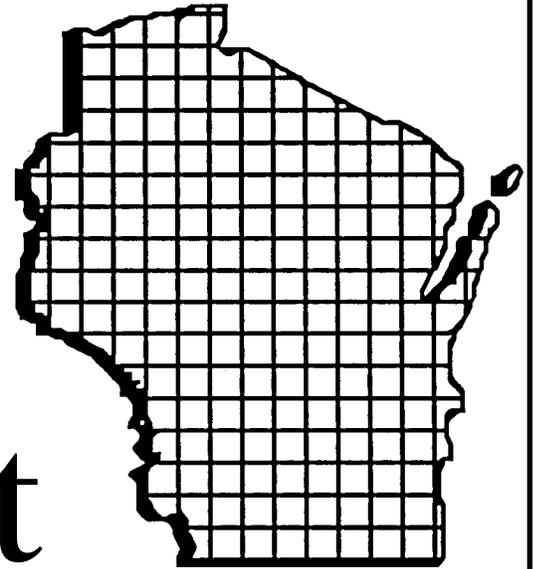


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# Government Pollution

*The Metropolitan  
Milwaukee Sewerage  
District's Impact on  
Lake Michigan*

## REPORT FROM THE PRESIDENT:

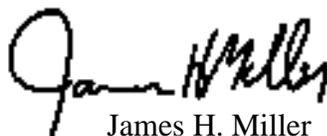
Today the Metropolitan Milwaukee Sewerage District (MMSD) continues to fail to improve water quality in Lake Michigan. For over one hundred years Wisconsin citizens have paid taxes to have sewage removed from their homes and treated properly. It was never their intent to have their sewage pollute the lake from which they obtain their drinking water. Wisconsin taxpayers need to demand accountability for this failure. This study by Susan Hein, a visiting fellow at WPRI with a masters degree in Urban and Regional Planning from the University of Wisconsin-Milwaukee, documents the failures of the MMSD.

This report uses over 170 endnote references to track the evolution of MMSD and its inability over the years to meet its goals to "preserve the environment" and "protect water quality." Started in 1977, MMSD's water pollution abatement program developed into Wisconsin's largest public works project costing nearly \$3 billion for a state-of-the-art sewerage system. The intent of this system was to improve the quality of Lake Michigan and at the same time decrease dumping into the lake. By any indicators this has failed. In fact MMSD is now asking taxpayers for billions of additional dollars to make improvements on a system that clearly did not meet its original expectations.

Furthermore, MMSD spends millions of taxpayer's dollars on public relations to create a positive spin. Since they are a monopoly, why do they need public relations? Simply, the facts demonstrate they are inept in their role. A recent study by one of their own consultants reported that the sewerage district might have underestimated by 72% the amount of raw sewage dumped into the lake. The actual sewage dumped into Lake Michigan could be over 20 billion gallons rather than the reported 13 billion. This is simply unacceptable.

The lack of accountability is breathtaking. Can you imagine if a private corporation dumped pollutants into Lake Michigan and then tried to cover it up? There would be groups of outraged environmentalists and government bureaucrats crusading to penalize the companies. None of that happens with MMSD. Government bureaucrats seem to be extremely reluctant to penalize another government agency. The environmentalists are strangely silent. It appears that the only people these zealots are interested in pursuing are private companies. Clearly they have no interest in holding a public institution accountable for creating more environmental hazards in Lake Michigan than all the corporations put together.

It is time to change the way MMSD is run. The public — if it is interested in Lake Michigan providing drinking water and recreational opportunities for the next generation — needs to hold elected officials responsible for this institution that has gotten dramatically out of control. Government bureaucrats are not going to clean up this mess without pressure from the citizens of Wisconsin.



James H. Miller

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## GOVERNMENT POLLUTION

### *The Metropolitan Milwaukee Sewerage District's Impact on Lake Michigan*

SUSAN S. HEIN

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## EXECUTIVE SUMMARY

Milwaukee metropolitan area taxpayers paid almost \$3 billion for the Water Pollution Abatement Program (WPAP), Wisconsin's largest public works project spanning roughly from 1977 to 1996. The goal of WPAP was to increase the capacity of the Milwaukee Metropolitan Sewerage District's (MMSD) sewage treatment system. By increasing the capacity of the system, sewage overflows would be eliminated and water quality would improve. Unfortunately, sewage overflows continue to plague the MMSD system and criticism is growing. Newspaper headlines are reminiscent of headlines in the pre-WPAP days. Even the federal Environmental Protection Agency (EPA) and the Wisconsin Department of Natural Resources (DNR) have come under fire for not being tough enough with the MMSD. Now taxpayers are funding current and planned MMSD projects that will cost nearly \$2 billion, and the sewage continues to overflow into the rivers and Lake Michigan.

The Water Pollution Abatement Program was the result of a court settlement in 1977 between the DNR and the MMSD. The agreement was settled in court because the MMSD sued the DNR to halt enforcement of new federal sewage discharge standards, which were a result of an amendment to the federal Clean Water Act. The tactic of challenging the EPA and the DNR occurred frequently and continues to this day.

To increase the capacity of the sewerage system, upgrades were made to the sewage treatment plants, and a system of deep tunnels was built 300 feet under the Milwaukee metropolitan area. The deep tunnels were to hold up to 400 million gallons of sewage if the system's capacity was overloaded and store the wastewater until it could be processed. The commonly held expectation was that sanitary sewer overflows would be eliminated and that combined sewer overflows would be reduced to no more than two annually. This did not happen. Since the tunnels opened in 1994, more than 13 billion gallons of wastewater have been dumped into the local waterways. To make things more confusing, the DNR allows up to six overflows annually from the combined sewers; however, the EPA wants the MMSD to start measuring the overflows by volume instead of by incidence.

Problems have plagued the tunnels since their construction. Buildings in Milwaukee's downtown were damaged during the boring process, causing millions of dollars in damages. In addition, striking workers and general cost overruns dramatically increased the amount the MMSD paid for the tunnels. After the tunnels began to work, more problems were discovered. Outward leakage of sewage was discovered after the MMSD made assurances that the tunnels would not leak. Ironically, the MMSD had opposed concrete linings in the tunnels, which were favored by the EPA and the DNR. The MMSD even challenged the DNR in court over this issue. Additionally, too much water is leaking into the tunnels, according to federal and state standards.

Wisconsin lawmakers were not satisfied with the performance of the deep tunnels and required the MMSD to inspect the tunnels fully; they also called upon the Legislative Audit Bureau to perform an audit. The July 2002 audit was the Legislative Audit Bureau's third audit regarding the Water Pollution Abatement Program. The MMSD has continued to defend its record, stating that the tunnels are working as they had been designed to work. The MMSD chooses to focus on the gallons captured by the deep tunnel rather than the gallons that overflow. It tends to redirect critical attention by focusing on a comparison of the district's overflow record to other districts' overflow records instead of comparing current results to what people had expected from the tunnel project.

Some changes have been made recently. In another irony, there are now discussions about separating parts of the combined sewer area as part of the MMSD's future projects. This alternative had previously been discarded because it was deemed too costly in comparison to the deep tunnel alternative. At the federal and state level, the EPA has toughened its stance on water quality standards, and the DNR planned to clarify its standard for sanitary sewage overflows because the EPA and the DNR were interpreting water quality laws differently.

So, what does this mean for the taxpayer? After paying nearly \$3 billion for one solution that is not achieving its objectives, the MMSD is planning more projects to be funded with more taxpayer dollars. Throughout the WPAP project, the MMSD opposed upgrades, modifications, and changes requested by the EPA and the DNR, and it continues this practice today. Several lawsuits had been filed regarding the sewerage projects. The MMSD opposed concrete linings for the tunnels, and there were problems of leakage; it opposed increasing tunnel sizes, yet it now declares that the capacity of the tunnels is inadequate and it is building more capacity. It opposed tougher standards

for the permissible number of sewer overflows, yet it cannot meet the standard it has fought to protect or even the original expectation of zero sanitary sewer overflows and two combined sewer overflows per year. This is unacceptable.

It is time for a change. Periodically, bills have been proposed in the state legislature calling for more accountability from the MMSD and a change in governance. So far, these bills have not passed. However, the MMSD cannot continue to avoid the taxpayers — to whom it does not answer directly, even though taxpayers pay the bills. More accountability is needed. Taxpayers cannot continue to fund expensive projects and not get the results that were expected.

## INTRODUCTION

Since 1977, taxpayers in the Milwaukee metropolitan area have paid nearly \$3 billion for a state-of-the-art sewerage system. Its centerpiece is the Water Pollution Abatement Program (WPAP), completed in 1996. The WPAP, the largest public works project ever undertaken in Wisconsin, increases the capacity of metropolitan-area sewerage treatment plants to handle wastewater. It relies on several components to do this, including a new system of large underground tunnels in which wastewater is stored and treated before it is pumped to the surface for release. As stated originally, the goal of WPAP was to reduce the incidence of sewage overflows — a chronic problem for as long as the area has had a sewerage system — thus improving water quality in Lake Michigan.

