



WASTEWATER TREATMENT PLANT

INTRODUCTION

Built in 1982, the Wastewater Treatment Plant processes an average of 3.5 million gallons of wastewater each day. Wastewater treatment is essential to protecting public health, while sustaining water suitable for aquatic life, agriculture, recreational use and the drinking water supply down stream.



OUR MISSION

To protect public health and sustain a healthy environment by safely operating the facility in a fiscally responsible manner, while continually complying with the discharge permit and other applicable regulations as entrusted to us by the residents of Northglenn.



CONTACT INFORMATION

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PHASE 1 | PRE-TREATMENT

At the Headworks Building, Step-Screens and a Grit Removal System eliminates large debris, inorganic matter as well as trash, leaving behind a nutrient rich effluent. Headworks allows Northglenn to remove material that will cause major damage to equipment throughout the treatment process.



Anything flushed down the toilet or washed down a drain ends up here. Such as; kitchen grease, wipes, feminine hygiene products, floss picks, syringes, plastic toys, as well as scrap metal.

The flushable label on many hygiene products, like sanitation wipes, can be very deceiving, just because an item claims it is “flushable” DOES NOT mean it is actually biodegradable.

Take a golf ball for example, sure you can flush it, but you risk damage to your pipes as well as damage to the collection and wastewater treatment systems.

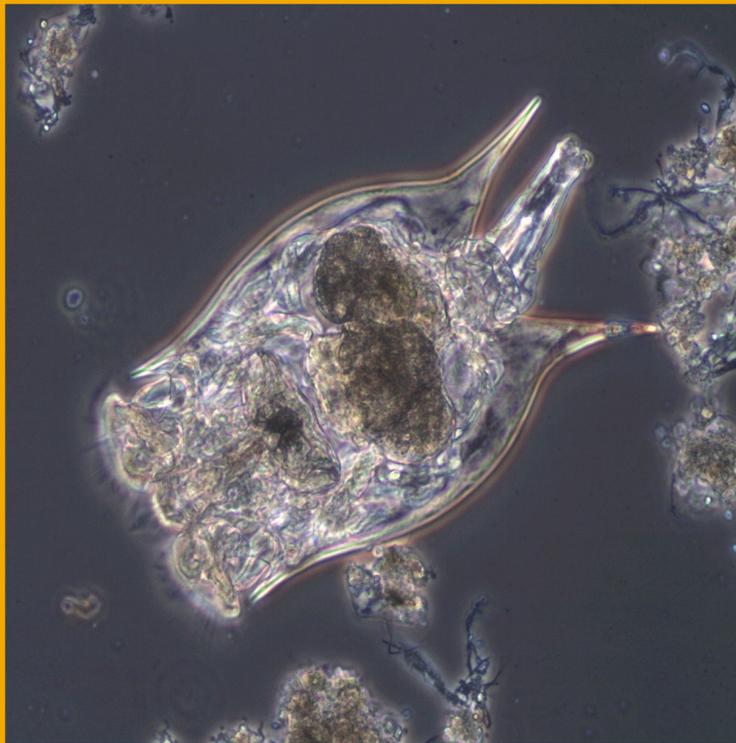
Trash or decomposable? Put it to the test, place your “flushable” item in a bowl of water for an hour, if it is not breaking down, then it belongs in the trash.

PHASE 2 | SECONDARY TREATMENT

Secondary treatment begins in Aeration Basins after trash and other inorganics have been removed. Northglenn uses Three Stage Biological Nutrient Removal Process, a biological form of wastewater treatment using aeration and microorganisms commonly referred to as “bugs” to treat wastewater.



These bugs digest organic matter found in wastewater. Examples of organic materials include, nutrients (phosphorous & nitrogen) and oxygen depleting substances. Under proper conditions, microorganisms rapidly reproduce, speeding up the decomposition of nutrients. The mixture of bugs, raw sewage and returned sludge is referred to as Mixed Liquor.



Mixed Liquor then flows out of Aeration Basins into Clarifiers. Here Mixed Liquor settles out into Sludge, a biologically diverse liquid composed of engorged microorganisms. Sludge forms as Mixed Liquor sinks to the bottom of the Clarifiers and clean water flows over the top. Once settling is complete, clean water flows to the final stage of treatment, disinfection while sludge is transferred to one of two locations.



Relocation for Sludge depends on the pounds of bugs remaining in the system. Sludge is either, returns to Aeration Basins, restarting the secondary treatment process or transfers to Biosolids Lagoons for further processing. After treatment, a third-party dredging company removes lagoon Biosolids and applies them to permitted agricultural land, growing items like feed corn for livestock. Applying Biosolids is beneficial for crops by supplying nutrients and increasing the water holding capacity of soil.

PHASE 3 | DISINFECTION

Before reclaimed water is released from the plant, it must be further treated to deactivate bacteria, viruses, mold, algae and any other pathogens. Northglenn uses ultraviolet (UV) light as its disinfection method for microorganisms.



Short-wavelength ultraviolet light is used to inactivate microorganisms by destroying their DNA, leaving them unable to perform vital cellular functions such as reproduction. UV disinfection is one of the safest and most efficient ways to disinfect water, especially as bacteria, viruses, mold and algae have become resistant to chemical sterilization.

After UV treatment, effluent, also known as reclaimed water, is now 98% similar to drinking water and is finally introduced back into the watershed. Reclaimed water is used for crop irrigation, recreational use, as well as drinking water downstream.