



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Washington

Watershed-scale Effort Removes Bacteria Sources

Waterbody Improved

The Washington Department of Ecology (Ecology) added numerous segments in the lower Skokomish River watershed to the state's 1998 Clean Water Act (CWA) section 303(d) list of impaired waters because of high levels of fecal coliform (FC) bacteria. Bacteria from agriculture and other sources impaired recreation use and raised concerns about the health of shellfish beds at the mouth of the river. Local residents and tribal, local and state governments removed high-risk septic systems and installed numerous best management practices (BMPs). FC levels dropped throughout the watershed. Data from a long-term ambient monitoring station on the Skokomish River have shown consistent compliance with water quality standards, prompting Ecology to remove that segment from Washington's 2008 list of impaired waters. Recent monitoring indicates that seven additional segments in the Skokomish River watershed are meeting water quality standards and might be proposed for delisting in the near future.

Problem

The Skokomish River drains a rural, sparsely populated basin of approximately 247 square miles. The river originates in Olympic National Park and discharges to Annas Bay in southern Hood Canal. The Skokomish Indian Reservation, at the basin's mouth, contains low-density residential areas. The Annas Bay estuary area contains a rich shellfish resource that is used by tribal, commercial and recreational harvesters.

Monitoring by the Skokomish Tribe from 1995 through 1997 showed that FC levels in the Skokomish River and some of its tributaries exceeded Washington's water quality standards. In 1996 Ecology's long-term monitoring program determined that the Skokomish River at the Highway 101 bridge also did not meet water quality standards. Washington's FC bacteria freshwater quality standard requires that FC organism levels do not exceed a geometric mean value (GMV) of 50 colony forming units (CFU)/100 milliliters (mL) and do not have more than 10 percent of all samples obtained for calculating the GMV exceeding 100 CFU/100 mL. Because numerous segments within the Skokomish River watershed violated the FC standard, Ecology added them to the 1998 CWA section 303(d) list of impaired waters for FC, including Skokomish River (four segments), Purdy Creek (two segments), Ten Acre Creek and Weaver Creek. Additionally, the Washington Department of Health has listed the Annas Bay commercial shellfish harvest area as threatened because of FC contamination almost every year since 1995.

Ecology completed a Total Maximum Daily Load (TMDL) study in 2001 with the assistance of the

Skokomish Tribe. The partners established the TMDL to (1) address water quality impairments due to high FC levels in the lower Skokomish River basin and (2) help protect marine water quality standards and shellfish harvesting in Hood Canal. The TMDL study indicated that the bacteria came primarily from agriculture sources in the basin but also from humans (septic systems), recreation (uncontrolled human waste), and domestic and wild animals. The TMDL established FC load reduction targets for Ten Acre Creek, Weaver Creek, Purdy Creek and the Skokomish River.

Project Highlights

Work to improve water quality began in 1998, when the Mason Conservation District (Mason CD) received a Centennial Clean Water Fund grant to help landowners implement BMPs. Soon after, local residents, the Skokomish Tribe and Ecology representatives formed a workgroup and completed a watershed cleanup plan. The workgroup decided to try pursuing voluntary measures to improve water quality before considering regulatory options.

Responding to the cleanup plan, watershed partners undertook numerous actions to reduce pollution. Landowners and the Mason CD installed 24,000 feet of riparian fencing; planted approximately 32,000 trees; implemented 17 waterway improvement projects; enrolled 62 acres of land with a buffer of 150 feet; and implemented proper manure handling and storage. The Cascade Land Conservancy bought 175 acres adjacent to prime fish habitat (total cost \$350,000). Mason County purchased 19 frequently flooded properties and

decommissioned septic systems. The Washington Department of Fish and Wildlife (WDFW) inspected and repaired all fish hatchery septic systems. The Skokomish Tribe evaluated and repaired the reservation's septic systems. Taylor Shellfish Company, Simpson Timber Company and the Puget Sound Action Team partnered to add signs to reduce unauthorized partying and camping along the river (\$200 fine). Hunter Stores and WDFW partnered to install portable toilets during fishing seasons. Residents, the Skokomish Tribe and local agencies participated in efforts to increase awareness of proper water management by posting fliers on fishermen's windshields and nearby toilet facilities.