Since 1996, however, the sewers have continued to overflow, dumping untreated sewage into Lake Michigan and its waterways on several occasions. On June 12, 2000 for example, 16 million gallons of partially treated sewage were dumped into Lake Michigan after Milwaukee received less than one inch of rain. The MMSD plant manager explained this was necessary to avoid dumping into local rivers.<sup>1</sup> And on April 9, 2001, 193 million gallons of sewage were dumped after only 0.71 inches of rain due to human error.<sup>2</sup> The overflow episodes have been associated with fecal coliform contamination in beach areas (other sources of contamination also have contributed to this problem), forcing beach closings. In addition, WPAP tunnels have been found in at least one instance to leak sewage, contaminating groundwater in violation of the Metropolitan Milwaukee Sewerage District's (MMSD's) operating permit.

It seems to be a *déjà vu* experience. Newspaper headlines in Milwaukee and Chicago highlight ongoing sewage-dumping problems and controversies just as they did more than 30 years ago. (See Appendix A) Officials in Illinois once again point to Milwaukee as a source of lake water contamination, and local environmental groups are demanding once again that the MMSD take steps to prevent sewage overflows. Unsettled technical problems about how best to handle sewage problems continue to provoke disagreement among specialists and politicians, and the responsible agencies — Wisconsin's Department of Natural Resources (DNR) and the federal Environmental Protection Agency (EPA) — have been unable thus far to provide consistent, effective oversight.

For its part the MMSD contends that it has met its permit requirements and that sewage overflows have been reduced, thanks to the WPAP, even though they have not been entirely eliminated. Further improvements have been done and are continuing to be done. Planned projects to be completed by 2011 in combination with the completion of the MMSD's 2020 plan will cost nearly \$2 billion.<sup>3</sup>

The situation overall raises obvious questions. What was the Water Pollution Abatement Program (WPAP)? Were taxpayers misled by early claims about the potential of the WPAP? Why is there so much confusion about its objectives? To what extent have those objectives been met? Why is the MMSD now planning to spend \$2 billion more to address issues for which taxpayers may believe they have already paid?

## FROM OUTHOUSES TO THE MMSD<sup>4</sup>

Sewage disposal in Milwaukee had simple beginnings in the latter half of the 19th century; human waste was deposited in outhouses. Outhouses were abandoned as more and more bathrooms were built inside homes, but this development created a new problem, since sewage had to be carried away from houses and neighborhoods. Underground pipes were constructed to carry sewage into the Milwaukee, Menomonee, and Kinnickinnic Rivers. These early sewers served a dual purpose: removing sewage and diverting rainwater from the roadways, where horses and carriages might otherwise get bogged down.<sup>5</sup>

The sewage found its way into Lake Michigan — a result that bothered few people at a time when the lake was regarded as a resource to be used chiefly for navigation. By the 1870s, however, early signs of trouble were marked by times when the smell in downtown Milwaukee became unbearable after heavy spells of sewage dumping. The following timeline outlines the highlights of sewerage history in Milwaukee.

1869 . . . . . Board of Public Works was created and was made responsible for sewage disposal.

1879 . . . . . Milwaukee Common Council hired three engineers to review the polluted lakefront problem, and a sewage disposal plant was recommended. It was not built.

1880-1886. . Intercepting sewers were built to capture sewage intended for the Menomonee River. Special assessments on lots and a sewer tax on real estate funded the cost of the intercepting sewers. A pumping station on Jones Island would send the sewage far into the lake.

- 1887-1888. . Milwaukee's common council voted for the construction of a flushing tunnel for the Milwaukee River. This would pump water from Lake Michigan to the river to flush out odors and bacteria and to increase the oxygen level of the river. This was approximately one-third the cost of the intercepting sewer system.
- 1889 . . . . . A sewage disposal plant was recommended again. There was only limited support for it so it was never built.
- 1900 . . . . . The sewage disposal plant idea was revisited due to an increasingly contaminated water supply. Water was drawn from Lake Michigan and used by Milwaukee residents without any type of treatment. Contributing to the contamination of the water supply was the population growth of the city and the absence of intercepting sewers in the suburbs. It was around this time that the sewage disposal issue first became overtly political. The Socialists wanted a water purification plant and the expansion of water intake pipes into the lake, and they wanted this under the control of the mayor and common council. This alternative was less expensive and would allow leftover funds to be used for a municipal light plant. The Nonpartisans, the Socialist's opposing party, wanted a sewage treatment plant.
- 1907 . . . . . A flushing tunnel was constructed for the Kinnickinnic River.
- 1909 . . . . . A typhoid scare that occurred during the summer caused the common council to authorize a study to investigate sewage disposal as a means of water purification. The study revealed that either a water purification plant or a sewage disposal plant would work, but the study recommended that both be used in conjunction with one another.
- 1910 . . . . . The State Hygiene Laboratory determined that contamination of the lake extended seven miles from shore.
- 1912 . . . . . Milwaukee's Health Department tested city hall water and found it was contaminated 40 percent of the time. The health department recommended a sewage treatment plant.
- 1913 . . . . . Milwaukee Sewerage Commission was created to address the city's sewage needs.
- 1920 . . . . . Conditions continued to worsen. Milwaukee's health department recommended that water from the lake be boiled before use. Moreover, Milwaukee's city comptroller declared the city was near its debt limit and could not construct a sewage treatment plant and a water filtration plant.
- 1921 . . . . . The Metropolitan Sewerage Commission was created to address sewage needs outside the city of Milwaukee but within the boundaries of Milwaukee County. It acted as an extension of the Milwaukee Sewerage Commission. The intercepting sewers in the county were connected to the city's intercepting sewers. Milwaukee County taxpayers funded the construction of the sewage disposal plant, and a countywide property assessment funded annual operational costs.
- 1922 . . . . . The Milwaukee common council voted to postpone the construction of a water filtration plant.
- 1925 . . . . . Jones Island Sewage Treatment Plant started operation using a state-of-the-art activated sludge process.<sup>6</sup> In its first five years of operation, the output of treated sewage increased from 85 tons to 200 tons per day.
- 1934 . . . . . Construction began on a water purification plant. Milwaukee was now at the forefront of water purification.

Even though Milwaukee developed state-of-the-art facilities for treating sewage and purifying water in the 1920s and 1930s, water quality deteriorated again after World War II with the population boom and the expansion of industries in Milwaukee and the county. Expansions of sewage treatment capacity were needed. The Jones Island plant was expanded in 1952, and the South Shore sewage treatment plant opened in 1968 as a relief facility for Jones Island.<sup>7</sup> Expansions were again provided in 1968 and 1974. Attention to water quality continued to increase during the 1960s and 1970s, as government agencies focused increasingly on environmental issues.

In 1982 the Milwaukee Metropolitan Sewerage Commission was created by the State Legislature while disbanding the Milwaukee Sewerage Commission and the Milwaukee County Sewerage Commission. The Commission establishes and enforces the Milwaukee Metropolitan Sewerage District's policies.

## PRELUDE TO THE WATER POLLUTION ABATEMENT PROGRAM

In 1967, representatives from Illinois, Indiana, Michigan, and Wisconsin attended the Lake Michigan Pollution Control Conference. One outcome of the conference was an agreement that all sewage treatment plants located along the shores of Lake Michigan would disinfect sewage before releasing it into the lake. Wisconsin set its deadline for compliance at December 1971.<sup>8</sup> In 1972, the Federal Clean Water Act was amended, setting new limits at the federal level for the amount of sewage that could legally be dumped into the nation's waterways. Each state was required to enforce these standards. Wisconsin's DNR, the relevant state agency, required the MMSD to reduce its sewage overflows in order to meet these new standards.<sup>9</sup>

The Illinois Attorney General filed suit against Milwaukee in May 1972,<sup>10</sup> alleging that Milwaukee did not disinfect its effluent before discharging it into Lake Michigan. Michigan joined Illinois<sup>11</sup> in the suit, which also named Racine, Kenosha and South Milwaukee as co-defendants. At the time, the Jones Island Treatment Plant did not disinfect effluent after sewage was treated. But the chief engineer of the Metropolitan Sewerage District countered that more than 96 percent of the bacteria were removed from the effluent before the sewage was returned to the lake.<sup>12</sup>

By the time the Illinois vs. Milwaukee suit came to trial in January 1977, Racine, Kenosha, and South Milwaukee had settled out of court. Several allegations remained:

- The sewage treatment plants were outdated.
- Milwaukee's sewage processing allowed run-off and dumping in the lake, especially during rainy periods when the system would overload.
- Illinois wanted Wisconsin held to the same standards for pollution discharge that it had established for itself, which were stricter than the federal standards.
- The dumping of inadequately treated sewage was harming Illinois residents.<sup>13</sup>

At trial, the plaintiff presented evidence to show that the South Shore treatment plant, which had no overflow points on its interceptor sewers, was diverting sewage to Jones Island treatment plant, where sewage was discharged at overflow points during peak volumes. The Jones Island and South Shore treatment plants were said to be incapable of handling the volume of sewage entering both plants. South Shore could handle 120 million gallons a day after ongoing updates were completed, but during a period of flooding in the spring of 1976 the volume of sewage and storm water reached 420 million gallons a day.<sup>14</sup> Later the defense argued that the problem was localized to the Milwaukee harbor. The defense and the plaintiff produced witnesses with conflicting testimony regarding the die-off of bacteria. Finally, the defense countered that in 1975 Chicago had dumped 1.1 to 1.2 billion gallons of sewage into Lake Michigan over two days in August.<sup>15</sup>

