

Thornton Composite Reservoir

Thornton, Illinois

Keller constructed a low permeability grout curtain surrounding the CSO (combined sewer overflow) reservoir to protect the surrounding groundwater.



The project

A part of the Tunnel and Reservoir Plan (TARP), the north lobe of the Thornton Quarry was converted into a reservoir with the capacity to retain nearly 8 billion gallons of CSO prior to treatment. To reduce the permeability of the perimeter rock formation, thus mitigating leakage into the groundwater, a double-row grout curtain was designed along the 9,800 LF perimeter.

The challenge

Keller was contracted to reduce the permeability of the bedrock to an approximate value of 1 Lugeon by drilling holes with strict alignment requirements and injecting a suite of balanced and stable grouts.

The solution

Keller drilled approximately 800,000 feet of double-row grout curtain holes to depths ranging from 20 feet to 575 feet. Drilling was performed at angles varying from 0 degrees to 65 degrees from vertical, using a drill rig equipped with a water-actuated down-the-hole hammer. Upon completion of drilling, Keller grouted the rock in 20-foot stages.

Project facts

Owner(s)

Metropolitan Water Reclamation District of Greater Chicago

Keller business unit(s)

Keller

Main contractor(s)

F.H. Paschen

Engineer(s)

Black & Veatch
MWH Americas

Solutions

Seepage control

Markets

Infrastructure
Water, sewage and waste disposal

Techniques

High mobility (cement slurry) grouting

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