

# ASTORIA PUBLIC WORKS

## *Facts About Astoria's Wastewater System*

Astoria's wastewater system covers nearly four square miles and services 10,000 people. The wastewater treatment facilities including the treatment plant, pump stations, and interceptor line were constructed from 1972 to 1974 at a cost of about 8.6 million dollars. Prior to 1974 all of Astoria's sewage went directly into the Columbia River and Youngs Bay without any treatment. The City of Astoria generates an average of five million gallons of wastewater per day.

Many of Astoria's sewer lines date back to the late 1800s and are still in use today. In 1974, most of the existing sewage lines were connected to a main collection pipe called an interceptor which runs along the city's waterfront. A series of pump stations push the wastewater along this pipe until it reaches the treatment plant. The collection system is composed of 3965 individual connections, 72 miles of sewage pipe, and nine pump stations. Astoria has 1546 manholes which are used to clean and inspect the collection system.

Astoria's wastewater collection system is a combined system which means that both domestic sewage and storm runoff flow into it. Occasionally, during times of heavy rainfall, the flow of wastewater can exceed the capacity of the collection system. When this happens the excess wastewater is bypassed directly into the Columbia River and Youngs Bay through a series of 38 combined sewer overflow points. Usually this untreated wastewater is so heavily diluted with rain water that it poses no serious threat to the receiving stream. Engineering studies are currently underway to formulate plans that will eventually eliminate these discharges.

Astoria's wastewater treatment facility is an aerated lagoon system. The lagoon consists of two aerated ponds followed by a polishing pond and a chlorine contact chamber. The two aerated ponds each have a surface area of approximately 7 acres with a volume of about 22 million gallons. The polishing pond has a surface area of approximately 10 acres with a volume of 48 million gallons. There are four floating mechanical aerators in pond #1 and two in pond #2. The wastewater treatment plant removes about 70% of the waste material in the water.

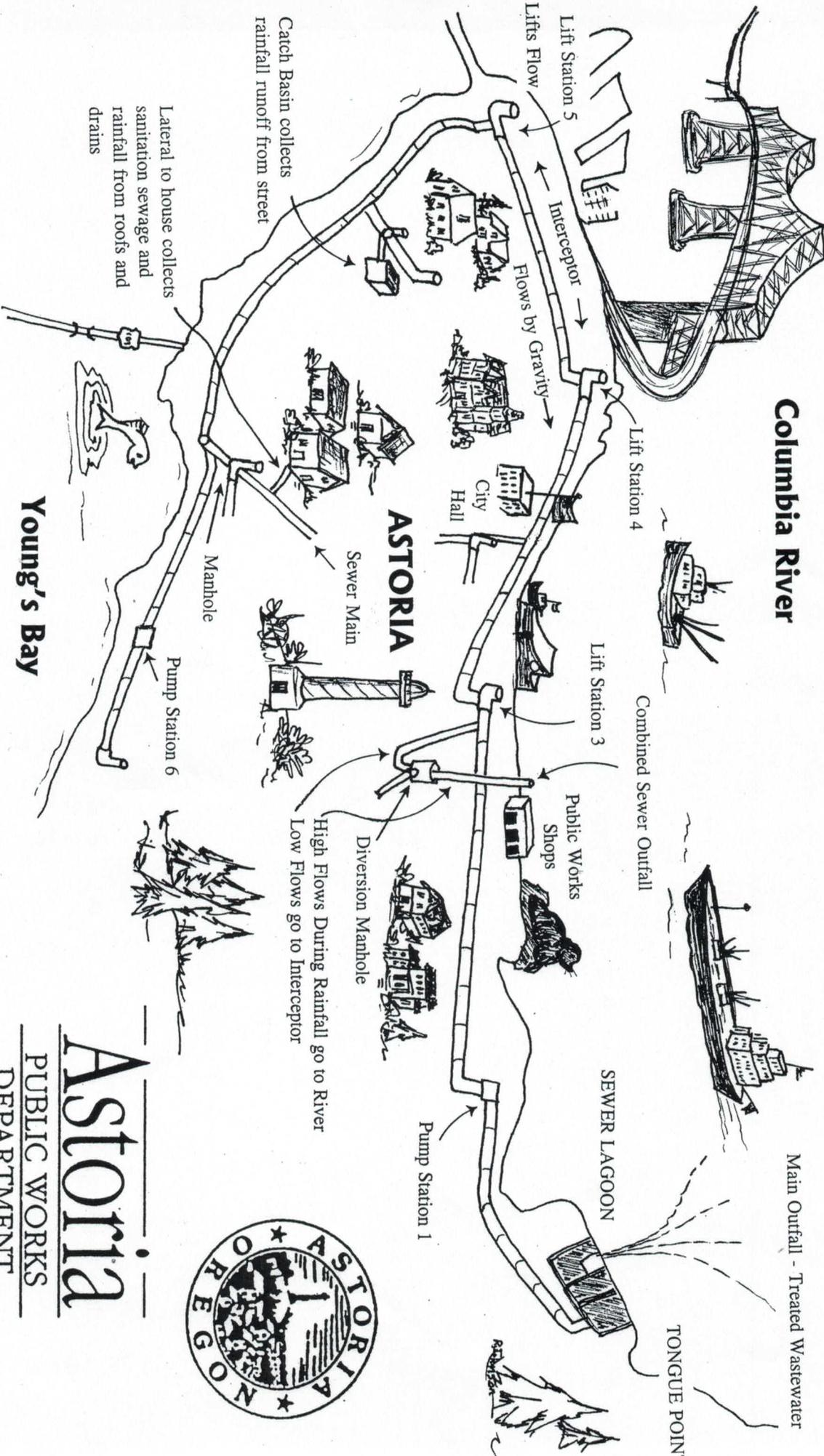
For the most part, the wastewater cleans itself naturally using the same water purification processes which take place in nature. The larger waste material is removed by settling to the bottom of the ponds. The smaller waste material is removed by bacteria and other microorganisms which use it as a food source. The aerators provide dissolved oxygen which is needed by the microorganisms to digest the waste. During the final stage of treatment, chlorine is added to disinfect the water which kills the harmful microorganisms. When the wastewater has been treated it is discharged into the Columbia River about 550 feet from the shoreline at a depth of about 11 feet below sea level.

Once the wastewater enters the treatment plant it is regularly tested to ensure that the wastewater is being adequately treated. The chlorine residual is checked daily and pH tests are done three times a week. Biochemical oxygen demand, total suspended solids, and fecal coliform tests are done weekly. Pond temperatures and dissolved oxygen levels are monitored frequently. Ammonia and nitrite levels are also tested during certain times of the year.

# ASTORIA'S SEWER SYSTEM

Columbia River

Main Outfall - Treated Wastewater



Catch Basin collects rainfall runoff from street

Lateral to house collects sanitation sewage and rainfall from roofs and drains

High Flows During Rainfall go to River

Low Flows go to Interceptor

Young's Bay



**Astoria**  
PUBLIC WORKS  
DEPARTMENT