Water Cleanup Plans

Total Maximum Daily Loads (TMDLs)

WASHINGTON STATE DEPARTMENT OF ECOLOGY

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Why develop Water Cleanup Plans?

Because it 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 badly polluted they need extra help.

Although municipal wastewater and industrial discharges require increasingly intense treatment under the Clean Water Act, many water bodies still fail to meet standards. Some receive so many point source discharges that even more stringent requirements must be used. Some waters are degraded by nonpoint pollution from runoff that carries bacteria, toxins, and excess nutrients from many sources.

Water Cleanup Plans, also called Total Maximum Daily Loads or TMDLs, identify the pollution problems, allocate the maximum allowable pollution from various sources, and develop strategies to achieve those limits.

Because federal law requires them.

The federal Clean Water Act of 1972 requires states to establish numeric standards for specific pollutants in water bodies. For instance, most rivers and streams in Washington must have at least eight milligrams of dissolved oxygen per liter of water.

The Clean Water Act also requires states to prepare a list of water bodies that do not meet water quality standards every two years. Ecology uses data collected by agency scientists, Indian tribes, state and local governments, industries, and others to develop the list, which then goes through an intensive public process. A Water Cleanup Plan or TMDL must be developed for each of the polluted water bodies. Ecology identified 666 such water bodies in 1996.

The purpose of the plan is to determine the amount of pollution a water body can receive and still remain healthy for its intended uses, such as industrial, agricultural, drinking, recreation, and fish habitat. The plan must be approved by the US Environmental Protection Agency (EPA).

Because a settlement agreement requires them.

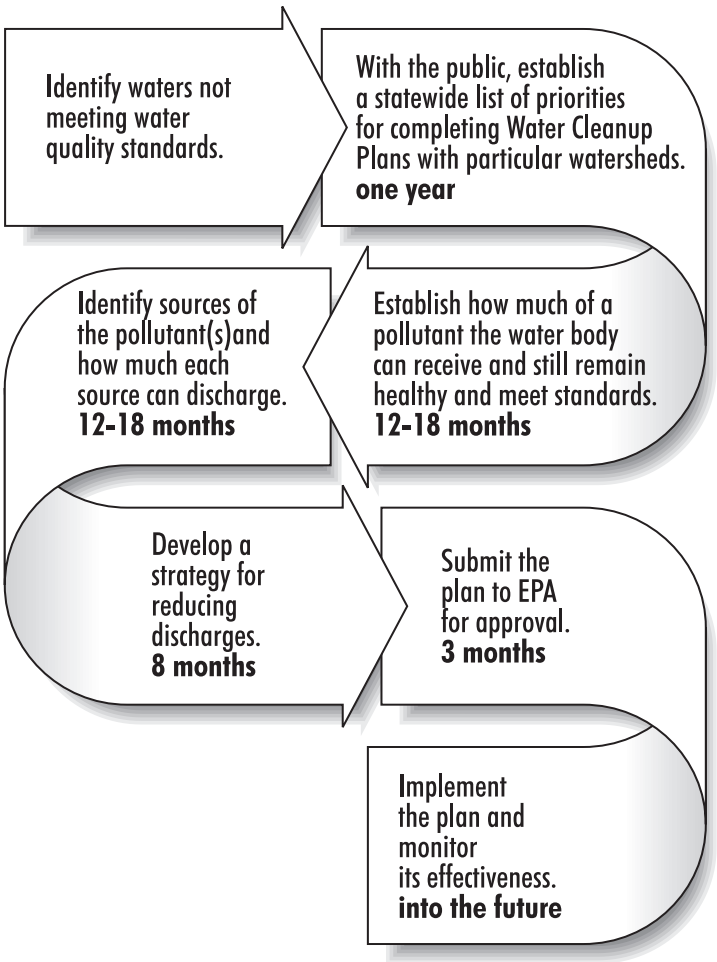
The Clean Water Act contains provisions for citizens to enforce the law, and they do, by filing lawsuits against government agencies who they feel are not doing their job. During the past 10 years, private citizens and environmental groups have filed lawsuits on more than 30 states for being too slow at completing Water Cleanup Plans.

