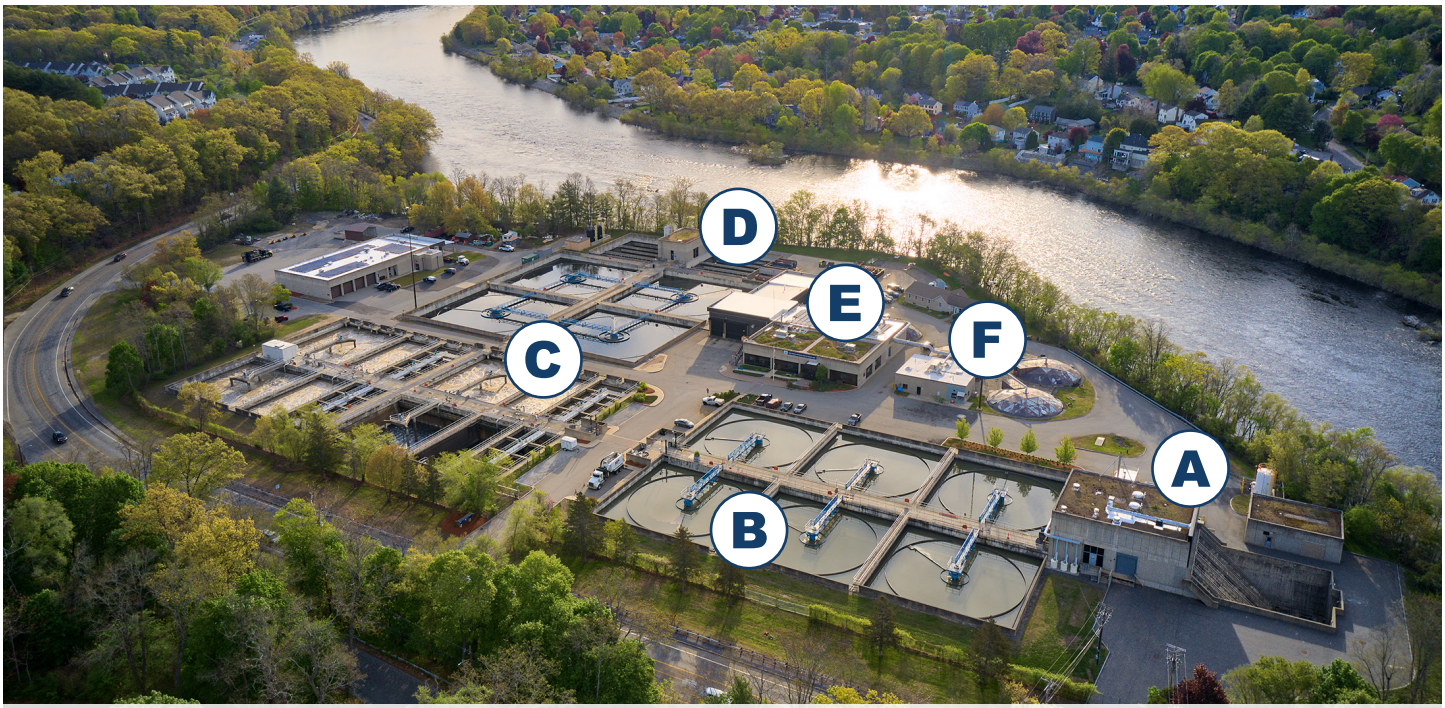
LOWELL REGIONAL WASTEWATER UTILITY

PHASE 3 TREATMENT FACILITY UPGRADE

Lowell Regional Wastewater Utility (LRWWU) provides wastewater treatment to Lowell and parts of surrounding communities. Phased projects are periodically planned to address wastewater collection and treatment facility infrastructure repairs and upgrades. Aging equipment requires more frequent maintenance and is at higher risk of failure which can result in odors, treatment issues, and costly emergency repairs. Similar to past phases the Phase 3 improvements aim to modernize outdated equipment, streamline operations, ensure the continued reliability of critical infrastructure, comply with current and future environmental permits, and reduce ongoing operation and maintenance costs as summarized below.



A - Influent Building
B - Primary Treatment
C - Secondary Treatment
D - Disinfection
E - Administration Building
F - Solids Handling Area

Process Improvements

- New scum processing equipment
- New chemical building for improved phosphorus removal
- Additional chlorination pumps and storage for more reliable disinfection of treated effluent
- New Bisulfite Building for more reliable chlorine removal after disinfection and prior to discharge to the Merrimack River
- New centrifuges and dewatering equipment
- Additional chemical equipment for sludge odor control and processing

Infrastructure Renewal and Energy Efficiency Improvements

- Grit removal equipment replacement
- New air diffuser equipment in the aeration tanks resulting in energy savings
- Gravity thickener mechanism replacement used to thicken sludge before dewatering
- Replacement of electrical equipment in Effluent Building from the 70's

Phosphorus Removal

The Phase 3 Upgrade focuses on aging equipment replacement and a new process to aid phosphorus removal. The facility currently removes phosphorus from wastewater through biological treatment. A new chemical building and equipment is being constructed to provide chemical addition to aid in phosphorus removal. Phosphorus not removed as part of the treatment process can cause water quality issues in the Merrimack River (e.g. algal blooms).

Dewatering Upgrade

Another priority of the project is replacement of sludge dewatering equipment. The treatment process results in excess sludge which must be hauled off-site for disposal. The dewatering process removes water from the sludge thereby reducing the weight and volume. A reliable dewatering system saves on operating and disposal costs. Specifically, the upgrade expands the facility's dewatering capacity thereby reducing operating time which saves on electrical costs and allows Operators to focus on other areas of the facility.

The Phase 3 Project will significantly benefit the community by ensuring environmental protection, optimizing operational efficiency, and delivering long-term cost savings.