

Liquid Treatment Process

Treating raw sewage at the Wastewater Treatment Plant is an important, complex operation that involves several processes to ensure all contaminants are removed prior to releasing water back into the environment, and all solid materials are suitably stabilized prior to disposal and/or recycling. This page focuses on the liquid treatment process. For a description of the removal process for inorganic materials see the [Headworks](#) page. For a description of the organic solids process, see the [Biosolids Treatment Process](#) page.

After the big, bulky, and heavy inorganic material is removed at the headworks, the remaining liquid and organic rich raw sewage goes through a series of processes designed to digest and convert the organic material to a stable form, separate the digested solids from the liquid, and disinfect the liquid before discharging it back into the environment.

The Wilsonville Wastewater Treatment Plant uses a process known in the industry as an Activated Sludge process. In this process, primary treatment involves aeration and mixing of the sewage in the presence of bacteria. The bacteria “eat” the raw organic matter, converting it to biomass. The resulting liquid stream, known as a “mixed liquor” is routed to clarifiers – large circular tanks, where the biomass settles out as a sludge. There may be as many as three clarification/settling steps for the mixed liquor before the liquid is sent to the next process – filtration.

In the filtration process, the liquid is passed through a media such as sand, activated carbon or an engineered membrane to remove the remaining suspended solids from the water. Filtration is followed by a final disinfection step to kill remaining pathogens before discharge. Typical disinfection processes include chlorine injection and high intensity ultraviolet light, or UV. In order to minimize residual chemical discharges to the Willamette River, the Wilsonville WWTP uses a UV disinfection process.

Upgrades to the liquid processes included addition of a third aeration basin, construction of an additional secondary clarifier, construction of a new disk filter, and addition of another UV channel. These improvements increased overall capacity from 2.25 million gallons per day (MGD) to 4 MGD while ensuring continued compliance with the National Pollutant Discharge Elimination System (NPDES) permit that Wilsonville has through the state Department of Environmental Quality (DEQ).