

Odor Control System Addresses Community's Complaints

By Brent Howe and Bill Robinson

The relations between a wastewater treatment facility and the surrounding community can be trying at the best of times. When strong odors affect the quality of life for the entire neighborhood, years of harmonious relations can be brought to a sudden end.

After years of operating under the community's radar, The Water Pollution Control Authority (WPCA) of the City of Bridgeport, CT, had developed an odor problem at its East Side Wastewater Treatment Plant. The extent of the problem was obvious to everyone, especially neighbors in condominium developments, marinas, and industrial/commercial operations surrounding the treatment plant.

The treatment plant had operated successfully, and relatively unnoticed, for many years. However a combination of events and conditions in 1999 led to odor complaints which put the treatment plant in the community spotlight:

- A plant expansion and refurbishment project had taken one-third of the treatment plant facilities out of service.
- Equipment that was in service was old, having reached the end of its useful life.
- The plant was operating with a diminished air supply in its process air blowers.
- The summer was exceptionally hot.
- A major user expanded their demand for treatment services, causing a significant change in the characteristics of the wastewater received for treatment.

Any one of the above can cause havoc to wastewater treatment, however in combination, they proved too much for the local community to tolerate. The situation reached the point where the State of Connecticut issued a Consent Order, directing the WPCA to eliminate the odor.

In response, the WPCA commissioned an odor study which identified potential sources of odor and recommended a plan of action. The initial recommended solution was a capture-and-treat approach involving a substantial number of fixed covers over primary clarifiers, influent and effluent channels and various skimmings pits, along with a central odor treatment system.

After consulting with its engineering advisors and operating staff, the WPCA concluded the proposed solution was technically sound, but the fixed covers did not address the operational need for regular access to the tanks to observe the

treatment process, inspect equipment and take samples. Also, since the odor sources were dispersed around the plant property, there was a concern that an elaborate and expensive piping system would be required to bring the odorous off-gas to a central treatment system. A search was initiated for a cover system that allowed better tank access and a treatment system better suited to the dispersed odor sources.

A solution was critical, but so were cost concerns. In an effort to meet both operating and cost requirements, the WPCA investigated various cover systems and chose a solution consisting of three different cover styles.

The WPCA chose a retractable, structurally supported cover system manufactured by Geomembrane Technologies Inc. (GTI) for the influent channel and primary clarifiers. GTI's structurally supported covers met the operational need for regular and unencumbered access to the tanks. They consist of a sheet of high strength, UV protected coated fabric tensioned across a series of low profile aluminum arches which span each tank opening.

The fabric cover is sufficiently air tight to capture the off-gases for removal to the treatment system, yet it can be detached on three sides and retracted to expose the tank contents for inspection or maintenance. The arched shape means that rain or snow-melt water automatically runs off the cover to the tank perimeter.

GTI's designers worked with the WPCA and its advisors to add several customized features that either made the operator's job easier or simplified connections to the odor treatment system.

Skimmings pits are covered with GTI's suspended covers. The irregular shape of the pits, and the many pipe and cable penetrations, made these high-strength, flexible, tensioned fabric covers a good choice.

Narrow channels within concrete walkways are covered with aluminum diamond plate panels customized by a local fabricator. The aluminum plate replaces aluminum grating, and is fabricated in sections sized to allow manual removal.

Odorous air captured under the various cover systems is exhausted to individual prepackaged



A retractable, structurally supported cover system is used to cover the influent channel and primary clarifiers.

carbon filtration systems installed beside each odor source. The WPCA found that this solution has a double benefit: a cost savings in not having to run a pipe network from each odor source to a central treatment facility, and the flexibility to add more covers and treatment systems if required in the future.

WPCA staff were also creative in addressing odors from their sludge storage tanks. The head-space in the tanks is used as an inlet air source for a mixing air blower system in the plant's chlorine contact basin. Sludge odors are oxidized as the air curtain mixes the wastewater.

This creative solution proved successful in meeting the odor complaints, the fiscal budget, and positions the WPCA well for future expansions.

Following installation of the covers and odor treatment systems in April 2003, the odors are under control at the East Side Treatment Plant. The community and the WPCA are once again back to a harmonious relationship. Industrial and commercial developments continue to grow in the area surrounding the plant. **WW**

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