

## COMBINED AND SANITARY SEWER OVERFLOW ISSUES

### MSD...A NEW FOCUS

The Metropolitan Sewer District was established in 1946 to provide sewer service and limited flood protection for the old City of Louisville and Jefferson County. At that time, Louisville had about 750 miles of combined sewer pipes that discharged, both sanitary and storm runoff, directly to the Ohio River and Beargrass Creek. It also had an Ohio River floodwall system that was still on the drawing board; no wastewater treatment plants; and, a post-World War II baby boom that was driving suburban growth into rural Jefferson County.

That massive suburban growth, framed by the 1950's through the early 1990's created, quite possibly, the most serious water pollution problems in our community...the proliferation of over 300 'package' (or portable) wastewater treatment plants and over 40,000 individual septic tank systems.

Both privately owned package plants and septic tanks were used because areas, such as Shively, Pleasure Ridge Park, Valley Station, St. Matthews, Fairdale, Okolona and Hikes Point were far outside the limits of the existing combined sewer system. Nevertheless, the pressures to expand, with the relative ease of extending other utility services, such as natural gas, electricity and water, made development of these areas attractive to both builders and the thousands of new homeowners, who were quickly outgrowing the old city limits.

With the passage of the Federal Clean Water Act in 1972, a new emphasis was placed on the capture and treatment of raw sewage. Cities across the United States responded by building large trunk sewers and wastewater treatment plants to collect and clean sewage before it reached rivers and streams. Much of the initial work was done with the help of federal grant funds.

Louisville was no exception. In the 1970's, treatment facilities were upgraded at the Morris Forman plant in West Louisville and a large diameter sewer was built to eliminate the failing Okolona Wastewater Treatment Plant. MSD began an effort to extend sewers to the suburbs, but was met with resistance by some residents who felt their septic tanks were adequate.

Very little was done to expand sewer service through the 1970's. St. Matthews and Hikes Point had been added to the MSD system, but most suburban areas continued to be served by a growing number of failing septic systems and malfunctioning package treatment plants.

By the 1980's, many suburban residents, along with the Kentucky Division of Water (KDOW) and the U.S. Environmental Protection Agency (EPA) were becoming more concerned with water pollution, especially issues involving septic tanks, seepage pits and package treatment plants. Both the KDOW and the EPA urged MSD to step in and expand the local sewer system in an effort to eliminate these sources of pollution.

It should be noted that failing septic tanks and package treatment plants have always been constant polluters – 24 hours each day, seven days a week. Their partially treated wastewater flowed directly to streams and creeks in Louisville and Jefferson County, degrading water

quality and killing aquatic life. Since their removal and disconnection, stream quality has improved significantly.

To eliminate these constant sources of water pollution, MSD built and acquired over 1,000 miles of sewer lines; constructed two new regional wastewater treatment plants; and expanded four others. Today, the Louisville Metro sewer system includes over 3,000 miles of combined and sanitary sewers; over 300 sewerage pumping stations; and, six regional wastewater treatment plants that process over 160 million gallons of wastewater each day. All six of those treatment plants are currently meeting their quality permits on a regular basis. Five of the six regularly receive national recognition for quality standards. The Morris Forman plant, MSD's largest, has just completed over \$150 million in improvements and will be a candidate for the Most Improved Plant Award, given by the Association of Metropolitan Sewerage Agencies (AMSA) in the coming year.

Almost all of these advancements were made as an investment by the local community and its' citizens. MSD spent its last federal grant monies in 1987. Since then, it has received no funding from federal or state governments for sanitary sewer improvements. Consequently, MSD and its customers have invested over \$1 billion during the past 15 years to improve local water quality.

Still, significant challenges lie ahead. Of our 3,000 mile sewer system, over 700 miles of the system is old, combined storm and sanitary sewer, with over 400 miles of the system at least a century old. Some sewers predate the American Civil War. Aging sewer systems are environmental problems because they leak. Groundwater and rainwater (clear water) enter these pipes during storms and prolonged wet periods. During these periods, the sewers become overloaded with clear water causing sewer backups and overflows to streams and rivers. MSD's system experiences both.

