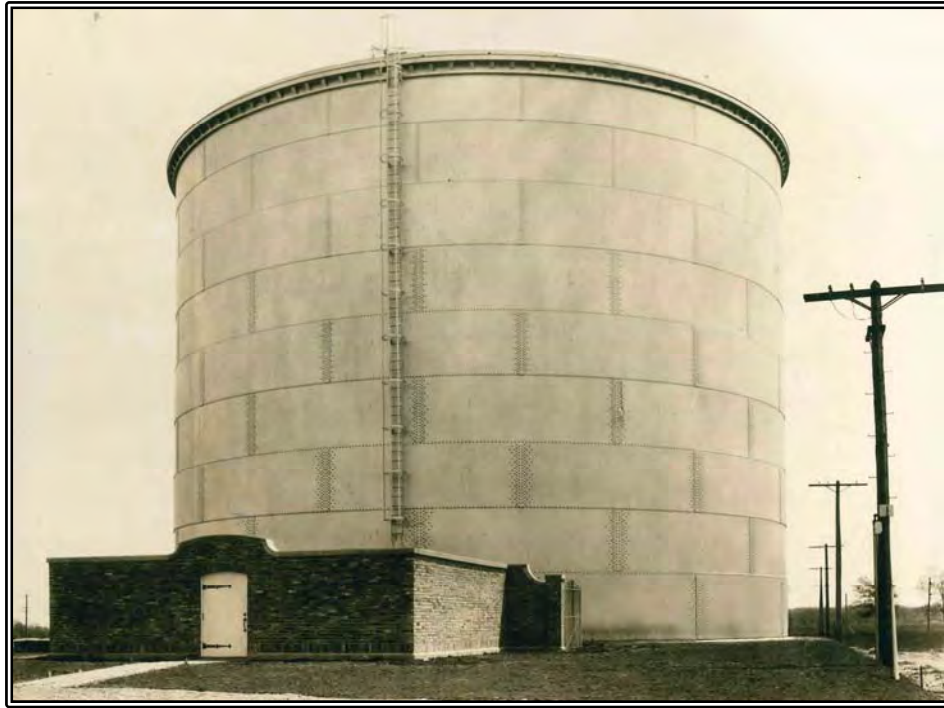




Kenosha Water Utility

2016 Annual Report



Then . . .



. . . and Now

"Providing and Protecting Kenosha's Greatest Natural Resource"

2016
ANNUAL REPORT
of the
KENOSHA WATER UTILITY
Kenosha, Wisconsin



BOARD OF WATER COMMISSIONERS (Jan - March)

Jan Michalski, Chairman

Scott N. Gordon

Eric Haugaard, Vice Chairman

Rhonda Jenkins

Steve Bostrom

Patrick Juliana

BOARD OF WATER COMMISSIONERS (April - Dec)

G. John Ruffolo, Chairman

Jesse Downing

Kevin Mathewson, Vice Chairman

John Fox

David Bogdala

Mitchell Pedersen

Edward St. Peter, General Manager

Dave Lewis, Assistant General Manager

DIVISIONS

John Andersen, Director of GIS / IT

Melissa Arnot, Director of Operations

Cathy Brnak, Director of Business Services

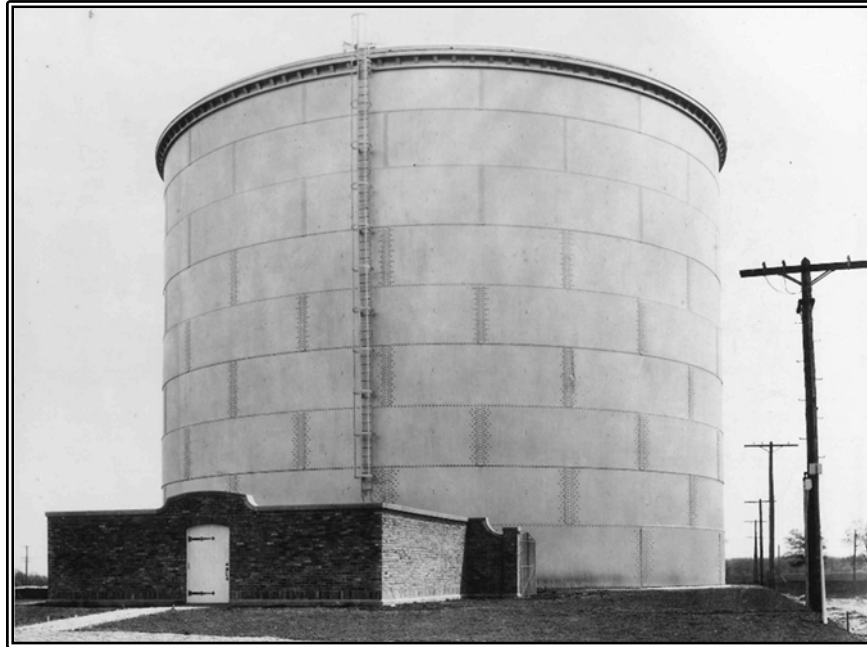
Curt Czarnecki, Director of Engineering

Roger Field, Director of Water Production

Sue Hill, Director of Personnel & Administration

Katrina Karow, Director of Wastewater Treatment

About the Cover



2.75 million gallon ground storage tank and booster station originally constructed in 1934. This is the only riveted water storage tank in the distribution system with approximately 30,608 rivets. The booster station originally had one 5 MGD booster pump.



Booster station and pumps upgraded in 2002. The booster station now contains four booster pumps – one each 5, 3, 2 and 1.5 MGD pumps in addition to a natural gas emergency generator.

Table of Contents

General Manager’s Letter of Transmittal	1
Assistant General Manager’s Letter of Transmittal	2
Water Utility Organizational Chart	3
General Statistics - Water	4-5
General Statistics – Sewer	6-7
Water Utility Vehicles	8
Water Utility Major Equipment	9
 Engineering Division	
Letter of Transmittal – Engineering	10
Letter of Transmittal – GIS/IT	11
Contracts Awarded	12
Developer Infrastructure Accepted	13
Engineering/GIS Recap of Significant Projects	14
 Business Services	
Letter of Transmittal – Business Services	15
Water and Sewerage Service Charges	16
Consumption Charges by Customer Class	17-18
Meter Services Report	19
Ten Year Comparison of Customer Consumption	20
 Water System	
Letter of Transmittal – Water Production	21
Monthly Main Plant Pumping Report	22
Monthly Booster System Pumping Report	22
Main Plant Pumping Last Ten Years (graph)	23
Booster Pumping Last Ten Years (graph)	24
Finished Water Per Month (graph)	25
Monthly Rapid Sand Plant Filtration Report	26
Monthly Membrane Plant Filtration Report	27
Monthly Rapid Sand Plant Chemical Feed Report	28
Monthly Membrane Plant Chemical Feed Report	29
Monthly Laboratory Report	30-31
Water Quality Analysis – Synthetic Organic Chemicals	32
Volatile Organic Chemicals	33
Inorganic Chemicals	34
Income Statement	35
Statement of Net Position	36
Comparative Operating and Maintenance Expenses	37
Comparative Income Statement	38
Utility Plant in Service	39
Accumulated Depreciation	40

Table of Contents

Debt Service Schedules	
Water System Revenue Refunding Bonds – Series 2008	41
Advance from Municipality	42
Total Debt Repayment Schedule	43
Letter of Transmittal – Water Distribution/Sewer Collection	44
Water Distribution Pipe System	45
Water Services Added to System	46
Fire Hydrants Added to System	46
Water Main Installation Costs	47
Operating and Maintenance Report – Distribution	48
Sewerage System	
Letter of Transmittal – Wastewater Treatment Division	49
Treatment Data – 5 Year Comparison	50
Treatment Data and Chemical Usage	51
BOD Removal and TSS Removal (graphs)	52
Wastewater Flow	53
Plant Operating Data	54
Sewer Main Installation Costs	55
Operating and Maintenance Report – Sewer	56
Summary of Sewer Cleaning and Televising	56
Sewage Collection Pipe System	57
Income Statement	58
Statement of Net Position	59
Comparative Operating and Maintenance Expenses	60
Comparative Income Statement	61
Utility Plant in Service	62
Accumulated Depreciation	63
Debt Service Schedules	
Clean Water Fund Loan	64
Advance from Municipality	65
Total Debt Repayment Schedule	66
Letter of Transmittal – Industrial Pretreatment Program	67
Summary of Influent Metals	68
Summary of Effluent Metals	69
Summary of Anaerobic Digested Sludge Metals	70
Household Hazardous Waste	
Letter of Transmittal	71
HHW Program Participation	72
Comparative Income Statement	73
Statement of Net Position	74
Plant in Service and Accumulated Depreciation	75

Board of Water Commissioners

G. John Ruffolo, Chairman
Kevin E. Mathewson, Vice Chairman
David Bogdala
Jesse Downing
John Fox
Mitchell Pedersen



**Edward St. Peter
General Manager**

4401 Green Bay Road
Kenosha, WI 53144

Phone (262) 653-4300
Fax (262) 653-4303

“Providing and Protecting Kenosha’s Greatest Natural Resource. . .Water”

June 2017

Board of Water Commissioners
Kenosha Water Utility
4401 Green Bay Road
Kenosha, WI 53144

Dear Board Members,

SUBJECT: 2016 Annual Report

I respectfully submit the year 2016 Annual Report of the Kenosha Water Utility. The annual report documents the statistics of the operations, capital improvements and financial activity of our three enterprise systems, “Water System, Sewerage System, and Household Hazardous Waste Program.”

The Kenosha Water Utility continues to maintain a strong financial position. Revenues in the Water System, Sewerage System and Household Hazardous Waste exceeded expenses for the year 2016.

Each division has provided detailed descriptions of their activities over the past year. It is encouraging to review these accomplishments and realize that we have an outstanding group of directors, supervisors and staff that not only provide the highest quality water and sewerage service, meeting and exceeding all state and federal requirements, but also a team that works 24 hours/day, 7 days/week, 365 days/year tirelessly in their mission to **“Provide and Protect Kenosha’s Greatest Natural Resource ... Water.”** I would like to give special thanks to all of our employees (team members) who diligently work together to be the best that we can be.

Our customers are accustomed to turning on the faucet and the water is there, pure, cold and safe; having safe and flowing sewers; having customer service second to none; and having facilities that will meet their needs well into the future. I doubt our customers give it much thought each day and we at the Utility are committed to keeping it that way!

I thank the Board for their support and direction as we work together to serve our customers.

Sincerely,

Edward St. Peter, General Manager



www.kenosha.org

Board of Water Commissioners

G. John Ruffolo, Chairman
Kevin E. Mathewson, Vice Chairman
David F. Bogdala
Jesse Downing
John Fox
Mitchell Pedersen



David Lewis
Assistant General Manager

4401 Green Bay Road
Kenosha, WI 53144

Phone (262) 653-4300
Fax (262) 653-4303

“Providing and Protecting Kenosha’s Greatest Natural Resource”

May 2017

Mr. Edward St. Peter, General Manager
Kenosha Water Utility
4401 Green Bay Road
Kenosha WI 53144

Subject: 2016 Annual Report

Dear Mr. St. Peter,

I respectfully submit my 2016 Annual Report. Each year, the Kenosha Water Utility strives to reduce costs, improve performance, and optimize operations. These efforts are highlighted in this year’s Annual Report. Major activities and initiatives that I supported at the Utility this year included:

- Painting of the 60th St. west ground storage tank.
- Installation of new hatches in both settling basins at the Water Production Facility. The new hatches will facilitate a much safer working environment for employees working in the basins.
- Start-up of the Energy Optimized Resource Recovery Facility Project at the Wastewater Treatment Plant.
- Contracted with Donohue and Associates to conduct a bar screen study. The study looked at different bar screen designs to determine which design would work best at the Wastewater Treatment Plant.
- Rebuilding of one of the Waukesha engines in the Wastewater Treatment Plant pump station. The engine had been in operation since 1999 and had run more than 120,000 hours.
- Implementation of a new compensation plan for water utility employees. The plan was initiated based on a study completed by Carlson Dettmann Consulting in Madison. The plan provided streamlining of employee classifications as well as a multi-tiered wage progression for employee compensation in the future.
- Conducted a safety audit and department specific safety training.

In 2016, I shared responsibility for the management of the Distribution Division with Curt Czarnecki, our Director of Engineering Services. I enjoyed this opportunity very much. I have been truly impressed with the work ethic of the employees in the department and their dedication to the Kenosha Water Utility. This year, we added three seasonal employees to the department. They did an outstanding job and allowed us to flush and clean more than 640,000 feet of sewer main throughout our system.

I thank you, Mr. St. Peter, and all the KWU Directors and Supervisors for your support during 2016. I would also like to thank the Board of Water Commissioners for their support throughout 2016. None of the projects that were undertaken would be possible without your input and approval.

Sincerely,

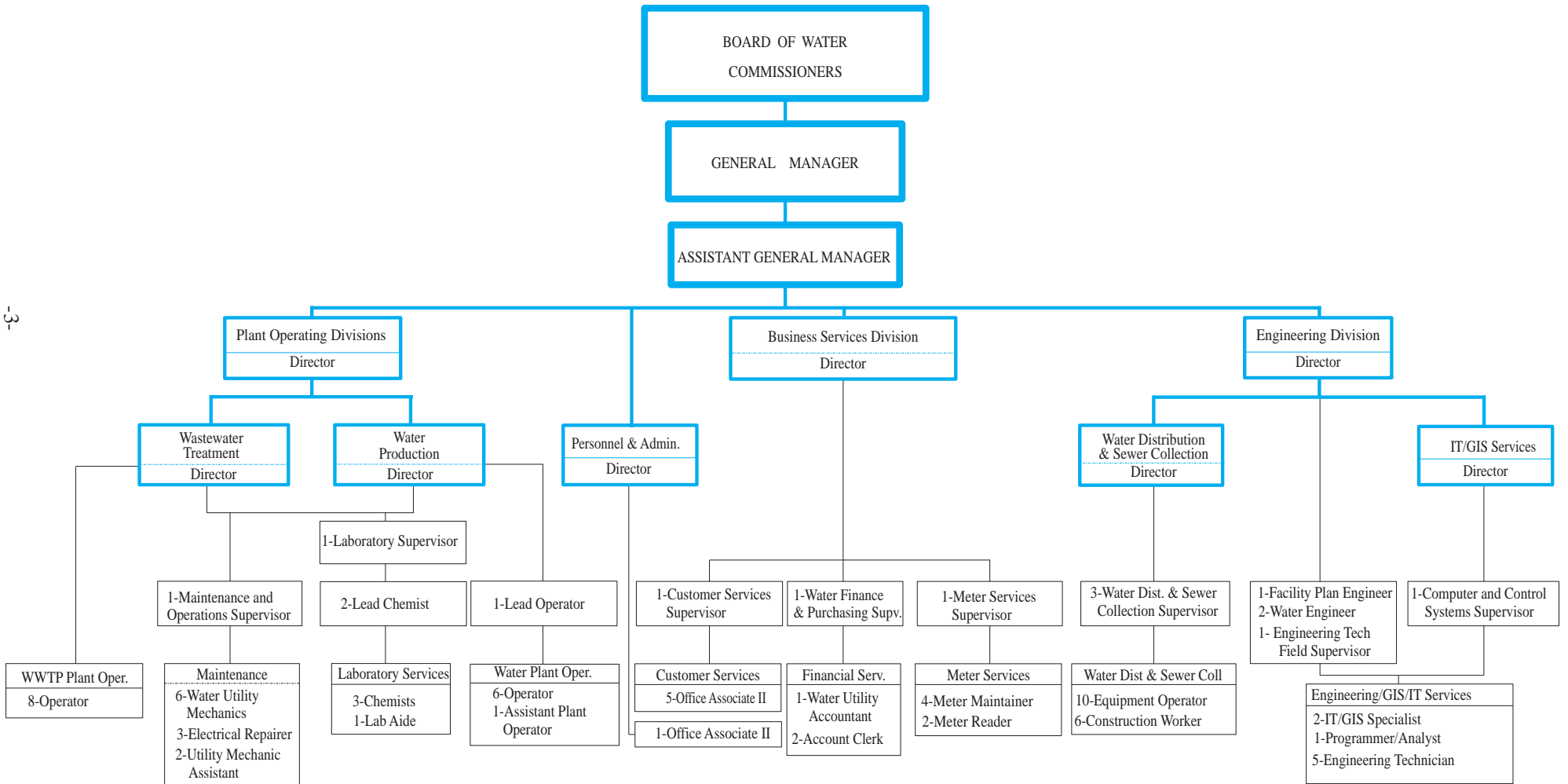
David J. Lewis
Assistant General Manager



www.kenosha.org



2017 Organizational Chart



General Statistics Water

	<u>2016</u>	<u>2015</u>
1. Population of Kenosha, Pleasant Prairie, Somers & Bristol	134,626	134,479
Population of current service area (estimated)	118,349	118,507
Population of City of Kenosha	99,489	99,623
2. Total gallons pumped	5,817,425,000	5,253,811,000
3. Total gallons low lift water used in plant	669,257,000	638,860,000
4. Total gallons water pumped – high lift use	5,148,168,000	4,614,951,000
5. Total gallons high lift water accounted for, not metered	133,745,000	127,419,000
6. Total gallons water pumped to distribution system	5,014,423,000	4,487,532,000
7. Increase (decrease) from previous year	11.74%	2.66%
8. Total gallons passed through customers' meters	4,470,933,000	4,131,849,000
9. Percent of water accounted for	87%	90%
10. Consumption:		
Minimum gallons pumped in any one day	9,872,000	9,242,000
	March 28, 2016	January 1, 2015
Maximum gallons pumped in any one day	26,510,000	20,953,000
	July 2, 2016	August 1, 2015
11. Total daily consumption – Average	12,215,664	11,320,134
Average daily consumption per capita – gallons per day	103.22	95.52
12. Total number of services	30,372	30,085
Active accounts (total meters less in stock and deduct meters)	31,090	31,064
Number of services added (net)	287	443
Per mile of pipe	82.57	82.94
Persons per service (City of Kenosha)	3.28	3.31
13. Pipe in distribution system (in miles)	367.82	362.73
Size range in diameter	1" - 48"	1" - 48"
Pressure range – pounds per square inch	40 – 80	40 – 80
Population per mile (City of Kenosha)	270.48	274.65
14. Valves for distribution system (except hydrant valves)	6,014	5,861
Total installed for year	153	97
15. Hydrants for distribution system	3,359	3,298
Total installed for year (79 new - 18 retired = 61 additional)	61	64
Per mile of pipe	9.13	9.09
16. Utility operating revenue	\$ 14,793,816	\$ 14,046,013
Net Operating Income	\$ 1,717,714	\$ 2,097,664
Net Income (all expense and revenue)	\$ 1,188,405	\$ 1,467,420

	<u>2016</u>	<u>2015</u>
17. Operating and maintenance expenses	\$ 7,933,566	\$ 6,861,365
Per mile of pipe to expense	\$ 21,569.15	\$ 18,915.90
Per million gallons to distribution system	\$ 1,582.15	\$ 1,528.98
18. Tax Equivalent – Water	\$ 2,326,403	\$ 2,310,740
Increase (decrease) from previous year	0.7%	0.1%
Percent of operating revenue	15.7%	16.5%
19. Depreciation	\$ 2,816,133	\$ 2,776,244
Percent of operating revenue	19.0%	19.8%
20. Production Cost Analysis of Energy Used		
Total electrical costs (high and low lift)	\$ 527,101	\$ 569,838
Cost for pumping (per million gallons)	\$ 90.61	\$ 108.46
Total electrical costs (booster system)	\$ 159,110	\$ 145,535
Cost of re-pumping for booster system (per million gallons)	\$ 77.98	\$ 70.82
Total electrical energy consumed at plant	\$ 620,534	\$ 569,861
Total natural gas energy consumed at plant	\$ 35,310	\$ 45,840
21. Production Cost Analysis of Chemicals Used		
Sand Filters		
Potassium Permanganate – total pounds	–	–
Sulfate of Aluminum – total tons	322.9	297.9
Chlorine – total tons	20.4	20.2
Hydrofluosilicic acid – total tons (liquid weight)	31.8	33.3
Polyphosphate – total tons (liquid weight)	15.2	11.7
Total cost per million gallons of filtered water	\$36.18	\$43.82
Membrane Filters		
Chlorine – total tons	18.0	16.0
Hydrofluosilicic acid – total tons (liquid weight)	28.1	26.4
Polyphosphate – total tons (liquid weight)	13.4	9.5
Total cost per million gallons of filtered water	\$15.47	\$18.01
22. Plant Capacities:		
Treatment plant	45.0 MGD	45.0 MGD
Low lift pumps	50.0 MGD	50.0 MGD
High lift pumps	48.0 MGD	48.0 MGD
Lake intake	102.0 MGD	102.0 MGD
Emergency intake	15.0 MGD	15.0 MGD
23. Water usage in booster service area (million gallons)	2,040.30	2,054.91
24. Average number of General Customers by class		
Residential	27,541	27,500
Multifamily Residential	1,077	1,164
Commercial	2,166	2,114
Industrial	84	66
Private Fire Services	499	492
Public Authorities	191	185
Irrigation	0	2
Sales for Resale (points of sale)		
Village of Pleasant Prairie	7	7
Village of Somers	8	8
Village of Bristol	2	2