In January, 1998, EPA and Ecology settled a lawsuit filed by two environmental groups because they felt Ecology was acting too slowly. The main terms of the settlement are a 15-year schedule for Ecology to complete the 666 plans for water bodies identified on the 1996 List or else EPA will do them instead. Ecology is developing methods to streamline the development of Water Cleanup Plans.

Water Cleanup Plans have five main components:

- identification of the type, amount, and sources of water pollution in a particular water body or segment,
- determination of the capacity of the water body to assimilate pollution and still remain healthy,
- allocation of how much pollution each source will be allowed to discharge,
- a strategy to attain the allocations, and
- a monitoring plan to assess effectiveness.

Flow Chart for Typical Water Cleanup Plans



What is the schedule for Washington's cleanup plans?

Ecology has 15 years to develop plans to clean up the 666 water bodies, to help local governments write their own plans, or work with them in partnership. The settlement agreement requires five-year reviews to evaluate the state's progress.

Who is responsible for implementation?

Ecology oversees implementation for point sources by placing necessary limits in the discharge permits. For pollution from nonpoint sources, Ecology works with other agencies, local governments and citizens to identify and implement specific "best management practices" to control nonpoint pollution.

How is the cleanup of waters progressing?

Since 1988, EPA has approved more than 200 Water Cleanup Plans developed either by Ecology or by local governments or planning councils. As of 1998, Ecology is working on 66 additional plans. A stream or river may need separate plans for different segments, for different pollutants, or both.

Partial List of Water Quality Standards for Surface Waters of Washington - WAC 173-201A

	CLASS AA "Extraordinary"	CLASS A "Excellent"	CLASS B "Fair"
Temperature	< 16° C < 61° F	< 18° C < 64° F	< 21° C < 70° F
Dissolved Oxygen (mg/L)	> 9.5	> 8.0	> 6.5
pH	6.5-8.5	6.5-8.5	6.5-8.5
Fecal Coliform Bacteria (colonies/100mL)	< 50	< 100	< 200
Turbidity	< 5 NTU	< 5 NTU	< 10 NTU

*CLASS AA: "**Extraordinary**": Highest quality streams - protected uses include domestic water supply, swimming, and coldwater fish spawning and rearing.*
*CLASS A: "**Excellent**" quality streams - same as AA, but not quite as cold or oxygenated as AA - less than optimum conditions for certain stages of sensitive aquatic life.*
*CLASS B: "**Fair,**" pretty good streams, but not clean enough for domestic water supply - only for industrial and agricultural uses. OK for secondary contact (fishing and boating) but not considered safe for swimming.*

A Tale of Two Streams

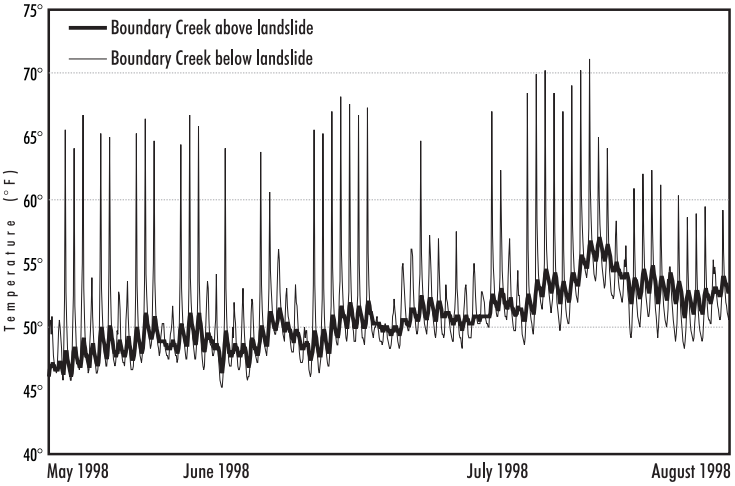
Boundary Creek

Boundary Creek, an **extraordinary** high mountain stream on the Olympic Peninsula, once met all the most stringent standards for a stream. Tumbling noisily over cool boulders, shaded by tall firs, the water holds enough oxygen for the trout and salmon to spawn in the clean gravel. Low fecal coliform bacteria counts - 25-40 colonies per 100 milliliters - come only from wild animals and birds. But in 1997, a washout of an abandoned logging road removed all the trees and shrubs that once protected the stream. In addition to a huge influx of sediment into the stream, the temperature of both air and water rises sharply now for about four miles below the slide. This violation of standards for an extraordinary stream will keep Boundary Creek on the polluted waters list until the riparian zone is restored. A Water Cleanup Plan is required.

