

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

**NUCLEAR WASTE TECHNICAL REVIEW BOARD
FULL BOARD MEETING**

**SUBJECT: INTEGRATION OF DATA
AND MODELS**

PRESENTER: DR. JEAN L. YOUNKER

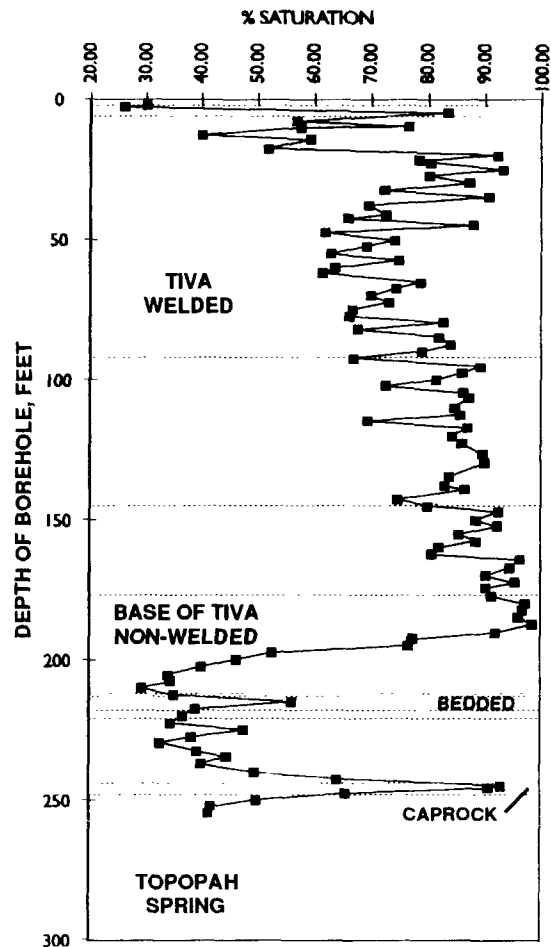
**PRESENTER'S TITLE
AND ORGANIZATION: MGDS SYSTEMS MANAGER
M&O/TRW ENVIRONMENTAL SAFETY SYSTEMS
LAS VEGAS, NEVADA**

