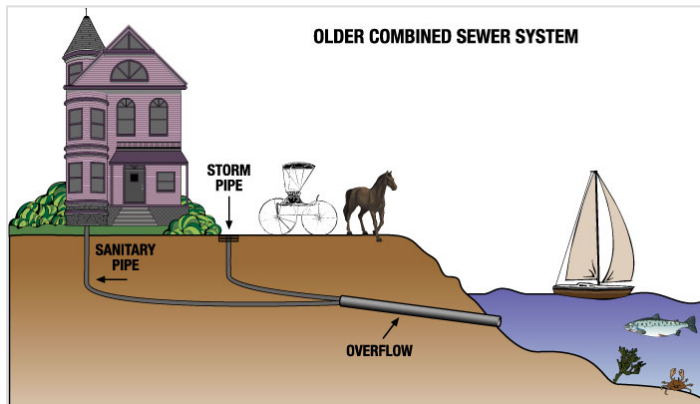


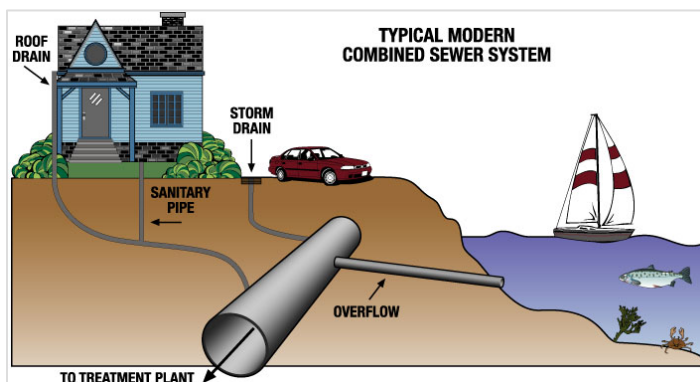
CAUSES OF COMBINED SEWER OVERFLOWS

The combined sewer system in the north end of the city was largely constructed between 1890 and 1963. The system was designed to convey sewage, horse manure, street and rooftop runoff, and garbage from city streets to the nearest receiving body of water.



Old system

Prior to 1960, the combined sewer system discharged directly to Port Gardner Bay and the Snohomish River through numerous outfalls without treatment. A system of gravity sewers, lift stations, force mains, and regulators was constructed in the early 1960s to intercept these outfalls and convey the sewage to treatment lagoons. The interceptor sewers and lift stations were sized to accommodate all of the dry-weather flows and part of the stormwater runoff. Excess combined sewage resulting from stormwater, overflows either to Port Gardner Bay or the Snohomish River.



Advantages of new system

The advantage of the combined sewer system is that, most of the time when rainfall is low to moderate; both the storm water and waste water go to the treatment plant before being discharged to Puget Sound. The disadvantage is that during heavy rains, untreated stormwater and waste water may be discharged at combined sewer outfall locations.