Results

Water quality in the Skokomish River and tributaries has improved greatly since the mid-1990s. Data from Ecology's long-term ambient monitoring site on the Skokomish River at Highway 101 show compliance with water quality standards since 1999. In 2005 and 2006 the Mason CD partnered with Ecology to conduct follow-up TMDL monitoring on the impaired segments. These data show that FC levels have significantly declined since 1999. All previously impaired segments met water quality standards in 2005–2006 (see Figure 1). A 20 percent reduction in FC levels is still needed in Weaver Creek to meet the TMDL target.

Because the long-term ambient monitoring site data show that the Skokomish River (Highway 101) segment consistently meets water quality standards, Ecology removed it from the impaired waters list in 2008. Data from the TMDL attainment monitoring study show that water quality has also improved significantly in the other seven impaired segments throughout the lower Skokomish River watershed: Skokomish River (three segments), Purdy Creek (two segments), Ten Acre Creek and Weaver Creek. Because the seven segments are part of an ongoing TMDL study, Ecology plans to conduct additional monitoring. If these segments continue to meet

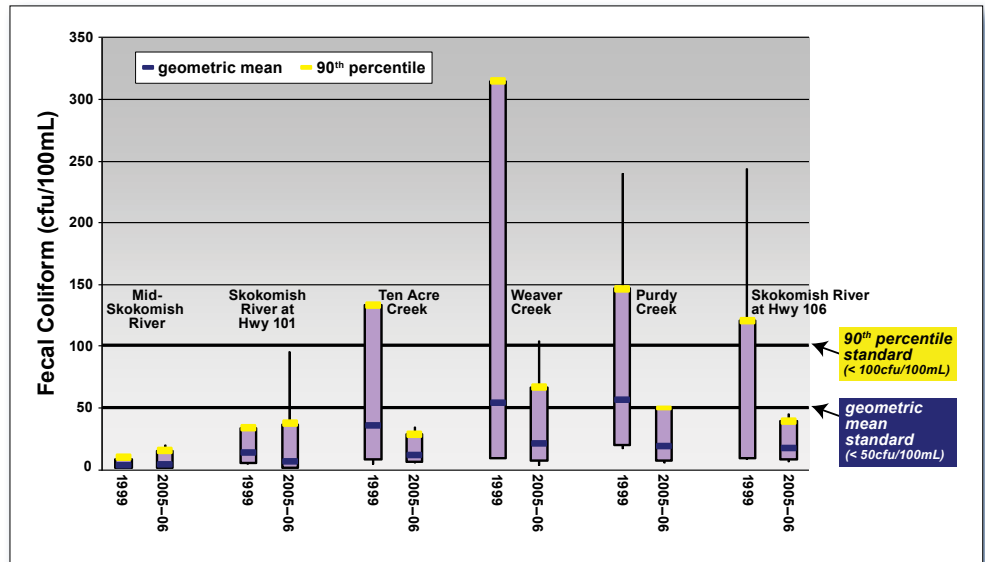


Figure 1. Data collected during the original TMDL assessment (1999) compared to the data from the 2005–2006 TMDL Attainment Monitoring Study. Sites include a reference site (Mid-Fork Skokomish River), an Ecology long-term ambient monitoring site (Skokomish River at Highway 101), and four monitoring points established in the TMDL. All sites met water quality standards in 2005–2006.

water quality standards in the future, Ecology will consider removing them from the impaired waters list and placing them in the assessment category of waters that meet standards.

Partners and Funding

This watershed-scale project involved numerous partners, including the Skokomish Tribe, the U.S. Environmental Protection Agency, Ecology, Mason CD and the Mason County Department of Health Services (MCDHS). The Mason CD received approximately \$611,000 in Centennial Clean Water Fund grants to complete projects in the Skokomish River watershed, including assessing and prioritizing restoration projects, implementing BMPs, performing water quality monitoring, coordinating with local residents and governments, and conducting outreach events. The MCDHS received \$106,755 in CWA section 319 funds to support a project to investigate, identify and monitor FC contamination in the lower watershed. The Hood Canal Coordinating Committee, a watershed-based council of governments, received approximately \$120,400 in CWA section 319 funds for a septic system assessment and public outreach project.



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For additional information contact:

Lydia Wagner
Water Cleanup Plan Coordinator
Washington Department of Ecology
Southwest Regional Office
360-407-6329 • lydia.wagner@ecy.wa.gov