

# Case Study: Montague

## COST SAVINGS, NITROGEN & PHOSPHORUS REMOVAL MONTAGUE, MASSACHUSETTS (POPULATION 8,500)

A collaborative effort has resulted in the development of the Sequenced Aeration process, a highly effective method of nitrogen and phosphorus removal.

Cost: \$100,000

Annual Operating Savings: \$500,000/yr in reduced sludge disposal costs



Montague's 1.83 MGD conventional activated sludge plant is operated in a Sequenced Aeration mode. The primary clarifiers receive return activated sludge (RAS) and trucked-in waste sludge; they operate as anaerobic fermenters. Influent is pumped to one of the two plug-flow aeration tanks for approximately 90 Minutes. For the next 1½ hours, all of the influent is pumped to the other aeration tank. Air is turned off in the tank receiving the influent flow to create anoxic conditions for nitrate-nitrogen removal. The tank not receiving flow is aerated; ammonia-nitrogen removal occurs in the oxygenated tank.

Converting the facility to Sequenced Aeration involved in the installation of two motor operated RAS valves, two motor operated aeration piping valves, in-line DO and ORP instrumentation, miscellaneous piping and programming changes to the plant's SCADA system at a total cost of \$1000,000.

Effluent total-nitrogen averages 8 mg/L. Effluent total-phosphorus averages 0.75 mg/L. Because the plant is operated at a mixed liquor concentration of 10,000+, the quantity of sludge removed has declined by 50%. Annual sludge disposal cost savings of \$500,000/yr are being realized.

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"Montague's talented staff very much values the support that CleanWaterOps provides."



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