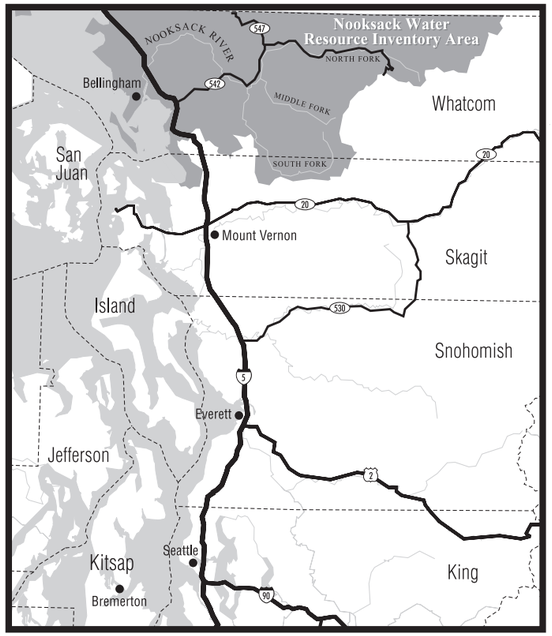
Monitoring Water Quality indicators of success

Also in 1998, the local shellfish protection committee received a grant through the WCD to do monitoring of the Nooksack River and its tributaries. *The Northwest Indian College (NWIC)* set up a state certified lab to do bacteria sampling and analysis and has been doing an excellent job of collecting data for several years now. The *U.S. Environmental Protection Agency (EPA)* also has a contract with NWIC to do some intensive monitoring focused on bacteria source identification.

Nooksack River Watershed



Left, *before: horses have access to the salmon stream*
Right, *after: cleanup plan work - fenced riparian area, stream banks restored with native vegetation*

Is Water Quality Improving?

The NWIC college is funded to assess the big picture: *Is the water quality getting better or worse over time?* Over time, water quality *has* improved at the mouth of the Nooksack River, improved on some tributaries, or remained the same or gotten worse on other tributaries. These inconsistent results show that additional work by all private and public entities is still needed to meet water clean up plan targets for the Nooksack River.

Ecology reviews NWIC monitoring data to identify areas where Ecology should focus their dairy inspection and enforcement efforts. Additionally, Ecology's dairy inspectors collect samples between NWIC established stations to narrow down the bacteria sources. Through these efforts, many enforcement actions have been issued, water quality problems have been permanently corrected, and streams have become cleaner in Whatcom County.

As illustrated here, the approach to improving water quality in the Nooksack watershed is a teamwork story.

More Information

For more info on Ecology's work in the Nooksack watershed contact *Steve Hood* at Bellingham Field Office, 360-738-6254

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A Department of Ecology Report

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Water Cleanup Plans
Total Maximum Daily Loads (TMDLs)

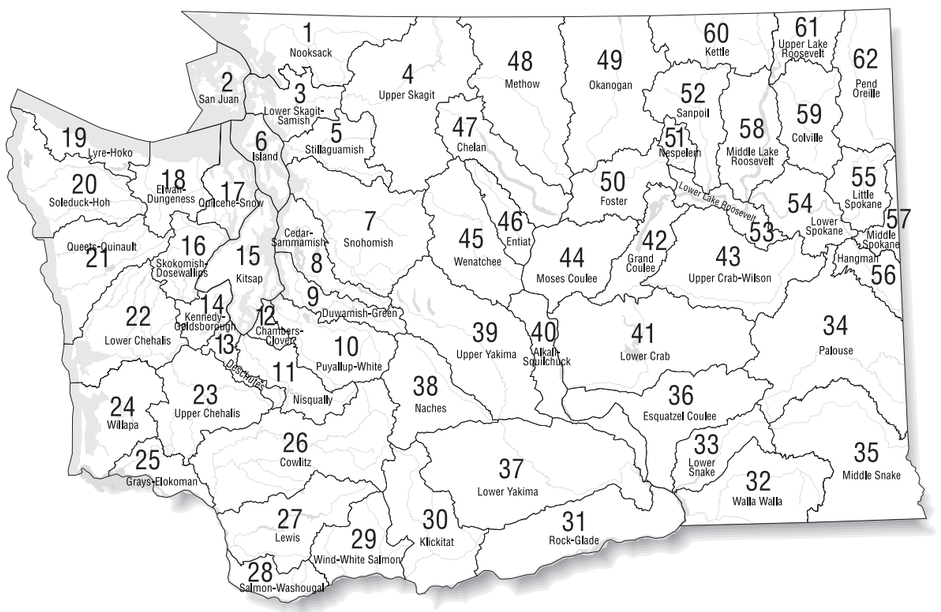
Why develop Water Cleanup Plans?

Water Cleanup Plans will result in cleaner lakes, streams, rivers, and bays. Clean water is vital for our quality of life - for both economic development and a healthy environment. But some water bodies are so severely polluted they need extra help. Total Maximum Daily Loads (TMDLs or Water Cleanup Plans) describe the type, amount and sources of water pollution in a particular waterbody, analyze how much the pollution needs to be reduced or eliminated to achieve clean water, and provide strategies to control pollution.

The federal Clean Water Act requires states to prepare a list of water bodies that do not meet water quality standards for ensuring the water is healthy for such uses as fish and wildlife habitat, domestic and agricultural water supplies, and recreation in and on the water. All water bodies identified on the list must attain water quality standards within a reasonable period, either through a Water Cleanup Plan (TMDL), or other pollution control mechanisms. U.S. Environmental Protection Agency (EPA) reviews and approves this list every two years.

