

# Focus on Water Temperature in the Upper Yakima River Watershed

Water Quality Program

August 2014

## Upper Yakima Tributaries Temperature Reduction Plan

### Cool streams help salmonids stay healthy

Salmonids (salmon, steelhead, char, and their relatives) need cold water to stay healthy during key life stages. Some tributaries to the upper Yakima River have warm summer water temperatures that can harm salmonids and other native species that depend on cool, clean water.



The Washington State Department of Ecology (Ecology) sets temperature standards for Washington's waters, which protect the most sensitive uses of local waters. In the upper Yakima River watershed, protected uses include salmonid spawning, rearing, and migration. Two types of upper Yakima salmonids—steelhead and bull trout—are listed as "threatened" under the federal Endangered Species Act.

### What causes high stream temperatures?

Many factors can affect water temperature. The direct summer sun heats stream water, but streamside plants can create shade to keep water cool. Changes in stream depth, flow rate, and volume of water flowing in a stream can change stream temperature. Cool water entering streams from underground sources can mix with stream water and lower the temperature in the stream. Fires or floods can remove streamside plants and shade.

Human actions can also make streams warmer:

- Removing streamside plants reduces the shade over the water and allows more heating by the sun.
- Dirt, gravel, and rocks can be washed into a stream from forest lands, agricultural areas, or building sites. This change can make streams shallower, wider, harder to shade, and warmer.
- Water removed from the stream reduces the amount of water left in the stream, making the stream slower and shallower. If water is taken out in the summer, when streams are already low, the water left in the stream can become warmer. Irrigators and other water users must have legal rights to take water out of a creek.

### WHY IT MATTERS

Water that is too warm can cause stress and harm to salmonids. In many of the streams that connect to the upper Yakima River, warm summer water temperatures cause these streams to fall short of Washington's water quality standards. Several types of salmonids use the upper Yakima River tributaries as important migration routes and as spawning and rearing areas.

Salmonids have less food in warm water, because many of the stream insects they must eat cannot live in warm water. Warm water changes a salmonid's body processes, making it more likely to catch diseases and suffer damage from toxins. Young salmonids swim slower in warm water, so they are less able to escape from predators. Warm water often cannot hold enough oxygen for salmonids to breathe. If stream water gets too warm (above 77°F), many salmonids will become sick or die.

### Contact information

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### Special accommodations

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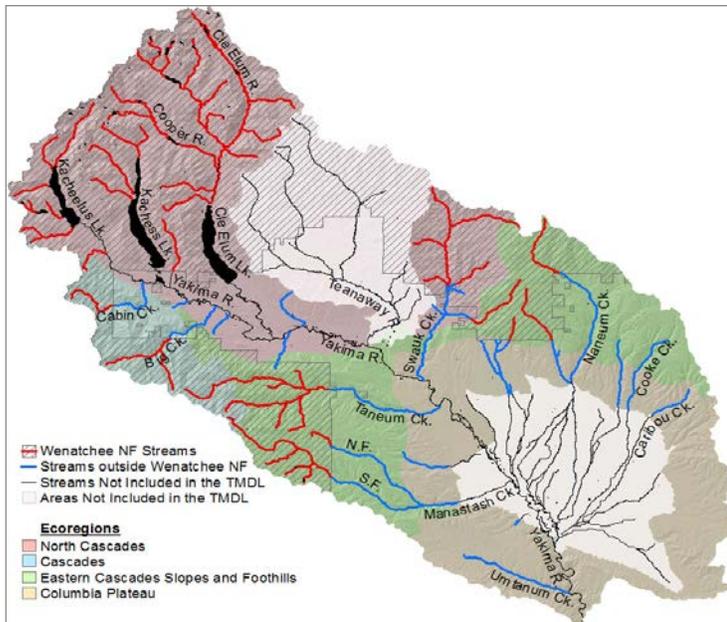
## Understanding and fixing problems

Ecology and its local partners collected extensive water temperature data in tributaries of the upper Yakima River. Ecology scientists used this data to model the many factors that affect stream temperature. They developed a water quality improvement plan (also known as a Total Maximum Daily Load assessment or TMDL) to reduce water temperatures in certain portions of upper Yakima tributaries.

A water quality improvement plan describes the amount and sources of a specific pollutant in a water body and how much the waters can accept without exceeding water quality standards. The plan also offers solutions to reduce the pollution.

## Upper Yakima Tributaries Temperature TMDL

The study area for the *Upper Yakima River Tributaries Temperature Total Maximum Daily Load* includes tributaries that enter the Yakima River upstream of and including Umtanum Creek. Streams identified



Map of the upper Yakima watershed, showing which streams are included in the Upper Yakima River Tributaries Temperature TMDL

Creek, Manastash Creek, and Naneum Creek. Other waters in the upper Yakima watershed that are not addressed in this TMDL will be (or have been) addressed in additional TMDLs or water cleanup plans.

In general, scientists found that the effective shade produced by full potential streamside vegetation is needed to meet water quality standards for temperature in the upper Yakima tributaries.

### How can you help cool streams?

Many people and groups can take action now to help protect streams in the upper Yakima River watershed. The following actions will help cool stream water.

#### Plant tree borders.

Streamside landowners can plant trees next to streams. As they grow, the trees will shade and help cool water. Mature streambank plants also add valuable woody debris to the stream channel and help filter pollutants from runoff water.

**Save water.** Carefully use water taken from streams to help protect flows during late-summer, low-flow conditions. More efficient watering and irrigating methods use less water than other more common methods. Leaving more water in a stream helps the stream stay cooler.

#### Restore stream channels.

Work with local organizations on streamside repair projects that prevent entry of sediment. This will help keep streams deeper and narrower. Restoration projects can also help connect the stream with the natural floodplain and cool underground water.

**Participate.** Helping keep streams cool in the Upper Yakima River Basin requires work by many people. If you would like to be on a mailing list to learn more about this work, please contact Jane Creech at 509-454-7860 or [jane.creech@ecy.wa.gov](mailto:jane.creech@ecy.wa.gov)