General Statistics Sewer

	<u>2016</u>	<u>2015</u>
25. Total gallons wastewater pumped & treated	8,281,449,000	8,012,490,000
26. Increase (decrease) from previous year	3.36%	2.99%
27. Treatment:		
Minimum gallons treated in any one day	15,521,000	14,328,000
Date:	Nov. 25, 2016	July 14, 2015
Maximum gallons treated in any one day	51,131,000	64,827,000
Date:	April 6, 2016	April 10, 2015
28. Total daily wastewater treated – Average	22,626,910	21,952,027
Average daily treatment per capita – gallons per day	191.19	185.24
29. Total dry solids to digester, tons	5,638	5,493
30. Sludge to dewatering centrifuge, gallons	33,884,912	26,141,684
Sludge to dewatering centrifuge, wet tons	141,300	109,011
Percent solids	2.04%	2.69%
31. Sludge off dewatering centrifuge (to landfill), wet tons	6,284	9,316
Sludge off dewatering centrifuge (to dryer), wet tons	2,974	0
Percent solids	27.0%	26.8%
32. Sludge from dryer (to landfill), wet tons	843	0
Percent solids	95.3%	n/a
33. Sludge to landfill, dry tons	2,502	2,493
Grit to landfill, tons	1,133	708
34. Pipe in distribution system (in miles)	339.78	336.03
Size range in diameter	6" - 99"	6" - 99"
Population per mile (City of Kenosha)	292.80	296.47
35. Utility operating revenue	\$ 12,607,332	\$ 12,256,200
Net Operating Income	\$ 2,237,915	\$ 1,156,150
Net Income (all expense and revenue)	\$ 2,460,477	\$ 1,346,682
36. Operating and maintenance expenses	\$ 10,369,416	\$ 11,100,050
Per mile of pipe to expense	\$ 35,414.67	\$ 37,440.72
Per million gallons collected	\$ 1,252.13	\$ 1,385.34
37. Depreciation	\$ 2,128,003	\$ 2,200,467
Percent of operating revenue	16.9%	18.0%
38. Wastewater Treatment Cost Analysis of Energy Used		
Total electrical costs (wastewater treatment)	\$ 558,487	\$ 598,550
Cost for treatment (per million gallons)	\$ 67.44	\$ 74.70
Total electrical costs (lift stations)	\$ 72,184	\$ 72,368
Cost of pumping sewage to treatment plant		
Total natural gas energy consumed at plant	\$ 93,521	\$ 48,910
Methane gas produced by digesters (therms)	420,917	356,855
Value of methane gas (estimate)	\$ 196,103	\$ 202,179

	<u>2016</u>	<u>2015</u>
39. Wastewater Treatment Cost Analysis of Chemicals Used		
Ferric Chloride - total gallons	199,764	198,947
Chlorine - total tons	54.9	48.8
Sulfur Dioxide - total tons	51.9	45.4
Polymer - total tons	104.0	73.0
Sodium Hydroxide - total pounds	169,283	-
Sulfuric Acid - pounds	54,392	-
Total cost per million gallons of treated sewage	\$ 65.80	\$ 56.05
40. Plant Capacity	28.6 MGD	28.6 MGD
41. Average number of General Customers by class		
Residential	26,745	26,764
Multifamily Residential	923	1,106
Commercial	1,983	1,781
Industrial	69	57
Public Authorities	147	142
Sales for Resale (points of sale)		
Village of Pleasant Prairie	4	4
Village of Somers	4	4
Village of Bristol	1	1

Water Utility Vehicles – 2016

Distribution & Sewer Collection

Water Distribution

Fleet #	Description
2091	1992 Ford Truck w/ Utility Service Body
2115	1993 IHC Tandem Axle Dump Truck
2367	1997 Ford Hydro Vac Valve Turner Truck
2420	1998 IHC Tandem Axle Dump Truck
2434	1999 GMC 1 Ton Dump Truck
2474	1999 Ford Utility Van
2701	2003 GMC 1 Ton Dump Truck
2850	2006 GMC Pickup
2852	2006 GMC Pickup
2854	2006 GMC 1 Ton Dump Truck
2856	2006 GMC Crew Cab w/ Utility Service Body
2878	2006 Sterling Tandem Axle Dump Truck
2957	2008 Freightliner Tandem Axle Dump Truck
2959	2008 GMC Van
2960	2008 GMC Pickup
3070	2010 Ford Crew Cab w/ Utility Service Body
3279	2014 GMC Pickup
3281	2014 GMC Pickup
3299	2015 International Tandem Axle Dump Truck
3303	2015 International Tandem Axle Dump Truck
3331	2015 Chevrolet Pickup

Water Production

2771	2004 Jeep Liberty
2842	2006 GMC Pickup
2961	2008 GMC Pickup
3283	2014 GMC Pickup

Engineering Services

2148	1993 GMC Pickup
2535	2001 Ford Pickup
2649	2003 GMC Pickup
2653	2003 GMC Pickup
2660	2003 Dodge Van
2682	2003 GMC Van
2715	2003 GMC Van
2737	2004 GMC Van
2862	2006 GMC Van
2883	2006 GMC Pickup
3024	2009 Jeep Grand Cherokee
3105	2011 GMC Pickup
3124	2011 GMC Pickup
3253	2013 Chevrolet Suburban
3280	2014 GMC Pickup

Sewer Repair/Inspection

Fleet #	Description
2089	1992 Ford Pickup Flatbed-Shoring Truck
2299	1996 IHC Tandem Axle Dump Truck
2364	1997 Chevrolet Van
2421	1998 IHC Tandem Axle Dump Truck
2472	1999 Sewer Flusher Vacuum
2554	2000 Vactor Sewer Cleaner
2851	2006 GMC Pickup
2884	2006 TV Truck – Ford Chassis
2930	2007 GMC Pickup
3043	2009 Ford F450 w/ Utility Service Body
3202	2012 Sewer Flusher Vacuum
3284	2015 GMC Tandem Axle Dump Truck
3352	2005 Sewer Flusher Vacuum

Meter Shop

2849	2006 GMC Van w/ Utility Service Body
3004	2008 Dodge Grand Caravan
3127	2011 GMC Van
3248	2014 GMC Van
3257	2014 GMC Van
3285	2014 GMC Van

Administration/Customer Service

2265	1995 GMC Safari Minivan
2962	2008 Jeep Liberty
3304	2014 Ford Edge

Wastewater Treatment

2063	1991 Ford w/ Galbraith Container System
2427	1998 Ford Pickup
2430	1998 GMC 1 Ton Dump Truck
2559	2001 Sterling Dump Truck
2652	2003 Ford Utility Truck with Crane
2700	2003 GMC Van
2714	2004 Ford Pickup
2746	2004 GMC Pickup
2843	2006 GMC Pickup with Plow
2866	2006 GMC Pickup
2945	2008 Freightliner Quad Axle Dump Truck
2966	2008 GMC Van
3073	2010 Ford Escape Hybrid
3106	2011 GMC Pickup
3282	2014 GMC Pickup
3297	2014 Ram 4500 w/ Service Body and Crane

Water Utility Major Equipment – 2016

Distribution & Sewer Collection

Water Construction

Fleet #	Description
453-00	1958 Engresser Pipe Thawer
455-19	1986 Tapmate Tap Machine
1943	1989 Caterpillar Forklift
	1989 Wach Power Valve Turner
	1991 Dowel Drill Machine
	1992 Wach Power Valve Turner
2206	1994 Smith Air Compressor
2366	1997 Case Wheel Loader
2958	2007 Airman Air Compressor
2968	2007 Case Tractor Loader Backhoe
2970	2008 Case Tractor Loader Backhoe
3326	2015 Case Tractor Loader Backhoe
	2016 Husqvarna Road Saw

Water Production

	1998 Mitsubishi Fork Truck
	2005 Kubota Tractor
2890	2006 Kubota Mower

Sewer Repair

Fleet #	Description
2840	2005 JCB Tractor Loader Backhoe
3334	2016 Case Tractor Loader Backhoe

Wastewater Treatment

	1980 6" Marlow Pump
	1995 6" Marlow Pump
	1998 4" Barnes Submersible Pump
	1998 John Deere Mower
	1999 8" Thompson Pump
	2000 6" Gormann-Rupp Pump
	2000 8" Godwin Pump
2987	2003 New Holland Skid Loader
2819	2006 Nissan Forklift
2893	2007 JCB Wheel Loader
3332	2015 Kubota Mower

Water Service Centre

	1996 Kubota Tractor
--	---------------------

Engineering Services

4401 Green Bay Road
Kenosha WI 53144

Phone (262) 653-4315
Fax (262) 653-4303



“Providing and Protecting Kenosha’s Greatest Natural Resource”

May 2017

Mr. Edward St. Peter, General Manager
Kenosha Water Utility
4401 Green Bay Road
Kenosha, WI 53144

Subject: 2016 Annual Report – Engineering Services Division

Dear Mr. St. Peter,

I respectfully submit the annual report for the Engineering Services Division for the year 2016. The Engineering Services Division continues to provide a variety of engineering services for our various operating divisions within the utility as well as City departments, public agencies and developers.

This year once again continued the upward trend of private development as the economy continues to improve. Kenosha is still proving to be one of the most attractive markets for distribution facilities within the Midwest. Many new developments were completed in 2016 with the largest being the Bridge Development which is now home to the newest U-Line facility. Engineering Services Division staff once again was instrumental in the planning, review and oversight of all private development within the city limits. With an overwhelming volume of inquiries into other vacant parcels within the city, 2017 is shaping up to be a very busy year as far as private development is concerned.

In addition to private development, the utility put out contracts to help rehabilitate and enhance our aging infrastructure. A summary of these contracts can be found later in this report.

The wide variety of projects undertaken during the 2016 calendar year demonstrate the complexity and diversity our staff and the water and wastewater industries as a whole are tasked with overseeing on an annual basis. We continued our typical initiatives such as water main replacement, reducing infiltration/inflow into the sanitary sewer system, sump pump inspections, Diggers Hotline locate requests, and construction inspection responsibilities. In addition however, we began investigating and planning for rehabilitation of our water and wastewater infrastructure. Some of these initiatives included continuing to optimize the Energy Optimized Resource Recovery project at our wastewater treatment plant, removing and replacing the coating on the 60th Street east ground storage tank, replacing our existing bar screens with perforated plate band screens at our wastewater treatment plant, studying our Industrial Park and Big Buck lift stations, investigating new membrane filtration equipment at our production plant and planning for the aggressive implementation of a lead service replacement program. These initiatives are being undertaken to ensure we have completed the planning, research and budgeting necessary to stay ahead of the aging infrastructure challenges facing our industry.

On behalf of the staff of the Engineering Services Division, I would like to thank the Board of Water commissioners and all utility employees for working together to ensure 2016 was another productive and successful year.

Sincerely,

A handwritten signature in black ink, appearing to read 'Curtis Czarnecki'.

Curtis Czarnecki, P.E.
Director of Engineering Services



www.kenosha.org

**Information Technology/
Geographic Information Systems**

4401 Green Bay Road
Kenosha WI 53144

Phone (262) 653-4315
Fax (262) 653-4303



“Providing and Protecting Kenosha’s Greatest Natural Resource”

June 2017

Mr. Edward St. Peter, General Manager
Kenosha Water Utility
4401 Green Bay Road
Kenosha, WI 53144

Subject: 2016 Annual Report - Information Technology / Geographic Information Systems

Dear Mr. St. Peter,

The Information Technology (IT) / Geographic Information Systems (GIS) team had an extremely busy and productive year. The team not only worked on various new projects but continued to make enhancements to the master digital map supplying this information out to more mobile users. Some of these legacy and various new projects are listed below:

- Developed a system that virtualized many of the servers at the water production plant and the main office. This technology enables older computer systems to be run on new hardware without having to upgrade the operating system which in most cases prolongs the life and therefore minimizes costs to upgrade.
- Enhanced the network infrastructure with a two phase airFiber conversion project that will provide faster connection speeds at the wastewater and production plants.
- Converted the legacy GIS software to an open-source low cost solution. This conversion is now allowing more users to access the GIS system for substantially lower cost, without the yearly maintenance fees from legacy software companies.
- Completed a test project that demonstrated a low-cost SCADA Human Machine Interface solution that will replace the existing legacy SCADA system at the wastewater plant scheduled for spring of 2017
- Continued the GPS (Global Positioning System) Collector summer internship program for college students. This year these students were from Carthage College and the University of Wisconsin-Parkside.
- Enhanced and updated KWU’s website www.kenoshawater.org with valuable customer information.
- Developed web content for the city's new web site which will be implemented in February 2017. The www.kenoshawater.org will be replaced by this site <https://www.kenosha.org/departments/water-utility/>
- Provided many web based input forms, surveys, and informational web pages for our employees to receive and disseminate time critical data.
- Enhanced mobile mapping solutions for not only the meter maintainers, but also engineers, engineering technicians, inspectors, distribution supervisors and locators.

The IT/GIS team would like to thank you and the Board of Water Commissioners for their continued support. I would also like to thank the IT/GIS staff and all of the divisions within the Water Utility for their support and patience throughout the year.

Respectfully submitted,

John N. Andersen
Information Technology /
Geographic Information
Systems Director



www.kenosha.org

2016 Engineering Service Contracts Awarded

<u>Project</u>	<u>Contractor</u>	<u>Description</u>	<u>Awarded Cost</u>
2013-02-WWTP	Centrisys Corporation	Energy Optimized Resource Recovery Project Change Order #1 Screening and Improvements Project	\$ 1,131,750.00
2016-01-PROD	L.C. United, Inc.	60th Street West Ground Storage Tank Painting	\$ 306,000.00
2016-02-W	A.W. Oakes and Son, Inc.	Water Main Relay Phase I 39th Avenue - 75th to 76th Streets 30th Avenue - 70th to 72nd Streets 22nd Avenue - 52nd Street to 300' North 77th Street - 6th to 7th Avenues	\$ 419,350.50
2016-04-S&W	A.W. Oakes and Son, Inc.	8" Sanitary Sewer and 8" & 12" Water Main Extension 47th Avenue - 19th Place to 21st Street	\$294,512.50

2016 Developer Infrastructure Accepted

	Water Mains	Hydrants	Services
St. Catherine's Medical Building	\$ 30,292.44	-	\$ 11,636.90
67th Street Development	3,679.08	9,723.24	2,745.02
Meadow Heights Estates	43,145.62	5,046.76	18,967.00
Strawberry Creek Subdivision	992,835.99	109,212.26	177,425.46
Forest Meadows Subdivision	55,103.79	8,636.00	15,960.00
First Industrial Park South	28,834.56	7,821.60	6,153.90
Indian Trail High School Addition	112,042.16	7,892.70	2,765.14

Sanitary Sewer Mains

67th Street Development	\$ 25,611.17
Meadow Heights Estates	81,736.12
Strawberry Creek Subdivision	1,104,515.25
Forest Meadows Subdivision	72,594.99

Note: Total cost includes developer and KWU costs.

2016 Engineering Staff and G.I.S. Personnel Recap of Significant Projects

	<u>Hours</u>
<u>Water Production Engineering - Total Hours 532</u>	
Water Treatment Plant & Reservoir Maintenance	430
Painting of Water Storage Tanks	74
Storage Building	28
<u>Sewerage System Engineering - Total Hours 3,673</u>	
Sanitary Sewer Locates (Digger's Hotline)	1,604
Sump Pump Inspection	525
Wastewater Treatment Plant Maintenance	257
Energy-Optimized Resource Recovery System	332
Sanitary Sewer System Flow Study/Inspection	339
Sewer Repair, Cleaning and Inspection	533
Headworks Upgrade	83
<u>Water Distribution System - Total Hours 4,827</u>	
Water System Locates (Digger's Hotline)	2,054
Maintenance of Mains, Services and Hydrants	1,352
Cross Connection Inspection	1,421
<u>Water Main Installed by Kenosha Water Utility Contract - Total Hours 705</u>	
Water Main Replacement 2016 - Various Locations	430
Water Main Replacement 2017 - Various Locations	124
47th Ave - 19th Pl to 21st St	151
<u>Water Main Installed by Developers - Total Hours 416</u>	
Uline	416
<u>Sanitary Sewer Installed by Kenosha Water Utility Contract - Total Hours 200</u>	
47th Ave - 19th Pl to 21st St	200
<u>Sanitary Sewer Installed by Developers - Total Hours 881</u>	
Uline	671
Springs at Kenosha	210
<u>New Development - Total Hours 380</u>	
Plan/Project Review	380
<u>GIS Infrastructure Mapping - Total Hours 554</u>	
Water Infrastructure	315
Sewer Infrastructure	239

Business Services

4401 Green Bay Road
Kenosha WI 53144

Phone (262) 653-4300
Fax (262) 653-4320



“Providing and Protecting Kenosha’s Greatest Natural Resource”

June 2017

Mr. Edward St. Peter, General Manager
Kenosha Water Utility
4401 Green Bay Road
Kenosha, WI 53144

Dear Mr. St. Peter,

SUBJECT: 2016 Annual Report – Business Services Division

I respectfully submit the Annual Report of the Kenosha Water Utility Business Services Division.

This division combines the talents and resources of personnel in the areas of customer service, meter reading, meter maintenance and accounting. This combined group strives to provide prompt and accurate service to both our internal and external customers. In addition to general questions about bills, Business Services attempts to be proactive in resolving matters before they become complaints. Our customer service staff strives to make each customer contact a positive one. Calls are answered by a live body, not an automated system.

Meter shop personnel are required to be certified as cross connection control testers with the State of Wisconsin. They test all RPZ devices for the Utility as well as other City departments. They have continued the meter testing program for meters larger than 1-inch according to Public Service Commission guidelines. The program has been completed for conversion of meters to touch pad remote reading devices. These have proven to be more reliable for reading purposes as well as the assurance that meters are operational. The meter shop provides residential cross connection inspections, sump pump inspections, meter inspections prior to sale of vacant properties as well as doing meter replacements under the twenty year change-out program for small meters. Meter readers are efficiently reading between 370 and 410 meters per day.

The finance division supports the entire Utility by providing payroll, accounting, accounts payable, budgeting, purchasing and other services. The rate of return for the water unit was 4.72% based on an average net rate base valued at \$50,816,259. The rate of return for the sewer unit was 7.50% based on an average net rate base valued at \$29,713,908.

I would like to thank you and the other members of the utility management for their continued guidance and support. Once again, I wish to thank my staff for their dedication and fine work attitude which are key to getting the job done. Business Services Division employees, together with other divisions, will work to insure that the Kenosha Water Utility continues to “Provide and Protect Kenosha's Greatest Natural Resource.”

Sincerely,

A handwritten signature in black ink that reads 'Cathy Brnak'.

Cathy Brnak
Director of Business Services



www.kenosha.org

Water and Sewerage Service Charges – 2016

Water Rates

Water rates for municipally owned water utilities in Wisconsin must be approved and authorized by the Public Service Commission of Wisconsin. The Kenosha Water Utility policy is to maintain water rates that will provide 1.3 times coverage of maximum annual debt service by net income of the system.

Sewerage Service Rates

Sewer service rates for Kenosha are authorized by the Board of Water Commissioners. The Kenosha Water Utility policy is to maintain sewer rates that will provide 1.2 times coverage of maximum annual debt service by net income of the system.

Water Utility General Service Billing

The Kenosha Water Utility issues water and sewer service bills on a bi-monthly basis to residential, commercial and public customers. High consumption customers are billed monthly. The "Sale for Resale" category was added in 1990 and is billed monthly.

Water Rates Effective June 1, 2015 Public Fire Protection Rates Effective June 1, 2015

Meter Size	Public Fire Protection Bi-Monthly Charge	Meter Service Bi-Monthly Charge
5/8 Inch	\$6.18	\$10.10
3/4 Inch	6.18	10.10
1 Inch	8.24	18.96
1-1/2 Inch	12.36	32.96
2 Inch	18.54	45.32
3 Inch	24.72	78.28
4 Inch	30.09	117.42
6 Inch	37.08	206.00
8 Inch	43.26	306.94
10 Inch	49.44	432.60
12 Inch	55.62	560.32

Plus volume charges:

First 1,700 cubic feet used each month or
 3,400 cubic feet used each two months - \$ 2.00 / 100 cu. ft.
 Next 23,300 cubic feet used each month or
 46,600 cubic feet used each two months - \$ 1.85 / 100 cu. ft.
 Over 25,000 cubic feet used each month or
 50,000 cubic feet used each two months - \$ 1.50 / 100 cu. ft.

