



Managing Northern Kentucky's Wastewater and Storm Water

Mission:

To reliably provide the Northern Kentucky region with wastewater and storm water services to protect public health, property and the environment and to support the economic vitality of our community.

Vision:

To be a customer-centered and community-focused utility by understanding and meeting the needs of our customers and addressing issues that are of strategic importance to the entire community.

Values:

Accountability
Collaboration
Customer Focus
Environmental Stewardship
Integrity
Safety

Goals:

Customer Satisfaction
Operational Efficiency & Resiliency
Financial Viability
Workforce Dedication
Environmental Stewardship
Stakeholder Support
Optimal Infrastructure Management

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What will the next 20 years look like? SD1's central focus in the coming decades will be meeting the goals of its ambitious Clean H2O40 program. Learn more about the overflow mitigation program and what it will mean for our region.



LETTER FROM ADAM CHANEY



**“SD1 has spent
75 years doing
everything we
can to keep our
region healthy
and thriving,
and we’ll
continue that
tireless work
whatever storms
may come.”**

OVER THE PAST 75 YEARS, Sanitation District No. 1 has become an integral part of the Northern Kentucky community, working around the clock to protect public health, property and the environment and to support the growth and economic vitality of our region.

You might not think about SD1 very often – after all, most of our pipes are underground and when things are flowing smoothly, we’re out of sight, out of mind.

But take a minute and imagine our region without SD1.

Imagine if every time you washed your hands, took a shower, did a load of laundry or flushed the toilet, you had to figure out what to do with that water. Each of our customers creates, on average, nearly 100 gallons of wastewater every day. Multiply that by the hundreds of thousands of residents we serve, and you begin to realize just how important SD1 is.

And we don’t just take that wastewater away from local homes and businesses, we carry it through a vast network of pipes and other infrastructure across our region to one of our treatment plants, where it undergoes up to 16 hours of treatment before being returned, clean once again, to our local waterways.

We know that despite our best efforts, there will always be large storm events with the capability of overwhelming our region’s sanitary sewer and storm infrastructure. Our crews are out there, across our region, every day of the year working hard to keep waterways clean and protect the community from waterborne disease and flooding.

SD1 has spent 75 years doing everything we can to keep our region healthy and thriving, and we’ll continue that tireless work whatever storms may come.

Adam Chaney
EXECUTIVE DIRECTOR



OUR PROUD HISTORY



The Ohio River is 981 miles long and stretches from the Allegheny and Monongahela rivers in Pittsburgh to the Mississippi River in Cairo, Illinois.

Geologists say the river formed on a piecemeal basis beginning about 3 million years ago as the result of one of the early ice ages.

Native Americans and early settlers were the first to use the river as a transportation route, and today more than 184 million tons of cargo – most commonly coal – are carried up and down the river each year.

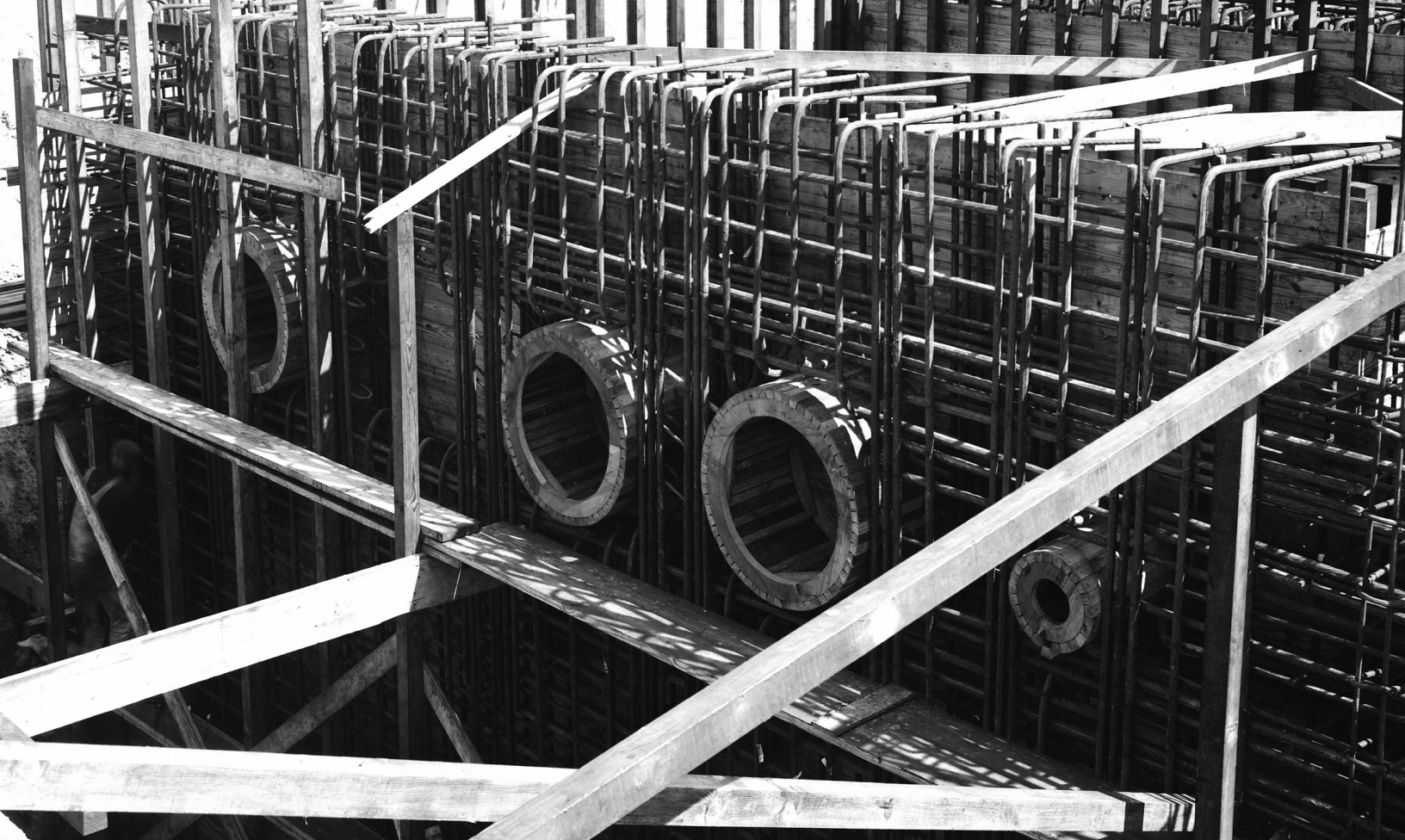
The mighty Ohio, which earned its name from the Iroquois word “O-Y-O,” meaning “great river,” today borders six states – Pennsylvania, Ohio, West Virginia, Kentucky, Indiana and Illinois. It gathers runoff from New York to Mississippi.

