

## **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 home town 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*

### **Background**

The Mishawaka Utilities Electric Division is the second largest municipally owned electric utility in Indiana, providing service to 26,836 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. 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; our operation is totally financed by the customers we serve.



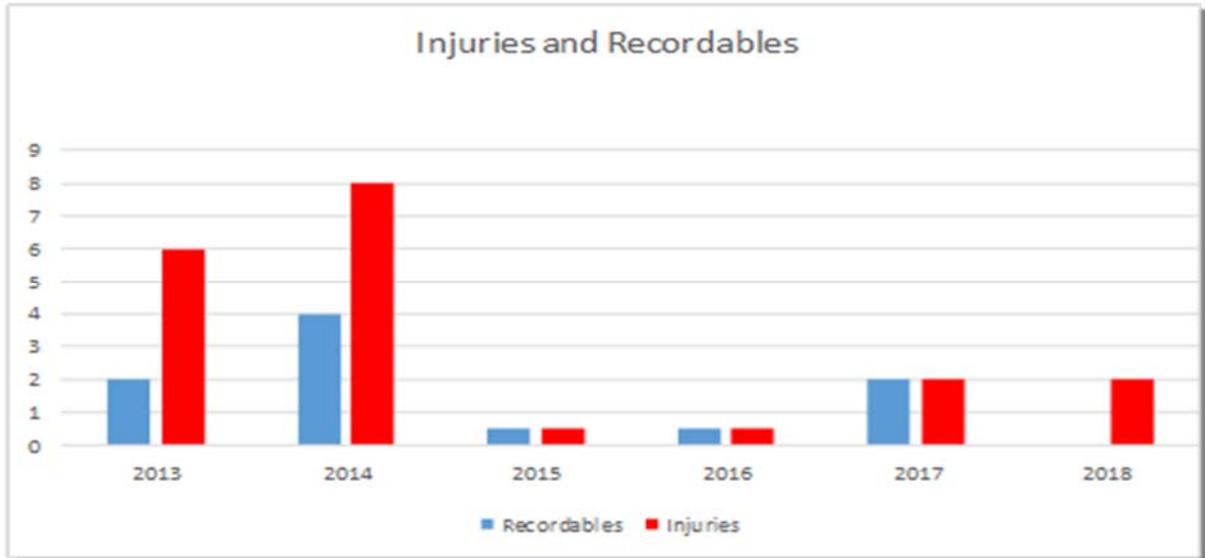
*Mishawaka Utilities Electric Department*

### **Electric Division Process Measures**

Process Measure	2017	2018	Percent Change
Peak Demand Month (month and kW peak demand)	July 128,450	June 139,218	+8.4%
Total Energy Purchased (kWh)	604,889,100	618,873,618	+2.31%
Total Energy Sold (kWh)	561,313,966	582,555,158	+3.78%
Total Number of Customers Billed	26,259	26,836	+2.19%
Engineering Projects Completed	293	351	+19.7%
Number of Transformers Set	74	81	+9.5%
Metering Dept Work Orders Completed	23,381	25,073	+7.23%

### **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 is a recurring annual training program. Safety has been, and will continue to be, our main focus at the Electric Division.



### System Energy Consumption

In June we hit our annual peak demand of 139.2 [MW] (5.5 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 618,873,618 [kWh], up 2.31 percent from the previous year.

### Reliability/Performance Enhancements

- Replaced obsolete breakers (6) at 12th St., Borley, and University stations.
- Replaced failed ALTS gear at Nyloncraft with (2) G&W Viper-STs.
- Replaced obsolete annunciators (4) at Borley, Clover, and Virgil stations.
- Replaced obsolete Virgil TransData meter. This completes the ION upgrade project.
- Replaced several insulators and lightning arresters at Borley and Bercado stations.
- Replaced all diode packs on RTU control boards to mitigate control failures.
- Upgraded network infrastructure, added redundant compute and storage servers.

### Employee Training and Lineman's Rodeo

Mishawaka Utilities Electric Division's in-house NJATC apprenticeship training program, which started in February of 1988, is now in its 31<sup>st</sup> year. Our program is a cooperative effort with IBEW Local 1392. The program is recognized by and registered with the Department of Labor Bureau of Apprenticeship and Training. Don Beck and Chuck Bailey attended National Training Institute (NJATC) instructor training classes this past July at the University of Michigan in Ann Arbor. Chuck received his Master Instructor / Trainer certificate. Don has his certificate and is currently taking Advanced Studies Courses. The classes are necessary for these instructors to maintain their certification as trainers in our apprentice program. Kevin McGann, Construction Superintendent, functions as the president of Mishawaka's National Joint Apprenticeship and Training Committee.