Debris carried by the washout of a logging road wiped out the riparian zone below the slide. Water temperature increases some 10° Celsius or 18° Fahrenheit along this reach. The warmer water can't hold as much oxygen, another requirement for coldwater fish.

Daily spike in water temperatures due to lack of shade below the slide

This chart shows data from summer 1998. Above the slide, water temperatures are consistently cool. Below the debris slide, the exposed stream warms up every day. Sediment and high temperatures have destroyed two-thirds of the known spawning habitat of the Beardsley trout, a rare species.



Above the slide, Boundary Creek's cool waters are shaded by a riparian buffer zone that's mostly intact.

Deep Creek

Deep Creek, an **excellent** stream that winds smoothly through the foothills of the Chehalis Basin, is naturally a little warmer than Boundary Creek. The warmer water holds less oxygen, so trout and salmon can live, but not reproduce as prolifically. In 1995, cattle in the stream raised fecal coliform counts to more than 5,600 bacteria colonies per 100 milliliters, putting Deep Creek on the polluted waters list. A Water Cleanup Plan called for fencing to keep the cows out of the water.

The Lewis County Conservation District went into action. By 1996, the district and local farmers had installed miles of fencing and alternative watering devices for all the cows in the watershed. Coliform counts dropped to a low of 55 units, well below the standard for Class "A" streams, and Ecology removed Deep Creek from the polluted waters list.

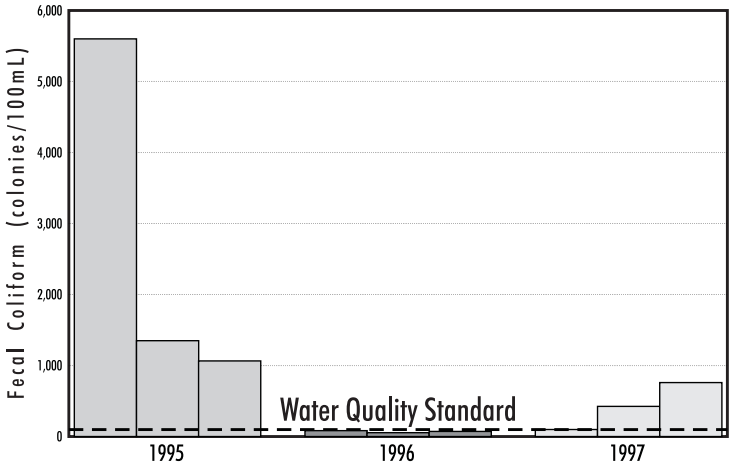
Then in 1997, a break in the fencing let some cows back in the stream, and coliform counts again exceeded the standard, although the water is still much cleaner than in 1995. Repairs are planned, and water quality improvement should return.

This new cattle crossing limits access to Deep Creek. Cows don't like the large rocks, so they don't waste any time about grabbing a drink and moving on. The barbwire fence goes up to the edges of the path and across the creek on both sides, so cows can't walk along the stream. Vegetation can now grow back in the riparian zone, and erosion from the heavy animals is prevented.

Another alternative for watering the cows is the pasture pump, which takes water from the stream and siphons it up into a small trough. The cow activates the pump by pushing it with its nose.

Drop in bacteria due to fencing

This chart shows the sharp reduction in fecal coliform bacteria following the installation of fencing early in the summer of 1996. It also shows the increase in bacteria in 1997, due to a break in the fence, which allowed animals to access the stream again.



For more information

For more information about Ecology's work with Water Cleanup Plans, please contact Dave Peeler at (360) 407-6461. Ecology's Internet homepage address is *http://www.wa.gov/ecology*

If you have special accommodation needs or require this publication in an alternative format, please contact Annie Phillips at (360) 407-6408 or (360) 407-6066 (TDD).