About 10 percent of America’s population lives within the Ohio River Basin, with thousands of communities receiving their drinking water from its relentless flow.

Up and down the river, urban and agricultural runoff, abandoned mines, industrial waste and – yes – raw sewage all threaten its water quality.

This threat is not new.

In February of 1871, a Cincinnati health officer named W. Clendenin reported to the Board of Health his concerns about the river’s water quality. As *The Cincinnati Enquirer* reported on that date – the newspaper’s first ever reference



to pollution of the river – Clendenin warned of “...the influence of exhalations from cesspools, sewers and privy vaults in the production of certain diseases.

“In referring to this subject now,” Clendenin continued, “my object is to direct special attention to the fact that a continuance of certain practices now common in Cincinnati is likely to produce the most pernicious results, endangering the public health and comfort.”

Clendenin was right – the practices he warned of in 1871 did, in fact, produce a pernicious result that continue to this day to threaten public health and comfort. Clendenin concluded his remarks to the Board of Health by calling for regulation of the pollution of our creeks and rivers.

THE 1940s

That’s exactly what happened, 77 years later, when Congress passed the first federal law aimed at protecting water quality – the Federal Water Pollution Control Act of 1948, which subsequently became the Clean Water Act.

At that point, most cities in the U.S. continued to discharge raw sewage directly into streams, rivers, lakes or oceans. Northern Kentucky was no different. Local wastewater was discharged directly into the Ohio River and its tributaries; this was still acceptable despite nearly a

century of warnings against water pollution.

But the states bordering the Ohio River hadn’t been sitting, waiting for the federal government to act. A decade before the first federal law protecting water quality, states along the river had begun working together to form the Ohio River Valley Sanitation Compact (a precursor to the Ohio River Valley Water Sanitation Commission (ORSANCO)), an interstate treaty born in Cincinnati that aimed at addressing the increase of pollution resulting from population growth and increased industrial activity.

It would be a costly endeavor, with 1943 estimates for cleaning up the Ohio River ranging from \$53 million to \$200 million.

On September 5, 1945, in response to odor concerns at Banklick Creek, Dr. H. Clay White, a Kenton County health officer, recommended the establishment of a sanitation district in Northern Kentucky.

One year later, on September 12, 1946, Kentucky Commissioner of Sanitation Districts F.C. Dugan issued an order establishing the boundaries of a proposed sanitation district in Northern Kentucky pursuant to Kentucky Revised Statutes 220, which authorized populous counties within Kentucky to establish such districts.

On December 6 of that year, Dugan issued an order organizing Sanitation District No. 1 of Campbell and Kenton Counties, Kentucky. Twenty-one days later, SD1’s

articles of incorporation were filed with the Kentucky Secretary of State.

William D. Anderson was appointed one of three founding SD1 Board of Directors (along with Harry F. Schaeper and George Beuttel) on December 12, 1946. As secretary and treasurer of the Board, Anderson would play a key role in the establishment of SD1. Anderson would oversee the unprecedented collaboration required for 17 Northern Kentucky communities to work together to develop one of the nation's first regional sewer districts without a penny of state or federal funding.

In 1948, the Ohio River Compact was formally ratified, signed by nine states – Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Tennessee, Virginia and West Virginia. The Compact was a pledge for “faithful cooperation” and enactment of necessary legislation for abatement and control to make the waters of the Ohio River and its tributaries “safe and sanitary.”

THE 1950s



William D. Anderson
General Manager
1952-1959

Anderson became SD1's first general manager after serving on the Board of Directors during the District's founding.

