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Milwaukee Metropolitan Sewerage District

The Milwaukee Metropolitan Sewerage District is responsible for providing sewage services to the City of Milwaukee and most of Milwaukee County, as well as to several municipalities in surrounding counties. Wastewater from local sewer systems flows into the District's system of collector sewers before it is treated or temporarily stored in 19.4 miles of tunnels at depths of up to 325 feet, which are known as the Deep Tunnel. Both the collector sewers and the Deep Tunnel are part of a comprehensive, multi-year, \$2.3 billion sewer improvement program that the District began in 1986 to comply with federal water quality standards by reducing the amount of untreated sewage discharged into local waterways.

Sewer Overflows Have Not Been Reduced to the Extent Anticipated

The Deep Tunnel has reduced both the number and the volume of sewer overflows in the Milwaukee area. The average discharge of untreated wastewater has been reduced by 7.2 billion gallons annually, which is an 81.3 percent reduction from estimated pre-tunnel levels. Nevertheless, at the time of construction, the Deep Tunnel was expected to virtually eliminate sanitary sewer overflows, which discharge waste from homes and businesses, and to limit overflows from sewers that combine sanitary sewage and stormwater to an average of 1.4 per year. Contrary to these expectations, there has been an average of 4.9 sanitary sewer overflows and 3.0 combined sewer overflows annually since the Deep Tunnel went into operation.

In total, the District has discharged 13.2 billion gallons of untreated wastewater since the Deep Tunnel began operation in 1994: 12.3 billion gallons from combined sewer overflows, which were allowed under an operating permit issued by the Department of Natural Resources (DNR), and 936.7 million gallons from sanitary sewer overflows.

Sewer Overflows Have Multiple Causes

A combination of factors has resulted in more overflows than were expected, including large storms in recent years, stormwater infiltration into sewers, capacity issues in the Deep Tunnel and the District's sewers and treatment facilities, and operational policies that have exacerbated overflows. Approximately 64 percent of the overflow since 1994 was discharged because the District's system could not capture wastewater generated by storms of a size it was designed to handle.

Capacity has been limited by a 17.4 percent increase in water inflow and infiltration into the sewer systems of the municipalities served by the District, a problem caused by siphons that limit the amount of wastewater conveyed to one of the District's two treatment plants, sediment deposits in the Deep Tunnel, and policies and strategies adopted by the District and its private contractor. For example, a total of 107 million gallons of untreated wastewater was discharged since June 1999 during six overflows that occurred because the contractor had temporarily turned off Deep Tunnel pumps while switching to a lower-cost source of electricity.

Plans to Increase Capacity and Reduce Flooding Will Be Costly

To address the limitations of its sewer system, the District plans to spend \$786.4 million on projects that include constructing 116.0 million gallons of additional storage capacity for sanitary sewage, improving its conveyance system,

purchasing equipment to improve its ability to predict storage capacity needs, and increasing treatment plant capacity.

In addition, to reduce the amount of stormwater entering its sewer system, the District has funded \$2.1 million in local demonstration projects and adopted new limits that are intended to reduce inflow and infiltration by 5 percent district-wide through 2010. It also requires municipalities to include runoff management systems as part of their development plans.

Through 2001, the District spent \$133.8 million for watercourse improvement projects that are expected to reduce flood damage and sewer overflows and to improve water quality. The costs of these projects have been higher than the District anticipated. For example, the Lincoln Creek flood control project, which is in the Milwaukee River watershed, cost 63.9 percent more than original project estimates. The District plans to spend a total of \$410.0 million for watercourse improvement projects through 2010, including \$131.3 million for the Milwaukee River watershed and \$192.0 million for the Menomonee River watershed.

Water Quality Has Improved in Parts of the District's Service Area

Our review of water quality monitoring data suggests water quality has generally improved within the City of Milwaukee and the Village of Shorewood, where stormwater and sanitary sewers are combined. However, water quality outside of the combined sewer area has not improved substantially since 1994. Furthermore, despite improvements within the combined sewer area, a DNR report indicates neither Lake Michigan nor Milwaukee-area rivers currently meet designated water quality standards specified in federal and state law. Other sources of pollution, including nonpoint sources, continue to adversely affect water quality in the District's service area.

The District May Not Have Met All Conditions of Its Permit

Our review of overflow data indicates that in four instances between 1994 and 2001, the District did not submit timely reports to DNR on sewer overflows that released approximately 90,000 gallons of untreated wastewater into Milwaukee-area waterways. The District ultimately reported these overflows in a quarterly report to DNR. In addition, based on our review of available information, the District exceeded groundwater standards for coliform bacteria in at least 29 wells since 1995, and the Deep Tunnel was filled to a higher level than the permitted maximum five times since 1994. These isolated violations of permit conditions did not result in formal enforcement actions by DNR.

[full report, PDF file \(1,380KB\)](#)