Lineman rodeo competitions showcase the talents and training of the line worker. Judging follows APPA safety regulations at international levels. Our most accomplished employees attend these rodeos competitions. Electric Division Construction Department personnel participated in the following events in 2018:

- *The APPA National Rodeo* held in Raleigh, North Carolina on May 5th & 6th. We sent a Journeyman team consisting of Captain Chuck Bailey, Don Beck, and Colter Hurley.
- *The Fallen Lineman Rodeo* held in Clearfield, Pennsylvania on June 16th. Our team consisted of Captain Chuck Bailey, Don Beck, and Colter Hurley. Mike Miller also competed as an apprentice.
- *The IMEA State Lineworkers' Rodeo* was held in Lawrenceburg, Indiana on September 15th & 16th. Our journeyman team consisted of Captain Chuck Bailey, Don Beck, and Colter Hurley. Ryan Francis, Grant Ginter, and Angel Fernandez competed at the apprentice level. Awards included Journeyman Team – 3rd place overall and 3rd place in the Roller Changeout Event. Apprentice Ryan Francis placed 3rd overall, 1st place in the Obstacle Course Event, 1st place in the Lightning Arrester Changeout Event, and 3rd place on the Written Test. Angel Fernandez placed 2nd in the Lightning Arrester Changeout Event.
- *The International Lineman Rodeo* was held in Bonner Springs, Kansas on September 12th. We sent a journeyman team consisting of Chuck Bailey, Don Beck and Colter Hurley. Rob Verhostra also competed as an apprentice.

## **Organizational Changes**

Organizational changes this past year were as follows:

### Administration Department

- Justin Overholser was promoted to Senior Engineering Assistant

### Construction Department

- We hired 4 Apprentices last year: Angel Fernandez, Jeffrey Fisher, Grant Ginter, and Colin Leonard
- We had one Journeyman resign: Nate Prenkert

## **Engineering and Construction**

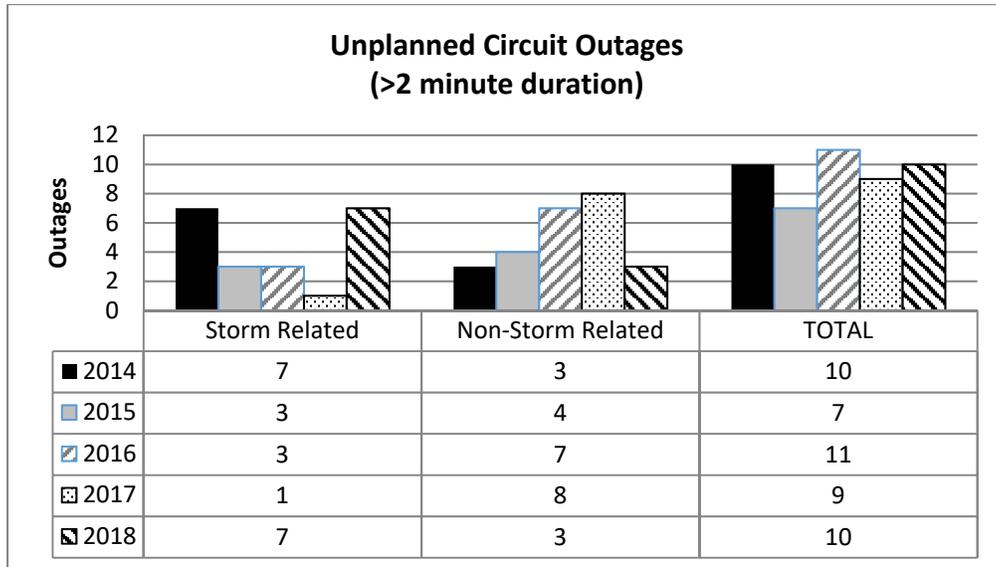
### **General**

#### Unplanned Outages

There were 10 unplanned circuit outages in 2018, with a cumulative outage time of 19 hours. The number of unplanned outages was 10% higher than the previous year (9 in 2017).

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 driven 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 (wreaths and tree downtown and at Battell Park). Our support role includes providing both personnel and vehicle resources for setup and removal.

### **Preventive Maintenance**

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 precise location of the affected residence or business and the necessary information, through its relational database features, to home in on the outage extent.