In March of 1951, SD1 awarded a contract in the amount of \$360,207.80 for the construction of Section A of a planned \$6 million sanitary sewer system in Northern Kentucky. Section A was to comprise a lateral sewer in Campbell County from the mouth of the Licking River along the Ohio River to Tower Hill Road and Mary Ingels Highway.

In January of 1952, Anderson resigned from the Board to become SD1's first general manager. Later that year, SD1 would break ground on its first wastewater treatment facility in Bromley. At the October 1 groundbreaking event, E. Blackburn Moore, chairman of ORSANCO, commended Northern Kentucky for its leadership role. “Northern Kentucky has set an example that well might be followed throughout the entire Ohio Valley,” Moore told a crowd of officials and dignitaries from across the Ohio River Valley.

On July 1, 1954, approximately 39,000 customers in Campbell and Kenton counties started paying sanitary sewer fees to fund the construction and maintenance of the \$7.6 million project. Payments were to be based on water consumption, with a minimum rate of \$2.40 every three months, which would include 8 hundred cubic feet (HCF) of water



The Bromley Treatment Plant operated from 1954-1979.

treatment, and an additional 24 cents per HCF above 8.

Soon after the Bromley Treatment Plant opened in 1954, local residents began to complain of hydrogen-sulfide odors. Within a year, the local Circuit Court in June 1955 enjoined further operation of the plant until the issue could be resolved. The plant remained closed while necessary odor-reducing equipment was installed, and on November 17, 1956, it was allowed to reopen pending a state inspection. State inspectors gave the plant a clean bill of health in February 1957, and it continued operation until 1979, when the Dry Creek Wastewater Treatment Plant opened in Villa Hills.

The decade would close with the firing of Anderson as general manager on November 4, 1959, and SD1's operations being placed under the control of McGill & Smith, an engineering firm from Bethel, Ohio.

THE 1960s

Robert D. McGill served, for all intents and purposes, as the second general manager in SD1 history. McGill was responsible for day-to-day operations while the District searched for a permanent replacement to William Anderson.

McGill brought with him a plan to operate SD1 more economically, and to further address odors. "Costs are constantly going up," he told *The Enquirer*. "We will have to pay better wages, chemicals for treatment will be higher and supplies will be more. But we'll try to keep the bills down," he said.

The 1960s saw further expansion of SD1, beginning with the addition of Erlanger in 1961. The following December, Donald W. Heil was named general manager, with a new focus on the administrative operation of the District. A new role was created to manage the Bromley Treatment Plant.

Heil's tenure would prove to be a short one, ending with his resignation in June of 1965 to return to private business. He would be replaced by Paul W. Brown (not to be confused with Cincinnati Bengals founder Paul E. Brown), who became general manager on July 1, 1965.

Four months later, Brown would accept a Kentucky Jaycees clean water award on behalf of SD1 and its 55 employees at the State Association of Water & Sewage Plant Operators annual convention.

At that point, SD1 had already grown to a district serving 27 communities across Northern Kentucky and was developing a comprehensive education program for schools and residents.

"Much has been done to acquaint industry with the need for proper treatment of waste," Brown told those in attendance at the second annual Northern Kentucky Water Pollution Control Seminar on March 24, 1966. "But it has been done slowly and more needs to be done," he added.



Robert D. McGill
Interim General Manager
1959-1962

McGill brought a focus on efficiency and a plan to address odor issues.



Donald W. Heil
General Manager
1962-1965

Heil's focus was on the administrative operation of the District. Under his leadership, a new role was created to manage the Bromley plant.



Paul W. Brown,
General Manager
1965-1976

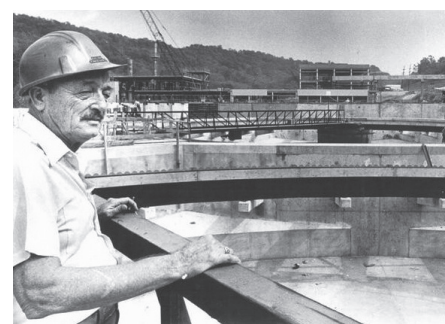
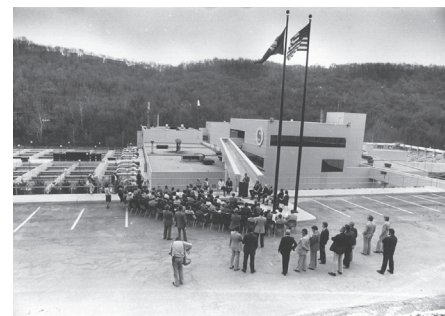
Brown oversaw SD1's continued growth, including work to raise federal funds to help pay for the construction of the Dry Creek plant.

As the decade came to a close, SD1 announced plans to build a new treatment plant down river from the Bromley facility that would allow for the eventual phasing out of the Bromley plant. In addition, Brown said that SD1 and Boone County officials were in talks about a consolidated, regional sanitation program.