Sewerage Service Rates Effective June 1, 2015

\$2.48 monthly or \$4.96 bi-monthly - Plus \$1.99 / 100 cubic feet

100 cubic feet = 748 gallons

**CONSUMPTION CHARGES BY CUSTOMER CLASS
BASED ON BILLING DATE, NOT ACCRUAL BASIS**

RESIDENTIAL

Bill Mo.	Water		Public Fire Protection	HHW Charge	Sewerage		Spr. Cr.
	Cons.Ccf	Charge			Cons.Ccf	Charge	
April 2016	157,380	\$ 450,043.90	\$ 83,987.23	\$ 13,431.50	156,323	\$ 377,700.53	
May 2016	149,073	439,988.35	86,463.35	13,292.50	141,962	348,510.32	
June 2016	149,663	436,346.45	83,984.14	13,431.00	148,798	362,725.78	
July 2016	165,960	473,468.74	86,488.07	13,296.50	155,561	353,052.03	22,536.75
Aug 2016	177,872	492,745.41	83,993.41	13,434.50	175,967	366,991.79	49,817.66
Sept 2016	253,036	643,092.87	86,528.24	13,301.00	234,267	374,430.18	157,801.03
Oct 2016	203,788	543,152.97	84,015.04	13,436.00	200,319	367,805.18	97,472.19
Nov 2016	214,605	568,550.64	86,546.78	13,304.00	200,410	365,101.45	99,732.83
Dec 2016	159,429	455,730.40	84,002.68	13,434.00	157,823	337,232.84	43,467.57
Jan 2017	154,654	451,216.05	86,549.87	13,304.50	145,843	356,234.93	
Feb 2017	165,109	467,517.62	84,005.77	13,434.50	163,949	392,893.63	
March 2017	170,568	483,051.79	86,586.95	13,309.50	162,603	389,610.56	
Totals	2,121,137	\$ 5,904,905.19	\$ 1,023,151.53	\$ 160,409.50	2,043,825	\$ 4,392,289.22	\$ 470,828.03

COMMERCIAL

Bill Mo.	Water		Public Fire Protection	Sewerage	
	Cons.Ccf	Charge		Cons.Ccf	Charge
April 2016	38,744	\$ 91,213.96	\$ 9,195.84	36,335	\$ 77,528.56
May 2016	61,716	138,483.31	11,030.27	60,223	100,673.47
June 2016	37,666	89,659.33	9,174.21	35,567	76,006.13
July 2016	68,214	149,873.07	11,026.15	61,412	126,042.64
Aug 2016	73,888	146,605.98	9,273.09	38,372	81,543.50
Sept 2016	62,641	145,808.88	11,025.12	70,552	142,414.32
Oct 2016	51,366	114,244.72	9,257.64	43,378	91,568.60
Nov 2016	100,661	205,490.31	11,025.12	78,182	159,071.85
Dec 2016	43,105	99,890.32	9,251.46	38,339	81,489.51
Jan 2017	63,563	142,154.06	10,918.00	57,221	117,704.40
Feb 2017	35,626	86,704.77	9,177.30	34,012	72,937.67
March 2017	58,832	133,493.21	10,942.72	57,777	118,052.21
Totals	696,022	\$ 1,543,621.92	\$ 121,296.92	611,370	\$ 1,245,032.86

MULTIFAMILY RESIDENTIAL

Bill Mo.	Water		Public Fire Protection	HHW Charge	Sewerage	
	Cons.Ccf	Charge			Cons.Ccf	Charge
April 2016	35,144	\$ 77,544.15	\$ 8,747.79	\$ 495.50	35,144	\$ 71,979.10
May 2016	46,408	104,669.15	6,872.16	427.00	45,441	92,115.46
June 2016	34,471	76,354.27	4,979.02	492.50	34,471	70,678.33
July 2016	47,619	107,003.13	6,878.34	427.50	46,133	93,487.95
Aug 2016	36,641	80,434.87	4,979.02	492.50	35,618	72,916.90
Sept 2016	54,470	119,932.43	6,875.25	427.00	47,812	96,877.71
Oct 2016	41,949	90,037.80	4,976.96	491.50	36,480	74,606.91
Nov 2016	61,042	131,822.76	6,878.34	427.00	52,086	105,349.21
Dec 2016	37,398	81,636.40	4,981.08	491.50	36,365	74,435.37
Jan 2017	48,440	108,859.59	6,999.88	437.50	46,819	94,919.96
Feb 2017	37,122	81,304.13	4,999.62	494.50	37,122	75,900.16
March 2017	53,590	118,140.20	7,006.06	437.50	52,454	106,054.33
Totals	534,294	\$ 1,177,738.88	\$ 75,173.52	\$ 5,541.50	505,945	\$ 1,029,321.39

**CONSUMPTION CHARGES BY CUSTOMER CLASS
BASED ON BILLING DATE, NOT ACCRUAL BASIS**

PUBLIC

Bill Mo.	Water		Public Fire Protection	Sewerage	
	Cons.Ccf	Charge		Cons.Ccf	Charge
April 2016	16,674	\$ 21,141.37	\$ 1,894.17	8,724	\$ 17,804.68
May 2016	18,451	20,521.73	1,352.39	8,904	17,876.34
June 2016	17,689	20,775.77	1,894.17	8,140	16,642.52
July 2016	20,720	21,484.78	1,352.39	8,940	17,910.83
Aug 2016	28,465	36,349.27	1,887.99	10,118	20,573.78
Sept 2016	21,772	25,319.83	1,352.39	7,801	15,688.00
Oct 2016	40,535	55,485.37	1,887.99	10,511	21,355.85
Nov 2016	23,338	27,296.26	1,358.57	9,623	19,263.85
Dec 2016	21,982	29,335.82	1,887.99	10,159	20,655.37
Jan 2017	19,250	20,717.29	1,364.75	8,775	17,488.13
Feb 2017	15,901	21,299.02	1,887.99	8,545	17,443.51
March 2017	18,110	20,799.89	1,364.75	9,141	18,312.65
Totals	262,887	\$ 320,526.40	\$ 19,485.54	109,381	\$ 221,015.51

INDUSTRIAL

Bill Mo.	Water		Public Fire Protection	Sewerage	
	Cons.Ccf	Charge		Cons.Ccf	Charge
April 2016	45,278	\$ 70,236.54	\$ 388.31	30,466	\$ 139,140.98
May 2016	47,498	76,053.33	915.67	30,599	113,710.24
June 2016	41,594	64,687.94	388.31	24,208	75,795.70
July 2016	51,244	81,949.03	915.67	30,641	99,655.20
Aug 2016	47,402	73,596.89	388.31	25,075	110,242.40
Sept 2016	69,358	109,935.93	915.67	34,766	100,973.63
Oct 2016	73,700	113,145.09	388.31	38,241	119,670.95
Nov 2016	74,200	116,934.03	915.67	38,761	131,182.26
Dec 2016	58,042	89,517.14	388.31	31,561	119,449.80
Jan 2017	49,104	78,474.23	915.67	28,365	118,407.24
Feb 2017	34,818	54,626.24	388.31	20,653	89,382.42
March 2017	50,851	81,083.53	915.67	27,246	133,163.47
Totals	643,089	\$ 1,010,239.92	\$ 7,823.88	360,582	\$ 1,350,774.29

SALE FOR RESALE

Bill Mo.	Cons.Ccf	Water Charge	Public Fire Protection
April 2016	130,988	\$ 190,448.89	\$ 8,359.48
May 2016	103,303	151,192.07	8,359.48
June 2016	104,306	152,358.36	8,359.48
July 2016	148,874	216,011.79	8,359.48
Aug 2016	179,383	259,805.26	8,359.48
Sept 2016	216,038	313,352.27	8,359.48
Oct 2016	224,584	325,266.20	8,359.48
Nov 2016	173,357	251,455.64	8,359.48
Dec 2016	127,754	185,971.34	8,359.48
Jan 2017	127,797	185,984.98	8,359.48
Feb 2017	131,091	190,467.00	8,359.48
March 2017	144,270	209,382.80	8,359.48
Totals	1,811,745	\$ 2,631,696.60	\$ 100,313.76

Meter Services Report - 2016

<u>Meter Size</u>	<u>New Accounts</u>	<u>Tested/ Upgraded</u>	<u>Total Meters</u>
5/8" Meters	3	2,289	25,272
3/4" Meters	31	440	4,584
1" Meters	3	59	1,000
1-1/2" Meters	8	147	599
2" Meters	-	221	668
3" Meters	2	56	112
4" Meters	-	24	60
6" Meters	-	26	32
8" Meters	-	9	9
10" Meters	-	2	2
Total	47	3,273	32,338

New Private Fire Lines **9**

Meter Shop Activity

Set New Accounts	47
20 Year Meter Change Outs	1,332
Install Radio Read Units	309
Remove Meter (test and replace)	406
Check Readings (high/low consumption, etc.)	3,280
Shut Offs, Take Out Seasonals	154
Repair Outside Register/Touch Pad	1,120
Pressure Tests	24
Locate/Clean Curb Box	336
Service Break Checks/Trace Services	82
Shut off at Curb (non-payment & customer requests)	496
Meters Bench Tested/Rebuild & Retest	290
Frozen Services	12
Frozen Meters	59
Pool Fills	0
Large Meter-Field Testing	103
Total Service Calls	8,050

TEN YEAR COMPARISON OF CUSTOMER WATER CONSUMPTION

Average Number of Water Customers	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	% INCR (DECR) 2016 vs. 2015
Residential	26,775	27,034	27,183	27,278	27,334	27,365	27,410	27,452	27,500	27,541	0.15%
Multifamily Residential	N/A	N/A	N/A	N/A	N/A	N/A	1,130	1,115	1,164	1,077	(7.47%)
Commercial	3,251	3,290	3,306	3,313	3,317	3,315	2,176	2,177	2,114	2,166	2.46%
Industrial	70	69	69	67	66	63	60	61	66	84	27.27%
Public	186	192	192	192	192	185	183	185	185	191	3.24%
Irrigation	3	3	3	3	3	3	3	2	2	-	(100.00%)
Private Fire Lines	403	417	432	441	455	464	467	477	492	499	1.42%
Sale for Resale											
Pleasant Prairie	7	7	7	7	7	7	7	7	7	7	0.00%
Town of Somers	8	8	8	8	8	8	8	8	8	8	0.00%
Village of Bristol	2	2	2	2	2	2	2	2	2	2	0.00%
TOTAL	30,705	31,022	31,202	31,311	31,384	31,412	31,446	31,486	31,540	31,575	0.11%

Annual Consumption (1,000 Gallons)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	% INCR (DECR) 2016 vs. 2015
Residential	1,813,520	1,764,393	1,717,591	1,710,396	1,704,587	1,838,553	1,638,280	1,535,419	1,549,036	1,586,610	2.43%
Multifamily Residential	N/A	N/A	N/A	N/A	N/A	N/A	430,591	417,147	417,529	399,652	(4.28%)
Commercial	990,851	979,048	931,833	1,054,683	953,963	977,711	495,955	471,956	488,315	520,624	6.62%
Industrial	305,239	291,145	324,720	306,136	396,382	287,364	336,628	419,995	411,406	481,031	16.92%
Public	104,303	117,992	90,212	107,094	117,950	183,924	170,517	170,966	168,484	196,639	16.71%
Irrigation	1,489	1,621	1,177	1,243	1,204	2,148	1,323	1,744	2,014	-	(100.00%)
Sale for Resale											
Pleasant Prairie	747,724	740,550	701,630	754,021	794,343	842,036	746,097	761,521	1,012,853	1,188,200	17.31%
Village of Somers	160,816	154,185	151,554	156,848	162,957	179,703	146,385	142,909	145,463	160,352	10.24%
Village of Bristol	5,693	5,574	4,952	5,424	5,464	5,025	4,563	5,673	5,962	6,633	11.25%
TOTAL	4,129,635	4,054,508	3,923,669	4,095,845	4,136,850	4,316,464	3,970,339	3,927,330	4,201,062	4,539,741	8.06%

Customer Class as a Percent of Total Consumption

Residential	43.91%	43.52%	43.78%	41.76%	41.20%	42.59%	41.26%	39.10%	36.87%	34.95%
Multifamily Residential	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.62%	9.94%	8.80%
Commercial	23.99%	24.15%	23.75%	25.75%	23.06%	22.65%	12.49%	12.02%	11.62%	11.47%
Industrial	7.39%	7.18%	8.28%	7.47%	9.58%	6.66%	8.48%	10.69%	9.79%	10.60%
Public	2.53%	2.91%	2.30%	2.61%	2.85%	4.26%	4.29%	4.35%	4.01%	4.33%
Irrigation	0.04%	0.04%	0.03%	0.03%	0.03%	0.05%	0.03%	0.04%	0.05%	0.00%
Sale for Resale										
Pleasant Prairie	18.11%	18.26%	17.88%	18.41%	19.20%	19.51%	18.79%	19.39%	24.11%	26.17%
Town of Somers	3.89%	3.80%	3.86%	3.83%	3.94%	4.16%	3.69%	3.64%	3.46%	3.53%
Village of Bristol	0.14%	0.14%	0.13%	0.13%	0.13%	0.12%	0.11%	0.14%	0.14%	0.15%
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	89.15%	100.00%	100.00%	100.00%

Water Production Plant

100 51st Place
Kenosha WI 53140

Phone (262) 653-4330
Fax (262) 653-4362



“Providing and Protecting Kenosha’s Greatest Natural Resource”

June 2017

Mr. Edward St. Peter, General Manager
Kenosha Water Utility
4401 Green Bay Rd.
Kenosha, WI 53144

Subject: 2016 Annual Report for the O. Fred Nelson Water Production Plant

Dear Mr. St. Peter,

The Annual Report for the O. Fred Nelson Water Production Plant is hereby respectfully submitted.

The Kenosha Water Utility’s Water Production Division continues to provide the highest quality drinking water to our customers. A total of 5.2 billion gallons were pumped into the distribution system in 2016. The average daily flow was 14.33 million gallons per day, with a maximum day of 26.51 million gallons on July 2. The average tap water turbidity was 0.030 NTU and the average chlorine residual was 1.2 mg/l. Some significant projects completed in 2016 included:

- **Recoat 60th St West Ground Storage Tank**
- **Basin Confined Spaces Upgrade**
- **42” Intake Repairs**
- **Sedimentation Basin Shaft Seal Replacement**

Production Division would like to thank the Engineering and Business Services Divisions for their support throughout the year. Thanks to the Distribution Division for assisting with the heavier maintenance tasks and to the Wastewater Division for electrical and mechanical upgrades and repairs. We would also like to thank you, Dave Lewis, and the Board of Water Commissioners for providing us the tools and equipment to ensure we continue providing the best drinking water to Kenosha, Pleasant Prairie, Bristol, and Somers.

Sincerely,

Roger E. Field, P.E.
Director of Water Production



www.kenosha.org

Kenosha Water Utility

Production Division

Main Plant Pumping

2016

Month	Pumpage X 1000 Gallons				Electricity	
	High Lift	Daily Average	Low Lift	Daily Average	Pumping	Cost/MG
January	392,224	12,652	435,094	14,035	\$ 43,304	\$ 99.53
February	374,399	12,910	413,430	14,256	38,727	93.67
March	372,747	12,024	412,115	13,294	37,897	91.96
April	369,850	12,328	410,901	13,697	41,995	102.20
May	428,643	13,827	476,230	15,362	37,718	79.20
June	478,433	15,948	541,717	18,057	49,414	91.22
July	623,539	20,114	670,387	21,625	63,663	94.96
August	551,278	17,783	610,788	19,703	51,267	83.94
September	462,095	15,403	510,432	17,014	45,611	89.36
October	424,260	13,686	474,455	15,305	38,888	81.96
November	375,224	12,507	423,152	14,105	39,685	93.78
December	390,977	12,612	438,724	14,152	38,932	88.74
Total	5,243,669		5,817,425		\$ 527,101	
Average	436,972	14,316	484,785	15,884	\$ 43,925	\$ 90.88

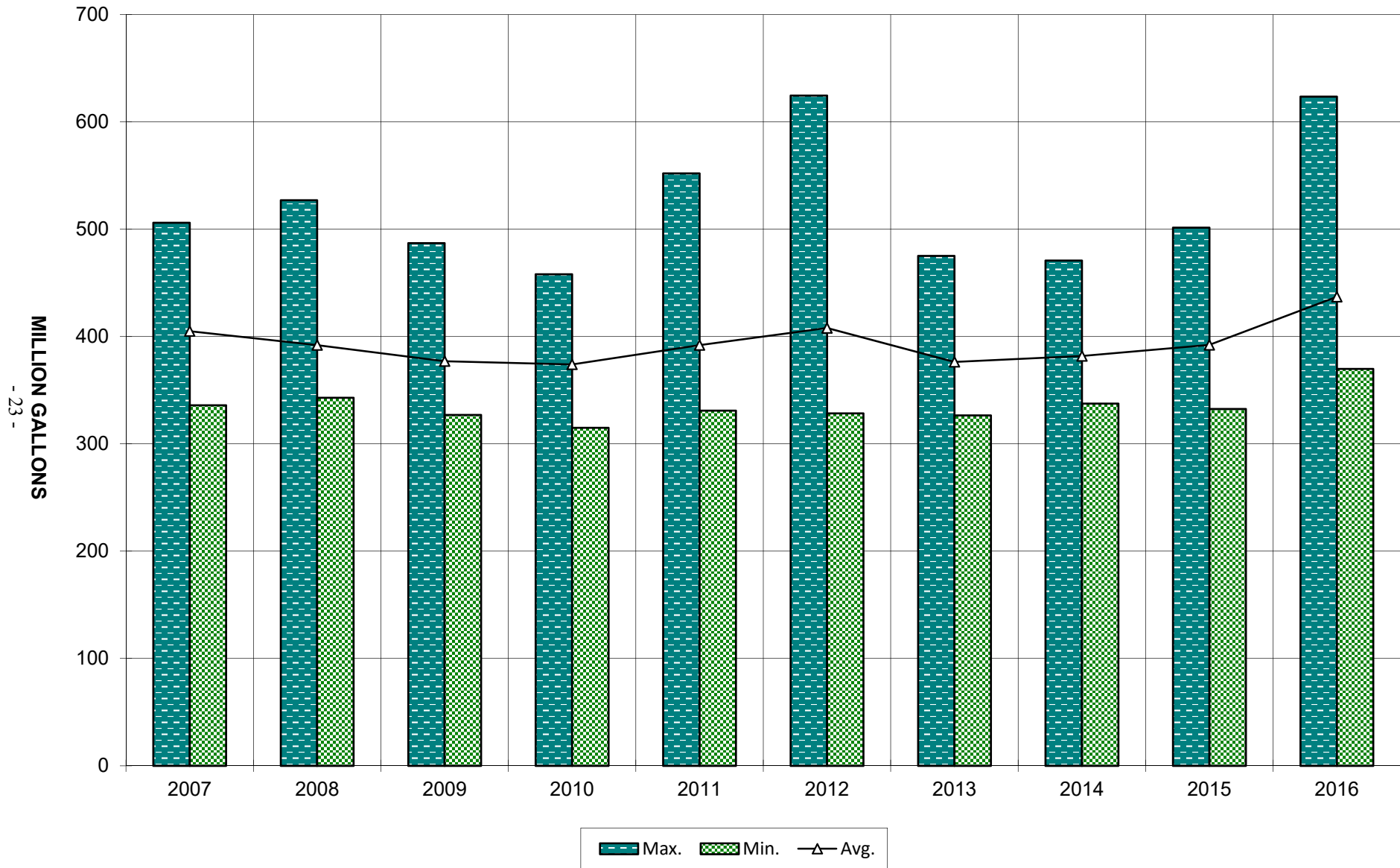
Booster System Pumping

2016

Month	Pumpage X 1000 gal	Total Power Cost	Pumping Power Cost	Total Cost/MG	Pumping Cost/MG
January	145,700	\$ 14,262	\$ 12,551	\$ 97.89	\$ 86.14
February	142,400	14,118	12,517	99.14	87.90
March	148,600	13,547	12,182	91.16	81.98
April	150,500	12,798	11,991	85.04	79.67
May	174,500	13,040	12,392	74.73	71.01
June	154,300	14,407	13,765	93.37	89.21
July	178,100	18,355	17,782	103.06	99.84
August	241,800	16,989	16,394	70.26	67.80
September	210,300	14,085	13,516	66.98	64.27
October	188,800	13,558	12,955	71.81	68.62
November	157,700	12,767	11,771	80.96	74.64
December	147,600	13,201	11,294	89.44	76.52
Total	2,040,300	\$ 171,127	\$ 159,110		
Average	170,025	\$ 14,261	\$ 13,259	\$ 85.32	\$ 78.97

