Musconetcong River News

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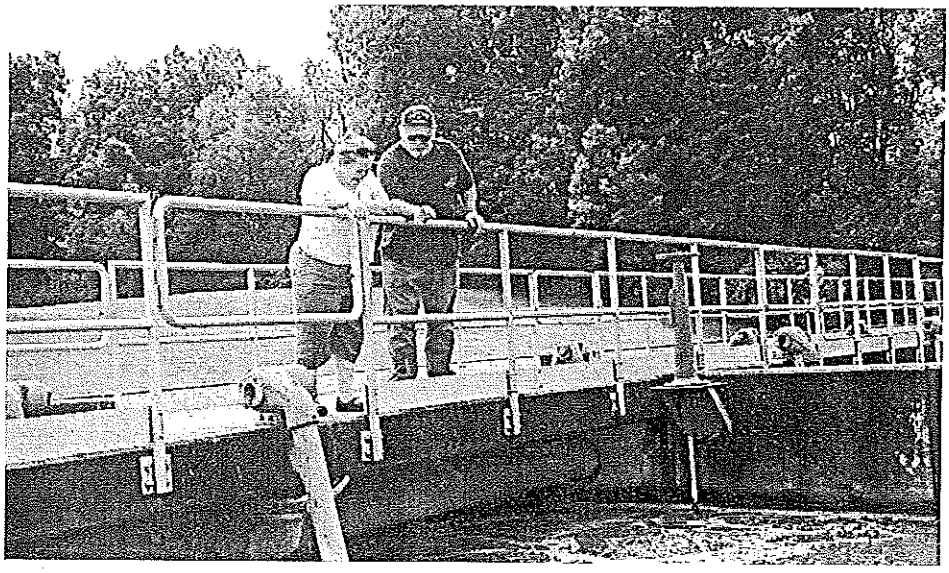
Wastewater Treatment Facilities Work to Protect the Musky

In September of this year MWA Executive Director, Beth Styler Barry, accompanied by Water Quality Monitoring Coordinator Nancy Lawler, and Trustee Emeritus/Water Quality Monitor, Chuck Gullage, toured the Musconetcong Sewerage Authority Treatment Plant and the Hackettstown Municipal Utilities Authority Wastewater Treatment Plant. These are the two wastewater treatment plants that discharge treated wastewater into the Musconetcong River.



Water Quality Monitoring Coordinator Nancy Lawler and Trustee Emeritus/Water Quality Monitor Chuck Gullage view the aeration tank where the bacteria break down organic material at the HMUA.

The Musconetcong Sewerage Authority (MSA) was created in the 1960s to provide treatment for the Boroughs of Netcong and Stanhope. The original capacity of the MSA was 0.5 million gallons per day (MGD); after the most recent expansion in 2005 it now handles a capacity of 4.3 MGD. The Hackettstown Municipal Utilities Authority (HMUA), created in 1965, is a water and sewerage authority and currently serves portions of five municipalities in the Hackettstown area. The HMUA has a capacity of 3.3 MGD but currently handles about 2.1 MGD.

The HMUA and MSA treat wastewater from households, businesses and industry that are not on private septic systems in the watershed. These facilities treat incoming wastewater and return the treated water (effluent) to the river. Processes used to treat wastewater include physical, chemical, and biological processes to remove the various components present in wastewater.

Effluent returned to the river must meet the limits for several components named in permits issued to the plant by the New Jersey Department of Environmental Protection to protect the health of the river, including bacteria, lead and nitrate. It goes without saying that we wouldn't want to flush our toilets or empty our washing machines directly into our river, so the job performed by the MSA and HMUA is critically important. If untreated sewage is added to a stream, dissolved oxygen levels will drop to levels too low to support sensitive species of fish and other aquatic life. Wastewater treatment systems are designed to digest much of the organic matter before the wastewater is released so that this will not occur.

Water Quality Monitoring Coordinator Nancy Lawler, who joined the HMUA tour said "As part of the tour we were allowed to review the data collected on the effluent. I came away thinking we all need to be more careful of what we pour down our sinks—it all shows up in the waste water stream. Some of that stuff is tough to remove, and that affects the health of the river. New contaminants show up from sunscreens, cleaning products and medications all the time. HMUA is doing their part to insure that the water they return to the river is clean and meets water quality standards—but we need to be more responsible too."

