

## Pentwater swings the impossible in water treatment

*New Clean Water Plant uses membrane filtration to meet state standards*



The Village of Pentwater's wastewater treatment facility was formerly a lagoon system with spray irrigation, meaning the water was treated in lagoon cells and then discharged to water farm crops. The Village received an Administrative Consent Order (ACO) from the Michigan Department of Environmental Quality, requiring Pentwater to improve its wastewater treatment. Its discharge irrigation system was overloading the farm fields with phosphorous. Direct discharge to Pentwater Lake was not possible as it was also overloaded with nutrients. Not sure how to bring its facility into compliance, the Village of Pentwater hired Prein&Newhof to give them a second opinion.

The challenges were two-fold: getting the level of treatment needed to meet compliance and accomplishing this at an affordable cost.

P&N was certain that membrane filtration could bring the plant into compliance, and described to the Village how they might accomplish this feat. The Village of Pentwater subsequently asked P&N to design the facility upgrades.

Prein&Newhof has designed membrane filtration plants before with great success.

Yet, there are multiple membrane system types and each has its own specific characteristics. P&N determined that a flat plate membrane was the best solution for Pentwater. The new treatment plant was designed and constructed with cost and long-term operation and maintenance issues in mind.

"The plant uses state of the art technology in a cost effective manner," says Project Manager, Mark Prein, P.E. "For example, the water is filtered through the membranes and discharged to a creek by gravity to help minimize operating costs associated with pumping."

Once constructed, P&N assisted the Village with starting up the plant and bringing it on line. "Meeting the low phosphorous limit was the most difficult challenge faced during startup. It took several weeks of adjusting various processes to maintain the balance necessary to consistently meet the permit limits," said Nate VerHeul, P.E., Project Engineer. P&N made it happen: the new design reduced phosphorus levels to an amazingly low 0.03 mg/L, a level 33 times lower than the typically required 1.0 mg/L limit.

While funding had also been a concern for the Village of Pentwater, Prein&Newhof was able to help them partner with Rural Development for funding assistance. The project received a Rural Development Loan of \$4.9 million and a Rural Development grant of \$500,000. And while Rural Development funding does not usually allow for recipients to prebid their equipment, P&N worked with Rural Development to meet their requirements and secure the specific membrane system needed for the project.



"The project was met with skepticism and resistance by some residents within the Village. We remained confident of the design and were able to help the Village successfully complete the project. Now the skeptics are true believers that the impossible is possible."

– Nate VerHeul, P.E.



## Long-time engineer's spirit and contributions live on

P&N was deeply saddened by the sudden death of friend and colleague Mark Lee, P.E. in late November, 2013. Mark was a Prein&Newhof employee for 27 years, from the time he graduated from college until the day of his death.

Mark was known as a kind and humble engineer and friend, who devoted himself to everything he did, caring beyond measure. As one client expressed, "We thought we were Mark's favorite client, and have come to see that all of his clients felt just the same way."

Mark's work as an engineer will stand the test of time. He specialized in designing water supply and distribution systems, pumping stations, wastewater treatment and collection systems, pedestrian paths, and park improvements. He used his interest in diving to help with below-level intake design and construction observation, as well as harbor and marina design and remediation.



"Mark Lee combined the skills of an artist, a diplomat, a humanitarian, a diver and an engineer. I saw and enjoyed all of these in action as we collaborated on very interesting and challenging projects. It was my pleasure and privilege to work with Mark, who was always looking for ways to make life better for others. We miss him."

– Tom Newhof, P.E.



## Prein&Newhof Welcomes New Employees

**Jaclyn Steinbruch** joined P&N full time as an Administrative Services Coordinator after graduating from Calvin College with a business major, human resources concentration. (She had previously worked as an Administrative Intern.) Jackie works from the Grand Rapids Office, where she assists with a variety of administrative and human resource responsibilities.



**Nate Williams** joined P&N at the Holland Office after graduating with a Bachelor of Science in Civil Engineering from Calvin College. Nate is working on design and construction observation for various municipal projects along the lakeshore.



## P&N Says Goodbye to Three Long-Standing Employees

This year, Prein&Newhof thanked three very loyal employees for their many years of dedication to serving our Michigan communities, and for their contributions to their professions and the success of Prein&Newhof.



**Art Brintnall, P.S.** retired after 44 years with Prein&Newhof. He was hired by Ed Prein & Tom Newhof a year after they began the company. He managed our survey crews for many of these years.



**Michael Fuller, P.E.** retired after 38 years with Prein&Newhof. Mike worked on many water and wastewater supply and distribution projects for large and small communities.

**Philip Glupker, P.E.** retired after 37 years with Prein&Newhof. Phil managed our Holland Office for many years while working on infrastructure improvements in Ottawa County.

## Prein&Newhof specializes in:

- Civil & Environmental Engineering
- Environmental Consulting
- Surveying
- Geographic Information Systems
- Laboratory Testing

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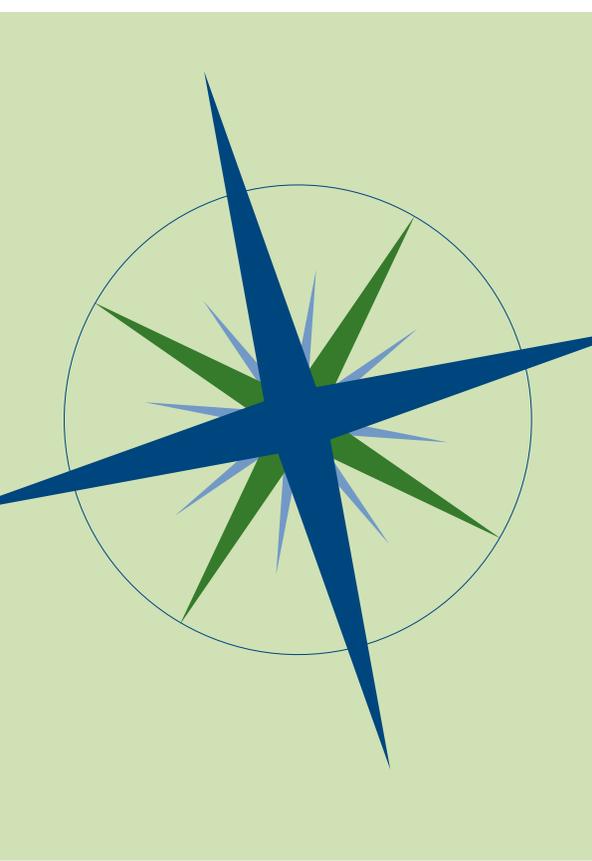
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