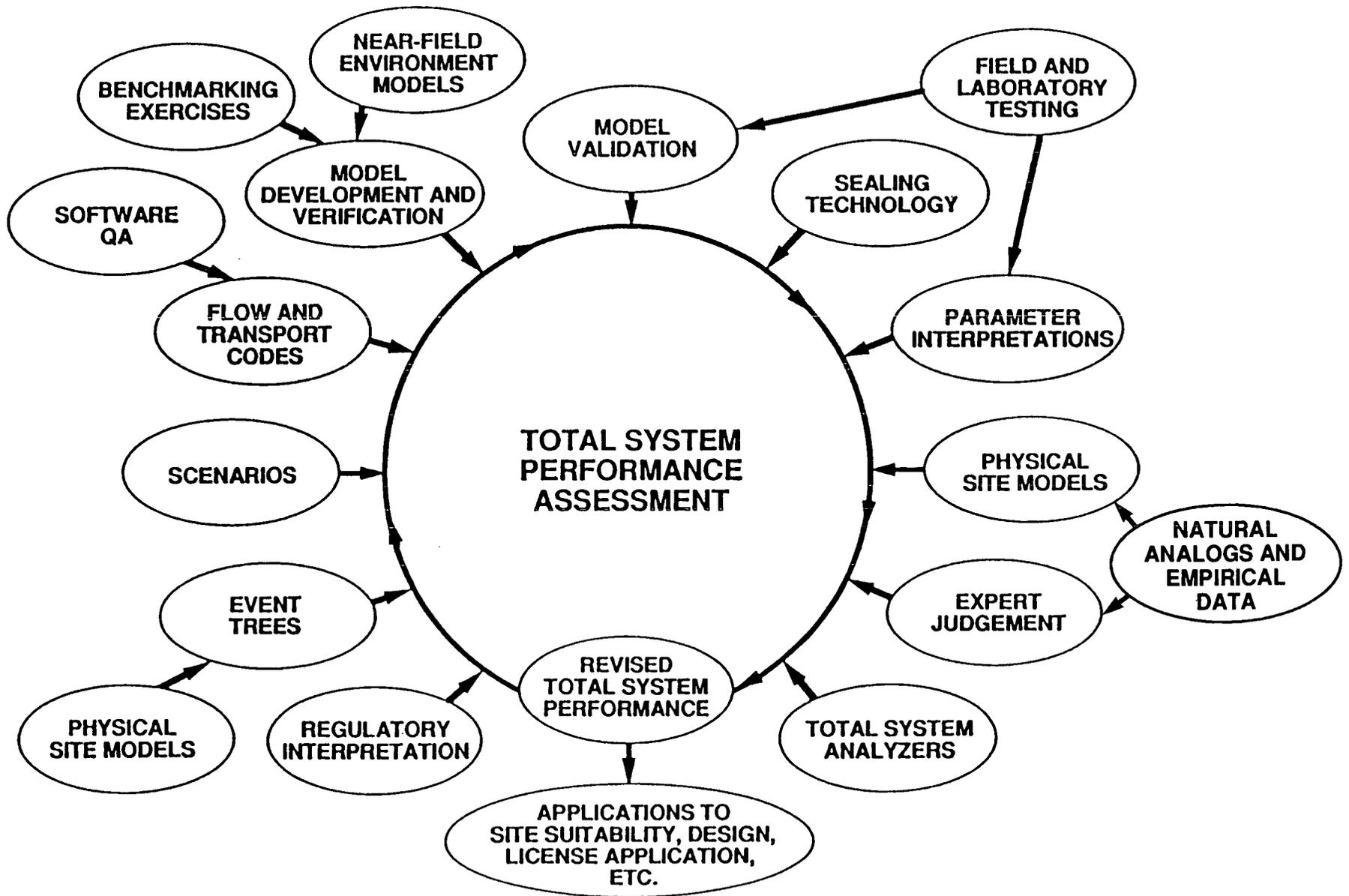
**NOVEMBER 12-13, 1991**

# Performance Assessment and Sealing

- **Performance of sealing systems**
  - **Substitute criteria**
  - **"Incredible" scenarios**
- **Design of sealing systems**
- **Sealing systems in performance assessments**