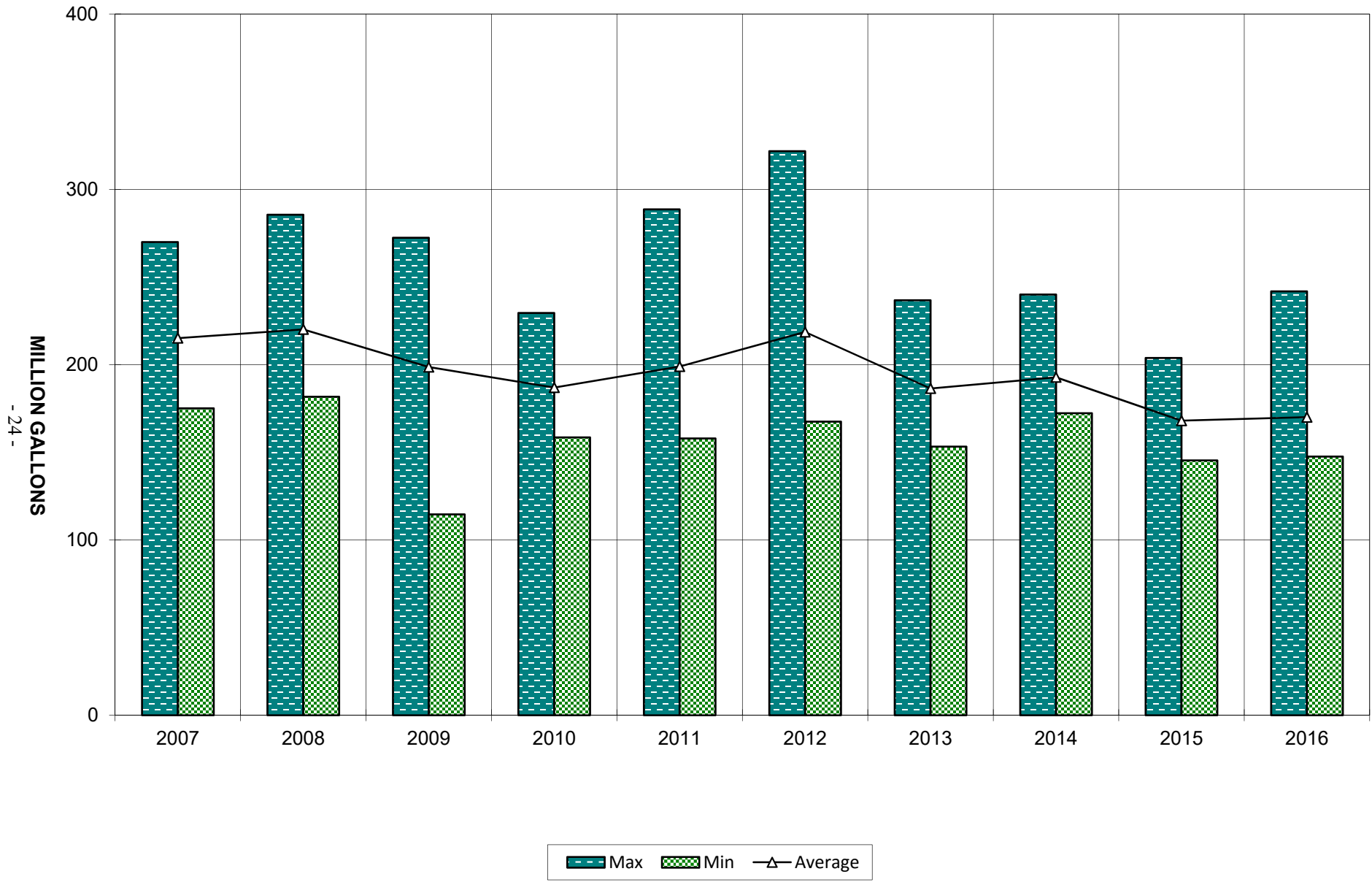
Main Plant Pumping Last Ten Years

Monthly Flow - Million Gallons



Booster Pumping Last Ten Years

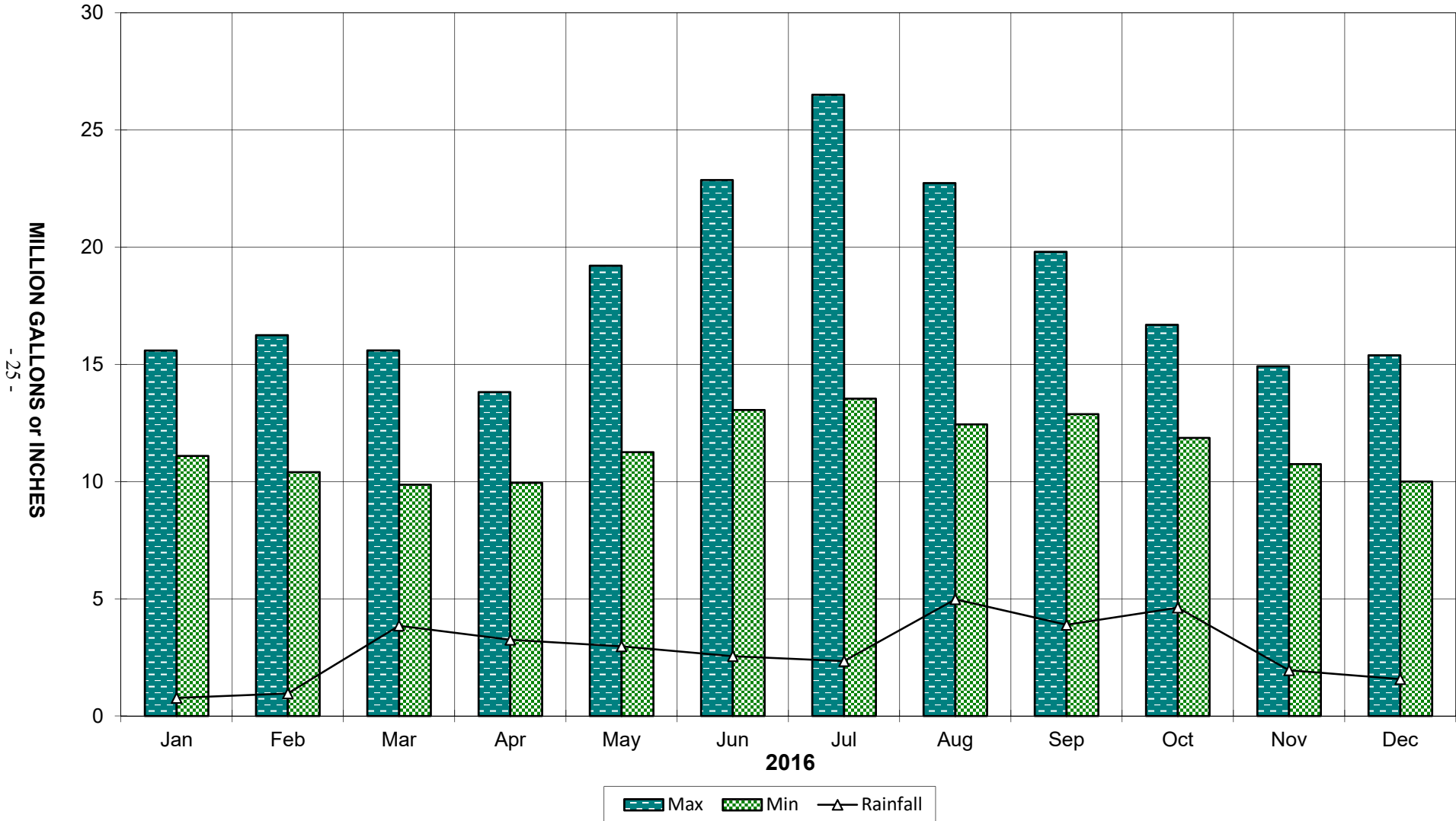
Monthly Flow - Million Gallons



-24-

Finished Water Per Month Compared to Rainfall

Daily Flow Min/Max (MG) + Total Precipitation (Inches)



Kenosha Water Utility

Production Division

Rapid Sand Plant Filtration Report

2016

Month	Pumpage (1000 gal.)			
	Total Water Treated	Max Day	Min Day	Avg Day
January	219,533	9,975	5,494	7,082
February	213,050	10,649	4,862	7,347
March	198,270	9,978	4,276	6,396
April	202,588	8,276	4,376	6,753
May	238,771	10,918	5,644	7,702
June	227,849	12,594	6,245	7,595
July	391,520	16,635	6,896	12,630
August	342,878	14,552	6,968	11,061
September	263,820	12,029	6,793	8,794
October	222,338	9,813	6,044	7,172
November	190,034	8,479	5,036	6,334
December	216,870	9,757	4,425	6,996
Total	2,927,521			
Average	243,960			7,989

Month	Washwater (1000 gal.)	% Rated Capacity	Filter Run Hours		
			Max	Min	Avg
January	2,750	35	80	26	68
February	2,448	37	80	63	79
March	1,500	32	80	79	80
April	1,570	34	80	76	79
May	2,130	39	80	38	68
June	3,562	38	66	29	40
July	4,501	63	60	33	45
August	4,650	55	56	11	39
September	2,480	44	72	35	57
October	2,160	36	80	40	61
November	2,020	32	80	60	71
December	2,480	35	80	42	65
Total	32,251				
Average	2,688	40			63

Kenosha Water Utility

Production Division

Membrane Plant Filtration Report

2016

Month	Pumpage (1000 gal.)			
	Total Water Treated	Max Day	Min Day	Avg Day
January	172,691	5,680	5,241	5,571
February	161,324	5,646	4,894	5,563
March	174,477	6,716	5,329	5,628
April	167,262	5,662	5,525	5,575
May	189,872	9,329	5,528	6,125
June	250,584	10,916	5,869	8,353
July	232,019	11,427	5,424	7,484
August	208,400	9,217	1,744	6,723
September	199,255	8,895	4,928	6,642
October	201,922	8,426	5,487	6,514
November	185,190	11,600	5,445	6,173
December	174,107	6,651	5,199	5,616
Total	2,317,103			
Average	193,092			6,331

Month	Washwater Raw (1000 gal.)	% Rated Capacity	CIP Run Hours		
			Max	Min	Avg
January	35,860	36	501	500	500
February	33,052	36	500	500	500
March	35,490	43	501	500	500
April	36,080	36	500	500	500
May	44,020	60	500	500	500
June	53,720	70	501	500	500
July	46,825	73	500	420	491
August	49,020	59	502	444	497
September	42,425	57	501	500	500
October	42,050	54	500	500	500
November	39,120	74	500	500	500
December	38,280	43	501	500	500
Total	495,942				
Average	41,329	53			499

CIP - Clean-in-Place

**Kenosha Water Utility
Production Division
Rapid Sand Plant Chemical Feed Report
2016**

Month	Alum		Chlorine		Fluoride	
	Pounds	lb/MG	Pounds	lb/MG	Pounds	lb/MG
January	50,311	229.17	3,354	15.28	5,397	24.58
February	51,351	241.03	3,169	14.87	5,202	24.42
March	43,796	220.89	2,864	14.44	4,831	24.37
April	45,052	222.38	3,138	15.49	5,009	24.73
May	51,946	217.56	3,821	16.00	5,949	24.92
June	54,758	240.33	3,519	15.44	5,659	24.84
July	70,738	180.68	6,111	15.61	9,208	23.52
August	64,948	189.42	5,625	16.41	8,481	24.73
September	51,313	194.50	4,230	16.03	6,487	24.59
October	55,795	250.95	3,524	15.85	5,290	23.79
November	52,054	273.92	3,006	15.82	4,317	22.72
December	53,691	247.57	3,176	14.64	5,051	23.29
Total	645,753		45,537		70,881	
Average	53,813	225.70	3,795	15.49	5,907	24.21

Month	Potassium Permanganate		Polyphosphate		Total Chemical Cost	
	Pounds	lb/MG	Pounds	lb/MG	Total \$	Cost/MG
January	0	0.00	2,092	9.53	\$ 8,242	\$ 37.54
February	0	0.00	2,308	10.83	8,395	39.40
March	0	0.00	2,063	10.41	7,343	37.04
April	0	0.00	2,272	11.21	7,694	37.98
May	0	0.00	2,808	11.76	9,069	37.98
June	0	0.00	3,136	13.76	9,421	41.35
July	0	0.00	4,857	12.41	13,427	34.29
August	0	0.00	4,160	12.13	12,153	35.44
September	0	0.00	3,146	11.92	9,422	35.71
October	0	0.00	2,379	10.70	8,951	40.26
November	0	0.00	2,113	11.12	8,106	42.66
December	0	0.00	2,453	11.31	8,684	40.04
Total	0		33,787		\$ 110,907	
Average	0	0.00	2,816	11.42	\$ 9,242	\$ 38.31

**Kenosha Water Utility
Production Division
Membrane Plant Chemical Feed Report
2016**

Cleaning Chemicals								
Month	Sodium Hydroxide		Hydrogen Peroxide		EDTA		Sulfuric Acid	
	Pounds	lb/MG	Pounds	lb/MG	Pounds	lb/MG	Pounds	lb/MG
January	6,285	36.39	1,303	7.55	993	5.75	657	3.80
February	5,237	32.46	1,086	6.73	827	5.13	547	3.39
March	4,539	26.01	941	5.39	717	4.11	474	2.72
April	5,237	31.31	1,086	6.49	827	4.94	547	3.27
May	3,841	20.23	797	4.20	607	3.20	401	2.11
June	8,380	33.44	1,738	6.94	1,324	5.28	876	3.50
July	6,634	28.59	1,376	5.93	1,048	4.52	693	2.99
August	6,634	31.83	1,376	6.60	1,048	5.03	693	3.33
September	6,634	33.29	1,376	6.91	1,048	5.26	693	3.48
October	6,285	31.13	1,303	6.45	993	4.92	657	3.25
November	5,237	28.28	1,086	5.86	827	4.47	547	2.95
December	5,237	30.08	1,086	6.24	827	4.75	547	3.14
Total	70,180		14,554		11,086		7,332	
Average	5,848	30.25	1,213	6.27	924	4.78	611	3.16

Process Chemicals								
Month	Chlorine		Fluoride		Polyphosphate		Total Cost *	
	Pounds	lb/MG	Pounds	lb/MG	Pounds	lb/MG	Total \$	\$/MG
January	2,639	15.28	4,245	24.58	1,646	9.53	\$ 2,907	\$ 16.83
February	2,400	14.88	3,939	24.42	1,748	10.84	2,534	15.71
March	2,521	14.45	4,251	24.36	1,815	10.40	2,480	14.21
April	2,590	15.48	4,135	24.72	1,876	11.22	2,652	15.86
May	3,039	16.01	4,731	24.92	2,233	11.76	2,401	12.65
June	3,871	15.45	6,223	24.83	3,448	13.76	4,528	18.07
July	3,622	15.61	5,456	23.52	2,879	12.41	3,236	13.95
August	3,419	16.41	5,155	24.74	2,528	12.13	3,155	15.14
September	3,195	16.03	4,899	24.59	2,376	11.92	3,246	16.29
October	3,201	15.85	4,804	23.79	2,160	10.70	3,228	15.99
November	2,929	15.82	4,207	22.72	2,059	11.12	2,842	15.35
December	2,549	14.64	4,055	23.29	1,970	11.31	2,637	15.15
Total	35,975		56,100		26,738		\$ 35,846	
Average	2,998	15.49	4,675	24.21	2,228	11.42	\$ 2,987	\$ 15.43

* Includes cleaning and process chemicals

MG - million gallons

Kenosha Water Utility
Production Division
Laboratory Report
2016

Month	Alkalinity Average mg/l		pH Average pH units		Conductivity µS/cm	
	Raw	Tap	Raw	Tap	Raw	Tap
January	115	108	8.32	7.74	340	336
February	115	109	8.34	7.75	342	339
March	113	107	8.34	7.75	331	335
April	115	108	8.33	7.73	344	349
May	113	107	8.34	7.71	305	308
June	108	103	8.44	7.76	271	274
July	108	103	8.42	7.74	281	282
August	108	103	8.43	7.68	284	288
September	109	103	8.25	7.61	282	288
October	109	103	8.29	7.66	285	288
November	109	104	8.31	7.68	288	292
December	110	104	8.37	7.73	284	287
Average	111	105	8.35	7.71	303	306

Month	Hardness mg/l		Temp Raw ° F		
	Raw	Tap	Max	Min	Avg
January	148	148	37	32	34
February	142	142	36	34	34
March	140	140	43	34	39
April	142	146	46	41	43
May	134	136	54	45	48
June	130	130	63	46	54
July	130	130	70	48	57
August	136	140	70	48	61
September	134	134	70	46	57
October	134	134	63	50	55
November	136	134	55	45	50
December	136	136	46	34	37
Average	137	138	54	42	47

mg/l - milligrams per Liter
µS/cm - microsiemens per centimeter

**Kenosha Water Utility
Production Division
Laboratory Report
2016**

Month	Turbidity NTU								
	Rapid Sand Raw			Membrane Raw			Tap		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
January	87.9	2.3	20.5	147.0	2.4	20.7	0.042	0.031	0.036
February	150.8	2.4	25.7	163.1	2.8	27.0	0.044	0.036	0.033
March	88.5	1.6	16.3	86.4	2.4	18.2	0.039	0.026	0.032
April	64.5	2.0	12.3	71.8	3.1	15.4	0.035	0.027	0.031
May	57.0	1.0	7.0	65.5	1.2	8.3	0.038	0.025	0.030
June	27.5	0.7	5.1	31.9	0.8	6.1	0.032	0.025	0.028
July	61.1	0.8	4.2	61.1	0.8	4.2	0.035	0.025	0.029
August	6.9	0.6	1.5	7.7	0.8	1.7	0.046	0.027	0.030
September	18.5	0.4	2.1	18.4	0.8	2.6	0.030	0.025	0.027
October	93.1	0.5	5.0	75.7	0.7	5.7	0.029	0.024	0.026
November	36.3	1.0	7.8	44.0	1.6	8.9	0.044	0.025	0.029
December	18.4	0.6	3.2	20.2	1.0	4.1	0.040	0.026	0.029
Average	59.2	1.2	9.2	66.1	1.5	10.2	0.038	0.027	0.030

Month	PO ₄ Average mg/l	Fluoride Composite Average mg/l	Chlorine Residual mg/l		
			Tap		
	Tap	Tap	Max	Min	Avg
January	0.19	0.75	1.2	1.1	1.2
February	0.17	0.72	1.2	1.1	1.2
March	0.16	0.72	1.2	1.1	1.2
April	0.16	0.74	1.2	1.0	1.2
May	0.15	0.73	1.2	1.1	1.2
June	0.15	0.73	1.5	1.1	1.2
July	0.18	0.72	1.3	1.1	1.2
August	0.19	0.74	1.3	1.1	1.3
September	0.20	0.76	1.3	1.0	1.2
October	0.19	0.75	1.3	1.2	1.3
November	0.20	0.72	1.3	1.2	1.3
December	0.17	0.72	1.3	1.2	1.3
Average	0.18	0.73	1.3	1.1	1.2

NTU - Nephelometric Turbidity Units
PO₄ - Polyphosphate
mg/l - milligrams per liter

Synthetic Organic Chemicals

Parameters	Minimum Detection Level µg/L	Kenosha Results µg/L	Maximum Contaminant Level µg/L
Alachlor (Lasso)	0.033	ND	2
Aldicarb Total	0.37	ND	3
Aldicarb Sulfoxide	0.38	ND	4
Aldicarb Sulfone	0.39	ND	2
Aldrin	0.033	ND	na
Atrazine	0.033	ND	3
Benzo(a)pyrene	0.02	ND	0.2
Butachlor	0.033	ND	na
Carbaryl	0.44	ND	na
Carbofuran	0.43	ND	40
Chlordane	0.033	ND	2
2, 4-D	0.086	ND	70
Dalapon	0.81	ND	200
Dicamba	0.13	ND	na
Dieldrin	0.033	ND	na
Di (2-ethylhexyl) adipate	0.6	ND	400
Di (2-ethylhexyl) phthalate	0.006	ND	6
Dinoseb	0.12	ND	7
Diquat	0.37	ND	20
Endothall	0.51	ND	100
Endrin	0.006	ND	2.0
Glyphosate (Round-up)	4.7	ND	700
Heptachlor	0.015	ND	0.4
Heptachlorepoxyde	0.010	ND	0.2
Hexachlorobenzene	0.033	ND	1
Hexachlorocyclopentadiene	0.033	ND	50
3-Hydroxycarbofuran	0.43	ND	na
BHC Gamma (Lindane)	0.0070	ND	0.2
Methoxychlor	0.033	ND	40
Methomyl	0.42	ND	na
Dual (Metolachlor)	0.033	ND	na
Metribuzin (Sencor)	0.033	ND	na
Oxamyl (Vydate)	0.43	ND	200
PCB Total ****	0.1	ND	0.5
Pentachlorophenol	0.037	ND	1
Picloram (Tordan)	0.059	ND	500
Propachlor	0.033	ND	na
2,4,5-TP (Silvex)	0.11	ND	50
Simazine	0.033	ND	4
2,3,7,8-TCDD (Dioxin)	0.000005	ND	0.00003
Toxaphene	0.33	ND	3

na – not applicable

ND – not detected

µg/L – micrograms per Liter or parts per billion

**** PCB 1016 (0.030); PCB 1221 (0.042); PCB 1232 (0.091); PCB 1242 (0.11);
PCB 1248 (0.047); PCB 1254 (0.032); PCB 1260 (0.026)

Volatile Organic Chemicals

Parameters	Minimum Detection Level µg/L	Level Found Kenosha Results µg/L	Maximum Contaminant Level µg/L
Benzene	0.22	ND	5
Bromobenzene	0.17	ND	na
Bromodichloromethane	0.15	4.6	80
Bromoform	0.16	0.19	80
Bromomethane	0.26	ND	na
Carbon Tetrachloride	0.20	ND	5
Chloroethane	0.94	ND	na
Chloroform	0.19	3.5	80
Chloromethane	0.16	ND	na
1,2-Chlorotoluene (o-)	0.18	ND	na
1,4-Chlorotoluene (p-)	0.19	ND	na
Dibromochloromethane	0.15	2.8	80
Dibromomethane	0.22	ND	na
1,3-Dichlorobenzene (m-)	0.21	ND	na
1,2-Dichlorobenzene (o-)	0.17	ND	600
1,4-Dichlorobenzene (p-)	0.17	ND	75
1,1-Dichloroethane	0.20	ND	na
1,2-Dichloroethane	0.16	ND	5
1,1-Dichloroethylene	0.21	ND	7
1,2-Dichloroethylene, cis	0.19	ND	70
1,2-Dichloroethylene, trans	0.14	ND	100
Dichloromethane	0.19	ND	5
1,2-Dichloropropane	0.24	ND	5
1,3-Dichloropropane	0.19	ND	na
2,2-Dichloropropane	0.14	ND	na
1,1-Dichloropropene	0.10	ND	na
1,3-Dichloropropene	0.36	ND	na
Ethylbenzene	0.19	ND	700
Chlorobenzene	0.19	ND	100
Styrene	0.17	ND	100
1,1,1,2-Tetrachloroethane	0.18	ND	na
1,1,1,2,2-Tetrachloroethane	0.15	ND	na
Tetrachloroethylene	0.18	ND	5
Toluene	0.18	ND	1,000
1,2,4-Trichlorobenzene	0.19	ND	70
1,1,1-Trichloroethane	0.15	ND	200
1,1,2-Trichloroethane	0.20	ND	5
Trichloroethylene	0.11	ND	5
1,2,3-Trichloropropane	0.19	ND	na
Vinyl Chloride	0.18	ND	0.2
Xylene Total	0.53	ND	10,000

na – not applicable

ND – not detected

µg/L – micrograms per Liter or parts per billion

All parameters are sampled at the distribution system entry point every three years per WDNR regulations.