Louisville Metro is not unique in this regard. Almost all major cities have similar sewer systems. They are just one piece of an aging national infrastructure that includes water mains, bridges and highways.

Recognizing the problem of overloaded sewer systems ahead of most cities, MSD initiated a Wet Weather Abatement Program in 1989. The first goal was to accurately identify potential overflow points in the combined sewers (CSOs) and in the fast growing sanitary sewer system (SSOs). Both CSOs and SSOs occur most often during very heavy or prolonged rain events. On average, the Louisville area experiences about 30 days each year that are wet enough to cause discharges from CSOs and SSOs. On the remaining 300 or so dry days, almost all wastewater is channeled to a treatment plant. On the wettest days, millions of gallons of diluted sewage is discharged to our streams. Only by relieving these overloaded sewers do we prevent sewage from backing up into homes and basements. Discharging to local streams has never been a preferred option, but the protection of public health in homes and prevention of private property damage has always been MSD's primary concern.

Most of the local SSO problems can be directly related to the acquisition of over 300 private package plant systems that caused EPA concerns in the 1980's. MSD and its local rate payers took a proactive approach in eliminating private package plants. It was done without EPA orders

and without state or federal funding. As those plants were eliminated, several hundred SSOs were also eliminated. But, hundreds of miles of leaking pipe that came with those plants are still in the ground and cause sewer overloading and occasional discharges to streams.

Today, the EPA is again mandating upgrades in municipal sewer systems across the United States. Cincinnati, Atlanta, Birmingham, Charlotte and many others have signed agreements with EPA to build treatment processes and storage facilities to eliminate combined and sanitary sewer overflows. Each city's proposed plan of action is unique to its sewer system, but, in many cases the fix will cost in excess of \$1 billion. At the extreme, Atlanta's proposed plan will cost over \$3 billion and will be built over a twenty-year period.

Currently, there is no federal or state money available to fund these mandates. Solutions will be paid for by local citizens and businesses. Projecting Atlanta's costly program over twenty years, the average residential customer's monthly bill will jump from about \$35 to about \$102 by 2008.

What does a similar mandate mean for Louisville Metro? MSD must now focus even more attention on minimizing or eliminating combined and sanitary sewer overflows, in addition to preventing basement backups. That will be our community's primary water quality initiative over the next 10 to 20 years.

MSD has already invested over \$250 million over the past five years in projects that should pay future benefits during rain events. Over 200 million gallons of stormwater capacity has recently been built into the Morris Forman plant. Large storage basins, that hold millions of gallons of combined wastewater during storms, have just been completed. And, early next year, MSD will roll out Real Time Control, an advanced program that will divert wastewater using dams and gates from one sewer line to another for storage. When the storm passes, the gates can be opened, with the stored wastewater routed to a treatment plant, rather than a stream. MSD has also installed over 6,000 backwater preventers in local basements at no additional cost to property owners to prevent sewage from backing into homes.

All of this is progress, but it won't likely be enough. It is more likely that EPA will require additional storage basins, possibly additional underground relief sewer lines, and backup electrical generators for our largest pumping stations. And, as they have done in other cities, they will set the schedule and the cost will be borne by MSD's customers.

What will it cost? That will depend on what EPA mandates; what MSD negotiates as fair and reasonable; and, what projects and schedule both can agree on. Cincinnati just signed an order with EPA in November that will cost that city \$1.5 billion over 20 years to correct and modernize its aging sewer system.

Clean water and public health are the primary mission of MSD. The Clean Water Act guides the mission. MSD has been progressive in its approach to cleanwater issues. Louisville was one of the first cities, nationally, to initiate a Wet Weather Program. In fact, EPA used Louisville MSD as a "model program" in its first CSO Report to Congress.

We know that the standards will continue to be raised. It is unfortunate that the federal government has not yet partnered financially with cities as they raise these standards. Even so, MSD will push forward to meet cleanwater standards, as we should, while doing so in a way that protects the quality of life and economic health of our community.

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