The MUE GIS implementation expanded further throughout 2018 with daily application of the data collected and maintained in the GIS system. For example:

- Maintained construction and street light work flow.
- Maintain 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. Alerted 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, with Futura Mobile software.
- Nearing completion of the Pole Attachment Reporting. Will help generate revenue to the Electric department.

### **Project Engineering Activities**

2018 was another busy year for the Electric Department's Projects staff. The projects team oversaw 351 new projects for the year. Included in that number are 95 new residential underground house services and 18 new commercial three phase services. We supported the installation of 130 new utility poles as a result of our pole inspection program. We assisted with replacing 23 light poles that were knocked down by vehicles.

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 a new overhead three phase circuit to the Ireland Trail water storage unit
- Installed equipment to allow switching circuits for St. Joseph Hospital without interrupting service

#### ***Substation Support:***

- Scheduled projects to support:
  - Switching
  - Breaker Testing Switching

#### ***Major Projects:***

- Jimmy Carter Habitat for Humanity Work Project
- Silver Birch Assisted Living Center
- Merrifield Park (North Side)
- United Federal Credit Union with new decel lane
- Mary Gibbard Park Improvements
- Lippert Components on Byrkit Ave
- The Mill at Ironworks
- Condemned Pole Replacements
- Douglas Rd./Veterans Parkway Improvements
- Wilshire Plaza-Firehouse Subs, Vision Works, Ulta, Core Life Eatery, Carters, Oshkosh

**System PM:**

- Vault Hazard Testing
- SF6 gas inspection and servicing of all puffers in service
- Electric pedestal verification and inspections (1st year recorded electronically)

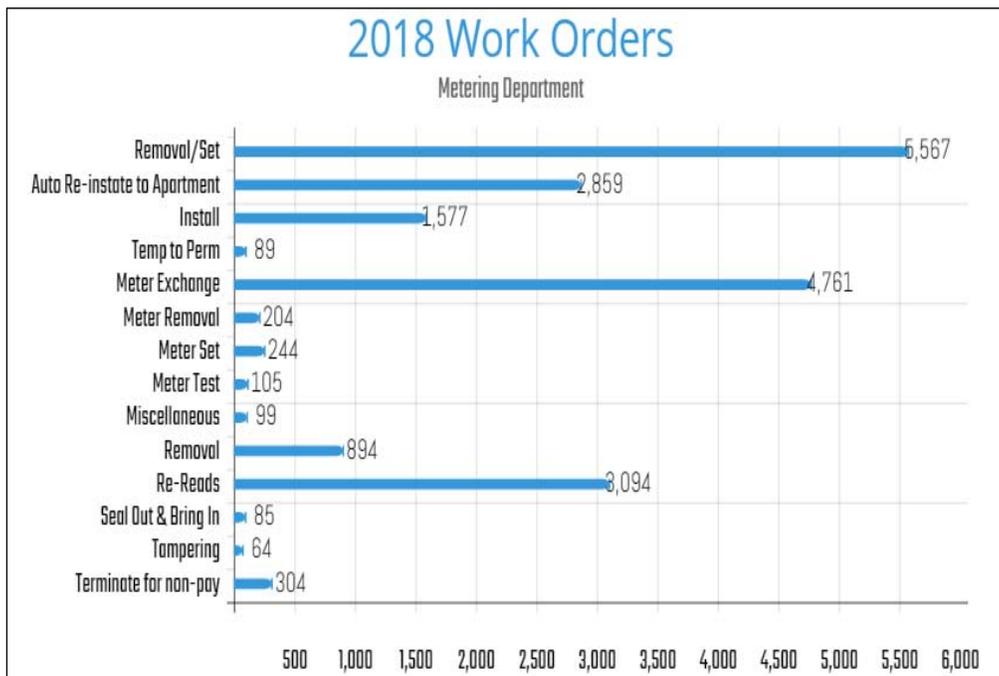
**Metering**

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 responsibility of the meter readers to read an average of 26,836 electric customers and 17,470 water customers on a monthly basis. 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 with 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 has 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 173 disconnect lists which included 2,975 customers. 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. Along with disconnecting services the Service Reps reconnected 2,327 customers resulting in \$58,175 in charges (\$25.00 fee x 2,327). During follow-up visits, to disconnected customers, 64 were found to have tampered which resulted in tampering fees totaling \$4,480 (\$70.00 x 64).

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 4,761 mechanical meters to AMR meters.

