

Mishawaka Utilities

James Schrader, General Manager

Mishawaka Utilities was founded in 1903 as the Mishawaka Public Utilities Company and consisted of a Water Works and Electric Light Plant. Wastewater treatment was added to the Utilities in 1952 and celebrated its 60th anniversary in 2012. From humble beginnings, Mishawaka Utilities has grown into a world class municipal utility that provides reliable electric service, clean and safe water, and effective wastewater treatment. The Sewer Maintenance Department is funded by Wastewater Division revenue; however the department is under the guidance of the City's Engineering Department. The Utility's 131 employees are dedicated to keeping the utility infrastructure reliable and up to date, with capacity to attract growth and development, helping to shape Mishawaka's future.

The Utility Business Office provides customer service as well as support services to the three operating divisions. The Utilities are under the direction of General Manager Jim Schrader. Hometown services provided by Mishawaka Utilities mean that residents and businesses can count on reliable, efficient, and affordable water, electric, and wastewater treatment.

The Utility's offices and crews are local. Personnel and can be dispatched quickly to respond to problems and emergencies. When customer contact with the Utilities is

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required, a friendly human being is ready to take your call. The Business Office is conveniently located in downtown. The employees of Mishawaka Utilities are its customers too.

Mission

Mishawaka Utilities is committed to providing the 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 far exceed the expectations of our owners, our customers.

Mishawaka Utilities Business Office

Virginia Fras, Manager

Each of us has experienced various levels of customer service, ranging from outstanding to terrible. What ingredients go into the mix for those who choose to provide "world class customer service"? It is all about making the right behavior choices. These begin with individuals, then within departments, as employees meet the needs of each other, then extend these behaviors to outside customers. The key to customer service is a positive mind-set, and this is what we strive to display at the Business Office.

The four keys to providing effective Customer Service are to:

- Listen to Customers
- Know your Products and Services
- Admit mistakes
- Value the customer's time

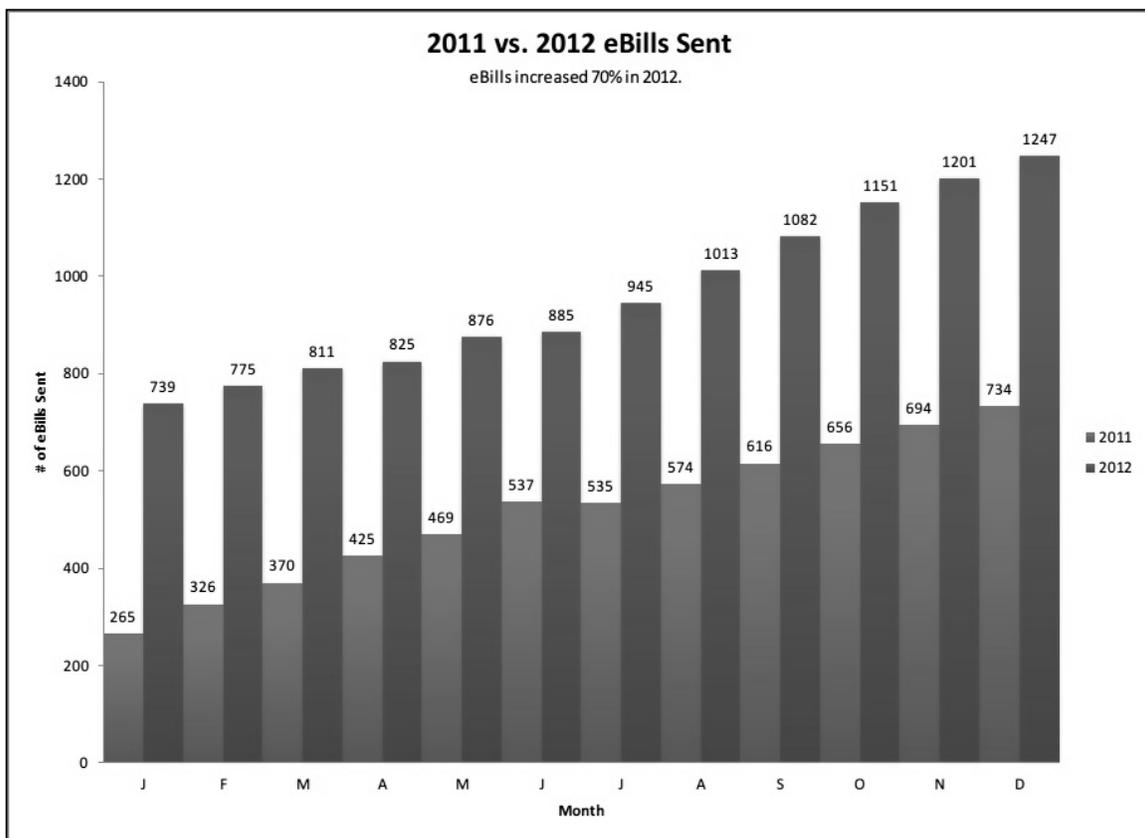
Our Business Office is staffed with 24 employees who work hard to continuously improve Customer Service and office efficiencies. We have updated our website software this year. We continue to accept Visa, MasterCard, Discover, and e-check payments on our website. We also offer the option of paying by Interactive Voice Response through our new 1-866-288-0515 number. Some of the benefits that the website updates offer are providing on-line payment history which is automatically organized, filed, and available anytime through a simple, user interface. The customer can search prior billing statements and research payment history without the need to call the Business Office. These new enhancements will also archive customer information, eliminating the need to re-enter such information for second and future payments.



Electronic invoicing and payment provides the following benefits:

- Reduced costs associated with the production, handling and mailing of paper invoices
- Dramatically improved customer service due to around-the-clock customer self-service for invoice and payment histories

- Enhanced cash flow from quicker payments made electronically and aided by the automated collections manager, allowing the Utility to send automated reminders of payment due, payment overdue, etc.
- Reduction in labor costs associated with invoice packaging, mailing, handling of paper, dispute resolution and collections
- Improved customer satisfaction as customers save time and money by paying electronically
- Security with the assurance that sensitive personal information is transmitted, stored, and maintained using best practice PCI compliant data security standards.



We will continue to move forward in 2013 with updating our customer service and billing software to improve internal efficiencies. This effort will improve customer service response times, enhance customer intelligence, improve application integration, and lower maintenance and integration costs. We look forward to rolling this new software out early in the third quarter of 2013. It is a pleasure serving the citizens of Mishawaka and we are committed to continuing to provide “World Class Service”, both now and in the future.

Water Division

Bruno Trimboli, Manager

In 2012, the twenty-eight employees of the MU Water Division worked tirelessly to supply our 46,000 customers with potable water via 17,100 service connections. As always, our objective was to deliver exemplary customer service along with potable drinking water that meets or exceeds Federal and State drinking water standards. Simultaneously, our goal was to work to keep production costs to a minimum through enhanced efficiency achieved by continuously improving the manner in which we conduct our business. These efforts were applied to the operation and maintenance of our three water treatment plants with combined maximum capacity of over thirty million gallons per day, six water booster stations, four elevated water storage tanks totaling 6.75 million gallons of elevated storage, and 295 miles of water distribution main that comprise our public water system.

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In order to achieve our stated mission, the Water Division is organized into four distinct areas of activity that are all interdependent. These areas are Water Quality Operations and Wellhead Protection (WHP); Water Treatment and Pumping Facility Maintenance; Distribution System Maintenance and Construction; and Water Metering and Backflow Inspection.



The Water Quality/Operations group is responsible for the operation of our water treatment plants and well fields. They also conduct the comprehensive testing of the drinking water that these facilities produce in accordance with Federal and State regulations. Water quality throughout our distribution system, from the wells to the customer's service line, was monitored and maintained through over 19,500 discrete tests performed either in our water quality laboratories or by

independent certified contract labs. Water quality testing and treatment plant operations are conducted and monitored on a daily basis. The Annual Drinking Water Quality Report that is provided to our customers by July 1st of each year is published by the Water Quality/Operations group. This report summarizes the results of our comprehensive testing for our citizens in accordance with USEPA regulations.

Mishawaka Utilities Water Division

Water Quality Laboratory Testing Totals 2012

Test/Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Conductivity	132	120	154	126	160	126	132	138	142	160	132	126	1,648
Manganese	132	120	154	126	160	126	132	138	142	160	132	126	1,648
Iron	132	120	154	126	160	126	132	138	142	160	132	126	1,648
Hardness-Calcium	132	120	154	126	160	126	132	138	142	160	132	126	1,648
Alkalinity	132	120	154	126	160	126	132	138	142	160	132	126	1,648
Total Hardness	132	120	154	126	160	126	132	138	142	160	132	126	1,648
Fluoride	124	116	146	120	146	120	124	124	142	146	120	124	1,552
Phosphate	88	80	88	84	92	84	88	92	80	92	88	84	1,040
Free Chlorine	124	116	124	120	124	120	124	124	120	124	120	124	1,464
Total Chlorine	124	116	124	120	124	120	124	124	120	124	120	124	1,464
pH	132	126	154	126	160	126	132	138	142	160	132	126	1,654
Temperature	132	126	154	126	160	126	132	138	142	160	132	126	1,654
Routine Bacti	50	50	50	50	50	50	50	50	50	50	50	50	600
Other Bacti	2	1	4	2	2	2	4	4	6	16	2	0	45
Raw Bacti	0	0	22	0	22	0	0	0	22	22	0	0	88
TSS	2	2	2	2	2	2	2	2	2	2	2	2	24
Lead & Copper	0	0	0	0	0	0	0	0	0	0	0	0	0
VOC	0	0	0	0	0	0	0	0	0	0	0	0	0
SOC	0	0	0	0	0	3	0	3	0	0	0	0	6
IOC	0	0	0	0	0	0	0	0	0	0	0	0	0
Sodium	0	0	0	0	0	0	0	0	0	0	0	0	0
Radionuclides	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrate	0	0	0	3	0	0	0	0	0	0	0	0	3
TTHM's & HAA5	0	6	0	0	6	0	0	6	0	0	6	0	24
Monthly Totals	1,570	1,459	1,792	1,509	1,848	1,509	1,572	1,633	1,678	1,856	1,564	1,516	19,506

Total Tests completed for 2012 - 19,506

Protection of our aquifer is the responsibility of the Well-Head Protection Coordinator. In 2012, the Well-Head Protection effort continued to identify and confirm thousands of potential sources of ground water contamination and to integrate this information with our GIS resources. This included locating abandoned wells, identifying commercial and industrial activities that have the potential to contaminate the ground water, and our

participation on the St. Joseph County Water Resource Area Board. Our original Phase I well-head protection effort commenced in December of 2000, and was submitted to the Indiana Department of Environmental Management in 2001. Phase II of our well-head protection plan, including the well-head area delineations, was updated and submitted to IDEM in March of 2012. This represented a significant amount of effort on the part of our personnel. IDEM approved our Phase II submittal on August 21st of 2012.

