

Our Approach

Bremerton adopted its first CSO Reduction Plan in 1992. This plan used textbook assumptions and identified “separation,” as the method to achieve CSO reduction. Separation consists of directing stormwater from inflow sources such as catch basins and roof drains out of the combined sewers and into new storm sewers. The first major CSO reduction project began in 1994 and other projects immediately followed.

In 1998, the City contracted with HDR Engineering to evaluate new information obtained through a rainfall and CSO monitoring program. This evaluation concluded infiltration sources such as leaking pipes and manholes in combination with inflow generated flow volumes that could not be corrected cost-effectively by separation alone within the mandated timeframe. In response, the City updated the CSO reduction plan and began implementing a combination of approaches along with separation including pump station upgrades, treatment plant construction, storage and a major public involvement campaign to eliminate inflow from private property.

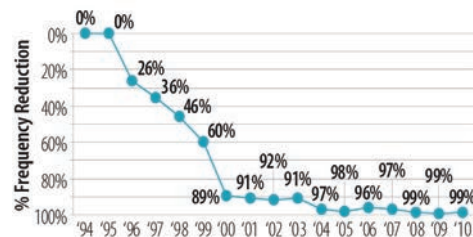
The benefits of Bremerton’s aggressive implementation became apparent as the volume and frequency of CSO events plummeted. By 2000, CSO events were reduced by 90% and further reduced by 97% in 2004. A major milestone was attained in 2009 when the City constructed its final CSO reduction project and achieved 99% reduction in CSO frequency.

In total, Bremerton’s program cost \$50 million and constructed 275,000 gallons of storage, 12.5 miles of new sanitary and storm sewers, two new pump stations, and a new wet weather CSO treatment plant. Additionally, seven existing pump stations and the wastewater treatment plant underwent major upgrades.

Results

Bremerton’s significant accomplishments include:

- CSO volume reduced by over 99%
- CSO frequency reduced by over 99%; from over 600 events per year to less than one event per outfall per year.
- Partnered with the US Navy and other ENVVEST stakeholders to model and evaluate the impact of CSOs on Dyes Inlet which prompted Washington DOH to reopen shellfish beds in 2003 that had been closed since the 1960s.
- Developed a comprehensive public education and assistance program to engage citizens with CSO Reduction efforts and water pollution prevention.



“Bremerton is the first complex CSO community in Washington to complete all CSO reduction projects designed to meet the State requirement of no more than an average of one event per year at all outfalls.”

Karen Burgess

*Municipal Unit Supervisor
Department of Ecology*

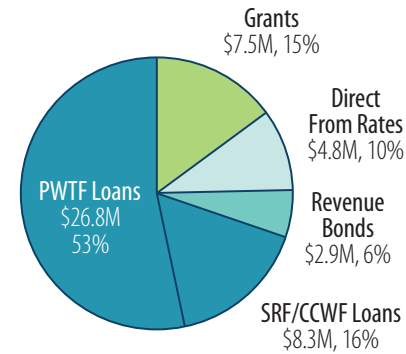
What Were the Costs?

CSO Reduction Plan and Facility Planning	\$710,000
Design and Construction Projects in Basins	\$36,710,000
CSO Treatment Plant Design and Construction	\$5,670,000
Wastewater Treatment Plant Upgrades	\$6,120,000
Litigation	\$640,000
Outreach (Cooperative Approach) & Misc.	\$450,000
TOTAL	\$50,300,000

How Was it Funded?

The CSO Reduction program was funded by City of Bremerton Ratepayers and the following assistance programs:

- EPA Grants
- Public Works Trust Fund Loans
- Centennial Clean Water Fund Loans
- Centennial Clean Water Fund Grants
- State Water Pollution Control Revolving Fund Loans
- Revenue Bonds



All debt assumed for the program will be retired in 2029.

85% of the \$50.3M program cost funded by Bremerton ratepayers

“Constructing these comprehensive improvements to our wastewater system was a joint effort with a host of agencies, and we hope to be a model for other municipalities implementing rigorous CSO standards.”