Throughout the trial, the DNR was engaged in negotiations with the MMSD. In 1976, the MMSD had filed a lawsuit against the DNR to halt enforcement of the new federal sewage discharge standards.<sup>16</sup> After much deliberation, a court-approved settlement in May 1977 was reached between the MMSD and the DNR. The Metropolitan Milwaukee Sewerage District would be required to spend about \$670 million over the next 25 years on the Water Pollution Abatement Program (WPAP). The requirements were to expand the system capacity by completing solid management programs at the two treatment plants by July 1982 and completing relief sewers by July 1983. The MMSD would be allowed to add new sewer extensions to the existing system. It had not been resolved whether the DNR could levy fines against the MMSD for past and future pollution violations.<sup>17</sup>

A few months later, in July 1977, the Illinois vs. Milwaukee lawsuit came to an end. Federal Judge John Grady ruled that all overflows and bypasses must be eliminated. The requirements he established were more stringent than existing federal requirements.<sup>18</sup> By November 1977, Judge Grady amended his decision, adding a deadline of 1989 for completion of the project; he also ruled that the system must be capable of handling runoff from all but the most extreme storms. Almost two years later, in April 1979, a Federal Appeals court reversed Judge Grady's ruling in part. The reversal would have saved Milwaukee taxpayers \$309 million (in 1980 dollars) on the total project; plaintiffs appealed the case to the U.S. Supreme Court. Judge Grady's orders were halted pending the Supreme Court's decision on the case.<sup>19</sup>

Cost estimates for the WPAP moved steadily upward, even apart from Judge Grady's orders. By early 1981, its estimated price tag of \$670 million had increased to \$1.3 billion. Then the EPA issued its findings related to MMSD's obligations. Added costs of complying with the EPA's findings were estimated at \$1.47 to \$1.64 billion, an increase

of \$170 to \$340 million. Even though the EPA determined that the MMSD had more work to do, it disagreed with Judge Grady's ruling in one respect. Judge Grady had ruled that the MMSD must prevent overflows caused by severe storms — those occurring roughly once every 40 years; the EPA said that a lower standard was sufficient.<sup>20</sup>

On April 28, 1981, the Supreme Court overturned the lower court ruling in *Illinois vs. Milwaukee*, finding in favor of the MMSD. The Court ruled that federal courts cannot impose stricter standards than those set by Congress in the Water Pollution Control Act of 1972.<sup>21</sup> It vacated the federal court ruling.<sup>22</sup> Eased requirements followed:

- The deadline for completion of the WPAP was extended from 1990 to the mid- to late-1990s, relieving in part MMSD's immediate need to borrow money.
- Overflows would be allowed for storms that occurred more often than once every 37 years, but it was still to be determined how often those overflows would occur.
- New storm sewers in the combined sewer/storm sewer area of Shorewood and Milwaukee would not have to be built.

Still included in the project were plans for the deep tunnels and expansion of the sewage treatment plants.<sup>23</sup>

The Supreme Court ruling was hailed as a victory for Milwaukee. Newspaper articles enumerated the substantial property tax savings it would imply for households; they also emphasized that the ruling diminished an impending prospect of local government bankruptcy.<sup>24</sup> Even so, Milwaukee County Executive O'Donnell was not sure that bankruptcy could be staved off.<sup>25</sup> Local officials had once hoped that the federal government would fund 75 percent of the total cost of the sewer work remaining to be done, since the Clean Water Act had promised funding levels of that percentage. But Congress had not determined the aid allocation and amounts, and the 75 percent funding level seemed unlikely.<sup>26</sup> Despite the Supreme Court's helpful ruling, the MMSD did not have an approved plan with which to move forward. The DNR had yet to approve MMSD's master plan.

The master plan would have permitted more sewer overflows than the DNR or the EPA wanted to allow. The two agencies favored allowing overflows only once every five years. Their requirements raised the cost of the project over the amount estimated by MMSD. The MMSD wanted to use estimates based on two overflows a year.<sup>27</sup> Milwaukee's Mayor Maier and Milwaukee County Executive O'Donnell urged the DNR to ease its standards so as not to bankrupt the community.<sup>28</sup> Some sewer commissioners urged the DNR to allow a longer time period in which to pay for the project. Others saw the DNR as singling out and punishing Milwaukee, even though the court order in question had been agreed to by the DNR and the MMSD.<sup>29</sup>

In addition to its litigation in the *Illinois* case and its negotiations with the DNR and the EPA, the MMSD also found itself embroiled in what came to be known as "the sewer wars" — a prolonged controversy with 15 suburban municipalities. When the Milwaukee Sewerage Commission was created in 1913, capital charges were recovered through calculations based on property values for municipalities within its service territory. It recovered charges from municipalities outside its district based on the volume of sewage the respective communities contributed. This procedure for recovering capital charges changed in 1985 when all municipalities served by the MMSD were required to pay for capital charges based on property values.<sup>30</sup> The 15 suburban communities rebelled, and numerous lawsuits ensued. Officials representing the suburban communities believed the sewer work required to fix the combined-sewer problem in sections of Milwaukee and Shorewood should be paid for by Milwaukee and Shorewood.<sup>31</sup> The state budget provided \$40 million for sewer construction across the state, of which half was predicted to go to MMSD for work on the combined sewer issue. It was hoped this state money would ease the dispute.<sup>32</sup> It did not.

After the lawsuits and appeals finally ran their course, the suburban group FLOW (Fair Liquidation of Waste) lost. Each FLOW community was required to pay the MMSD for its share of the WPAP project based on property value, not usage.

## THE WATER POLLUTION ABATEMENT PROGRAM

Begun in 1981 and completed in 1996, the WPAP project was the largest public works project ever undertaken in Wisconsin. It focused on reducing the incidence of sewage overflows into local waterways. To achieve that goal, officials considered three main approaches. One was to prevent water from infiltrating the current sewerage system; this might involve, for example, eliminating sewer leaks on private property or reducing leaks of water into the pipes

in the public system. The second possibility was to enhance the sewerage system so that it would be able to handle increased volume during wet weather. This could be done by increasing the capacity of the treatment plants and/or by adding large storage tunnels for untreated sewage and storm water, holding it for processing. The third possibility was to separate the combined sanitary and storm sewers in Shorewood and Milwaukee.<sup>33</sup>

Pursuing the first alternative — keeping water from infiltrating the system — would have been expensive. Reducing the influx of water into the sewerage system by 50 percent would have added an additional \$1 billion to the original cost of the project.<sup>34</sup> The separate sewer alternative had many critics, especially in the city of Milwaukee. A large area of the city, including the entire downtown and a section of Shorewood, had combined storm and sanitary sewers. Separating the sewers would have caused physical and economic disruption for years. Private property owners would have been forced to obtain expensive new sewer connections.<sup>35</sup> Businesses would have suffered economically as roads and sidewalks were torn up. In addition, since the combined sewer area was in Milwaukee and Shorewood, these two municipalities would have borne the cost. Milwaukee's district attorney went so far as to predict that crimes of arson would increase as a result, since homeowners would face charges ranging from \$2,000 to \$4,000 just for new sewer lateral lines.<sup>36</sup> In light of these projected difficulties, officials settled on the second option: to increase the processing capability of the sewerage system. Upgrades to sewage treatment plants would increase their capability for processing sewage, and the construction of underground storage facilities would allow all wastewater to be treated before it was returned to the lake.

Cost was a major consideration in this decision. Federal and state funding for the project seemed likely to be less than the amounts projected early on, and local taxpayers would therefore bear a large share of the costs. The cost of the deep-tunnel option was \$469 million less than the option that would have involved separation of the combined sewers.<sup>37</sup>

The WPAP project had several components, including increasing the treatment plants' capacity for treating sewage, replacing old sewers, building new interceptors, and improving sewer lines. But the centerpiece of the WPAP project was the deep tunnel system, consisting of approximately 15 miles of tunnels — 300 feet underground, with diameters up to 28 feet — built under the Milwaukee and Menomonee River valleys to store unprocessed wastewater.<sup>38</sup> From these tunnels sewage and storm water are pumped up to the surface for processing at sewage treatment plants.<sup>39</sup>

### WHAT DID PEOPLE EXPECT FROM THE WPAP?

At the time of its completion, many people assumed that the WPAP project would put an end to sewer overflows, or at least reduce their incidence and volume dramatically. With increased daily capacity for treatment plants plus huge new storage areas for wastewater, the system now would be far better able to treat sewage before it flowed into local waterways. As overflows were reduced nearly to zero, water quality in Lake Michigan would improve markedly. Prior to construction of the deep tunnels, annual sewage overflows into the rivers and Lake Michigan had been voluminous — enough, according to one computation, to fill the 42-story US Bank building, formerly the First Wisconsin Center, 52 times. One new estimate provided by the *Milwaukee Sentinel* held that post-WPAP overflows would be decreased by a factor of more than eight, with volume enough to fill the building only six times.<sup>40</sup>

Other estimates provided different forecasts, ranging from those that foresaw the elimination of sewage overflows<sup>41</sup> to those foreseeing overflows once a year at the most.<sup>42</sup> An estimate more commonly used held that overflows from the separate sanitary sewers would be completely eliminated, while overflows from the combined sanitary and storm sewers would occur two times, or less, annually. (See Appendix B) This number was four times the limit desired by the EPA and the DNR.<sup>43</sup> (Since then, the DNR has relaxed its requirements and is currently allowing the MMSD six overflows from the combined sewer system annually. The EPA is challenging the relaxed standard.)

