

The Evolution of Waste Retrieval/Removal Requirements for the Waste Isolation Pilot Plant

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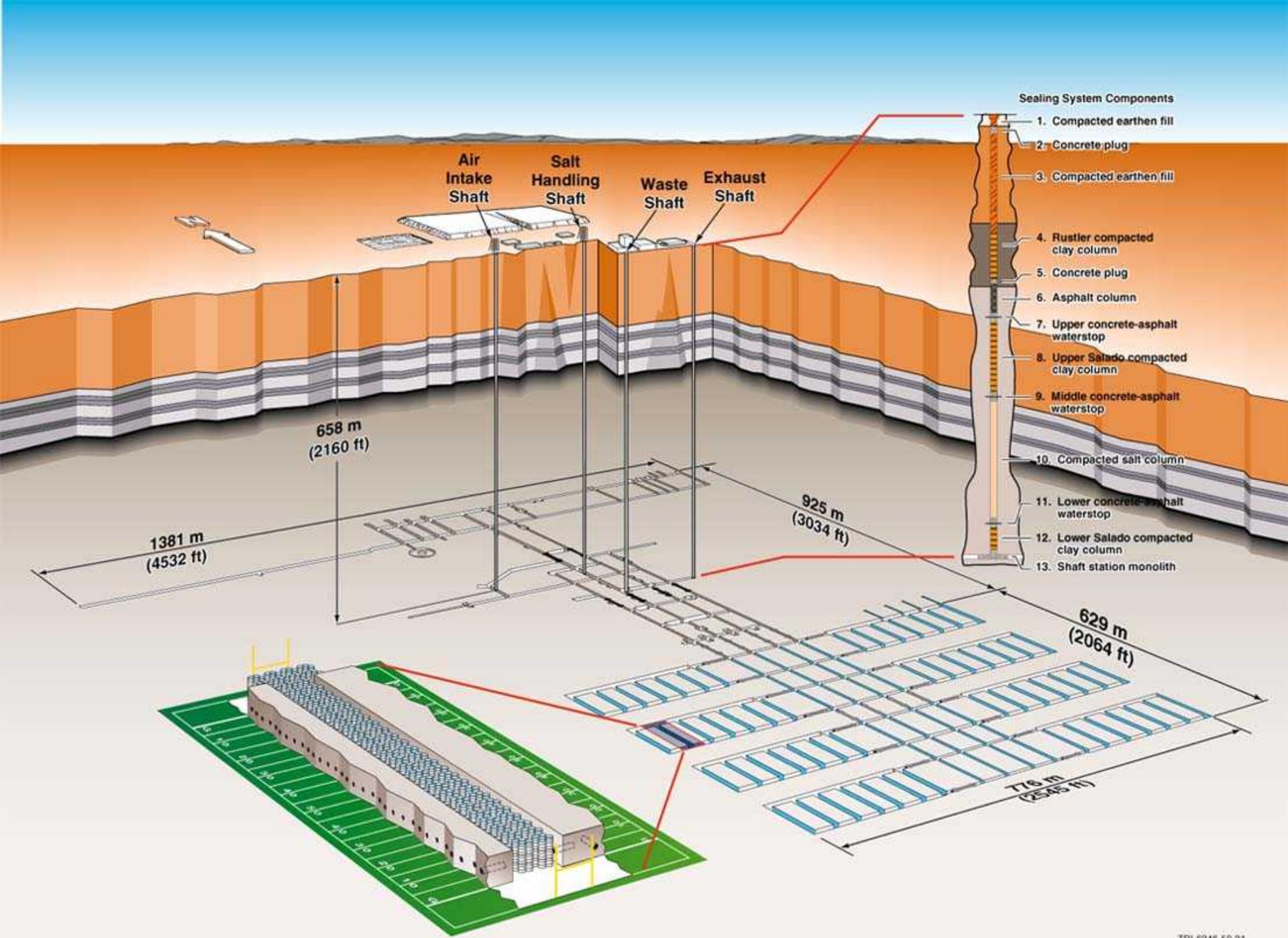


Waste Isolation Pilot Plant (WIPP)



Mission

To permanently dispose defense transuranic waste in an environmentally sound and safe manner in compliance with applicable environmental regulations and laws





