

Unique method used to clean up Lake Turingen

There have been both natural and financial benefits in Nykvarn since the municipality cleaned up Lake Turingen, which had been contaminated with mercury. The fish, at present unsuitable for eating, will be suitable for eating again in the relatively near future.

The Municipality of Södertälje in 1998 applied for grants from the local investment programme (LIP) to isolate the mercury pollution in Lake Turingen in two stages. The project came to an end in 2003, in the newly formed Municipality of Nykvarn.

Over the period 1946 to 1966, Nykvarn Mill released fibre residues containing mercury into the Turingeån River and Lake Turingen. Altogether there were 350–400 kilograms in the lake system when the remediation started. By far the greater part of this was bound to particles in the bottom sediment.

The pollution resulted in the fish in the lake containing high levels of mercury, and mercury leaked out into Lake Mälaren and affected Lake Yngern, which is of national interest for natural assets.

POSITIVE ENVIRONMENTAL AND ECONOMIC IMPACTS

- The mercury level in the lake is steadily declining. According to calculations, the level in fish will fall below the national target value of 0.5 mg/kg from the present-day level of 2 mg/kg in 20–50 years instead of in 200 years, as it would have if the remediation had not been carried out.
- The visibility depth in the water of the lake is increasing, which is beneficial for both bathing and fishing.
- The spread of mercury to Lake Mälaren has decreased substantially.
- The conference facility and golf course built alongside the lake are examples of establishments that would probably never have come into being without the remediation.
- The method saved more than half the cost of traditional remediation.

Photographs: Ronald Bergman



IMPLEMENTATION

In the first stage of the project the mouth of the Turingeån River and an overgrown bay alongside the mouth of the river were dredged. The dredged materials were placed in the inner part of the bay and covered with a sheet and a sealing layer of sand.

In the second stage a completely new method which has now been patented by Vattenresurs AB was used. This method involved covering 80 percent of the bottom of the lake with an artificial bottom sediment that prevents the mercury from leaking out into the water of the lake. The artificial sediment was mixed during the laying process.

The project took longer than planned, largely due to lack of familiarity with the new technique. A few minor questions also remain to be ironed out with regard to how effective the covering actually is.

POTENTIAL AND FUTURE BENEFIT

Contaminated sites in many places pose a greater environmental threat than ongoing environmentally hazardous activities. It is important to clean up these sites both for the environment and to create terrestrial and aquatic environments we can use without risk.

WHY BEST PRACTICE

The project was the first in the world to use the 'cover' method to clean up a lake. This way of covering bottom sediment has attracted great international and national interest. Representatives of the municipality have presented the project at an international conference, and many study visits have been received, from Swedish remediation companies, universities and other interested parties, both Swedish and foreign.

The method is a highly cost-effective way of dealing with this type of pollution. The new method meant that the project cost only a quarter as much as it would have if the municipality had chosen to clean up Lake Turingen in the traditional way. Fish from the lake were listed in 1968 as unsuitable for consumption, but it is estimated they will be fully suitable for eating in 10–15 years.

FOR FURTHER INFORMATION

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Contractors/providers:
The traditional dredging was done by
Berg & Våg Maskin AB.
The innovative cover method was developed
by Vattenresurs AB.

The project on the Internet:
www.turingen.se

For further information on Best Practice:
www.swedishepa.se/bestpractice
www.naturvardsverket.se/mir

FACTS

LIP Södertälje
Action 11998
Environmental investment: SEK 56m
Grant: SEK 28m

