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## **MONITORING AND REMEDIATION OF THE I&W BRINE CAVERN IN CARLSBAD, NEW MEXICO**

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### **Abstract**

The now-abandoned I&W brine cavern, located within the City of Carlsbad, New Mexico, produced more than 6 million barrels of brine from 1979 to 2008. The cavern has become a public safety concern because of its location within the city and because two similar brine caverns collapsed in New Mexico during 2008. While no permanent homes are truly threatened, a recreational-vehicle and motor-home campground, two major highways, an irrigation canal, a church, and a feedstore could be affected by a sinkhole if the cavern were to collapse. Solution-mining details and geological information are provided on the cavern from its creation as a twin-well mining system to its final operation as a single-well cavern. The cavern was plugged in 2008, and so far, only indirect methods have been used to determine its actual shape and volume. A two-dimensional seismic survey consisting of five intersecting lines was used to suggest several points of the cavern outline. Geotechnical measurements, including surface subsidence, surface-structure tilts, well-casing tilts, groundwater monitoring well piezometers, and crack movements, are being used to detect and warn of an impending collapse. To date, the measured surface behavior does not portend a collapse. Planning is underway to reenter the cavern for the first sonar survey of the majority of the cavern. After dewatering the cavern's size and shape, remediation methods to ensure the public safety will be decided on and undertaken.

**Key Words:** cavern collapse, seismic survey, subsidence, tilt measurements, tiltmeter, Carlsbad

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