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H2M NEWS 2007
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INSIDE:

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Keeping the Sound Safe
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H2M Highlights

"The quantity of usable water on the planet is very small. There are problems all over the world accessing safe drinking water. We're fortunate on Long Island that we have an aquifer we can use as a plentiful source of water - it's our duty to protect that source for all future generations."

FRANK M. RUSSO, P.E.
VICE PRESIDENT,
CHIEF WASTEWATER
ENGINEER FOR H2M

WASTE NOT, WANT NOT

Water Reuse Project Satisfies Peconic Estuary Plan While Reclaiming Precious Water Resources

Several factors drove the Wastewater Reuse Pilot Study H2M recently conducted for the Town of Riverhead. A number of key benefits emerged as a result of the study which earned H2M a Silver Engineering Excellence Award from the American Council of Engineering Companies of New York (ACECNY).

The Town of Riverhead initiated the reuse program to determine if there was a way of ultimately reusing about 350,000 gallons a day of effluent from the Riverhead Advanced Wastewater Treatment Facility to irrigate the adjacent Indian Island Golf Course, owned by Suffolk County. This represents the first water reclamation project in Suffolk County. Although protecting the Peconic Estuary by minimizing nitrogen discharge was the main objective, a myriad of issues had to be considered - the impact to Long Island's sole source drinking water aquifer, the people who live in the area, the workers who maintain the course, and the golfers. In addition to irrigating the course with reused wastewater, the study also looked to satisfy a major recommendation of the Peconic Estuary Comprehensive Conservation and Management Plan, which is to reduce the annual mass loading of nitrogen to the Estuary.

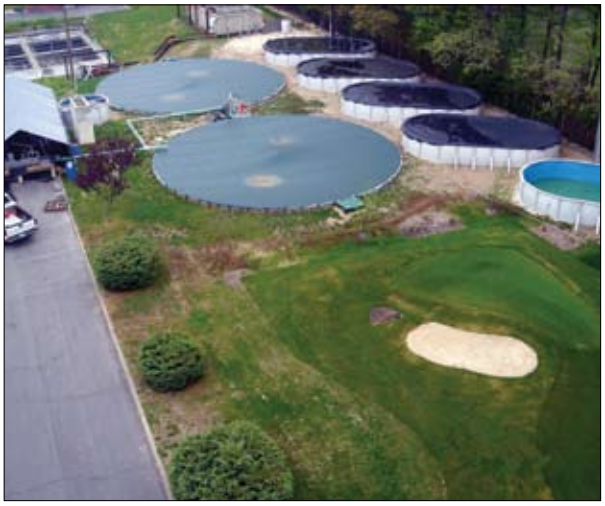
The Town of Riverhead took action on this initiative several years ago and upgraded its wastewater treatment plant at a cost of $8.75 million which significantly lowered the discharge of nitrogen to the Peconic River. Riverhead had always anticipated reusing the plant's effluent to irrigate the adjacent golf course while simultaneously reducing nitrogen loading even further.

H2M researched technologies to cost-effectively achieve high quality reuse water, investigated and short listed potential equipment vendors, and developed an approach with suitable testing protocols. Based on suggestions initially received from the Suffolk County Department of Health Services, H2M performed a nationwide search for experts in the field of microbiology/virology and selected Scientific Methods, Inc. and microbiologist, David Battigelli, PhD, to assist in the program's development. He worked with the rest of the project team, including H2M's Frank M. Russo, P.E., Vice President and Edward P. Byrne, P.E., Senior Project Manager; Riverhead Sewer District Superintendent Michael P. Reichel, and senior plant operator Tim Allen.

Using advanced filtration equipment and ultraviolet (UV) disinfection, the treated wastewater was reclaimed for reuse. A model golf course was constructed on the treatment plant site to test the reclaimed waters' effectiveness and its impact. A side stream portion of effluent was diverted to the model course via pipes and pumps.

H2M batch treated 300,000 gallons of effluent over a one month period and used seven large swimming pools and two old treatment tanks to store the water. Two custom made 50-foot diameter swimming pool covers were specially made for this project so that algae would not grow and cause fouling of the irrigation system sprinkler heads during the test.

The treated water resulted in virus reduction of over 99.9999 percent. This pilot study and the irrigation performance results earned the recommendation of Cornell University for a permanent, full-scale irrigation system. •



KEEPING THE SOUND SAFE:
Installation of Nitrogen Removal Facilities, Oyster Bay Sewer District

A condition called *hypoxia* was pinpointed in the Long Island Sound study plan as a problem that needed to be addressed.

