

# Improving Water Quality in the Samish

## Getting the manure out of streams and shellfish beds

### Introduction

Samish Bay in Skagit County has rural beauty and an equal dose of rural agricultural and septic system impacts from its watershed. To help the Washington Department of Ecology (Ecology) make sure that the streams are safe for recreation and that Samish Bay shellfish can be safely harvested and eaten, residents and local officials have added a dose of rural initiative. They are getting the word out about improper manure applications and livestock access to streams that are degrading water quality.



### Problem

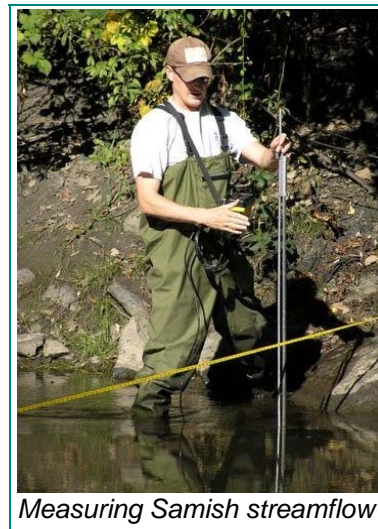
Samish Bay has valuable commercial and recreational oyster beds spread across its muddy bottom. Prized Samish Bay oysters are harvested and shipped to Pacific Northwest-area restaurants to be served as delicacies “on the half shell.” Over the past 15 years there have been two outbreaks of gastrointestinal illness among those who consumed raw shellfish harvested commercially from Samish Bay. On both occasions, Washington Department of Health had to close the beds to harvest and begin the difficult task of investigating potential sources of viruses and bacteria to this watershed. Although the Department of Health was able to conduct a shoreline survey around the bay to look for direct sources of bacteria and viruses, they do not have the resources to look upriver for sources.

### Project or event/goals

Fecal coliform bacteria, while not usually harmful to human health, are “indicator” organisms that public health and environmental agencies use to evaluate water quality and help determine where pathogens are coming from. In 2006, Ecology launched a water quality monitoring project at 36 sites throughout the watershed to find bacteria sources and clean up Samish Bay. After a year of monitoring, the Ecology study showed that high bacteria levels were occurring at most of the stations.

As informative as the exhaustive monitoring program was, it still did not pinpoint where the bacteria were coming from. In rural areas with livestock, improperly managed manure can be a source of bacteria. Livestock may be highly visible as a source if they are pastured next to a stream and there is no fencing to prevent animal access. More difficult to identify as a potential source is manure from one operation that is spread on fields at a different location as a fertilizer for crops or pasture. If managed properly, this spreading of manure does not harm streams. But if applied during the rainy season when fields are flooded or applied too close to a stream, the manure can pollute both the stream and the bay down below. Because manure application is visible only during the spreading operation itself, which is occasional, it is very difficult for regulatory agencies to know when this is happening and whether it is being managed properly.

This is where involved citizens and motivated local officials helped identify sources of bacteria in the watershed. Trolling around on the Internet one day, a citizen who was concerned about the Samish River’s degraded water quality found Ecology’s website explaining the purpose of the Samish Bay water quality improvement project.



*Measuring Samish streamflow*

He contacted Ecology staff with information about a manure spreading operation that was happening very frequently near his home on the Samish River. Manure spreading happened throughout the wet season and at times when fields were flooded.

Ecology took extra samples from the Samish River near the citizen's home and photographed evidence of recent manure application to flooded fields. Water samples from ditches that drain the fields and discharge to the Samish River had elevated bacteria counts. Ecology tracked down the agricultural operation that was the source of the manure being spread and determined that it qualified for regulation as a Combined Animal Feeding Operation (CAFO). The CAFO regulations require that operations submit a Nutrient Management Plan helping ensure that manure is managed in a way that will not harm water quality. It also means the operation will be subject to inspection by the Washington Department of Agriculture.

## Milestones and outcomes

Because of citizen interest and involvement, Ecology was able to identify an agricultural operator whose practices were degrading the Samish River. Putting the operation under permit will make it possible for the Washington Department of Agriculture to periodically inspect the operation to ensure it follows best management practices in its manure management and no longer represents a threat to the river.



From these efforts by citizens, Ecology, and Department of Agriculture came a second benefit to the water quality of Gages Slough in Burlington. Gages Slough is just southeast of the Samish River where the spreading occurred and the manure being spread was generated from an agricultural facility in the city of Burlington. Land adjacent to the facility was being leased for livestock pasturing next to Gages Slough, and no fencing was installed to limit animal access to the slough. This problem provided further evidence that the facility was being operated in a way that was harmful to water quality. Once the facility owner was contacted, the cattle were fenced away from Gages Slough within two weeks of the complaint.

## Project highlights

Through the efforts of concerned citizens and agency staff, two agriculture-related bacteria sources to the Samish River and Gages Slough were removed. The facility that is the source of the manure is in the process of developing a Nutrient Management Plan and applying for CAFO permit coverage, which will help prevent manure from polluting streams and shellfish beds.

## Partners

Washington State Department of Agriculture and Ecology are working together to get the Burlington facility under a CAFO permit. Skagit Conservation District will work with the facility owner to develop the Nutrient Management Plan. Washington State Department of Health continues to monitor Samish Bay water quality and provide shellfish harvest advisories to Ecology and interested local organizations.

## For more information

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