

Mishawaka Utilities

James M. Schrader, General Manager

Mishawaka Utilities is headquartered at 126 North Church Street. This is the where the Business Office is located as well as the office of the General Manager. The General Manager provides leadership and guidance to the Business Office and the three operating divisions: Electric, Water, and Wastewater Treatment. The employees of Mishawaka Utilities take great pride in serving our community.

Mishawaka Utility Business Office

Virginia Fras, Business Office Manager

Mission

We are part of an organization committed to providing our community with the best products and services in electric, water, and wastewater treatment.

Mishawaka Utilities strives to:

- Provide reliable service at competitive rates,
- Maintain high professional and ethical standards in a courteous atmosphere,
- Promote continuing education for safety-conscious and well-trained staff,
- Cooperate with and promote our community, and
- Provide products and services that exceed the expectations of our owners- our customers

The Mishawaka Utilities Business Office provides centralized customer service, trash service support, billing, data processing, finance/accounting, and administrative functions for our three operating divisions of Mishawaka Utilities: Electric, Water, and Wastewater Treatment. Today, these three utilities serve a population of more than 47,000 people (27,000) customers.

The Mishawaka Utilities Business Office takes pride in offering personal hometown service to our customers and we look forward to the New Year and the opportunity to serve you better.

Electric Division

Sedrick Springman, Division Manager

We are part of a utility committed to providing our community with the best products and services in electric, water and wastewater treatment.

Mishawaka Utilities strives to:

- Provide reliable service at competitive rates,
- Maintain high professional and ethical standards in a courteous atmosphere,
- Promote continuing education for a safety-conscious and well-trained staff,
- Cooperate with and promote our community, and
- Provide products and services that exceed the expectations of our owners - our customers.

The Mishawaka Utilities Electric Division (MUE) is the second largest municipally owned electric utility in Indiana, providing service to 27,477 customers. We have 11 substations located throughout the city. Our 48 person staff, located at 1646 E. 12th Street, engineer, construct and maintain the distribution system, consisting of nearly 127 miles of overhead, 176 miles of underground distribution lines, and seven miles of transmission lines (primarily 34.5 kV, with a small 69 kV section feeding our University Park substation). This system serves a population of 48,252 (as of the 2010 census).



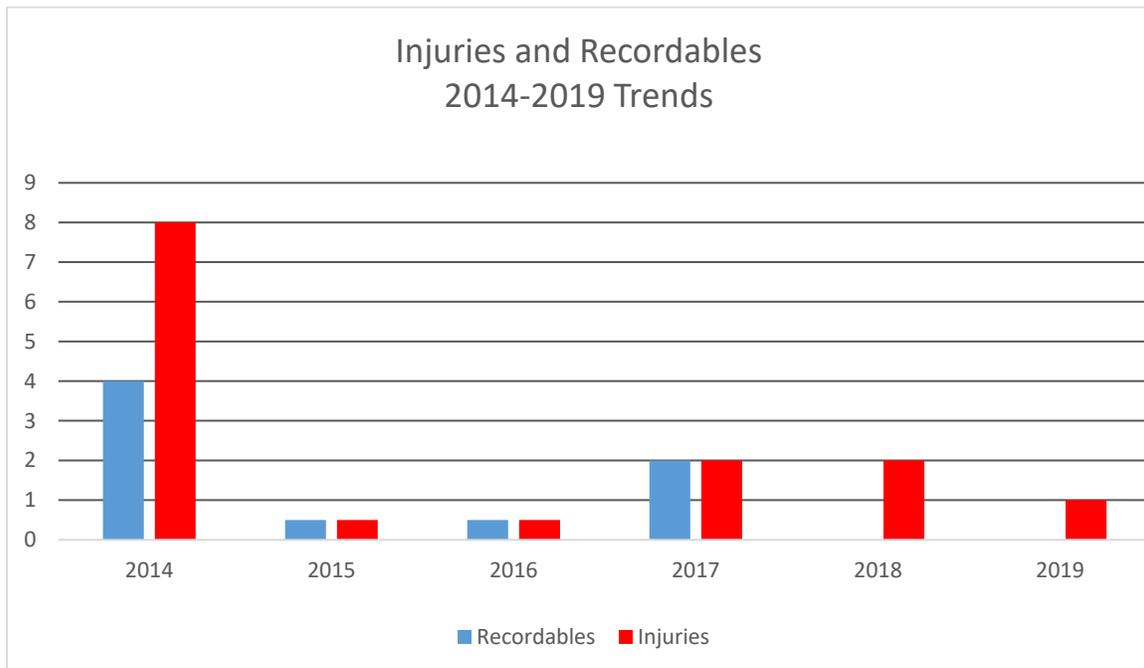
*Mishawaka Utilities Electric Division
1646 East Twelfth Street*

Mishawaka's electric rates are slightly below average for cities our size in Indiana. It is one of the nation's lowest-cost energy states. Consumers enjoy electric bills that are lower than those of neighboring utilities. While owned by the City of Mishawaka, we are not supported by tax dollars. We are a division of Mishawaka Utilities and our operation is totally financed by the customers we serve

Electric Division Process Measures

Process Measure	2018	2019	Percent Change
Peak Demand Month (month and kW peak demand)	June 139,218	July 133,951	-3.78%
Total Energy Purchased (kWh)	618,873,618	598,175,892	-3.34%
Total Energy Sold (kWh)	582,555,158	594,917,937	+2.12%
Total Number of Customers Billed	26,836	27,477	+2.40%
Engineering Projects Completed	351	300	-14.50%
Number of Transformers Set	81	78	-3.70%
Number of Metering Dept Work Orders Completed	25,073	22,385	-10.72%

Personnel Safety



All Construction personnel participated in bucket rescue and pole top rescue at our Logan Street Training Facility. Training was administered by the IMEA. This training recurs annually.

Safety has been, and will continue to be, our main focus at the Electric Division.

System Energy Consumption

In July we hit our annual peak demand of 133.9 [MW] (9.09 percent less than the previous high of 147.3 [MW], set in August 2006). All distribution equipment operated within design constraints. SCADA provided continuous up-to-date information on transformer loading and system supply voltages. Also, our energy consumption (total energy purchased) for the year was 598,175,892 [kWh], down 3.34 percent from the previous year.

Reliability / Performance Enhancements

- Replaced obsolete breakers (3) at Bercado station.
- Replaced obsolete breaker relays (15) at 12th, Bercado, Logan, University stations.
- Replaced all capacitor bank switching mechanisms (7) after a failure at Bercado station.
- 12th St. T1 LTC serviced by Solomon due to heavy gassing.
- Replaced 12th St 52-T1 breaker bushings (6) due to imminent failure (moisture ingress).
- Last Replaced Bercado 52-7 breaker vacuum bottles (3) due to imminent failure (loss of vacuum)

Organizational Changes

Administration Department

- Justin Overholser was promoted to Senior Engineering Assistant

Construction Department

Six Apprentices were hired last year.

