

Wastewater Treatment Plant

Wastewater is any water that leaves our homes or businesses from sinks, tubs, drains and toilets. This water is processed at [Penticton's Wastewater Treatment Plant](#), an industry-leading facility that treats an average of **12 million litres** of water each day. It's one of the most advanced treatment facilities of its kind in Canada.

The Facts

- Did you know that almost half of the water you use in your homes ends up going down the drains?
- Treating our wastewater is crucial to protect the ecosystem around us. It's also a matter of public safety.
- Reclaimed water is used to irrigate city parks, sports fields, school grounds and the Penticton Golf and Country Club.
- The Okanagan College and the Wastewater Treatment Plant also use the reclaimed water for toilet flushing.



About the Tour

What happens to the water after you flush the toilet or wash the dishes? Staff will walk you through the processes required to process wastewater.

- Learn about how, and why, water is treated (and walk through the steps to see the transformation).
- Hear about the importance of water conservation.
- Learn about what cannot be flushed down the toilet (learn about the 3 P's: pee, poo and paper).

Location

📍 [459 Waterloo Avenue, Penticton](#)

Access to the site is at the end of Waterloo Avenue, which has a controlled gate. Parking for buses is best in the truck turn-around outside the gate. Parking for smaller vehicles is available to the left inside the gate. Come to the front door to meet your tour guide.

Please be aware this facility has stairs and is not wheelchair-accessible. All participants should wear closed-toe shoes and weather-appropriate clothing, since much of the tour is outdoors.

Tours are offered upon request and are booked on a first-come, first-serve basis. The tours are 1.5 hours in length.

Book Your Tour

☎ Phone: 250-490-2550

✉ Email: joel.mertz@penticton.ca



www.penticton.ca

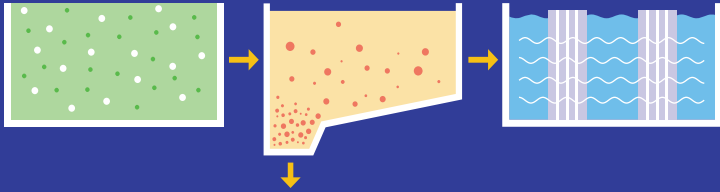


Wastewater Treatment Plant TOUR



How It All Works

Put simply, the process goes like this:



- A **biological nutrient removal process** removes phosphorus and nitrogen.
- **Gravitational processes** are used to remove solids, which are treated, then composted.
- **Ultraviolet disinfection** is applied to disable any harmful bacteria before the effluent is discharged.

Treatment Process

Here's a play-by-play of the wastewater treatment process:

STEP 1 | HEADWORKS

Incoming wastewater travels through fine screens, where most of the unflushables are removed. These solids are washed, conveyed to a bagged garbage bin and taken to the landfill. The influent then flows through a degrit system where heavier solids are further separated out.

STEP 2 | PRIMARY CLARIFICATION

Wastewater then flows by gravity to one of two primary clarifiers. At this stage, collectors skim the tank and remove the settled solids. Flow exits the tanks and continues to the splitter box, where it is split into the two bioreactors.

STEP 3 | BIOREACTORS

The liquid, called Mixed Liquid Suspended Solids (MLSS), passes through three zones in a process that removes phosphorous and nitrogen. This includes the anaerobic (without oxygen), anoxic and aerobic (with oxygen) zones. The different environments encourage bacteria and other microorganisms to feed on different components of the wastewater.



STEP 4 | SECONDARY CLARIFICATION

The bio-reactor effluent flow moves to the two secondary clarifiers and the settled sludge is returned to bio-reactors. Any floatables are skimmed and pumped to the beginning of the plant to go through the treatment process again. The clarified effluent flows over to the filters.

STEP 5 | FILTERS

The secondary clarifier effluent is filtered to remove any remaining particulate.

STEP 6 | DISINFECTION

Effluent is disinfected by ultraviolet light, which inactivates microorganisms.

STEP 7 | EFFLUENT REUSE

Reclaimed water is used to irrigate City parks, sports fields, school grounds and the Penticton Golf and Country Club. All reclaimed water is chlorinated before leaving the wastewater treatment plant and is tested during the irrigation season daily for E. coli and chlorine.

The [Okanagan College and the City's Treatment Plant](#) also use the reclaimed water for toilet flushing. In addition to toilet flushing, the treatment plant uses the reclaimed water for all hosing around the plant, and heating and cooling in the administration building.

The Solids Composting Process

The solids that remain are treated as follows:

STEP 8 | FERMENTER

The fermenter digests heavy organic solids and sludge from the primary clarifiers. This process is referred to as fermentation and creates Fermented Primary Sludge (FPS) and Volatile Fatty Acids (VFAs), which are used in the nutrient removal process that occurs in the bioreactor.

STEP 9 | SLUDGE THICKENING – DISSOLVED AIR FLOTATION (DAF)

Here, wasted MLSS from the bioreactor is mixed with polymer and microbubbles. Solids attach themselves to the microbubbles and float to the surface, where it is skimmed off and transferred to the Thickened Waste Activated Sludge Storage (TWAS).

STEP 10 | TWAS STORAGE

The TWAS tanks are aerated with coarse air that is supplied from the process air blowers. This keeps the solids in suspension.

STEP 11 | CENTRIFUGE

The TWAS and FPS are combined just before they enter the centrifuge along with a small amount of polymer. It is then thickened to approximately 18% solids, discharged and pumped into two roll off bins, then transported to the landfill, where it is composted.

STEP 12 | COMPOSTING

The sludge is combined with wood chips and sawdust, then stacked on aeration pipes to dry. The piles are monitored for metals, coliforms, salmonella, PCB's, moisture, pH, nitrogen and phosphorous. This product is recycled to City Parks and sold as compost to the public and farmers for agricultural use.

