



## *Achieving resolution requires a thorough understanding.*

Surface Water Quality Assessment

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### Challenge

The population of one of the largest breeding colonies of black-necked swans (*Cygnus melancoryphus*) in South America declined due to the loss of their principal food source, the aquatic plant Luchecillo (primarily *Egeria densa*). The decline coincided with the start-up of a pulp mill located along the banks of the Río Cruces near Valdivia, Chile.

The Regional Environmental Commission issued an Order to Arauco, the owner of the pulp mill, to investigate the potential environmental effects associated with their wastewater discharge, and to evaluate the feasibility of alternative discharge locations.

### Background

The pulp mill in Celulosa Arauco y Constitución S.A., faced strong opposition from various citizen organizations, environmental activists, indigenous people, and especially the residents of the coastal town of Mehuín. Concerns include potential effects on black-necked swans, fishing, tourism and the overall health and well-being of the area.

The pulp mill discharges its treated wastewater to the Río Cruces, upstream from the Carlos Anwandter Nature Sanctuary. This location was controversial since the Sanctuary is designated as a wetland of international importance under the Ramsar Convention. Alternative discharges were also controversial since the best alternative is located in the Pacific Ocean at Maiquillahue Bay, which is an important fishing grounds for local villagers.

### Project

Arauco retained EcoMetrix to address the objectives specified in the Order.

As specialists in surface water quality assessment, we undertook a comprehensive investigation of the potential environmental effects associated with the mill discharge.

We examined the hydrologic and water quality characteristics of the Río Cruces, neighboring streams, and coastal areas to establish baseline conditions. We then quantified the waste assimilative capacity of each alternative discharge location and prioritized them based on suitability. Our findings were documented and presented to the Regional Environmental Commission and other concerned agencies to ensure transparency and understanding.

### Outcome

Bruce Rodgers, CEO and senior environmental engineer, lead the study team. He said, *“success of the study required a clear understanding of the potential issues, and a strong technically defensible and unbiased evaluation”*.

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