- Omero Brioli
- Grant Ginter
- Tyler Gruler
- Michael Hedman
- Daniel Stoehr
- David Whitaker

We had three Journeymen resign: Chuck Bailey, Shawn Bolinger, and Keegan Putz

We had five Apprentices resign: Jeffery Fisher, Ryan Frances, Sean Guzy, Colin Leonard, and Joshua Stachowiak.

We promoted one hourly Dispatch employee to a salary position: Jeffrey Erickson was promoted to GIS Engineering Assistant.

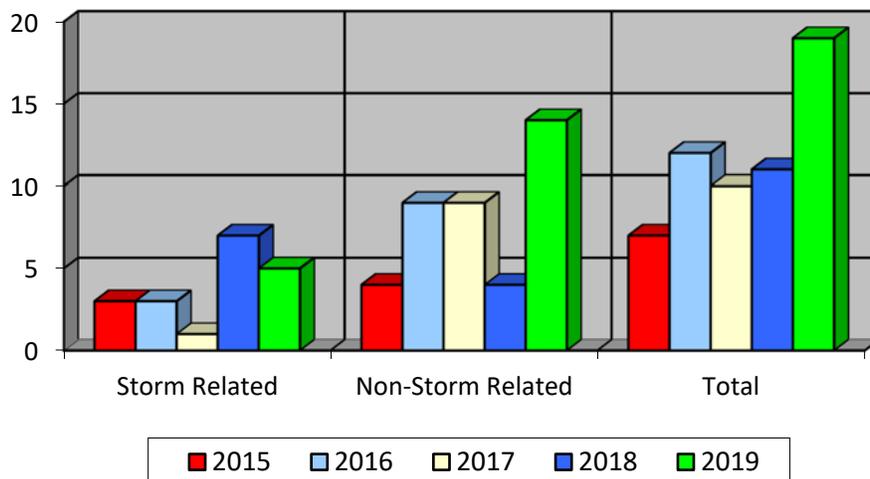
Engineering and Construction

General

Unplanned Outages

There were 19 unplanned circuit outages in 2019, with a cumulative outage time of 19 hours. The number of unplanned outages was 73% higher than the previous year (11 in 2018).

Unplanned Power Outages



The system as a whole continues to provide reliable power. This is due to multiple reasons including ongoing reviews and analysis of system reliability and operational issues, with appropriate actions taken to address areas requiring improvement. Performance has also been positively affected by implementation of reliability enhanced design changes, an effective preventive maintenance (PM) program, effective implementation of the fuse coordination program, and effective preparation, review, and approval of technical procedures

Support Services

Annual support services were provided for Summerfest, Summer Concert Series, Memorial Day Parade (Beutter Park and Battell Park), Kamm Island Festival, Heritage Festival, as well as decorations for the Holidays including wreaths and tree downtown and at Battell Park. Our support role includes providing both personnel and vehicle resources for setup and removal.

Preventive Maintenance (PM)

We are continuing with our substation PM program to help prevent and mitigate failures, and prolong equipment life

GIS (Geographic Information System)

The Electric Division has effectively used its GIS base map to assist outage response teams. GIS information provides both a concise location of the affected residence or business and the necessary information, through its relational database features, to determine the extent of the outage.

The MUE GIS implementation expanded further throughout 2019 with daily application of the data collected and maintained in the GIS system. These tasks include:

- Maintained construction and street light workflow.
- Maintained street light database and created reports for monthly billing for Business Office.
- Maintained Futura inspection software to help record issues with pole conditions.
- Maintained circuit maps updates, Futura updates (GPS included), and the transformer database.
- Maintained all iPads/laptops for Engineering and construction crews.
- Implemented electronic UG inspections software, eliminating paper records.
- Maintained pole quality inspection reports to alert crews when pole change-outs were necessary.
- Introduced Futura Catalyst. Replacing ArcGIS as our online source for MUE facility information.
- Issued new laptops to crews. Crews are now able to edit in the field using Futura Mobile software.
- Nearing completion of the pole attachment reporting to help generate revenue for the Electric Division

Project Engineering Activities

2019 was another busy year for the Electric Division's Projects staff. The projects team oversaw 300 new projects for the year. Included in that number are 60 new residential underground house services and 22 new commercial three phase services.

The most demanding projects (those requiring in excess of 160 hours per crew) included the following:

- Electric distribution improvements (line maintenance projects)
 - 12th Street Pole line relocation from Downey Ave. to Campbell Ave.
 - Installation of new Engo units to reduce low voltage issues in problem areas
 - Installed equipment to allow switching circuits for St. Joseph Hospital without interrupting service
 - Installed at multiple location new 600-amp switches and fault indicators to reduce outage times
- Substation Support
 - Scheduled projects to support
 - Switching
 - New G.O.A.B. installed at University substation
 - Breaker testing switching
- Major Projects
 - Mary Gibbard Park
 - Grandview Apartments Phase II
 - Beacon Hospital
 - The Mill
 - Hellenic Assisted Living Center
 - Elmwood Ave.
 - New Hospice Building
 - Condemned pole replacements
 - Douglas Rd./Veterans Parkway improvements
- System PM
 - Vault hazard testing
 - SF6 gas inspection and servicing of all puffers in service
 - Transformer inspections

