

City of Bremerton

Public Works and Utilities Department

Watershed Protection:

A Key Ingredient to Maintaining an Unfiltered Surface Water Supply

Kathleen Cahall, Water Resources Manager



“If there is magic on the planet, it is contained in the water.”

Loren Eiseley, 1957



The City of Bremerton takes a multiple barrier approach to producing high quality drinking water from an unfiltered surface source:

Watershed Protection

Disinfection

Responsible Operation and Maintenance

Water Quality Monitoring

Regulatory Compliance

Customer Communication

Watershed Protection

- Land Ownership
- Security
- Source Water Quality Monitoring
- Forestry Practices
- Recreation Prohibition
- Conscientious Employees

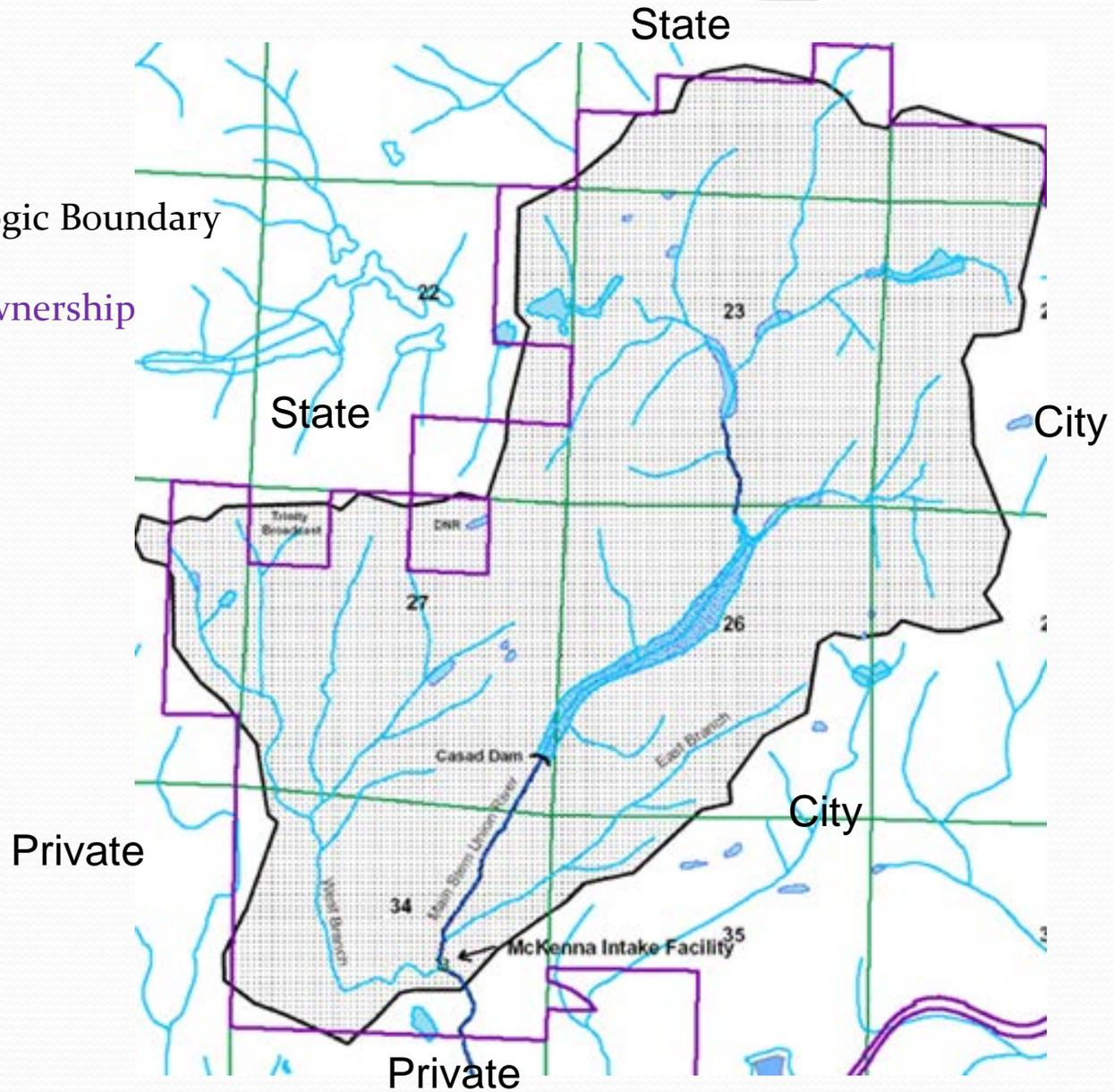
Land Ownership

The City of Bremerton Water Utility owns over 8,000 acres including 98% of the 3,000-acre Union River Watershed.