The Metering Department attended several training sessions including bi-monthly IMEA Safety 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 over the telephone and two-way radio
- 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 polyphase 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 34th year of service. The Electric Dispatch office is staffed by two Clerk Dispatcher "A"s. Chuck Brunner, the senior member and crew leader and Jeff Erickson, with 20 and 18 years of service respectively. These individuals continue to be strong, capable employees that provide critical support to the rest of the Electric Division.

2018 again proved to be active in terms of new acquisitions to our fleet. We replaced four aged vehicles with a new Ford F150 4x4 pickup truck for our System Reliability Supervisor, and for the Construction Department, a new International 7400/Altec bucket truck, a new Ford F350 service body pickup truck and a new Ford F550 contractor-style dump truck.

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 2018 totaled \$33596.

In 2018, inventory purchases were up over \$696,000 compared to purchases in 2017. This can be attributed but not limited to projects such as large-scale electric meter replacement, the relocation of the pole line on the south side of 12<sup>th</sup> Street between Campbell and Downey Avenues in preparation for road widening, the Habitat for Humanity project on the City’s north side, the Mill at Ironworks, the replacement of over 200 condemned wooden utility poles and the refit project to replace existing high pressure sodium street lighting with new LED technology.

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 chart (*right*) breaks down our inventory spending, comparing 2017 to 2018.

Item	Dollars Spent		
	2017	2018	Change
Aerial Transformers	\$18,068	\$13,178	-27%
Pad mounted Transformers	\$215,072	\$469,551	118%
Transformer Accessories	\$90,462	\$51,941	-43%
Pipe	\$36,063	\$88,294	145%
Pipe Accessories	\$7,329	\$10,373	42%
Meters	\$208,009	\$243,423	17%
Meter Accessories	\$9,496	\$24,552	159%
Wire	\$160,177	\$406,188	154%
Wire Accessories	\$112,870	\$94,867	-16%
Poles	\$97,763	\$125,927	29%
Pole Accessories	\$61,412	\$45,448	-26%
Street Light Poles	\$97,763	\$162,200	66%
Lighting Accessories	\$129,263	\$149,846	16%
Service Materials	\$39,590	\$93,588	136%

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 an integral 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 2019, 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 179,203 feet of sewer lines, and televised 225,293 feet of sewer lines in 2018. The collection system has over 200 miles of sanitary sewers and storm lines. Approximately 38 percent of the collection system was cleaned or televised during the year. Cleaning and televising is an important process in maximizing flow of sewage to the Wastewater Treatment Plant and determining what needs repaired or replaced. Discovery of larger sewer/storm infrastructure that needs to be repaired are often identified, and sent to the Engineering Department for bidding for contractor repair.

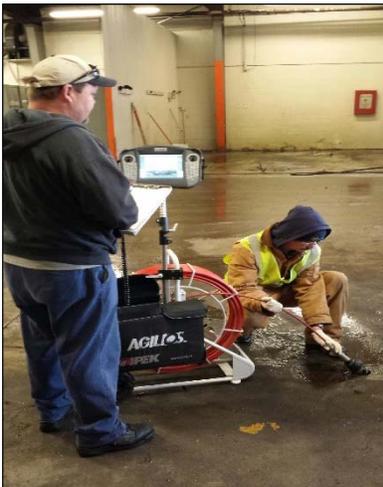


*Sewer Maintenance Department Staff*

The Sewer Department has 14 employees that perform 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 the integrity of repairs or lining.



*Video Surveillance*

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 insure 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 if there are 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 if there are blockages or damage. In 2018, over 3,208 feet of residential laterals were

televised with the push cam system for a grand total of 228,465 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 178 sewer excavation inspections in 2018.

## Sewer Insurance Program

Over the past year, 198 calls were received from residents during normal working hours and 18 after hour's 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 inspect contractor cleaned laterals. Of the 216 total calls, 50 residents qualified for the sewer insurance program. These 50 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 a one year guarantee against tree roots, to more in-depth projects such as 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.



*Video Inspection Crew*

## CIPP Sewer Rehabilitation Various Locations 2018

As part of ongoing infrastructure improvements, Cured in Place Pipe (CIPP) lining was used for a total of 8,800 feet to rehabilitate 28 various key sewer lines. The project also included the structural rehabilitation of 35 manholes with polyurethane lining. The total project investment was \$650,000.

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 2019.



