

# Curiosity Killed the Bacteria

## Solving water quality problems with simple investigations

### Introduction

Curious Ecology employees sampled a roadside ditch. This led to cooperation between agencies, better water quality, and homeowners delighted with their new, no-upfront-cost septic system.

### Problem

Little Bear Creek does not meet water quality standards for fecal coliform bacteria. Ecology submitted a plan in May 2005 to solve the problem. Part of our plan is to investigate and find specific sources. One such investigation found a residential septic system that was not working properly. This one septic system was contributing enough fecal coliform bacteria to cause problems far downstream

### Project goals



The Northwest Regional Office Water Quality Section takes samples to find problem areas within watersheds. Septic systems that do not work properly are one of the sources. Finding these septic systems usually needs the cooperation of homeowners, dye testing, and sophisticated methods like thermal infrared photography. In this case, we found the system with inexpensive sampling methods.

During a quarterly sampling trip we became curious about the water in a roadside ditch. When high fecal coliform concentrations were found, we returned to sample the various streams leading to the ditch. This time we found a section of one stream where the problem seemed to come from. On a third trip our eyes and noses led us to a seep coming from a yard, where the fecal coliform concentration was several million colony forming units per one hundred milliliters (cfu/100ml). In comparison, the water quality standard for Little Bear Creek is 50 cfu/100ml.

Although the volume of water coming from the septic system is small compared with Little Bear Creek, some simple calculations show that it was enough to cause a violation of the water quality standards.

Our delight at finding the source was tempered by knowing that this would come as bad news to the homeowners, who had been friendly during our investigation. They are an elderly, disabled couple on a limited income. He lost most of his hearing as an artillery gunner in World War II and she is nearly blind. We offered our help to guide them through the permit and construction process. Our offer was accepted.

The Snohomish Health District responded by designing a new septic system, helping the couple apply for permits, and guiding them through the contractor selection process. The Housing Authority of Snohomish County awarded the homeowners a zero-interest, deferred payment loan that will not need to be paid until the property is sold.



## Milestones and outcomes

We have been sampling Little Bear Creek since August 2004. In February 2006, our sampling found this septic system. We informed the Snohomish County Department of Public Works in March, and they relayed it to the Snohomish Health District. The health district met with the couple and confirmed Ecology's findings in April. The Housing Authority of Snohomish County also began working with the couple in April. The permits and loans were awarded in May, and by late-July a new septic system was in place and functioning.



We are confident that fixing this system will improve water quality. Concentrations of fecal coliform above this section of stream were low before the system was repaired. Since then, another source of fecal coliform bacteria has emerged above the repaired septic system. This as yet unidentified source is proving more elusive, as the stream originates in a wetland surrounded by new homes.



*The new drainfield*

## Project highlights

One of the Ecology staff working on this project had been with the agency for one month when the first ditch sample was taken. These events have allowed him to make contacts with Snohomish County agencies that have been beneficial for other investigations.

Another highlight was seeing how correcting one small source could improve the water quality of an entire stream. Sometimes the problem of

clean streams seems overwhelming — yet fixing just a few failing systems may yield big improvements in overall stream quality.

The greatest outcome has been the satisfaction of the homeowners. At one time they admitted to tremendous worry and losing sleep over the potential of their home being declared unsuitable for habitation, possible legal action, the costs of a new septic system, and the damage to their landscaping. They were won over by the respect and assistance given them by staff from all agencies and are delighted with the improvements to their plumbing and the new septic system.

## Partners

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## **Funding**

Washington State Department of Ecology  
Approximately 70 hours of staff time and \$300 of laboratory costs

Snohomish Health District  
Approximately 22 hours of staff time including design and as-built preparation and up to \$500 of reduced or waived permit fees and services

Housing Authority of Snohomish County  
Approximately 20 hours of staff time and a zero interest, deferred payment loan of \$12,000

Snohomish County Department of Public Works  
Approximately 1 hour of staff time

## **Ecology website for more information:**

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