

Tunnel Works

Tunnel Works Program Frequently Asked Questions



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City Utilities operates the largest municipally-owned wastewater collection and treatment system in Indiana. The system serves 161 square miles and includes 1,014 miles of sanitary sewer lines, 365 miles of combined sewer lines and 610 miles of stormwater-only pipes. Fort Wayne's Water Pollution Control (sewage treatment) Plant on Dwenger Avenue east of North Anthony Boulevard has a capacity to treat up to 100 million gallons of wastewater per day (MGD) during wet weather.

Keeping the sewer system operating to serve customers and to meet regulatory requirements takes ongoing maintenance, repair, replacement and expansion of sewer system components. Operation and maintenance along with improvements to the sewer system are funded entirely by user fees collected from sewer utility customers in Fort Wayne and surrounding areas. City Utilities does not receive any revenue from taxes. In fact, City Utilities makes an annual payment in lieu of taxes (PILOT) to the tax supported part of City government. City Utilities does not make a profit. All revenue collected through customer rates and charges is reinvested in running the sewer system, increasing sewer capacity, and repairing or replacing aging infrastructure.

How we got here - Fort Wayne's Consent Decree

Fort Wayne is under a federal court order to greatly reduce the amount of combined sewage going into our rivers each year. The order also requires City Utilities to reduce sewage backups into homes during wet weather events, eliminate discharges from sanitary sewers and enhance the sewer system's reliability through ongoing operation and maintenance, repair, rehabilitation and replacement. Fort Wayne negotiated with the US Environmental Protection Agency (US EPA), the Indiana Department of Environmental Management (IDEM) and the United States Department of Justice for more than ten years before an agreement was reached in late 2007 (formally signed in 2008) that governs how City Utilities will carry out these Clean Water Act mandates. The agreement was incorporated into a federal Consent Decree and is enforced by a federal court.

When Fort Wayne's combined sewer system was designed and built as far back as the 1890s, it was state-of-the-art. Discharges from the sewer system into the rivers were allowed when the sewer system became overloaded with rainwater exceeding the capacity of pipes to carry the flow or the capacity of the sewage treatment plant to treat it all. As our country became more environmentally conscious, laws and regulations changed and overflows from combined sewer systems, like Fort Wayne's, were no longer an acceptable practice.

Fort Wayne's Consent Decree requires City Utilities to reduce the number of overflow events from the combined sewer system from 71 times in a typical year to just four times per year on the St. Marys and Maumee Rivers. The operation, construction and green infrastructure program to which the City agreed must be completed by 2025 (18-years from the time the agreement was reached).

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Q: What is the tunnel all about?

A: The *Tunnel Works* Program represents a major part of Fort Wayne’s efforts to implement the 2008 Long-Term Control Plan and associated Consent Decree. The premier project - the deep rock tunnel - will be constructed in the bedrock deep below the city. The tunnel will collect sewage from the combined sewer system and transport it to the sewage treatment plant -- sewage that would otherwise overflow into the St. Marys and Maumee Rivers when it rains.

Q: Why is the tunnel needed? What are combined sewers?

A: Like many cities in the United States, portions of the City of Fort Wayne use a single pipe system to carry a combination of sanitary sewage and stormwater. During dry weather, the pipe capacity is adequate to carry sanitary wastewater to the sewage treatment plant. When it rains, the addition of stormwater can overwhelm these combined sewer lines causing the system to discharge combined sewage and stormwater to the rivers through a number of outfall locations. The *Tunnel Works* Program, together with other key parts of the Long-Term Control Plan, will reduce the number of times combined sewer overflows occur in a typical year from about 71 times to just (four) 4 times on the St. Marys and Maumee Rivers. Investment in the *Tunnel Works* Program will improve river water quality and benefit Fort Wayne and surrounding areas for generations to come.

Q: Why do our sewers discharge sewage into the rivers? Were the sewers designed this way or are they broken?

A: Originally when cities such as Fort Wayne developed, only stormwater sewers existed to carry rain water away from neighborhoods and to the rivers. When indoor plumbing became common, sanitary facilities were connected to these existing stormwater sewers. All of the sewage from homes and businesses that did not have on-site treatment (septic systems) went directly to the rivers. In 1940, Fort Wayne built its first Water Pollution Control Plant to treat sanitary sewage. Interceptor sewers were built to collect wastewater from neighborhoods and carry it to the plant. But during wet weather, the sewers still discharged some combined sanitary sewage and stormwater to the rivers when too much flow would have overwhelmed the plant or caused sewage to back up into streets and homes. Combined sewers were considered state of the art for sewer design until the early 1970s when the Clean Water Act prohibited further combined sewer construction. Since the early 1990s, combined sewer communities have been mandated by federal law to begin reducing combined sewer overflows (CSOs). In April 2008, Fort Wayne formalized its agreement with the federal government for how the combined sewer system would be improved.