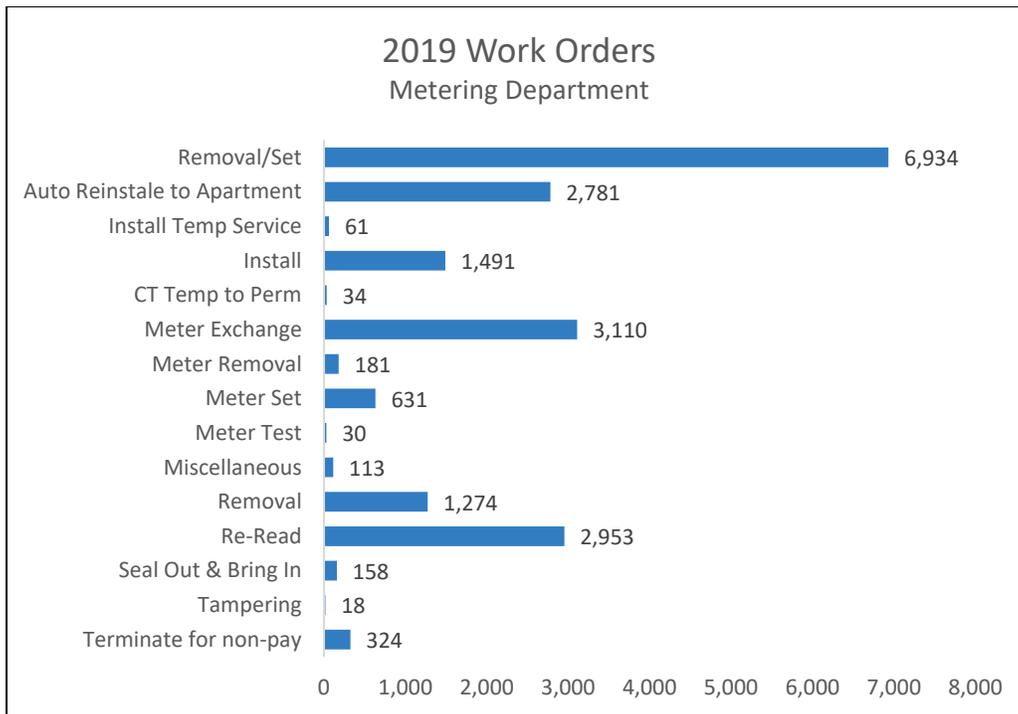
Metering

The Mishawaka Utilities Metering Department is comprised of the Metering Manager, five Service Representatives (Reps) and five Meter Readers. It is the responsibility of this department to maintain all electric meters and read all (electric and water) meters in the City. It is the sole responsibility of the meter readers to read an average of 27,477 electric customers and 18,040 water customers on a monthly basis (18,040 based on July 2019 which includes sprinkling accounts). The Metering Manager has been able to keep the monthly reading schedule at or near 30 days.

In conjunction with reading the meters the Metering Department completes any re-read service orders that are requested. The request for a re-read could be made by the customer and/or the Data Processing Department if the original reading is in question. See graph below for number of re-read service orders completed.

The Service Reps duties include doing power quality test and recording procedures along with replacing existing meters, throughout the City, to radio read meters (AMR-Automated Meter Reading). By installing an AMR meter, an accurate monthly reading is obtained without requiring meter access. The AMR meter is not only time efficient but is also a convenience for the customer who no longer needs to provide access.

The following graph depicts performance by the Metering Department in the area of work orders:



The Service Reps, who run the disconnect truck completed 182 disconnect lists which included 3,102 customers. A processing fee of 25.00 is incurred by each customer on the disconnect list. For the year 2019 there would have been \$77,550 in charges (\$25.00 fee x 3,102). There are seven areas (cycles) in the City for which disconnect lists are performed on a monthly basis. These lists are for customers who are delinquent on their utility bills. The disconnect truck also runs special disconnects throughout the month that could be for delinquency on payment plans or deposits. During follow-up visits, to disconnected customers, 68 were found to have tampered which resulted in tampering fees totaling \$5,100 (\$75.00 x 68).

The Metering Department continues to make strides in changing meters from three-phase mechanical thermal demand meters to electronic solid-state meters. In addition, single-phase A-base adaptor upgrades were also performed. As a team, we were able to change 3,110 mechanical meters to AMR meters.

The Metering Department attended several training sessions including bi-monthly IMEA Safety and Training and in-house training sessions. The Metering Department strives to implement the newest metering technology to ensure the best quality service for the citizens of Mishawaka.

Operations

Within the Mishawaka Utilities Electric Division, the Engineering, Construction, and Metering Departments all rely on the Operations Department for support. The Operations Department purchases, coordinates and maintains all goods, services and rolling stock for the Electric Division. In conjunction with the Business Office, the Operations Department generates bills for contracted services (set up by Engineering) and damage claims to our facilities, due to traffic accidents and contractor dig-ins. The Operations Department also assists the Accounting Department in keeping accurate material and accounts payable records, and by generating all purchase orders and job costing reports.

Other key functions of the Operations Department include:

- Dispatching crews and providing assistance to both customers and other divisions
- Maintaining all records for use by Accounting, Engineering, and Construction pertaining to transformers, meters and inventory material
- Maintaining the storeroom and issuing materials to construction crews.
- Issuing poly-phase meter sockets to electrical contractors
- Tracking the SCADA system that monitors the entire substation network

The Operations Department is headed by Ross Trimboli, the Operations Coordinator, who is starting his 35th year of service. The Electric Dispatch office is staffed by Clerk Dispatcher “A” Chuck Brunner, the senior member and crew leader with 21 years of service. A new employee, Sedrick Springman, Jr. was hired on May 6, 2019 as a Clerk Dispatcher “B” to fill the open position resulting from the reassignment of Jeff Erickson to the Engineering Department. These individuals continue to be strong, capable employees that provide critical support to the rest of the Electric Division.

There were numerous new acquisitions to our fleet in 2019. We purchased three 2019 Chevrolet Silverado 4x4 pickup trucks for our Superintendent, Construction Foreman and Project Manager, two 2019 Ford Ranger 4x4 pickup trucks for our Metering Department, and a 2019 Ford F550 4x4 bucket truck with 42’ Altec boom for the Overhead Construction Department. In the process of acquiring these new vehicles, we traded a total of 6 aged vehicles. We also took delivery of a new Vermeer trencher for the Underground Construction department and a new Toyota 5,000 lb. forklift for the Operations Department.

Operations assists in generating additional revenue for the Electric Division by processing billings for traffic accidents, damage to facilities by contractors and construction costs outside the normal scope of service. Billings generated in 2019 totaled \$47,922.45.

In 2019, inventory purchases were down \$72,186.00 compared to 2018. We continue our partnership with Anixter Power Solutions by utilizing their Vendor Managed Inventory system, or VMI. Mishawaka Utilities entered into this partnership in January of 2009 to provide a computerized inventory management system with Anixter acting as our primary vendor for line construction and maintenance material.

The following chart breaks down our inventory spending, comparing 2018 to 2019:

Item	Dollars Spent		Percent Change
	2018	2019	
Aerial Transformers	\$13,178	\$88,428	571.03%
Padmount Transformers	\$469,551	\$385,013	-18.00%
Transformer Accessories	\$51,941	\$90,502	74.24%
Pipe	\$88,294	\$72,837	-17.51%
Pipe Accessories	\$10,373	\$2,608	-74.86%
Meters	\$243,423	\$206,828	-15.03%
Meter Accessories	\$24,552	\$22,498	-8.37%
Wire	\$406,188	\$441,631	8.73%
Wire Accessories	\$94,867	\$79,142	-16.58%
Poles	\$125,927	\$144,726	14.93%
Pole Accessories	\$45,448	\$36,066	-20.64%
Street Light Poles	\$162,200	\$56,925	-64.90%
Lighting Accessories	\$149,846	\$152,374	1.69%
Service Materials	\$93,588	\$104,176	11.31%

The Operations Department strives for efficiency in the administration of procurement and accounting, the management of materials and services, and the maintenance of the fleet and facilities. It serves as a support department for the Electric Division. When called upon, Operations also assists other Mishawaka Utilities divisions as well as City of Mishawaka departments with any tasks necessary. As the Operations Department looks ahead to meeting the new challenges of 2020, it welcomes the opportunity to build upon past accomplishments and to develop our future successes.

