SUB-AQUEOUS AGGREGATE EXTRACTION

JAGGER HIMS LIMITED
Environmental Consulting Engineers

PROBLEM

The Mill Creek Aggregates property in Puslinch Township is underlain by high quality sand and gravel resources that extend below the water table. Also present on the property is a wetland and a cold water stream, Mill Creek, that sustains a brown trout and brook trout fishery. The problem was how to design, operate and monitor the aggregate extraction so as to maximize resource recovery and yet protect the fishery habitat and wetland. The property is owned by the University of Guelph, and protection of the environment was a paramount objective of the University.

APPROACH

The subject property and environs were studied intensively by an integrated team of experts including hydrogeologists, aquatic and terrestrial biologists, resource planners and hydrologists. The physical setting of the property was defined and the natural resources of the area were inventoried. Of particular importance was the interaction between the groundwater, the surface water, the fishery and the wetland. The licence application was carefully scrutinized by the regulatory agencies, and the scientific assessment was publicly reviewed by the Ontario Municipal Board. The application was approved in 1990, and a licence was granted to the University of Guelph in 1991. The site is operated by Dufferin Aggregates.

SOLUTION

The extraction operation was designed in a series of phases, commencing at a location removed from the more sensitive areas of the creek and wetland. Through detailed discussions and negotiations with the regulatory agencies, a comprehensive monitoring program was established to ensure that the extraction operation does not negatively impact the fishery habitat nor the wetland. As extraction proceeds, a series of large lakes will be formed. The rehabilitation plans include a strong component of wetland habitat construction and enhancement around the perimeter of the lakes to promote habitat diversity within the environment. The Mill Creek site is one of the most intensively studied and monitored aggregate resource operations in the Province. This site is providing an excellent opportunity to carefully assess the interaction between the natural environment and a well designed and operated aggregate extraction operation.