

Feasibility Studies



INTERA has supported both surface-based and underground hydrogeological characterization programs at the US Department of Energy's Waste Isolation Pilot Plant.

INTERA's expertise in the hydrogeologic characterization of subsurface strata makes us well-qualified to help evaluate the feasibility of sites selected for CO₂ storage. We first began evaluating the subsurface hydrogeologic conditions for the siting of deep geologic waste facilities in the early 1980s as part of the United States Department of Energy (USDOE), Office of Nuclear Waste Isolation's Systematic Comprehensive Evaluation of the Performance and Total Effectiveness of a Repository for Nuclear Waste (SCEPTOR) Program. This work included developing a performance assessment methodology that was applied to a variety of potential sites and storage media types (i.e., bedded salt, basalt, crystalline, volcanics, and clay).

INTERA uses and confirms existing data and analyses from the initial site selection and augments them with additional data from a variety of sources to evaluate the feasibility of a site. For geologic storage projects, this includes evaluating both technical and non-technical components—subsurface geologic data, regulatory requirements, model data, site data, and social data. INTERA's capabilities are closely aligned with evaluating several of these components including subsurface geology and hydrogeology, regulatory requirements, and model and site data. Our depth of experience means we know where to find existing geologic and hydrogeologic data, as well as sources of proprietary or other data that can be efficiently acquired to help inform feasibility studies.

■ Site Characterization for Licensing and Monitoring of a Deep Geologic Repository for Transuranic Waste, Eddy and Lea Counties, New Mexico, USA

Challenge: To obtain and maintain a license to store transuranic waste in a bedded salt deposit located over 2,100 feet below ground surface.

Solution: The Waste Isolation Pilot Plant (WIPP) is a US Department of Energy geologic repository for defense-generated radioactive wastes. INTERA conducted field hydrogeological characterization, data interpretation and documentation, and modeling in support of site characterization and performance assessment of the site and underground facility for long-term waste isolation. INTERA was responsible for much of the field characterization and groundwater modelling used to support the license application for the facility to be approved as a repository. Since the facility became operational in 1999, INTERA has continued to provide hydrogeological characterization services in support of licensing and monitoring efforts. Some of our work at WIPP has included deep borehole permeability testing and test interpretation, design and execution of multi-well tracer tests, permeability testing in repository access shafts (to support eventual sealing activities), combined permeability and hydrofracturing tests in the repository host rock, and brine inflow and gas threshold pressure testing in the underground repository.

Results: INTERA's characterization efforts supported the successful licensing of WIPP which became operational in 1999. Our work has also supported several license renewals and WIPP continues to operate as the only deep geological repository for radioactive wastes in the United States.

