The Value of State Oversight in DOE Waste Disposal Operations

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Outline

- Legislation and Funding
- The Regulatory Environment – the way it was Early 1980's
  - Hanford
  - State Oversight of Yucca Mountain during Site Conceptualization and Characterization
- New Approaches to Technical Interaction Applied by the DOE EM Office of Compliance

Legislation and Funding

- **The Nuclear Waste Policy Act of 1982**
  - Review and oversight by States and Indian Tribes
  - Funded from the Nuclear Waste Fund
- **NWPA 1987 Amendments**
  - Singled out Nevada
  - Extended oversight to local governments
- **1995 DOE withheld funds** from Nevada and local governments
- **1997 Appropriations Act**
  - Oversight funds prohibited to Nevada and local governments

The Way it Was – 1980's

- Pre-NWPA – NRC was developing Siting Criteria for HLW (10 CFR 60) in anticipation of NWPA and later applying these criteria to repository candidate sites.
- EPA was developing standards (40-CFR 191)
- Data were often difficult to obtain, sparse and not readily transferable or easily workable.
- Despite these problems, NRC did manage to have meaningful technical exchange of information.

After NWPA 1982

- With the passage of the NWPA, States and Tribes were given a review and oversight function
- State's and Tribe's opinions were often not taken seriously.
- Data were not readily available for their review and were often slow in coming, partly due to not knowing what was available.