*Vactor Crew*

## **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-six 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.

### **Wastewater Long Term Control Plan (LTCP)**

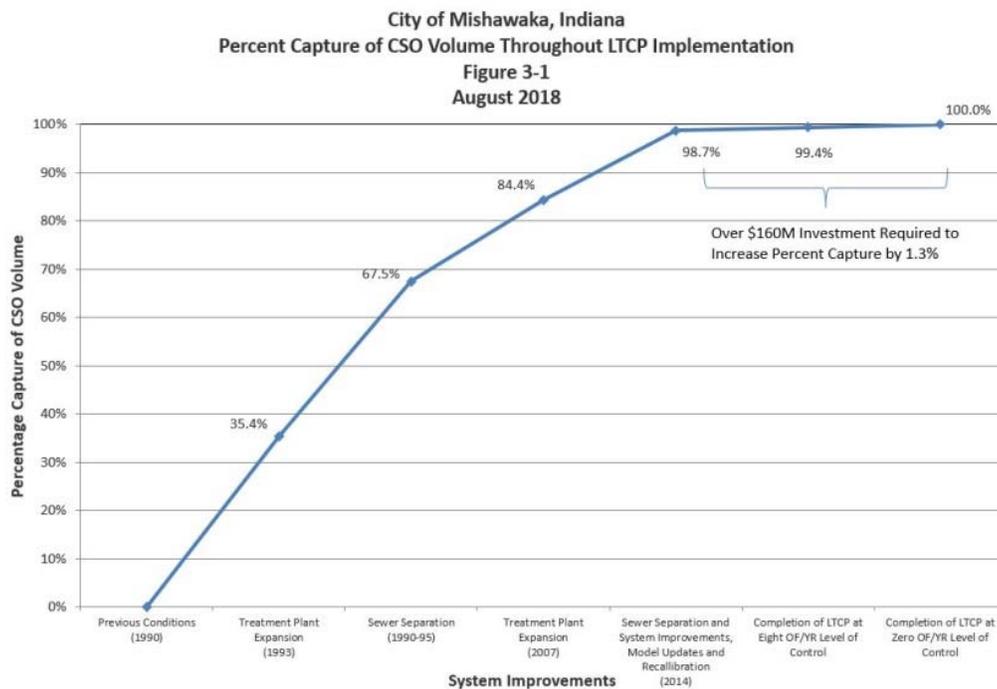
Like many other Indiana communities, Mishawaka was developed with a combined sewer system (CSS). During large storms the CSS, which carries both sewage and storm water, can become overloaded resulting in discharges of raw sewage into the St. Joseph. The Clean Water Act (CWA) requires cities with combined 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 28 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 from the baseline year of 1990. 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 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 most of our citizens.

Mishawaka has begun 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 new plan is more affordable and would result in an overall CSO volume reduction of 99.3%, 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 we anticipate negotiations to begin early this year. 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.

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 2018, 1411 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 environmental regulations. This includes the monitoring and inspecting of all Significant Industrial Users (SIUs) within the City. The City currently has seven 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.

### **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. The Wastewater Division is responsible for the maintenance of these systems. 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 certified by the Indiana State Department of Health. Our state certification was renewed in 2018.

Every year 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.

### 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 2018 was 57.2 MGD on June 30th. The maximum total flow treated on a single day was 42.10 million gallons on February 20th. The following are statistics for 2018.

Statistical Summary						
	2013	2014	2015	2016	2017	2018
Average Flow (MGD)	9.92	9.69	9.35	10.57	10.33	11.53
Peak Flow (MGD)	60.4	60.9	65.2	70.0	60.0	51.5
BOD Removed (%)	98	98	98	98	98	98
Phosphorus Removed (%)	80	82	85	82	83	84
Ammonia Removed (%)	92	95	96	94	97	98
Solids Removed (%)	97	98	98	98	98	97
Biosolids Produced (dry tons)	1040	1047	1169	1351	1269	1280
Electricity Use (MkWH)	5.1	4.9	5.2	5.3	5.2	5.3
Natural Gas Use (Mcf)	6.6	6.4	5.1	4.9	6.0	7.4
Total Precipitation (inches)	38.17	41.44	35.92	46.70	43.53	49.18

	2018												Total
	J	F	M	A	M	J	J	A	S	O	N	D	
Total Flow Treated (Billion Gallons)	0.28	0.49	0.46	0.34	0.44	0.37	0.32	0.30	0.29	0.30	0.30	0.32	4.21
Pollutants Removed (Million Pounds)													
Organic compounds	0.74	0.76	0.68	0.62	0.74	0.69	0.75	0.64	0.61	0.60	0.64	0.71	8.18
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	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.04	0.04	0.05	0.53

## 2018 Highlights

The most significant highlight of the year was the wastewater plant staff's efforts in operating and maintaining treatment during the largest storm and flooding we have ever experienced. Eight inches of rain over a two-day period, along with significant snow melt caused some of the worst flooding our area has ever seen. During this time the treatment plant remained completely operational while treating daily flows that averaged 40% more than the plant's design capacity. Not only was the treatment plant staff able to maintain operation, no violations of the plant's discharge limits occurred and the plant remained in full compliance with its NPDES permit.