Inorganic Chemicals

Parameters	Minimum Detection Level mg/L	Level Found Kenosha Results mg/L	Maximum Contaminant Level mg/L	Sample Location
Alkalinity Total CaCO ₃	1.0	132 max	na	Entry point
Antimony Total	0.00013	ND	0.006	Entry point
Arsenic Total	0.0005	0.00065	0.01	Entry point
Barium Total	0.0001	0.022	2	Entry point
Beryllium Total	0.00013	ND	0.004	Entry point
Cadmium Total	0.0001	ND	0.005	Entry point
Chromium Total	0.00023	ND	0.1	Entry point
Copper	0.001	0.10	1.3 (AL)	Residential taps
Cyanide	0.005	0.0090	0.2	Entry point
Fluoride Total	0.05	0.84	4	Entry point
Haloacetic Acids	0.000048	0.01425	0.06	Maximum residence
Hardness Total CaCO ₃	1	148 max	500	Highest result obtained
Lead	0.0001	0.0062	0.015 (AL)	Residential taps
Mercury Total	0.00005	ND	0.002	Entry point
Nickel Total	0.0005	0.00086	0.1	Entry point
Nitrate as N	0.019	1	10	Entry point
Nitrite	0.0067	ND	1	Entry point
pH Lab	0.01pH	7.71 pH	na	Entry point
Selenium Total	0.002	ND	0.05	Entry point
Sodium Total	0.15	12	na	Entry point
Sulfate Total	2.5	28	na	Entry point
Thallium Total	0.0001	ND	0.002	Entry point
Total Trihalomethanes	0.00013	0.0405	0.08	Maximum residence

ND – not detected

mg /L – milligrams per Liter or parts per million

AL – Action Level

na – not applicable

Entry Point – Where water enters the distribution system.

Maximum residence – A point of maximum residence time in the distribution system.

Water System
Statement of Net Position
December 31, 2016

Assets

Utility Plant

Utility Plant in Service	\$ 117,780,648.95	
Work in Progress - Water Plant	4,246.05	
Work in Progress - Water System	723,292.12	
Accumulated Depreciation	<u>(42,490,109.15)</u>	
Net Plant in Service		76,018,077.97

Nonutility Property

Nonutility Property	20,370.78	
Accumulated Depreciation - Nonutility Property	<u>(2,370.78)</u>	
Net Nonutility Property		18,000.00

Current Assets

Cash and Cash Equivalents	493,074.77	
Investments	1,996,000.00	
Restricted Cash and Cash Equivalents	75,730.41	
Customer Accounts Receivable	1,451,348.20	
Receivable from Municipality	760,031.61	
Unbilled Revenues	1,585,555.96	
Other Accounts Receivable	52,997.18	
Materials and Supplies	380,511.09	
Accrued Interest Receivable	70,658.54	
Other Current Assets	<u>79,656.58</u>	
Total Current Assets		6,945,564.34

Other Assets

Restricted Investments	8,364,178.20	
Deferred Charges	2,890,369.12	
Assessments Receivable	<u>122,842.11</u>	
Total Other Assets		11,377,389.43

Total Assets

\$ 94,359,031.74

Deferred Outflow of Resources

Deferred Pension Resources	<u>\$ 2,085,768.01</u>
----------------------------	------------------------

Liabilities

Current Liabilities

Current Portion of Water Revenue Bonds	\$ 2,350,000.00	
Accrued Taxes	2,378,777.00	
Accounts Payable	176,491.63	
Accrued Interest Payable	29,455.40	
Current Portion of Advance from Municipality	40,845.24	
Current Portion of Accrued Compensated Absences	35,049.21	
Payable to Municipality	641,138.72	
Deferred Credits	<u>7,146.37</u>	
Total Current Liabilities		5,658,903.57

Non-current Liabilities

Long-term Debt		
Water Revenue Bonds - Series 2008 (net of unamortized premium in the amount of \$125,296.15)	4,795,242.22	
Advance from Municipality	89,596.02	
Advance from Sewerage Unit	<u>5,000,000.00</u>	
Total Long-term Debt		9,884,838.24
Accrued Compensated Absences		335,982.73
Worker's Compensation Accrued Liability		179,092.00
Other Postemployment Benefits		799,231.00
Pension Liability - Wisconsin Retirement System		<u>366,208.98</u>
Total Non-current Liabilities		11,565,352.95

Total Liabilities

\$ 17,224,256.52

Deferred Inflow of Resources

Deferred Pension Resources	<u>\$ 807,194.84</u>
----------------------------	----------------------

Net Position

Invested in Capital Assets, net of related debt	71,231,819.19	
Restricted for Debt Service	6,139,688.23	
Unrestricted	<u>1,041,840.97</u>	
Total Net Position		<u><u>\$ 78,413,348.39</u></u>

Water System
Comparative Operating and Maintenance Expenses

	2016	2015	2014
Source of Supply Expenses			
Maintenance of Lake Intakes	\$ 54,129.82	\$ 12,551.82	\$ 21,580.68
Miscellaneous	9,625.00	9,625.00	9,625.00
	<u>63,754.82</u>	<u>22,176.82</u>	<u>31,205.68</u>
Pumping Expenses			
<u>Operation</u>			
Supervision and Engineering	144,168.40	115,176.35	109,814.44
Fuel - Electricity and Gas	827,827.16	779,771.57	863,868.49
Labor	117,653.70	111,001.82	116,583.53
Miscellaneous Expense	5,993.01	5,568.86	8,280.72
	<u>1,095,642.27</u>	<u>1,011,518.60</u>	<u>1,098,547.18</u>
<u>Maintenance</u>			
Structures and Improvements	21,544.99	24,195.10	34,417.59
Power Production Equipment	257.10	4,119.74	67,127.87
Pumping Equipment	96,291.42	86,599.26	81,396.95
	<u>118,093.51</u>	<u>114,914.10</u>	<u>182,942.41</u>
Water Treatment Expenses			
<u>Operation</u>			
Supervision and Engineering	54,427.45	56,306.62	53,017.57
Lead Testing Program	-	-	1,888.74
Chemicals	147,765.73	135,170.83	149,216.71
Labor	307,646.35	286,874.13	258,935.67
Miscellaneous Expense	23,084.32	34,420.63	49,054.94
	<u>532,923.85</u>	<u>512,772.21</u>	<u>512,113.63</u>
<u>Maintenance</u>			
Structures and Improvements	440,979.34	91,495.87	86,739.09
Water Treatment Expense	503,570.31	523,797.21	522,854.68
	<u>944,549.65</u>	<u>615,293.08</u>	<u>609,593.77</u>
	<u>2,754,964.10</u>	<u>2,276,674.81</u>	<u>2,434,402.67</u>
Transmission and Distribution Expenses			
<u>Operation</u>			
Supervision and Engineering	217,662.13	71,274.92	143,954.62
Transmission and Distribution Lines	67,008.18	49,456.15	57,573.90
Meter Expense	43,379.34	63,179.61	69,794.84
Customer Installation Expense	137,366.14	35,106.57	38,392.54
Miscellaneous Expense	469,556.51	534,367.27	488,431.00
	<u>934,972.30</u>	<u>753,384.52</u>	<u>798,146.90</u>
<u>Maintenance</u>			
Supervision and Engineering	11,131.36	21,401.00	23,249.93
Maintenance of Standpipes/Reservoirs	461,455.31	105,171.23	35,875.76
Transmission Mains	1,082,052.51	874,461.44	1,294,150.93
Services	119,367.40	256,472.23	326,184.35
Meters	41,310.17	46,336.56	45,284.81
Hydrants	42,042.75	56,259.64	42,598.32
	<u>1,757,359.50</u>	<u>1,360,102.10</u>	<u>1,767,344.10</u>
	<u>2,692,331.80</u>	<u>2,113,486.62</u>	<u>2,565,491.00</u>
Customer Account Expenses			
Customer Accounting and Collection	304,003.55	306,358.31	331,434.80
Meter Reading	60,952.39	60,249.01	71,768.47
	<u>364,955.94</u>	<u>366,607.32</u>	<u>403,203.27</u>
Administrative and General Expenses			
Administrative and General Salaries	211,712.67	202,965.86	172,465.81
Office Supplies and Expense	48,094.30	38,090.92	24,487.97
Outside Services Employed	223,080.98	189,100.64	185,104.02
Property Insurance	109,036.06	78,189.82	73,364.90
Employee Benefits and Pensions	1,486,634.53	1,557,453.76	1,064,991.47
Regulatory Commission Expense	15,337.13	12,643.76	12,019.14
Miscellaneous Expense	27,418.64	26,151.84	27,257.54
	<u>2,121,314.31</u>	<u>2,104,596.60</u>	<u>1,559,690.85</u>
Total Operation and Maintenance Expenses			
Utility Taxes	2,326,402.98	2,310,740.44	2,309,514.71
Depreciation	2,816,132.86	2,776,243.71	2,738,808.47
Total Operating Expenses	<u>\$ 13,076,101.99</u>	<u>\$ 11,948,349.50</u>	<u>\$ 12,011,110.97</u>

**Water System
Comparative Income Statement**

	2016	2015	2014
Sales of Water			
Residential Water Sales	\$ 5,910,377.04	\$ 5,738,762.24	\$ 5,588,166.47
Commercial Water Sales	2,752,975.79	2,667,753.72	2,606,107.18
Industrial Water Sales	1,000,503.95	858,004.92	836,946.98
Total Unmetered Sales to General Public	12,717.86	\$ 9,456.86	\$ 10,992.42
Private Fire Protection	167,223.71	165,072.00	149,898.00
Public Fire Protection	1,351,071.27	1,325,246.09	1,293,946.74
Sales to Public Authorities	319,338.23	299,690.17	285,806.84
Sales for Resale	2,616,217.80	2,204,997.43	1,726,877.19
Sales to Irrigation Customers	-	4,752.11	4,233.34
Total Sales of Water	<u>14,130,425.65</u>	<u>13,273,735.54</u>	<u>12,502,975.16</u>
Other Operating Revenues			
Penalties	160,111.53	166,821.01	172,874.70
Other Water Revenue	66,443.29	67,542.89	69,041.06
Allocated Services	146,531.23	142,905.83	142,968.37
Miscellaneous Service Revenues	290,304.55	395,007.54	299,859.68
Total Other Operating Revenues	<u>663,390.60</u>	<u>772,277.27</u>	<u>684,743.81</u>
Total Operating Revenues	<u>14,793,816.25</u>	<u>14,046,012.81</u>	<u>13,187,718.97</u>
Operating Expenses			
Source of Supply	63,754.82	22,176.82	31,205.68
Power and Pumping Expense	1,213,735.78	1,126,432.70	1,281,489.59
Water Treatment Expense	1,477,473.50	1,128,065.29	1,121,707.40
Transmission and Distribution Expense	2,692,331.80	2,113,486.62	2,565,491.00
Customer Accounting and Collection Expense	364,955.94	366,607.32	403,203.27
Administrative and General Expense	2,121,314.31	2,104,596.60	1,559,690.85
Depreciation	2,816,132.86	2,776,243.71	2,738,808.47
Taxes	2,326,402.98	2,310,740.44	2,309,514.71
Total Operating Expenses	<u>13,076,101.99</u>	<u>11,948,349.50</u>	<u>12,011,110.97</u>
Utility Operating Income	<u>1,717,714.26</u>	<u>2,097,663.31</u>	<u>1,176,608.00</u>
Other Income			
Interest Earned	37,346.29	12,356.36	14,696.94
Miscellaneous Non-operating Income	3,603.41	2,745.34	9,348.45
Total Other Income	<u>40,949.70</u>	<u>15,101.70</u>	<u>24,045.39</u>
Operating and Other Income	<u>1,758,663.96</u>	<u>2,112,765.01</u>	<u>1,200,653.39</u>
Non-operating Expenses			
Interest on Long-term Debt	622,311.98	711,322.40	796,428.83
Amortization of Debt Expense	(55,053.93)	(65,976.78)	(76,438.58)
Total Non-operating Expenses	<u>567,258.05</u>	<u>645,345.62</u>	<u>719,990.25</u>
Net Income	<u><u>\$ 1,191,405.91</u></u>	<u><u>\$ 1,467,419.39</u></u>	<u><u>\$ 480,663.14</u></u>
Rate of Return on Average Investment (based on operating income & expense)	4.72%	4.93%	3.06%

**Water System
Utility Plant in Service
For the year ended December 31, 2016**

	Depr. Rate %	Cost of Plant 1/1/2016	2016 Additions	2016 Retirements	Adjustments Incr/(Decr)	Cost of Plant 12/31/2016
Source of Supply						
Structures and Improvements	2.00	\$ 1,136,362.88				\$ 1,136,362.88
Collect and Impound Reservoirs	1.67	268,710.96				268,710.96
Lake Intakes	1.67	1,567,121.31				1,567,121.31
Supply Mains	1.33	453,081.81				453,081.81
Pumping Plant						
Land	N/A	18,657.25				18,657.25
Structures and Improvements	2.00	3,775,410.45		3,166.58		3,772,243.87
Other Power Prod Equipment	4.00	813,800.43				813,800.43
Electric Pumping Equipment	3.33	3,762,979.51	4,615.76			3,767,595.27
Other Pumping Equipment	4.00	8,646.81				8,646.81
Water Treatment						
Land	N/A	527,047.60				527,047.60
Structures and Improvements	2.00	8,450,031.99				8,450,031.99
Water Treatment Equipment	3.24	1,315,428.19				1,315,428.19
Membrane Filtration Equipment	5.56	13,836,627.77				13,836,627.77
Transmission and Distribution						
Land	N/A	314,867.39				314,867.39
Reservoirs and Standpipes	1.86	6,195,422.40				6,195,422.40
Mains	0.93	50,568,737.94	2,570,953.10	30,196.97		53,109,494.07
Services	2.09	7,834,803.49	410,877.98	16,060.34		8,229,621.13
Meters	5.00	4,903,124.82	223,005.51	153,801.89		4,972,328.44
Hydrants	1.59	5,132,178.43	295,362.24	6,262.98		5,421,277.69
General Plant						
Furniture and Equipment	5.88	48,421.80	10,000.00	6,116.39		52,305.41
Computer Equipment	6.67-14.29	290,825.79	45,337.11	38,912.99		297,249.91
Transportation Equipment	12.86	1,365,667.39			(21,427.00)	1,344,240.39
Stores Equipment	5.88	1,497.75				1,497.75
Tools and Shop Equipment	5.88	306,128.78	7,950.00			314,078.78
Lab Equipment	5.88	105,986.93				105,986.93
Work (Power) Equipment	9.00	601,278.65	24,665.00	76,075.00		549,868.65
Communication Equipment	9.09	-				-
Telephone Equipment	20.00	41,180.70				41,180.70
SCADA System Equipment	10.00	692,506.89				692,506.89
Miscellaneous Equipment	5.88	204,166.25		799.97		203,366.28
Total		<u>\$ 114,540,702.36</u>	<u>\$ 3,592,766.70</u>	<u>\$ 331,393.11</u>	<u>(\$ 21,427.00)</u>	<u>\$ 117,780,648.95</u>

**Water System
Accumulated Depreciation
For the year ended December 31, 2016**

	Balance 1/1/2016	2016 Depreciation	Less Cost of Retirements	Add Cash Received	Adjustments Incr./Decr.	Balance 12/31/2016
Source of Supply						
Structures and Improvements	\$ 386,363.42	\$ 22,727.26				\$ 409,090.68
Collect and Impound Reservoirs	171,535.63	4,568.09				176,103.72
Lake Intakes	887,848.91	26,641.06				914,489.97
Supply Mains	108,830.27	8,155.47				116,985.74
Pumping Plant						
Land	-					-
Structures and Improvements	1,105,630.42	75,476.54	3,166.58			1,177,940.38
Other Power Prod Equipment	355,134.51	35,807.22				390,941.73
Electric Pumping Equipment	1,753,701.51	165,672.65				1,919,374.16
Other Pumping Equipment	7,619.17	380.46				7,999.63
Water Treatment						
Land	-					-
Structures and Improvements	3,458,079.11	169,000.64				3,627,079.75
Water Treatment Equipment	1,315,428.19	-				1,315,428.19
Membrane Filtration Equipment	10,106,263.21	830,197.67				10,936,460.88
Transmission and Distribution						
Land	-					-
Reservoirs and Standpipes	2,709,502.06	119,953.19				2,829,455.25
Mains	8,378,995.40	616,328.47	30,196.97			8,965,126.90
Services	3,586,808.27	167,822.57	16,060.34			3,738,570.50
Meters	1,744,232.08	271,574.97	153,801.89	15,730.34		1,877,735.50
Hydrants	1,524,547.15	116,326.55	6,262.98	8,920.12	3,633.98	1,647,164.82
General Plant						
Furniture and Equipment	36,952.65	2,921.08	6,116.39			33,757.34
Computer Equipment	156,121.38	35,984.04	38,912.99			153,192.43
Transportation Equipment	846,315.56	70,580.55			(19,284.30)	897,611.81
Stores Equipment	1,497.75					1,497.75
Tools and Shop Equipment	227,668.88	17,986.02				245,654.90
Lab Equipment	70,896.55	6,147.24				77,043.79
Work (Power) Equipment	330,696.09	28,861.31	76,075.00	8,280.00	3,606.69	295,369.09
Communications Equipment	(8,513.49)					(8,513.49)
Telephone Equipment	41,180.70					41,180.70
SCADA System Equipment	596,068.43	11,201.37				607,269.80
Miscellaneous Equipment	85,078.76	11,818.44	799.97			96,097.23
Total	<u>\$ 39,984,482.57</u>	<u>\$ 2,816,132.86</u>	<u>\$ 331,393.11</u>	<u>\$ 32,930.46</u>	<u>(\$ 12,043.63)</u>	<u>\$ 42,490,109.15</u>

Water System
Water System Revenue Refunding Bonds - Series 2008
Debt Service Schedule
December 31, 2016

Year	Interest Rate %	Principal	Interest		Total
		December 1	June 1	December 1	
2017	5.00%	2,350,000.00	176,875.00	176,875.00	2,703,750.00
2018	5.00%	4,725,000.00	118,125.00	118,125.00	4,961,250.00
Totals		<u>\$ 7,075,000.00</u>	<u>\$ 295,000.00</u>	<u>\$ 295,000.00</u>	<u>\$ 7,665,000.00</u>

**Water System
Advance from Municipality
Debt Repayment Schedule
December 31, 2016**

Year	Interest Rate %	<u>Principal</u>	<u>Interest</u>		Total
		April 1	April 1	October 1	
2017	5.760%	40,845.24	3,756.78	2,633.53	47,235.55
2018	5.880%	43,480.42	2,633.53	1,383.47	47,497.42
2019	6.000%	46,115.60	1,383.47	–	47,499.07
Totals		<u><u>\$130,441.26</u></u>	<u><u>\$ 7,773.78</u></u>	<u><u>\$ 4,017.00</u></u>	<u><u>\$142,232.04</u></u>

**Water System
Total Debt Repayment Schedule
December 31, 2016**

Year	Principal	Interest	Total
2017	2,390,845.24	360,140.31	2,750,985.55
2018	4,768,480.42	240,267.00	5,008,747.42
2019	46,115.60	1,383.47	47,499.07
Totals	<u>\$ 7,205,441.26</u>	<u>\$ 601,790.78</u>	<u>\$ 7,807,232.04</u>

**Water Distribution &
Sewer Collection Division**

4401 Green Bay Road
Kenosha WI 53144

Phone (262) 653-4306
Fax (262) 653-4303



“Providing and Protecting Kenosha’s Greatest Natural Resource”

May 2017

Mr. Edward St. Peter, General Manager
Kenosha Water Utility
4401 Green Bay Road
Kenosha, WI 53144

Subject: 2016 Annual Report for the Water Distribution and Sewer Collection Division

Dear Mr. St. Peter,

The 2016 Annual Report for the Water Distribution and Sewer Collection Division is hereby submitted. We completed 354 excavation projects last year, a decrease in fifteen when compared to 2015. In addition to excavation activities our Division cleaned 124.3 miles of sanitary sewer as part of our annual sewer flushing program.