Sewer Maintenance Department

Tom Dolly, Manager

The Sewer Department cleaned a total of 104,705 feet of sewer lines and televised 133,266 feet of sewer lines in 2019. The collection system has over 200 miles of sanitary sewers and storm lines. Cleaning and televising is important to the process of maximizing the flow of sewage to the Wastewater Treatment Plant and determining what needs to be repaired or replaced. Reports of larger sewer/storm infrastructure that need repairs are often identified and sent to the Engineering Department for bidding.

The Sewer Department has 14 employees that do cleaning, televising, new sewer hookup inspections, sewer locates for digging, and repairs. The Sewer Department also assists the Street Department in the winter with plowing.

Video Surveillance Program

The Department has a planned video surveillance program with precise documentation on sewers that may need maintenance. The video inspection crew checks the integrity of the pipe, the condition of sanitary sewer laterals and validates repairs or lining.

The video surveillance crew records all visual data and all manually documented information gathered. This information is uploaded to the City GIS Department and Engineering for further study and updating of the City GIS Map. Inspections of new sewer system extensions through sewer televising are conducted to ensure that the construction meets our City specifications.

The video inspection trucks are also equipped with a lateral launch system that gives us the ability to televise residential laterals from the main line in the street up to the house to determine blockages or damage. We are also able to take our mini push cam system into homes to televise from the house to the street to determine blockages or damage. In 2019, over 3,501 feet of residential laterals were televised with the push cam system for a grand total of 136,767 feet of main line and lateral lines televised.

The employees assigned to push cam inspections may also be assigned to do sewer locates for contractors and follow ups to residential issues. These employees performed 145 sewer excavation inspections in 2019.

Mishawaka Sewer Maintenance Department 2019



*Front (l-r): Jon Jozwiak, DJ Schidler, Grady Faulkner, Melanie Weber, Gary Isle, Steve Weston, Chad McCann, James Clark.
Back (l-r): Tom Dolly, Skyler Ryan, Ashtin Galletti, Justin Hill, Mathew Hazinski, Ryan Lewis, Aaron Koszyk, John Francis, Joe Sutherland, Ian McAllister.*

In 2019, over 3,501 feet of residential laterals were televised with the Push-Cam system

Sewer Insurance Program

Over the past year, 214 calls were received from residents during normal working hours and 15 after-hours requests for our personnel to check the sewer main. These calls ranged from homes with sewer problems, odors coming from the sewer line, water standing in the street or following up to contractor cleaned laterals. Of the 229 total calls, 77 residents qualified for the sewer insurance program. These sewer insurance work order calls were taken, set-up and completed by our office personnel.



These residents had repairs that ranged from a simple second opinion cleaning and 1-year guarantee against tree roots, to a more in-depth project such as an excavation and lateral repair. This program has proven to be very successful in assisting Mishawaka's residents with the high cost of sewer lateral repairs. More of the specifics regarding the sewer insurance program can be found on our City's website.

CIPP Sewer Rehabilitation 2019

As part of ongoing infrastructure improvements, Cured-in-Place-Pipe (CIPP) lining totaled 10,551 feet rehabilitating 35 various key sewer lines. The project also included the structural rehabilitation of 53 manholes with polyurethane lining. This was indeed our largest most comprehensive rehabilitation project with an investment of \$852,598.

The Sewer Department continues to strive to improve its preventative maintenance programs and, through cost-effective measures, maintain the current level of services provided. Through its various programs, the division endeavors to preserve and maintain its major infrastructure system investment. Working together as a team with all Departments has proven to be one of the most important keys to success in 2020.



Wastewater Division

Karl R. Kopec, Manager

Overview

The mission of the Wastewater Division is to protect public health and the water environment of the community and to provide efficient service at a reasonable cost. Mishawaka's wastewater treatment plant is a Class IV facility with an average design capacity of 20 million gallons per day (MGD). Class IV facilities comprise the largest and most complex treatment facilities in the state.



The service area that contributes flow to the wastewater facility extends beyond the city limits. Areas served include new developments in Osceola, and parts of the county north, east, and south of the city limits.

Mishawaka's wastewater treatment facility serves residential, commercial, and industrial accounts. The treatment facility operates 24 hours per day, 365 days a year. The twenty-five employees of the Wastewater Division have over 444 years of combined wastewater experience. Seven members of the staff hold Indiana's highest level of professional operator certification.

Speaking at the "BusinessH2O Water Innovation Summit" in September, the EPA's assistant administrator for water, David Ross, referred to those who clean our country's water and wastewater as "silent, everyday unsung heroes." While not as celebrated as others who dedicate themselves to public service, such as police officers, firefighters, and teachers, they are every bit as essential – if not more so. "Without this sector, we don't have society as we know it," Ross said.

We are proud of what we do and the contribution we make to the wellbeing of our fellow citizens.

Wastewater Long Term Control Plan (LTCP)

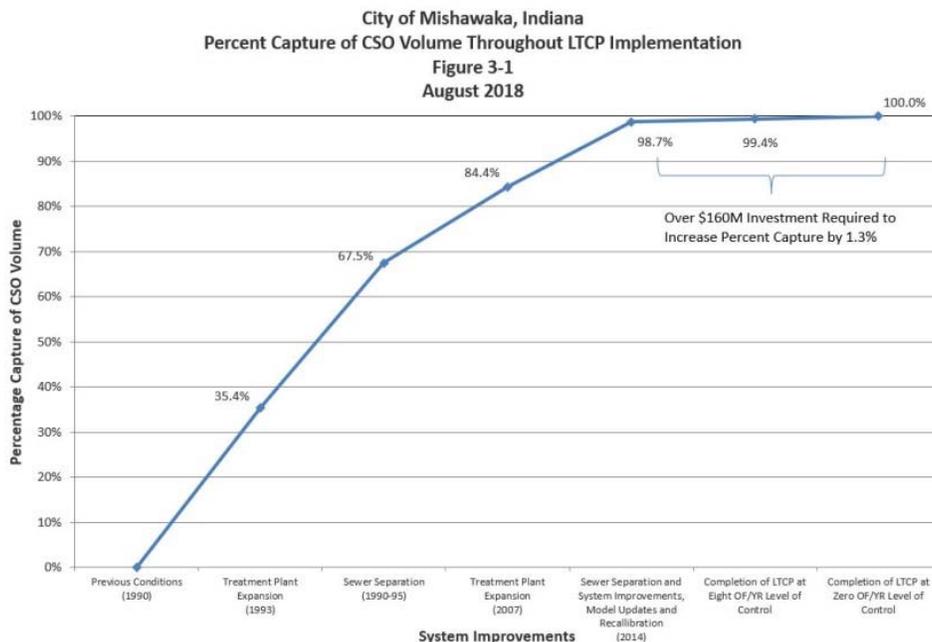
Like many other Indiana communities, Mishawaka was developed with a combined sewer system (CSS). During large storms the CSS, which carries both sewage and storm water, can become overloaded resulting in discharges of raw sewage into the St. Joseph River. The Clean Water Act (CWA) requires cities with combined sewer systems to develop long-term control plans to reduce or eliminate discharges of combined sewage. Mishawaka's LTCP was entered into a Federal consent decree in May of 2014.

