DEPARTMENT OF ECOLOGY
State of Washington

Bacteria Study Digs Up Concerns for Shellfish Harvest Areas along North Pacific Coast Beaches

How You Can Help

If you live along a coastal area:

- Monitor and repair failing and leaking onsite sewage systems.

When you're at the beach:

- Dispose of litter and food-waste safely. Bring trash containers with you and dispose of them at home or use public trash cans.
- Use public toilets.
- Bag-up pet waste and throw the waste in a trash can.
- Use bags designed to catch horse waste as the horses are ridden. Also clean horse staging areas before the tide comes in.
- Use pump-out stations to empty sewage from recreational vehicles (RVs).

Thousands of people enjoy razor clam digging at Washington's coastal beaches every year. However, high levels of fecal coliform (FC) bacteria can cause short-term and long-term clam digging closures. People can get sick if they eat bacteria-laden shellfish or if they come in contact with bacteria-laden water.

FC bacteria come from many sources including failing and leaky septic tank and sewer systems. Other common sources include wildlife, dogs, horses, and people on the beaches.

Since 2011, portions of recreational shellfish harvest areas along the North Pacific Coast were reclassified from *Approved* to *Conditionally Approved,* and in 2013, one area near the city of Ocean Shores was downgraded to *Prohibited* because of high bacteria sampling results. (See map on next page.)

Water Quality Standards protect people from bacteria contamination

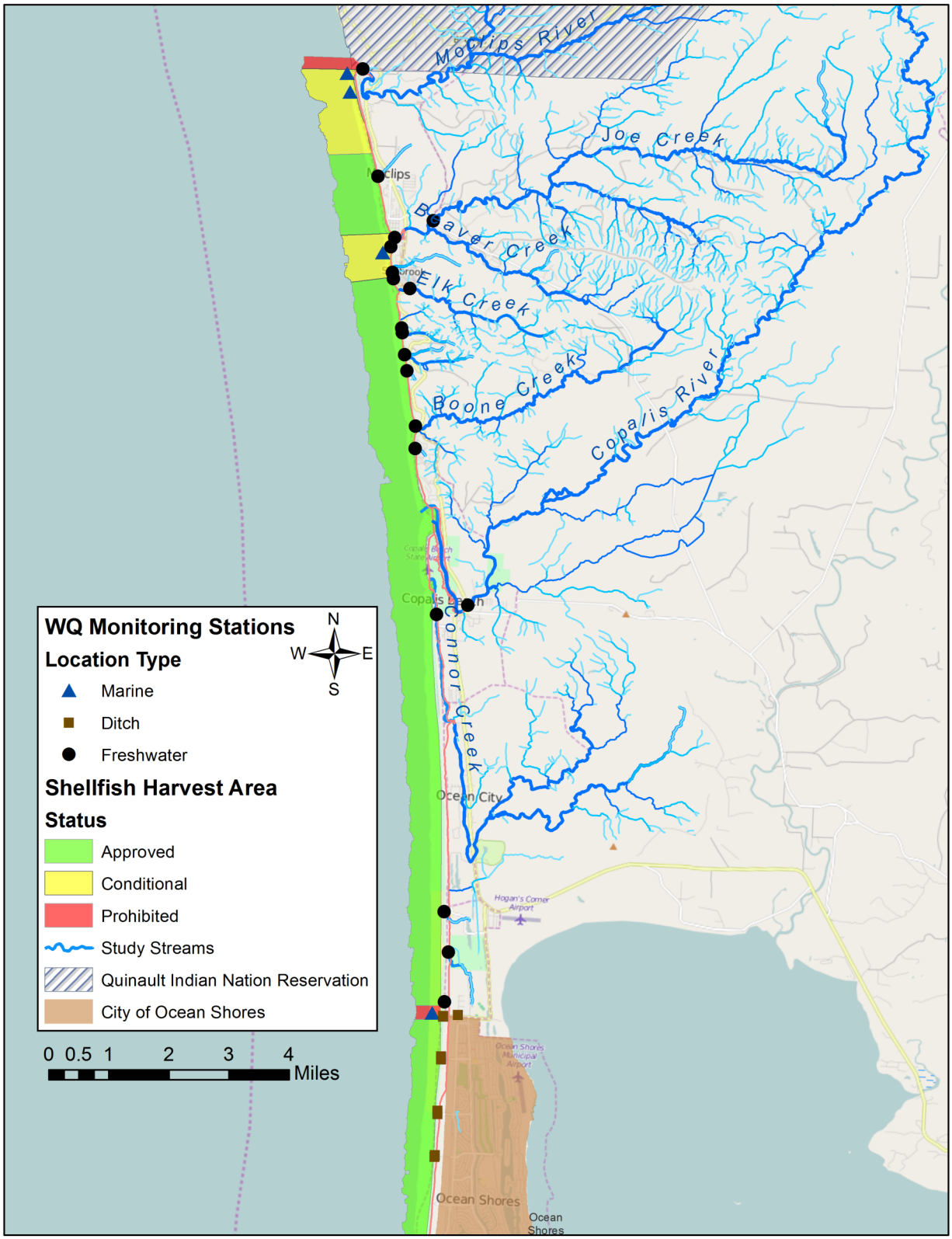
Washington State's water quality standards (WQS) and the National Sanitation and Shellfish Program set limits for FC bacteria to protect people from getting sick from eating contaminated shellfish.

