Summer 2003

Clean Water Herald

A Newsletter, to inform and update you about your Clean Water District

Putting Science to Work

Dungeness Bay Water Quality Study

Do you remember reading about Dungeness Bay in past newsletters? We have featured it in the past because bacterial concentrations measured by Washington State Department of Health (DOH) have increased since 1997. Periodically the bacterial level, measured by the amount of fecal coliform (fc), exceeds water quality criteria for shellfish harvest. In 2001, DOH added 100 more acres to the 300 acres that had previously been downgraded to *Prohibited* for shellfish harvesting because of high bacterial levels. Now, as the high bacterial levels remain and are detected in more places, we are faced with a possible increase in the *Prohibited* area and a seasonal closure (November-January) of the entire Inner Dungeness Bay.

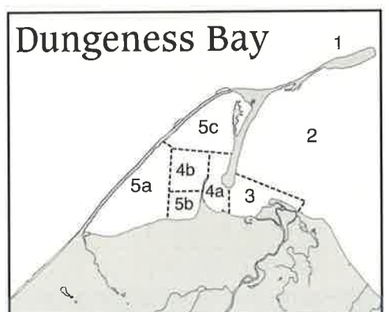
A study has been completed by Dr. Jack Rensel, an oceanographer, to help understand Dungeness Bay circulation. The report found:

- The bay has less water volume today than in 1967 when depths throughout the Inner Bay tended to be up to 2 feet deeper.
- 45% of the amount of water which leaves the Bay on an outgoing tide, is brought back into the bay on the next incoming tide.
- The entire flow of the Dungeness River enters the inner Bay on incoming tides.
- None of the flow of the Dungeness River enters the inner Bay on outgoing tides (it enters the Strait of Juan de Fuca instead).

Water quality was tested throughout the Inner and Outer Bay as well as at the mouth of Dungeness River for a full year as part of this study. Interesting points reported are:

- In the Inner Bay, the winter results had highest average fc.
- At the River Mouth, spring and summer had the highest average fc levels. However, the highest loading (fc concentration x amt. of water) of bacteria from the River is in the winter, because there is much more flow.
- Stormwater/irrigation ditches that enter on the marine bluffs of Marine Drive had some very high fc concentrations. The ditches do not contribute very much flow, and are generally not defined as a principal source. However, the ditches may affect the DOH water quality data because of proximity to their collection sites.
- Birds in the Inner Bay – specifically dabbling ducks, were more numerous in the winter when the bacteria levels rise.
- Seals are generally ruled out as a bacterial source because they do not come into the bay in the winter, only in the summer (when the fc levels are quite low).
- The freshwater from the Dungeness River was found to be a contributing source of bacteria year round.
- Sediments, when tested, had very low or no fecal coliform (fc).

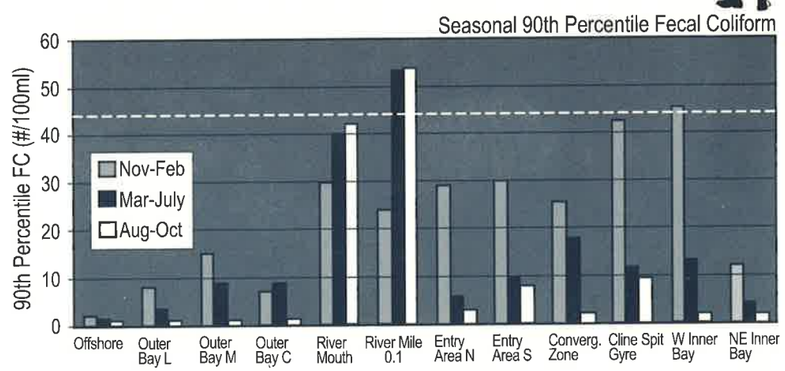
If you would like to know more, contact:
Lyn Muench @ Jamestown S'Klallam Tribe: 681-4631



1	Offshore, Straight of Juan de Fuca
2	Outer Bay
3	River Mouth
4a	Entry Zone
4b	Convergence Zone
5a	West Inner Bay
5b	Cline Spit Gyre
5c	North Inner Bay Basin

Circulation & Fecal Coliform Studies

Area 2, the Outer Bay, was divided into 3 zones: Outer Bay L (lighthouse), Outer Bay M (main), and Outer Bay C (center). Not shown here.



