



## COST ESTIMATING AND DESIGN SERVICES

HILLVIEW RESERVOIR  
Yonkers, New York

**OWNER:**

New York City  
Department of Environmental Protection

**COMPLETION DATE:**

2006

**PRIMARY SERVICES PROVIDED:**

Detailed engineering design  
and cost estimating

Aparr Engineering, LLC provided design services and prepared detailed construction cost estimates for 519B Construction Contracts (519G - General and 519E - Electrical) for the Hillview Reservoir. Our staff developed the design and prepared cost estimates for the two chlorine scrubber systems (one in Downtake Chamber #1 and the other in Downtake Chamber #2) and interior lighting of the main areas of the four chambers (Uptake Chamber #1&2 and Downtake Chamber #1&2).

The scope of services included the following:

- Surveyed, inspected and evaluated the condition of the existing facilities that affect the system design including exhaust system, containment of spill, etc. as well as the existing lighting system.
- Investigated scrubber design requirements and criteria, including Chlorine Institute recommendations, requirements of OSHA & EPA, and the NYSDOH & NYSDEC.
- Interviewed various scrubber manufactures for their input and experience .
- Prepared drawings and specifications
- Check and made detailed quantity take-offs.
- Determined pricing through manufacturers, Means Cost Estimating Books, published wage rates, and other sources, including our experience.
- Prepared and finalized detailed construction cost estimates which included direct and indirect costs, contingency and profit.

