Water Cleanup Plans

Taking the temperature of Yakima River waterways

Issue

In a coordinated effort, the state Department of Ecology (Ecology) and other local, state and federal agencies will measure stream temperatures in several Yakima Basin rivers and tributaries using thermal imaging technology (infrared).

Increased water temperature is one of the leading water-quality problems in Washington's waterways. Federal law requires states to identify sources of pollution (which includes high temperatures) in waters that fall short of water quality standards. States must determine how much pollution the waters can receive and *still* remain healthy – (also called a total maximum daily load, known as a TMDL or water cleanup plan). A water quality study defines the maximum allowed pollution for the water body and allocates pollutant "loads" among the sources. A draft strategy for cleaning the pollution, based on the water quality study, is called a water cleanup plan.

Background

Temperature readings and other data will be collected by helicopters flying along the mainstem Yakima River and several streams and tributaries.

The helicopters, operated by the Bonneville Power Administration, will be equipped with state-of-the-art Forward Looking Infrared Radiometry (FLIR) thermal-imagery equipment. The equipment mounted on the helicopters will take infrared digital photographs of the rivers to provide a visual image of the waterbody's surface temperatures. To confirm flight data and field readings, temperature gauges will be placed at various locations in the rivers and streams.

The helicopters will fly about 1,000 feet above the river and will work generally when daytime temperatures are highest.

Several state, federal and tribal agencies in Oregon and Washington have successfully used infrared imaging to characterize existing conditions and to help identify and address environmental problems. Similar technology will and has been used by various tribal, state and federal agencies to study the Columbia River, Pend Oreille River, and streams in the Willapa, Stillaguamish, Wenatchee and Methow basins.

Data from these studies will be valuable to waterfront landowners, tribes, local governments, fishery specialists, watershed planning units, and state water-quality managers for planning stream restoration efforts, particularly in determining where to plant vegetation to decrease river temperatures.

Why is water temperature important?

High water temperatures are bad news for wildlife habitat, aquatic plants and insects, and the spawning, rearing and migration of fish in the Yakima Basin. Water temperature critically influences the health and survival of salmonids. Lack of vegetation along the river, sediment and low stream flows typically cause higher temperatures in rivers and streams. It is also important to identify areas of cool water upwelling that provide important refuge for cold water fish.

August 2001

Ecology is an equal opportunity agency.

Publication Number 01-10-045

Why are helicopters and thermal imaging technology being used?

This technology, while not essential to water cleanup work, will help speed the study and cleanup process. There is a lot of work to do. The State of Washington has more than 600 waters on its cleanup list -- about 300 are listed for temperature problems. Ecology believes the technology will help the water cleanup plans be more scientifically sound. Also, the study will provide Ecology and local communities scientific information about surface temperatures so we can work together to identify trouble spots and, where necessary, reduce temperatures and improve habitat.

How is this going to affect landowners along the rivers being studied?

Ways to improve the health of streams will be discussed and coordinated with landowners and local officials. Landowner participation is essential to help state and local agencies develop plans to improve water quality, meet state water quality standards, comply with the federal Clean Water Act and prevent listings for endangered species.

Why test the rivers this year, when flows are expected to be below normal?

It's important to sample when water flows are low because it will give us picture of conditions during a low-water year, when temperature conditions are probably at their most critical. Also, this data will compliment infrared work done by BPA in 1998, a year with normal to high water flows.

What will be photographed, and what will Ecology do with the images?

Digital images will focus on the center of the stream and take in as much of the riparian areas along side the stream as possible. It will cover an area of approximately 150 meters (490 feet) wide. Infrared and digital video images will be collected along the entire length of the mainstem and several tributaries. The information from the adjacent riparian areas may be used to estimate shading from vegetation, condition of the habitat and to identify side channels and wetlands. Data will be available for use by watershed planners, water quality specialists, conservation districts and other interested parties. Corresponding information from in-stream temperature gauges will also be available

How does Ecology know these temperatures are high or unhealthy?

Taking the temperature of the rivers from the helicopters with the high-tech measuring devices will provide the best data available to compare with previous sampling information. The new information should also help establish a baseline to determine where and when conditions change. This information will help to evaluate whether the highest temperatures or other environmental conditions are caused naturally or by human activities.

The state's fish populations have declined significantly, and the habitat – the lakes and rivers where the fish live – needs to be healthy for the fish populations to recover. Habitat is one of many factors causing the decline in salmon and steelhead populations.

Will Ecology be taking enforcement based on the information found?

The focus of this project is to gather information that will provide a better perspective on the health of specific water bodies and help Ecology and local communities develop effective water cleanup plans. These flights and photographs are in no way designed for enforcement activities.

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