The Water Metering /Backflow/Cross Connection group is responsible for enforcing the testing of the many backflow devices located throughout our distribution system. The purpose of these devices is to prevent the back siphoning of potentially harmful contaminants from commercial, industrial or irrigation activities into the potable water distribution system. Backflow devices are required in all commercial and industrial buildings and on all irrigation systems that receive water service from



Mishawaka Utilities. The Water Division Meter Department coordinates closely with the Customer Service section of the MU Business Office to schedule the installation, removal, and testing of our water meters. Most of this work is done on a pre-scheduled basis, but often these personnel are required to respond to unscheduled situations. Water meters are not only necessary to allow us to bill our customers for water and wastewater services, but they also help us to determine the type and trends of service required. Customer emergencies account for much of the Meter Department's efforts.

The Water Treatment and Pumping Facility Maintenance group keeps our water storage tanks in proper working order. Each of our twenty-two production wells were inspected, serviced, and maintained as required. Two wells were replaced due to age and wear. This is the key to efficient operation. The majority of our effort to update and enhance the water system's SCADA control system was completed in 2012. We continue to pursue improved energy management in the water system with the goal of controlling our energy costs.

The Water Distribution System Maintenance and Construction group continued their intense pace in 2012. Water main breaks, leaking service lines, broken distribution valves, fire hydrant flushing, and assistance to contractors working for the City were examples of services provided to our customers. Projects supported included the ongoing Capital Avenue (SR331) project, the various phases of the Milburn Blvd. project, North Main Street project, and the Mill Street project. On numerous occasions, we brought our crews in to work later during the evening or at night in order to minimize the impact of our work on affected customers as we relocated water main and/or fire hydrants for the contractors. In addition, five water main extension projects totaling almost 2,000

linear feet were completed. There are over 2,700 fire hydrants in our system. The most important function of the fire hydrant is to fight fires, but they are also used to flush the distribution system periodically to further enhance water quality. During our yearly flushing, each hydrant is checked for proper operation and is repaired as required. Fire hydrant flow data is acquired and provided to engineering and insurance entities as requested. A dependable and ample water source for fire-fighting purposes (ISO rating) has a direct bearing on a community's ability to attract or retain commercial and industrial activities. The Water Division assisted the Mishawaka Fire Department with the latest ISO evaluation of our fire protection system this past year.

There were many challenges to address in 2012. Although the national economy was suffering, our customers expected and received world class service from their Water Division. The Water Division pumped and treated an average of 8.48 million gallons per day, an increase of almost 1 million gallons per day over 2011. This potable drinking water met or exceeded all State and Federal drinking water standards. Simultaneously, we maintained and repaired as needed the extensive treatment and distribution infrastructure while aggressively supporting other City Of Mishawaka and State of Indiana construction projects.

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MONTH	VIRGIL WELL FIELD	DWF	Gumwood Well Field	Total (MGD)
	Water Pumped (MGD)	Water Pumped (MGD)	Water Pumped (MGD)	Water Pumped (MGD)
January	80.16	119.55	1.38	194.22
February	77.53	115.55	1.59	186.32
March	88.97	122.83	1.44	203.01
April	96.48	120.09	1.50	208.32
May	184.27	148.24	1.79	334.52
June	266.78	198.48	1.46	471.48
July	265.57	211.98	1.76	488.85
August	157.90	178.77	1.64	346.31
September	128.17	161.35	6.19	293.64
October	102.56	129.76	5.17	235.41
November	71.44	123.32	3.72	194.80
December	75.87	127.24	4.87	202.38
Yearly Total	1595.70	1757.17	32.50	3385.37
Monthly Average	132.97	146.43	2.71	279.94
Highest Month	266.78	211.98	6.19	488.85
Lowest Month	71.44	115.55	1.38	186.32

In the year ahead we will continue to support the City of Mishawaka's various capital projects, much as we have this past year. We look forward to an improved national economy and increased need for our water service in all areas. We look forward to modernizing our rate structure so that it will be fair to all user classes and will reward water conservation. The Water Division will strive to continue meeting or exceeding potable water standards as required by IDEM and the USEPA. We will continue to explore and implement more efficient methods of operating the water treatment, pumping, storage, and distribution systems. We expect to continue to deliver world class service to our customers. Although we anticipate 2013 will present challenges, the Water Division will strive to meet them, continuing to help shape Mishawaka's future.

Electric Division

Tim Erickson, Manager

Background

The Mishawaka Utilities Electric Division (MUE) is the second largest municipally owned electric utility in Indiana, providing service to 27,027 meters, an increase of .06 percent over last year. MUE does not generate power. Power is purchased on a wholesale basis from American Electric Power (AEP) and then distributed via MUE's sub-transmission system.

The heart of the system are the 11 substations located at strategic points throughout the city. The Electric Division staff constructs and maintains the distribution system consisting of nearly 127 miles of overhead lines and 176 miles of underground distribution lines. Also maintained are seven miles of transmission lines, primarily 34.5 kV, with a small 69 kV section. Our system serves a population of 48,252. MUE's consumers enjoy electric rates that are slightly below average for similar sized cities in Indiana, which is one of the nation's lowest-cost energy states.

While owned by the City of Mishawaka, the Division is not supported by tax dollars. As a division of Mishawaka Utilities, the operation is totally funded by the customers served. Operationally, the Division continues to aggressively rethink how work is performed, how to allocate limited resources, and how to maintain the exceptional reliability of the distribution system.

The Division has a staff of 46 employees, divided into four departments: Engineering, Construction, Metering and Operations. The following table depicts the key process measures for the Division:

Electric Division Annual Statistics

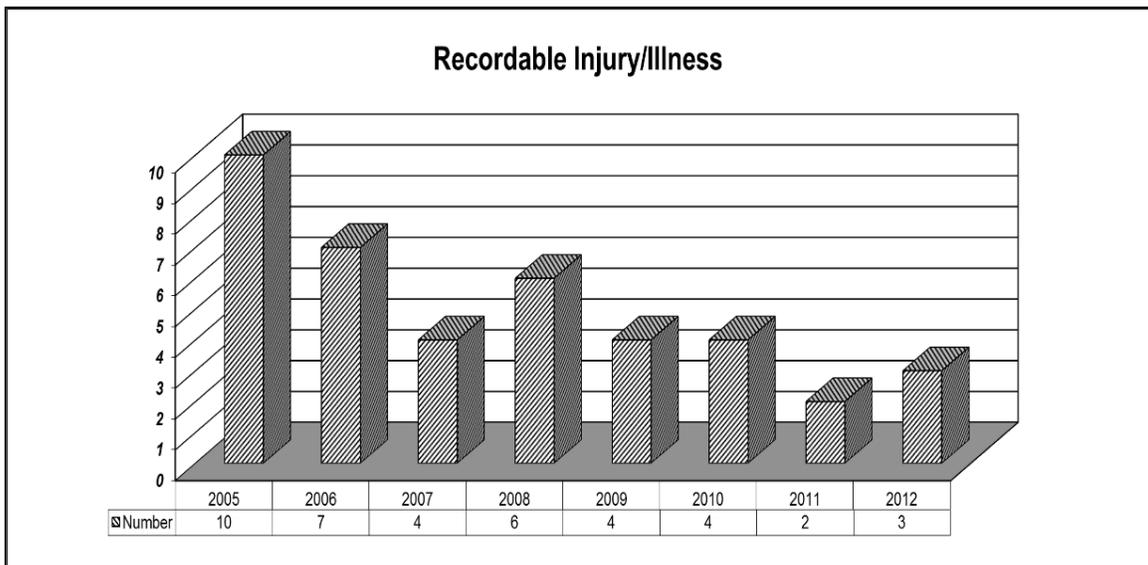
Process Measure	2011	2012	Change
Energy Usage, Highest Month (month and kW peak demand)	July 145,108	<i>July</i> <i>146,160</i>	0.72%
Total Energy Purchased (kWh)	621,122,029	<i>624,569,719</i>	0.56%
Total Energy Sold (kWh)	592,977,454	<i>592,463,076</i>	0.09%
Customers Billed (electric and water)	44,121	<i>44,117</i>	-.01%
Engineering Projects Completed	104	<i>148</i>	42.3%
Transformers Set	24	<i>29</i>	20.8%
Meter Department Work Orders Completed (electric only)	23,345	<i>22160</i>	-5.08%

