

A TRANSITION FROM NIMBY TO AMENITY

Creative sustainable approach to Connecticut public works project wins over neighbors and captures 2007 Visionary Project Award

Some residents of a comfortable suburban community in Connecticut weren't pleased when they first heard that their historic neighborhood had been selected as the site of a major public works facility.

The upscale quarter is on land originally purchased in 1798 by famed American inventor Eli Whitney—most noted for his invention of the cotton gin—and is surrounded by grand old homes inhabited for generations by prominent local citizens.

“When the engineering consultants pointed out that this was a very cost-effective site for a necessary Regional Water Authority (RWA) facility, people just said, ‘Not in my backyard,’” said Wendi Goldsmith, president of Bioengineering Group.

Her Salem, Massachusetts-based firm served as the sustainability consultant on the design team that progressively challenged itself and the collaborating project team members to raise the bar on the project as it unfolded. The end result is Connecticut Water Purification Facility and Park which won the 2007 Visionary Project Award at the Land Development Breakthroughs Best Practices Conference in Phoenix, Arizona, in November of 2007.

Perhaps more importantly, the project is a winner at home.

Beyond fulfilling its stated goal of providing clean water to the local citizenry, the development's innovative design has created a vibrant ecosystem and healthy watershed, which includes a public park and educational facility and provides a diverse habitat and sanctuary for migrating species of birds.

The project incorporates state-of-the-art watershed management practices that maintains natural hydrology, manages water runoff, and educates the public regarding sustainable watershed stewardship, low-impact site design, and protection of riparian resources.

The neighborhood is satisfied, it's a point of pride for the Regional Water Authority, and the design team is basking in the glow of much media attention,” Goldsmith said.

Early Challenges

In need of a new water purification facility, the RWA searched for potential sites and saw this location as its best option. It already had a century-old connection to the local water system.

“The site was first used in the Victorian era to provide what was then state-of-the-art water treatment,” Goldsmith said. The original slow-sand-filter plant was put into service in 1906. Progressively higher water-quality standards made it obsolete. It was closed in 1991 and demolished in 2001.

Already near a reservoir of fresh water, its location would also allow gravity to move water through the new purification process, which meant a significant reduction in operation and maintenance costs. The location was the optimal choice.

“This site would cost about \$35 million less to develop than any other option for the RWA,” Goldsmith said. “You could also theoretically store water right on site and pump it out for distribution.”

The reception from the neighbors was chilly at first. The perception of sheet-metal buildings or Quonset-style huts with trucks full of chemicals moving in and out was not their idea of maintaining the local ambience.

Then a member of the community spoke up and suggested a different approach, according to Goldsmith. What if the facility was made to be visually pleasing and publicly accessible? It could be a plus for the entire community.

“That idea was well received by even some of the more contentious community members, and it was embraced by the RWA,” she said. “That’s how the process went forward.”

The Vision

The new water purification facility needed to be designed and constructed with sensitivity to the immediate environment. Not only located within a residential neighborhood and adjacent to historically significant sites, it adjoined a sensitive tributary to the Long Island Sound Estuary, and was highly visible from a cliff-top urban park.

The RWA also wanted a facility that would be accessible to the public, from school tour groups to professional outreach. The entire site could serve as a state-of-the-art model for

effective watershed stewardship through integration of best management practices such as vegetated swales, treatment wetlands, and other measures.

The Bioengineering Group collaborated with the other project team members to identify opportunities and methods to integrate building, landscape, utility, and permitting needs.

“First of all, we identified very specific goals to achieve and said, ‘Wouldn’t it be great if we raised the bar and used this site as an example of what’s possible, as if it were a primordial forest and healthy meadow?’” Goldsmith said. “Wouldn’t it be great to achieve that kind of watershed function while still accommodating a major public works program?”

Costs vs. Long-Term Benefits

There were challenges along the way to attaining those goals, many associated with sustainable elements that on the balance sheet appeared to be extraneous costs.

“There were many turning points on the project where it appeared to be at an impasse. Very often the way the team got through was to raise the bar higher,” Goldsmith said. “Instead of some compromise that sacrificed a piece of the project or reduced the integrity of the original concept, at virtually every turn we found a way to increase the integrity.”

The approach was evident from the beginning when the project shifted from simply building a facility to accomplish a basic purpose, to the creation of world-class architecture and landscape design, which won over the neighborhood and has won international attention, hardly typical for a public works project! Worth mentioning is the receipt of the 2007 Committee on the Environment Award from the American Institute of Architects.

“A lot of the more unorthodox sustainable elements of this project were roundly questioned and challenged during the value-engineering process,” Goldsmith said. “But at every turn, we defended the important ones. It was a beneficial process to help refine and further integrate those elements to achieve, ultimately, cost-effective, stakeholder-supported solutions.”

The Results

“Most public works projects are viewed as ugly but necessary. This project demonstrates that doesn’t have to be the case,” Goldsmith said.

The Connecticut Water Purification Facility and Park serves as a significant outreach tool for

the area by promoting low-impact approaches to development within the rapidly growing region of Connecticut known for the water-quality impairment of the Long Island Sound.

Integrating best management practices, the entire site, including green roof, vegetated swales, and treatment wetlands, serves as a state-of-the-art model for effective watershed stewardship. The facility demonstrates low-impact site development compatible with recreation, habitat, and educational access. The interior facilities include an exhibition lobby, laboratories, an acoustically-treated lecture hall, conference spaces, and extensive operational facilities.

Purifying millions of gallons of water per day, the facility and park is comprised of six sectors, analogous to the six stages of water treatment. Purification processes were selected for efficiency, relying on gravity instead of pumping for flow. Following the natural laws of gravity, water flows across the site and within the facility avoiding the cost of mechanical pumps. Energy systems were based on geothermal loops. Stormwater handling was achieved through use of vegetated swales and treatment wetlands rather than catch basins and pipes. Accordingly, off-site impacts of the site such as energy demand, waste handling, and runoff were responsibly addressed.



“Here we have a case where, fulfilling a very concrete need for water supply, and meeting ever increasing, stringent regulations has been done in a fashion where yet another thing is accomplished along the way,” Goldsmith said. “Instead of ‘Not in my back yard,’ we achieved a ‘Please in my back yard’ project.”