At both the MSA and HMUA all types of debris-plastics, toys, rags and even the occasional cell phone-are removed before the wastewater is treated. Next, during the Primary treatment phase, the sewerage is temporarily held in a tank so that heavy solids can settle to the bottom, while fats, oil and grease (FOGs) and lighter solids float to the surface. FOG s present the biggest challenge for wastewater treatment plants. In both facilities, these settling tanks were equipped with mechanical scrapers that scoop the sludge towards a hopper in the base of the tank where it is collected. At HMUA there are two sludge digesters; their temperatures are maintained by furnaces fired by methane gas resulting from decomposing sludge.

Secondary treatment removes dissolved and suspended biological matter.

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Secondary treatment is performed by bacteria that actively work on the waste water. Pipes deliver compressed air to help the process along and create a good habitat to keep the microorganisms alive. The workers at the sewer plants speak of the bacteria in the aeration tanks as if they are trusted colleagues.

Tertiary treatment in both facilities includes disinfection of the effluent before water is discharged into the highly sensitive ecosystem of the Musconetcong River. At both the HMUA and the MSA the final stage of treatment is exposure to ultraviolet light that kills almost all bacteria and viruses, and a long step aerator adds oxygen to the water before it leaves the plant.

Chuck Gullage, MWA Trustee Emeritus, present on both tours, made the following observation "Working on the Musconetcong River as a River Watcher water monitor over the past few years, I have learned a couple of things with regard to the sewerage treatment plants that have permitted discharges into the river. If there is a pollution report on the river it is probably not emanating from either the Musconetcong Sewerage Authority or the Hackettstown Municipal Utility Authority. The highly trained and dedicated personnel employed in these two facilities take extreme pride in their work and are professional in the performance of their duties. The people who work in these plants are passionate environmentalists who love the river as much as we do. They are our partners in the care of the Musky."

MWA Executive Director Beth Styler Barry and James Schilling, Director of the Musconetcong Sewerage Authority discuss the primary phase of treatment at the MSA.

A Follow–up on the Summer Solar Farm Article

Beth Styler Barry

The summer edition of the Musconetcong River News featured an article on solar farms, however, a few recent developments have led me to prepare this follow up article.

First, we've received notice of a planned 99,000 panel solar installation in the Musconetcong Watershed – not the sort of thing I had in mind while writing the original piece. Solar facilities are extremely consumptive of land and are competitors with agriculture for the use of prime agricultural soils; in fact the 99,000 panel proposal is located on NJ Prime Farmland Soil.

Secondly, a long-time MWA partner and supporter, Geoffrey M. Goll, P.E. of Princeton Hydro, LLC provided me the opportunity to read a paper he prepared titled "Building Sustainability into Solar Farm Development through Soil Health Maintenance".

The paper raises issues about the long-term effects on soil health that I did not consider in the original article. In that article, I quoted Susan E. Craft, Executive Director, State Agriculture Development Committee from a presentation titled "On-Farm Solar Energy Generation" which stated "soil disturbance [for solar production] must be approached with the overall goal being to ensure land can be returned to agricultural production."

According to Mr. Goll's research, some of the impacts of this disturbance are "soil compaction and stripping of topsoil during construction, reducing soil permeability, lowering of soil biodiversity, and limiting plant cover density. Such impacts to the soil will increase stormwater runoff, soil erosion, and dust. ... these facilities require heavy construction equipment and material delivery which imparts repeated stresses that have significant and permanent impacts on the underlying soils." According to Mr. Goll, "A change to the planning, engineering and construction techniques for solar farms that includes the integration of soil health protection would improve the sustainability of solar farms..." and should be considered when planning large scale solar generation on agricultural soil.

Local Solar Energy ordinances typically call for land to be returned to its natural state. However, reading Mr. Goll's paper, I realize that this is not easily achieved and, more worrisome, none of the local ordinances that I have read address any method of measuring soil health or productivity as part of their decommissioning plans. These ordinances need to be amended to address the long term impacts of this type of development on agricultural lands.