



Town of Concord WWTP CoMag™

Application

Tertiary Treatment for Total Phosphorus Removal

Capacity

1.25/4.4 MGD
NPDES 0.2 mg/l
Total Phosphorus

Commissioned

October 2007

Location

Concord,
Massachusetts

The Town of Concord, Massachusetts (Concord) operated under a National Pollutant Discharge Elimination System (NPDES) permit that had an interim seasonal phosphorus limit of 0.75 mg/L. The Massachusetts Department of Environmental Protection and the United States Environmental Protection Agency (USEPA) has issued a new permit with a seasonal phosphorus limit of 0.2 mg/L.

The plant's existing phosphorus treatment – the addition of alum prior to the secondary clarifiers – was not expected to meet the future permit limits. Engineers evaluated multiple configurations of processes (CoMag™, dissolved air floatation, sand filters, and membrane

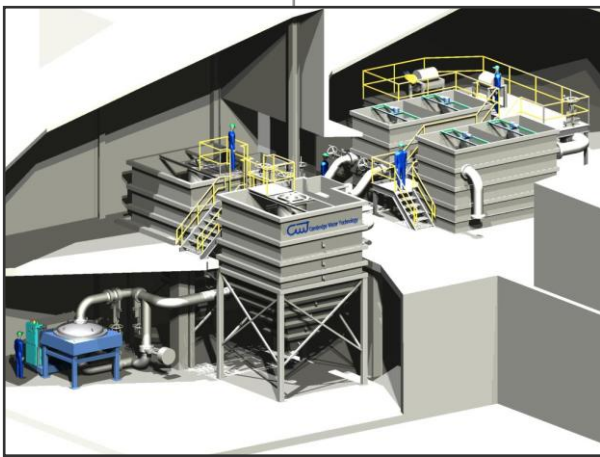
biological reactors, or MBRs) to help Concord select an option that would provide process flexibility and reliability on the space-limited site. A combination of evaluation criteria was used to screen the alternatives that merited further

evaluation. After an 18-month trial of the CoMag™ process, the Town of Concord concluded that CoMag™ was the optimal solution.

The CoMag™ system is part of a larger facility upgrade that includes improvements to the headworks, disinfection system, plant utilities, controls, and other processes. It should be noted that after testing the CoMag™ effluent, the designers felt confident that a smaller and less expensive UV disinfection system could be used due to the excellent water quality.

CoMag™ Process Overview

The CoMag™ process comprises conventional chemical coagulation and flocculation with the proven benefits of high rate ballasted sedimentation. By adding fully inert, finely ground, non-abrasive magnetite (Fe₃O₄) to the flocculation process, CoMag™ succeeds in significantly increasing the weight and settleability of the chemical floc. The result of this easily managed process is high rate, reliable clarification and the near 100% removal of particulate as small as 10 microns. And this performance without the potential of clogging and



plugging that is characteristic of media, cloth or membrane filtration.

Advantages of the CoMag™ System

The key benefits and advantages that drove Concord to their commitment to the CoMag™ process were:

- **Low capital and O&M costs**
- **Non-abrasive ballast**
- **High reliability**
- **Intrinsic redundancy**
- **High “turndown” capability**

- **Reliable in upsets**
- **Flexibility of Coagulant Type**
- **Reduces cost of UV disinfection**
- **Capability of achieving TP Effluents of <0.05 mg/L**

To learn more about the Concord WWTP upgrade and how CoMag™ can help solve your water and wastewater treatment challenges contact Bob Backman at 617-871-1353 x114 in our Cambridge office or email Bob at rbackman@cambridgewater.com.