Black Line = Hydrologic Boundary

Purple line = City Ownership



Security

Gates and signs



CITY OF BREMERTON UTILITY PROPERTY

NO TRESPASSING

GATES AND PROPERTY UNDER SURVEILLANCE

NO PARKING – Unauthorized vehicles will be towed

VIOLATORS SUBJECT TO ARREST AND PROSECUTION

US Code Title 42 Section 300i

RCW 9A.52

BMC 15.02.210

For Emergencies call 911 or 360-473-5920

Security

Watershed patrols - contract with the Bremerton Police Department
Cameras - some in place with plans to install more.





MOULTRIE

29.43 inHg - 28°F 11/15/2014 06:14PM FOOTSOE311

Source Water Quality Monitoring

The Union River Reservoir
is a warm monomictic
oligotrophic lake.

Regulated parameters:

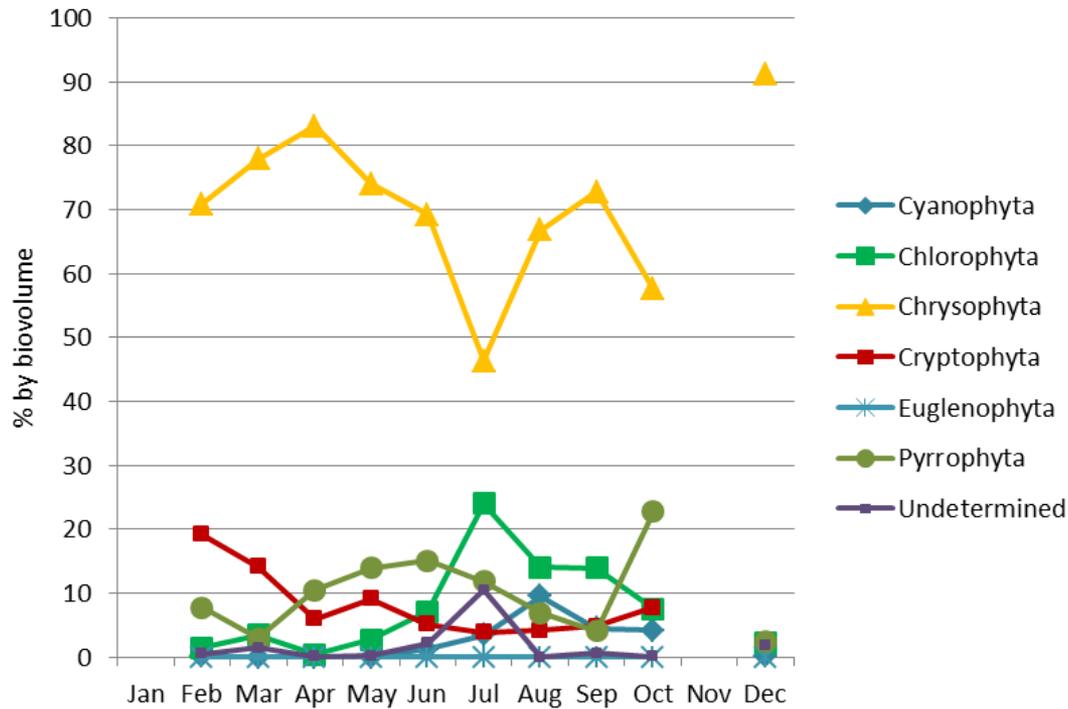
- Turbidity
- Source fecal coliform
- Inorganics
- LT2 Cryptosporidium

Voluntary Monitoring:

- Nutrients
- TOC
- Stratification
- Algae
- Zooplankton
- Giardia



Union River Reservoir Algae Succession



Chrysophytes, sometimes called **golden algae**, are the largest population of algae in the Union River Reservoir. They are a large group of algae found mostly in fresh water and include diatoms and algae with flagella in motile cells. Uroglena and Dinobryon are common in the Union River Reservoir.



