



CONNECTICUT RIVER WATCH PROGRAM

Connecticut River Coastal Conservation District, Inc.
deKoven House Community Center ▪ 27 Washington Street ▪ Middletown, CT 06457
phone (860) 346-3282 ▪ fax (860) 346-3284 ▪ www.conservect.org/ctrivercoastal

Coginchaug River Watershed Water Quality Results Summary—2008

The Connecticut River Coastal Conservation District (the District) conducted a water quality study in the Coginchaug River Watershed to address recommendations in the recently completed watershed-based plan. Monitoring activities were conducted with the help of volunteers as part of the District's Connecticut River Watch Program.

A monitoring plan was developed jointly with the Natural Resources Conservation Service to support efforts to implement the Department of Environmental Protection (DEP) bacteria TMDL for the Mattabeset River Watershed. Goals of the water quality study were: to locate areas contributing to bacteria loading in the Coginchaug, and to build public awareness of water quality issues and human impacts on rivers. Fifteen (15) sample sites were selected on major tributaries near their confluence with the Coginchaug River to help determine whether, and to what extent, the tributaries were contributing to bacteria levels documented in the main stem (see site list below).

The District recruited and trained twelve (12) volunteers from the community to collect water samples for bacteria testing, and provided them with sampling supplies and resource materials, including a volunteer water sampling manual. Samples were collected four times on a bi-weekly schedule from July through September. Volunteers also measured air and water temperature, and made observations of water level, color and odor at each site. Samples were analyzed for one type of indicator bacteria, *Escherichia coli* (*E. coli*), at the State Public Health Laboratory in collaboration with municipal health department staff. The monitoring activities were conducted according to procedures outlined in a Quality Assurance Project Plan developed by the District and approved by DEP and EPA.

2008 Coginchaug River Watershed Sites

Stream	Town	Location
Unnamed Tributary (Crooked Hill area)	Durham	Rte. 77
Chalker Brook	Durham	South End Ave
Creampot Brook	Durham	South End Ave
Parmalee Brook	Durham	Parmalee Hill Road
Fowler Brook	Durham	off of Cherry Lane
Hersig Brook	Durham	Pickett Lane
Sawmill Brook	Durham	Rte. 68
Allyn Brook	Durham	Rte. 68
Lyman Meadow Brook	Middlefield	Rte. 147
Ellen Doyle Brook	Middlefield	Strickland Road
Hans Brook	Middlefield	Rte. 157
Wadsworth Brook	Middletown	Wadsworth Falls SP, Main Trail crossing
Swimming Pond (outlet)	Middletown	Wadsworth Falls SP
Laurel Brook	Middletown	Wadsworth Falls SP
Butternut Pond (outlet)	Middletown	Washington Street

Sampling coincided with rain of varying degrees preceding three of four sample days.¹ On two of these days there was enough rain to qualify as “wet condition,” as defined by the CT DEP.² Therefore, run-off was not likely a major contributing factor in the overall water quality results.

Following is a summary of key findings (data are attached).

Indicator Bacteria—*E. coli*

- Twelve of the fifteen Coginchaug watershed sites (80%) exceeded the geometric mean criterion³ for *E. coli* in CT’s Water Quality Standards.
- Of the 66 samples collected over the course of the summer, twenty-five (25), or 38%, exceeded the single sample criterion for *E. coli* in CT’s Water Quality Standards.
- Wet weather appears to have contributed to consistently higher bacteria levels on one of the days qualifying as “wet condition.”⁴ Bacteria levels were very elevated on this day (August 6, 2008)—far exceeding the single sample criterion—at ten of the fifteen sites. On the other “wet condition” day (July 23, 2008), rainfall amounts were not as significant, and for the most part, the rain was just beginning when samples were being collected.⁵
- At four of the sites the single sample criterion was exceeded only on the rainiest sample day, pointing toward runoff related sources. These sites include: Chalker Brook, Allyn Brook, Wadsworth Brook and Butternut Pond. At the remaining sites, the single sample criterion was also exceeded in relatively dry conditions, pointing toward a combination of chronic and runoff related sources.
- Levels exceeded the single sample criterion on all four sample days at two sites: Lyman Meadow Brook and Laurel Brook. Levels exceeded the single sample criterion on three or the four sample days at two sites: Fowler Brook and Sawmill Brook.
- Bacteria “hot-spots,” where levels were highest, include Lyman Meadow Brook (geo-mean of 3305); Laurel Brook (geo-mean of 1330); Fowler Brook (geo-mean of 763); and Sawmill Brook (geo-mean of 557).

Indicator Bacteria: The presence of certain bacteria in water indicates that human sewage or animal manure is present. While not harmful themselves, they are indicators of other disease-causing organisms. When bacteria counts are over a certain level there may be a health risk from water contact. *E. coli* are the indicator bacteria used by the State of CT for freshwater, to evaluate general sanitary conditions and determine whether established bathing areas are safe for swimming. Sources include wastewater treatment plants, on-site septic systems, domestic and wild animal manure, urban runoff, and others.

¹ Rainfall data collected by the WeatherBug Tracking Station at Coginchaug Regional High School, Durham

² Wet condition as defined by the DEP is more than 0.1” precipitation in 24 hours before sampling, 0.25” in 48 hours before sampling, or 2.0” in 96 hours before sampling

³ Geometric mean is an average value that reduces the influence of very high or low values

⁴ On August 6, 2008, 0.14” of rain fell between 4:00 and 7:00 am, and 0.17” of rain fell between 7:00 and 8:00 am, for a total of 0.31”. This was the first rain following three days of dry weather.

⁵ On July 23, 2008, 0.13” of rain fell between 7:00 and 8:00 am. According to samplers, 7 samples were taken during light rain and 6 during rainy conditions.