Panels Constructed by Conventional Methods



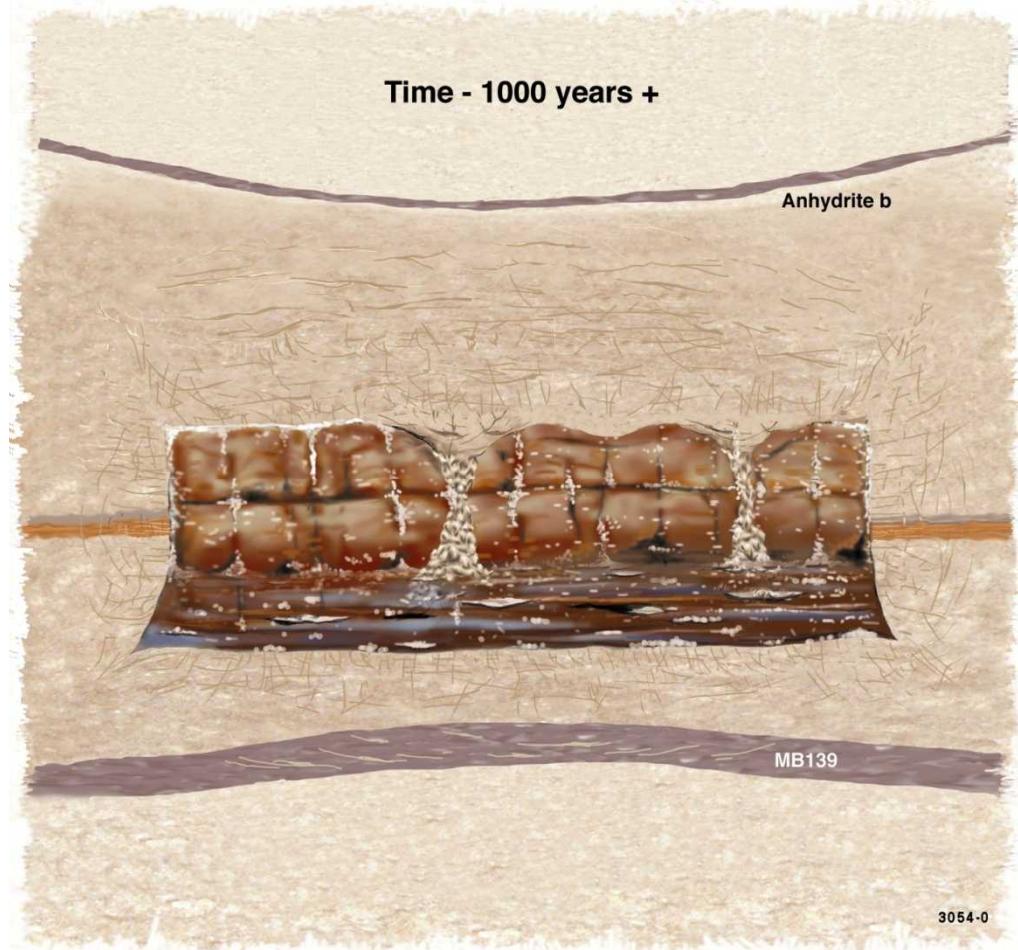


Waste Emplacement

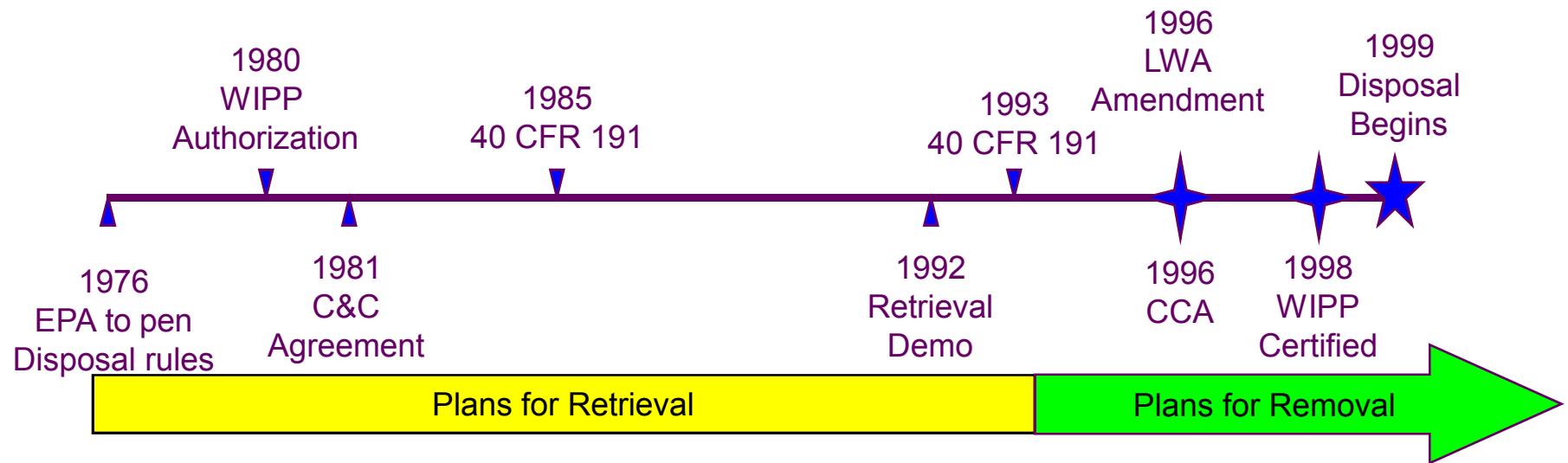


Disposal Concept, Safety, and Progress

- **Bedded Salt is Superior (NAS 1957)**
 - Dry
 - Plastic
 - Stable
- DOE has cleaned up 17 small sites and two large sites
- WIPP is more than 50% filled



Regulatory Timeline





Waste Retrieval and the WIPP Test Phase

- Waste experiments planned for WIPP underground
- If unfavorable results were obtained from experiments, waste would be retrieved
 - Waste was being “stored” during experiments, not considered to be “disposed”
 - Key Concept: **Waste Retrieval** differs from **Waste Removal** in that removal occurs after disposal
- State of New Mexico negotiated the “Consultation and Cooperation Agreement”
 - Contained provisions for waste retrieval and waste retrieval demonstrations to verify that retrieval could be accomplished
- LWA requires retrieval demonstrations during test phase

1992 Retrieval Demonstration





Disposal Phase Requirements

- 40 CFR 191.14(f) states, “Disposal systems shall be selected so that removal of most of the waste is not precluded for a reasonable period of time after disposal” - emphasis added
- EPA’s Preamble to 40 CFR 191 states that “...there is no intent to require that a repository shaft be open to allow recovery...” and that “... it only needs to be technologically feasible (assuming current technology levels) to be able to mine the sealed repository and recover the waste – albeit at substantial cost and occupational risk”
- Removal must be *possible*, but not necessarily easy or inexpensive



Removal Regulatory Philosophy

- **Removal implies that disposal was intended to be permanent, with no provisions for removal explicitly engineered into disposal system**
 - No additional roof support
 - Shafts or entrances not maintained in open state
 - No intention of returning to waste area