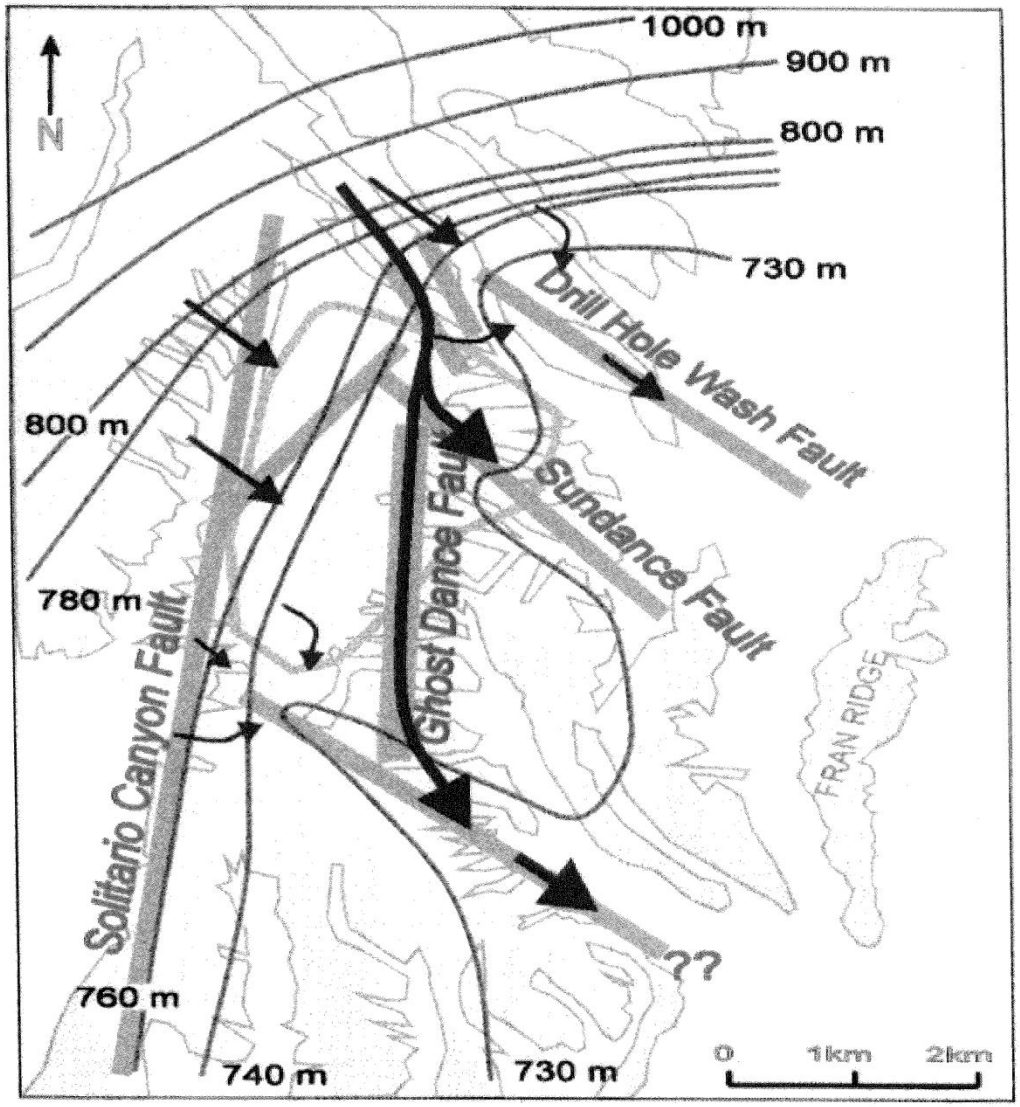
Yucca Mountain Reviews

- Differences in technical interpretation between the State of Nevada and the YM Project started to emerge in the mid 1980's and early 1990's. Two examples are:
  - Volcanism and recurrence intervals
  - Groundwater flow field

Groundwater Flow Field

- State Contractors were not convinced of the conceptualization of saturated flow put forth by the DOE/USGS.
  - matrix flow
  - west to east flow
  - potentiometric surface interpretations

- The State Contractor conceptualization included:
  - Structurally controlled fracture flow
  - Temperature data indicated movement along fault zones
  - Different interpretation of the potentiometric surface


N
1000 m
900 m
800 m
730 m
800 m
780 m
760 m
740 m
730 m
Drill Hole Wash Fault
Sundance Fault
Ghost Dance Fault
Solitario Canyon Fault
FRAN RIDGE
??
0
1km
2km

Groundwater Flow Field

- Nevada urged OCRWM to incorporate the temperature data and match both temperature and head data.
- OCRWM refused to look at this scenario despite the evidence.
- Nevada pressed forward and developed their own conceptual and numerical models.

Site Characterization

- Site Characterization began at Yucca mountain without consideration of a fault controlled, fracture flow conceptual model.
- Despite State urging to investigate/interrogate major fault and fracture zones, OCRWM largely ignored their comments regarding characterization.
- Had OCRWM been open to alternative conceptual models early on in the process, characterization efforts could have led to better, more relevant information obtained earlier in the process.

Later Developments

- During the 1995 -96 time frame, excavation of the tunnel produced Bomb pulse Chlorine 36 along exposed fractures.

- DOE and the USGS set about verifying this information by:
  - Remapping
  - sampling the tunnel several years later

Final DOE Models

- Later (2005-2006), the DOE finally included fracture flow and fault zones into their site models.
- While more complicated, the latest OCRWM model flow paths are very reminiscent of those developed years earlier by the State contractors.
- The OCRWM defensive approach was actually a costly position that resulted in a sparse and very uncertain data set entering into the License Application.

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DOE EM Has a New Approach

- Part of the DOE site closure or waste disposal site process involves the development of a performance Assessment (PA)
- After a few bad experiences, trying to get agreement on PAs from the States, DOE EM realized the process was not working and something had to change.

DOE EM Office of Compliance PA Scoping Approach

- Bring all affected parties and regulators to the table to discuss each of the key aspects of the PA.
- Much of it is educational.
- This approach paid off for the DOE EM at each of the sites where it has been tried, Savannah River and Idaho; saving both time and money.
- More importantly the process resulted in an informed (and largely supportive) regulator and stakeholder community.

Conclusions

- Involve States, Tribes, local governments and other stakeholders early in the PA process,
- Address stakeholder questions and concepts in a meaningful way. Do not ignore them– get answers.
- Though the Scoping process can take time, it can result in considerable savings in both time and money.
- Other public technical exchange processes can benefit utilizing the DOE EM Office of Compliance PA Scoping process.