Over the last 30 years, Mishawaka has reduced its combined sewer overflows from 314 million gallons to 4.1 million gallons in a typical year. This is a 98.7% reduction in CSO volume from the baseline year of 1990 and represents capture and treatment of 99.54% of wet weather flow. Studies have shown that eliminating the remaining 1.3% of Mishawaka's CSO volume would result in no measurable improvement in river water quality. The CWA and US EPA require a level of CSO

control where the cost of compliance surpasses the point that results in an equivalent environmental benefit. The cost to remove the last 1.3% cannot be justified. The phenomenon of diminishing returns is common when dealing with water pollution controls. The costs often far exceed the incremental benefits to eliminate the last CSOs. The bottom line is that if LTCP improvements are required to be built as currently mandated, the cost to remove the last 1.3% of CSO volume would exceed \$160 million. This is not the right investment of ratepayer’s money. It is entirely unacceptable based on our understanding that the end result would not measurably improve the water quality of the St. Joseph River and would be financially crippling relative to the modest means of many of our citizens.

Mishawaka is engaged in ongoing discussions with EPA, the State of Indiana, and the Department of Justice to modify our consent decree and negotiate an affordable, justifiable endpoint that will protect the environment while not financially burdening the citizens of Mishawaka. An initial meeting was held in January of 2018 to present our tremendous progress to date on reducing CSOs and the fact that the cost to meet the conditions of our existing consent decree cannot be justified because additional investment in CSO mitigation will not result in measurable water quality benefits in the St. Joseph River.

From January through August of 2018 the City and its engineering and legal consultants developed an alternative CSO Long Term Control Plan. The City seeks to not construct a \$100 million storage and conveyance tunnel with negligible benefit to either CSO reduction or water quality. In place of the tunnel, a **“Sewer Separation and Neighborhood Revitalization Plan”** would be just as protective of the environment and would bring tangible improvements to neighborhood infrastructure. The new plan is more affordable and would result in an overall CSO percent capture of 99.74%, with an annual overflow volume of 2.3 million gallons. The cost for the alternate plan would be around \$8 million, saving our ratepayers over \$152 million. On August 23, 2018 the new plan was formally submitted to USEPA and IDEM. It is currently under review by the agencies and negotiations are ongoing. This remains a top priority for the City!



Our ultimate goal is to save the City and our ratepayers many millions of dollars while still protecting the environment. We have developed a great negotiation strategy with our team of experts. Our aim is to greatly reduce the burden and liability that ultimately, we would all have to bear.

Our impressive reduction in CSO volume places Mishawaka well ahead of most Indiana CSO communities. Our new plan makes sense, protects the environment and our ratepayers. We are optimistic that reason will prevail, saving many millions in spending that would provide no environmental benefit. Our consent decree renegotiations are ongoing.

In addition to the daily operation of the treatment plant, the Division is also responsible for the Biosolids Facility, Industrial Pretreatment Program, lift stations and biofilters, and combined sewer overflow (CSO) structures.

Biosolids Facility

The Biosolids Facility is located on South Logan Street. This site is the location for the solids dewatering operation and the storage of biosolids prior to land application. Biosolids, the stabilized solid material resulting from the treatment of wastewater, are land applied on area farm fields. In 2019, 1,205 dry tons of biosolids were produced. Farmers desire biosolids because it contains nitrogen and phosphorus, reducing the amount of commercial fertilizer that must be used. It also improves the quality of the soil.

Industrial Pretreatment

The Industrial Pretreatment program is responsible for enforcing all federal, state, and local pretreatment regulations. This includes the monitoring and inspecting of all Significant Industrial Users (SIUs) within the City. The City currently has eight permitted Significant Industrial Users and several non-permitted industries that are routinely monitored and inspected. Pretreatment programs are intended to prevent industrial pollutant discharges from causing interference, upset, or pass-through at municipal wastewater treatment plants by controlling discharges of industrial pollutants at their source.

The pretreatment coordinator is also responsible for the operation of the Division's mercury minimization program and for monitoring restaurants and institutional kitchens for discharge of fats, oil, and grease (FOG) which can cause blockages in the city's sewer system.

Lift stations and Biofilters

There are 29 remote sewage pump lift stations in Mishawaka that pump sewage from areas where it cannot flow to the treatment plant by gravity. Mishawaka's lift stations range in size from 150 gallons per minute (gpm) to 4,000 gpm.

There are 5 remote odor control facilities including biofilters and carbon adsorption systems. The Wastewater Division is responsible for the maintenance of these systems. The biofilter media in Central Park was removed and replaced in December. Monitoring and reporting on the activity of the 21 CSO structures, and the operation of the combined sewer overflow control program is also a Division responsibility.

Laboratory

The Wastewater Division operates a laboratory that provides process control testing and regulatory compliance analysis required in our NPDES permit. This includes analysis of samples from each process to ensure optimum efficiency, monitoring of the effluent to verify compliance with discharge limitations, and analysis of industrial samples to ensure compliance with federal and local pretreatment standards.

During the summer, the laboratory performs bacteriological tests for Mishawaka's swimming pools and the splash pad at Central Park. Labs that conduct biological analysis on pools and splash pads must be inspected and certified by the Indiana State Department of Health. Our state certification was renewed in 2019.

Annually the laboratory is required to participate in the EPA's Discharge Monitoring Report - Quality Assurance (DMR-QA) program. This Federal program consists of analyzing samples with unknown concentrations for all of the parameters in the NPDES permit, including biomonitoring. The results of the testing give the EPA and the Indiana Department of Environmental Management assurance that the data we submit is accurate. In 2019 the laboratory successfully passed all required DMR-QA analyses.

The Treatment Process

Mishawaka's wastewater treatment consists of the following processes: influent screening, grit removal, primary settling, activated sludge secondary treatment, final clarification, disinfection, post aeration, and anaerobic digestion. The treatment facility operates in a conventional activated sludge mode. The activated sludge process is a biological treatment process in which a mixture of wastewater and activated sludge bacteria are aerated and mixed. Single stage nitrification is used to convert toxic ammonia to nitrate. Phosphorus is removed by chemical precipitation.

Solids generated in the treatment process are biologically converted in an anaerobic environment into simple organic compounds and become known as biosolids. These biosolids are dewatered at the Biosolids Facility and are land applied on area farm fields for soil conditioning and fertilizing. Land application of biosolids is recycling in its truest sense.

