Below are our results for this week (6/23). Sampling occurred on Wednesday, with no rain on sampling day or the previous day and only light showers in the days before that. River level was approximately 150 cfs and has been falling slowly ever since the rains on June 9-10.

River and tributary fecal coliform levels were generally low, except for Colony Creek. There were no unusual conditions reported at Colony. Counts in the drainage infrastructure remain high.

This week there are additional explanations below the data for those who are unfamiliar with fecal coliform testing.

6/23/2010

River Sites		Result	Duplicate
Samish River at Hwy 9	11	17	
Samish River at upper Prairie Rd	SAM3PR	17	
Samish River above Parsons Creek	SAMPAR	27	
Samish River at Double Creek Ln	SAMDCL	30	
Samish River at first Prairie Rd	SAM1PR	110	
Samish River at Grip Road	SAMGRIP	30	
Samish River at Thomas Rd	32	70	23
Drainage Sites			
Alice Bay Pump Station	33	300	
Edison Slough at School	36	500	170
Edison Pump Station	37	500	
North Edison Pump Station	38	900	
Tributaries			
Parsons Creek at mouth	PAR	2	
Skarrup Creek at Double Cr Ln	SKAR	80	
Swede Creek at Grip Rd	8	50	
Friday Creek at Prairie Rd	6	50	
Thomas Creek at Hwy 99	3	30	
Thomas Creek at F&S Grade Road	4	140	
Colony Creek at Colony Rd	39	1600	

Fecal Coliform Basics

Fecal coliform bacteria are bacteria from the intestinal tracts of warm-blooded animals, which when shed into the environment through feces, can be associated with certain diseases in humans. Fecal coliform are measured in "colony-forming units" per 100 mL of sample, commonly abbreviated as "cfu." The higher the number, the more bacteria and the greater the health threat to in-stream users like swimmers and fishermen, as well as consumers of raw shellfish from the bay.

The state water quality standard for most freshwaters, including the Samish River and its tributaries, is a geometric mean of no greater than 100 cfu, with no more than 10% of the samples exceeding 200 cfu. The standards are designed to protect human health from bacterial infection during contact recreation (swimming, boating, and fishing) and raw shellfish consumption.

A geometric mean is an alternative method of calculating an average that is less influenced over time by the occasional very high sample. It is used to prevent occasional high samples from causing a stream to be out of compliance with the state standards if most other samples are within the standard.

For the Samish Basin, the bellweather site is the Samish River at Thomas Road, which is the closest river station to the bay that we normally sample. This gives the best indication of the concentration of bacteria headed for the bay.

Calculating the Geometric Mean

The geometric mean is calculated by taking the "nth" root of the product of all the samples. For example, for three samples reading 3 cfu, 4, cfu, and 10 cfu, the product is 3 x 4 x 10 = 120. The geometric mean is the cube (3^{rd}) root of that product, which, in this case, is 4.9 cfu. For comparison, the more common arithmetic mean would be 17/3 = 5.7. If the three fecal coliform counts were 3 cfu, 4 cfu, and 1000 cfu, the geometric mean would be 23 compared to an arithmetic mean of 336.