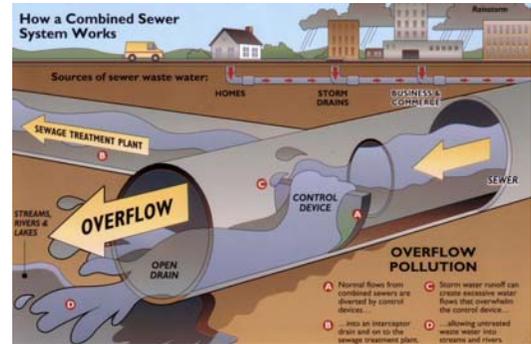


Enterococci and Raw Sewage at the 125th Street Combined Sewer Overflow: Environmental Issues and Policy Recommendations for the Waterfront Development in Manhattanville

In 2004 Enterococci replaced Fecal Coliform as the new federal standard for water quality at public beaches. Enterococci provides a higher correlation than fecal coliform with many of the human pathogens often found in sewage. The Federal BEACHES Act requires states to adopt EPA's published indicators for protective water quality standards. For marine waters, no single enterococcus reading may exceed 104 cells/100ml, and the mean measurement is not to exceed 35 cells/100ml. This project monitors these levels at the Harlem Piers, along with total coliform, *E.coli*, salinity, turbidity, suspended matter, precipitation, tides, organic/inorganic matter, and temperature. Past data collected by the NYC DEC at other locations can be seen below.



When heavy rainfalls occur, raw sewage legally flows into the Hudson River. Outflows of sewage are caused by combined sewer overflows (CSOs). Combined sewer systems are designed to collect a combination of building waste and street drainage. Precipitation can create an overwhelming volume of wastewater, which often exceeds the treatment plant's capacity for processing. In this event, the excess is diverted directly to the river without treatment. Raw sewage contains various forms of fecal bacteria, including *enterococci*. These microbes are not dangerous themselves, but are used to indicate the presence of pathogens such as *Salmonella*, *Shigella* and *E. coli*, which can cause gastrointestinal disease and other ailments in humans. Combined sewer overflows may expel the sewage during heavy rainfalls, but surprisingly, *enterococci* can still be detected during dry periods.

TABLE 3-1: 2003 Monthly Geometric Means for Areas of High Enterococcus in New York Harbor

Location	Region	2003 Enterococcus Monthly Geometric Mean (cells/100ml)			
		June	July	August	September
K3	Kills	111	16	6	90
K4	Kills	29	6	9	39
G2	Gowanus Canal	113	28	16	177
H3	Harlem River	62	39	87	39
E14	East River (NEWYORK)	54	16	77	16

Turbidity is measured using a secchi disk, seen below with NYC DEC secchi depth readings in Jamaica Bay.

FIGURE 7-1: Jamaica Bay Secchi Depth, Summer Mean with 2 Standard Errors (1986-2003)

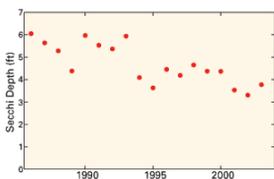


TABLE 4-1 Monthly Precipitation, May to September Long-term Average and 2003 Totals

Month	Normal (inches)	2003 (inches)
May	4.69	3.40
June	3.94	10.26
July	4.62	3.76
August	4.22	5.85
September	4.23	6.03
Total	21.60	29.30

Source: Central Park, NYC, National Climate Data Center

References:

2003 New York Harbor Water Quality Report, New York City Department of Environmental Protection
http://www.moundsvillewwtp.com/CSO_Diagram1.jpg
<http://www4.agr.gc.ca/resources/prod/img/pfra/water/cooper7.jpg>

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