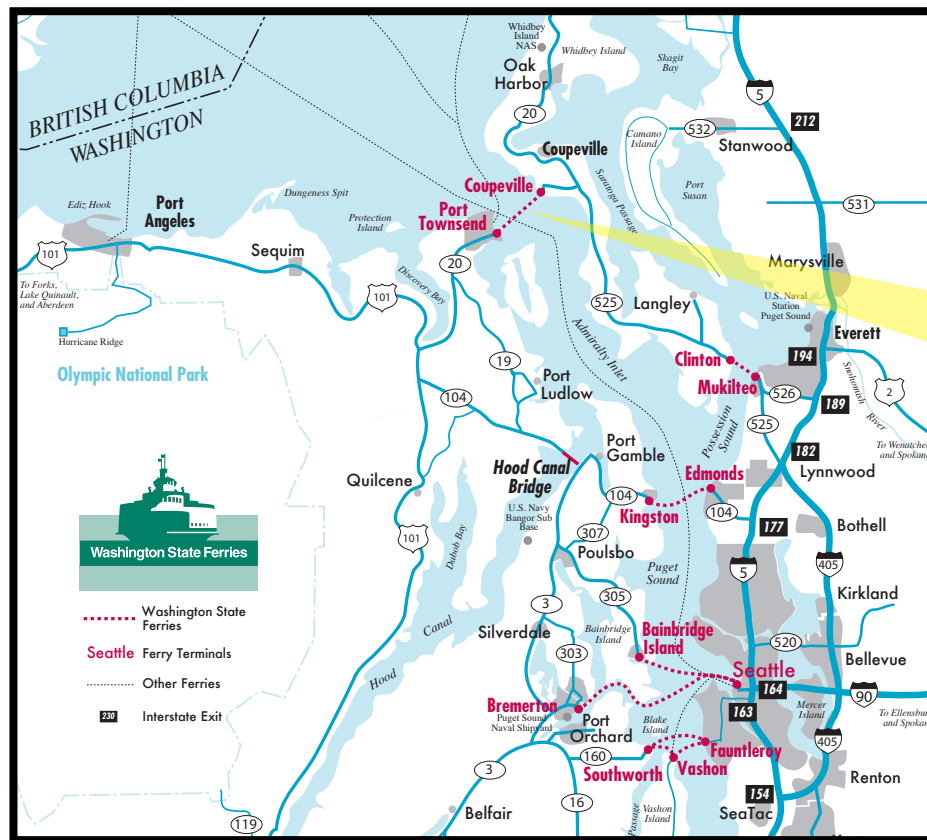


DID YOU KNOW?

The Coupeville–Port Townsend ferries are helping to monitor water quality in Puget Sound.



Measurements taken by Washington State ferries are helping scientists understand the circulation and exchange of Puget Sound and Pacific Ocean waters.

