Threats and Barriers to Improved Water Quality in the Five Mile River Watershed

Where does residential pollution come from?
(clockwise from top right):

- Leaking oil or fluids from our cars & trucks
- Excess Nutrients from lawn care activities and application of too much fertilizer
- Conditions that support concentrated, year-round populations of wildlife
- On-site septic systems that have not been properly maintained & are not operating correctly
- Poorly managed grass clippings near our streams
- Un-managed or inappropriately disposed pet waste
- Lack of riparian (streamside) buffers

More than **80%** of the Five Mile watershed area is used for residential homes & yards. That means that many of the pollution problems are originating from residential uses. Pollution is coming from...***US*** and the things we do in the watershed!

Each time it rains, stormwater flows over driveways, lawns, and sidewalks, it picks up trash & debris, chemicals, dirt, and other pollutants, and travels toward our streams.

Think the little bit of *your yard* doesn't matter? There are over **8,000** households in the watershed –each little bit adds up to a lot of pollution fast!

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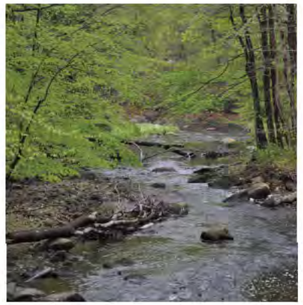
City of Norwalk
Conservation Office
City Hall, Room 215
Norwalk, CT 06856-5125

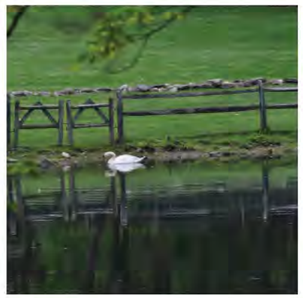
Watershed Report Card

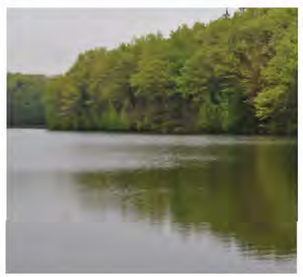
A Summary of the Water Quality of the Five Mile River Watershed

Summer 2012

How is *your* neighborhood river doing?







The Five Mile River Watershed is a 7,995 acre area that drains into the Five Mile River and out to Long Island Sound. The Five Mile watershed extends across parts of New Canaan, Norwalk, and Darien. The watershed includes streams that feed the Five Mile River (tributaries), such as Father Peter's Brook, Holy Ghost Father's Brook and Keeler's Brook.

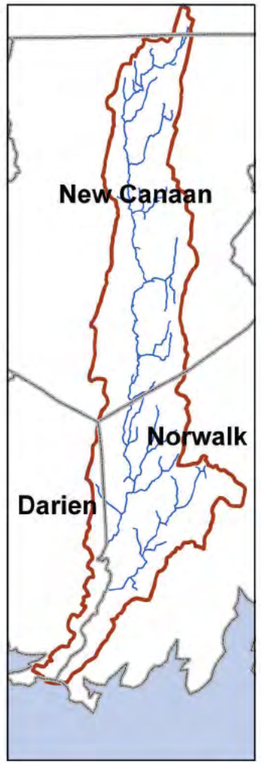
Everyone lives in a watershed. A watershed is an area of land that drains into a particular brook, stream or river. Look at the map inside - if you live in the area within the red line, you live within the Five Mile River Watershed.

Why does that matter? The everyday activities that we do within the watershed directly impacts the health of the river and Long Island Sound!

The Five Mile River and its tributaries are our neighborhood rivers—have you taken a look at them lately? How are they doing?

How is *your* Five Mile River doing?

(turn the page to find out!)



How do you measure the health of a river system?

There are many ways to evaluate the health of a river. Some are *qualitative*— Does the river look good? Are there enough trees along the bank? Are there fish in there? Are the banks eroded? Is beautiful & scenic? Other evaluation methods are more *quantitative* and measure specific parameters of water quality.

The **water quality** of a river system can tell a lot about the health of the watershed as a whole. Specific, measurable parameters include water temperature, turbidity, nutrients, dissolved oxygen and indicator bacteria.

When there 's too much of any of these parameters, it is ... ***pollution!***

Water Quality Monitoring

A water quality monitoring program collects a suite of information from our streams & rivers that can be used to assess watershed health.

Watershed-wide monitoring of the Five Mile by Harbor Watch began in the summer of 2011 and continues today. Summer monitoring occurs roughly two times a month at the same set of sample sites (see the map to the right).

Harbor Watch collects a lot of information, but we will focus here on two parameters: **indicator bacteria and nutrients.**

Indicator bacteria (*Eshelieria coli*) point to the potential presence of contamination by human or animal waste. It is pretty easy to figure out why too much of this parameter is a problem!

