

## US Navy Naval Station Water System Analysis

### Client / Location

US Navy / Newport, RI

### Services Provided

- Water distribution system analysis
- Determination of storage tank requirements
- Water quality analysis
- Evaluation of supply and demand on the system
- Comprehensive computer modeling

### Project Duration

2000-ongoing

Siegmund & Associates (SA) was authorized in December of 2000 to develop a comprehensive computer model the water system for the entire Naval facility which encompassed three communities. The goals of the study were many. The program used was WaterCad.

**Distribution system analysis** - With pipeline age ranging from new to over 60 years and pipeline diameters ranging from 2" to 24" and a distribution network of over 60 miles, an analysis to identify and confirm known system deficiencies was required.

**Storage Tank Requirements** – The base utilized a number of ground storage reservoirs for firefighting which, together with booster pump stations would augment the supply from the City of Newport water system. The role or importance of these facilities needed to be known along with the identification of those that could be eliminated.

**Water Quality Analysis** – elevated levels of THM's resulting from the chlorination process were not only high, but under pending revisions to acceptable levels, would pose problems in achieving those new standards. The nineteen (19) chlorinating stations located throughout the distribution system were added into the model along with the incoming and outgoing chlorine residual values. Pipe age, material, and other factors were likewise entered into the model to



simulate chlorine consumption. Extended age simulation together with constituent analysis provided valuable information as to THM formation and location. The information was utilized as a basis for the re-habilitation of the chlorination stations to better control the discharge of chlorine.

**Supply Analysis** – Water supply is provided through a number of interconnections with the City of Newport water system. One aspect of the study was to determine which of those interconnections were required and which could be eliminated. The cost of the water meter replacement program would be greatly affected based on the analysis developed from the computer model.

**Demand Analysis** – With hundreds of buildings and a multitude of uses, the demand contribution from each had to be determined with a high degree of certainty for the results would be used not only for model development but for a long range conservation program as well. Where buildings had meters, the information was readily available, where meters did not exist, a physical inventory of toilet fixtures was necessary. Where building use was to change, interviews with base planners were conducted

SA is currently under a five year open contract with the Navy, a part of which is to maintain the computer model and to perform analysis as requested.

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