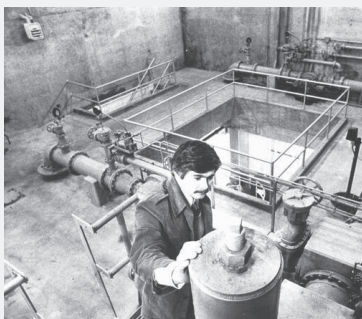
THE 1970s

Treating wastewater and keeping our local waterways clean is costly business. That was the message for Northern Kentuckians as sewer bills began to climb in the 1970s. In 1970 alone, customers saw a 125% rate increase, from about \$30 per year to about \$70 per year.

That increase, *The Enquirer* reported on July 12, 1970, would "go toward financing a staggering \$42 million sewage program projected for the area served by [SD1]. Part of the total will be needed over the next 20 years, but an estimated \$32 million must be spent in the next six years." Much of that cost would come with the construction of Dry Creek.



Construction of the \$68 million Dry Creek Wastewater Treatment Plant began on August 22, 1975, and SD1 celebrated its grand opening on April 11, 1980. Today, Dry Creek treats about 25 million gallons of wastewater per day – a process that takes about 16 hours.



Gary R. Richardson
General Manager
1977-1994

Richardson has the longest tenure as GM in SD1's history, serving in the role for 18 years and overseeing continued growth of the District.

To help limit the impact of rate increases, the Kentucky Department of Natural Resources and Environmental Protection announced on October 4, 1973, that it would be distributing \$15.8 million in federal funds for the Dry Creek facility. This was in addition to a \$9.7 million federal grant received four months earlier. The following year, another \$13.8 million in federal funding would be secured for the project. Construction on the \$68 million Dry Creek Wastewater Treatment Plant began on August 22, 1975.

A year earlier, federal officials told the Boone County Fiscal Court that federal funds for a standalone sewer system were unlikely and recommended joining with a larger system such as SD1 of Campbell and Kenton Counties.

A new era at SD1 began in 1976 when Gary R. Richardson became the District's fifth general manager. Richardson would record the longest tenure as general manager in SD1 history, serving in the role for 18 years and overseeing continued growth of the district.

THE 1980s

SD1 celebrated the dedication of the Dry Creek Wastewater Treatment Plant on April 11, 1980 – the culmination of more than a decade of planning and work to bring the system online.

"There are bigger plants, but we were pioneers," said General Manager Gary Richardson, "one of the first districts in Kentucky to venture ahead and improve its sewage treatment system under the new laws."

Today, Dry Creek treats waters from Boone, Campbell and Kenton counties. The facility was originally designed with a capacity for treating 25.3 million gallons per day – a process that takes about 16 hours.

Meanwhile, the former Bromley plant experienced a reboot on Pike Street, being converted into the International Catfish Ranch in 1982. The facility included a casual open-air restaurant called Miss Sippy's, the more upscale Katsby's restaurant and the Swampy's outdoor bar. It also included a small marina. The International Catfish Ranch would close in 1986 and be followed by Durty Harry's steak and seafood restaurant and then a Chinese restaurant called Tamsui.

One of SD1's darkest days came on August 24, 1985, when two members of the staff were overcome by fumes in a sewage vat at Dry Creek. David Wilder and Larry Harmon died of asphyxia. Although an investigation by the Kentucky Occupational Safety and Health Review Commission determined that SD1 was blameless in the accident, the incident led to an increased focus on worker safety that continues today.

THE 1990s

In June of 1992, Boone County partnered with SD1 to build a \$9 million main-trunk sewer system through the central part of the county to serve Hebron, Bullittsville and Burlington. The system called for sewer mains and pump stations, and wastewater would be treated at Dry Creek.

The following year, the City of Newport began discussions about merging with SD1 to help address the city's deteriorating sewer system.

In 1993, Dry Creek was expanded to increase design capacity to 46.5 million gallons per day. Later that year, the November 7 issue of *The Enquirer* included something that hadn't been in the paper in nearly two decades – a job posting for SD1 general manager. Gary Richardson had announced he would not be renewing his contract, and so a new era was about to begin.

The posting noted that SD1 had 72 employees – an increase of only 18 people since Paul Brown took over as GM in 1965. "Position requires abilities of an experienced, overall administrator, with major responsibilities for short- and long-term planning, financial management, regulatory compliance, indebtedness oversight, personnel administration, union negotiations, purchasing, and property acquisition."

Jeff Eger became SD1's sixth general manager on March 1, 1994. "We needed someone to pull together a Northern Kentucky that is divided over sewers," said Richard Kennedy, chairman of the SD1 Board at the time. Eger previously served as executive vice president and chief



Jeff Eger
General Manager
1994-2011

Eger would oversee the consolidation of the District into a three-county regional utility, including assuming ownership of much of the region's sanitary and storm sewer infrastructure.

operating officer of the Kentucky Chamber of Commerce.

For years, city and county officials and SD1 had been divided about how sewer lines should be managed. Cities like Newport and Covington, where lines were more than 100 years old, were pushing for a regional utility, while some suburban communities pushed for subdistricts that would allow cities to give up ownership and maintenance of their lines to the District.

In 1994, in response to pending changes in environmental regulations and increased public interest in consolidation of services, KRS 220 was amended to allow SD1 to operate sewage and drainage systems in cities located within its jurisdictional boundary.