Q: What will the tunnel and associated sewers actually do?

A: During dry weather, sanitary sewage from the combined sewer area will continue to be carried through existing sewer lines to the sewage treatment plant to be treated. During rain or heavy snow melt events (known as “wet weather”) the tunnel will collect and transport the majority of the combined sanitary sewage and stormwater runoff, that would otherwise be discharged to the St. Marys and Maumee Rivers, to the sewage treatment plant.

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Q: How will sewage get into the tunnel?

A: A few new “near surface” sewers will be built and structures called “drop shafts” will be added to direct the combined sewage into the tunnel. The combined sewage will travel through the tunnel to the sewage treatment plant where it will be stored temporarily and treated after the wet weather event is over and the plant has sufficient capacity.

The tunnel is a piece of a three part strategy to reduce the amount of combined sewage being discharged to the rivers by: 1) separating some sewers to remove stormwater; 2) collecting and transporting more combined sewage to the sewage treatment plant; and 3) treating more combined sewage at the plant.

Q: Where will the tunnel be located?

A: The tunnel system will begin at the existing sewage treatment plant located on the Maumee River east of North Anthony Boulevard. It will run east, generally parallel to the Maumee River, cross Swinney Park and the St. Marys River, and then continue south along the St. Marys River. It will end near Foster Park.

Q: How long and how deep will the tunnel be? How about the connecting sewers?

A: The main tunnel will be approximately five (5) miles long and will be located approximately 200 – 250 feet deep in the bedrock under Fort Wayne. As part of the larger *Tunnel Works* Program, approximately a mile of consolidation sewers will also be constructed. Consolidation sewers are near surface sewers that will collect combined sewage from the existing sewer system and connect to drop shafts that will direct the combined sewage into the tunnel. There will be nine (9) drop shafts, between 4 and 8 feet in diameter, constructed near existing combined sewer overflow locations. There will also be approximately two (2) miles of relief sewer connected to the south end of the tunnel that will be shallower and smaller in diameter.

Q: How long will it take to build?

A: Construction of the main tunnel is estimated to take 54-months, but the entire system, including all connecting pipes, could take up to eight (8) years to complete. For the entire system to operate construction of the drop shafts and consolidation sewers must be completed.

Q: When will construction begin?

A: Program design work began in 2014. Construction of the tunnel will begin in 2017 and will take about three (3) years to complete. Near surface sewer construction will occur between 2019 and 2023. Construction of the Foster Park relief sewer may extend to 2025.

Q: How will the tunnel be built?

A: The five (5) mile long portion of the tunnel will be approximately 200 to 250 feet deep and will be dug using an underground tunnel boring machine or TBM. The machine will be put in place through a large opening called a working shaft to be located near the sewage treatment plant, and will travel underground to the other end at Foster Park. As the tunnel is dug, a concrete liner will be placed behind the TBM. The finished tunnel will have an inside diameter of 16 feet.

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There will be two (2) miles of relief sewer at the south end of the tunnel that will be shallower and smaller in diameter and will be likely be constructed using traditional “open cut” methods. A trench will be dug at the depth needed for the pipe. Pipe will be laid at the bottom of the trench. The trench will be refilled using stone around and above the pipe with soil added on top of that. Any above ground disturbance will be restored to be as it was prior to the construction. For example, a portion of the pipe will be located under the Foster Park golf course; however, when construction is complete, the golf course will be restored as a golf course for future use by the public.

Vertical drop shafts will be constructed to direct combined sewage from the near surface consolidation sewers into the tunnel. These drop shafts will be constructed from the ground surface to the depth of the tunnel by digging through the soft soils using a traditional excavation. Specialized drilling methods will be used to get through the rock to the final depth, thus connecting the drop shafts to the tunnel. The consolidation sewers that will connect to the drop shafts will be constructed using traditional “open cut” methods or trenchless technologies.

Q: How will this project help the rivers?

A: Combined sewers - such as those that serve about one third of Fort Wayne - discharge a mixture of sanitary sewage and stormwater runoff to the rivers when it is raining or snow is melting. These discharges affect the quality of the rivers and can pose a health risk for people who come in contact with the rivers for a period of time after a combined sewer overflow (CSO) event. Combined sewage also has negative impacts on wildlife and the overall ecology of the rivers. The tunnel project will collect and transport the combined sewage to the sewage treatment plant, thus reducing amount of combined sewage and the pollutants entering the rivers by 90%.

