The Lake Champlain TMDL placed a cap on phosphorus discharges from WWTF's where the load represents a significant portion contributed to critical lake segment watersheds. In February 2015, the State issued a Regional Planning Advance to St. Albans to conduct a pilot study to identify advanced phosphorus removal technologies that are available, reliable, effective and economical to meet an effluent TP limit of 0.1 mg/l, or lower.

In October 2017, the State issued a new Discharge Permit to St. Albans which lowered the phosphorus discharge limit from 6,089 to 2,436 lbs—a 60% decrease. This Discharge Permit included a schedule and deadlines for compliance, July 1, 2020.

To comply with these new requirements, construction of the P improvements started in early 2018. The P improvements included:

- Secondary clarifier optimization
- Rapid mix and flocculation tanks
- New chemical feed/storage systems
- New Aqua Aerobics cloth media filters

Innovations included addition of the rapid mix and flocculation tanks and use of 5 micron filter fabric. The P improvements were operational in December 2019, ahead of schedule.

**PHOSPHORUS REMOVAL OBJECTIVES**

**OVERALL PROJECT HIGHLIGHTS**

- Joint-funded project by State of Vermont and USDA/Rural Development.
- Repurpose and reuse of existing tanks and structures.
- Added stormwater pumping station to reduce flooding during major rainfall events.
- Converted primary clarifiers from travelling bridge to chain and flight.
- The City moved forward with the phosphorus removal improvements to support their commitment to improving water quality in Missisquoi Bay even though the waste load allocation defined in the new Discharge Permit was appealed.
- Conversion of original Filter Building to Chemical/Feed Storage and Rapid Mix/Flocculation Tanks.
- Maintain gravity flow through the plant with new Filter Building
- Energy management includes mechanical (heating/ventilation), and electrical improvements throughout.
- Improved process monitoring and control with new PLC/SCADA system.

**FUNDING SOURCES**

- State of Vermont Pollution Control Grant: $1,200,000
  State Revolving Loan: $6,135,000
- USDA Rural Development Grant: $2,948,000
  Loan $7,717,000
- Total Funding: $18,000,000

**AGED RELATED IMPROVEMENTS**

- Septage receiving facility
- Headworks with aerated grit removal and comminutor
- Three (3) Primary Clarifiers
- Primary effluent pumping
- Rotating Biological Contactors
- Two (2) Secondary Clarifiers
- New Filters
- Disinfection system
- Anaerobic digestion with primary and secondary digester tanks
- PLC/SCADA
- Operations Building