The confusion or uncertainty implied by these estimates may be attributable in part to the two types of sewer systems involved, and to how they work in dry and wet weather. During dry weather, both systems operate in the same way. Sanitary waste is collected in local sewers; then it flows to the interceptor sewers, which convey the waste to the treatment plant for processing. During wet weather, things are different. In the separated sewer area, sanitary waste is collected in local sanitary sewers; the waste then flows into the interceptor sewers and to the treatment plant for processing, or to the deep tunnels for storage. Storm runoff is collected in storm sewers and flows into the local waterways. In the area serviced by combined sanitary sewers, one local sewer collects sanitary waste and local street

runoff. The combined waste and storm water in these sewers is funneled to an interceptor sewer, after which it is sent to one of the deep tunnels for storage, or to a treatment plant for processing. This wastewater is mostly storm runoff combined with sanitary waste; it is not as concentrated as wastewater from the separated sanitary sewers.

When extreme storms occur, sewers can overflow if the deep tunnel is full and the treatment plants are operating at peak capacity.<sup>44</sup> Due to the higher concentrations of waste they convey, sanitary sewers have a higher priority for diversion to the deep tunnels. Giving them priority leaves less room for waste from the combined sewerage system, and may cause overflows. But eliminating overflows from the sanitary sewers is more critical than eliminating combined sewer overflows because overflows from sanitary sewers convey concentrated raw sewage into the waterways. Overflows from the combined sewers are “cleaner,” containing a mixture of storm water and sanitary waste. This is the reason for a limit of zero sanitary sewer overflows, as compared to six per year from combined sewers. Water quality will not be degraded, according to the DNR, by this zero/six standard.

In various ways, messages reaching the public emphasized prospects for near elimination of overflows, with overtaking of the system likely to occur only as a result of extreme conditions. The *Milwaukee Journal* reported that the tunnels were a “system of underground sewage and storm water storage tunnels that will prevent flooding of aging sewers. Use of the new deep tunnels will eliminate almost all overflows of raw waste into the city’s rivers and Lake Michigan.”<sup>45</sup> And the MMSD agreed. An MMSD spokesman explained that snow-melts, heavy rains, and other infiltration would be captured by the deep tunnels.<sup>46</sup> The “deep tunnel project was designed to store storm water runoff in tunnels until the water can be treated and released into the lake.”<sup>47</sup> Additionally, a DNR water quality specialist predicted that when the deep tunnels started to function, bypassing would not be a problem since the MMSD would be able to store sewer runoff until it could be properly treated.<sup>48</sup>

*Early in the construction phases of WPAP, doubts were raised as to how the reduction of sewage overflows might affect water quality in Lake Michigan.*

The WPAP project also seemed likely to produce cleaner water. But the project did not come with any specific, stated goal for water quality. The issues associated with water quality are not cut and dried. For example, there are different pollution sources: non-point sources and point sources. Sewage overflows amount to point-source pollution, as do other discharges of industrial chemicals and metals. These pollutants are relatively easy to identify and trace because they flow from specific sources. Non-point sources include farm runoff and street runoff — chemicals, manure, soil, and oil, for example. These pollutants are more difficult to identify and trace because they do not flow from specific sources. Non-point pollution is generally harder to prevent than point-source pollution, and its presence in a polluted area (a Lake Michigan beach area, for example) complicates the analysis of the environmental issue at hand.

Early in the construction phases of WPAP, doubts were raised as to how the reduction of sewage overflows might affect water quality in Lake Michigan. In May 1984, David Edgington, director of the University of Wisconsin-Milwaukee’s Center for Great Lakes Studies, issued a statement that the WPAP would not “affect Lake Michigan in a noticeable way. . . . The sewage that ends up in the lake is no great concern.” He explained that sewage overflows into the lake are broken down and neutralized naturally, and cleaning up the water in the harbor area would require a decrease in non-point pollution. Mayor Maier also expressed doubts. Speaking at a symposium for non-point pollution, Maier said that without guarantees at the state and federal level regarding non-point cleanup, the likely results of the WPAP were uncertain. He suggested establishment of a separate cleanup fund for non-point pollution, along with a mandatory participation policy instead of the voluntary one.<sup>49</sup>

Later, in February 1986, the Southeastern Regional Planning Commission (SWRPC) completed a five-year Milwaukee harbor and estuary study which stated that completion of the WPAP would produce water suitable for boating and recreation but not for swimming. High levels of fecal coliform and other bacterial pollutants in the inner harbor would continue to pose risks for swimmers, although the WPAP and future projects targeting agricultural runoff would significantly reduce those risks. A SWRPC engineer added that once the number of combined sewer overflows declined, sediments would decompose and stabilize quickly within two years.<sup>50</sup>

## BUILDING THE TUNNELS

During the design phase of the WPAP, the capacity of the sewage treatment plants was 400 million gallons per day.<sup>51</sup> Without the deep tunnels, excess raw sewage or excess sewage mixed with storm water would be dumped into local waterways or backed up into basements and homes. The tunnels were crucial to the project because they would provide space for storage of sewage and storm water until it could be pumped up to treatment plants for processing and safe release. But controversy followed the deep tunnels from the design phase of the project through the construction phase, with problems ranging from labor disputes to unexpected environmental conditions.

Experts at the EPA and the DNR disagreed with MMSD experts about the need for concrete linings for the tunnels. Two MMSD engineers argued that concrete linings in the deep tunnels were not needed. They explained that the greatest pressure on the tunnels would be inward, so linings would not be needed to keep sewage from leaking out and polluting the ground water.<sup>52</sup> However, the DNR and the EPA favored concrete linings, and the DNR approved the deep tunnels with a stipulation that the MMSD spend an additional \$47 million to line the tunnels with concrete. Concrete linings were needed, according to the DNR, because leakage could not be prevented merely by grouting cracks, as the MMSD proposed. The MMSD strongly insisted the linings were a waste of money.<sup>53</sup>

The disagreement landed in court. Ultimately, Wisconsin's Supreme Court affirmed a Court of Appeals ruling holding that the MMSD was entitled to a hearing on the DNR directive requiring the MMSD to spend an additional \$45 million to line the tunnels with concrete. The hearing was warranted, according to the Court, because the MMSD had a "substantial interest" in avoiding the extra cost. The Supreme Court explained further that the lining requirement "threatens injury to the district's substantial interest in fiscal restraint and to the district's substantial interest in executing its statutory duties."<sup>54</sup> The MMSD was able subsequently to assure the DNR and the EPA that it would be impossible for leaks to occur from the tunnel, and the parties reached a compromise providing for most of the tunnels to be grouted. Half of the North Shore tunnel was lined with concrete, and 20 percent of the Crosstown tunnel was lined. The other tunnel areas were grouted.<sup>55</sup>

Construction of the North Shore Deep Tunnel did not progress smoothly. In the excavation, rock crumbled during the boring process, enabling water to rush into the tunnel. Accusations of inadequate testing were made of the consulting firm that had completed the soil borings and analysis prior to excavation.<sup>56</sup> Extra steel supports were then needed for the tunnel, plus extra efforts to control flooding.<sup>57</sup> Problems at the North Shore tunnel snowballed with cost increases, striking workers, and the settling of downtown buildings — all costing the MMSD more money.<sup>58</sup>

Early in the WPAP project, the DNR and the MMSD agreed that water leaking into the tunnels posed a greater potential problem than sewage leaking out because it was expected that the volume of water leaking in would be much more than sewage leaking outward.<sup>59</sup> The tunnels, it was said, were like submarines. If a leak were to occur in a tunnel wall, water would rush in.<sup>60</sup> Preventative steps were taken accordingly. A dewatering process was put in place to pump water from the area, and concrete casings and chemical grouting were applied in the tunnels.<sup>61</sup> The DNR and the MMSD also agreed that if water did leak into the tunnels, the leakage would not hamper the tunnels' operation.<sup>62</sup> Water could get into the tunnel system through leaky laterals, manhole covers, and old sewers. The MMSD planned accordingly to repair sewers and laterals and to replace manhole covers to prevent excess ground water from entering the deep tunnels.<sup>63</sup>

With cost overruns plaguing tunnel construction, frustration mounted. As early as spring 1989, questions about the appropriateness of the deep tunnel decision were voiced. "Some area scientists, engineers, and construction industry officials believe it would have been a cheaper and more effective for Milwaukee to have devised other solutions to the overflows — including separating the aging combined storm and sanitary sewers that still served 27 miles of Milwaukee and Shorewood."<sup>64</sup> One biologist with UW-Milwaukee's Center for Great Lakes Studies suggested that the solution should have been to separate the sewers while providing also for improved sewage treatment and the reduction of pollutants in storm water runoff.<sup>65</sup>

## WHAT HAPPENED AFTER THE TUNNELS BEGAN OPERATING?

### Leaks

In July 1995, the DNR raised concerns about possible leaks of sewage from the tunnels. (The DNR's first priority is maintaining clean ground water, not preventing sewage overflows.<sup>66</sup>) Two violations of the MMSD's tunnel operating permit had the DNR worried. The first violation occurred when the ground water table dropped below the targeted level. According to the operating permit, it was never supposed to fall below 20 feet above the tunnel, but it frequently did drop below that 20-foot level. In these cases, groundwater pressure on the tunnel walls would decrease — increasing the chance that waste water might leak out of the tunnels.<sup>67</sup> The second violation occurred when coliform bacteria were found in two tests at a monitoring well located within 500 feet of the tunnel pumping station at Jones Island. The state asked the MMSD to investigate. A report issued by an engineering firm stated that liquid from the tunnels had leaked, but the amounts were small and had not traveled far from the tunnel. As the ground water level rose, pressure on the tunnel increased and the liquid was drawn back into the tunnel.<sup>68</sup> Thus, according to an MMSD spokesman, the MMSD did not consider this an instance of leakage. In a letter to the DNR, the MMSD executive director maintained that the leaks had not been serious.<sup>69</sup>