On July 1, 1995, 28 cities in Northern Kentucky turned over ownership of their sanitary sewer systems to the District. That December, Boone County officially merged with SD1. The cities of Independence and Alexandria followed suit, and as a result, SD1 became responsible for the collection and treatment of virtually all Northern Kentucky wastewater, serving 33 communities in Boone, Campbell and Kenton counties, with the exception of the cities of Florence and Walton (though SD1 does accept and treat wastewater from Florence).

As a result of these consolidations, SD1 assumed ownership and operational responsibility for approximately 900 additional miles of sanitary sewers and related pump stations. SD1 also became responsible for approximately 100 combined sewer overflow (CSO) points and related flood protection components located within the combined sewer systems along the Ohio River, Licking River and Banklick Creek.

In 1996, SD1 began an extensive rehabilitation program on the region's collection system, spending more than \$65 million to upgrade and rehab pump stations and sanitary sewer lines. Over the next decade, the District would replace more than 16 miles of sanitary sewer line, complete more than 1,500 sewer line point repairs and repair or replace more than 4,000 manholes.

THE 2000s

In fall of 2002, good news was reported regarding the quality of the water within the Ohio River, with advances in water quality credited to improvements in Northern Kentucky and Cincinnati designed to keep

raw sewage out of the river.

Just a month later, however, the US Environmental Protection Agency (EPA) concluded that Kentucky was failing to adequately protect as much as two-thirds of its rivers, streams and lakes from being harmed by pollution and issued water quality standard for Kentucky. That standard would set the stage for later regulation of sanitary sewer overflows and combined sewer overflows in Northern Kentucky.

In 2003, SD1 entered into interlocal agreements with 33 local governments, giving SD1 the responsibility to undertake permitting requirements and other related services regarding the Storm Water Phase II Management Program, while the ownership and maintenance responsibilities of the public storm water system remained with the local governments.

Just one year later, SD1 received the US EPA's "Clean Water Act Recognition Award" for outstanding storm water management, one of the most prestigious national awards granted by the EPA.

The Public Service Park opened in 2004, merging a beautiful walking trail with an interactive learning experience that teaches visitors and local schools about water pollution prevention.

In October 2005, SD1 joined the ranks of wastewater utilities across the nation whose futures would be guided by a consent decree to improve water quality. The decree, signed by SD1, the US Environmental Protection Agency, the Kentucky Environmental and Public Protection Cabinet and the US Department of Justice, required an estimated \$880 million investment (an estimate that would eventually climb to \$1.3 billion) over 20 years to address sewage overflows in Northern Kentucky.

Given the expansion of the sanitary sewer system and

the establishment of a regional storm water utility, SD1 saw tremendous growth during this time, seeing its total staff grow from about 65 in 1994 to more than 200 in 2006.

On September 24, 2007, the Eastern Regional Water Reclamation Facility began accepting flow after nearly three years of construction. Located in Alexandria, Eastern Regional was built to eliminate SSOs due to deteriorated infrastructure and replace and receive the combined flows of existing Alexandria, Southern Campbell County Industrial Park and Pond Creek treatment plants. It will also accommodate future growth in Campbell County.

Eastern Regional was built to incorporate state-of-the-art treatment and odor control technologies, using ultraviolet light to disinfect water before release and innovating biofilters to help control odors. The facility has a design flow of 4 million gallons per day and currently treats about 1 million gallons per day.

Beginning in 2009, storm water infrastructure transfer agreements were developed and approved by a majority of the cities and counties in Northern Kentucky, shifting to SD1 ownership and maintenance responsibilities related to the public storm water drainage system.

THE 2010s

On April 22, 2010, a banner headline in *The Enquirer* told a story that was decades in the making: "Ohio River 'robust, healthy.'" The article begins, "Here's a sentence many may not have thought they'd ever read: The quality of life for fish in the Ohio River in the region is 'robust and healthy,'" according to Erich Emery, who oversees biological programs for the Ohio River Valley Water Sanitation Commission."

In the decades since SD1 was founded, life in and around



The SD1 Public Service Park opened in 2004, merging a beautiful walking trail with an interactive learning experience that teaches visitors and local schools about water pollution prevention. The PSP is adjacent to SD1's Main Office in Fort Wright.

the Ohio River had improved tremendously. The article noted that in the 1950s, scientists refused to even go into the water to collect samples, sometimes noting its “orange and purple color.”

The article continued, “When Orsanco was created 62 years ago, the river was referred to as ‘an open sewer’...” and noted that traces of human and animal waste had been on a steady decline since the 1970s, and even noted that the fish in the river near Northern Kentucky are safe to eat.

It concluded, however, by noting that there was still much more work to be done, citing the costly federal consent decrees that Cincinnati and Northern Kentucky were operating under to mitigate sewer overflows.

In January of 2011, Jeff Eger ended his 17-year tenure as SD1 general manager/executive director to become executive director of the Water Environment Federation (WEF). During his tenure, Eger developed and implemented a regional storm water management program to comply with US EPA regulations and supervised the regionalization of 30 municipal sanitary sewer systems.

