

Lake Kounpee - Grout Wall Complete

By Peter Tighe

In January, the final work was completed on the installation of the sub-surface microfine grout wall which should see the water level in Lake Kounpee return to its natural range.

The planning for this project commenced eighteen months ago and has required a coordinated effort by CRL's Technical Services staff, consultants, drilling and grouting contractors.

Detailed drilling and geological logging was carried out under Mark Robertson's supervision to accurately map the complex perching layer that supports the lake. A high level of confidence in the sub-surface structure was essential. From this information, the best location for the grout wall was calculated to be 100m west of the lake's edge, close to where the old Bayside mine path caused the breach.

The design for the grout wall was calculated to create the equivalent of an underground dam wall across the edge of the perching layer to prevent loss of water from the lake. To achieve this, the wall needed to be 275m long and average 1.25m thick. The bottom of the wall had to follow the base of the perching layer which ranged from 30 to 50 m below the surface and the top of the wall high enough to allow the lake water to return to its normal level.

Golder and Associates were consulted throughout the project to provide advice and assistance on our interpretation of

the geology and the location and design of the wall. They also conducted tests to simulate the cement being exposed to groundwater for 50 years. These tests showed that the wall would still be effective after that time and it is thought that natural processes will also assist in maintaining the integrity of the wall in the very long term.

To achieve the planned design required 10 000 bags (300 tonnes) of microfine cement slurry to be injected below the surface through 275 poly pipes installed vertically at 1 metre spacing. Slade Drilling were contracted to drill and install the poly pipe - a total of nearly 10 kilometres of 20mm black poly pipe. The bottom of the pipe had to be accurately positioned at the planned bottom of the grout wall.

Groutech Pty Ltd used specially constructed mixing and pumping stations to inject the microfine cement into the pipes, pulling back the pipe in one metre lifts and injecting the cement until the planned top of the wall was reached. The grouting took six weeks to complete.

Jim Brodie did a top class job in the complex task of coordinating the drilling and the supply of large amounts of materials and equipment needed for the



Installing the grout wall

job. Everything arrived on site on time.

Water level monitoring in piezometers installed either side of the wall indicates that the wall is starting to take effect. The plan is to allow the lake to recharge naturally through rainfall so a good wet season is needed to see the ultimate result of the project.

Lake Kounpee is an important environmental legacy. By undertaking this work CRL is actively demonstrating that solutions can be found to the environmental problems of the past.



Mixing the grout