Personnel Safety

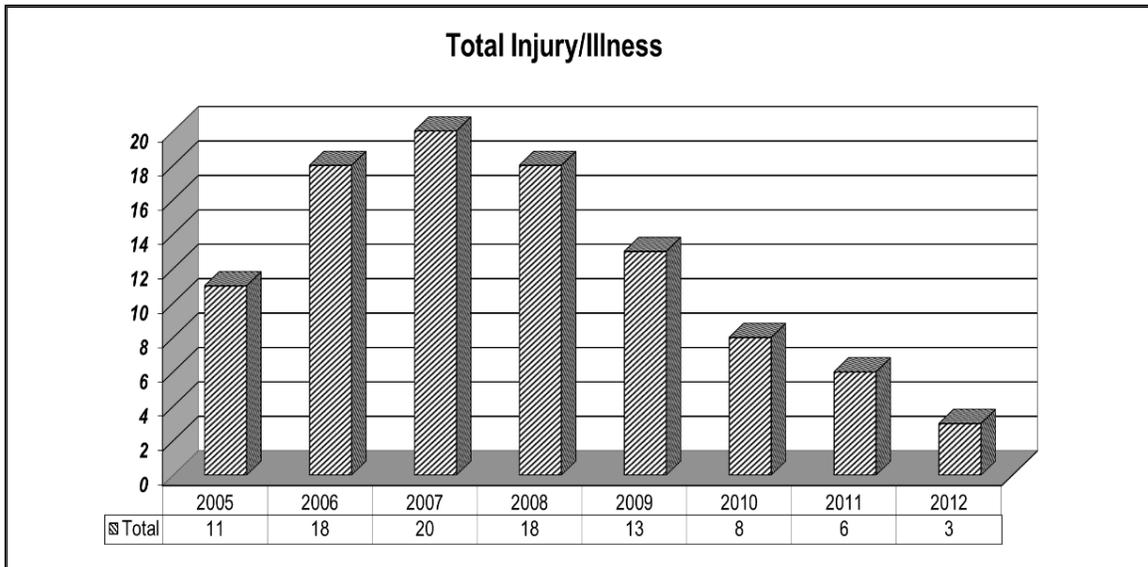
The Division completed an annual inspection of 2,308 components throughout the City to ensure the safety of the general public. Inspections verify proper locking and tagging of equipment. Due to the potential hazards of electrical distribution, the safety of our citizens and Electric Division employees is our highest priority.

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All construction personnel participated in bucket rescue and pole top rescue at the Logan Street Training Facility. Training was administered by the Indiana Municipal Electric Association (IMEA). This training occurs annually to ensure that construction crews remain current in rescue response. In addition, all metering and construction personnel attend monthly safety meetings administered by the IMEA.



The number of recordable injuries/illnesses increased by 50 percent from the previous year (from two to three). In addition, the total number of injuries/illnesses decreased by 50 percent (from six to three).



Working safely is the most important aspect of the Division’s mission. A key element of maintaining a safe workplace is using equipment and tools that are in good working order and in compliance with industry and government safety standards. Each year, tests are required on the Division’s bucket and line trucks for both structural and dielectric safety compliance. Structural safety is basically defined by condition of the equipment. Every five years, units are x-ray tested to check for structural cracks and stresses that are not detectable with the human eye. Equipment must be in good mechanical and physical condition. Dielectric safety testing ensures that proper insulation levels are met for equipment that is operated around energized electric lines.

Division linemen who work with high voltage electricity are required to wear personal protection equipment, or PPE. Typical PPE consists of high-voltage rubber gloves and sleeves, flame-retardant clothing, hard hats, safety glasses and fall-arrest harnesses and lanyards. Rubber gloves and sleeves are tested and certified twice a year per industry standards. Fall-arrest equipment is inspected annually. Prevention is always the first step towards working safely. Any employee whose job would place them in a situation where an electrical arc flash could occur is issued flame retardant (or FR) outerwear.

Reliability and Performance Enhancements

- Completed installation of a backup generator at our 12th street facility to power all expected loads such as SCADA, dispatch radio and phone system, and house loads in the event we experience a power outage as occurred in the summer of 2011.
- Implemented a design change at Union and UP substations to monitor the status of the 86 and HSG trip coils. This was implemented in response to a protective system fuse failure at Union substation that went undetected for a significant period of time. This design change will be implemented at all stations.

- Completed an in-depth review of the resonant harmonic impact of the Clover substation capacitor bank and transformer in response to an SJRMC concern that some of their equipment was being affected by the high voltage distortion emanating from their Clover feed. We determined that keeping the CapBank kVAR at 2400 or less with all SJRMC loads on their Clover feed would preclude SJRMC operational issues. The following actions have been taken:
 - SCADA has been programmed to monitor Grape circuit loads and to automatically disable the Clover 3000 kVAR CapBank should SJRMC transfer all its load to Clover.
 - The Clover 1500 kVAR CapBank is disabled during normal operation to preclude excessive kVAR harmonic amplification issues.
- Designed and installed a 1500 kVAR CapBank at Russ to both improve system kVAR control as well as to improve the transformers power factor that feeds Nylon Craft.
- Completed detailed engineering on 52-T2 and TPU-2 addition for Russ Street T2; poured footer and pad. Installation is scheduled for first quarter of 2013.

System Energy Consumption

In July of 2012 we hit our annual peak load of 149.3 MVA, .13 percent greater than the 2011 peak, but 2.8 percent less than the previous high of 153.6 MVA, set in August 2006. All distribution equipment operated within design constraints. SCADA provided continuous up-to-date information of transformer loading and system supply voltages.

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Also, our energy consumption, total energy purchased for the year, was 624,569,719 kW, increased .56 percent from the previous year.

Increased Revenue

Designed and installed a kVAR control system, using programmed SCADA inputs, that will result in reducing AEP's power factor charges by \$75,000 over the next five years. The cost of the upgrade was \$6,000, resulting on a 12.5 to 1 return on investment.

Training

Our apprenticeship program is in its 24th year. In February of 1988 we started our Joint Apprenticeship Training Program and have graduated 24 apprentices to Journeyman Lineman. Our program is a cooperative effort between Local Union IBEW 1392 and the Mishawaka Utilities Electric Division. Our program is recognized and registered with the Department of Labor Bureau of Apprenticeship and Training. To graduate an apprentice must have a minimum of 8,000 hours on the job training and 576 hours of classroom study.

Three of the four apprentices hired in 2011 have now completed 3000 hours of on the job training and have been placed on the after-hours callout list making them available to assist in outage restoration.

Don Beck is our journeyman in-house instructor. He attended classes in Ann Arbor, Michigan and has been certified by the Department of Labor as an instructor.

Lineman's Rodeo Participation

Construction department personnel participated in the following lineman rodeos:



- 2012 APPA national rodeo held in Cleveland Ohio, where this year we sent 2 journeyman teams to compete. Team #1 consisted of Chuck Bailey, Dave Cochran and Jak Kudlaz. Team #2 consisted of Scott Flynn, Shane Reynolds, and Matt Stull. Team #2 did very well, finishing 22nd nationally while Team #1 finished 40th. These competitions teach safety, teamwork and camaraderie and bring distinction to our utility at a national level.
- Following the APPA national rodeo, Mishawaka headed to Anderson, In. for the Indiana Municipal Electric Association competition. Our Journeyman team consisted of Chuck Bailey, Shane Reynolds and Mat Stull. Jak Kudlacz and Nathan Prenkert competed individually in the apprentice division. The journeyman team finished second in the overall competition and apprentice Nate Prenkert finished first overall while Jak Kudlacz finished 1st place in four events and 2nd overall.
- In September, Mishawaka had, for the first time, a team made up of management and union. Competing in the Wisconsin State Rodeo were Shawn Bolinger and Chuck Bailey who took home a 2nd place event, a 3rd place event, and finished 4th place overall.

Our Journeyman team Chuck Bailey, Scott Flynn and Matt Stull finished 37th in the world

- The season ended at the International Lineman’s Rodeo held in Kansas City, where 205 international teams compete for the world title. Our Journeyman team (Chuck Bailey, Scott Flynn and Matt Stull) finished 37th in the world and Jak Kudlacz placed 5th in the world as an apprentice once again proving Mishawaka is among the best of the best.