Bacteria study, 2014-2015

The Washington State Department of Ecology (Ecology) completed a study to identify sources of FC bacteria in order to protect recreational razor clam digging areas along the coast from Ocean Shores north to the Moclips River.

Ecology sampled for FC bacteria at the mouths of significant tributaries and stormwater ditches that drain to shellfish harvest areas between Ocean Shores and Moclips as well as marine waters at these beaches.

Our data, and data collected by the Washington State Department of Health and the Quinault Indian Nation, are assessed and summarized in the *North Pacific Coast Beaches Fecal Coliform Bacteria Source Investigation Study: Data Summary* at https://fortress.wa.gov/ecy/publications/SummaryPages/1603021.html. These results are also included in an online web map. The document, web map, and other links can be found on the project website at: http://www.ecy.wa.gov/programs/wq/tmdl/NBeachShellfish/



North coast study area with sampling sites and 2015 Washington State Department of Health (DOH) shellfish classifications.

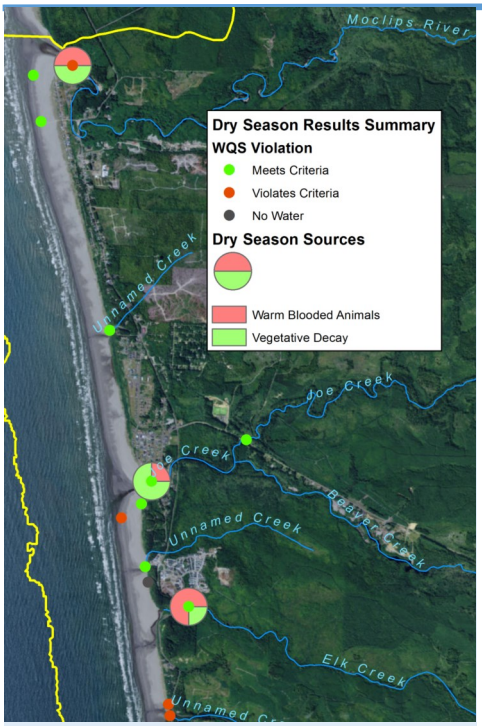


Figure 1: Dry-season bacteria results for the northern portion of the study area near Moclips, WA.

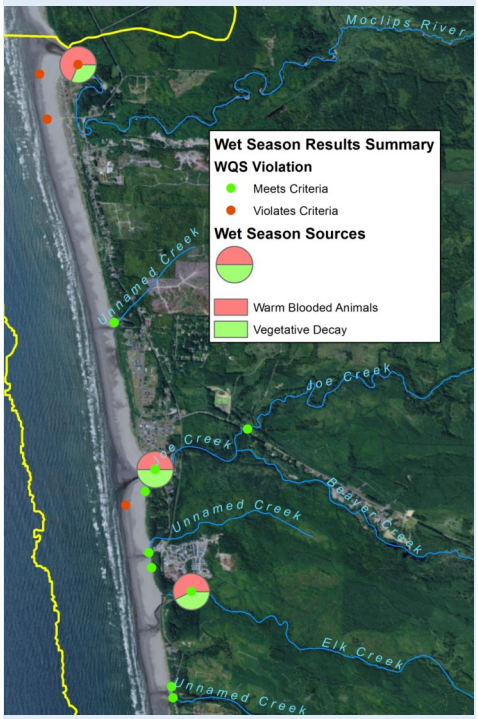


Figure 2: Wet-season bacteria results for the area around Moclips, WA.