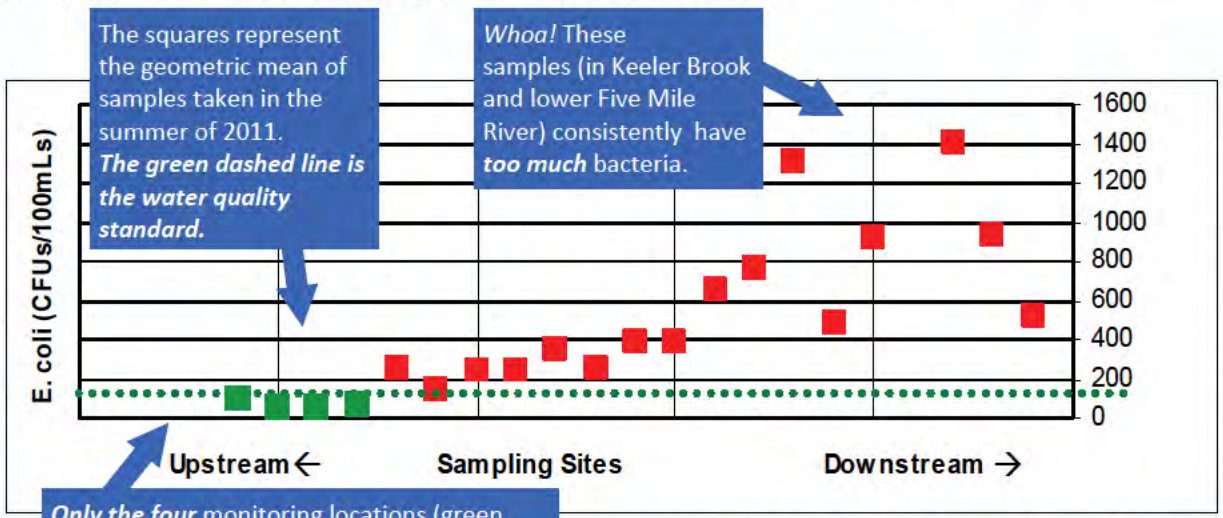
Nutrients include Total Nitrogen (TN) & Total Phosphorus (TP). Too many nutrients can result in algae blooms and oxygen-depleted 'dead zones'.

Dick Harris of Harbor Watch taking a water sample!

Results of the Monitoring

Though regular monitoring has just begun, we can use what we have to gauge the relative health of the river and its watershed.

The map and the graph illustrate the results of **Indicator Bacteria** monitoring. In general, most of the watershed's waters have too much bacteria pollution.



Only the four monitoring locations (green symbols) in northernmost New Canaan met the standard for bacteria. All of the other locations did not meet this water quality standard during 2011 monitoring.

TIP! *The red and green symbols on the map (on right) show the locations of the monitoring sites. The information in the graph above is arranged upstream to downstream and shows the bacteria quantities from the same locations shown on the map.*

The monitoring also indicates that there are too many **nutrients** (nitrogen and phosphorus) in our waters. Excessively high nutrient levels can lead to toxic conditions for fish & wildlife.

See the chart below for an overview of the monitoring results.

	OVERALL STATUS in WATERSHED	What is the ISSUE?	POTENTIAL POLLUTION SOURCES	WHAT YOU CAN DO
Indicator Bacteria (*E. coli*)	Too High	*E. coli* is an indicator bacteria...its quantity in a water sample *indicates* the likely presence of potentially harmful bacteria and pathogens in the water. When levels of indicator bacteria are too high, swimming areas and beaches are closed & oyster beds can be deemed unfit for consumption.	• Inappropriately disposed pet waste • Improperly functioning on-site septic systems • Concentrated populations of wildlife • Stormwater runoff—the water that goes into catch basins is NOT treated before emptying into our streams	• If you have a pet, dispose of waste in the toilet or trash—never the storm drain! • Learn more about the proper use & maintenance of your on-site system. Pump your tank every 3 years. • Don't feed wildlife.
Nutrients (Nitrogen & Phosphorus)	Too High	Too many nutrients in the water fuel dense algae blooms. These blooms smother & block sunlight to native vegetation, turning ponds green. Algae blooms also rob the water of oxygen—a condition called hypoxia. This forces fish to either swim away or die. Our rivers empty into Long Island Sound, & nutrient pollution causes hypoxia in the Sound.	• Excessive applications of lawn fertilizers • Improperly disposed grass clippings. Grass contains a lot of nitrogen. • Stormwater runoff—which has collected pollutants from yards, driveways, roads, etc. • Permitted discharges.	• Do a simple soil test to determine what your lawn really needs before fertilizing. • Keep your mower deck high & leave the clippings on your lawn. • Plant a streamside buffer or a rain garden. The plants use the nutrients.

What Can I Do? Contact your local Conservation Office or Inland Wetlands Department to learn what your municipality and the State of Connecticut are doing to improve the Five Mile River Watershed. With the oversight of the South Western Regional Planning Agency (http://www.swrpa.org), a Watershed-based Plan is being developed for the Five Mile River Watershed.

You are a very important part in the successful implementation of the Watershed-based Plan—contact us to learn more!