Although the Wastewater Division is primarily focused on the operation and maintenance of the treatment plant, some parts of the collection are our responsibility. During the year the forcemain of the Schumacher lift station collapsed. During emergency excavation to replace the forcemain, it was discovered that the gravity sewer and drop structure also needed to be replaced.

Maintenance of the Juday Creek was also required during the year. The variable frequency drives on the pumps were routinely tripping causing the pumps to fail. A voltage monitoring device was placed on the incoming power to the station and found that there were spikes in the power supply. Power filters were placed on the station and no further pump failures have occurred.

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 early 2019.

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 1993, 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, two projects were designed and bid for construction. The first project includes the addition of a new influent bar screen, hazardous gas monitoring system upgrade, new chlorine tank with improved circulation piping, and CSO 9 flow monitoring. The bids were opened in December and the low bid was \$1,177,000 which was \$703,000 below the engineer's

opinion of probable construction costs. The project was awarded to Kokosing Industrial in Westerville, Ohio

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

### **Operators Challenge**

Every year in May, teams from across Indiana have a chance to compete in the Wastewater Challenge. In 2018, the competition was held at the Shelbyville Water Resource Recovery Facility. The Challenge is a series of events set up by five different IWEA committees – Residuals and Resource Recovery, Collections, Operations and Maintenance, Laboratory, and Safety. Eight teams competed for various committee and overall team awards. The Mishawaka Ninja Turdles Team consisted of Ray Rankin, Lindsay Grossmann, Mike Kubisiak and Cristina Vigil. They walked away with the Operations and Maintenance Award, the Lab Award, and Third Place Overall.



*Operator Challenge Team*

### **Award Winning**

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 17<sup>th</sup> consecutive year. The Division also received the Safety Award for the 3<sup>rd</sup> consecutive year. This award recognizes continuing safety excellence. Also, Jill Norton the Chief Chemist, and past IWEA President, received the Water Environment Federation’s Arthur Sidney Bedell Award. This award is given for extraordinary personal service to a WEF member association.

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.

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.

## **Water Division**

*Dave Majewski, Manager*

October 29, 2018 was the culmination of years of planning and design as we broke ground for our new 2 million-gallon reservoir. This tank will be completed by the end of summer 2019. To complement the tank we will add a new Booster Station and over 7000' of 12" water main to provide a redundant feed to the south end of Mishawaka as well as more storage to our distribution system.



*Ground breaking for new 2 million-gallon reservoir*



*Pouring the floor of our 2 million-gallon reservoir*

When the new tank goes online we will remove our 90-year-old, 3-million-gallon reservoir from service for rehabilitation, which will take an additional 8 to 12 months. The Engineers at DLZ have done a great job with the design and oversight of these projects. Our contractor, HRP has kept things ahead of schedule and is doing an excellent job with their work as well as keeping all of the subcontractors on schedule, such as Grand River Construction who is responsible for building the tank.

If you would like to see live updates and a time lapse video of the project, go to the City of Mishawaka website and click on the Mishawaka Utilities link and click Water Division to see this project from the beginning. Pay close attention to December 13<sup>th</sup> on the video when we poured 1,200 yards of concrete delivered by 126 concrete trucks in less than 8 hours.

Design kicked into full gear for our new Well Field and Treatment Plant at Juday Creek. By the end of 2019 we will have a finished design and be ready to bid this project in early 2020 with ground breaking later that year. In 2018 we drilled more test wells to further research water quality along with Geotek drilling to help determine building sites for the well houses. Road and Utility improvements occurred along on



*Looking over Construction Progress  
at new Tank with DLZ*

Douglas Road in 2018, and currently construction is underway on Veteran’s Parkway, which will go north off of Douglas Road and go over a new bridge at Juday Creek to the site of our new treatment plant.

This new Well Field will supply an additional 12.5 million gallons of water and be able to keep up with the new growth in the University Park Pressure District, as well as be able to supply other areas of the City as needed as demand continues to increase.