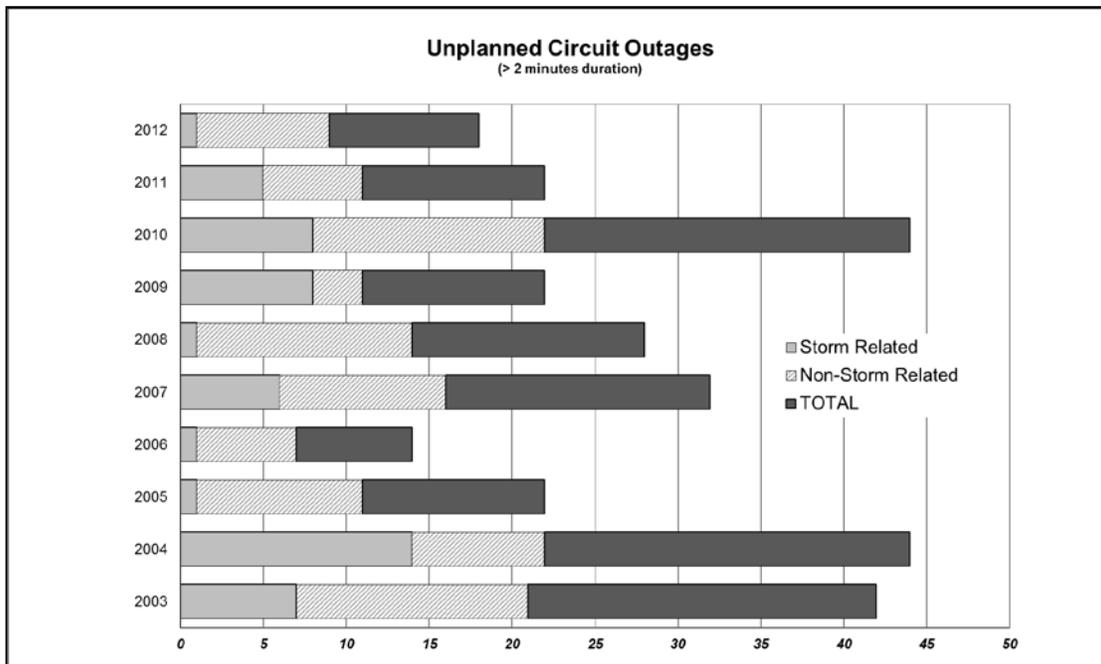


Tim Erickson and Kevin McGann continue to serve on the Indiana state Lineman’s Rodeo committee and Tim also serves on the State Safety and Training committee.

Outage Performance

There were 9 unplanned circuit outages in 2012, with a cumulative unplanned outage time of 12.1 hours. This represents a decrease of 18 percent from the previous year’s 11 unplanned outages.

The following chart depicts our unplanned circuit outage trend for the past 10 years.



The system as a whole continues to provide exceptionally reliable power. This is due to multiple reasons including ongoing reviews and analysis of system reliability and operational issues. Appropriate actions are 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.

Preventive Maintenance (PM) – examples of PMs performed include the following:

- **Motor Operated Air Break Switches**

The motor mechanism and switches on two of our motor operated air break switches (MOABS) were tested.

- **Insulator Cleaning**

Insulators were power-cleaned by Preventive Power and Maintenance in December of 2011 at University, and Bercado Substations. These cleanings are part of our strategy to clean the University Substation plus one other substation annually, with the goal of cleaning every substation at least once every ten years. Cleaning of insulators at University, Logan, Union, and Virgil Substations will be completed the second week of 2013.

- **Motor Operator Failure**

While servicing the 12th Street Substation transformer tap changer we experienced a problem with the transformer 34.5 kV motor operator air break (MOAB) switch. An updated piece of equipment that better fits our protection scheme was installed.

- **Routine Inspections (failure finding tasks)**

Our infrared (IR) scan was completed in May. IR surveys provide the opportunity to preemptively address equipment temperature anomalies thereby preventing failure.

Engineering Projects

The Main Street expansion project from Ardennes north to Day Road was one of our most significant projects. This project involved the relocation of multiple three phase underground lines. We also completed the final steps in merging the MUE Fiber network with the Saint Joe County Metronet project, implementing a new 5 year contract for future growth.

Two other projects requiring significant effort were the First Street expansion and Trinity Road expansion Projects.

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

- Electric distribution improvements (line maintenance projects):
 - 34.5 [kV] Pole Line Rebuild Union Sub to 4th Street Sub.

- 4th Street Sub 52-4 Rebuild / Downtown.
- Logan Sub 52-6 Primary Rebuild.
- Union Sub 52-6 Primary Rebuild.
- Major City Jobs
 - Trinity Road Primary & New 14 [ft] Sternberg Lights
 - Main Street new 14 [ft] Sternberg Lights
 - Lincolnway West 14 [ft] Sternberg Lights & Banners
 - Cheddar's Restaurant Project & SJRMC Hospital Feed Relocate
 - UP Mall Primary Rebuild
 - River Center Apartments
 - First Street New 14 [ft] Sternberg Lights
 - Union Street Rebuild / Habitat for Humanity Homes
 - River Walk Security Underground Services
 - Golden Corral Restaurant

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 relational database features, to hone in on the extent of the outage.

GIS implementation expanded further throughout 2012 with daily application of the data collected and maintained in the GIS system. For Example:

- GIS continues to play a vital role in the periodic inspection of high voltage equipment. The effort required the creation of equipment location maps throughout MUE territory.
- Maintained fiber plan to Trimble's web based Utility Center named eView. Maintained web based fiber map for contractors and for the City.
- Maintained Circuit Map updates, Utility Center updates, transformer database, GPS Field work, representing over 300 work orders.
- Assisted in the implementation of a Cap Bank inspection program.
- Introduced new laptop computers for crews. Trained crews on new software to help the construction workflow to be more efficient.
- Introduced Yuma GPS units to GIS department. Completed SQL 2008 migration and Utility Center installs on these machines.

Operations

The Operations Department provides support to the Engineering, Construction, and Metering Departments. 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. Operations also maintains the storeroom, and issues materials to construction crews.

The Operations Department wrote purchase orders for approximately \$865,000 for goods and services.

Billings to recoup costs related to damages to our facilities from traffic accidents and contractor mishaps totaled over \$74,000.

This year, the interior of the building received a bit of a face lift. Many of the common interior areas were repainted. The tile in the lunchroom, foreman’s offices, meter tech area, and rear hallway was also replaced.

A new vehicle was ordered to add to the working fleet. It is a 42-foot, single-man insulated aerial platform, or bucket truck, that will be delivered in early 2013.

Working safely is one of the most important aspects of our job. One facet of maintaining a safe workplace is using equipment and tools that are in good working order and up to industry and government safety standards – Operations is responsible for the equipment maintenance program.

Metering Department

The number of electric customers increased from 27,067 to 27,497. Service Representatives completed over 19,000 work orders as well as running a Shut-off list of over 3,200 work orders. The Meter Technician van completed over 5,000 work orders, along with newly implemented testing procedures for current-transformers and power-transformers.

Meter Reader routes, thanks to the re-routing efforts of Jeff Persyn, are running much more efficiently than in previous years; the back tracking on meter routes has been minimized.

Work Orders for Electric	2011	2012	Change
Removals	9536	9763	2.38%
Installs	9341	9646	3.26%
Sets	106	162	52.8%
Re-reads	3680	3569	-3.02%
Change Meters	460	386	-16.1%
Miscellaneous	222	635	186%
Totals	23,345	24,161	3.5%

Our shut offs and reconnects increased in 2012. The Business Office, along with our customer service truck, runs a shut off list three days per week, along with a special list on Fridays, if needed. We make it a priority to do follow-up visits to disconnected accounts to check for tampering and theft.

We are continuing a meter change program transitioning from three phase mechanical thermal demand-type metering to electronic solid state-type metering, along with single phase A-type base adaptor upgrades.

We also continue to move toward an A.M.R. (Automatic Meter Reading) program. A.M.R. will greatly improve the efficiency of meter reading.

The following table depicts performance in the area of shut offs:

Shut-offs	2011	2012	Change
Past-Due Amount	335,180	307,621	- 8.22%
Total Amount Due	663,231	625,834	- 5.64%
# Shut-Offs	3260	3286	0.8%
# Bad Checks	203	201	- 0.99%
# Payment Plans & Extensions	136	158	16.2%
# Payment Plan Deposits	284	293	3.17%
Shut-Off Totals	3708	3938	6.2%

We will continue to move forward with these programs and research new programs to improve on our customer services.

Recognition of Outstanding Performance

Gordon Allen has continued to work tirelessly to provide reliability enhancements to our system. In 2012 he identified and installed a kVAR control system that will save/eliminate \$75,000 dollars in AEP penalties over the next five years, and \$15,000 per year thereafter. He spearheaded our facilities backup generator installation and continues to search for better ways to do things. Gordon supervises projects, substations and all engineering department functions. He is now leading another large project, the addition of substation high voltage isolation breakers at five critical substations, to be completed over the next five years. These high voltage breakers will significantly improve reliability by minimizing the numbers customers impacted by a substation transformer outage.

Kevin McGann has organized and expanded our school electrical safety and training program to include new surrounding communities. New additions for 2013 will include

Mishawaka parochial schools, the Penn school system, and Wakarusa 5th graders. Kevin also serves on the IMEA state committee for Indiana Lineman's Rodeo.

Chuck Bailey continues to develop our lineman's rodeo teams at the state, national and world levels. He is the driving force behind the organizing, training, and teaching, and loves competing as he makes Mishawaka a perennial leader in these competitions. In our hometown he has responded to over 200 consecutive after-hours calls. Last year he also partnered with our construction foreman Shawn Bolinger on a first-ever management/union joint rodeo team that finished in the top 5 in the Wisconsin state lineman's competition.

Awards

- 2012 APPA national rodeo held in Cleveland, Ohio, this year we sent two journeyman teams to compete. Team #1 consisted of Chuck Bailey, Dave Cochran and Jak Kudlaz. Team # 2 consisted of Scott Flynn, Shane Reynolds, and Matt Stull. Team #2 did very well, finishing 22nd nationally while team #1 finished 40th. These competitions teach safety, teamwork, camaraderie, and bring distinction to our utility at a national level.
- In the Indiana Municipal Electric Association competition in Anderson, our journeyman team consisting of Chuck Bailey, Shane Reynolds and Matt Stull finished second in the overall competition. Jak Kudlacz and Nathan Prekert competed as individuals in the apprentice division. Nate finished first overall while Jak finished 1st place in four events and second overall.
- In September, Mishawaka for the first time fielded a two man team made up of management and union. Competing in the Wisconsin State Rodeo Shawn Bolinger and Chuck Bailey took home a 2nd place event, a 3rd place event and finished 4th place overall.
- The season ended at the International Lineman's Rodeo held in Kansas City, where 205 international teams competed for the World title. Our Journeyman team of Chuck Bailey, Scott Flynn, and Matt Stull finished 37th in the *world* and Jak Kudlacz placed 5th in the *world* as an apprentice. Their performance once again proved that Mishawaka Electric is among the best of the best.