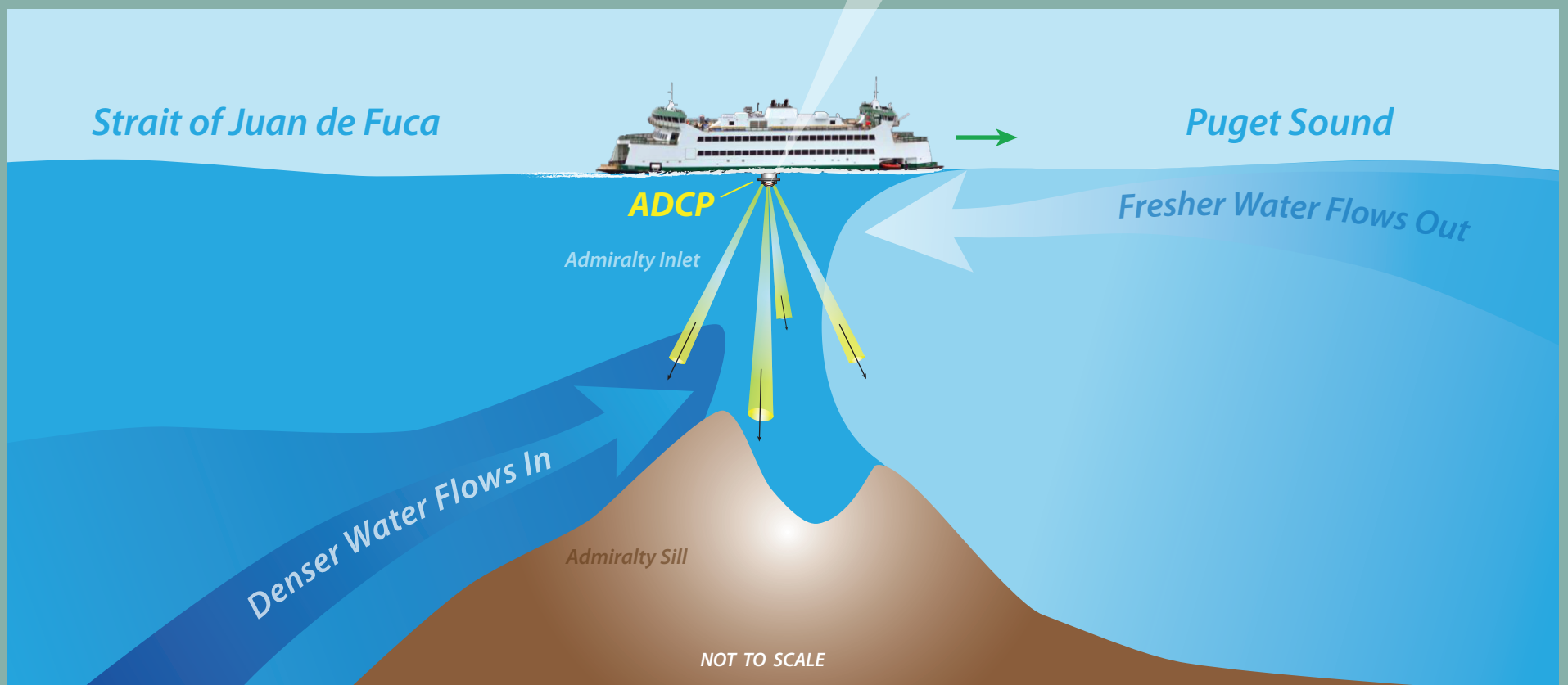
WHY THE COUPEVILLE–PORT TOWNSEND FERRIES?

Many WSDOT ferry routes travel back and forth ACROSS Puget Sound. On this map it's easy to see that the Coupeville–Port Townsend route crosses the GATEWAY SEPARATING the Strait of Juan de Fuca (Pacific Ocean) from greater Puget Sound many times every day. This constriction is where CIRCULATION AND EXCHANGE between the basins happens.

Puget Sound is an estuary—a body of water where fresh water from rivers and streams mixes with the ocean. Pacific Ocean water along the Washington coast carries many essential nutrients but can become host to harmful algal blooms and depleted of oxygen by natural processes. Intrusions of this ocean water to Puget Sound at certain times of the year can stress, harm, or even suffocate marine life. Scientists are hopeful that data collected by WSDOT ferries continuously over many seasons and even years will increase understanding of how water quality in Puget Sound is modulated by these oceanic and large-scale climate patterns.

HOW IS IT DONE?

Sensors called Acoustic Doppler Current Profilers, or ADCPs, have been installed on the hulls (bottoms) of the *Kennewick* and *Salish*. ADCPs send sound waves (pings) down through the water column beneath the ferry as it is under way. Particles in the water column reflect the sound back. The time it takes for the echoes to return to the ADCP is used to calculate the speed and direction (velocity) of the water flowing under the ferry.



WANT TO LEARN MORE?

Ferry-Based Monitoring of Puget Sound Currents | [www.apl.uw.edu/Ferries for Science](http://www.apl.uw.edu/Ferries%20for%20Science)



This research is a partnership among Applied Physics Laboratory of the University of Washington, the Washington Department of Ecology, the Washington State Department of Transportation, Integral Consulting Inc., and Puget Sound Partnership and is funded by the U.S. Environmental Protection Agency.