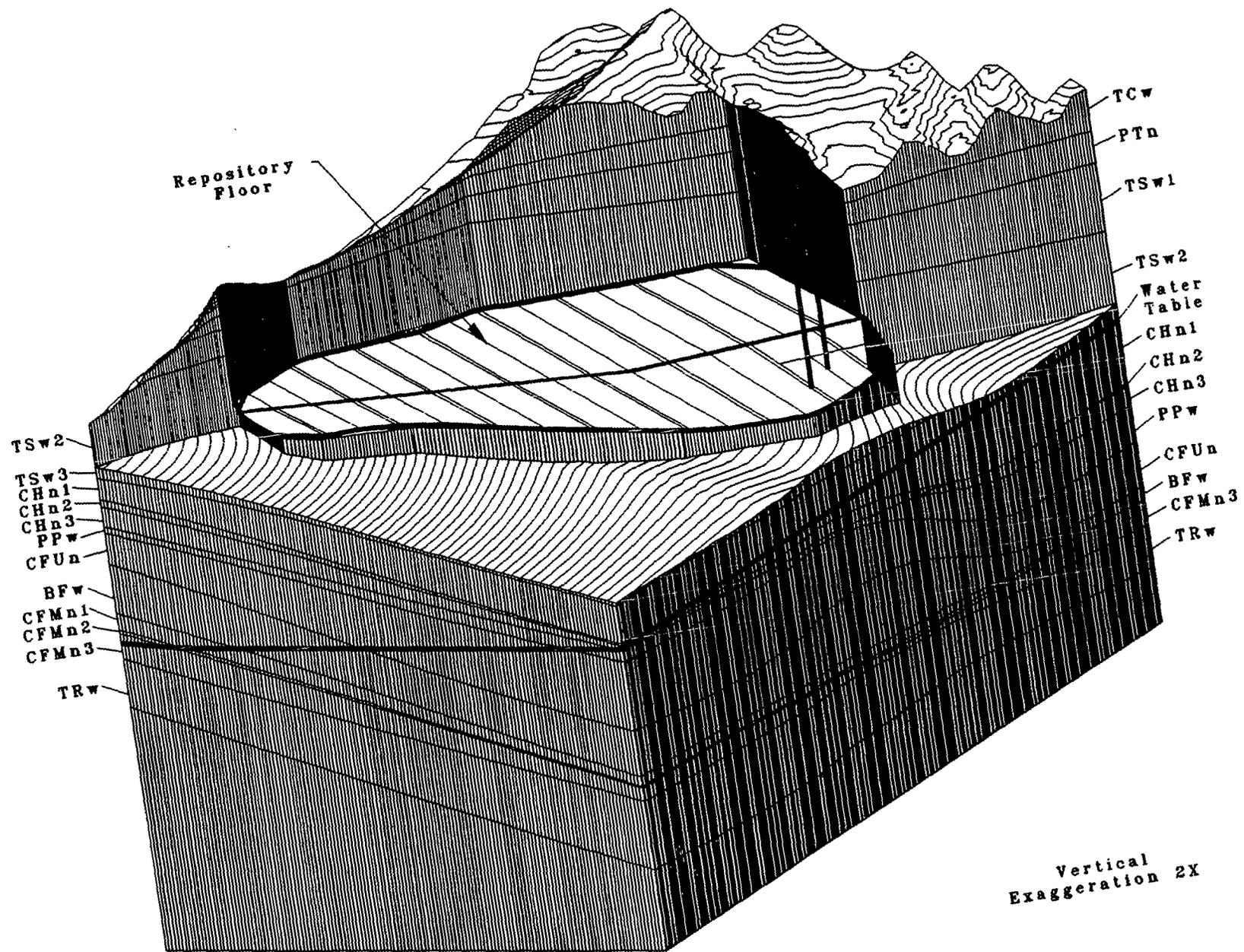
# **Importance of Sealing Systems in Meeting Total-System Performance Objectives**

- **Water reaching waste emplacement areas**
- **Potential for human intrusions**
- **Preferential pathways**
- **Near-field environment**