As SD1 searched for a permanent replacement for Eger, Deputy Executive Director of Engineering Mark Wurschmidt would take over in the first of two stints as interim leader of SD1. Wurschmidt would lead the District for about a year until a permanent replacement could be found.

David Rager became SD1’s eighth executive director (formerly “general manager”) on January 1, 2012. Rager previously spent 18 years as CEO of the Greater Cincinnati Water Works. During that time, he also served as deputy city manager and interim city manager.

In 2012, the Western Regional Water Reclamation Facility became SD1’s newest wastewater treatment plant. Western Regional cleans water from most of Boone County



David Rager
Executive Director
2012-2016

Rager oversaw the opening of Western Regional and the completion of the Western Regional Conveyance Tunnel.

and portions of Kenton County, alleviating demand from Dry Creek.

Western Regional uses ultraviolet light to disinfect water before release and odor biofilter technology to help control odors. It takes about 27 hours for wastewater to go through the treatment process at Western Regional.

Western Regional treats an average flow of about 8 million gallons per day and has a flow capacity of about 20 million gallons per day. The facility services more than 26,650 accounts.

Later that year, SD1 facilities received a number of National Association of Clean Water Agencies (NACWA) awards that recognize superior wastewater treatment services by protecting public health. Peak Performance Gold Awards were earned by the Charles H. Kelly School Treatment Plant and the Verona Commons Treatment Plant (two of several smaller package treatment plants owned and operated by SD1); Peak Performance Silver Awards were earned by Eastern Regional and the Rivershore Farms Treatment Plant (another package treatment plant); and the Ethans Glen Treatment Plant earned a Peak Performance Platinum Award.



The Eastern Regional and Western Regional water reclamation facilities were brought online in 2007 and 2012, respectively. Both plants feature state-of-the-art treatment and odor technologies, using ultraviolet light to disinfect water. The treatment process at Western Regional takes about 27 hours, and the plant treats about 9 million gallons of wastewater per day.



This large boring device was used to help build the \$110 million Western Regional Conveyance Tunnel. The 32,610-foot tunnel routes flow to the Western Regional treatment plant. It was recognized as the Environmental Initiative of the Year by New Civil Engineer magazine in 2013.



Adam C. Chaney
Executive Director
2017-Present

Chaney has overseen the successful renegotiation of SD1's Clean H2O40 Amended Consent Decree, creation of a base-rate fee structure and development of long-term financial and capital plans during his tenure.

In 2013, SD1 completed the Western Regional Conveyance Tunnel. This \$110 million project was designed to not only assist with SD1's consent decree sewer overflow mitigation requirements, but also to support the economic growth and vitality of Boone County. The 32,610-foot tunnel routes flow to Western Regional. It was recognized as the Environmental Initiative of the Year by New Civil Engineer magazine in 2013.

That same year, SD1 faced a difficult financial dilemma when the Boone County and Kenton County Fiscal Courts rejected a proposed 9 percent rate increase. Balancing affordability with meeting the requirements of the federal consent decree was a serious challenge, Executive Director Rager insisted, particularly when the economic downturn had resulted in lower-than-expected revenues. The decision resulted in staffing reductions, deferred maintenance and system assessment, and ultimately decreased service levels.

To meet the challenges of operating a regional utility, SD1 made significant investments in technology during this period, growing to 75 servers, 50 networked devices and about 485 computers, laptops, tablets and mobile phones. In addition, the District enhanced its use of geographic information system (GIS) and added the digital maintenance management software, Lucity, which was integrated with the GIS system, as well as supervisory control and data acquisition (SCADA) telemetry to monitor pump station operation throughout the region.

Executive Director Rager resigned in March of 2016, and Deputy Executive Director of Engineering Mark Wurschmidt was once again called on to lead SD1 during a search for Rager's replacement.

Wurschmidt joined SD1 in 1997 and was appointed deputy executive director of engineering in 2005. Prior to his time at SD1, he worked in the private sector for consulting engineers Arcadis and Franklin Consultants, Inc. He would go on to retire from SD1 in July of 2017.

Adam C. Chaney became the ninth and current SD1 Executive Director on January 3, 2017. Chaney previously served on the SD1 Board of Directors since 2014 and as president of the Board from July 2015 through December 2016.

Chaney brought a background in finance, banking and operational management, having formed a real estate investment company in 1999 that grew to include single-family residential, multi-family, office and retail properties across the region. He also previously served as president and board chairman for the Building Industry Association of Northern Kentucky.

Just six months after taking office, Chaney launched Lean SD1 – a District-wide commitment to creating a lean culture and transforming the utility through continuous



SD1's lovable fish mascot, Splash McClean, is an important part of the District's commitment to community engagement. You'll regularly see Splash at ballgames and other events around our region.

improvement. By continually evaluating the effectiveness and efficiency of processes large and small across the District, Lean SD1's ultimate aim is to minimize waste and maximize value.

An early example of SD1's new focus on efficiency came in the summer of 2018, when SD1 conducted a technical competition amongst the nation's leading consulting firms to find innovative ways to reduce the cost of sanitary sewer overflows. The competition created the roadmap for future initiatives and culminated in more than \$700 million in ratepayer savings over the existing overflow mitigation plan.