Tim Erickson and Kevin McGann continue to serve on the Indiana state Lineman's Rodeo Committee. Tim also serves on the State Safety and Training committee.

Challenges Ahead

In 2013 the number one priority in the electric utility must be the safety of the employees and the public. We will remain committed to the expansion of the Mishawaka school safety program. Once again, all 5th grade students will receive electrical safety training and the Division will hold a three day training session for Mishawaka firefighters. The training will expand in 2013 to include Penn schools, Mishawaka parochial schools and will move into Wakarusa. The goal is to train communities and develop contacts to expand this training into their surrounding communities. Staff will not grow complacent with training and safety. Electrical equipment inspections again included all high voltage

switchgear in 2012. With almost six thousand units in the database, all are checked for security and warning signs.

A big challenge looms ahead in renewable energy and demand side management requirements. As new laws become enacted, the Division must decide on the extent of its involvement. The partnership with IMEA offers a platform or voice to be heard at state level meetings.

As energy costs continue to rise, Electric Division customers enjoy very low rates. Base electric rates have not been increased since 1990. As Mishawaka weighs the benefits of IURC involvement our residents can rest assured that competent decisions will be made

Base electric rates have not been increased since 1990

in the best interests of our residents. We will continue to provide affordable rates and reliable service to our customers. Electric Division

employee's responses are very timely and it is not unusual to see the system restored long before surrounding communities. Our linemen and supervisory staff continue to provide outstanding response to all types of after-hours outages.

2013 holds many challenges and Mishawaka is well positioned to move forward in all aspects of system preventative maintenance, from the substations all the way to the house meter, while continuing to be good stewards of the rate payer's dollar.

Conclusion

The Electric Division provides exceptionally reliable and affordable electric service to its customers, both residential and commercial. Interruptions are minimal and restoration times are very fast when interruptions do occur. The engineering and construction staffs work tirelessly to maintain 11 substations and hundreds of miles of distribution lines. With Mishawaka Electric's linemen again placing in the top ten in the national and international linemen's competitions, the Division truly does provide "World Class Service" to the community.

In 2012 Mishawaka totaled 9 unplanned service interruptions. The duration of these outages was held to a minimum by swift response times and qualified personnel available around-the-clock who care about our hometown. This exceptional level of service has been maintained in spite of staff reductions. Our Division's total staff has decreased from 57 to 46 employees in the past five years as jobs have been combined and new efficiencies have been created in response to tough economic times. This is certainly a testament to the quality and dedication of our people.

The residents of Mishawaka enjoy affordable rates, reliable service and courteous hard working employees who live and work in this community. They take great pride in their performance and knowledge of the system and care about this community. Our Engineering, Construction, Metering, and Operations departments work hard for Mishawaka residents, day and night, and take great pride in our response times and restoration efforts when problems do occur.

Wastewater Division

Karl R. Kopec, Manager

Overview

The Mishawaka Wastewater Treatment Plant marked its 60th anniversary of operation on April 18, 2012. It is hard to imagine that only 60 years ago all the sewage from homes, businesses, and industries flowed directly into the river without treatment. Things have certainly changed. Mishawaka today enjoys a modern, state-of-the-art treatment facility that is recognized as one of the best in the state. A river that was once used as a sewer is now a valuable asset to our community, fostering development in our Downtown.

Mishawaka's wastewater treatment plant serves over 17,000 residential, commercial, and industrial accounts. The population served exceeds 50 thousand. In 2012 over 4.4 billion gallons of wastewater were treated and over 7.4 million pounds of pollutants were

In 2012 over 4.4 billion gallons of wastewater were treated and over 7.4 million pounds of pollutants were removed prior to discharge into the St. Joseph River

removed prior to discharge into the St. Joseph River. In 2012 there were no exceedances of effluent limits. The treatment plant

operates 24 hours per day, 365 days a year. The twenty six employees of the Wastewater Division have over 472 years of combined wastewater experience. Six members of the staff hold Indiana's highest level of professional operator certification.



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 plants comprise the largest and most complex treatment facilities in the state.

The service area that contributes flow to the wastewater plant 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. Expanding the service area protects groundwater, our drinking water source, and increases the customer base, lowering the overall wastewater cost per household.



Mishawaka's wastewater plant is unique because of its location near downtown and within the Lincoln Park neighborhood. The facility is surrounded by houses, condominiums, apartments, parks and the Riverwalk. Much effort is expended to be a positive member of our community. The buffer once provided by the river disappeared as the section of Riverwalk between Kamm's Island and Kate's Garden was completed. Hundreds of "riverwalkers" pass by the facility each week and many positive comments have been received about the well-kept grounds and landscaping. As the public is drawn closer to the facility, housekeeping and maintenance have become more important than ever. Treatment plant employees take pride in efforts to keep the facility an attractive asset of the community.

In addition to the treatment plant, the Division also operates the Biosolids Facility on South Logan St. which is the site for the solids dewatering operation and the land application program. Another responsibility is monitoring of industrial dischargers through the Division's Industrial Pretreatment Program. Eight significant industrial dischargers are monitored and regulated to assure that their discharges do not harm the wastewater treatment plant processes.

The Division is responsible for certain aspects of the City's sewer system. These responsibilities include the maintenance of 28 remote sewage pump lift stations, operation of five remote odor control facilities, monitoring and reporting on the activity of the 23 combined sewer overflow (CSO) structures, and the operation of the combined sewer overflow control program. Lift stations are required to pump sewage from areas where it cannot flow by gravity.

Mishawaka's lift stations range in size from 150 gallons per minute (gpm) to 4,000 gpm. Middleboro, the oldest station, was placed in service in 1952. A design for renovating this station was completed in 2012. Construction of the improvements will take place in 2013. A new regional lift station that serves the area east of Capital Avenue was

constructed in 2012 as part of the US 331 railroad underpass project. The majority of funding for this new lift station came from INDOT, however the city contributed funding to increase the capacity of the station to handle future increases in flow. Lift stations are continuously monitored by a radio based telemetry system.

Critical stations are equipped with stand-by generators in case of power outages and the remainders have transfer switches and receptacles to allow for portable generator operation. Since newer lift stations tend to be far from the

A new regional lift station that serves the area east of Capital Avenue was constructed in 2012 as part of the US 331 railroad underpass project

treatment plant, in the outer reaches of the collection system, all new stations are required to have permanent stand-by generators. Additionally, generators for three older existing lift stations were purchased in 2012 using ARRA stimulus funding. Designs for renovating two of these lift stations were completed in 2012 with construction to occur in 2013. There are now five odor control systems to treat air emissions from the sewer system around the City. The Wastewater maintenance department also maintains these units.

The Wastewater Division operates a laboratory that provides process control testing and regulatory compliance analysis. The laboratory conducts analyses that are required in our NPDES permit. This includes analysis of samples from each process to ensure optimum efficiency, monitoring of the effluent to comply with discharge limitations, and analysis of industrial samples to ensure compliance with Federal and local pretreatment standards. Currently the laboratory employs a Chief Chemist and two Plant Chemists.

The laboratory analyzes approximately 18,000 routine samples every year. Along with these samples, duplicates, spikes and standards must be tested to ensure that quality data is obtained bringing the total number of analyses to nearly 39,000. Routine samples include carbonaceous biochemical oxygen demand (cBOD), suspended and volatile solids, ammonia, phosphorus, and solids analysis for sludge and biosolids. These analyses are conducted daily. The laboratory also conducts analysis for the heavy metals cadmium, chromium, copper, lead, nickel and zinc. These tests are performed quarterly on the influent and effluent of the wastewater treatment plant. The laboratory staff also continued participation in an E. coli study on river samples that began in 1997. The E.coli study involves sampling the St. Joseph River at Bittersweet Road Bridge, Main Street Bridge, the Ironwood Drive Bridge and Angela Blvd. Bridge each Thursday throughout the year.

During the summer the laboratory performs bacteriological tests for Mishawaka's swimming pools. The laboratory conducts the bacterial analysis through its Indiana State Department of Health Certificate, which is required in order to perform bacteriological testing of drinking water and pools. As part of this certification the laboratory is required to correctly analyze ten unknown bacterial cultures as a performance evaluation. In 2012, the laboratory correctly identified all ten.



As part of the NPDES permit requirements the laboratory collected samples for biomonitoring and organic pollutant monitoring. Although these tests were not done in-house, significant time was spent in the organization and collection of the samples. Biomonitoring tests the potential for toxicity of our effluent on living organisms. Three samples were taken in May of 2012. The organic pollutant monitoring analyzes for more than 200 individual organic compounds. Our effluent passed this test showing no organics above detection limits for samples taken in May of 2012.

Every year the laboratory is required to participate in the EPA's Discharge Monitoring Report - Quality Control (DMR-QC) program. This Federal program consists of analyzing samples with unknown concentrations for all of the parameters of 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 on a monthly basis is accurate. In 2012, all the parameters were analyzed correctly.