One local company claimed it had been affected by sewage leaking out of the tunnels. Red Star Yeast had a well within 500 feet of one tunnel. The well was contaminated with coliform bacteria. The MMSD denied that the bacteria came from its tunnel. Red Star Yeast closed the well and switched to using city water. It also filed a claim against the MMSD,<sup>70</sup> but the claim was dismissed partly “because the district has immunity against groundwater pollution lawsuits.” Moreover, because the lawsuit was dismissed, the court did not determine who was at fault for polluting Red Star's well.<sup>71</sup> Red Star appealed and won a reversal in March of 2003. It can now pursue its claim against the MMSD for contamination of its well.<sup>72</sup>

Polluting groundwater is against state regulations, and an official with the DNR stated that it cannot allow groundwater polluting to continue. MMSD's operating permit includes several conditions requiring it to prevent groundwater contamination. In respect to these conditions, terms of the permit have been violated. But to complicate matters, the MMSD halted the DNR from enforcement by requesting a simple legal review.<sup>73</sup>

### Beach closings

As it became clear that the WPAP had not put an end to sewer overflows, beach closings caused by bacterial contamination became a rallying cry for critics of the MMSD. After a beach closing in the summer of 1994, a county supervisor became frustrated, contending that the new tunnels were supposed to have ensured open beaches.<sup>74</sup> MMSD officials cautioned that deep tunnels represented a large first step toward restoring Milwaukee's waterways, but water pollution problems would not be solved immediately.<sup>75</sup> The tunnels were preventing overflows and decreasing bacterial contamination in the lake, but bacteria flowed from many sources, not merely sewage overflows.<sup>76</sup> MMSD researchers also noted a decrease in personal items found floating in the rivers, lower levels of bacteria in the harbor, and clearer water in the Menomonee River.<sup>77</sup> And by the end of 1995, oxygen levels in the water were such that the MMSD did not have to resort to pumping Lake Michigan water into the river to protect fish.<sup>78</sup> A report issued by the MMSD stated that levels of fecal coliform bacteria had declined by 25 percent from 1993 through 1995, with further decreases in 1996.<sup>79</sup>

While beach closings continued, the MMSD defended its tunnels and its overflow record. The Executive Director for the district claimed there was no proof that sewage overflows were causing beach contamination. But a report issued by Citizens for a Better Environment stated that sewer overflows were one of many causes of beach closures. It also observed that the deep tunnels were supposed to have made beach closings unnecessary for the most part.<sup>80</sup> An official with the MMSD concurred that the MMSD was partly to blame. But MMSD officials generally stressed the role of contamination from other sources including waste from pets and birds, and runoff from upstream farm fields.<sup>81</sup>

In the context of these arguments, three lawmakers called for a study to uncover the sources of pollution that had forced closures at South Shore Beach.<sup>82</sup> Funded mainly through the EPA via the DNR, the study would be completed by representatives from the DNR, the U.S. Geological Survey, the Milwaukee Health Department, and the UW-

Milwaukee Great Lakes Water Institute.<sup>83</sup> By the end of 2000, three studies examining beach contamination had been launched.<sup>84</sup> Preliminary results of one study by the UW-Milwaukee Great Lakes Water Institute pointed to seagulls as one of the culprits in beach contamination.<sup>85</sup>

## Overflows

The tunnel system raised expectations that sewer overflows would be reduced dramatically, but these expectations were dashed almost from the outset. Use of the tunnels did reduce the number of sewer overflows, but not to the extent people believed they had been promised. A study by the Legislative Audit Bureau (2002) documented the number of overflows in question, along with the volume of wastewater discharged. Table 1 is compiled from that report.

**TABLE 1 NUMBER OF OVERFLOWS & VOLUME OF DISCHARGES<sup>86</sup>**

Year	Sanitary Sewer Overflows		Combined Sewer Overflows		Total	
	Number of Incidences	Volume	Number of Incidences	Volume	Number of Incidences	Volume
1994	1	2.3	1	171.2	2	173.5
1995	5	73.2	1	773.3	6	846.5
1996	3	67.7	4	674.9	7	742.6
1997	5	248.6	2	1991.5	7	2240.1
1998	4	79.6	2	629.3	6	708.9
1999	8	271.7	6	4105.4	14	4377.1
2000	5	137.5	5	3489.7	10	3627.2
2001	8	56.1	3	464.6	11	520.7
<b>Total</b>	<b>39</b>	<b>936.7</b>	<b>24</b>	<b>12,299.9</b>	<b>63</b>	<b>13,236.6</b>

*Volume in millions of gallons*

For combined sewer overflows between 1994 and 2001, the goal of less than two overflows per year was met in 1994, 1995, 1997, and 1998, or 50 percent of the time. The record for sanitary sewer overflows is far worse. For the same time span there have been 39 sanitary sewer overflows, with 936 million gallons of untreated sewage from the sanitary sewers dumped into the waterways. The overflow limit for sanitary sewers was supposed to have been zero after completion of the WPAP. Counting all overflows, more than 13 billion gallons of wastewater have been dumped into the region's waterways since 1994.

Official explanations for this overflow record have emphasized excessive rainfall. During the planning phase for WPAP, estimates were based on one rainstorm in the Milwaukee area in June 1940; this storm produced approximately six inches of rainfall in a two-day period. The deep tunnels were designed to hold waste and storm water following a storm of this size. Since 1994, however, Milwaukee has experienced five storms larger than the June 1940 benchmark storm: two in 1997, and one in 1998, 1999, and 2000. All five of these storms caused overflows, for a total overflow volume of 4.8 billion gallons. Also, some of these storms were categorized as "100-year" storms, with rainfall totals ranging roughly from seven to eight inches.<sup>87</sup> Storms of this magnitude have a one percent probability of occurring in a given year. Total rainfall for July 1997 was 4 1/2 inches above normal; moreover, half the total amount (of 20 inches) came in a three-week span.<sup>88</sup> The tunnels had not been designed to capture runoff from weather conditions as extreme as these. But sixteen other storms during the period in question were less severe than the 1940 benchmark storm, and the runoff from these storms should have been captured by the deep tunnel system. Instead, sixteen storms less severe than the benchmark caused sewer overflows.<sup>89</sup>

Other causes of overflows included mechanical failures, power failures, human error, and policy decisions. For example, eleven of the sanitary sewer overflows were caused by mechanical failures, and the volume for these discharges was 2.7 million gallons.<sup>90</sup> On other occasions, specific policies promoted the dumping of sewage. One policy encouraged overflows before the deep tunnels were filled to capacity, and the MMSD had reasons for this. One reason was to save room in anticipation of heavier rains, thus leaving space for suburban waste from sanitary sewers. This waste is more concentrated than waste from the combined sewers. In 1999, MMSD agreed to reserve half of the tunnel space for suburban sewage. Another reason was to avoid filling the tunnels to capacity, which seemed to exacerbate the problem of leakage from the tunnels, thus contaminating groundwater.<sup>91</sup> Overfilling also caused damage to the tunnels.<sup>92</sup>

Another policy followed by the MMSD and United Water Service (UWS), the private firm that operates the deep tunnels for the MMSD, called for tunnel pumps to switch from its power source to We Energies at night to take advantage of a cheaper source of electricity. This policy saved UWS over \$515,000 in two years from June 1999 to December 2001,<sup>93</sup> but it also allowed 107 million gallons of sewage to overflow. During a review of MMSD practices and overflows, a DNR spokesman clarified the practice by saying UWS was running the pumps this way per MMSD request. After the Legislative Audit Bureau discovered this practice during an audit, the MMSD sent letters to UWS directing it to discontinue the practice. In response, equipment upgrades were made to allow for the switch to a cheaper electricity source without a need to turn off the pumps.<sup>94</sup> Some overflows were caused by excessive water infiltration into the sewerage system. The infiltration in turn was caused by rainwater leaking into the sewers and leaky sewer laterals.<sup>95</sup>

After the deep tunnels came into use, flooding and sewage backups occurred in homes across the Milwaukee area, and questions were raised about the role of the tunnels in causing these backups. Municipalities experiencing backup and flooding problems demanded answers. Glendale's City Administrator faced off against Glendale's Mayor, who was Chairman of the Milwaukee Metropolitan Sewerage Commission. The City Administrator pointed out that Glendale had aggressively attacked its sewer problems by maintaining its sewers and specifically addressing the problem of sewage backups. The Mayor went on record as saying the tunnels were working as designed, but the sewer system was aging and causing the backup problems. Senator Alberta Darling (R-River Hills) called for a study to determine whether changes that had occurred in the prior three years had caused sewage backups.<sup>96</sup>

While MMSD's critics, the DNR, and MMSD agreed that too much storm water was getting into the sanitary sewers during rainstorms, there was no agreement about the way the water was entering the sewers.<sup>97</sup> "Those from the sewerage district point out that their system was never intended to handle storm water. The sewerage district generally says the storm water is entering the system through leaks in the municipal sewers or manhole covers and from the downspouts and foundation drains of homes."<sup>98</sup> Senator "Darling asked whether the DNR had contributed by forcing the closing of bypasses that had allowed untreated overflow sewage to enter waterways."<sup>99</sup> A spokesman for the DNR said the agency has to do a balancing act between water quality and public health.<sup>100</sup> Given the choice between sewage backups in basements and overflows into the local waterways, the public chooses overflows.<sup>101</sup>

## THE RESPONSE

As sewer overflows continued to exceed projections, often for reasons not foreseen or acknowledged in early discussions of the WPAP, critics increasingly targeted the MMSD with accusations of misrepresentation and incompetence. The critics focused on the billions of gallons of sewage that continued to be dumped into the waterways; in reply, the MMSD focused on tens of billions of gallons of waste that had been captured and processed from the deep tunnels.