H2M's design achieved the final total nitrogen reduction goal of 80 pounds per day approximately eight years ahead of discharge permit requirements.

The Long Island Sound was deemed a national estuary in 1987. The waterway provides feeding, breeding, nesting, and nursery areas for various plant and animal life and generates $5.5 billion per year to the region's economy from commercial and sport fishing, boaters, swimmers, and sightseers.

To protect this precious natural resource, a Management Conference for the Long Island Sound Study developed a comprehensive plan to protect and improve the health of the Sound. It concluded that a condition called hypoxia, which is low dissolved oxygen, was afflicting a substantial portion of the Sound's marine habitat in late summer. In turn, New York State Department of Environmental Conservation (NYSDEC) imposed limits to reduce nitrogen discharged from the 12 municipal treatment plants located on the north shore of Long Island.

The Oyster Bay Sewer District (OBSD) discharges treated effluent to Oyster Bay Harbor, which is an embayment to Long Island Sound. NYSDEC issued a revised permit that required the OBSD to reduce nitrogen discharged to Oyster Bay from the treatment plant by 63.8 percent in three 5-year increments by August 2014.

H2M provided planning, design, and construction related services under the direction of Project Manager Steven C. Hearl, P.E. The OBSD Commissioners agreed with H2M's recommendation that it would be more beneficial to construct the nitrogen removal facilities to meet the ultimate total nitrogen reduction goal rather than a phased program to achieve each interim limit. This decision resulted in a quicker improvement to water quality.

The nitrogen baseline load discharged by OBSD was 220 pounds per day. At the permit flow limit of 1.8 MGD, the effluent total nitrogen concentration needed to be less than 5.3 mg/l. to meet the maximum 80 pounds per day limit by August 1, 2014. H2M recommended the Sequencing Batch Reactor (SBR) process since it would achieve a design effluent total nitrogen concentration of only 4 mg/l.

The OBSD facility is located on a waterfront parcel with limited area. To provide space, the design required the removal of the existing trickling filters so that the SBR could be constructed. The District met permit limits throughout construction by modifying operations of existing facilities.

A new 40-foot by 60-foot single story building on a pile foundation was constructed to house the motor control centers, SBR and sludge holding tank blowers, and sludge belt thickener. A new diesel fueled standby generator was installed in a sound attenuating enclosure to allow for the plant to operate during power outages.

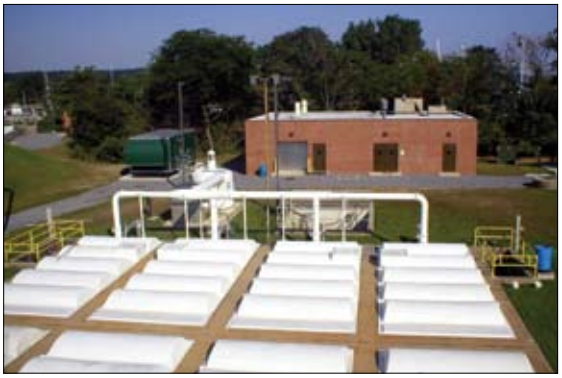
Oyster Bay Sewer District Treatment Plant Effluent.

To protect tidal wetlands that were within 60-feet of the new tanks, positive site drainage facilities, gravel roadways and porous roadways were installed to minimize runoff. The four existing primary clarifiers were reutilized as pre-equalization basins to reduce influent hydraulic and mass loading variability.

The innovative SBR process was put online in December 2005 and the 12-month rolling average for effluent total nitrogen is in the range of 50 to 70 pounds per day. H2M's design has achieved the 2014 requirements approximately eight years ahead of schedule. That's good news for Oyster Bay Harbor, and the future of our beautiful Long Island Sound. •

SBR/Sludge Holding Tank with Harbor in background.

SBR in operation.



Covered pre-equalization basins and odor control with blower/thickener/control building in background.

Blower Room.

OTHER H2M WASTEWATER PROJECTS

Suffolk County Sewer District No. 1:

This project involves the expansion and reconstruction of advanced wastewater treatment facilities for Suffolk County Sewer District No. 1 – Port Jefferson. The treatment capacity is being increased from 0.85 million gallons per day (mgd) to 1.15 mgd using SBR technology and UV disinfection. H2M's design provides an effluent total nitrogen concentration of four milligrams per liter (mg/L) for compliance with the 15 year Total Maximum Daily Load (TMDL) allowed by the NYSDEC as determined from the Long Island Sound Study. This $23 million project is currently under construction and is scheduled for completion in early 2008. The project is tracking under budget.