The laboratory assists the pretreatment program for the City of Mishawaka. The laboratory conducted analyses on 8 permitted industries in 2012. Analyses ranged from metals and cyanide to cBOD and pH. The test results allowed the pretreatment coordinator to confirm that the industries were in compliance with their discharge permit limits. Pretreatment testing was performed weekly throughout the year. The hard work by the laboratory staff paid off once again by receiving the Indiana Water Environment Association 2012 Laboratory Excellence Award. This is the 11th consecutive year that the laboratory has received this award.

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 plant is designed to operate in the 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. Organic pollutants and ammonia, phosphorus, and heavy metals are removed in the process. Ammonia removal is required because it is toxic to aquatic life and it creates an oxygen demand, lowering the level of dissolved oxygen in the river. Phosphorus is removed both biologically and by chemical precipitation using ferrous chloride. Phosphorus removal is required because excess amounts in the river can cause oxygen depleting algae blooms that harm aquatic life.

Solids generated in the treatment process are biologically converted in an anaerobic environment to simple organic compounds and become known as biosolids. These biosolids 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 methane gas. The gas is captured and compressed and is used as a fuel in the treatment plant boilers. Hot water generated by the boilers is used to heat the



...biosolids are land applied on area farm fields for soil conditioning and fertilizing. Land application of biosolids is recycling in its truest sense

facility's buildings and to also heat the anaerobic digester tanks. 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 plant.

The treated effluent from the facility is disinfected with sodium hypochlorite and then treated with sodium bisulfite to remove any remaining chlorine. At the very end of the process the effluent is aerated to add dissolved oxygen just before discharge to the river. The treated effluent is ten times cleaner than required by law.



Statistics

In 2012 the wastewater plant treated over 3.44 billion gallons, averaging 286 million gallons monthly and 8.6 million gallons per day. The treated flow was 760 million gallons less than in 2011.

...over 7 million pounds of pollutants were removed in the treatment process

In 2012 over 7 million pounds of pollutants were removed in the treatment process and the quality of treated discharge to the Saint Joseph River was exceptional.

	2006	2007	2008	2009	2010	2011	2012
Average Flow (MGD)	12.15	11.53	14.23	12.64	10.16	11.43	9.19
Peak Flow (MGD)	26.7	36.3	36.1	27.5	58.8	59.7	58.0
BOD Removed (%)	97	97	97	98	98	98	98
Phosphorus Removed (%)	77	79	79	78	79	79	80
Ammonia Removed (%)	85	90	96	96	93	90	95
Solids Removed (%)	96	96	96	97	98	97	98
Biosolids Produced (dry tons)	1254	967	911	826	1115	1093	1121
Electricity Use (MKWH)	Pre-expansion			5.283	4.874	4.922	4.992
Natural Gas Use (Mcf)	Pre-expansion			9.914	7.691	7.055	5.378
Total Precipitation (inches)	47.1	49.1	51.6	44.9	33.7	43.33	34.52

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 treated in 2012 was 58 MGD on July 19th. The maximum total flow treated on a single day was 18.06 million gallons, also on July 19th. Treating flow in excess of the design capacity requires skillful operation and a well maintained facility. Pollutants removed during 2012 included 6.9 million pounds of organic compounds, 75 thousand pounds of phosphorus, and 472 thousand pounds of ammonia nitrogen.

Biosolids, the stabilized solid material resulting from the treatment of wastewater, are land applied on area farm fields. In 2012, almost 1300 dry tons of biosolids were processed. 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.

Digester gas is generated in the anaerobic digestion treatment process. This gas is 65% methane and is captured and burned in the treatment plant boilers supplying heat to the facility's buildings and providing heat required by the treatment process. Approximately 60 thousand cubic feet per day is generated, replacing purchased natural gas.

Significant Projects in 2012

Lift station Computer Upgrade

The Wastewater Division is responsible for the operation and maintenance of lift stations in and around the City. In addition to routine inspections, all stations are monitored remotely, through a radio-based computer network, for operating status and alarms. During the year the Division completed a project to upgrade the main computer interface which monitors and reports lift station status at the wastewater plant. The original computer interface and monitoring software was installed in 2002 and had become outdated. The new system is compatible with existing control and monitoring systems that were installed at the Wastewater Plant during the 2008 facility upgrade. The new system provides reliable and stable lift station monitoring.

Electrical Hazard Assessment

New OSHA regulations regarding work within electrical cabinets require a program to protect workers from arc-flash. This danger is present when working in energized electrical panels. An arc-flash is an electrical explosion that occurs when energized components are accidentally grounded or shorted. The Division's maintenance staff routinely works on live equipment and it is of utmost importance to provide for their protection. The Division completed a study that identified potential arc-flash hazards. Electrical devices were labeled indicating hazard level and special protective equipment and procedures required. Employees were trained on arc flash safety protocol.

Biosolids Forcemain Rehabilitation

Digested sludge from the wastewater plant is pumped one mile south to the Biosolids Facility on Logan Street. The forcemain was built in 1952 and is brittle cast iron pipe. In recent years, numerous breaks in the pipeline have occurred causing sludge to spill onto the ground and requiring emergency repairs. In 2012 this pipeline was lined with special high strength cured-in-place pipe which will prevent breakage in the future. Additionally the radio based communication link between the treatment plant and Biosolids Facility was replaced by a hard wire fiber optic connection.

Central Park Biofilter

Odors had become a problem in Central Park at the entrance to the recently expanded Rivercrossing. A carbon adsorption odor control unit was installed as part of the expansion but this unit was insufficient in controlling the odor. In 2012 a biofilter was constructed to treat odorous air drawn from the structure just upstream of the crossing.



The system has bypass ductwork which allows the system to be operated in any of three modes: carbon adsorption only, biofilter only, or carbon adsorption followed by biofilter treatment. This combination of odor control technologies has effectively eliminated odors at the rivercrossing.

Award Winning

The Mishawaka Wastewater Division received two awards at the 76th Indiana Water Environment Association Annual Conference, held in Indianapolis November 14 – 16. For the tenth time overall, and the fourth time in the last five years, Mishawaka received the Best Annual Report Award in the large plant category. Mishawaka’s wastewater laboratory received its twelfth consecutive Laboratory Excellence Award. Chemist Tom Florkowski received recognition for 20 years of work in the water environment field by his induction into the IWEA 20 Year Club.

In 2012 Chemist Jill Norton was elected to serve as Vice-President of the Indiana Water Environment Association (IWEA) in 2013. Jill will ascend to the office of President in 2015. IWEA is one of 75 affiliated member organizations of the national Water Environment Federation (WEF). Jill brings distinction to Mishawaka as she is poised to lead the State’s water quality association.

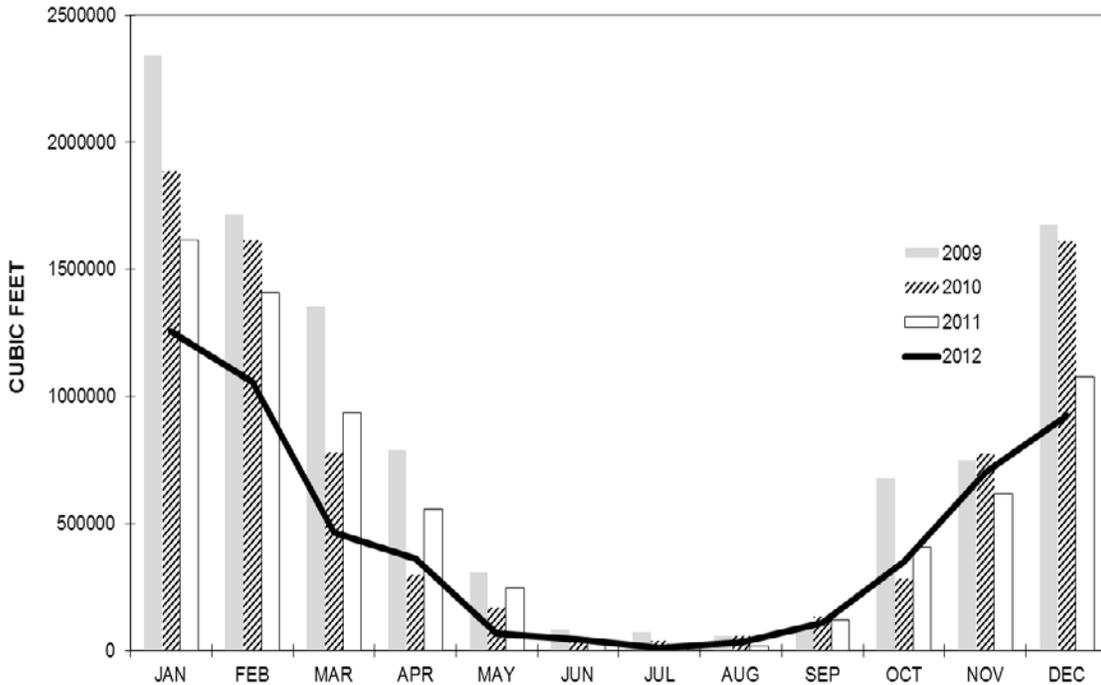


Efficiencies

Wastewater treatment plants are large consumers of energy. It is estimated that wastewater treatment plants consume 3 percent of electricity generated nationally. In the treatment process, aeration and pumping require the highest energy usage. To reduce this demand, one of the first high-efficiency turbo blowers in the state of Indiana has been installed. Eligible for grant funding under the American Recovery and Reinvestment Act Green Project Reserve, the new turbo blower passed EPA green initiative requirements.

The turbo blower has the potential to reduce aeration electrical consumption by more than 30 percent and requires less maintenance compared to the existing blower. The new turbo blower was placed in service in July of 2010 and 2012 was its second full year of operation.