In June 2000, the DNR and the EPA raised concerns about the sewage overflows from the sewerage system, declaring that they would review the system and MMSD's practices. The EPA stated that there was no reason that overflows from the separate sanitary sewers should occur.<sup>102</sup> The MMSD Executive Director, Anne Kinney, said MMSD welcomed the review for the opportunity it would provide to address the public criticism that the tunnels were not performing effectively and as they had been designed.<sup>103</sup>

As the criticism continued, the MMSD had to respond, and it did with redirection, excuses, and denial. A week after the MMSD Executive Director welcomed the review, the MMSD confirmed the deep tunnels were not large enough to hold all the wastewater generated by heavy rains. The issue was redirected when Executive Director

Kinney stated the MMSD should focus next on limiting the flow of rainwater into the sewerage system, and she also redirected the focus by reiterating the comparison of their overflow record to other sewerage districts' overflow records.<sup>104</sup> The MMSD has preferred to focus on the sewage that was captured. It estimated that the WPAP project had captured about 40 billion gallons of wastewater, but in the same time period 13.2 billion gallons of wastewater were discharged into the waterways.<sup>105</sup> At one time Anne Kinney claimed that the increased instances of dumping were due to changing global weather conditions.<sup>106</sup> Another excuse given to state lawmakers was that the dumping was necessary in order to avoid sewage backups in basements.<sup>107</sup> And above all, the MMSD denied any state water quality violations. Executive Director Kinney stated that the MMSD had committed no violations of Wisconsin's water quality limits.<sup>108</sup> In addition, the MMSD continuously stated that it has never exceeded the discharge limit (stipulated in the dumping permit issued by the DNR) of six combined sewer overflows per year, and this was confirmed in a July 2002 audit.<sup>109</sup>

Public outcry continued, however, prompting the EPA to call a meeting with state regulators and the MMSD in July 2000. Here again the MMSD defended its overflow record. It stressed that the terms of state permits had not been violated, that it had achieved or exceeded full compliance, that its record surpassed that of most other sewerage treatment plants, and that it would implement nearly \$1 billion in planned improvements to the system over the next decade. The DNR agreed that the MMSD had not violated the terms of its water quality permit and had a good performance record.<sup>110</sup> But state lawmakers were not satisfied with either the DNR or the MMSD. They were concerned that the DNR had not sufficiently monitored the MMSD,<sup>111</sup> and many were not satisfied with responses given by the MMSD during that summer meeting.

As criticisms mounted, legislators called for an inspection of the MMSD's deep tunnel system and a legislative audit.<sup>112</sup> A spokesman for the MMSD said the MMSD would welcome an audit, asserting that a recent inspection of the tunnels had shown no evidence of any problems with them. The inspection to which he referred was based on video camera photography of 200 feet of the tunnels. At this time it was estimated by the MMSD that between six and eight million gallons of groundwater leaked into the tunnels on a daily basis. The MMSD admitted that the tunnels had not been fully inspected since their completion in 1993.<sup>113</sup> A full inspection of the tunnels was supposed to have been completed after the first time that the tunnels had filled, and full inspections were to continue thereafter at five-year intervals.<sup>114</sup>

*Senator Darling argued that suburban development had not exceeded expected growth rates and that expected growth should have been factored into the tunnel design.*

A DNR report released in March 2001 revealed that while the MMSD blamed heavy rainstorms for increased dumping, the DNR believed leaky sewers and suburban development were to blame. The DNR found no evidence of problems with the tunnels per se, but it recommended that the MMSD implement stricter standards in its long-range sewer improvement plan.<sup>115</sup> The DNR also called for an increase in the capacity of the sewerage system.<sup>116</sup> The MMSD considered these tougher standards unnecessary and opposed them. Instead, it urged the DNR to implement a grant program that would help decrease the infiltration of storm water into the sewerage system.<sup>117</sup>

None of this satisfied disgruntled legislators. Senator Darling argued that suburban development had not exceeded expected growth rates and that expected growth should have been factored into the tunnel design. Representative Neil Kedzie (R-Elkhorn) argued that an independent audit of the MMSD would be necessary.<sup>118</sup> In June, legislators gave approval for an audit of the MMSD. This audit would review:

- sewage overflows into the rivers and Lake Michigan;
- MMSD's prevention strategies for future overflow conditions;
- pollution levels in the lake;
- operating procedures and regulation of the tunnels; and
- the DNR's regulation of the MMSD.<sup>119</sup>

## THE DNR AND THE EPA

It was becoming clear that the DNR and the EPA applied different standards regarding sewage overflows. The EPA held that sanitary sewage dumping is illegal except in the case of extreme natural disasters. On the face of it, that seems to establish a definite limit. But in a confusing counterpoint, the EPA also conceded that states have authority to set water quality standards based on federal law regulating water pollution. The DNR held a vague and apparently less stringent standard: “Basically, dumping from sanitary sewers is to be avoided, but it's also generally tolerated. For example, MMSD unloaded 110 million gallons of raw sewage from sanitary sewers into streams in May [2000] (along with more than 1 billion gallons from combined sanitary/storm sewers) and faced no repercussions.”<sup>120</sup>

In March 2001, an enforcement officer for the EPA stated that the MMSD had illegally dumped sanitary sewage; instead of taking formal action against the MMSD, however, the EPA hoped to negotiate a solution with the MMSD.<sup>121</sup> In deference to state authority within the scope of federal law, the EPA never had stated a clear limit for overflows. The EPA stipulated only that the limit should not allow water quality to degrade. That standard would allow for six annual overflows from the combined sanitary sewers, or for a wastewater treatment level of 85 percent.<sup>122</sup>

Both the DNR and the EPA have authority to mandate action by the MMSD and to impose fines. Throughout the spring of 2001, the EPA and the DNR continued to consider taking action against the MMSD. But no clear, consistent pattern of enforcement emerged. The DNR favored standards set in 1980, which would allow overflows after a storm larger than the 1940 storm: six inches of rain within a 48 hour period. The MMSD preferred a benchmark of three inches. The EPA has generally been more aggressive than the DNR, which has been concerned about alienating the MMSD.<sup>123</sup> The more aggressive stance of the EPA was exemplified in an action it took against South Milwaukee in spring 2001, when it ordered sewer officials to make \$1.12 million in improvements to the sewerage system. When a South Milwaukee sewerage official pointed out that the DNR had different perceptions of the issue,

the EPA claimed that it works in conjunction with the DNR. But a sewer system regulator for the DNR said the two agencies had different interpretations of water quality laws. The DNR’s standard for sanitary sewage overflows was being reviewed, and it planned to clarify its standard.<sup>124</sup>

*DNR officials were finally stating that the MMSD had repeatedly dumped sanitary sewage into the local waterways, which was illegal.*

In 2001, threats of fines by the DNR forced the MMSD to agree to expand the northwest tunnel.<sup>125</sup> DNR officials were finally stating that the MMSD had repeatedly dumped sanitary sewage into the local waterways, which was illegal. However, the MMSD did not quietly agree to these changes for the tunnel; in fact, it protested loudly that the decision was political and based on weird science. The DNR countered that if the northwest tunnel had been in place, it would have prevented millions of gallons of wastewater from being dumped; the expansion would therefore be appropriate. The MMSD’s Executive Director said she hoped reducing the infiltration of rainwater into the sewerage system would be considered for future projects as a viable alternative. A DNR representative said both types of projects —

reduction of rainwater infiltration and an expansion of the sewerage system’s capacity — were needed to address the overflow issues. At the same time, some suburban officials suggested that it was time to review one of the original alternatives — separation of sewers.<sup>126</sup>

In July 2001, two environmental groups — Friends of Milwaukee’s Rivers, based in Wauwatosa, and the Lake Michigan Federation, based in Chicago — stated their intention to file a lawsuit against the MMSD in federal court utilizing a provision that allows citizens to enforce the Clean Water Act. The Friends of Milwaukee’s Rivers Executive Director cited ongoing concern about sewage overflows as highlighted in DNR findings of repeated sewage overflows and beach closings. His Lake Michigan Federation counterpart cited a perception that the EPA and the DNR were not acting effectively to address the sewage overflow issue. He added that the Lake Michigan Federation had successfully sued the EPA for failing to enforce water quality standards, which the EPA subsequently adopted in October of 2000.<sup>127</sup>

Meanwhile, the DNR had been examining sewage overflows and the possibility that they constituted a violation of the MMSD's state permit. Finding that the MMSD had violated its permit eight times since 1995, the DNR declared that it would take legal action to correct the problem. The MMSD countered that the DNR was acting in response to the lawsuit filed by the two environmental groups. A spokesman for the MMSD said the DNR had previously been notified of the dumping incidents in question and had found no violations. The remedy sought by the DNR included a new MMSD operational plan by 2005 that would increase the capacity of the system to handle a 4.7-inch rainstorm over a 24-hour period; new standards for reducing infiltration of water into the sewerage system; and complete upgrades by 2012. The MMSD had sought a rainstorm standard of 3.1 inches per 24 hours, but the DNR pointed out that the MMSD had met neither standard up to that point. Finally an MMSD spokesman said that the changes sought by the DNR had all been included in the \$1 billion improvement plan it was already implementing.<sup>128</sup>