Outer Bay codes are L= near lighthouse, M=main channel, C=center of outer bay.
Water quality standard indicated by horizontal dashed line

Clean Water Herald
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To: Watershed Resident

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Calendar of Events

Event	Date/Time/Fee	Location
Native Plants: Join Joe Holtrop, Clallam Conservation District, and Bob Boekelheide, Dungeness River Audubon Center on a walk to learn about native plants.	August 9 10:00 am Free	Railroad Bridge Park amphitheatre
Science Day Camp: For children entering grades 3-5. *Call **681-4076** for more information & cost*	August 11-15 Call: 681-4076	Dungeness River Audubon Center
Fish of the Dungeness River: Join Scott Chitwood, Jamestown S'Klallam Tribe, as he shares the life histories and stories of the fish (especially salmon) of the Dungeness.	August 23 10:00 am Free	Railroad Bridge Park amphitheatre
StreamFest: Join the North Olympic Land Trust in celebration of healthy streams. *Music, stream walks, kid's activities, & more!*	September 14 1-4 pm (Salmon dinner - $15.00)	Park @ the shopping plaza (Star Video) to take a 5 min. shuttle Call:417-1815 (info)
Down by the River Day: With water and rivers as the theme, there will be activities for kids and adults, informative speakers, river lessons, bird and plant walks.	September 27 9-4 pm Free	Railroad Bridge Park

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Questions? Comments? Confused?
Call Val Streeter for the straight scoop and we'll include questions and answers in future updates.

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Fingerprinting the Bacteria

Just as our fingerprints identify us, there are ways to distinguish bacteria causing water pollution. Scientific methods are being developed and used to identify what type of animal (e.g., cow, dog, human, bird) the bacteria found in the water originated from. Since fecal coliform bacteria are found in the guts of all warm-blooded creatures (i.e., mammals and birds), they are good indicators of fecal waste in the water. This waste may carry harmful bacteria and viruses that can cause illness in people. The bacteria in surface waters generally come from a variety of sources. Some of these sources we can control, like humans, livestock, and pets but some sources we have little control over, such as birds, marine mammals and other wildlife.

With bacterial pollution closing Dungeness Bay to shellfish harvesting, Dr. Dana Woodruff, Senior Scientist at Battelle Marine Laboratory, was hired by Clallam County to conduct a study on what type of fecal identification method would be best used to help us clean-up the Bay. Using grant funds provided by the WA Department of Ecology, Dr. Woodruff will review the potential methods, which range from molecular to biochemical. Molecular methods (also called "biomarkers") have been used to identify bacteria in several bays in the Puget Sound, such as Drayton Harbor and Henderson Inlet. In Tillamook Bay, Oregon, antibiotic resistance (a biochemical biomarker) was used to determine the sources of bacteria. Many other types of methods are being developed around the country.

Since most biomarker methods are expensive, technical savvy is needed in order to choose wisely. Dr. Woodruff's report will be finished at the end of June, and will give guidance on which methods are worth pursuing. Choosing a method that can be accomplished logistically and will provide information to prioritize clean-up efforts is essential. We have always known what is causing the pollution in the Bay; warm-blooded creatures (mammals and birds). The question is, what is the most effective way to clean-up Dungeness Bay and restore shellfish harvesting?

Washington State Puget Sound Action Team has completed a book outlining 33 different projects, practices and ordinances featuring low impact development techniques that can save money and lighten our impact on the environment. *Natural Approaches to Stormwater Management: Low Impact Development in Puget Sound* can be viewed and downloaded at www.psat.gov.

Water Clean-up Study

Planned for Dungeness Bay

WA Department of Ecology will use the results from Dr. Jack Rensel's study on Dungeness Bay to create a water clean-up plan for Dungeness Bay. Also called a TMDL (total maximum daily load) study, the plan will define clean-up goals for areas of the Bay. The clean-up goals will focus on human-influenced bacterial sources to the bay, rather than wildlife sources from the National Wildlife Refuge. Similar to the TMDL study on the Dungeness River and other small streams (Matriotti, Meadowbrook, and Golden Sands) completed last year, this TMDL will follow the same public process, with a draft report issued followed by a public hearing. The draft report is expected at the end of the year, Dec 2003.

Awards:

for Watershed Stewardship

Ever feel like there are no rewards for "doing the right thing?" With help from a grant from the WA Dept. of Ecology, Clallam County will be issuing Watershed Stewardship Awards for those residences and businesses that participate in improving water quality. All recipients of the award will receive a small token of appreciation and acknowledgement in one of the Clean Water Herald newsletters. Because there are many improvements to be made, many awards will be given out. Achieving good water quality depends on the action of landowners, particularly ones nearby ditches, streams and bays.

All Clean Water District residents and businesses are eligible for this award.