Water Distribution System

The Distribution Division repaired 141 water main breaks in 2016, a 2% decrease from 2015. It should be noted that fifty-three main breaks, or 38% of the yearly total, occurred before April 1st. A related number of valves, sixty-one, were also repaired or replaced in 2016, a slight increase from 2015. Additionally, twelve fire hydrants were repaired or replaced as well as seventy-six water services (including thirty-six lead service replacements or abandonments).

Sanitary Sewer Collection System

Sewer projects in 2016 included the cleaning of over 124 miles of sewer main, an increase of 150% from 2015. While we made significant gains on the sewer flushing operations the sewer televising operations were scaled back to just over three miles of main. The focus of the televising efforts were the limits of any major projects in the City limits such as roadway resurfacing/reconstruction or sewer/water main relays. Direct work on the sanitary system remained fairly steady with forty-three lateral repairs, four sewer main repairs and eighteen manhole repairs.

Completing our work would be impossible without help from other KWU divisions. We’d like to thank the mechanics for keeping our equipment and vehicles in working order, Engineering Services for technical support and Business Services for communicating and coordinating with our customers. We would also like to thank the City of Kenosha Streets Division for supporting our operation by salting roads and clearing storm sewer inlets where main breaks occur. Finally, I’d like to acknowledge the outstanding Distribution Division employees. Their willingness to sacrifice their nights, weekends and holidays during inclement weather illustrates their dedication and willingness to provide an unparalleled level of customer service.

Thank you, Ed, and the Board of Water Commissioners for providing us with all the tools and technology necessary to complete our projects in a safe and efficient manner.

Sincerely,

A handwritten signature in black ink, appearing to read 'Curtis Czarnecki'.

Curtis Czarnecki, P.E.



www.kenosha.org

Water Distribution Pipe System - 2016

<u>Size</u>	<u>Material</u>	<u>Footage</u>
48"	Cast/Ductile Iron Pipe	370
36"	Cast/Ductile Iron Pipe	12,586
30"	Cast/Ductile Iron Pipe	13,280
24"	Cast/Ductile Iron Pipe	60,543
24"	Concrete Pipe	7,892
24"	Plastic Pipe	4,643
20"	Cast/Ductile Iron Pipe	8,327
18"	Cast/Ductile Iron Pipe	2,582
16"	Cast/Ductile Iron Pipe	173,309
16"	Plastic Pipe	34,764
14"	Cast/Ductile Iron Pipe	8,311
12"	Cast/Ductile Iron Pipe	225,839
12"	Plastic Pipe	54,960
10"	Cast/Ductile Iron Pipe	16,265
8"	Cast/Ductile Iron Pipe	365,462
8"	Plastic Pipe	208,594
6"	Cast/Ductile Iron Pipe	703,284
6"	Plastic Pipe	7,128
4"	Cast/Ductile Iron Pipe	30,188
3"	Copper Pipe	150
2"	Copper Pipe	2,517
2"	Plastic Pipe	759
1.5"	Copper Pipe	272
1"	Copper Pipe	70
Total Feet of Pipe		1,942,095
Total Miles of Pipe		367.82

Water Services Added to System - 2016

<u>Number</u>	<u>Size</u>	<u>Material</u>	<u>Average Unit Cost</u>	<u>Total Cost</u>
306	1"	Copper Connections	1,086.94	332,604.60
6	1.5"	Copper Connections	1,323.25	7,939.52
2	2"	Copper Connections	1,737.68	3,475.35
2	4"	PVC	2,103.36	4,206.71
4	6"	PVC	6,449.58	25,798.30
2	8"	PVC	5,818.45	11,636.90
9	8"	PVC	2,387.43	21,486.90
2	12"	PVC	3,076.95	6,153.90
<u>333</u>		Total		<u>\$ 413,302.18</u>

Fire Hydrants Added to System - 2016

<u>Number</u>	<u>Type</u>	<u>Average Unit Cost</u>	<u>Total Cost</u>
79	Steamer	\$ 3,717.54	\$ 293,685.95

2016 Water Main Installation Costs

Project	Size/ Type	Installer	Description	Footage	Total Costs	Cost per Foot
By Job Number						
Installed by Kenosha Water Utility						
516	8" & 12" PVC	City of Kenosha	Water Main Relay, 65th St - 51st Ave to 48th Ave	1,267.0	\$ 218,280.51	
518	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 55th Ave - 52nd St to 54th St	987.0	208,083.17	
522	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, Harrison Rd - Pershing Blvd to 67th St	528.0	100,810.11	
523	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 68th St - 43rd Ave to 67th St	733.0	135,369.63	
524	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 56th St - 7th Ave to 8th Ave	316.0	98,846.64	
528	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 10th Ave - 35th St to 37th St	890.0	187,975.85	
540	8" & 12" PVC	Minda LLC	Water Main Relay, 45th St - 39th Ave to 40th Ave	623.0	136,503.35	
542	8" PVC	Minda LLC	Water Main Relay, 39th Ave - North and South of 50th St	437.0	101,736.41	
544	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 32nd Ave - 14th Pl to 15th St	511.0	136,411.58	
566	8" PVC	Kenosha Water Utility	Water Main Relay, 46th St - Green Bay Rd to 900 ft East	908.0	101,192.19	
Subtotal				7,200.0	1,425,209.44	
Installed by Developers						
402	8" DI	St Catherine's CSM	65th Ave - 72nd St to 73rd St	408.0	30,292.44	
709	8" PVC	67th St Development	67th St - Green Bay Rd to 1,000 ft West	124.0	3,679.08	
432	12" PVC	First Industrial Park South	8100 60th St	519.0	28,834.56	
448	8" DI	Meadow Heights Estates	51st Ave - 39th St to 41st St	933.0	43,145.62	
459	8" PVC	Forest Meadows Subdivision	55th Ave - 65th St to 66th Pl	892.0	55,103.79	
462	8", 12" & 16" PVC	Strawberry Creek Subdivision		20,284.0	992,835.99	
no proj #	8" PVC	Indian Trail High School Addition		1,306.0	112,042.16	
Subtotal				24,466.0	1,265,933.64	
Grand total				31,666.0	\$ 2,691,143.08	
By Pipe Size						
402	8" DI	St Catherine's CSM	65th Ave - 72nd St to 73rd St	408.0	\$ 30,292.44	
448	8" DI	Meadow Heights Estates	51st Ave - 39th St to 41st St	933.0	43,145.62	
Subtotal				1,341.00	73,438.06	54.76
709	8" PVC	67th St Development	67th St - Green Bay Rd to 1,000 ft West	124.0	3,679.08	
459	8" PVC	Forest Meadows Subdivision	55th Ave - 65th St to 66th Pl	892.0	55,103.79	
462	8" PVC	Strawberry Creek Subdivision		10,875.0	520,979.28	
no proj #	8" PVC	Indian Trail High School Addition		1,306.0	112,042.16	
516	8" PVC	City of Kenosha	Water Main Relay, 65th St - 51st Ave to 48th Ave	1,185.0	187,911.87	
518	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 55th Ave - 52nd St to 54th St	987.0	208,083.17	
522	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, Harrison Rd - Pershing Blvd to 67th St	528.0	100,810.11	
523	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 68th St - 43rd Ave to 67th St	733.0	135,369.63	
524	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 56th St - 7th Ave to 8th Ave	316.0	98,846.64	
528	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 10th Ave - 35th St to 37th St	890.0	187,975.85	
540	8" PVC	Minda LLC	Water Main Relay, 45th St - 39th Ave to 40th Ave	58.0	23,301.17	
542	8" PVC	Minda LLC	Water Main Relay, 39th Ave - North and South of 50th St	437.0	101,736.41	
544	8" PVC	A.W. Oakes and Son, Inc.	Water Main Relay, 32nd Ave - 14th Pl to 15th St	511.0	136,411.58	
566	8" PVC	Kenosha Water Utility	Water Main Relay, 46th St - Green Bay Rd to 900 ft East	908.0	101,192.19	
Subtotal				19,750.00	1,973,442.93	99.92
432	12" PVC	First Industrial Park South	8100 60th St	519.0	28,834.56	
462	12" PVC	Strawberry Creek Subdivision		4,249.0	155,639.69	
516	12" PVC	City of Kenosha	Water Main Relay, 65th St - 51st Ave to 48th Ave	82.0	30,368.64	
540	12" PVC	Minda LLC	Water Main Relay, 45th St - 39th Ave to 40th Ave	565.0	113,202.18	
Subtotal				5,415.0	328,045.07	60.58
462	16" PVC	Strawberry Creek Subdivision		5,160.0	316,217.02	
Subtotal				5,160.0	316,217.02	61.28

**Distribution Division - Water
Operating & Maintenance Report - 2016**

Maintenance Completed

System	Maintenance Type	Quantity
Water Main Breaks	Circumferential	36
	Blow Out	70
	Joint Leaks	7
	Longitudinal	29
	Old Sleeve	2
	Other	9
Total Main Break Repairs		153
Valves	Reset/Replace Box (only)	15
	Replaced	35
	Repaired	10
	New Installation	-
	Removed/VBO	2
Total Valve Repairs		62
Water Services	Reset/Replace Box (only)	15
	Replaced (Lead Svcs: 14)	48
	Repaired	11
	Flow Test	1
	Shut at Main	-
Total Water Service Repairs		75
Hydrants	Replaced	6
	Repaired	6
	Relocated	-
	Abandoned	-
	New Installation	-
Total Hydrant Repairs		12
New Connections & Taps	1"	48
	1 1/2"	4
	2"	2
	4"	1
	6"	9
	8"	4
12"	1	
Total New Connections Installed		69

Meter Shop Request for Assistance: 134
Valves Operated: 952

Customer Complaints

(During Normal Work Hours)

Complaint	Quantity
Main Breaks	66
Hydrant Hit/Damaged	9
Hydrant Leaking	11
Service Repairs	12
Signs/Barricades Needed	7
Curb/Valve Box Repair	29
Water Taste/odor/color	15
Low Pressure	6
No Water	9
Service Turn-On	2
Service Turn Off	3
Temporary Road Patch	24
Utility Locates	-
Miscellaneous	5
Total	198

Customer Complaints

(After Normal Work Hours)

Complaint	Quantity
Main Breaks	91
Hydrant Hit/Damaged	9
Hydrant Leaking	6
Service Repairs	13
Signs/Barricades Needed	1
Curb box/Valve Box	6
Water Taste/odor/color	1
Low Pressure	4
No Water	18
Service Turn-On	12
Service Turn Off	28
Temporary Road Patch	1
Utility Locate	22
Miscellaneous	2
Total	214

Total Customer Complaints	412
----------------------------------	------------

Wastewater Treatment Plant

7834 3rd Avenue
Kenosha WI 53143

Phone (262) 653-4335
Fax (262) 653-4340



“Providing and Protecting Kenosha’s Greatest Natural Resource”

May 2017

Mr. Edward St. Peter, General Manager
Kenosha Water Utility
4401 Green Bay Road
Kenosha, WI 53144

Subject: 2016 Annual Report – Wastewater Treatment Division

Dear Mr. St. Peter,

We respectfully submit the 2016 Annual Report for the Kenosha Water Utility Wastewater Treatment Plant. This past year, the wastewater treatment plant treated 8.281 billion gallons of effluent. The average daily flow for the plant was 22.63 million gallons per day (MGD). The final effluent biological oxygen demand (BOD) and total suspended solids (TSS) were well within the permitted discharge limits.

The staff at the wastewater treatment plant works very hard throughout the entire year to operate, maintain, and improve the wastewater treatment plant and the collection system. In 2016, we continued to work on efficient operation of the energy optimization project equipment and processes. We continue to fine-tune and troubleshoot these intricate new processes. The lab staff was busy with additional testing requirements due to the new processes.

Staff and our engineering consultant began the process of upgrading the headworks by selecting the replacement equipment for the ½-inch bar screens. After extensive research, we selected perforated plates with 6 mm holes to improve the removal of rags, plastics, and wrappers. This ultimately will improve operations and maintenance throughout the plant. The headworks construction took place in the beginning of 2017.

Some of the other large projects in 2016 included: installation of a new right angle drive on one of the raw water pumps; change out of the lights in the yard at distribution; replacement of deteriorating chlorine piping. Additionally, the plant received a facelift with some new landscaping out front. The beautiful building is now visible!

We are very proud of the entire staff at the wastewater treatment plant. It is their attitude, dedication, and teamwork that make this place run smoothly. We would like to thank Ed St. Peter and the Board of Water Commissioners for their continued support and guidance. The Wastewater Treatment Plant and collection system have a lot of potential for improvement projects, which is why it is such an exciting place to work.

Respectfully Submitted,

Melissa Arnot
Director of Operations

Katrina Karow
Director of Wastewater Treatment



www.kenosha.org

Treatment Data - 5 Year Comparison

<u>YEAR</u>	<u>MGD</u>	<u>Influent mg/L</u>	<u>Primary Effluent mg/L</u>	<u>Primary Efficiency %</u>	<u>Final Effluent mg/L</u>	<u>Overall Efficiency %</u>
Suspended Solids						
2016	22.627	178	48	73	6.9	96
2015	21.930	180	51	72	7.9	96
2014	21.303	176	51	71	7.5	96
2013	20.452	160	50	69	6.4	96
2012	17.885	188	59	69	6.7	96
Five-Day BOD						
2016	22.627	177	114	36	10.9	94
2015	21.93	180	116	36	14.1	92
2014	21.303	175	110	37	12.9	93
2013	20.452	162	109	33	11.2	93
2012	17.885	190	127	33	8.5	96
Phosphorus						
2016	22.627	2.8	–	–	0.45	84
2015	21.93	2.91	–	–	0.49	83
2014	21.303	2.95	–	–	0.48	84
2013	20.452	2.61	–	–	0.49	81
2012	17.885	3.08	–	–	0.54	82

mg/L - milligrams per Liter

Summary

	2016	2015
Total wastewater pumped and treated	8,281,449,000	8,012,490,000
Total sludge to digesters - gallons	33,037,351	36,668,663
Total dry solids to digesters - pounds	11,275,931	10,986,137
Total dry volatile solids to digesters - pounds	8,672,440	8,359,717

Digester Data

Total gallons digested sludge removed	33,884,912	26,141,684
Percent dry solids	2.04	2.69
Total pounds dry solids removed	5,430,952	5,160,198
Percent volatile matter	54.4	53.6
Total dry volatile solids removed	2,954,438	2,765,866
Volatile solids destroyed, percent	65.9	66.9
Total gallons removed as supernatant	256,800	10,373,592
Percent supernatant solids	0.06	0.26
Total pounds supernatant solids removed	1,285	224,941
Percent supernatant volatile matter	66.7	54.2
Total pounds volatile solids, supernatant	857	121,918

Treatment Plant Data and Chemical Usage

	<u>2016</u>	<u>2015</u>
<u>Chemical Data</u>		
<u>Chlorine</u>		
Total pounds	109,718	97,556
Average pounds per day	301	267
Average residual, µg/L	< 100 µg/L	< 100 µg/L
<u>Sulfur Dioxide</u>		
Total pounds	103,797	90,871
Average pounds per day	284	249
<u>Ferric Chloride, Phosphorus</u>		
Total gallons	199,764	198,947
Average gallons per day	547	545
Average pounds of Fe per day	722	719
<u>Polymer</u>		
Tons	104	73
Pounds per pound of dry solids	0.038	0.028
<u>Sodium Hydroxide *</u>		
Total Pounds	169,283	-
Pounds per pound of lysed WAS	0.041	-
<u>Sulfuric Acid *</u>		
Total pounds	54,392	-
Pounds per CF through air scrubber	0.034	-

* Sodium Hydroxide and Sulfuric Acid added in 2016 for new biosolids processing

Aeration

Settleable Solids - mg/L	278	278
Mixed Liquor Suspended Solids - mg/L	3,007	3,016
Dissolved Oxygen - mg/L	2.1	2.2
BOD lbs. applied per day	20,480	19,869

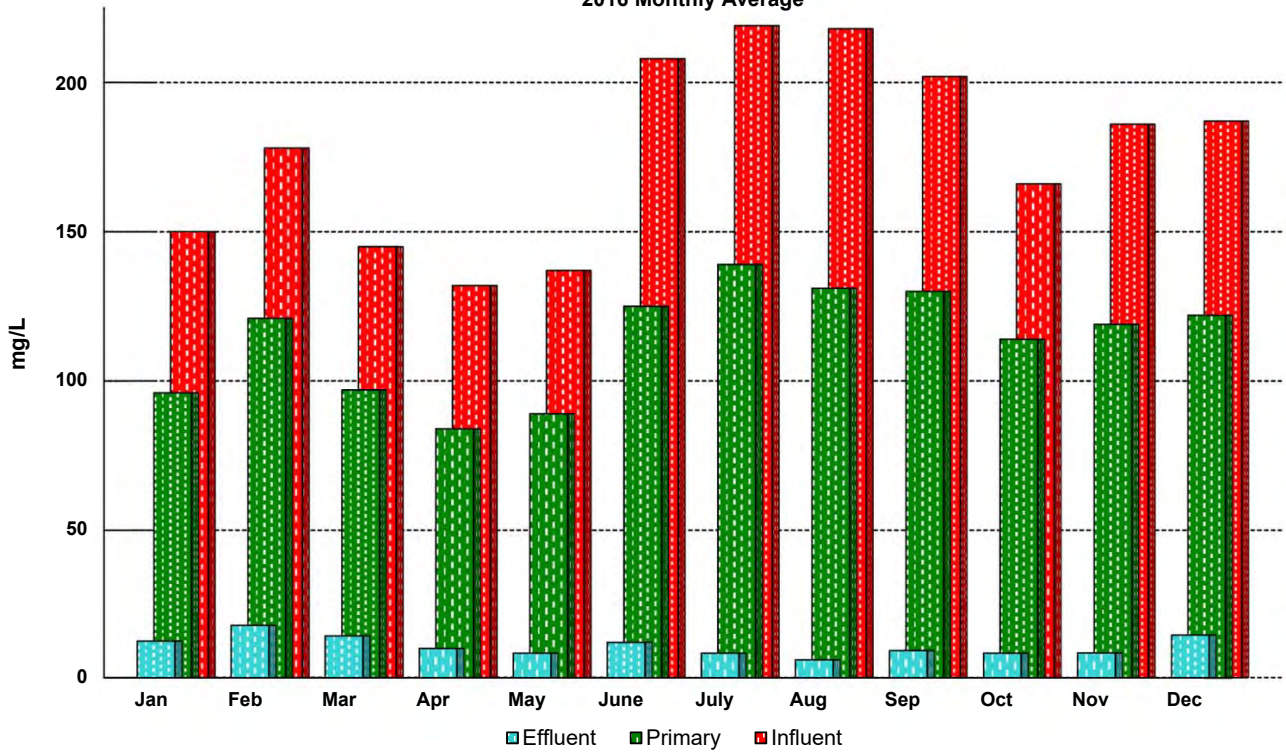
Thickener

Waste Activated Sludge to Thickener, gallons/day	149,581	133,697
Waste Activated Sludge - % solids	1.01	1.12
Waste Activated Sludge - lbs/day	12,514	12,427
Thickened Sludge - % solids	5.9	4.1
Thickened Sludge - % volatile	73.6	73.1
Thickener Effluent - Suspended Solids - mg/L	542	422
Thickened Sludge - lbs dry solids/day	13,071	11,373
Thickened Sludge - gallons/day	26,925	33,424

mg/L - milligrams per Liter
 µg/L - micrograms per Liter
 WAS - Waste Activated Sludge