- Regarding the removal requirement, EPA states, “... a mined geologic repository meets this requirement *without* any additional procedures or design features”
- **EPA wanted to make sure that future removal was not *impossible*, should a future generation make the informed decision that the waste, for whatever reason, should be removed**
 - This philosophy disqualifies certain disposal concepts, e.g., deep injection

Compliance with 40 CFR 191

- DOE submitted the Compliance Certification Application in 1996
- Outlined a 5-phase plan to remove waste from the WIPP repository after closure
 1. Planning and permitting
 2. Initial above-ground set-up and shaft sinking
 3. Underground excavation and facility set-up
 4. Waste location and removal
 5. Decontamination and decommissioning of facility
- Described techniques that could be used to remove the waste



EPA Review of CCA

- Found DOE's 5-phase approach acceptable
- Agreed that described techniques and procedures were all **feasible**
- DOE did not identify the time period during which waste removal would be feasible.
 - EPA determined that 100 years after disposal was a reasonable length of time during which waste could be removed
 - Current technology will likely remain available



WIPP's Continuing Compliance

- **WIPP's compliance must be recertified every 5 years after initial disposal of waste (1999, 2004, 2009, ...)**
- **Previous two recertification decisions by EPA did not modify the current removal plan**
 - **No public comments were received regarding the waste removal requirements or plans**
- **Therefore, the waste removal basis remains unchanged from that provided in original Compliance Certification Application of 1996**



Conclusion

- WIPP disposal program progressed from a test phase to a disposal phase
- WIPP test phase = waste **storage**
 - Storage requires retrieval capability
 - Facility components and features designed to facilitate retrieval
- WIPP Disposal phase = waste **disposal**
 - Disposal requires removal capability
 - Not easy, not inexpensive, but possible