

# To Protect Long Island Sound, an Urban Connecticut Community Selects Antimicrobial High-Tech Smart Sponge® Plus for Catch Basin Filters

## Case Study

### City of Norwalk Stormwater Management Improvement Project

“The Filter Project,” as Norwalk, Connecticut’s city officials call it, began as a natural outgrowth of the Long Island Soundkeeper’s mission of protecting the Sound’s ecosystem coupled with Norwalk’s commitment to clean up local waterways.

Hal Alvord, Director of Public Works in Norwalk, Connecticut, said that cleaning up polluted street runoff in storm water before it flows into the Long Island Sound was the highest priority of The Filter

Project. The heart of this approximately \$500,000 project involved fitting AbTech Industries’ antimicrobial filtration systems to storm drains in south Norwalk to catch trash, debris, animal waste, hydrocarbons, oil, grease, and bacteria before they enter the Sound.



### Project Challenge

Alvord said that the project is of critical importance to the community and the environment. The Long Island Sound watershed houses 8 million people with another 20 million living within 50 miles of it. Regulation has resulted in many improvements over the last few decades, but it has done little to stop the largest source of toxins – nonpoint source pollution. This is the pollution that comes from nonspecific sources – it’s the urban runoff that flows from paved surfaces through the storm drain system.

The project is a collaborative effort, which brought together an impressive roster of national businesses, nonprofit organizations, and local, state, and federal government officials. The City of Norwalk partnered with the Long Island Soundkeeper, The Maritime Aquarium, the Norwalk River Watershed Initiative, and AbTech Industries. Much of project cost – over \$500,000 – resulted from legislation sponsored by U.S. Senator Joseph Lieberman and provided by the U.S. Environmental Protection Agency. Other funds were raised by private organizations.

### Project Description

The Filter Project is a part of Norwalk Public Work’s stormwater management improvement program and involved fitting over 275 storm drains with high-technology filtration systems equipped with Smart Sponge® Plus. According to field tests, the project’s filters destroyed a high percentage of bacteria, including E. coli and other fecal coliform. The average removal rate was over 75 percent and the maximum removal rate was 99.9 percent, considering the first cleaning of the 275 catch basins yielded over 7.4 tons of trash, debris, leaves, sediment, and sand – the weight of over six Ford Escorts. All this bacteria, trash, and debris would have entered the Sound’s recreational waters if it hadn’t been captured by the filters.

The filtration systems – Ultra Urban® Filters with Smart Sponge® Plus – are produced by the Arizona-based company, AbTech Industries, which holds the technology’s patent.

### AbTech Industries Provides High-Tech Solution

Norwalk is using AbTech’s fourth generation antimicrobial Smart Sponge Plus4 in the high volume stormwater catch basins selected for this project. The antimicrobial agent is an Organosilane derivative widely used in a variety of fields including medical, consumables, pool equipment, and consumer goods, and it is registered with the U.S. Environmental Protection Agency in various applications, having been proven effective against a wide variety of microorganisms. It also acts as a fungi static, odor, and mildew control.

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Rodolfo Manzone, Ph.D., AbTech's Executive Vice President and Chief Technology Officer, explained how the filter destroys bacteria without using toxic chemicals. "The Smart Sponge® Plus employs an antimicrobial agent, chemically bound to the polymer filtration material, which inactivates dangerous microorganisms. The mechanism is based on the agent's electromagnetic interaction with the microorganism cell membrane, causing the microorganism disruption, but no chemical or physical change in the agent. Consequently, the antimicrobial agent is not depleted over time and it maintains its long-term effectiveness."

Approximately two years after installation, the Ultra Urban Filters had removed 38,000 pounds of sediment, trash and debris. During operation, water quality tests showed that the UUF's with Smart Sponge Plus had average bacterial reduction that ranged from 75% to over 95% for E. Coli and Total Coliforms. A "Black Box Characterization" was also performed on the used Smart Sponge media, which consisted of the deconstruction or meltdown of the media to determine what contaminants were trapped within the media itself. Upon analysis, it was found that approximately 49 pounds of contaminants were captured with the Smart Sponge of each filter, which included heavy metals (copper, titanium, zinc) and a variety of hydrocarbons (including oils, solvents, cosmetic product components, and chemical plasticizers). This testing showed a removal of an additional 13,500 pounds of contaminants, bringing the total amount of pollutants removed by the UUF's to approximately 51,500 pounds, which included preventing over 1200 gallons of hydrocarbons from entering the Long Island Sound.

An added benefit of the filtration systems is the ease at which the contents can be recycled. Glenn Rink, President and CEO of AbTech Industries, said, "Our technology is not only effective in removing bacteria, hydrocarbons, trash, and debris, but also in its ability to encapsulate and transform hydrocarbon pollutants into a stable solid for easy recycling through waste-to-energy facilities. It provides a closed-loop method for disposal and allows for less costly and less problematic handling of the waste product."

The City of Norwalk, population 84,000, has a harbor, marinas, and a shellfish industry. Norwalk will continue to evaluate the project's success through a monitoring process shared by the Long Island Soundkeeper, the City of Norwalk, and AbTech Industries (through Longo & Longo, an AbTech Connecticut-based distributor).

## What Others are Saying about the Project

*"We've been looking for new and innovative approaches to solving the critical threat to our waterways. We see this project as a great opportunity to participate on the ground level using cutting edge technology to address nonpoint source pollution."*

Hal Alvord, Director of Public Works in Norwalk, Connecticut.

*"The Filter Project will help clean our waters for swimming, boating, and shell fishing. We are very excited about the success of the project and the rate at which the system was implemented."*

Terry Backer, Long Island Soundkeeper Executive

*"It [Smart Sponge Plus] offers a tangible and visible solution to water pollution. Through a test tube demonstration, you can show people the dirty water; they see it go through the sponge and it comes out clear."*

Long Island Soundkeeper Grant Writer, Kim Courtney

For more information about the Smart Sponge® technology, visit [www.abtechindustries.com](http://www.abtechindustries.com) or call 1-800-545-8999.

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