SD1 also unveiled an enhanced interactive financial model in 2018, developed in partnership with Black and Veatch, that allows users to change variables such as rates and immediately see how those changes impact other variables, such as long-term debt.

In 2019, after nearly a decade of negotiation, SD1 reached an agreement with federal and state regulators to extend the deadline of the District's consent decree – then estimated to be a \$1.3 billion program – to January of 2040.

Under the terms of the program, which SD1 would eventually call Clean H2O40 (see p. 14), the District would be required to meet certain sanitary sewer overflow elimination targets and combined sewer overflow capture targets by key milestone dates, ultimately eliminating all typical-year SSOs and recapturing 85 percent of typical-year CSOs by 2040.

In addition to a new consent decree deadline, SD1 also implemented a new rate structure in 2019. With the dual purpose of more closely aligning the District's residential sanitary sewer fees with the actual cost of providing service as well as addressing water consumption decline, a base rate was established with a declining variable rate for additional wastewater treatment. An environmental surcharge to help fund the Clean H2O40 program was also

part of the new structure. To help offset the impact of the new structure, SD1 also established a Customer Assistance Program for low-income, low-volume customers.

THE 2020s

The 2020s brought with them a global pandemic that might have threatened SD1's day-to-day operations were it not for a strong commitment to patience, persistence and positivity. The District was forced to reevaluate all facets of its work, from how it engages customers to how it keeps staff healthy and safe.

New technologies were implemented, processes across SD1 were enhanced and staff worked together like never before to adapt to a "new normal" that continues today.

COVID-19 certainly didn't slow SD1's momentum. In April of 2020, the District announced a new smart-sewer management approach to fighting sewer overflows.

This new approach – a combination of storm water storage and flow management – is the basis for the Updated Watershed Plan (see p. 16) that was submitted to regulators that year. It is expected to trim hundreds of millions of dollars off the price tag of the Clean H2O40 Amended Consent Decree program, cutting in half SD1's long-term capital costs.

Later that year, SD1 announced the latest round of bond refunding, saving ratepayers \$14.8 million in debt service. Combined with two previous rounds of refunding over the previous four years, the savings for current and future ratepayers is nearly \$75 million.

"Every dollar we save through bond refunding is a dollar we do not have to collect from ratepayers," Executive Director Adam Chaney said. "So saving about \$3 million per year over the next 25 years is very significant. It allows us to invest in critical infrastructure around the region while keeping rates as low as possible."

On March 1, 2021, SD1 and the City of Covington agreed to the removal of the city from SD1's storm water management program.

Later that month, SD1 began work on its largest Clean H2O40 project to date – a multi-phase project to eliminate 47 million gallons of SSO in Wilder. The Licking River Siphon accounts for 41 percent of all recurring SSOs that SD1 must eliminate by its 2040 deadline.

During his first five years at the helm of SD1, Executive Director Adam Chaney has helped to transform the organization, increasing its service level, lowering anticipated costs and establishing a transparent and sustainable roadmap for SD1's future.



Clean H2O40 Ushers in a New Era of Smart-Sewer Management

NORTHERN KENTUCKY IS A RIVER TOWN.

Always has been, always will be. We respect the rivers and streams that flow through our history and culture because they unite us far more than they could ever divide us. We live, work and play in and around the Ohio and the Licking. Their waters shape the boundaries of our community and our identity.

So we have a responsibility – all of us – to keep their waters clean. That's why SD1 works around the clock, 365 days a year to manage Northern Kentucky's wastewater and storm water.

Because we live here too. This is our community, and for 75 years, we have dedicated ourselves to serving Northern Kentucky with pride.

When everything flows smoothly, our work is mostly hidden. You don't see the nearly 36 million gallons of water we clean every single day or the vast network of over 2,000 miles of SD1 pipe just below our neighborhoods. It's easy to forget how much goes into keeping Northern Kentuckians safe from dirty water and dangerous flood conditions.

Northern Kentucky is a river town, and our quality of life is directly linked to



“Northern Kentucky is a river town, and our quality of life is directly linked to our quality of water.”

our quality of water. The good news is – we’ve already come a long way. As you learned in the history section of this book, the Ohio River is much cleaner today than it was when SD1 was founded in 1946. Back in those days, our region’s wastewater was pumped directly into the Ohio River. Today, when wastewater enters SD1’s system, it ends up at one of our water treatment plants, where it undergoes up to 16 hours of cleaning. Through this process, SD1 prevents about 75,000 pounds of waste from entering the Ohio River every single day.

And when the weather is dry, our system generally runs pretty smoothly. But when heavy rain or snow hits, our system – like sewer systems across the country and around the world – can get overwhelmed, resulting in a sewer overflow.

That’s why we’ve partnered with the U.S. Environmental Protection Agency and the Commonwealth of Kentucky on a program called Clean H2O40, which aims to address both sanitary and combined sewer overflows in our region.

But before we go any further, we should probably explain the difference.

Sanitary sewer overflows (SSOs) occur when wastewater that is supposed to be contained within our sanitary sewer system escapes the system for some reason.

