

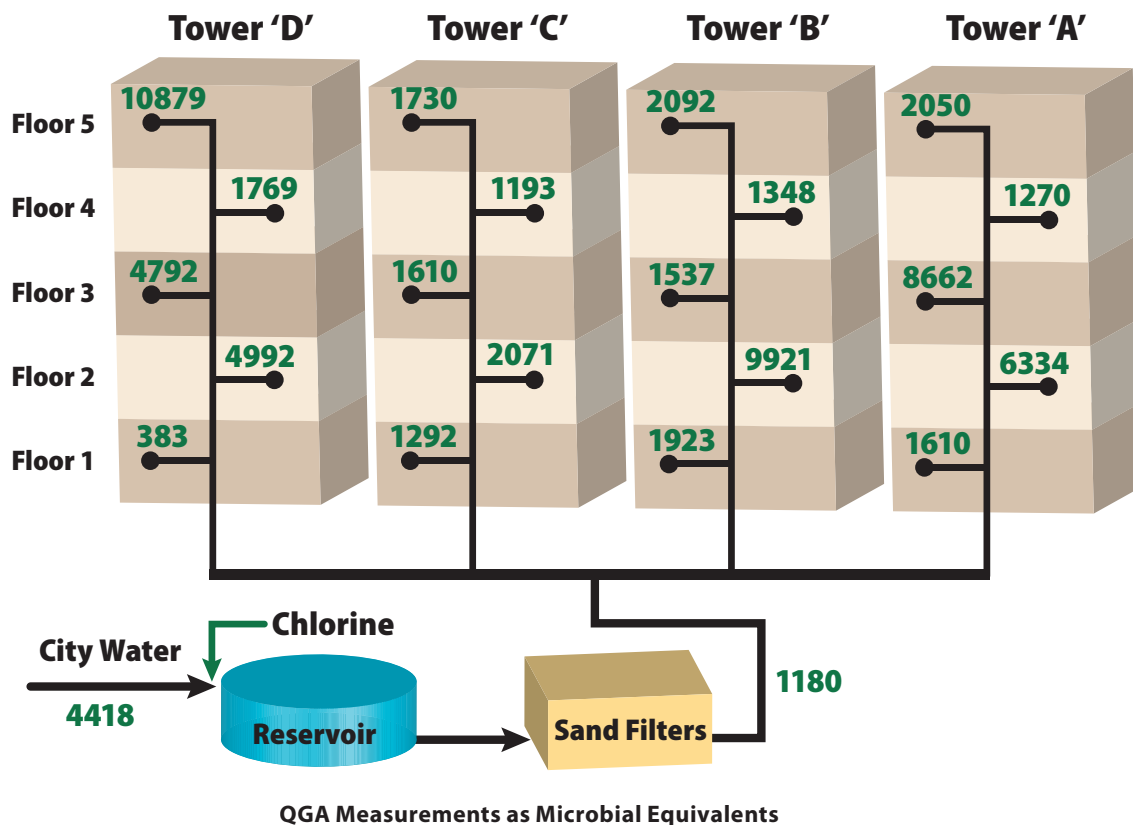
# Case Study: Hospital Water Safety Audit Using ATP Measurements

In September 2007, a site survey of a hospital in Eastern Canada was jointly performed by LuminUltra and Clean Air & Water Inc. The hospital takes in treated city water and processes it through additional treatment steps for further purification prior to delivering it to four separate five-story towers. This additional treatment is provided to improve quality and manage the higher levels of microbiological risk associated with immuno-compromised patients.

The goal of the site audit was to use LuminUltra's Quench-Gone Aqueous (QGA) test kit as a means to assess levels of microbiological accumulation in each sector of the hospital water distribution system and identify locations of higher risk. Secondary to this was the development of a HACCP-style water safety management program for routine use.

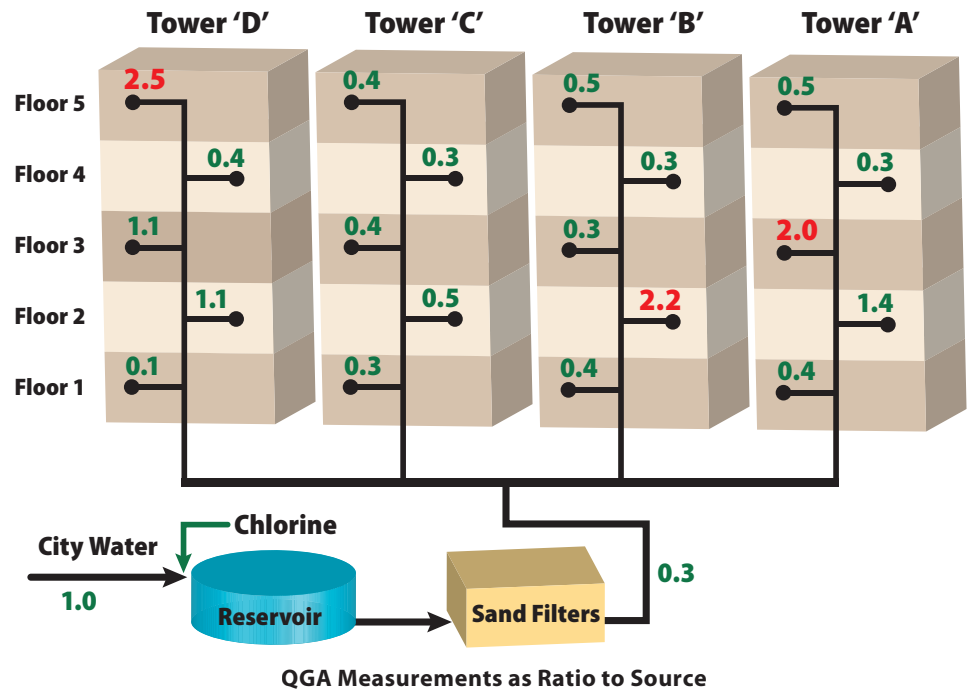
## Results

One sample was taken from the cold water supply of each floor on each tower (20 samples total) plus pre- and post-treatment. Results are reported as Microbial Equivalents per mL (1 Microbial Equivalent = 1 fg ATP):



Unlike conventional Heterotrophic Plate Count (HPC) measurements, QGA measures true total microbiological concentration by detecting all organisms, even those that are viable but not culturable. Further, the results were available in **real-time**. This allowed the conclusion that, because source water quality is expected to vary and thus impact each downstream delivery point, it would be more effective in the long-term to compare all results to source quality. This would provide an indication of treatment and maintenance effectiveness, allowing operators to take action based on variables which they can control.

As a general guideline, any area with more microbiological activity than the source water is an indication of microbial accumulation which can be mitigated using simple line flushing programs. When microbial risks are especially high, it is advisable to take stronger actions such as localized disinfection.



## Conclusions

Because a variety of microorganisms can present health risks and this risk is especially high in hospitals, a real-time measurement of total microorganisms such as QGA is an invaluable **first line of defense** in the management of microbial risks. When areas of elevated risk are identified, further actions can be taken including maintenance via flushing and/or localized disinfection and speciation of the type of microbial risk present (e.g. Legionella, Pseudomonas, E. coli), if any.

Management programs are most effective when operations personnel can isolate and react to areas of high risk, rather than a more cumbersome and costly broad-spectrum approach. A monitoring program such as this can be easily established for any water system, no matter the size, using LuminUltra's QGA technology!