

Focus on Temperature and Oxygen in Soos Creek Watershed

The creeks are too warm with little oxygen for fish

Fish breathe oxygen in the water (dissolved oxygen). Cooler water holds more oxygen. When water is too warm or has too little oxygen, local fish can face thermal stress and harm. Parts of Big Soos Creek and its main tributary streams have unhealthy temperature and oxygen conditions and fail to meet Washington State water quality standards.



These creeks serve as important migration corridors and spawning and rearing areas for several salmonid fish species: Puget Sound Chinook, Coho, sockeye, chum, pink, steelhead trout, and cutthroat trout. All need cold waters for optimum health during various stages of their lives.

The Department of Ecology (Ecology) has set specific water quality standards to protect fish spawning, rearing, and migration. Streams must not be warmer than 60.8°F (16°C) as an average of the maximum temperatures over seven days. Furthermore, portions of Big Soos, Jenkins, and Covington creeks must also meet a lower temperature standard of 55.4°F (13°C) from September 15 to July 1 to protect salmonid spawning. Meeting these standards will improve currently poor dissolved oxygen conditions (which must remain above 9.5 milligrams/liter).

Together, we can all restore and help protect clean and healthy streams.

TMDL: Ecology's program to improve water quality

To restore these waters and protect the vital salmonid habitat, Ecology is working with partners in the watershed on a water quality improvement effort to determine what is called the Total Maximum Daily Load (TMDL) of increased temperature.

Through this process, Ecology:

- Evaluates the water quality conditions.
- Estimates how much water temperature needs to be reduced to meet state water quality standards.
- Describes how citizens, state and local governments, and other organizations and businesses can help improve stream temperature and dissolved oxygen conditions in this watershed.

The above information will be in the Soos Creek System Temperature and Dissolved Oxygen TMDL/Water Quality Improvement Report. Ecology is expected to submit this report to the Environmental Protection Agency (EPA) by June 2010.

Possible causes of the water quality problems

Stream temperature is dependent upon a number of factors.

- Lack of streamside vegetation means lack of shade over the water, making it easier for the creek to heat up. Erosion and sediment loss from poorly managed forestlands, agricultural areas, or construction sites can make streams shallower, wider, and harder to shade.
- Reduced water stored in the ground means less cool water to feed the local creeks during the dry summer months. Expanded areas of impervious surfaces and water withdrawals for purposes such as irrigation and drinking water can cause the stream flows to become lower and shallower than usual in the summer.

Failing on-site septic systems and stormwater rushing over urbanized areas can 'flush' nutrients (in the form of human waste, soaps, domestic animal wastes, and poorly managed fertilizers) into our waters. Algae thrive on these excess nutrients. When they die, oxygen-consuming bacteria break down the algae and use up the DO in the water.

How you can help

Restore stream channels. Get involved in streamside restoration projects to help prevent erosion and sediment loss. Where streams have been straightened and channelized, restoration projects can help reestablish connections with the natural floodplain and with cool groundwater resources.

Conserve water. Practice wise use of water near streams to help protect flows during late-summer low-flow conditions. Reduce lawn areas for watering or use less-consumptive irrigation methods (soaker hoses or smart watering). Use deep soaks early in the morning or late in the evening to minimize evaporation and leave more water in the stream or in groundwater resources that 'recharge' stream flows. For more great ideas visit: <http://www.kingcounty.gov/environment/wastewater/WaterConservation.aspx>

Plant tree borders. Streamside landowners can plant trees that shade the stream, cooling the water as the trees mature. Woody debris and vegetation that falls into streams can provide food and habitat for fish. Mature streambank plants can help filter excessive amounts of sediments, fertilizers, or other nutrients from upland lawns and agricultural areas. This helps prevent the growth of algae and other water plants that use up precious oxygen.

Keep nutrients and organic material out of streams. Take these actions to prevent nutrient pollution in the streams and stormwater runoff:

- Check on-site septic systems every 2-3 years.
- Keep all soaps out of streams. If washing cars at homes, use only biodegradable soaps and wash only on lawns.

Focus on Soos Creek Watershed

- Prevent overuse and runoff of fertilizers. Use slow-release organic fertilizers if possible. Store fertilizers properly.
- Carefully manage domestic animal and livestock wastes: pick-up, cover, and keep away from streams; properly dispose of pet wastes.
- Keep grass clippings and other organic debris out of streams.

More information

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