**PRESENTER'S
TELEPHONE NUMBER: (702) 794-7650**

**RENO, NEVADA
APRIL 21-22, 1993**

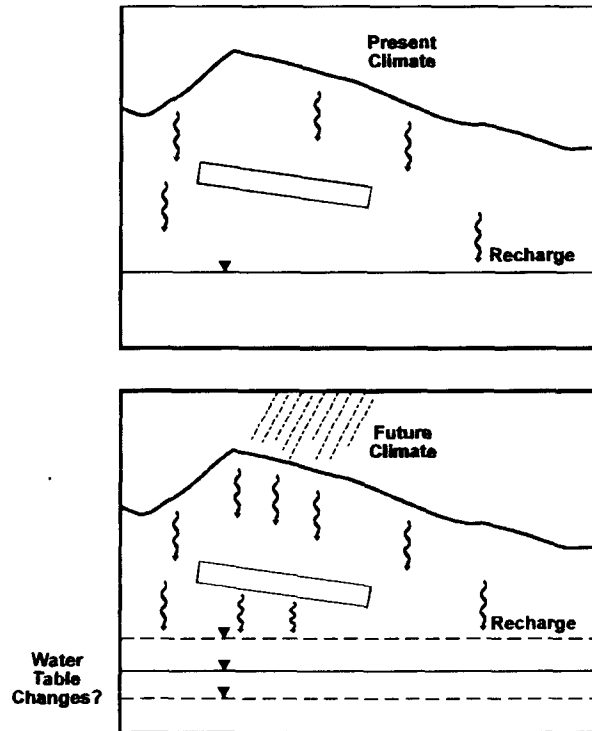
Integration of Data and Models

Site Data

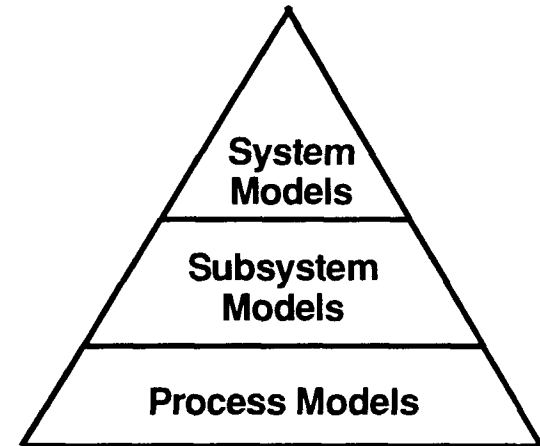


Site Models

- Preferred
- Alternative



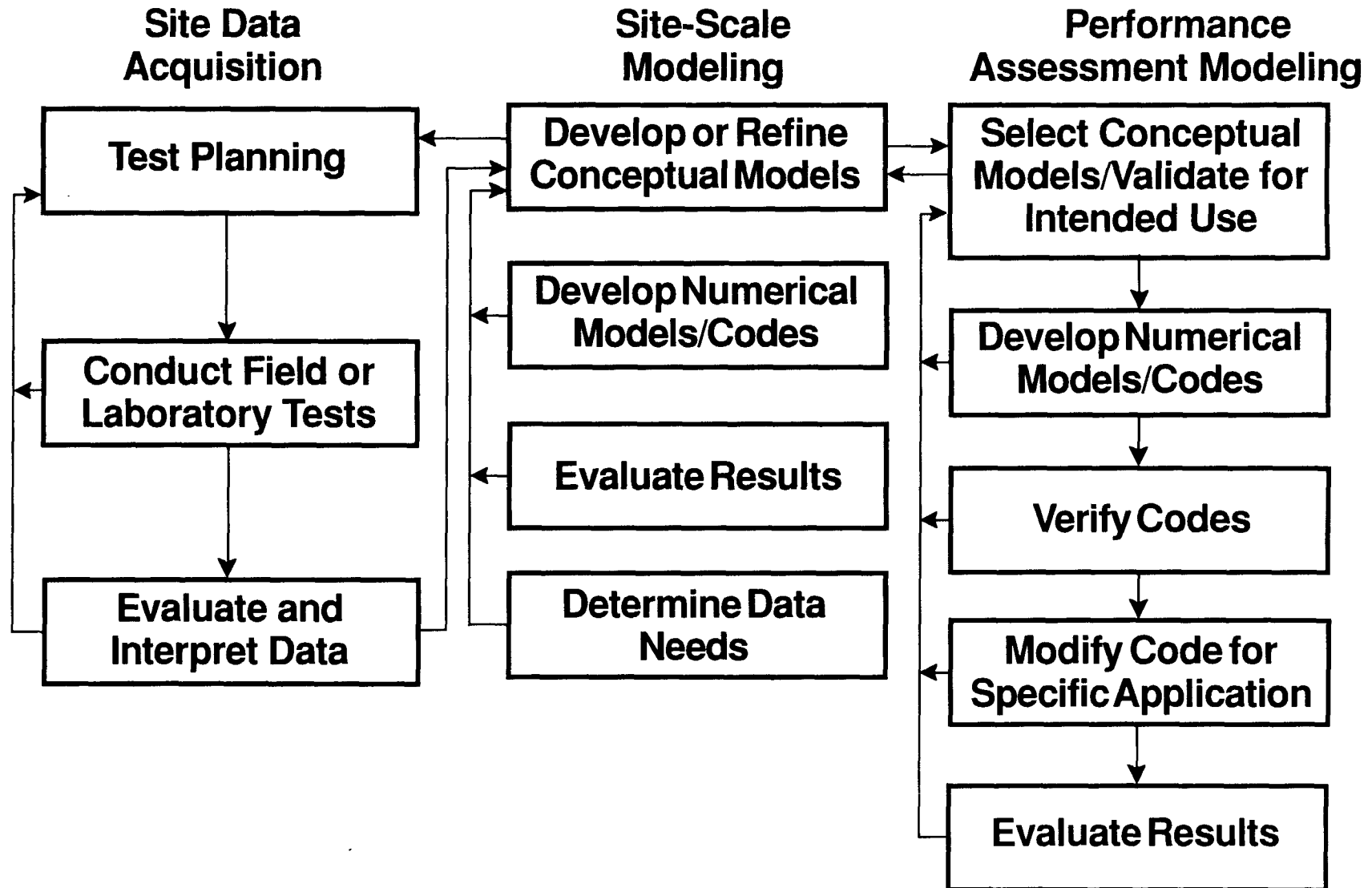
PA Models



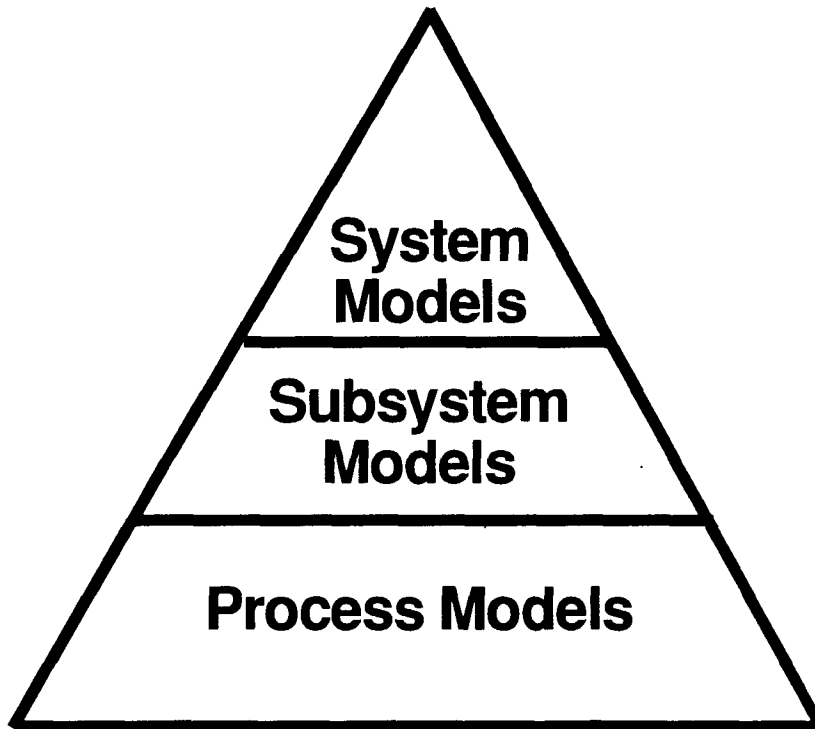
The Modeling Process

- **Develop alternative conceptual models**
- **Collect data to test validity of alternative models**
- **Select preferred model(s) and eliminate those no longer supported**
- **Develop numerical models/computer codes**
- **Perform sensitivity and uncertainty studies**
- **Decide if additional data are needed**
 - **Is uncertainty acceptable?**
 - **Is uncertainty irreducible?**

Interfaces and Feedbacks



Systematic Review of Models Pyramid



- Evaluate and select total system models/codes
- Review waste package subsystem models/codes and select one for upgrading
- Review flow and transport models/codes
- Review status of mechanistic/process codes

Objective: Ensure credible hierarchy of models/codes are available to predict performance

Specific Actions to Date

- **Repository Integrated Performance (RIP) code (Golder, 1991) used to conduct sensitivity studies on TSPA, 1991 results**
 - **Recommended as candidate for DOE Total System Model**
- **Waste Package Model/Code (ARREST) developed by Pacific Northwest Laboratories, selected as preferred subsystem model and being upgraded**
 - **Improved near-field**
 - **Alternative geometries**
 - **Alternative designs**
- **Next Total System Performance Assessment underway**
 - **Non-isothermal**
 - **Alternate waste package designs and emplacement modes**
 - **Improved hydrogeologic understanding**

A Perspective on the Session Topics