Study findings

Some freshwater rivers and creeks have high FC levels during the dry season (June-September). Stormwater conveyance ditches typically have high FC levels during the wet season (October-May).

Sampling during the dry-season and wet-season

Because FC sources may vary at different times of the year, we summarized results from the dry season to determine pollution patterns during that period. During the dry season, FC concentrations reflect more direct FC sources in rivers and streams.

Our dry-season source analysis looked at general types of bacteria in rivers and creeks. Results showed that FC bacteria levels from vegetative decay were generally higher than FC bacteria levels from humans and other warm-blooded animals during this season.

During the wet season, we expect to find higher bacteria levels because storm runoff tends to flush bacteria and other pollutants from where they accumulate on land and into rivers, creeks, and stormwater ditches.

An analysis of all data collected during the study confirmed that most FC sources throughout the year are warm-blooded animals, including humans, with the exception of sources to Joe Creek.

Sampling during a storm-event

Beach samples generally showed higher FC levels during the wet season, and levels peaked during storm-event sampling. The exception is the beach area just north of Ocean Shores, which showed bacteria levels were higher during summer months. Summer sampling didn't immediately follow any significant beach recreation events (4th of July, for example). But storm-event sampling showed that "first flush" storm events can quickly increase FC levels that violate water quality criteria along the beach and in rivers when rain washes bacteria off the land surface and into surface waters.

We sampled sites during a single storm event. We found high FC levels at all of these locations, along with several other sites that were not violating the criteria during the wet season. FC concentrations peaked immediately following storm events.

These event-driven problems could possibly be the result of (1) animal or human feces that build up during dry periods between storm events or (2) failing infrastructure such as sewer overflows and residential onsite sewage systems (OSSs). There could also be increases in natural sources due to rising rivers washing away raccoon latrine areas or other places where wildlife concentrate fecal matter near a river or stream.

Contact

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Websites

To track this project, follow Ecology's website at:
http://www.ecy.wa.gov/programs/wq/tmdl/NBeachShellfish/

This four-page document is at:
https://fortress.wa.gov/ecy/publications/SummaryPages/1603024.html

Shellfish harvest license and current harvest area closure information can be found on Washington Department of Fish and Wildlife's website:
http://wdfw.wa.gov/fishing/shellfish/razorclams/current.html

Accommodations requests

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-407-6764.

Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

Fix what we can

Bacteria from humans

Most polluted sites we found were in human-populated areas. These study results can be used to identify and correct problems related to human-caused sources. The Department of Ecology, the state departments of Parks, Health, and Fish & Wildlife, the Quinault Indian Nation, and Grays Harbor County are working together to reduce this problem.

Correction of OSS problems is within the jurisdiction of the Grays Harbor County Environmental Health Department. Over the last two years, the county has been inventorying OSSs within the North Coast area to better understand where potentially polluting infrastructure is located. The next steps for the county is to look for failing OSSs in areas where high bacteria problems have been found. They can do that by dye or smoke testing systems to see if the dye or smoke shows up where it shouldn't. OSSs that are found to be failing will need to be fixed. Homeowners may qualify for financial assistance.

In addition to broken infrastructure, such as leaky septic tanks or non-functioning drainfields, OSS failures at vacation homes could be due to a lack of fecal matter in the system to keep the microbiological activity working properly when nobody is home. There are some simple ways homeowners can take care of their septic systems: http://www.ecy.wa.gov/programs/wq/wqguide/septic.html.

Other bacteria problems, indicated by high FC levels from marine samples on the beaches, could be the result of human sources during summer recreation. (See blue side bar on page 1.)

Bacteria from other sources

Bacteria from wildlife —such as raccoons, deer, and seagulls—aren't easy to control.

Other possible sources include pet waste and horse manure on the beach and in the dunes. (See blue sidebar on page 1.)

Summary

The local economy of the North Pacific Coast beach areas relies on razor clam harvests and other beach recreation activities.

State and local governments and the Quinault Indian Nation are partnering to develop and implement a workplan to improve water quality and reduce or eliminate bacteria pollution. The workplan identifies specific activities that each of these partners will need to do to reduce FC bacteria sources from humans.

It is also up to everyone who lives and recreates along the beach areas to do what they can to ensure that shellfish harvest areas are protected and continue to stay clean.