Patty Lent

*Mayor
City of Bremerton*

The City of Bremerton would like to thank the following:



City of Bremerton achieves CSO Control Success



“It is clear that Bremerton has worked diligently and expended considerable resources on its CSO reduction program. As a result, Bremerton has established itself as a regional leader in stormwater pollution prevention.”

Chris Wilke

*Executive Director
Puget Soundkeeper Alliance*

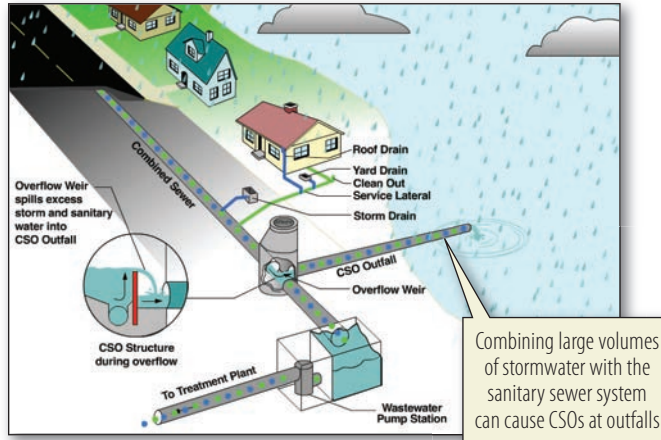
“Of the eleven communities operating combined sewer and stormwater systems in the state of Washington, the City is a leader and should take justifiable pride in the reduction of overflow volumes and frequency by more than 99 percent.”

Ted Sturdevant

*Director
Department of Ecology*

What is a CSO?

Combined sewer overflows (CSOs) are discharges of a mixture of untreated sanitary sewage and stormwater directly to the Puget Sound through pipes known as outfalls. CSOs are a legacy of the original sewer design dating back to the early 1900s when sanitary sewage and stormwater were conveyed through a single system of pipes. CSOs occur during heavy rainfall when the volume of the combined flow exceeds the capacity of the sewer. Bremerton has 15 CSO outfalls which discharge into the Port Washington Narrows and Sinclair Inlet.



What is CSO Compliance?

To protect water quality, the Washington State Department of Ecology (DOE) implemented regulations in 1986 to limit overflows to not more than one a year at each outfall. At the federal level, the Environmental Protection Agency (EPA) signed the National Combined Sewer Overflow Control Policy in 1994 to enforce the goals of the Clean Water Act by requiring the reduction of CSOs and compliance with additional flow controls to reduce the water quality impacts of CSOs.

Bremerton is one of 11 communities in Washington State and one of 800 communities in the United States faced with the challenge of achieving CSO compliance and being responsible stewards of our nation's waters. Many of these communities are just beginning to figure out what is required to achieve compliance. Ecology indicated that Bremerton is the first complex CSO community in Washington to construct all CSO reduction projects designed to reduce overflows to no more than an average of one event per year at each outfall.

Finding a Solution

In principle the solution is easy: provide system capacity for the peak flows or remove enough stormwater so the existing system isn't overloaded. The reality is that eliminating the many sources of stormwater in a combined system is daunting, and construction in urban areas is expensive. In the early 1990s, Bremerton averaged 600 or more CSO events per year. In 1993 the City settled a Clean Water Act case with Puget Soundkeeper Alliance which resulted in an expedited schedule for compliance with CSO reduction requirements. The challenge was to find the most economical, effective, and least disruptive way to achieve compliance in the shortest time possible.

Timeline of CSO Planning & Improvements



Bremerton's CSO Reduction Program invested \$48.5 million in system upgrades and new infrastructure in the wastewater and stormwater systems. Construction of 23 major capital projects included:

- 2 new pump stations, 7 major pump station upgrades
- 275,000 gallons of storage
- 12.5 miles of new sanitary and storm sewers ranging from 6-inch to 84-inch diameter
- New Eastside Wet Weather Treatment Plant
- Major Upgrade to Westside Wastewater Treatment Plant
- Elimination of 4 CSO sites