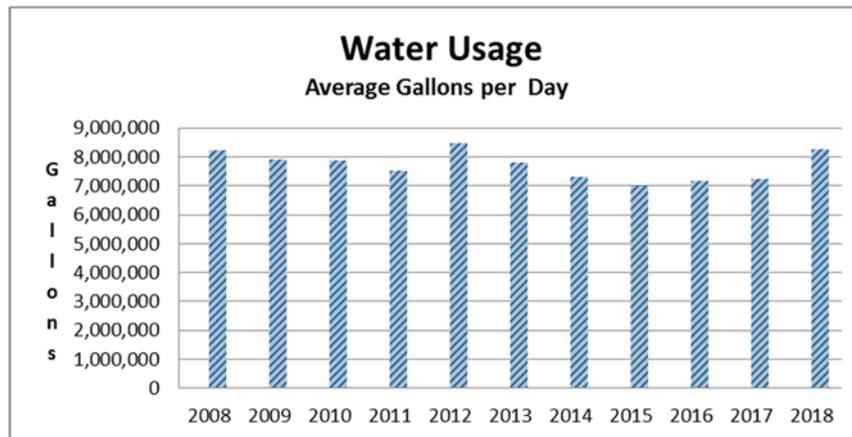


*Valve and pipe infrastructure along Douglas Road*

In 2018 we treated 3.012 billion gallons of water for an average of 8.252 million gallons per day. Our employees worked 1280 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**

Every day, 365 days a year our Water Quality Staff collects samples, tests the samples and adjusts the Treatment Plants accordingly to provide water that meets and exceeds the standards set by the Environmental Protection Agency and the Indiana Department of Environmental Management. This group performed over 21,000 tests to ensure Mishawaka has a safe supply of water. Included in this testing are 600 routine bacteria samples that make sure our system is free of harmful bacteria. Under the Safe Drinking Water Act the EPA must issue a new list of 30 unregulated contaminants every 5 years that we must monitor for. We have two sampling events in 2019 for UCMR 4. The intent of this rule is to provide baseline occurrence data the EPA can use to make decisions on potential future drinking water regulations.



Mishawaka Utility’s Water Department takes great pride in potable water that meets and exceeds Federal and State requirements to over 17,500 service connections. Our three water treatment facilities can produce 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.

## Wellhead Protection

Although we are excited for her as she starts the next chapter of her life, we are also sad that after 35 years with the City of Mishawaka, we say goodbye to our Well Head Protection Coordinator Jan Winn. Jan leaves this position in much better shape than when she started. She led our source protection program, which is mandated by federal and state statutes, keeping our Well Head Program up to date by locating wells and septic systems in and outside our protection area. Jan also monitored any spills that could possibly cause contamination to our aquifers. Along with that, she was a liaison with State regulators for continuing education credits for our staff. Jan was on numerous committees, was a Licensed Water Treatment Plant Operator, and would take on any job assigned to her. Jan leaves behind a lasting legacy for those who follow. Thanks for all you have meant to Mishawaka Utilities and the City of Mishawaka.



*Jan Winn adds her name to the retirement Board*

Speaking of those who follow, Alexa Hill is our new Well Head Protection Coordinator. She is very talented and we are sure she can fill Jan's big shoes! Welcome Alexa!

## Maintenance

Our Maintenance Team is responsible for the upkeep of our Business 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 inch up to 24 inch. This group receives chemical deliveries and oversees the maintenance of the wells and high service pumps that are the lifeblood of our distribution system. The most important thing is they get the job done and do it well!



*Installing new flow meter at East Tank and Booster Station*

## Meter & Backflow

On the front lines 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.



*Meter Repairman Todd Rathka testing a meter*

I am proud of this group's dedicated work. They completed 7,117 work orders in 2018. In addition, we also tested 4,022 backflow devices last year. Backflow devices prevent the potentially harmful contaminates from commercial, industrial, and irrigation activities to siphon back into Mishawaka's water supply. In May of 2018, we hosted an approved Backflow Certification Course. Two of our Meter Installers, Nick Standfield and Cody Pratt, made it through this intense training and now can be called upon to test backflow devices as needed.

Every year we add more radio read devices to our meter infrastructure. All new installations have a wireless transmitter and we continue to add existing meters to this system. By the end of 2019 the entire Milburn Blvd area should have this wireless technology installed, which makes billing easier and more accurate, and less labor intensive.