A byproduct of anaerobic digestion is digester gas. This gas is 65% methane and is captured, compressed and is used as a fuel in the treatment plant boilers. Digester gas is a free and renewable source of energy. Utilizing digester gas offsets the amount of natural gas that must be purchased and significantly reduces carbon dioxide emissions from the facility. Approximately 60 thousand cubic feet per day is generated, replacing purchased natural gas.

Statistics

Mishawaka's wastewater facility has an average design flow capacity of 20 million gallons per day (MGD) and a peak design flow capacity of 42 MGD. The highest peak flow rate treated in 2019 was 55.8 MGD on September 27th. The maximum total flow treated on a single day was 19.06 million gallons on June 10th. The following are statistics for 2019.

Statistical Summary						
	2014	2015	2016	2017	2018	2019
Average Flow (MGD)	9.69	9.35	10.57	10.33	11.53	11.39
Peak Flow (MGD)	60.9	65.2	70.0	60.0	51.5	48.4
BOD Removed (%)	98	98	98	98	98	98
Phosphorus Removed (%)	82	85	82	83	84	83
Ammonia Removed (%)	95	96	94	97	98	97
Solids Removed (%)	98	98	98	98	97	98
Biosolids Produced (dry tons)	1047	1169	1351	1269	1280	1245
Electricity Use (MkWh)	4.9	5.2	5.3	5.2	5.3	5.2
Natural Gas Use (Mcf)	6.4	5.1	4.9	6.0	7.4	10.8
Total Precipitation (inches)	41.44	35.92	46.70	43.53	49.18	44.57

2019													
	J	F	M	A	M	J	J	A	S	O	N	D	Total
Total Flow Treated (Billion Gallons)	0.31	0.31	0.32	0.36	0.47	0.47	0.40	0.33	0.32	0.34	0.29	0.24	4.16
Pollutants Removed (Million Pounds)													
Organic compounds	0.62	0.63	0.69	0.70	0.85	0.72	0.69	0.69	0.68	0.72	0.68	0.72	8.39
Phosphorus	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.12
Ammonia	0.05	0.04	0.04	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.52

2019 Highlights

In December of 2017, a large section of a final clarifier fiberglass trough broke off, forcing the complete shutdown of the clarifier. The break was unrepairable and resulted in the fast-tracking of new clarifier troughs to be designed, built, and installed in four final clarifiers in early 2019.

When the troughs for the first clarifier arrived in March of 2019, we were excited to begin the clarifier rehabilitation. Our excitement soon turned to disappointment when, during installation of the new troughs, it was discovered that they were incorrectly fabricated and did not properly fit into the clarifier. The “new” troughs were removed and the trough manufacturer recommended some modifications to make them fit correctly. When the modified troughs were reinstalled in the clarifier they again did not fit properly. The City decided to reject the troughs and directed the contractor to remove them from the site. The contractor voided their contract with the trough manufacturer. This began the process of finding an alternate trough supplier and essentially starting from scratch. By the end of the year a new source was found and work is underway to have these troughs designed, built and installed by the end of 2020.

On October 14 the Wastewater Department was faced with a catastrophic failure of the Willow Creek Lift Station. A pump separated from its base and flooded the dry pit which contains the pumps, motors, and electrical control cabinet. Everything in the flooded pit was ruined. On the day of the failure and throughout the first night, sewer vacuum trucks were used to pump out the wet

well to prevent sewer backups or overflows. The next morning the City contacted HRP Construction for assistance in setting up bypass pumping, taking the flooded pump pit out of the loop. This bypass is still being used while the treatment plant staff works to rebuild the lift station. A new electrical control panel has been built and is now mounted above ground so that it can never be subjected to flooding. New motors and one new pump were purchased and are being installed. The re-built lift station should be on-line by early spring of 2020 and the bypass system will be removed. The Wastewater Division is grateful for the vital assistance provided by HRP Construction and our Sewer Maintenance Department. A well-coordinated team effort averted what could have easily become an environmental disaster.

Not every project at the Wastewater Division requires an emergency response. The staff performs significant preventive maintenance projects throughout the year. A large project of note was the replacement of the fiberglass railing that surrounds the aeration tanks. These railings, which were installed in the plant expansion of 1992, have become brittle and worn. New aluminum railing was purchased and is being installed by the plant maintenance staff without contractor assistance. Two of the three tanks were completed during the year.

In addition to preventative maintenance, the Division periodically makes capital improvements to replace equipment that is at the end of its life span or to provide for adequate redundancy. During the year, construction of two projects were completed. The first project included the addition of a new influent bar screen, hazardous gas monitoring system replacement, new hypochlorite bulk storage tank with improved circulation piping, and CSO 9 level monitoring. The bids were opened in December of 2018 and the low bid was \$1,177,000, which was \$703,000 below the engineer's opinion of probable construction costs. After Change Orders during construction, the final cost was \$1,205,154. The project was constructed by Kokosing Industrial of Westerville, Ohio.

The second project was the replacement of an aging lift station located on Home Street. The station, which was at the end of its life-cycle, was located perilously close to a very busy intersection. The new station was moved away from the intersection, protecting it from damage by vehicle accidents. Both projects began in early 2019 and were completed during the year.

Award Winning

The operation of the treatment facility is accomplished by a team of dedicated operators who provide coverage 24 hours a day, seven days a week. This includes 3 shifts with 2 operators on each shift, two swing shift operators, and two utility operators. Each pair of operators is responsible for making process control decisions on their shift. On off-shifts, weekends, and holidays the facility is staffed solely by these two-person crews.

The Mishawaka Wastewater Division was recognized at the Indiana Water Environment Association Annual Conference. The Mishawaka Wastewater Laboratory received the Laboratory Excellence Award for the 18th consecutive year. The Division also received the Safety Award for the 4th consecutive year. This award recognizes continuing safety excellence.

Lindsay Grossmann, a chemist in the wastewater laboratory, received a Tumblebug Award. The Tumblebug is awarded to those who have labored industriously on behalf of the Indiana Water Environment Association. Lindsay joins Mishawaka's three other Tumblebugs: Jill Norton, Tim Brill, and Karl Kopec.



Lindsay Grossmann

Mishawaka is fortunate to have a modern wastewater treatment plant with capacity to keep Mishawaka able to accept flow increases associated with growth and development. Aggressive combined sewer overflow control efforts have positioned the city well ahead of many Indiana communities. Protecting and enhancing the St. Joseph River as well as promoting health in the community are benefits that help to make Mishawaka the Best Hometown in America.

In Memoriam – Adrian Peterson

In 2019, April 15th took on a new meaning for everyone at the Wastewater Plant. Taxes would become last thing on our minds. The day started like every other day, until we got a call that one of our operators was found unresponsive. Our staff immediately began CPR and setup the AED machine. They took turns providing care until the ambulance arrived. Sadly, their efforts were not enough to save our friend and coworker, Adrian Peterson. It fell upon us to try and make sense of this loss. Adrian was happy and healthy. This was the last thing anyone expected.

