

Project Name:

Design Optimization of Hydraulic
System of Secondary Treatment
Process in Bai Longgang WWTP
Shanghai

Client: Shanghai BLG
Wastewater Treatment
Company Ltd.

Project Duration:

2007 -

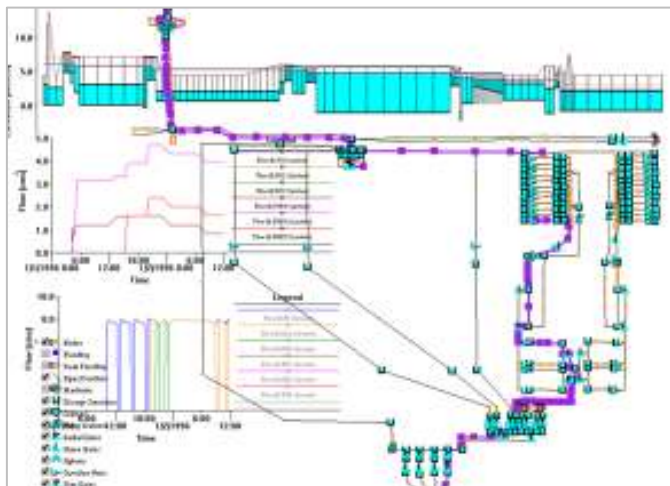
Project Cost: \$30 Million



Senior Professional Staff: Dr. Siping Zhou (Project Manager and Major Design Reviewer)

The upgraded BLG plant has a daily average flow capacity of 2,000,000 m³ plus the impact of diurnal peak flow and wet weather conditions. This will be one of the largest secondary treatment plants in the world. The hydraulic behavior of the large treatment plant may involve many aspects at both design and operational stages. It is more difficult to control flow going through the treatment units in a large plant than that in a small one. The BLG plant effluent is discharged into the estuary of Chang-Jiang

(River). Impact of tide makes the hydraulic design and operation in the large plant even more complicated.



To more precisely determine the flow distribution, head loss and hydraulic behavior for all of major process units and hydraulic structures within the plant, an overall hydraulic model was developed in this study. The plant hydraulic model here not only establishes the flow connections between the upstream and downstream process components but also includes the flow distribution

and control system among the individual units.

Evaluation of the hydraulic system design include:

All of major basins, connections, pumping stations and flow control structures in the plant.

The plant hydraulic operations under diurnal flow conditions and both dry and wet weather conditions.

The project for design evaluation and optimization determines the water levels, head loss, flow distribution and storage impact at every key control points under dynamical operational conditions (including influence of wet weather peak flow hitting on the plant). The possible hydraulic bottle-necks within the original system have been revealed. The key design parameters for the plant hydraulic system have been modified to eliminate the bottle-necks in the base design.