## ECHOS FROM THE PAST

In what seemed like an echo from the past, the DNR secretary recommended in 2001 that the separation of sewers be reviewed as part of an alternative plan for solving the sewer problems. To many Metro Milwaukee residents, this was ironic. After having been eliminated as an option twenty years ago, and after \$2.8 billion had been spent on a different approach, separation of the combined sewers was in the spotlight again. The Milwaukee Metropolitan Sewerage District was against it. A spokesman for the MMSD explained that the alternative had been rejected two decades ago because it would have cost too much and because it raised the possibility that pollution levels in the lake would increase if untreated water from the storm sewers flowed into the waterways.<sup>129</sup> A former Southeastern Wisconsin Regional Planning Commission executive director turned consultant, Kurt Bauer, added that the first flush of rainwater from city streets is just as dirty as raw sewage. And the director of the EPA's waste management office claimed that other cities were moving toward storage instead of separation of sewers because of cost and other problems. But he added that old sewers that needed to be replaced could be incorporated into a sewer separation project.<sup>130</sup>

*After having been eliminated as an option twenty years ago, and after \$2.8 billion had been spent on a different approach, separation of the combined sewers was in the spotlight again.*

Mayor Norquist and Antonio Riley, the former MMSD commission chairman, adamantly opposed the separation option, citing problems of cost and disruption to downtown traffic. They also predicted that separation would degrade water quality. They blamed the proposal on partisan politics, with Mayor Norquist accusing the DNR secretary of resurrecting the sewer wars by proposing something for which city residents would pay, while the suburbs were relieved of costs. However, some suburban officials said the separation option should be considered and that the suburban communities would be willing to help with the cost.<sup>131</sup>

In what resembled a mini-WPAP, the MMSD and the DNR agreed in fall 2001 to launch a project that would include tunnel construction projects and a program to replace leaky sewer laterals. The agreement did not include any fines against the MMSD for non-compliance with the terms of its permit. The MMSD had already begun to work on some components of the new project, but the agreement called for more than what was underway.<sup>132</sup> Unlike the original WPAP, which was supposed to virtually eliminate sewage overflows, this project was intended to accommodate growth in the northwestern suburbs and to alleviate sewage backups on the northwest side of Milwaukee County.<sup>133</sup> The DNR pushed the MMSD to enlarge its northwest-side sewer tunnel from a 12-foot to a 30-foot diameter in order to decrease sewage overflows. The larger tunnel proposed by the DNR had a price tag of \$165 million, which was approximately twice the original estimate. The MMSD said that the size of the original tunnel was adequate. But the DNR insisted that the capacity of the sewerage system needed to be increased because the deep tunnels did not do what they were supposed to do — eliminate almost all sewage overflows.<sup>134</sup>

After being threatened with fines, the MMSD agreed to a compromise on the tunnel's diameter; it would be increased to a diameter of 20 feet. This would increase the system's capacity to hold 91 million gallons of sewage and would increase the original cost by \$50 million. While the MMSD agreed to the capacity increase, a lawyer for the MMSD stated that the project was undertaken to accommodate future growth in the northwestern suburbs, not because there were any problems occurring now.

The new northwest deep tunnel will have concrete linings. A DNR administrator has stated that it was a mistake not to line the other three tunnels completely with concrete, since about 10 million gallons of water leak into these tunnels daily through cracks. MMSD had fought to prevent the linings because the alternative was cheaper; it contended that any extra water leaking into the tunnels would have been pumped out and released through the Jones Island Treatment Plant.<sup>135</sup>

*A DNR administrator has stated that it was a mistake not to line the other three tunnels completely with concrete, since about 10 million gallons of water leak into these tunnels daily through cracks.*

Both sides wanted to see the compromise agreement finalized. Feeling pressure from the EPA, the DNR wanted to obtain a legal agreement in case the MMSD did not fulfill its expectations; the MMSD in turn wanted more certainty about when future projects would get done. This would help strengthen its bond rating and could result in lower borrowing costs for these projects. But the new agreement ran into a snag in November of 2001 when a Dane County judge refused to sign it because, he said, it was an extension of the original case the DNR and the MMSD had agreed upon in 1977. This case created the WPAP.<sup>136</sup>

After the judge refused to sign the agreement, the EPA said that the agreement would have given the MMSD too much time to complete its construction work; the EPA also complained that no public input had been solicited regarding the agreement. (Public input is not required for settlements by the state, but it is required for federal settlements.)

In March 2002, two separate lawsuits were filed against the MMSD — one by the DNR, the other by the Friends of Milwaukee's Rivers (in conjunction with the Lake Michigan Federation) over ongoing sewage overflows. The DNR admitted that the MMSD had complied with the agreement it had made a year earlier, and both sides still accepted that agreement. But the MMSD's lead lawyer complained about the environmental groups' lawsuit. He claimed that the suit was inconsistent with positions the groups had taken when the MMSD had met with them earlier, and he accused the groups of planning to use any sums they might be awarded as funds for launching more lawsuits later. The environmental groups maintained that they were not satisfied with the DNR's lack of aggressiveness in monitoring the MMSD.<sup>137</sup>

With the completion of the tunnel inspections in spring of 2002, MMSD officials stated that the deep tunnels had never been designed to eliminate raw sewage overflows entirely; it had always been understood that some overflows would continue to occur, even with the deep tunnels. MMSD officials further stated that it would be too expensive to construct a system that did not overflow at all. They said that the amount that had been dumped — 13 billion gallons total over eight years — was modest compared to the dumping that had occurred prior to the completion of the WPAP (roughly 8 billion gallons each year).

Two lawmakers, Senator Alberta Darling and Representative Neal Kedzie, disagreed. Darling stated that the WPAP was intended originally to solve sewage overflow problems and basement backups; Kedzie stated that the tunnels were not performing to the public's expectations.<sup>138</sup> Neither of these claims specifically noted the original goal of eliminating sanitary sewer overflows and allowing a maximum of two combined sewer overflows annually. Nor were the DNR's objectives mentioned, which included the elimination of sanitary sewer overflows and allowing up to six combined sewer overflows annually.

In spring of 2002, six years after the completion of the WPAP, planning got underway for another MMSD water pollution project — the 2020 plan. This plan comes in addition to the \$1 billion long-range plan, targeted for completion by 2010. In this context, all alternatives to current pollution problems, old and new, seem likely to be reviewed, including the separation of combined sewers and new ways to prevent urban and rural runoff pollution from getting into the waterways. The initial cost estimate for the 2020 plan was \$900 million; MMSD officials hoped that federal grants and low-cost loans would offset some of this cost for the taxpayer.<sup>139</sup>

As a boost to the current MMSD project, a Milwaukee County Circuit Court Judge recently approved the settlement between the DNR and the MMSD that had been filed earlier in the year. The approved settlement is almost identical to the one that was rejected last fall. Environmental groups monitoring the case are not happy, however, and plan to continue their own lawsuit in federal court.<sup>140</sup> They claim that the new settlement does not go far enough because it includes no punishment of the MMSD for its permit violations and it does not do enough to curb over-

flows of partially treated and untreated sewage. The groups are seeking penalties up to \$25,000 per violation against the MMSD.<sup>141</sup> However, the MMSD is not admitting fault; it never has admitted to any violations, maintaining always that the overflows in question should be attributed to extreme weather conditions and equipment failures.<sup>142</sup>

Meanwhile, in May 2002, eight congressmen from Illinois resurrected complaints regarding the dumping of raw sewage by the MMSD, declaring that water at Illinois beaches had become dangerously polluted, putting swimmers at risk. They accused the MMSD of dumping more raw sewage into the lake than comparable agencies in any other city. The Executive Director for the MMSD responded by claiming that the increase in beach closings noted by the Illinois congressmen reflected better monitoring, and that 85 percent of the coliform bacteria in question had been deposited in the lake by the local sea gull population. He further stated that the MMSD had never violated the terms of its dumping permit, which allows six overflows a year.<sup>143</sup> A government researcher who studies Lake Michigan beach pollution concluded that overflows from MMSD tunnels were probably not the major cause of pollution at Chicago beaches, but he could not take the overflows off the list as one of many possible causes.<sup>144</sup>

And it continues to get more confusing. In the summer of 2002, an EPA administrator stated in a letter to one of the Illinois congressman that there was no direct link between Milwaukee sewage overflows and Chicago beach closings. There are other sources of bacterial contamination, the administrator stated, including storm-water runoff and animal waste.<sup>145</sup> Ongoing studies of beach contaminants are in process.

