

DEQ's Mission: To be an active leader in restoring, enhancing, and maintaining the quality of Oregon's air, water, and land.



State of Oregon
Department of
Environmental
Quality

Water Quality Standards



Photo courtesy of Port of Portland

Water. If there is one thing all Oregonians agree on, it's that water is one of our most precious natural resources. In fact, with over 100,000 miles of streams and rivers, 360 miles of coastline and some of the cleanest lakes and reservoirs in the world, you could say that water defines Oregon. Our rivers, streams and lakes not only provide great natural beauty, they supply the water necessary for drinking, recreation, industry, agriculture and aquatic life.

“DEQ scientists monitor hundreds of rivers, streams, lakes, groundwater areas and estuaries in Oregon.”

Why we need water quality standards

Standards are the benchmarks we use to know if we're doing our job to protect Oregon's water. When a river or stream meets the standards, the activities the water is used for are protected. Standards tell us if we can allow more growth

(and the water pollution that comes with growth) in a given area and still maintain safe, healthy, aesthetically pleasing waters.

The elements of water quality standards

The first element identifies the existing or potential uses of the water. This might include supporting activities like recreation, fishing, and irrigation. The second element identifies specific benchmarks that describe the quality of water needed to be able to use the water for those purposes. These guidelines can be either narrative or numeric. Narrative guidelines describe what Oregon's waters will be "free from", like oil and scum, color and odor, and other substances that can harm people and fish. Numeric guidelines assign numbers that



A denuded stream bank makes water quality vulnerable to increases in stream turbidity and temperature as well as excessive erosion and runoff.



Adequate stream side vegetation plays a vital role protecting water quality. It provides shade, stabilizes banks preventing erosion and filters runoff, which can contain a wide variety of pollutants like fertilizers, sediment and toxic chemicals.

represent limits and/or ranges of chemical concentrations, like oxygen, or physical conditions like water temperature.

A water body often has to support several uses, including cold-water fish like salmon and trout, industrial processes and agriculture. Federal law requires that DEQ protect the most *sensitive* of these uses. So

while exceeding the temperature standard might have little impact on industry or agriculture, salmon and trout are profoundly affected by water temperature and must still be protected.

Water quality standards are not established to protect against detrimental effects of all water pollution 100% of the time - a



*When it rains - even just a little - combined sewer overflows, or CSOs, carry untreated human wastes and storm water runoff directly into the river. DEQ has water quality standards that limit how much **fecal coliform bacteria** can be present in water. When bacteria are from human sources, such as sewage, there is a particular concern from a human health standpoint.*

certain level of risk is allowed. For example, standards for human carcinogens in water – things like arsenic and PCBs – are set using a risk estimate of 1 in one million.

How are water quality standards established?

The most important thing DEQ does is look at all of the information available from scientists in Oregon, at EPA, and across the nation. All of the written scientific information is reviewed. Additional studies are completed if necessary.

This information is taken to a technical/scientific advisory committee. This committee is made up of experts from



*Although a certain amount of **algae** is essential in a healthy aquatic ecosystem, too much is a problem. Algal blooms (excessive amounts of algae) are commonly caused by fertilizers entering streams and urban sources like lawns and gardens. Algal blooms can turn*

water green and murky and can increase the pH, causing eye irritation in humans. When blooms die off, the bacteria that consumes the dead algae can severely deplete oxygen in the water, harming fish and other aquatic organisms.

universities, industry, state and federal agencies, Indian tribes and environmental groups. The technical group typically develops a range of possible standards which is forwarded to a second group, a policy advisory committee, which reviews the alternatives and selects one. The Oregon Environmental Quality Commission actually adopts the standards, after extensive

public review.

DEQ examines its standards every three years to make sure they are up to date scientifically.



*The **temperature standard** protects Oregon's native "cold-water" species like salmon, trout, and amphibians. When water temperature becomes too high, cold-water species suffer a variety of ill effects ranging from decreased spawning success to death.*

***Turbidity** is caused by fine particles of soil, clay and sand being carried into lakes, streams and rivers by stormwater runoff. Excessive turbidity can clog the gills of fish, promote excessive algae growth, and reduce oxygen in water. It also fills in gravel beds, destroying salmon spawning habitat.*

How are water quality standards measured and applied?

DEQ scientists monitor hundreds of rivers, streams, lakes, groundwater areas and estuaries in Oregon. The monitoring process involves many techniques ranging from on-the-spot measurement of things like pH and alkalinity to taking water samples for later laboratory analysis for things like heavy metals or bacteria. DEQ also has computerized equipment that continuously monitors and records conditions including temperature and oxygen in a stream over a period of days, weeks or months. All data is



All data is reviewed for precision and accuracy using strict, scientifically sound protocols.

Water Quality Standards

- Serve as benchmarks to protect human and aquatic health
- Indicate condition of a given water body
- Protect the most sensitive of multiple uses
- Serve as planning tools for setting water quality goals
- Estimate a certain level of risk from pollution

reviewed for precision and accuracy using strict, scientifically sound protocols and EPA approved quality

assurance methods. A report is prepared every two years showing which waters in Oregon don't meet standards.

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DEQ is a partner in the Oregon Plan for Salmon and Watersheds.