Forestry Practices

- Water quality and forest health are the goals in the Union River Watershed – thinning and small even-age harvests
- Land Management and Forest Management Plans
- Road Maintenance and Abandonment Plan
- Brush Harvest Contract



Recreation Prohibition

The only activities in the Union River Watershed are water operations, forestry management, and limited education

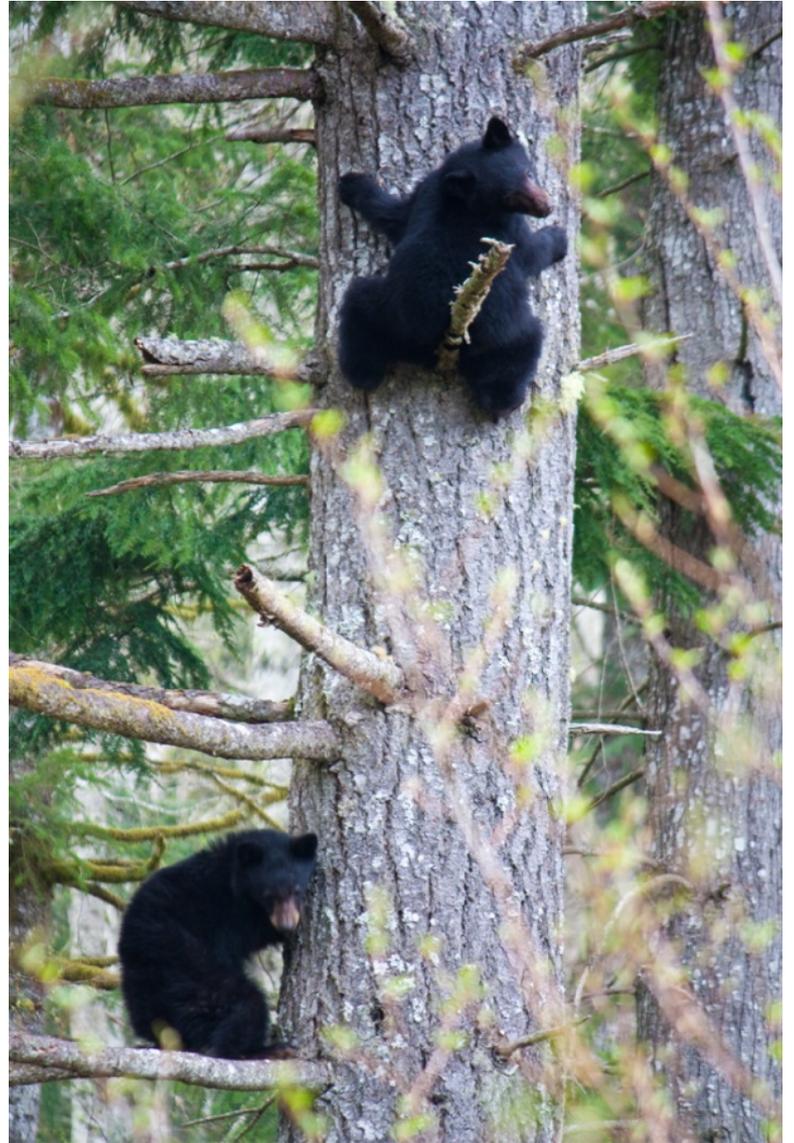


Conscientious Employees



Regulations and Standards

- State and Federal Surface Water Treatment Rule requires
 - Watershed Control Plan updated every 6 years
 - Annual Watershed inspection by DOH
 - Annual report to DOH document continuous improvements
- Washington State Forest Practices Act
- Washington Dam Safety Regulations
- ANSI/AWWA Source Water Protection Standard







MOULTRIE

29.62 inHg - 54°F 06/07/2014 03:03PM MOULTRIECAM



MOULTRIE

28.77 inHg - 28°F ○ 12/03/2013 02:08PM BLINDVIEW 1







Continued Protection by Multiple Barriers

Disinfection

**Responsible Operation and
Maintenance**

Water Quality Monitoring

Regulatory Compliance

Customer Communication

Advanced Disinfection Facility

- Ultraviolet Treatment
- Hypochlorite



