Water Recovery Opportunities for Perry’s Ice Cream

Client
Perry’s Ice Cream, located in Akron, NY, produces over 10 million gal/year of ice cream. The company purchases approximately 60,000 gal/day of city water and discharges a similar amount of treated wastewater to the municipal sewer system.

Opportunity Areas
Perry’s, a client of Insyte Consulting, has been working with NYSP2I to determine optimum water recovery and reuse options from their on-site water treatment facility. An initial study using reverse osmosis (RO) indicated that treated water could be purified for potential reuse. Additional work is ongoing to determine if other, lower cost water purification methods could produce water suitable for reuse in operations.

Objectives
The primary objectives were to assess various filtration technologies typically used for potable water and to determine if these technologies could economically produce 50% of the treated water clean enough for reuse.

Work Performed
NYSP2I worked with Perry’s to set up pilot tests utilizing different technologies in various combinations:

- Multimedia filtration (MMF)
- Granulated activated carbon filtration (GAC)
- Vacuum Rotary Drum Filter
- Ultrafiltration (UF) membrane
- Nanofiltration (NF) membrane

Results
The company spends over $200,000 annually for water purchase and sewer fees. If 50% of the water can be reused, up to $120,000/year savings can be realized by Perry’s. Findings obtained are summarized below:

- Best options appear to be utilization of UF or NF membranes.
- Tests using a vacuum rotary drum filter prior to UF and NF showed a slight improvement in flow rates. From an economic perspective, ultrafiltration would be the ideal process since the flow rate is highest (thus less capital required).
- For reuse implications, the quality of the UF water will be validated by a state agency.
- A NYSP2I R&D project is underway at the University at Buffalo focusing on improving membrane performance and utilizing wastewater samples from Perry’s for its experiments.