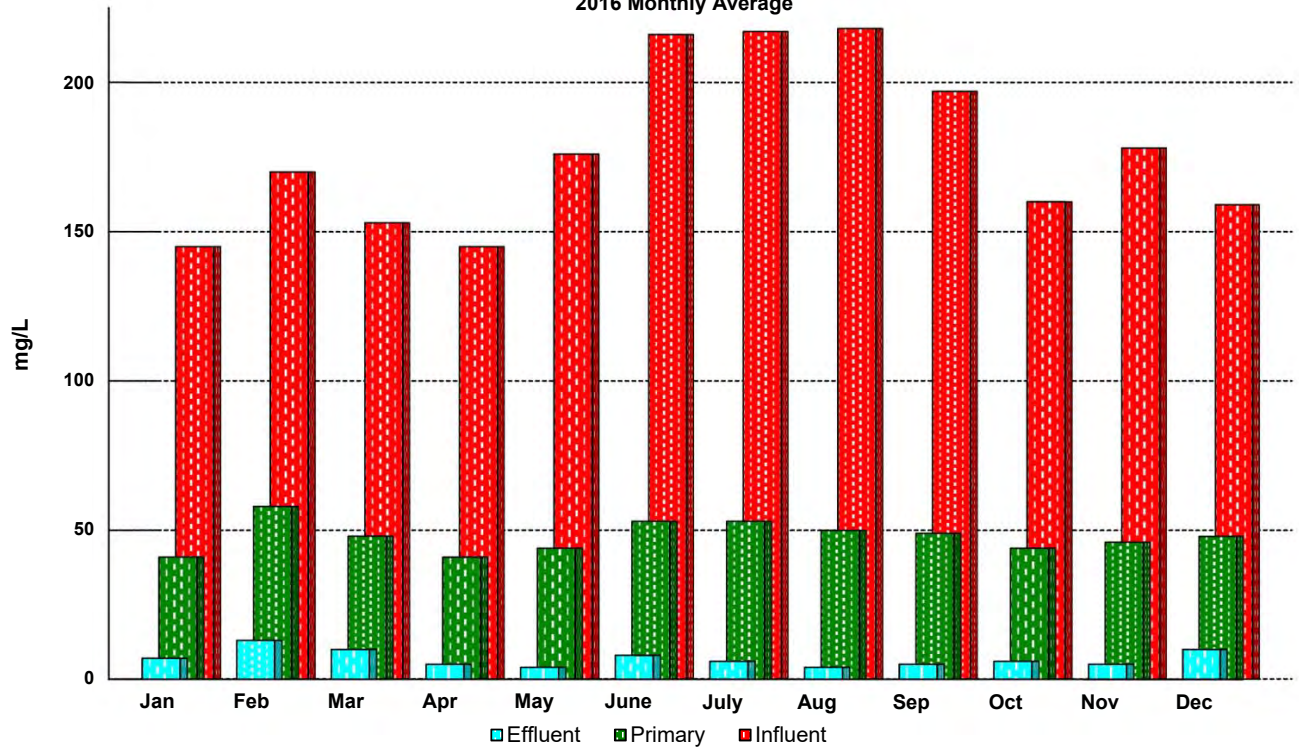
BOD REMOVAL

2016 Monthly Average



TSS REMOVAL

2016 Monthly Average



Wastewater Flow

Annual precipitation and average daily flow for the past five years

	<u>Precipitation, Inches</u>	<u>Average MGD</u>
2016	33.70	22.630
2015	35.83	21.930
2014	33.20	21.303
2013	39.50	20.452
2012	25.70	17.885

Supernatant

Gallons per day	128,400
Percent Solids	0.06
Pounds supernatant solids per day	643
Percent volatile	66.7

Sludge to Centrifuge

Gallons per day	97,091
Percent solids	2.04
Pounds per day	15,561
Percent volatile	54.4

Sludge off Centrifuge

Total tons	6,284
Percent solids	27.0
Centrate TSS, mg/l	843.0
Centrate pH	95.3

Solids Disposal

Tons of sludge to landfill, dry tons	2,502
Tons of grit to landfill	1,133

Annual Energy Usage

		<u>2016</u>	<u>2015</u>
Electricity	Total On and Off Peak kWh	6,546,865	7,479,235
	Total Demand kW	14,523	14,174
	Total cost	\$ 554,663	\$ 597,726
Natural Gas	therms	200,153	86,329
	Total cost	\$ 93,250	\$ 48,910
Methane gas produced by digesters	therms	420,917	356,855
Value of methane gas	Total	\$ 196,103	\$ 202,179

**Sewerage System
Plant Operating Data - 2016**

Month	Precip. Inches	Total Flow Raw Sewage MG	Average Daily Flow MGD	Maximum Daily Flow MGD	Day of Month	Power Cost
January	0.77	776.324	25.043	36.341	10	\$ 53,982
February	0.96	685.844	23.650	34.695	3	42,200
March	3.85	881.340	28.430	42.625	24	48,494
April	3.25	898.855	29.962	51.131	6	45,676
May	2.97	870.189	28.071	42.343	10	47,311
June	2.55	596.597	19.887	26.240	15	51,925
July	2.34	548.626	17.698	21.598	24	50,205
August	4.98	564.652	18.215	28.808	25	45,187
September	3.89	544.852	18.162	24.628	8	44,027
October	4.62	660.271	21.299	42.332	26	38,450
November	1.95	615.720	20.524	33.825	3	44,874
December	1.57	638.179	20.586	42.966	26	42,331
Total	33.70	8,281.449				\$ 554,662
Average	2.81	690.121	22.627	35.628		\$ 46,222

Monthly Averages

Month	BOD		TSS (mg/L)		Phosphorus (mg/L)		Total lbs. Dry Solids from Digester
	Influent	Effluent	Influent	Effluent	Influent	Effluent	
January	150	12.5	145	7.0	1.87	0.34	391,616
February	178	17.9	170	13.0	2.82	0.43	200,018
March	145	14.3	153	10.0	2.03	0.35	393,253
April	132	10.0	145	5.0	2.21	0.31	505,997
May	137	8.4	176	4.0	2.40	0.31	461,162
June	208	12.1	216	8.0	3.59	0.51	521,758
July	219	8.4	217	6.0	3.30	0.51	419,303
August	218	6.1	218	4.0	3.41	0.57	480,876
September	202	9.3	197	5.0	3.69	0.62	479,881
October	166	8.4	160	6.0	2.91	0.50	356,218
November	186	8.5	178	5.0	2.73	0.44	430,967
December	187	14.6	159	10.0	2.59	0.54	376,583
Average	177	10.9	178	6.9	2.80	0.45	418,136

2016 Sewer Main Installation Costs

Project	Size/ Type	Installer	Description	Footage	Total Costs	Cost per Foot
Installed by Kenosha Water Utility						
<u>By Job Number</u>						
616	15" PVC	City of Kenosha	Sewer Main Relay, 65th St - 51st Ave to 48th Ave	903.0	\$ 222,105.84	
				Subtotal	222,105.84	
Installed by Developers						
709	10" PVC	67th St Development	67th St - Green Bay Rd to 1,000 ft West	355.0	25,611.17	
748	8" PVC	Meadow Heights Estates	51st Ave - 39th St to 41st St	886.0	81,736.12	
759	8" PVC	Forest Meadows Subdivision	55th Ave - 65th St to 66th Pl	893.0	72,594.99	
762	8", 10", 12", 15", 16", 18" & 24" PVC	Strawberry Creek Subdivision		<u>16,754.0</u>	<u>1,104,515.25</u>	
				Subtotal	1,284,457.53	
				Grand Total	\$ 1,506,563.37	
<u>By Pipe Size</u>						
748	8" PVC	Meadow Heights Estates	51st Ave - 39th St to 41st St	886.0	81,736.12	
759	8" PVC	Forest Meadows Subdivision	55th Ave - 65th St to 66th Pl	893.0	72,594.99	
762	8" PVC	Strawberry Creek Subdivision		<u>12,075.0</u>	<u>694,385.10</u>	
				Subtotal	848,716.21	61.26
709	10" PVC	67th St Development	67th St - Green Bay Rd to 1,000 ft West	355.0	25,611.17	
762	10" PVC	Strawberry Creek Subdivision		<u>998.0</u>	<u>83,583.96</u>	
				Subtotal	109,195.13	80.71
762	12" PVC	Strawberry Creek Subdivision		<u>1,641.0</u>	<u>141,025.21</u>	85.94
616	15" PVC	City of Kenosha	Sewer Main Relay, 65th St - 51st Ave to 48th Ave	903.0	\$ 222,105.84	
762	15" PVC	Strawberry Creek Subdivision		<u>763.0</u>	<u>64,841.53</u>	
				Subtotal	286,947.37	172.24
762	16" PVC	Strawberry Creek Subdivision		<u>33.0</u>	<u>2,992.41</u>	90.68
762	18" PVC	Strawberry Creek Subdivision		<u>1,153.0</u>	<u>107,074.68</u>	92.87
762	24" PVC	Strawberry Creek Subdivision		<u>91.0</u>	<u>10,612.36</u>	116.62
				Grand Total	\$ 1,506,563.37	

**Distribution Division - Sanitary Sewer
Operating & Maintenance Report - 2016**

Maintenance Completed

System	Maintenance Type	Quantity
Sewer Main	Collapse	1
	Broken Pipe	3
	Joint Leaks	-
	Remove Flusher Nozzle	-
	Other	-
Total Sewer Main Repairs		4
Sewer Lateral	Collapse	25
	Broken Pipe	2
	Joint Leaks	5
	Broken at Wye	5
	Remove Parkway Trap	4
	Contractor Damage	-
	Other	2
Total Sewer Lateral Repairs		43
Manholes	Repaired	18
	Replace	-
	Remove/Abandon	-
Total Manhole Repairs		18

Total Sanitary Sewer Repairs	65
-------------------------------------	-----------

Customer Complaints

(During Normal Work Hours)

Complaint	Quantity
Sewer back-up	100
Sink Hole	2
Sewer Odor	8
Storm Sewer Back-up	2
Televise Lateral	5
Manhole Problem	3
Utility Locate	-
Total	120

Customer Complaints

(After Normal Work Hours)

Complaint	Quantity
Sewer back-up	44
Sink Hole	-
Sewer Odor	3
Storm Sewer Back-up	1
Televise Lateral	1
Manhole Problem	1
Utility Locate	22
Total	72

Total Complaints	192
-------------------------	------------

Summary of Sewer Cleaning and Televising (feet)

Year	Sewer Cleaning	PM List	Televise	Grand Total
2016	567,460	72,996	16,057	656,513
2015	224,107	38,995	51,360	314,462
2014	184,187	56,549	32,991	273,727
2013	164,028	38,459	18,071	220,558
2012	265,050	27,459	20,064	312,573
2011	325,955	28,965	19,678	374,598

Sewage Collection Pipe System - 2016

<u>Size</u>	<u>Material</u>	<u>Footage</u>
99"	Concrete	3,318
96"	Concrete	75
84"	Concrete	9,774
78"	Concrete	4,899
72"	Concrete	4,242
66"	Concrete, Steel	3,151
60"	Concrete, Steel	24,556
54"	Concrete, Steel	3,465
48"	Concrete, Steel, Brick	13,309
42"	Concrete, Steel, Brick	20,527
36"	Concrete, Clay, Steel	39,054
33"	Concrete, Clay	699
30"	Concrete, Clay, Steel	48,329
27"	Concrete, Clay, Steel	9,567
24"	Clay, Concrete, Plastic, Steel	97,217
22"	Clay, Plastic, Steel	5,708
21"	Clay, Plastic	42,065
20"	Clay, Plastic, Steel	19,068
18"	Clay, Plastic, Steel	122,722
16"	Clay, Plastic	943
15"	Clay, Plastic, Steel	161,889
14"	Clay, Plastic	1,156
12"	Clay, Plastic, Steel	264,934
10"	Clay, Plastic, Steel	153,763
8"	Clay, Plastic, Steel	731,348
6"	Clay, Plastic	8,241
Total Feet of Pipe		1,794,019
Total Miles of Pipe		339.78

**Sewerage System
Income Statement – 2016**

Sewerage Service Revenues

Residential Customers	\$ 4,393,738.09
Commercial Customers	2,245,706.03
Industrial Customers	1,261,564.00
Public Customers	217,807.39
Waste haulers	326,725.49
Wholesale Customers	2,454,371.99
Industrial Monitoring	106,414.35

Total Sewerage Service Revenues 11,006,327.34

Other Operating Revenues

Engineering Services	1,385,535.89
Other Income	89,651.87
Penalties	125,816.70

Total Other Operating Revenues 1,601,004.46

Total Operating Revenues 12,607,331.80

Operating Expenses

Wastewater Treatment Operation and Maintenance	2,737,285.44
Collection System Operation and Maintenance	1,017,964.94
Laboratory Operations	303,614.92
Industrial Waste Monitoring	58,994.06
Engineering Services	1,350,840.57
Customer Accounting and Collection Expense	339,697.67
Administrative and General Expense	2,380,642.32
Depreciation	2,128,002.52
Taxes	52,374.02

Total Operating Expenses 10,369,416.46

Utility Operating Income 2,237,915.34

Other Income

Interest Income	214,171.88
Miscellaneous Income	30,214.42

Total Other Income 244,386.30

Non-operating Expenses

Interest on Long-term Debt	21,824.59
----------------------------	-----------

Net Income before Capital Contributions 2,460,477.05

Capital Contributions 2,540,907.20

Net Income \$ 5,001,384.25

**Sewerage System
Statement of Net Position
December 31, 2016**

Assets		
Utility Plant		
Utility Plant in Service	\$ 136,395,766.03	
Work in Progress - Sewer Plant	12,282,208.74	
Work in Progress - Sewerage System	352,189.97	
Accumulated Depreciation	<u>(65,087,272.66)</u>	
Net Plant in Service		83,942,892.08
Other Property		
Other Utility Plant & Equipment for Future Use	1,071,992.38	
Accumulated Depreciation	<u>(385.68)</u>	
Net Other Property		<u>1,071,606.70</u>
Total Net Utility Plant		85,014,498.78
Current Assets		
Cash and Cash Equivalents	6,302,403.76	
Investments	8,995,000.00	
Restricted cash equivalents	44,205.35	
Restricted cash - Storm Water Utility Collections	299,073.87	
Restricted Investments	2,786,000.00	
Customer Accounts Receivable	1,171,056.72	
Receivable from Municipality	624,299.38	
Unbilled Revenues	1,046,337.55	
Other Accounts Receivable	572,876.78	
Materials and Supplies	48,400.91	
Accrued Interest Receivable	82,883.76	
Other Current Assets	<u>3,168.13</u>	
Total Current and Accrued Assets		21,975,706.21
Noncurrent Assets		
Advance to Water Unit		5,000,000.00
Other Assets		
Assessments Receivable		155,589.68
Deferred Charges		<u>2,476,901.33</u>
Total Other Assets		2,632,491.01
Total Assets		<u>\$ 114,622,696.00</u>
Deferred Outflow of Resources		
Deferred Pension Resources		<u>\$ 2,162,578.89</u>
Liabilities		
Current Liabilities		
Current Portion of Long Term Obligations	\$ 95,688.28	
Accounts Payable	618,029.72	
Accrued Interest Payable	2,119.72	
Current Portion of Advance from Municipality	41,537.26	
Current Portion of Accrued Compensated Absences	43,069.42	
Payable to Municipality	636,961.53	
Due to City of Kenosha - Storm Water Collections	299,073.87	
Deferred Credits	<u>388,886.88</u>	
Total Current and Accrued Liabilities		2,125,366.68
Non-current Liabilities		
Long-term Debt		
Advances from Municipality	91,113.98	
Clean Water Fund Loans	<u>305,646.43</u>	
Total Long-term Debt		396,760.41
Accrued Compensated Absences		193,716.52
Worker's Compensation Accrued Liability		144,179.00
Other Postemployment Benefits		733,626.00
Pension Liability - Wisconsin Retirement System		<u>415,605.66</u>
Total Non-current Liabilities		1,883,887.59
Total Liabilities		<u>\$ 4,009,254.27</u>
Deferred Inflows of Resources		
Deferred Pension Resources		<u>\$ 836,920.84</u>
Net Position		
Invested in Capital Assets, net of related debt	84,613,164.07	
Restricted for Debt Service	2,828,085.63	
Unrestricted	<u>24,497,850.08</u>	
Total Net Position		<u>\$ 111,939,099.78</u>

**Sewerage System
Comparative Operating and Maintenance Expenses**

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Operating Expenses			
Supervision and Labor	\$ 435,363.37	\$ 410,829.25	\$ 394,733.68
Power for Pumping and Aeration	654,878.37	655,438.80	622,675.12
Disinfection Chemicals	56,230.00	57,087.00	56,244.00
Sludge Conditioning Chemicals	457,762.78	391,996.55	467,056.69
Other Chemicals for Sewage Treatment	37,044.74	13,397.09	5,663.59
Laboratory Operations	303,614.92	282,134.42	274,756.41
Industrial Waste Monitoring	58,994.06	65,227.55	58,823.14
Landfill Expense	309,612.28	434,498.15	439,716.85
Transportation Expense	82,050.25	100,403.82	88,615.42
	<u>2,395,550.77</u>	<u>2,411,012.63</u>	<u>2,408,284.90</u>
Maintenance Expenses			
Collection System Operation and Maintenance	1,017,964.94	1,320,372.17	1,395,082.62
Wastewater Treatment Maintenance	704,343.65	1,279,935.35	849,299.39
	<u>1,722,308.59</u>	<u>2,600,307.52</u>	<u>2,244,382.01</u>
Customer Account Expenses			
Customer Accounting and Collection	278,745.32	280,161.69	308,040.81
Meter Reading Expense	60,952.35	60,248.96	71,768.42
	<u>339,697.67</u>	<u>340,410.65</u>	<u>379,809.23</u>
Administrative and General Expenses			
Administrative and General Salaries	299,204.91	272,703.31	219,998.37
Engineering Services	1,350,840.57	1,392,828.51	1,430,656.06
Office Supplies and Expense	51,538.59	38,628.69	42,367.05
Outside Services Employed	313,101.49	284,518.43	294,209.84
Insurance Expense	167,085.43	142,014.39	130,719.33
Employee Benefits and Pensions	1,195,049.50	1,035,372.01	977,797.82
Meter Operations Expense	348,412.40	322,955.95	325,644.72
Loss on sale of equipment	-	-	211,185.00
Depreciation	2,128,002.52	2,200,466.96	2,126,883.86
Utility Taxes	52,374.02	52,630.56	52,980.29
Miscellaneous Expense	6,250.00	6,200.00	6,100.00
	<u>5,911,859.43</u>	<u>5,748,318.81</u>	<u>5,818,542.34</u>
Total Operating Expenses	<u>\$ 10,369,416.46</u>	<u>\$ 11,100,049.61</u>	<u>\$ 10,851,018.48</u>

**Sewerage System
Comparative Income Statement**

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Sewerage Service Revenue			
Residential Customers	\$ 4,393,738.09	\$ 4,365,421.60	\$ 4,298,136.36
Commercial Customers	2,245,706.03	2,241,532.46	2,177,288.49
Industrial Customers	1,261,564.00	1,034,706.26	1,001,044.04
Public Customers	217,807.39	206,191.13	205,673.00
Waste haulers	326,725.49	263,868.92	278,933.49
Wholesale Customers	2,454,371.99	2,400,449.92	2,423,563.54
Industrial Monitoring	106,414.35	100,070.92	82,155.55
Total Sewerage Service Revenues	<u>11,006,327.34</u>	<u>10,612,241.21</u>	<u>10,466,794.47</u>
Other Operating Revenues			
Engineering Services	1,385,535.89	1,427,360.84	1,471,849.43
Other Income	89,651.87	86,134.73	86,606.12
Penalties	125,816.70	130,462.93	138,870.97
	<u>1,601,004.46</u>	<u>1,643,958.50</u>	<u>1,697,326.52</u>
Total Operating Revenues	<u>12,607,331.80</u>	<u>12,256,199.71</u>	<u>12,164,120.99</u>
Operating Expenses			
Wastewater Treatment Operation and Maintenance	2,737,285.44	3,343,586.01	2,924,004.74
Collection System Operation and Maintenance	1,017,964.94	1,320,372.17	1,395,082.62
Laboratory Operations	303,614.92	282,134.42	274,756.41
Industrial Waste Monitoring	58,994.06	65,227.55	58,823.14
Engineering Services	1,350,840.57	1,392,828.51	1,430,656.06
Customer Accounting/Meter Reading Expense	339,697.67	340,410.65	379,809.23
Administrative and General Expense	2,380,642.32	2,102,392.78	1,996,837.13
Loss on Sale of Equipment	-	-	211,185.00
Depreciation	2,128,002.52	2,200,466.96	2,126,883.86
Taxes	52,374.02	52,630.56	52,980.29
Total Operating Expenses	<u>10,369,416.46</u>	<u>11,100,049.61</u>	<u>10,851,018.48</u>
Net Operating Income	<u>2,237,915.34</u>	<u>1,156,150.10</u>	<u>1,313,102.51</u>
Non-operating Revenue			
Interest Income	214,171.88	188,016.34	186,905.77
Performance Bond Recovery	-	-	4,444,574.00
Miscellaneous Income	30,214.42	29,128.71	5,248.64
Total Non-operating Revenue	<u>244,386.30</u>	<u>217,145.05</u>	<u>4,636,728.41</u>
Operating Income and Other Revenue	<u>2,482,301.64</u>	<u>1,373,295.15</u>	<u>5,949,830.92</u>
Non-operating Expenses			
Interest on Long-term Debt	21,824.59	26,612.92	31,083.31
Total Non-operating Expenses	<u>21,824.59</u>	<u>26,612.92</u>	<u>31,083.31</u>
Net Income	<u><u>\$ 2,460,477.05</u></u>	<u><u>\$ 1,346,682.23</u></u>	<u><u>\$ 5,918,747.61</u></u>
Rate of Return on Average Investment (based on WWTP net operating income)	7.50%	3.57%	3.96%
Rate of Return on Average Investment (after debt service payment)	7.43%	3.49%	3.86%