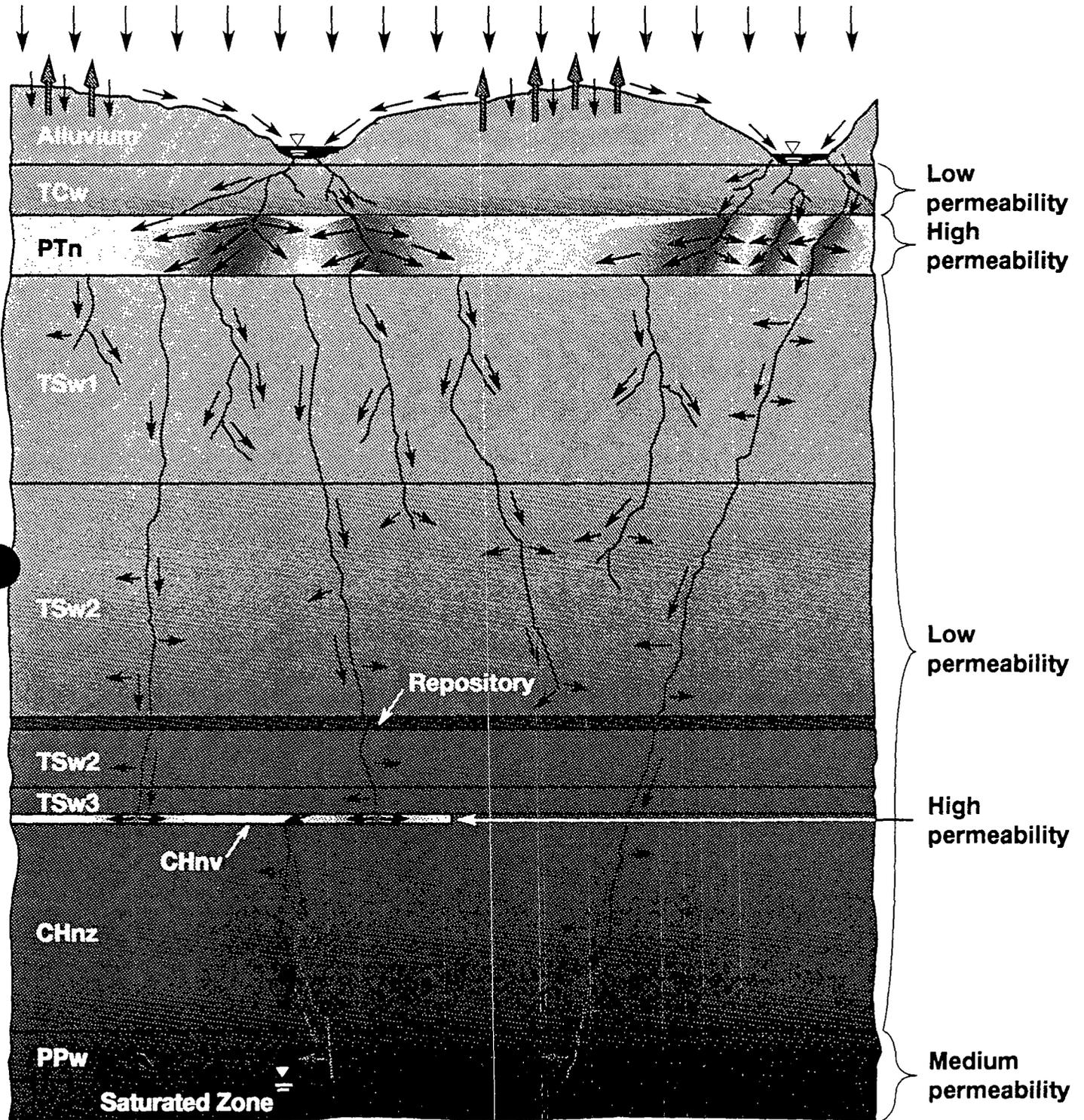
# Seals in Total-System PA

- **Scenarios**
  - **Conceptual Models**
  - **Parameters**
- } **Geometry**

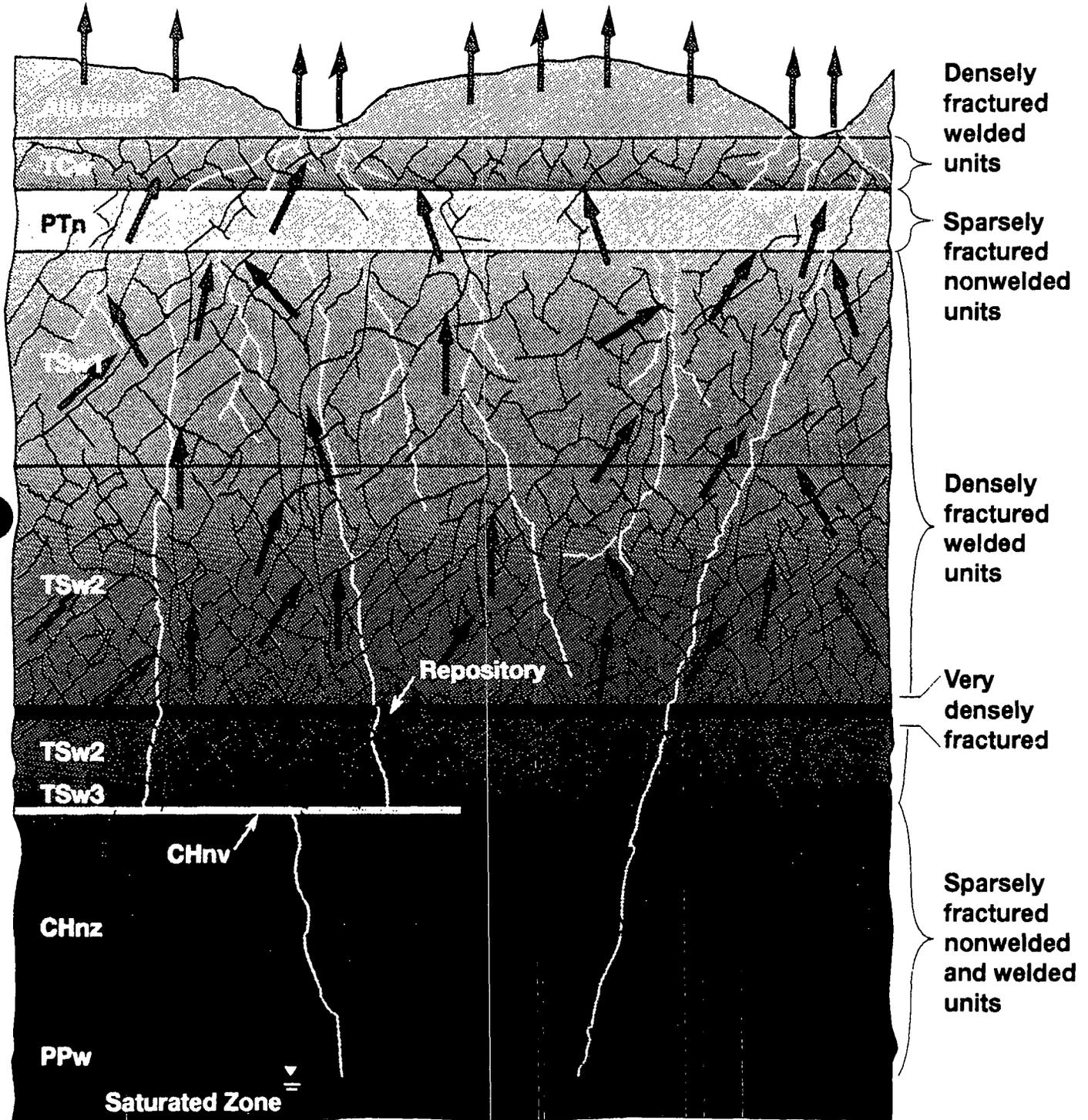


Vertical  
Exaggeration 2X

# Episodic infiltration occurs as fracture-dominated flow in the low permeability units and matrix-dominated flow in the high permeability units



**Greater fracture densities in the welded low permeability units may facilitate vapor phase removal of moisture**



# Conclusions

- **Sealing systems must be considered in meeting performance objectives**
- **Geometry and present conceptual models suggest influence of seals may be small (insignificant)**
- **Seals will be included in future cycles of total-system PA**
- **The near-field impacts of some sealing components (backfill) may be important to flow**