## THE INSPECTION AND THE AUDIT

In 2001, a local engineering firm released results from a study showing that the MMSD tunnels were leaking and contaminating groundwater. Groundwater levels were also affected by leaks of groundwater into the tunnels, and in some areas levels had dropped more than 100 feet.<sup>146</sup> Overfilling of the tunnels had caused cracks and grouting to flake from the tunnel walls, exacerbating the leakage problems. In response, the MMSD created a policy: sewage could be dumped into the waterways before the tunnels filled to capacity, thereby reducing the threat of more serious problems that might be caused by tunnel overfills.<sup>147</sup>

Only under pressure did MMSD officials agree to a full inspection of the tunnels for early 2002; they previously had said that full inspection was unnecessary.<sup>148</sup> Upon inspection, however, the tunnels were found to be in good condition and functioning properly. Cracks in the tunnel walls were sealing themselves by the formation of mineral deposits. Fewer than three million gallons of water were leaking into the tunnels daily, compared to the estimated amount of 10 million gallons.<sup>149</sup> Both the MMSD and its critics had overestimated the leakage problem. Still, the observed leakage was not trivial. Federal and state standards anticipate leakage in sewers. Given the size of the MMSD system, only one million gallons daily would be expected, according to federal and state standards,<sup>150</sup> not more than two and a half times that amount.

The MMSD consistently defended its tunnel record by stating that the tunnels were working as they had been designed to work. (See Appendix C) That argument invites obvious questions. Since tunnel inspections disclosed few problems, and since leakage was occurring in smaller quantities than had been anticipated, why have sewer overflows continued to occur? Was the design faulty to start with? Or was it misrepresented to the public? Or is it the case, as others familiar with the problem have suspected, that the tunnels are not working properly? State Senator Darling and Representative Kedzie have contended that the public's expectations and the original WPAP goals have not been met.<sup>151</sup> In an audit report, the Legislative Audit Bureau has stated that "design and operation mistakes and an emphasis on cost-cutting have hampered the effectiveness of Milwaukee's deep tunnel system, contributing to the dumping of raw sewage."<sup>152</sup>

Following the DNR report, the lawsuits, the accusations from the Illinois congressmen, and the inspection results, the results of the long-awaited MMSD audit became available in July 2002. This audit rejected the recent MMSD claim that the tunnels were designed to overflow from the beginning. While acknowledging that the number of overflows had decreased, the audit report stated what the public had been led to believe: "[A]t the time of construction, the Deep Tunnel was expected to virtually eliminate sanitary sewer overflows. It was also expected to significantly reduce combined sewer overflows by allowing an average of only 1.4 combined overflows per year." Moreover, "efforts to eliminate sanitary sewer overflow have resulted in larger combined sewer overflow than would have otherwise occurred."<sup>153</sup> Moreover, the report took note of projects that the MMSD was in the process of completing, as well as projects planned for the future; it found that "actual costs ha[d] been significantly higher than was projected."<sup>154</sup>

Water quality levels were investigated during the audit, with results providing good news and bad news for the MMSD. “Water quality ha[d] improved within the combined sewer area since the deep tunnels began operation, but . . . water quality outside of the combined sewer area ha[d] not substantially improved since 1994.”<sup>155</sup> The report stated further that water quality standards set by federal and state law had not been met either in Lake Michigan or the local rivers. The report criticized the MMSD for “adversely affect[ing] groundwater quality in limited areas.”<sup>156</sup>

## MORE CRITICISMS

The MMSD’s state operating permit expired at the end of March 2002; while a new one was under consideration, the MMSD operated under its old guidelines. As a condition for renewing the permit, the EPA requested more specific timetables for the MMSD construction projects.<sup>157</sup> The proposed permit would continue to allow the MMSD six overflows from the combined sanitary sewers each year. Critics denounced this, but the standard was defended by EPA officials who stated that the limit of six overflows followed from the EPA’s 1994 overflow policy guidelines. Senator Darling criticized the DNR policy and stated that the DNR should hold the MMSD accountable for these sewage overflows.<sup>158</sup>

More legislators, having to answer to their constituents, revisited the sewer overflow problem by conducting hearings in September 2002 to review issues raised by the Legislative Audit Bureau’s report on the MMSD and the DNR report released earlier in the year. In the hearings, much blame was placed on the MMSD and the DNR. The MMSD continued to defend the tunnel system and its overflow record. It attempted to minimize the importance of having dumped 13.6 billion gallons of untreated sewage into the waterways, claiming that it was mostly storm water mixed with sanitary waste. MMSD’s Executive Director further explained that the tunnels were not meant to prevent all overflows. And former State Rep. Antonio Riley, who is the former chairman of the MMSD Commission, said that taxpayers would not tolerate a two-fold increase in the sewer tax rate that would be needed to prevent all overflows; such a rate increase, he predicted, would drive businesses from the city. Riley said it was time to move on. But the MMSD had not satisfied its critics, and they would not let the MMSD move on.

During the hearing, critics stated that the MMSD needs more scrutiny on its \$1 billion project. They also faulted the DNR for not being more aggressive with the MMSD.<sup>159</sup> The deputy DNR secretary disagreed, defending the DNR’s actions by stating that the \$900 million 2010 project was an enforcement action. He explained that the DNR focuses on getting the sewer utilities to make changes, not on imposing fines. DNR officials also stated that most of the sewage overflows had been legal under the terms of the operating permit, which allowed up to six overflows per year from the combined sanitary sewers.<sup>160</sup>

The separation of sewers was also discussed at the hearing. Some of those in attendance expressed concern over the idea of separating the combined sewers in Milwaukee. The Executive Director for the MMSD estimated that the cost for separation would be \$3 billion, but the auditors viewed that estimate as exaggerated. While the secretary of the DNR stated he was not an advocate for the separation of sewers, he reiterated the necessity of reviewing it as an alternative.<sup>161</sup>

## TURNAROUNDS

During the fall of 2002, the DNR became more aggressive in its actions regarding sewer overflows. In October it issued citations to Wauwatosa, River Hills, Bayside, and Whitefish Bay for dumping sewage.<sup>162</sup> Also in October it cited the MMSD for allowing sewage to be dumped into the Milwaukee River for about a month before pedestrians discovered it. In addition to its requirements for a dozen other gates, the DNR required sensors on the flap gate where the sewage was being dumped.<sup>163</sup> The renewal permit for the MMSD also had some proposed changes. The DNR proposed that all sanitary sewage overflows will be counted as violations, as will overflows caused by mechanical failures.<sup>164</sup>

The EPA also toughened its stance on water quality standards, and it is proposing new measurements to be required of the MMSD. Under the terms of this proposal, the MMSD would use a computer modeling program to predict the impact of sewage overflows on the quality of the water. The impact of the overflows would be based on how much the MMSD dumped. In the past, the sewage overflow expectation was for the number of overflows, not the volume of the discharge. This proposal surfaced in response to the EPA’s concern that water quality standards haven’t been met under the old rule of no more than six overflows per year.<sup>165</sup> In April of 2003, the DNR issued the

MMSD a five- year permit incorporating the new objective. The MMSD can appeal the new standard for 60 days.<sup>166</sup> Following its usual pattern, the MMSD has countered that the new measurement procedure does not serve a purpose and that the EPA does not have the authority to require the change.<sup>167</sup>

In another dramatic change that occurred earlier in 2003, the MMSD surprised many with its announcement of a new stance toward the sewer separation issue. In January, the MMSD announced it was in favor of separating sewers in portions of the combined sewer area. The separation project would include the installation of devices designed to capture the first pollutants that are washed off the pavement at the onset of rainstorms. MMSD's Executive Director described the project as one of minor adjustments to the sewerage system; major adjustments that would involve tearing up downtown streets in order to separate sewer lines are still not an option, he said.<sup>168</sup>

## CONCLUSION

Where does this leave the taxpayers? Taxpayers paid for a sewerage system that is not achieving its original objectives. The result is recurring problems: too many overflows and degradation of water quality. At a cost of \$2.8 billion, this is unacceptable. Now, taxpayers will have to pay for two more projects — estimated to cost approximately \$2 billion. Before it spends billions of dollars of the taxpayers' money again, the MMSD needs to provide proof that the new solutions will work.

Throughout the WPAP project, the MMSD continually opposed upgrades, modifications, and changes requested by the EPA and the DNR, and it continues this practice today. Several lawsuits have been filed regarding the sewerage projects. The MMSD opposed concrete linings for the tunnels, and there were problems of leakage; it opposed increasing tunnel sizes, yet it now declares that the capacity of the tunnels is inadequate and it is building more. It opposed tougher standards for the permissible number of sewer overflows, yet it cannot meet the standard it has fought to protect or even the original expectation of zero sanitary sewer overflows and two combined sewer overflows per year. It is time for a change.

Currently, the MMSD does not answer directly to the taxpayers, and it continues to challenge the authority of the EPA and the DNR. Former State Senator Margaret Farrow (R-Elm Grove) once introduced bills to require more accountability from the MMSD and a change in governance.<sup>169</sup> During the "Sewer Wars," the Fair Liquidation of Waste organization (FLOW) tried unsuccessfully to have a bill introduced which would have authorized the Public Service Commission to oversee the MMSD.<sup>170</sup> These bills were not passed. It is time to revisit the accountability and governance issues. Ironically, when the Milwaukee Sewerage Commission was created in 1913, a similar political debate occurred and continued for years. It was the Socialists who were concerned about an independent commission operating outside the control of the common council.<sup>171</sup> Today, the mayor of Milwaukee appoints seven of the 11-member MMSD board. The Intergovernmental Cooperation Council selects the remaining four members. (This council is made up of elected officials from cities outside of Milwaukee in the MMSD's territory.) Of these appointees, six are elected officials: three each for the mayor and the suburban communities. This system of governance for the MMSD needs to change to ensure better and more informed decisions are made. The MMSD cannot continue to have more opportunities to waste taxpayer money with unacceptable results.

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