Water Resource Inventory Areas

WRIAs are large watersheds - a watershed is a geographic area where any drop of rain will drain to a single body of water such as a lake or river. There are 62 WRIAs in Washington State.



What is the schedule for Washington's cleanup plans?

As a result of a 1998 legal settlement agreement, The Department of Ecology has until 2013 to develop and implement plans to clean up 643 polluted water bodies. Most listed waterbodies are affected by more than one pollutant. Ecology will also be working with local governments, businesses and citizens to develop plans or solutions to improve water quality.

Who is responsible for implementation?

Ecology regulates for point sources (pollution that generally comes out of a pipe or an activity that has a wastewater or stormwater permit) by placing necessary limits in discharge permits. For pollution from nonpoint sources (pollution that comes from many, varied sources), Ecology works with other agencies, local governments, landowners, and citizens to identify and implement specific pollution controls or "best management practices."

Process for a typical water cleanup plan

A water body fails to meet water quality standards, triggering a federal requirement that the Washington Department of Ecology (Ecology) develop a water cleanup plan.

Ecology works with local government or planning councils, tribes and others to plan and conduct a water quality technical study. The study identifies pollution sources and determines how much the pollution needs to be reduced or eliminated to meet water quality standards.

Local interests, with Ecology's assistance, figure out how they can achieve the needed pollution reduction. Often this builds on local actions already underway.

First, Ecology and local interests develop a summary implementation strategy or SIS. This is a concise, conceptual description of activities planned or underway to achieve water quality standards. This summary plan is submitted, with the report on the technical study, to the U.S. Environmental Protection Agency (EPA) for approval.

From the SIS, Ecology and local interests then develop a detailed implementation plan. This plan describes strategies for meeting water quality standards:

- what actions ?
- when ?
- who's responsible ?
- sources for funding and other needed resources

Cleaning up the water means many people doing their part.

How is the cleanup of waters progressing?

Since 1992, EPA has approved more than 288 Water Cleanup Plans developed by Ecology, local governments, or planning councils.

Ecology is currently working on approximately 103 TMDLs. Between July 2000 and June 30, 2001 Ecology plans to submit 29 of these TMDLs to EPA for approval.

Why the Nooksack River

Historically, the combination of poor farm management practices and lack of farm upgrades caused a continual rise in fecal coliform bacterial levels in the Nooksack River and its tributaries. The bacterial levels rose such, that ten percent of the Nooksack River's water samples collected exceeded 383 bacterial colonies per 100 milliliters of water. This water sampling put the Nooksack River on Washington State's polluted waters list, known as the 303(d) list. A water cleanup plan was needed and state and local partners went into action.

Top: *An inital inspection that identified an unconfined and manure covered slab area. Manure from the slab could reach a drain that discharges to a ditch (state waters).*
Middle: *An immediate corrective action (temporary dirt berm) was taken by a farmer the same day. With the dirt berm installed, no manure could reach the drain.*
Bottom: Permanent correction taken by the farmer: new concrete slab and tall curbing. The slab now slopes away from the drain and towards the barn.

Partners at Work

On the state level, the *legislature* passed the Dairy Nutrient Management Act (90.64 RCW) in 1998. The act requires all farms to obtain a Dairy Nutrient Management Plan (DNMP). The DNMP requires dairy farmers to improve their farm practices (such as using filter strips and/or buffer zones along waterways) and to upgrade their farms (by acquiring sufficient land base for manure applications and 5-6 months long-term manure storage) in order to reduce surface or groundwater pollution.

Ecology's dairy inspectors work closely with dairy farmers and the *Whatcom Conservation District (WCD)* to prevent many on-farm water quality problems using technical assistance. But when those preventative methods fail, firm and fair enforcement of Washington State's Water Pollution Control Act (90.48 RCW) is practiced by Ecology. Issuing formal enforcement actions formally documents violations and acts as a deterrent to potential violators.

On the county level, the *Whatcom County Council* passed the Agricultural Nutrient Management Ordinance (WCC 16.28) in 1998. This ordinance prohibited application of liquid manure to bare cornfields in the fall and winter months in order to reduce fecal coliform loading to the Nooksack River. After some initial grumbling, a majority of Whatcom County's dairy farmers complied with the ordinance, agreeing that it made common sense.

Small farms with horses or beef cattle access to streams are another bacteria source. These farm problems are often referred to *Whatcom County's Planning and Development Services* for violations of their Critical Areas Ordinance. Once identified by Ecology or Whatcom County staff, these farms are required to immediately remove animals from the stream and are formally referred to the WCD to obtain a Farm Plan. On-going monitoring in areas where animal access was identified and corrected have shown sharp reductions in bacteria levels.

There have been times that bacteria source data showed no apparent animal causes. In these cases, Ecology staff notified Whatcom County's *Health and Human Services* that an On-Site Septic System (OSS) may be the bacteria source. *The Whatcom County Health Department* agreed to do inspections and septic problems are now being corrected. After corrections were complete, bacteria contamination levels, measured through ongoing monitoring, have dropped to levels that protect human health and the environment.

Left, before: shows beef cattle access to a salmon stream.
Right, after: Ecology required corrective actions by the horse and beef cattle landowners. A fenced riparian area with native vegetation restored streambanks. A bridge was installed, so animals can cross over the stream to graze the other side and not pollute. Restoration work was completed with assistance by the Whatcom Conservation District and the Nooksack Salmon Enhancement Association, Whatcom County's salmon restoration group.