Nipsco Gas Usage 2009 thru 2012



Digester gas which is produced in the treatment process is also recovered and burned in the plant hot water boilers to provide “free” energy that replaces natural gas. The boilers provide heat for the plant buildings and also heat the two 1 million gallon digester tanks. Much time was invested in 2012 fine tuning the digitally controlled heating and ventilation system that serves all the facility’s buildings and connecting tunnels. This effort has significantly reduced the plant’s reliance on natural gas while maximizing the use of “free” digester gas.

Mishawaka has documented a 16 percent improvement in overall wastewater energy performance. The facility has decreased natural gas consumption 29 percent between 2009 and 2012. This is a significant achievement considering the 2008 treatment plant expansion required a 35 percent increase in heating capacity due to increased building area and safety code-mandated increases in building ventilation. Improvements to the digester system have increased digester gas production an average of 15 percent. Digester gas utilization has risen from 40 percent or less to nearly 70 percent. The new central heating system more efficiently burns digester gas and distributes “free” heat wherever it is needed.

Lighting upgrades in mid-2010 have reduced the energy required to light the large facility. A computer monitoring and control system is used to assist in plant operation,

control, and data acquisition. In spite of two major plant expansions in 1992 and 2008, the wastewater division has fewer employees today than in 1992.

The treatment plant staff continued to look for opportunities to increase energy efficiencies and reduce energy consumption and cost. The Mishawaka Wastewater Plant volunteered to participate in a two-year Energy Pilot Project sponsored by EPA and the Indiana Department of Environmental Management. Along with seven other Indiana wastewater and water utilities, Mishawaka developed an energy management system (EMS). EMSs track energy use and look at measures that might be available to reduce consumption and maximize available energy. The result of the pilot project is a more energy efficient wastewater plant for Mishawaka's ratepayers.

The Division also continued to work toward becoming a paperless operation. With the installation of the new SCADA computer system in the last expansion, collection of data is now occurring electronically. All of the paper chart recorders have been taken off-line and the operations data is archived digitally.

...collection of data is now occurring electronically

The operation of the treatment plant is accomplished by a team of dedicated operators that 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. Operators include Robert Hall, Mike McDonald, Adrian Peterson, Mike DeCocker, Jim Szulczyk, Dave Pieters, Johnny Francis, Tim Wells, John Bolinger and Anthony Vogel. Each pair of operators is responsible for making process control decisions on their shift. On off-shifts, weekends, and holidays the plant is staffed solely by these two-person crews.

Safety Milestone

By the end of 2012 the Wastewater Division reached 1,468 days without a lost time injury. This amounts to over 200,000 person hours worked during this impressive stretch of safe work days. The wastewater industry presents numerous hazards and records higher than average occupational injury rates. The staff deserves credit for working smartly and keeping safety a high priority.

Combined Sewer Overflows / Consent Decree

Although the wastewater treatment plant has been upgraded and expanded to keep pace with growth in the community and ever more stringent environmental regulations, there are parts of the sewer system that date back to the early 1900's. These remaining older sewers carry both sanitary sewage and stormwater runoff in the same pipe and need to be addressed to minimize combined sewer overflows (CSOs). During heavy rainstorms, when the capacity of the sewer system and treatment plant is exceeded, combined sewer overflows can discharge a mixture of stormwater runoff and wastewater directly into the river without treatment. CSOs were constructed to prevent basement backups and street

flooding. Mishawaka is one of 90 communities in Indiana with combined sewer overflows. There are around 850 CSO communities nationwide.

The reduction of CSOs is now required by federal law. Sewer design that made sense in the last century is not acceptable today. CSO reduction is one of the City's top priorities. Since 1990 Mishawaka has reduced annual CSO volume by more than 86%. This significant reduction has been achieved through a combination of treatment plant expansions, sewer separation projects, and sewer system capacity upgrades and an aggressive sewer maintenance program. Mishawaka has developed a federally mandated long-term control plan (LTCP) to address the remaining combined sewer overflows. Because Mishawaka discharges into an interstate river, the approved plan will be enforced by a federal consent decree.

Throughout 2012 the City continued negotiations that began in late 2004 with the US Environmental Protection Agency, Indiana Department of Environmental Management, and the Department of Justice over its Long Term Control Plan details and consent decree language. The protracted negotiations are a result of the complexity of CSO reduction and the significant cost to do so. A final draft was submitted to the agencies in November for review. The proposed plan will vastly reduce the occurrence of CSO from the current 50 overflows per year to zero overflows in years with typical rainfall.

Looking Ahead

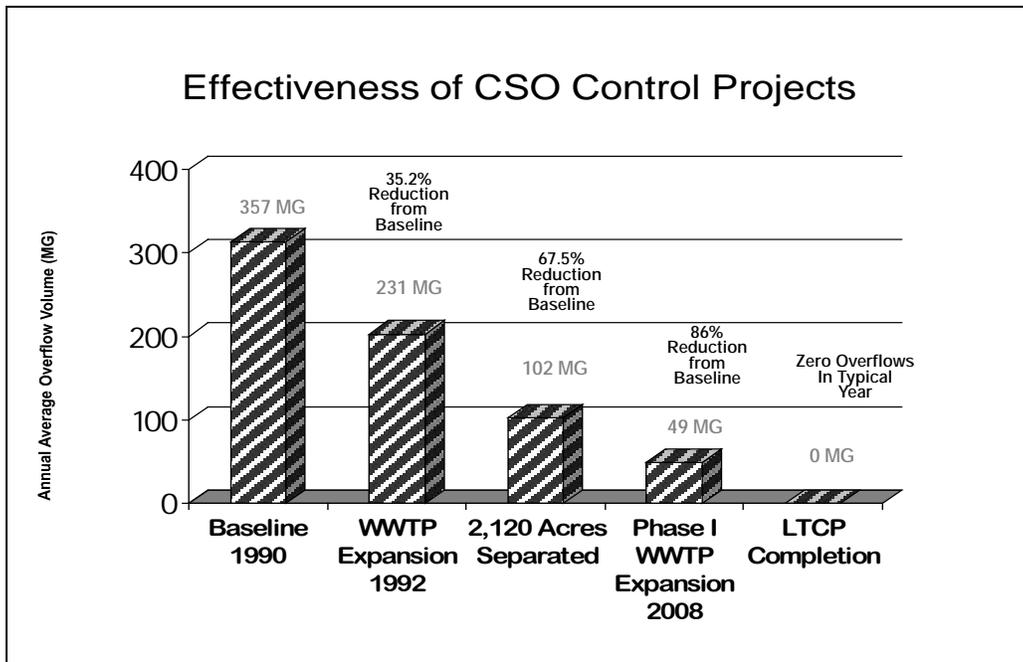
Final approval of Mishawaka's LTCP and signing of the consent decree is expected in 2013. The plan is estimated to cost between \$140 and \$160 million and take 20 years to fully complete. The decree will require that the LTCP be implemented according to schedule and that it meet the goal of zero overflows. In December of 2010 a \$37 million Sewage Works revenue bond was sold to fund the first phases of the City's LTCP projects. Future rate increases will be necessary to cover Long Term Control Plan costs.

Final approval of Mishawaka's LTCP and signing of the consent decree is expected in 2013

Although Mishawaka's plan has not received formal EPA approval, the city has aggressively implemented CSO reduction projects. Throughout 2012 sewer separation continued in the Milburn Boulevard area. This work will be completed in 2013 and the treatment plant is already seeing a considerable reduction in flow from this area. The construction of an underdrain system and the rehabilitation of sanitary sewers have significantly reduced the amount of groundwater entering the sewer system, requiring treatment. New storm sewers prevent rainwater and snow melt from entering the sanitary sewer system. Reducing both wet and dry weather flow from this area has the effect of adding capacity at the treatment plant. Approximately 2 million gallons per day of clean groundwater that does not require treatment has been removed from the sewer system and treatment plant.

Design of another LTCP element was completed in 2012 for the Wilson Boulevard Area. This project will consolidate five CSO's into one and will include some sewer capacity increases and limited sewer separation. Construction of this element will occur in 2013.

Mishawaka's National Pollutant Discharge Permit (NPDES) expired in November of 2011. This 5-year permit is the facility's operating license. The City received its new permit on May 1, 2012. It expires April 30, 2017. The new permit contains mercury limits for the first time. The new discharge limit is 1.3 parts per trillion. This is an extremely low limit. One part per trillion is the equivalent of one inch in 16 million miles! Like most larger communities, Mishawaka cannot meet the 1.3 part per trillion limit all of the time. Monitoring over the past five years shows that the limit is exceeded in about 30% of samples. The State allows communities to apply for a variance of the mercury limit which results in a higher limit that is attainable. A condition of receiving a variance is the development of a Mercury Minimization Plan that focuses on pollution prevention and source control to achieve mercury effluent reductions due to a lack of economically viable end-of-pipe treatment options. In 2012 Mishawaka began the variance process and started the development of the Mercury Minimization Plan. The State allows a 36 month time frame to complete the work necessary to be granted the variance and revised mercury limit.



Conclusion

Mishawaka is fortunate to have a modern wastewater treatment plant with capacity to keep Mishawaka moving forward. Aggressive combined sewer overflow control efforts have positioned the city well ahead of many Indiana communities. Protecting and enhancing the Saint Joseph River as well as promoting health in the community are benefits that all of Mishawaka's citizens can enjoy.

Sewer Maintenance Department

Tom Dolly, Manager

The Sewer Maintenance Department is responsible for the maintenance and rehabilitation of the collection system which includes over 200 miles of sanitary sewers and storm lines. The Department has twelve dedicated and conscientious employees that are both versatile and enthusiastic. Responsibilities of the Department include televising, cleaning lines, making repairs, and cleaning debris or snow off of storm inlets.



