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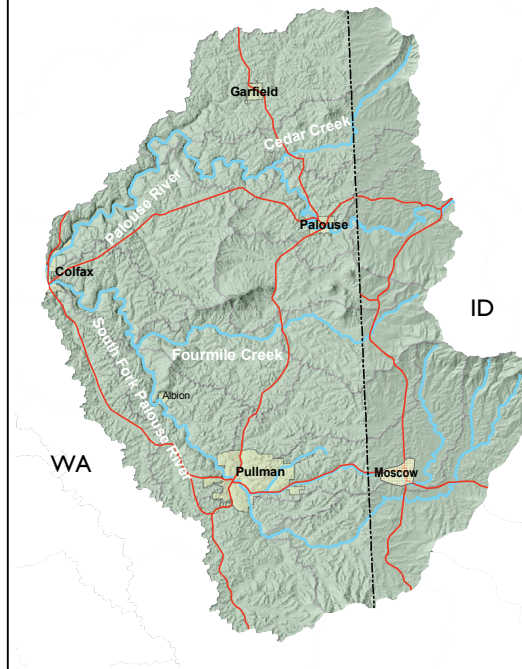
(Contractor providing flight and imagery)

Website: [www.watershedsciences.com](http://www.watershedsciences.com)

*If you need this information in an alternate format, please contact the Water Quality Program at 425-649-7041. If you are a person with a speech or hearing impairment, call 711, or 800-833-6388 for TTY.*

## Thermal Infrared Radiometry

### Taking the Temperature of the North and South Fork Palouse Rivers



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## Background

Increased water temperature is one of the leading water quality problems in Washington. High water temperature harms aquatic life. Many species of fish can not thrive in water with higher temperatures. This can affect the success of fish spawning and rearing. Cool water is an important part of a healthy habitat for fish, the insects they feed on and other wildlife. Warmer water does not contain as much oxygen than cooler water.



South Fork Palouse River

Lack of vegetation along the river, sediment (from eroding banks, etc.), and low stream flows may cause higher temperatures in rivers and lakes.

Federal law requires states to identify and develop water quality improvement plans (also called total maximum daily loads or TMDLs) to restore water quality in streams and lakes that do not meet standards. Several streams in the Palouse River watershed do not meet standards for temperature.

The Washington State Department of Ecology (Ecology), along with local organizations and landowners, will start working on a plan to address temperature problems in the Palouse in 2006. Water quality improvement plans include a study about the water quality issues and a strategy to meet the standards. Although major work on this project will not begin until 2006, some work scheduled this summer will assist in the effort.

## What work is happening this summer?

Between July 18 and August 15, 2005, Ecology will measure stream temperatures in the Palouse River watershed using thermal infrared imaging. The survey area includes the South Fork Palouse River, Paradise Creek and the North Fork Palouse River.

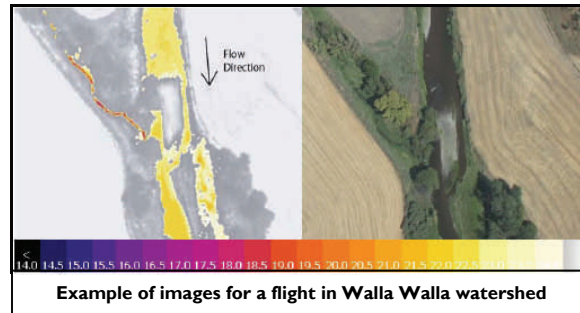
The study is designed to develop a wide area assessment of temperature issues in the watershed. The information from these flights will be used to help develop strategies to reduce water temperature in areas where it is too high.

Ecology is contracting with Watershed Sciences Inc. to fly over approximately 65 miles of streams by helicopter. The helicopters will be mounted with Thermal



Infrared Radiometry (TIR) equipment, also called Forward Looking Infrared Radiometry (FLIR). The equipment takes infrared photographs of the rivers to provide an image of each river's surface temperatures. Temperature gauges will also be placed in the rivers to confirm the flight data.

## What will be photographed?



The focus of the images will be the center of the stream. The image will cover an area of approximately 200 by 300 meters (660 by 990 feet) and will have a spatial resolution of approximately 0.5 meters (less than 2 feet). Infrared and photographic images will be collected along the entire length of the streams. The information from the adjacent land areas may be used to estimate shading from vegetation.

## Who's involved?

Although Ecology does not plan to start the study on water temperature until early 2006, we have been working with the local Palouse Watershed Planning Unit on water quality issues. The planning unit is working with Ecology to ensure the most complete picture about the natural conditions of the streams is obtained. The contractor for the planning unit, Golder & Associates, will be collecting data to be used in the temperature study. This work includes evaluating the natural streamside vegetation conditions and the influences groundwater has on the streams.

In addition, the city of Moscow will be contracting with Watershed Sciences, Inc. to evaluate the Idaho portions of the South Fork Palouse River and Paradise Creek.



## How will this affect landowners along the rivers?

The helicopters will fly no lower than 1,000 feet (the length of about three football fields) and will work between 2 and 5 p.m., when daytime and stream temperatures are highest.



This study will not evaluate individual properties. It is designed to evaluate the temperature of the water; how shade, groundwater inputs and other factors may affect the water temperature; and assist in determining if the high temperatures may be a natural condition.

Stream improvements to reduce temperatures will be discussed and coordinated with the Watershed Planning Unit and other interested parties. Having local residents and officials involved in the process brings benefits such as improved water quality; compliance with federal Clean Water Act requirements; healthy, functioning riparian areas; and higher summer stream flows.