Additional construction photographs can be found at http://spaces.msn.com/port-jefferson-stp-photo/.

Riverhead Sewer District Advanced Wastewater Treatment Facility:

This $8.75 million facility went on line in October 2000. H2M provided design engineering, construction administration, resident engineering and start-up services for the project. The plant included the use of SBRs to achieve stringent effluent limitations required for discharge to the sensitive Peconic Estuary. The project included dual SBRs followed by ultraviolet disinfection. The upgrade also included new headworks, conversion of clarifiers to pre-equalization basins, post-equalization basins, "multi-use" tanks, and a new sludge conditioning and thickening system. This 1.4 mgd facility is currently achieving total nitrogen concentrations of less than 8.0mg/l.

Huntington Sewer District Advanced Wastewater Treatment Plant:

This improvement project was undertaken also as a result of the Long Island Sound Study. The NYSDEC and USEPA requirements for the Huntington plant based on location and total loading determined that the facility must meet a 4.2 mg/l total nitrogen effluent limitation at the permit flow of 2.5 MGD. The Facility Plan prepared by H2M evaluated several alternative treatment schemes. The selected plan used the SBR technology to achieve total nitrogen reduction.

H2M was instrumental in securing approximately $8.9 million in grant funds from the New York State Clean Air/Clean Water Environmental Bond Act. The project is currently under construction and scheduled for completion in early 2008.

Have questions on any of these projects? Please contact us at H2M@H2M.com.

Other Wastewater Related Projects:

Suffolk County Department of Public Works, Hauppauge Industrial /Wastewater Treatment Facility

Status: Under Design
Project Cost: $30 million (est.)

Suffolk County Department of Public Works, Hauppauge Sewer District Expansion

Status: Under Design
Project Cost: $35 million (est.)

Village of Patchogue, Advanced Wastewater Treatment Facility

Status: Under Design
Project Cost: $5 million (est.)

H2M HIGHLIGHTS

News:

Michael J. Bonacasa, AIA

The recent acquisition of Michael J. Bonacasa Architect, P.C. brings MICHAEL J. BONACASA, AIA to H2M as Senior Architect and Studio Director. Mike has over 19 years of design and construction experience in the private sector and retail industry. Before joining H2M, he was the principal and president of Michael J. Bonacasa Architect, P.C., a firm specializing in residential, commercial and multiple family dwellings, contracting over 800 projects since 2001. Mike is a member of the American Institute of Architects-Long Island Chapter, Architectural Review Board of Rockville Centre, and the Building Inspectors Association of Nassau County. Integral to H2M's fastest growing studio, Mike oversees the private sector and retail community projects. Coming on board with Mike are Project Coordinators Christopher Dowdell and Anna Musial, and Architectural Interns Joseph Guisto and Edward Stattel, Jr.

H2M Labs, Inc. is celebrating its 50th anniversary this year. Established in 1957, it became an independent corporation in 1986. H2M Labs is one of the largest and finest commercial environmental laboratories in the United States, and the premier lab of the Northeast, with five decades of successful operation. H2M Labs is National Environmental Laboratory Approval Program (NELAP) accredited, with primacy in New York State, and was one of the first laboratories in New York to undergo the stringent NELAP audit procedure and be awarded certification. It also was awarded the American Council of Independent Laboratories Seal of Excellence for a fourth consecutive year, having consistently met the standards for approval and has an excellent reputation for distinguished service and quality. H2M Labs is an Employee Owned Company.

Awards:

HOLZMACHER, MCLENDON & MURRELL, P.C. was recently awarded three 2007 Engineering Excellence Awards from the American Council of Engineering Companies of New York (ACECNY). In the category of Water/Wastewater, a Platinum Award was presented for H2M's installation of nitrogen removal facilities for the Oyster Bay Sewer District. Also under the Water/Wastewater category, a Gold Award was presented for H2M's iron removal treatment facility design, which included an architecturally aesthetic treatment building and full automation for 24-hour unmanned operation. The Incorporated Village of Hempstead was experiencing iron contamination and ongoing community complaints of rusty water and staining. H2M provided the most effective process to remove the iron using chemical pre-treatment and pressure filtration. A Gold Award in the category of Building/Technology Systems was presented for H2M's innovative, computerized SCADA system which enabled the Hicksville Water District to control all water pumps, pressure, tank levels, and alarms. As part of the system, the communication systems were also upgraded to allow a new video surveillance system to be networked to improve security. The SCADA system provides automated notification in the event of alarm occurrence, which improves the overall water supply operations and security. •

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