### **Distribution**

Many take for granted that when we turn on our taps we will have water there. Without our dedicated construction crew that would not be possible. Installing new water main, fixing service leaks and main breaks, removing lead services, and flushing hydrants, are just a few examples of what they do on a daily basis. Identifying critical valves is a project we have been working on the last 5 years. This year we replaced three 20 inch valves on 4<sup>th</sup> Street and numerous others in the City. Large valves 20 inches and larger make up a small percent of the city's total, but can also be some of the most important when a shutdown is needed.



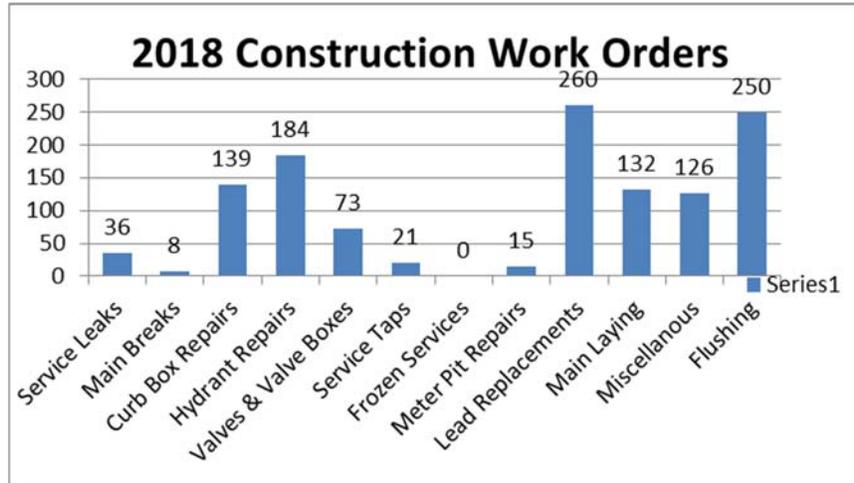
*20" valve installation on 4th Street*

Also of note, in the last few years has been the number of hydrants that have been hit by cars. Whether it be accidents or inattentive drivers texting, we have seen a surge in hydrant repairs. That number is up 44% over the last 2 years. Along with the major infrastructure projects we are currently working on, we have many other projects we are proud of. We are closer to another feed to the east side of Mishawaka. Selge construction bored 600 feet of 10 inch water main under Eller Ditch at the RES and we added another 600 plus feet to get us within 1,200 feet of tying in at Kline Street.



*Construction crew fixing a leak*

In 2018 our crews installed over 7,000 feet of water main, replaced 260 lead services, flushed over 2,000 fire hydrants and repaired numerous service lines and valve boxes, along with pouring hundreds of yards of concrete to repair the street or sidewalk where we performed our work. These guys keep the water flowing!



2018 CONSTRUCTION PROJECTS	
Rosetta Place	Grandview Retail
Villa's at Reverewood Phase 4 and 5	Newbury Point Section 5
The Res Extension	Byrkit Ave & Lincolnway
Northbridge Valley	3835 Edison Lakes Parkway
Burdette Street	

LEAD REPLACEMENTS 2018	
	No. of Replacements
Jackson Street	44
Alabama Street	56
Burdette Street	15
East 4 <sup>th</sup> Street	52
East Donaldson St.	38
W. Jefferson Blvd	16
Byrkit Avenue	44

Our dedicated staff continues to support Water for People which raises money to help fund clean drinking water and adequate sanitation throughout the world. The Mishawaka Water Department pie sale raised \$1000, and for the 19<sup>th</sup> consecutive year we donated at least \$1,000 to Water for People.

Our employees served on committees that raised almost \$200,000 from different events around the state, and the Indiana Section of the American Water Works Association leads the nation in donations to Water for People. I am also proud of our employees who volunteered their time to the Jimmy and Rosalynn Carter Work Project which was an amazing success not only for the homeowners but for the fulfilling experience it gave those that worked on the site.



*Dave Majewski and Water for People CEO Eleanor Allen*

The Construction, Water Quality, Maintenance, and Meter/Backflow group have worked closely with contractors and engineers to help plan and design water main construction, plant upgrades, and our new facilities that are being built and will be built over the coming years. I am proud of our staff and their dedication to our mission which is clean, safe, drinking water!



*Mayor Dave giving his thumbs up to the new tank*



*Water Quality Supervisor Tony Galassi & Division Manager Dave Majewski like what they see at new tank site*

The next few years will be very exciting for Mishawaka Water and the citizens of Mishawaka as years of planning will bring new projects to life and keep Mishawaka Water running strong for years to come. We are proud to deliver a great product and provide world-class service to the great citizens of our beloved Princess City.



*Mishawaka Water Department circa 2018*