All Clean Water District residents and businesses are eligible for this award. Water quality improvements include: septic system repair, streamside restoration, animal and manure improvements, and other activities that improve the quality of water. Suggestions/recommendations for award candidates are welcome. *Contact Val Streeter at Clallam County, 417-2543 / vstreeter@co.clallam.wa.us.*

SEQUIM DUNGENESS
CLEAN WATER DISTRICT

Watershed Stewardship Awards will feature the new Sequim-Dungeness Clean Water District logo on the tokens of appreciation (coffee mugs and water bottles). This logo was developed for the Clean Water District. Our logo depicts why we care about the quality of our water. Clean water promotes health for future generations.

Shellfish growing waters must pass two standards in order to be approved for harvesting. The geometric mean (based on 30 water samples) cannot have more than 14 fecal coliform per 100mL of water AND the 90th percentile cannot exceed 43 fecal coliform per 100 mL of water. The 90th percentile standard is the most stringent. In the case of Dungeness Bay, most of its failing stations don't meet the 90th percentile but do meet the geometric mean standard.

Managing our Stormwater

A stormwater ordinance is currently under review by the Clallam County Planning Commission. While it is a new step for Clallam County to adopt a stormwater ordinance, water drainage and flooding problems are not new. Several winters ago, as water flowed across Draper Rd., a long-time resident could recall how the water drainage patterns have changed and that the road NEVER used to flood. All of the watershed plans written over the last two decades refer to the need to address adverse impacts of stormwater. Although the regional comprehensive plan includes policies regarding stormwater management, the existing rules are over ten years old. Advances in the field of stormwater management indicate that some County standards do not adequately protect surface waters from adverse impacts of new development and redevelopment.

What is stormwater, and why does it matter? As development increases (or as the landscape is hardened with rooftops, parking lots, driveways, etc.), rain and snow-melt have less chance to soak into the ground. Instead, the water collects and *runs off* – downhill, or collects in a low spot – like your neighbor's basement. Andy Meyer, Clallam County Planning Director, said "One person's actions can have a significant and fairly immediate impact on a neighboring property. People are complaining about being impacted by the actions of their neighbors."

Stormwater can be problematic in multiple ways:

- As more water is forced to run off, flooding will become worse, as well as more frequent.
- Flooding affects homes and businesses (such as the Sequim businesses that have been flooded by a swollen Bell Creek).
- Flooding can damage fish habitat by scouring the bottom of the stream channel and eroding stream banks.
- More water running off means less water soaking into the ground and recharging our aquifers (i.e., wells going dry).
- As water collects and runs off – it generally picks up debris, chemicals and sediment and carries it into surface waters degrading our overall water quality (ground and surface water)

Even if you don't live nearby water, your actions influence water quality. When it rains, roadside ditches carry run-off water into irrigation ditches, streams and rivers. If your septic system is failing, you may be contributing to water pollution. Like it or not, water connects us and our health depends on it. Poor water quality brings increased chance of disease. Good water quality promotes health. It's our choice as a community.

The proposed stormwater ordinance has been drafted specifically for Clallam County. Clallam County's predominant type of development, a single-family residence on one to two acre parcels, is provided a variety of options, whereas currently there is one best management practice (BMP) which can be inappropriate in certain circumstances. The planning staff reviewed many WA State stormwater BMPs and chose the most appropriate ones for homebuilders in Clallam County to choose from. The new stormwater ordinance will still allow the homeowner to consult an engineer to design a site-specific stormwater management plan if they choose to. The ordinance is crafted so that there will be no new permit requirements unless the activity is just clearing and grading of land. Most stormwater management will be folded into the building permit process.

Digging for Clean Clams....

The Washington State Department of Health (DOH) is responsible for monitoring water quality of *commercial* shellfish beds to ensure the shellfish are safe for human consumption. In this capacity, DOH has closed approximately 400 acres of commercial shellfish beds in Dungeness Bay due to the high fecal coliforms. More closures are forthcoming.

DOH does not control *recreational* shellfish harvest — when you and family and friends dig for your dinner on your own. There are two types of closures for shellfish consumption performed by DOH. The first is the fecal coliform indicator as we have described; the second is for marine toxins such as paralytic shellfish poisoning (red tide). Both are posted on DOH web page www.doh.wa.gov. ***Is it illegal to collect shellfish on a beach that's closed by the State Department of Health?*** No, it is not illegal. Beach closures are public health recommendations. The County and the Department of Health do not have the authority to stop you from collecting shellfish. However, if you choose to collect shellfish on a beach that is closed, you do so at your own risk. The shellfish may harbor pathogens harmful to your health.