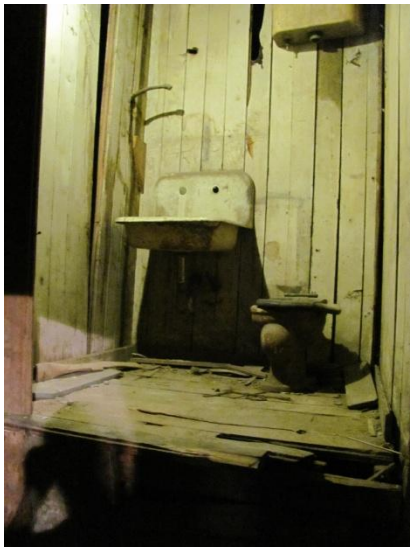
What were the challenges for wastewater in early Seattle?

Enrico Abadesco and Kenten Danas

There were many challenges in the early development of Seattle's wastewater system. The most prevalent problems dealt with the elevation of the city, the ebb and flow of the tides, lack of city planning and lack of adequate piping material. Waste from outhouses was washed into the streets by high tides, which caused unsanitary living conditions. Outhouses were replaced by toilets and wooden drainage pipe system, which encountered overflow of raw sewage into homes due to the back pressure caused by high tides flowing into the single pipe system. At times the pressure caused a geyser like experience several feet high. These problems persisted till 1890 when the city was burnt down and later rebuilt.

How did the "Crapper" change the face of wastewater?



Carmen Rodriguez and Maggie Stark

In the late 1800s Thomas Crapper brought the "Crapper" to Seattle, impacting people's everyday lives. As opposed to an outhouse, the "Crapper" required a connection to a central sewage system, which Seattle lacked. Thus, Seattle's first central sewage system was developed – a single wooden box pipe. Due to the tide cycle and the flawed sewage drainage, the pressure caused a reversal of the wastewater direction forceful enough to blow you off the "Crapper."

What is the historical reason for the location of the West Point Wastewater Treatment Plant?

Nate Janega and Christina Curtis

Before there were toilets in Seattle, there were outhouses: plain holes in the ground with a shack on top. The strong tides coming into Elliot Bay meant that much of the raw sewage was washed out into the bay twice daily. When flush toilets were made available to the citizens of Seattle, they had to quickly build a pipe network to serve the new-fangled toilets.

The solution was a single, six-inch square wooden box pipe: yes, that's right, wooden pipe, because the material they had the most of was wood. Remind me what Manning's n is for a wooden pipe. The gravity-drained pipe led out to a point of low elevation on the tip of the bay, known as West Point, where it drained untreated into the bay. This was probably done to avoid tidal entrapment in Elliot Bay.

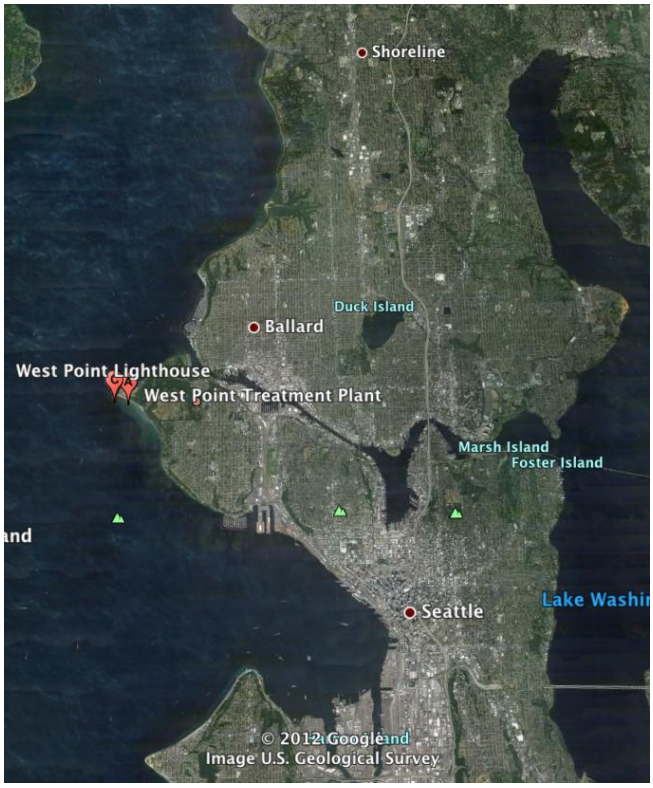


Figure 1: Map Showing the Location of West Point

Source: Google Earth

Later, environmental regulations required wastewater to be treated before discharge into natural waterways. The terminus of the sewer network at West Point was the logical location for the plant because all pipes led to West Point.

Figure 2: A cross-section image of a wooden pipe.

Figure 3: Side View of a Wooden Pipe

How does the history of Seattle continue to impact modern WWT (in Seattle)?

Ornwipa Thamsuwan and Joe Ellingson

Seattle's original wastewater management system consisted of outhouses built very close to the water's edge, the pits of which were often flooded by tides and filled in with sand. An improvement came with the invention of the Crapper (toilet), which necessitated a public sewage system. The system originally consisted of dysfunctional wooden pipes, which was later vastly improved with the installation of a concrete, metal, plastics piping system. The historic layout of these pipes is still used today. Interestingly, some wooden pipes weren't replaced and are still being used today, although with more modernized linings.

Since its inception, Seattle uses a combined sewage system to transport wastewater and storm water in the same pipes. This practice was first put in place when the streets were full of horse feces and other filth. Rain would wash the contaminated storm water down street drains where it would mix with wastewater from businesses and households and eventually flow into Puget Sound. Even though a treatment plant has been added and storm water is now much cleaner, the historic combined sewer system continues to be used today.