Since that day, our staff has been there for his family as much as possible. Through this loss, we have formed an unbreakable bond with his wife, Sheila and daughters, Emily and Kayley. Adrian was always talking about his family and how blessed he was to have them. It wasn't until he was gone that we got the opportunity to experience first-hand their love for each other.

During the summer, the DLZ Engineering firm had a charity golf challenge at their annual golf outing to benefit Adrian's family. Golfers were asked to make a donation to have a chance at hitting a target on the green of one of the holes. DLZ Engineering matched the donations collected and provided a pizza luncheon for Adrian's family, DLZ employees and Mishawaka staff.



(l-r): Mark Curtis, Tim Brill, Karl Kopec, and Tim Erickson

Knowing the holidays were going to be difficult, we also wanted to do something for his family during this time. Adrian's Wastewater family really came through with donations that we used to buy gifts for Adrian's wife and daughters. Shelia and the girls were so appreciative of our efforts to make their Christmas a little better. Shelia said it was Adrian's way of still watching out for them even though he couldn't be here. Bringing them a little bit of happiness helped all of us, though we cannot truly imagine their loss.

Water Division

Dave Majewski, Manager

On December 10, 2019 after ninety years in service, our 3-million-gallon reservoir affectionately known as Mabel's (she was the caretaker of this site years ago) which supplies water to the entire distribution system went offline at 2:26 p.m. as a new 2-million-gallon reservoir came online simultaneously.

In 1929 a loaf of bread was 9 cents, a gallon of gas a quarter, and a new car \$643.00. The stock market crashed that year, and it was the beginning of the great depression. Since that time and a lot of history, it has served Mishawaka citizens without fail, and now the old 3-million-gallon reservoir has been drained and cleaned and will be rehabilitated over the coming months and put back in service to continue to serve our city. It will function in unity with the new 2-million-gallon reservoir to give us 5 million gallons in storage to maintain pressure and supply our other pressure districts. The rehabilitation project should be complete by early fall. After years of design and planning and just over a year of construction, this new tank has become a reality. It is complimented with a booster station that now gives us a redundant feed to the south side of Mishawaka. Over one mile of new water main was installed to complete this loop.



New 2-million-gallon water tank under construction

With a floor and walls two feet thick and a roof eighteen inches thick a total of 2900 cubic yards of concrete were used. The weight of that concrete is 11,745,000 pounds. For structural integrity, 50 miles of rebar were used in the concrete; that is about 10 miles greater than the perimeter of Mishawaka. This tank, thoughtfully designed by DLZ, is an engineering marvel that will serve the citizens of Mishawaka for generations to come. HRP did an outstanding job as the general contractor overseeing many sub-contractors, including Grand River Construction who built the tank. This project funded by SRF (State Revolving Fund) is one of the most important projects we have undertaken, as it ensures the safety and quality of Mishawaka's drinking water, and infrastructure which is a top priority for this administration.

Our design continues for a new well field to be constructed at the Juday Creek Golf Course and a treatment plant to be built on the adjoining property. As this report is being delivered, our design is at 90% with projected bidding by early summer. This also includes a new 1.5-million-gallon elevated tank to be constructed at the same time. This tank will increase storage and pressure in the University Park pressure district. We are hoping to break ground in August for these projects. It will take between eighteen



Rendering of the Juday Creek area treatment plant

months and two years to complete this work. Construction of the new Veteran’s Parkway culminated in 2019 with a bridge over Juday Creek where the treatment plant will be built.

This new well field will supply an additional 8.2 million gallons, with room for expansion to supply up to 12.5 million gallons of water per day and will be able to keep up with the new growth in the University Park Pressure District. It will also be able to supply other areas of the city as needed and as demand continues to increase.

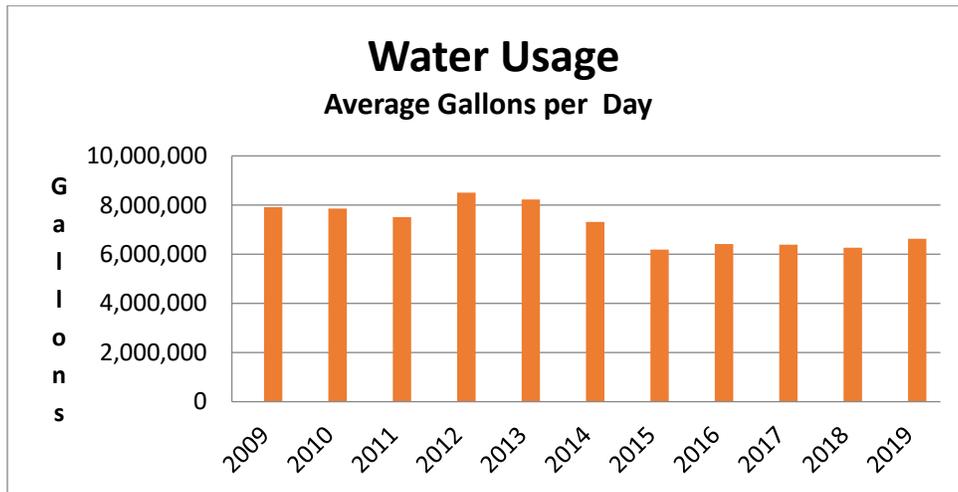


Blair Hills Tank



Dell Allen flushing new distribution line

In 2019 we treated 2.508 billion gallons of water for a daily average of 6.87 million gallon. Our employees worked 1384 hours of overtime as we have people on call 24 hours a day, 7 days a week to monitor and repair distribution system and treatment facility issues.



Water Quality

As every year goes by testing requirements grow more stringent. In 2019 we had two sampling events for UCMR 4, which are unregulated contaminants. These tests help the EPA determine future testing requirements. Looking ahead to 2020, we have our tri-annual lead/copper testing, and we also re-certify our lab with proficiency testing to make sure our results are accurate. We test our water supply daily and make adjustments as necessary. We took over 600 bacteria samples along with over 21,000 other water quality tests in 2019 to ensure our drinking water supply is safe.

Mishawaka Utility Water takes great pride in delivering potable water that meets and exceeds Federal and State requirements to over 17,500 service connections. Our three water treatment facilities can put out a maximum of 31.4 million gallons a day of water into our distribution system if needed, which encompasses over 300 miles of water distribution main. Tony Galassi oversees the Water Quality and Maintenance group and takes on whatever we pile on him. So as we move into 2020, he will be our new assistant manager, while still taking care of the aforementioned departments. Tony will continue to do a great job for us.

Purchasing

All good things must come to an end, and after an impressive 40 year run at Mishawaka Utilities our Operations/Purchasing Coordinator Keith Cooper said goodbye. Keith was a fixture for many years, and his knowledge will be missed. In retirement you may see him around the city taking pictures as he is an accomplished photographer. Thanks for all you have meant to Mishawaka Utilities and the City of Mishawaka.