**CLEAN
H₂O40**



Executive Director Adam Chaney signed the Clean H2O40 Amended Consent Decree on February 19, 2019

The sanitary system has separate pipes for wastewater and storm water – this system is found in areas of our community that have been developed more recently, after regulations were changed. And even in this system, storm water sometimes finds its way in, which can result in SSOs.

Our Clean H2O40 goal is to completely eliminate what we call “typical-year” sanitary sewer overflows by the year 2040.

We use a typical year as our benchmark because it’s impossible to completely eliminate every SSO and would be extremely expensive to try. So we are working to ensure that our system is built to handle typical year precipitation. When we started the Clean H2O40 program, our region saw about 115 million gallons of SSOs in a typical year.

Unlike the sanitary system, our combined sewer system carries wastewater and storm water in the same pipe; this system is found in areas that were developed long before regulations were put in place, which in Northern Kentucky generally means river cities like Covington, Newport and Bellevue.

Combined sewer overflows (CSOs) can occur when storm water overwhelms our region’s sewer pipes, potentially resulting in flooding, backups and other public health concerns. In a typical year, Northern Kentucky sees about 1.6 billion gallons of CSOs.

Our Clean H2O40 goal is to capture at least 85 percent of the total combined system flow by the year 2040.



SD1 is adding equalization (EQ) tanks to its system as part of a smart-sewer management program to store excess storm flow and control its release back into our system once a storm is over.

TYPICAL-YEAR SSO ELIMINATION GOALS

JULY 1, 2023	ELIMINATE 20% OF TY SSO
JULY 1, 2029	ELIMINATE 75% OF TY SSO
JULY 1, 2034	ELIMINATE 90% OF TY SSO
JANUARY 1, 2040	ELIMINATE 100% OF TY SSO

TYPICAL-YEAR COMBINED SYSTEM FLOW RECAPTURE GOALS

JULY 1, 2023	CAPTURE 67% OF TY COMBINED SYSTEM FLOW
JULY 1, 2029	CAPTURE 75% OF TY COMBINED SYSTEM FLOW
JULY 1, 2034	CAPTURE 80% OF TY COMBINED SYSTEM FLOW
JANUARY 1, 2040	CAPTURE 85% OF TY COMBINED SYSTEM FLOW

SD1’s blueprint for accomplishing these goals is our Updated Watershed Plan, which brings a new focus on smart-sewer management.

The first step toward creating smart sewers happens long before any work begins in the field. Working with our Updated Watershed Plan partner, Hazen and Sawyer, SD1 ran thousands of scenarios using artificial intelligence software to precisely predict what will happen throughout Northern Kentucky’s sewer system under various storm simulations.

The results of that work are at the heart of Clean H2O40 – a plan for the most effective and affordable approach to mitigating sewer overflows. Whereas in the past, SD1 would have attempted to build



This will eliminate sewer overflow much more economically than building larger and larger pipes.

larger pipes to manage more flow, we are now focusing on storage and coordinated release.

“We’re going to make our sewer system smarter,” said Executive Director Adam Chaney. “We can no longer afford to simply build bigger and bigger pipes and wait for them to become overwhelmed by larger and larger storms.”

The concept is similar to smart traffic lights during rush hour. As more and more cars begin to congest the road, traffic lights can be used strategically to keep things moving. SD1 will apply the same logic to Northern Kentucky’s sewer system, working toward system-wide coordination that relies on storing flow in tanks, pipes and other structures across the region.

“This new strategy is anticipated to significantly lower project costs and associated revenue needs by hundreds of millions of dollars over the next 20 years. In addition to maintaining sewer rate affordability, the reduced overflow mitigation costs will allow SD1 to address system expansion required to support the local economy,” Chaney said.

You might have noticed two large new equalization (EQ) tanks about a mile apart along Route 8 in Highland Heights and Silver Grove. Those tanks – and similar tanks which will be built across our region – will change the dynamics of overflow mitigation.

When heavy storms roll in, flow meter technology will signal the sewer system to store excess flow inside those tanks rather than allow it to continue downstream and overwhelm the system. Once a storm has passed and downstream capacity is available once more, the system will gradually release flow back into the pipes for transport to a treatment plant. This will minimize the risk of increased volume overwhelming the system and causing sewer overflows.

The two tanks in Highland Heights and Silver Grove alone will combine to hold about 3 million gallons when full, which will help to eliminate about 20 million gallons of typical-year SSOs. And they will do so at a price tag well below traditional overflow mitigation strategies.

A similar EQ tank is being constructed in Wilder that is part of a three-phase project that will eliminate more than 47 million gallons of typical-year SSO. Combined with the Highland Heights and Silver Grove tanks, these projects will get SD1 well over halfway toward its ultimate goal of total elimination of typical-year SSOs.

“We’re going to use storm water storage in combination with smart sewer management to improve our system today and into the future,” Chaney said. “This new approach will make it possible for SD1 to mitigate system overflows, improve water quality and public health, and continue supporting the economic vitality of our region without over-burdening ratepayers.”

And that is what Clean H2O40 is all about.

Can you imagine what our region would be like without SD1? Because after all, Northern Kentucky’s waterways are its lifeblood. Always have been, always will be.

We’re flowing with possibilities, and SD1 makes it possible.



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