The Department also responds to residential calls for sewer concerns, inspects new construction sewer connections, and locates sewer lines for contractors. Working with the City GIS and Engineering Departments to televise sewer laterals from homes is also a function of the Department. These inspections are necessary for determining sewer insurance repair needs. The Sewer Department even receives calls from concerned residents asking us to rescue ducklings that have fallen into storm catch basins.

Another significant responsibility of the Sewer Department is to maximize the volume of flow transported to the Wastewater Treatment Plant. This is accomplished by preventive maintenance and inspection of the sewers on a well-planned, rigorous schedule. This includes all sanitary manholes, storm sewers, inlets and catch basins.

Video inspections of new sewer system extensions are conducted to ensure that the construction meets our City design specifications.

The Department also performs various tasks for Electric, Water, Parks, Streets, and the Wastewater Treatment Plant.

The Sewer Department is comprised of four divisions that include Video Inspection, Cleaning, Repair, and Utility.

Video Inspection Crew

The video inspection crew is comprised of two main Camera Operators, and several cross trained individuals. Several employees were selected and given extensive training on new equipment which includes remote robotic cameras, and a new data collection system.



The crew provides precise documentation on sewers that may need maintenance such as jetting and vacuuming, dragging to remove heavy debris, and root cutting or herbicide treatment for root control. Video inspection also checks the integrity of the pipe, the condition of sanitary sewer laterals, and validates the need for repairs or lining.



The video inspection crew is well equipped and includes two state-of-the-art camera systems that can travel up to 1,200 feet, record videos and still pictures, save data to a computer in the camera truck, and print reports.

On the two video inspection trucks there are three cameras and three robotic drive systems that transport the cameras. This hardware is interchangeable in the event one is in need of a repair. The robotic cameras can drive down any sewer from 8 to 60 inches in diameter and travel up to 1,200 feet in length. The cameras have articulating heads that have zoom, as well as pan and tilt capabilities. The computers that control these cameras can record all visual data and all manually documented information entered by our

In 2012, over 7,893 feet of residential laterals were televised with the push cam system

camera technicians. This information is uploaded to the City GIS Department and Engineering for further evaluation and updating of the City GIS Map.

The video inspection trucks are also equipped with hand-held pole cameras to inspect manholes and tight spaces that a normal tractor driven camera can't access. These cameras have the ability to reach 24 feet in depth and one of them has zoom capabilities. One of the trucks has 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 2012, over 7,893 feet of residential laterals were televised with the push cam system.

The employees assigned to push cam inspections may also be assigned to do sewer locates for contractors, and follow ups to residential concerns. These employees

performed 99 sewer excavation inspections in 2012.

Cleaning Crew

The main function of the Cleaning Crew is to perform scheduled preventative maintenance cleaning on a daily basis. The Cleaning Crew has two combination trucks, an Aquatech, and a Vactor. Two highly skilled operators and a select group of cross trained individuals operate these trucks. Between the two combination trucks, 207,133 feet of sewer lines were cleaned during the year. This is nearly double what we cleaned in the previous year. As needed, one of these trucks will also assist the Video Inspection Crew, cleaning lines before they are televised.



As a result of the preventive maintenance schedule we have been able to minimize sewer surcharges into basements, increase the volume of flow to the wastewater treatment plant, and reduce combined sewer overflows.

The Sewer Repair Crew

The Repair Crew is comprised of cross trained employees that perform routine maintenance on storm inlets, catch basins, manholes, and concrete flat-work on sewer repairs. The repair crew uses concrete saws, jack hammers, a cement mixer, a backhoe, and concrete finishing equipment on a daily basis.

The Sewer Utility Crew

The Sewer Utility Crew, comprised of all cross-trained employees, perform many jobs for the Sewer Department. Their duties range from traffic control for the Video Inspection or Cleaning Crew, inlet patrol, lateral locate inspections, new construction inspections, service request mini cam inspections, and GIS Data collection for sanitary sewers.



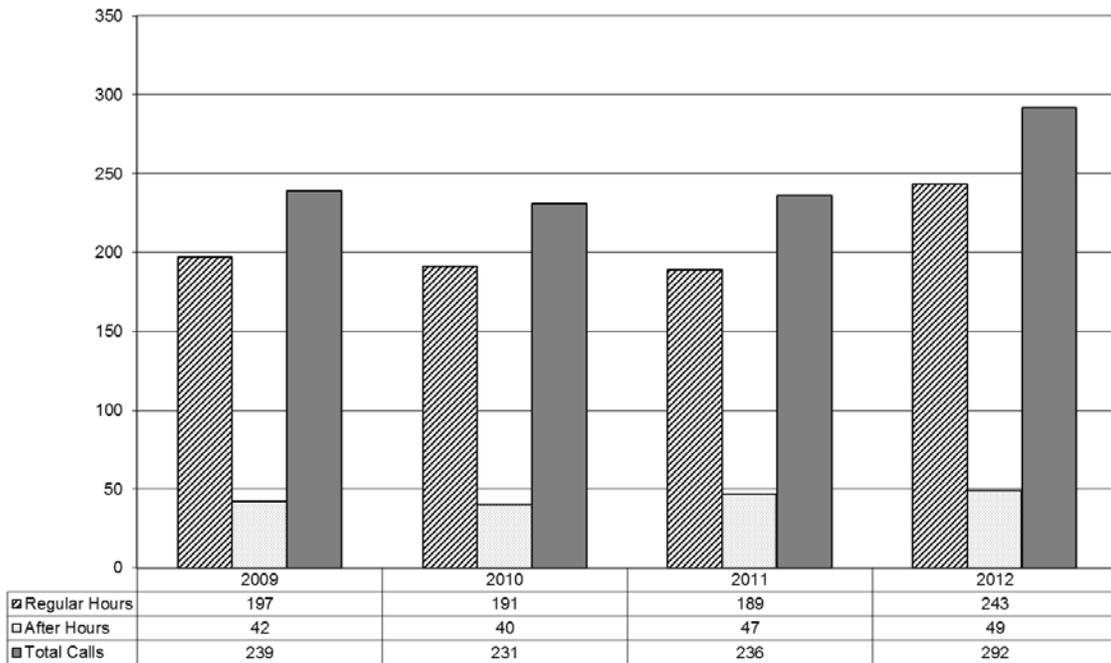
Over the past year, 243 calls were received from residents during normal working hours and 49 after-hours requests for our personnel to check the sewer main. These calls ranged from homes with sewer problems, odors coming from the sewer line, water standing in the street, or follow-up to contractor cleaned laterals. Of the 292 calls, 54 residents qualified for lateral repairs under the sewer insurance program. These 54 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 one year guarantee against tree roots, to a more in-depth repair such as a lateral replacement. This program has proven to be very successful at assisting Mishawaka's residents by subsidizing the cost of sewer lateral repairs. The specifics of sewer insurance program can be found on the City's website.

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 2012.

Residential Service Calls



2012 PREVENTIVE MAINTENANCE SUMMARY

	Number	Feet	Miles
Sanitary Sewer Jetted and Vactored		108,917	20.63
Sanitary Sewer Root Cut		1,316	0.25
Sanitary Sewer Dragged		0	0
Combined Sewer Jetted/Vactored		96,906	18.35
Combined Sewer Root Cut		10,572	2
Combined Sewer Dragged		0	0
Storm Sewer Jetted and Vactored		1310	0.25
Storm Sewer Root Cut		0	0
Storm Sewer Dragged		0	0
Inlets Cleaned	355		
Catch Basins Cleaned	577		
Drywells Cleaned	1		
Manholes Cleaned	4		
Vactoring Hours	2,535		
Sanitary Sewer Back-Up	1		
Storm Sewer Back-up			
Total Miles of Maintenance			41.48

2012 VIDEO INSPECTIONS

		Feet	Miles
Sanitary Sewer TV Inspected	Existing	111,805	21.17
	New	10,165	1.93
Storm Sewer TV Inspected	Existing	8,132	1.54
	New		
Combined Sewer TV Inspected	Existing	130,563	24.73
Service Lateral TV Inspected	Existing	7,893	1.49
	New		
	Total	268,558	50.86

2012 MAINTENANCE REPAIR SUMMARY

Sanitary & Combined Manhole Entry	11
Sanitary Main Repairs	1
Sanitary Manhole Repairs	0
Sanitary Manholes Replaced	0
Sanitary Manhole Invert Repairs	0
Sanitary Manhole Bench Repairs	0
Combined Manhole Raised to Grade or Exposed	5
Storm Main Repairs	0
Storm Manhole Repairs	1
Combined Manhole Invert/Bench Repair	1
Storm Manhole Invert/Bench Repair	0
Storm Inlet Repairs/Replaced	2
Storm Catch Basin Repairs/Replaced	6
Combined Catch Basin Replaced/Repaired	7
Combined Inlets Repaired/Replaced	4
Bags of Concrete	175
Castings	8
Risers	4
Pre-Fabs	6
Sewer Permit Inspections	99
Water Tap Inspections	27
“As-Built” Inspections	4

Conclusion

Prosperous cities are built upon a foundation of sound infrastructure. Electric, water, and wastewater treatment are vital infrastructure elements that are necessary to preserve quality of life and promote and support growth and development. While a national crisis looms because of aging and neglected infrastructure, Mishawaka Utilities stands apart. Wise investments in maintaining and improving our utilities are critical to shaping Mishawaka’s future.