Angelina Griesinger has taken over Keith’s duties as well as continuing her other responsibilities. She has a lot on her plate, but she loves the challenge, and we know she will excel in her new position.



Keith Cooper adding his name to the retirement board.

Maintenance

Our Maintenance Team keeps things working and is responsible for the upkeep of our main office, 3 treatment plants, 22 well houses, booster stations, elevated tanks, in-ground storage reservoirs, and all of the equipment inside of them. This includes but is not limited to the HVAC systems, hundreds of feet of chemical feed and water lines from ½” up to 24”. This group receives chemical deliveries and oversees the maintenance of the wells and high service pumps that are the lifeblood of our distribution system. This group is small, but their work is big, and they handle the challenge every day.



Water Main Installation – Beacon Pkwy

Well Head Protection

Water covers more than two-thirds of the earth’s surface, but it is mostly salty and undrinkable. The available freshwater resource is only 2.7% of the available water on earth, but only 1% of the available freshwater is accessible. We must be stewards of this precious and valuable resource. Our Well-Head protection program monitors our aquifers and what is happening around them to keep them safe for future generations.

Meter & Backflow

On the front line is our Meter and Backflow Group. When a call comes in from a customer about a leak, low pressure, no water, a leaking meter, needing water shut off, just to name a few, this group is generally the first to investigate. They work closely with our Business Office who schedules their appointments throughout the day. Along with scheduled appointments are the emergency calls that happen each day. We have someone on call 24 hours a day if a customer needs an emergency shut off.

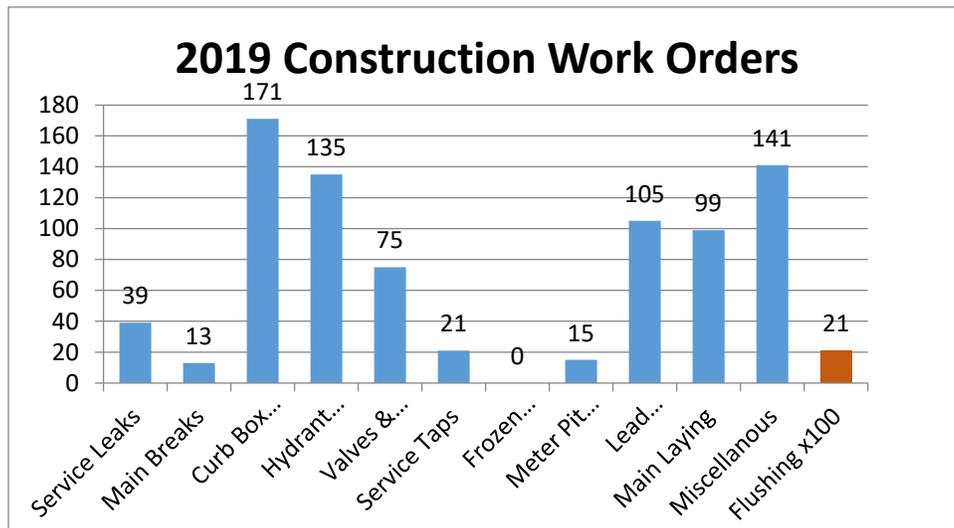


Employees from Mishawaka Water Dept. and DLZ Engineering inspecting the new tank.

I am proud of this group's dedicated work. They completed 6,871 work orders in 2019. In addition, we also tested 3,909 backflow devices. Backflow devices prevent the potentially harmful contaminants from commercial, industrial, and irrigation activities from siphoning back into Mishawaka's water supply.

Distribution

Our construction team keeps the water flowing in the distribution system. They are responsible for installing new water main, fixing service leaks and main breaks, removing lead services, and flushing hydrants. These are just a few examples of what they do on a daily basis. This past year we acquired a valve insertion system which allows us to install new valves into pipes that are under pressure. This is a great tool that lets us work on replacing old valves without shutting down parts of the system.



Our crews kept busy installing new water main, over 4 miles or 22,445 feet of pipe anywhere from 6" to 12". We also added 54 new fire hydrants to our system. Our mission to eliminate lead services continues as we removed 105 lead service lines and replaced them with copper. Helping our

efforts, Ryan Powell was promoted to an operator’s position. We hired a new pipefitter, Cody Tungate, who has been immersed in all aspects of water main construction and repair.

Some 2019 projects included the next phase of the Habitat for Humanity project, Beacon Parkway loop, Vibra Hospital, Helenic Living Center, and Savannah Pass, just to name a few. Another piece of equipment we acquired this past year has already made an impact. Our new hydro excavator allows us to dig in ever-increasingly difficult areas that are packed with utilities, allowing little room to dig. It is basically a big shop-vac on wheels that vacuums out the soil, water, and debris and makes our crew’s job easier and safer as it helps us find damage to and avoid the other buried infrastructure.

2019 Construction Projects	
Beacon Parkway	Reverewood Stoneham Drive
Meijer Drive	Shepard's Way
Habitat Build – Phase 2	12 th Street – Beiger to Byrkit
Ireland Road / Ireland Trail	Logan Street
Savannah Pass / Chapel Hill Drive	

Helping keep our system strong for fire protection is another key role of this department. This past year, improvements in our system along with data we supply helped the Fire Department improve their ISO rating which is short for Insurance Services Office. This classification program plays an important role in the underwriting process of insurance companies, and most use this information to determine policy prices which benefit the consumer.

Experience

At our fall conference the American Water Works association presents its service awards. John Stewart (40) years and Jim Wiesjahn (35) years are two examples of passion to service. John, an operator has installed miles and miles of water main over his years here. Jim, a senior utilityman, is an integral part of our Water Quality and Maintenance Team.



John Stewart and Jim Wiesjahn receive their service awards

Our dedicated staff continues to support Water For People which raises money to help fund clean drinking water and adequate sanitation throughout the world. 1 in 3 people or 2.1 billion do not have access to safe drinking water and 1 in 2 people (4.5 billion) do not have adequate sanitation. Last year alone 800,000 people died due to a lack of safe drinking water.

The Indiana Section of Water for People led the nation for the 4th consecutive year as we donated over \$163,000 dollars in 2019 to work toward an end in fixing this problem.

Our staff maintains multiple licenses through the Indiana Department of Environmental Management. These licenses include Water Treatment, Distribution System Construction and Maintenance, and Backflow. Every year our staff must acquire continuing education credits to

keep their certification current. I am proud of our staff and their dedication to our mission which is clean, safe, drinking water. Mishawaka Water works every day to bring them the best product possible and will always strive to do our best.



Mayor Dave helping out at the new tank



Pumping concrete to the top of the tank



Concrete roof pour



Booster station arrival



Valve insertion equipment installation

We are proud to serve the citizens of Mishawaka. The coming years will bring new treatment facilities, water tanks, water main, and many other improvements that will keep our infrastructure strong for generations to come.