Q: What kind of disruption should I expect?

A: In some neighborhoods along the Maumee and St. Marys Rivers, construction of near surface consolidation sewers will be required to connect existing sewers to the drop shafts. These new sewers will be constructed by traditional “open cut” methods and will involve the same degree of disruption as a normal sewer construction project, such as tree removal, traffic detours, construction noise and truck traffic. Also, at approximately nine (9) locations along the route of the tunnel, drop shafts will be constructed to drop the combined sewage from the consolidation sewers into the tunnel is being used during wet weather. At these drop shaft sites construction, activities may result in construction noise or truck traffic. As design progresses more meetings will be organized with local residents and businesses to discuss how to best manage construction. Of course, areas will be restored upon completion of construction. Construction of the tunnel itself will cause very little disruption on the surface. There will be increased truck traffic around the working shaft at the sewage treatment plant as soil and bedrock removed by the tunnel boring machine is hauled away. The tunneling machine will hardly be noticeable while the tunnel is being dug. The machine will not create noise or noticeable vibration.

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Q: How much is City Utilities investing in the *Tunnel Works* Program?

A: The estimated cost for the tunnel, drop shafts, near surface consolidation sewers, relief sewer and pumping station is approximately \$200 million. The cost of Fort Wayne’s entire Long-Term Control Plan is approximately \$240 million (in 2005 dollar value).

Q: What else is City Utilities doing to protect river quality?

A: The tunnel is the largest single project in the City Utilities’ plan to reduce combined sewer overflows and protect river water quality. In addition to building the tunnel to collect and transport more sewage to the sewage treatment plant, City Utilities has invested approximately \$50 million to increase the capacity of the sewage treatment plant to treat sewage and to store combined sewage during wet weather for treatment later. In many neighborhoods that have combined sewers, new sewers to collect and transport just stormwater have been built. In these areas, street inlets and other structures that handle stormwater have been connected to the new storm sewers so that the rainwater does not go into the combined sewers. These neighborhood “sewer separation” projects have the added benefit of reducing the likelihood of sewage backing up into basements and provide an added benefit for the money invested. City Utilities also conducts a variety of public education activities, contractor training, updates to technical standards, and routine water quality monitoring programs. All of these efforts are part of a comprehensive river water quality protection strategy.

Q: What is City Utilities doing to improve the St. Joseph River - why is it not mentioned as part of this project?

A: The *Tunnel Works* program designed to collect combined sewage that would otherwise overflow into the St. Marys and Maumee Rivers from neighborhoods primarily south of the Maumee and along the St. Marys River. While there are sewers that overflow into the St. Joseph River, they have been addressed through projects done north of the Maumee River. Many projects have been completed in areas around the St. Joseph River including the construction of new storm sewers in many neighborhoods and the addition of a new relief sewer to carry more sewage to the sewage treatment plant, reducing sewer overflows to the St. Joseph River to only one time in a typical year.

Q: How is City Utilities paying for the design and construction of the *Tunnel Works*?

A: After City Utilities entered into an agreement with the US EPA and IDEM for reducing sewer overflows to the City’s rivers, Mayor Tom Henry convened a Clean Rivers Task Force made up of community business leaders, local elected officials and citizens to consider alternatives for funding all of the \$240 million Long-Term Control Plan (in 2005 dollar value) – including the *Tunnel Works* Program. The Task Force examined a variety of funding options including seeking enabling legislation for a local option income tax, property taxes, sales taxes, federal grants-in-aid, state assistance, community trust funds, gaming revenue or stormwater fees.

The Task Force recommended using a mix of revenues to fund the investments in the sewer system needed

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to comply with federal regulatory, but acknowledged that sewer utility user fees would be an integral part of any funding scenario. The Task Force further acknowledged that several of the alternative financing components would require action by other levels of government and that it would take time to gain the local authority necessary to implement. The Task Force also stated a belief that when seeking federal and state funding options, it would be essential for Fort Wayne to demonstrate that it has been willing to take on a measurable share of the financial burden itself.

The Task Force encouraged City Utilities to seek financial assistance from state and federal governments and City Utilities continues to do so, even though no grant programs currently exist to help communities such as Fort Wayne with implementing federal clean water mandates.

City Utilities will borrow funds from a State Revolving Fund to cover the costs of the tunnel. This will be repaid over the term of the loan with revenue generated by sewer utility rates.

Q: How can I stay informed about the tunnel project?

A: The best way to stay informed about the progress of the *Tunnel Works* Program and public meetings or other events is to sign up for the City Utilities enews at fortwaynetunnel.org.