**Sewerage System
Utility Plant in Service
For the year ended December 31, 2016**

	Depr. Rate %	Cost of Plant 1/1/2016	2016 Additions	2016 Retirements	Adjustments Incr/(Decr)	Cost of Plant 12/31/2016
Collection System						
Land	N/A	\$ 125,244.31				\$ 125,244.31
Structures and Improvements	2.94	-				-
Service Connections	2.00	1,904,640.65				1,904,640.65
Collecting Mains	1.00	46,534,261.68	1,387,932.14			47,922,193.82
Interceptor Mains	1.00	27,142,083.25	118,631.23			27,260,714.48
Force Mains	1.00	1,336,740.49				1,336,740.49
Collection Equipment	4.00	1,352,802.61				1,352,802.61
Collection Pumping System						
Land	N/A	129,783.09				129,783.09
Structures and Improvements	2.50	5,930,997.79				5,930,997.79
Receiving Wells	2.50	5,523,470.40				5,523,470.40
Electric Pumping Equipment	5.33	8,880,201.95	12,221.00	6,853.52		8,885,569.43
Other Power Pumping Equip.	4.00	376,363.38				376,363.38
Miscellaneous Pumping Equip.	4.00	31,000.00				31,000.00
Treatment and Disposal						
Land	N/A	331,080.05				331,080.05
Structures and Improvements	2.50	8,230,064.69	33,854.74	32,956.00		8,230,963.43
Preliminary Equipment	3.80	523,370.16				523,370.16
Primary Treatment Equipment	2.97	4,164,657.81				4,164,657.81
Secondary Treatment Equip.	3.53	6,600,921.13				6,600,921.13
Advanced Treatment Equip.	2.86	223,231.28				223,231.28
Chlorination Equipment	4.41	1,243,141.30				1,243,141.30
Sludge Treatment & Disposal	4.17	6,027,613.08		57,220.00		5,970,393.08
Flow Metering and Monitoring	4.44	226,592.87				226,592.87
Outfall Sewer	2.31	1,179,759.13				1,179,759.13
Engineering Equipment						
Furniture and Equipment	5.88	41,021.15	8,810.00			49,831.15
Computer Equipment	6.67-14.29	83,425.63	13,995.00	5,540.60		91,880.03
Transportation Equipment	14.28	381,230.45		27,316.50		353,913.95
Engineering Equipment	5.88	26,245.77	2,836.99	666.11		28,416.65
Communication Equipment	9.09	(1,610.32)				(1,610.32)
Telephone Equipment	20.00	6,355.76				6,355.76
General Plant & Equipment						
Land	N/A	686,629.54				686,629.54
Structures and Improvements	2.50	2,116,466.20	33,472.27			2,149,938.47
Furniture and Equipment	5.88	102,167.49		3,368.00		98,799.49
Computer Equipment	6.67-14.29	77,380.54	18,268.76	10,894.78		84,754.52
Transportation Equipment	12.86	1,871,208.36	147,625.50	45,380.50	21,427.00	1,994,880.36
Work (Power) Equipment	9.00	364,068.09	97,345.00	16,525.30		444,887.79
Tools and Shop Equipment	5.88	253,750.60	31,086.00	1,600.00		283,236.60
Lab Equipment	5.88	175,169.28	2,771.86	1,993.67		175,947.47
Communication Equipment	9.09	9,526.00				9,526.00
SCADA System Equipment	9.20	218,978.95				218,978.95
Telephone Equipment	20.00	9,755.97				9,755.97
Miscellaneous Equipment	5.88	233,215.75				233,215.75
Total		\$ 134,673,006.31	\$ 1,908,850.49	\$ 210,314.98	\$ 21,427.00	\$ 136,392,968.82

**Sewerage System
Accumulated Depreciation
For the year ended December 31, 2016**

	Balance 1/1/2016	2016 Depreciation	Less Cost of Retirements	Add Cash Received	Adjustments Incr./Decr.	Balance 12/31/2016
Collection System						
Land	-					-
Structures and Improvements	-					-
Service Connections	\$ 830,523.98	38,092.81				\$ 868,616.79
Collecting Mains	12,202,558.11	478,488.92				12,681,047.03
Interceptor Mains	5,764,677.84	273,460.13				6,038,137.97
Force Mains	208,308.85	13,367.40				221,676.25
Collection Equipment	771,773.64	67,640.13				839,413.77
Collection System Pumping						
Land	-					-
Structures and Improvements	3,824,627.92	118,619.96				3,943,247.88
Receiving Wells	2,886,930.79	183,931.56				3,070,862.35
Electric Pumping Equipment	8,880,201.95	8,719.00	6,853.52	3,502.00		8,885,569.43
Other Power Pumping Equip.	160,061.31	18,818.17				178,879.48
Miscellaneous Pumping Equip.	11,874.97	1,550.00				13,424.97
Treatment and Disposal						
Land	-					-
Structures and Improvements	6,511,088.41	164,610.28	32,956.00			6,642,742.69
Preliminary Equipment	174,278.94	20,934.81				195,213.75
Primary Treatment Equipment	3,497,035.24	138,683.11				3,635,718.35
Secondary Treatment Equip.	6,600,921.13					6,600,921.13
Advanced Treatment Equip.	82,228.87	8,929.25				91,158.12
Chlorination Equipment	1,243,141.30					1,243,141.30
Sludge Treatment & Disposal	5,489,145.13	299,950.15	57,220.00			5,731,875.28
Flow Metering and Monitoring	158,959.23	15,113.74				174,072.97
Outfall Sewer	852,628.66	29,493.98				882,122.64
Engineering Equipment						
Furniture and Equipment	34,647.58	2,753.63				37,401.21
Computer Equipment	15,466.25	13,391.68	5,540.60			23,317.33
Transportation Equipment	273,358.13	12,969.55	27,316.50	2,055.00	676.65	261,742.83
Engineering Equipment	14,764.10	1,681.98	666.11			15,779.97
Communication Equipment	(1,610.32)					(1,610.32)
Telephone Equipment	1,271.15	1,271.15				2,542.30
Miscellaneous Equipment	(253.22)					(253.22)
General Plant & Equipment						
Land	-					-
Structures and Improvements	581,363.77	42,664.04				624,027.81
Furniture and Equipment	58,801.66	5,828.04	3,368.00			61,261.70
Computer Equipment	46,971.47	10,795.17	10,894.78			46,871.86
Transportation Equipment	1,395,883.00	79,898.62	45,380.50	7,720.00	16,102.35	1,454,223.47
Work (Power) Equipment	278,531.03	15,951.48	16,525.30	6,150.00	(5,956.47)	278,150.74
Tools and Shop Equipment	167,113.79	15,572.62	1,600.00			181,086.41
Lab Equipment	60,535.67	10,182.39	1,993.67			68,724.39
Communication Equipment	8,559.80	966.20				9,526.00
SCADA System Equipment	29,064.79	20,146.06				49,210.85
Telephone Equipment	9,755.97					9,755.97
Other Equipment	14,144.70	13,526.51				27,671.21
Total	\$ 63,139,335.59	\$ 2,128,002.52	\$ 210,314.98	\$ 19,427.00	\$ 10,822.53	\$ 65,087,272.66

**Clean Water Fund Project #4003-07
Loan Payment Schedule
Equalization Basin Modification
December 31, 2016**

<u>Year</u>	<u>Principal</u>	<u>Interest</u>		<u>Total</u>
	<u>May 1</u>	<u>May 1</u>	<u>November 1</u>	
2017	95,688.28	6,359.15	4,842.97	106,890.40
2018	98,720.64	4,842.97	3,278.74	106,842.35
2019	101,849.10	3,278.74	1,664.94	106,792.78
2020	105,076.69	1,664.94	–	106,741.63
	<u>\$ 401,334.71</u>	<u>\$ 16,145.80</u>	<u>\$ 9,786.65</u>	<u>\$ 427,267.16</u>

Interest rate is 3.169%

**Sewerage System
Advance from Municipality
Debt Repayment Schedule
December 31, 2016**

<u>Year</u>	<u>Interest Rate %</u>	<u>Principal April 1</u>	<u>Interest</u>		<u>Total</u>
			<u>April 1</u>	<u>October 1</u>	
2017	5.760%	41,537.26	3,820.42	2,678.15	48,035.83
2018	5.880%	44,217.08	2,678.15	1,406.91	48,302.14
2019	6.000%	46,896.90	1,406.91	-	48,303.81
Totals		<u>\$132,651.24</u>	<u>\$ 7,905.48</u>	<u>\$ 4,085.06</u>	<u>\$144,641.78</u>

**Sewerage System
Total Debt Repayment Schedule
December 31, 2016**

<u>Year</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2017	137,225.54	17,700.69	154,926.23
2018	142,937.72	12,206.77	155,144.49
2019	148,746.00	6,350.59	155,096.59
2020	105,076.69	1,664.94	106,741.63
Totals	<u>\$ 533,985.95</u>	<u>\$ 37,922.99</u>	<u>\$ 571,908.94</u>

Wastewater Treatment Plant

7834 3rd Avenue
Kenosha WI 53143

Phone (262) 653-4335
Fax (262) 653-4340



"Providing and Protecting Kenosha's Greatest Natural Resource"

May 2017

Mr. Edward St. Peter
Kenosha Water Utility
4401 Green Bay Road
Kenosha WI 53144

Subject: 2016 Industrial Pretreatment Program Annual Report

Dear Mr. St. Peter,

The Industrial Pretreatment Program is a requirement of the Clean Water Act and is regulated by the Wisconsin Department of Natural Resources (WDNR) through our wastewater treatment plant discharge permit. The WDNR designates the Kenosha Water Utility as the Control Authority to carry out the required elements of the program. The program regulates and monitors local industries, waste haulers, and adjoining communities discharging to Kenosha's wastewater collection system. The program is designed 1) to prevent the discharge of pollutants to the wastewater treatment plant (WWTP) which could interfere with operations or disposal of biosolids; 2) to prevent the introduction of pollutants to the WWTP that may pass through to the lake; and 3) to protect employee health and safety.

Significant dischargers are monitored at the regulated process and/or where their wastewaters enter the Kenosha sanitary sewer collection system. Haulers are monitored at the wastewater treatment plant. The adjoining communities are monitored weekly for conventional parameters being discharged to the collection system. We receive wastewater from the Villages of Bristol, Pleasant Prairie and Somers.

The WDNR conducted an on-site audit of our Industrial Pretreatment Program on April 11 & 12. The DNR staff conducted a thorough review of all files and accompanied me on an audit of a regulated industry. It went very well. This audit is scheduled to be conducted once per permit cycle (every 5 years).

The wastewater treatment plant effluent and sludge continue to meet or exceed discharge limits. The wastewater biosolids meets the state of Wisconsin's requirements for a high-quality sludge.

While we must monitor and enforce local and federal sanitary sewer discharge limits, our goal is to work cooperatively with significant industrial users to achieve continued compliance.

Respectfully Submitted,

A handwritten signature in black ink that reads "Katrina Karow".

Katrina Karow
Director of Wastewater Treatment



www.kenosha.org

**SUMMARY OF INFLUENT METALS TO THE
KENOSHA WASTEWATER TREATMENT PLANT**

POTW Influent: average pounds/day

Year	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury
1998	< 0.08	0.52	9.2	3.0	2.9	22.0	
1999	0.15	1.3	7.7	1.3	2.0	19.9	
2000	0.35	7.4	7.7	9.1	2.1	18.3	
2001	< 0.20	1.8	11.0	1.4	1.4	25.9	
2002	< 0.18	1.9	9.7	1.6	1.6	27.4	0.015
2003	< 0.16	1.4	9.4	1.7	1.2	19.1	0.032
2004	< 0.38	1.1	23.0	1.1	1.1	34.3	0.012
2005	< 0.31	1.1	10.4	0.78	1.1	23.7	0.030
2006	< 0.34	0.85	7.8	1.0	0.85	16.5	0.016
2007	< 0.5	1.1	12.0	1.3	2.4	23.0	0.022
2008	< 0.7	0.9	8.4	0.9	< 0.7	18.3	0.031
2009	< 0.4	0.6	7.6	1.0	< 0.6	18.0	0.018
2010	0.075	1.4	9.7	0.63	0.88	23.4	0.006
2011	< 0.14	0.8	8.5	0.58	0.56	20.9	0.008
2012	< 0.13	0.85	8.5	0.73	0.68	28.8	0.010
2013	< 0.12	1.3	7.9	0.78	1.8*	32.3	0.011
2014	< 0.12	1.2	11.7	0.99	1.0	32.3	0.006
2015	<0.061	1.0	9.1	1.12	0.70	22.7	0.010
2016	<0.066	1.3	9.0	0.94	0.53	19.7	0.005

* Average may be biased high due to a few uncharacteristically elevated results.

**SUMMARY OF EFFLUENT METALS FROM THE
KENOSHA WASTEWATER TREATMENT PLANT**

POTW Effluent: average pounds/day

Year	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury
1998	< 0.06	< 0.1	1.0	1.4	0.17	4.8	
1999	< 0.08	< 0.2	0.80	0.76	< 0.64	4.3	
2000	< 0.16	< 0.33	0.82	0.86	< 0.66	4.1	
2001	< 0.20	< 0.41	< 1.2	0.97	< 0.71	7.6	
2002	< 0.18	0.30	< 1.2	0.97	0.71	7.6	0.0028
2003	< 0.16	0.18	< 1.1	1.43	0.64	4.8	0.0016
2004	< 0.38	< 0.38	1.5	0.75	< 0.94	5.3	0.0005
2005	< 0.31	< 0.31	0.94	0.62	< 0.47	5.1	0.0005
2006	< 0.34	< 0.34	1.0	0.51	0.51	6.3	0.0008
2007	< 0.5	< 0.5	1.6	0.8	0.8	8.2	0.0008
2008	< 0.7	< 0.7	1.0	< 0.7	< 0.7	5.2	0.0006
2009	< 0.4	< 0.6	< 1.0	0.8	< 0.6	4.6	0.0004
2010	< 0.03	0.37	1.3	< 0.22	0.47	5.8	0.0004
2011	< 0.14	< 0.27	0.8	< 0.36	< 0.17	5.4	0.0002
2012	< 0.05	< 0.16	1.0	< 0.44	< 0.14	6.2	0.0002
2013	< 0.11	< 0.22	1.8	< 0.47	< 0.25	4.9	0.0003
2014	< 0.06	< 0.21	1.6	< 0.55	< 0.15	8.2	0.0002
2015	< 0.06	< 0.28	2.0	0.84	< 0.15	5.3	0.0002
2016	< 0.06	0.28	1.3	0.59	< 0.17	5.0	0.0002

**SUMMARY OF DEWATERED SLUDGE METALS FROM THE
KENOSHA WASTEWATER TREATMENT PLANT**

POTW Anaerobic Digested Sludge (Dewatered): average mg/kg

Year	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Selenium	Molybdenum	Mercury
2011	7.8	2.3	72.3	415	23.8	55.4	996	4.2	13.7	0.332
2012	8.1	3.5		372	21.2	36.4	1,114	6.1	17.7	0.598
2013	7.5	2.1	64.1	402	25.2	55.8	1,117	3.6	17.9	0.603
2014	10.9	1.8	55.4	364	24.0	44.8	909	2.1	17.1	0.475
2015	9.4	3.0	70.5	406	28.4	45.7	905	2.7	20.4	0.377
2016	10.2	2.6	86.9	433	31.2	29.1	895	5.0	18.2	0.497
High Quality Limit	41	39	No established limits	1,500	420	300	2,800	100	No established limits	17

mg/kg – milligrams per kilogram

Wastewater Treatment Plant

7834 3rd Avenue
Kenosha WI 53143

Phone (262) 653-4335
Fax (262) 653-4340



"Providing and Protecting Kenosha's Greatest Natural Resource"

May 2017

Mr. Edward St. Peter
Kenosha Water Utility
4401 Green Bay Road
Kenosha WI 53144

Subject: 2016 Household Hazardous Waste Collection Program Annual Report

Dear Mr. St. Peter,

The Water Utility organizes and staffs a Residential Household Hazardous Waste (HHW) Program on the first Saturday of the month (February-April & December) and on the first and third Saturdays of the month (May-November). The goal of the program is to offer City of Kenosha residents a convenient disposal option for household hazardous wastes in an effort to minimize waste disposed to sanitary and storm sewers. Additionally, the Kenosha Water Utility carries out a Mercury Minimization Program as a requirement of our wastewater discharge permit. The HHW events are one way to keep mercury out of the environment. Along with household chemicals, we also accept mercury containing products such as thermometers and fluorescent light bulbs.

All events are staffed solely by Water Utility employees. There are at least five to six employees plus a chemist in charge for each event. The employees collect acceptable chemicals for disposal and offer educational materials to customers about where they can dispose of unacceptable chemicals (i.e. oil, antifreeze, medicine, needles). The collected chemicals are disposed through a contracted disposal company.

The Water Utility conducted eighteen collection events throughout the year. As in past years, it was well received. The number of residents disposing waste per event ranged from 46 (August 20) to 139 (May 7) with an average of 81 per event. The total number of participants in 2016 was 1,454.

Respectfully Submitted,

A handwritten signature in black ink that reads "Katrina Karow".

Katrina Karow
Director of Wastewater Treatment



www.kenosha.org

Kenosha Household Hazardous Waste Program Participation

2016 Collection Dates and Number of Participants

February 6	69 participants
March 5	91 participants
April 2	75 participants
May 7	139 participants
May 21	68 participants
June 4	117 participants
June 18	71 participants
July 2	79 participants
July 16	56 participants
August 6	114 participants
August 20	46 participants
September 3	77 participants
September 17	64 participants
October 1	68 participants
October 15	59 participants
November 5	129 participants
November 19	63 participants
December 3	69 participants
Total Participants	1,454

The program averaged 81 participants per collection day.

Household Hazardous Waste Unit Comparative Income Statement

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Operating Revenue			
Residential	\$ 166,174.74	\$ 167,353.35	\$ 167,326.67
Stormwater Administration	14,040.00	14,040.00	14,040.00
Penalties	3,901.42	4,079.80	4,340.19
Total Operating Revenue	184,116.16	185,473.15	185,706.86
Operating Expenses			
Labor and Supplies	31,937.84	38,363.59	43,111.00
Outside Disposal Service	27,263.94	40,565.77	37,548.88
Costs Allocated from Other Funds:			
Wages	72,121.74	67,992.90	67,297.35
Postage	7,440.90	7,527.73	7,501.70
Other	3,592.48	16,858.07	3,253.45
Depreciation	3,268.82	3,063.84	3,125.24
Total Operating Expenses	145,625.72	174,371.90	161,837.62
Operating Income	38,490.44	11,101.25	23,869.24
Other Income			
Interest Income	222.73	201.61	148.78
Miscellaneous Income	173.08	-	-
Net Income	\$ 38,886.25	\$ 11,302.86	\$ 24,018.02

**Household Hazardous Waste Unit
Statement of Net Position
December 31, 2016**

Assets		
Utility Plant		
Plant in Service	\$ 87,874.56	
Accumulated Depreciation	<u>(24,596.37)</u>	
Net Plant in Service		63,278.19
Current Assets		
Cash	355,206.38	
Accounts Receivable	26,994.32	
Receivable from Municipality	19,079.79	
Unbilled Revenues	<u>20,801.75</u>	
Total Current Assets		422,082.24
Total Assets		<u>485,360.43</u>
Deferred Outflow of Resources		
Deferred Pension Resources		<u>20,132.08</u>
Liabilities		
Current and Accrued Liabilities		
Accounts Payable	2,146.40	
Payable to Municipality	<u>1,776.15</u>	
Total Current Liabilities		3,922.55
Non-current Liabilities		
Pension Liability - Wisconsin Retirement System		3,131.94
Total Liabilities		<u>7,054.49</u>
Deferred Inflow of Resources		
Deferred Pension Resources		<u>7,791.00</u>
Net Position		
Invested in Capital Assets	63,278.19	
Unrestricted	<u>427,368.83</u>	
Total Net Position		<u><u>\$ 490,647.02</u></u>

**Household Hazardous Waste Unit
Plant in Service and Accumulated Depreciation
For the year ended December 31, 2016**

		Plant in Service				
	Depr. Rate %	Cost of Plant 1/1/2016	2016 Additions	2016 Retirements	Adjustments Incr/(Decr)	Cost of Plant 12/31/2016
General Plant						
Structures and Improvements	4.00	\$ 76,398.31	10,644.25	-	-	\$ 87,042.56
Equipment	8.33	832.00	-	-	-	832.00
Total		<u>\$ 77,230.31</u>	<u>10,644.25</u>	<u>-</u>	<u>-</u>	<u>\$ 87,874.56</u>

		Accumulated Depreciation				
	Balance 1/1/2016	2016 Depreciation	Less Cost of Retirements	Add Cash Received	Adjustments Incr./Decr.	Balance 12/31/2016
General Plant						
Structures and Improvements	\$ 20,495.55	3,268.82	-	-	-	\$ 23,764.37
Equipment	832.00	-	-	-	-	832.00
Total	<u>\$ 21,327.55</u>	<u>3,268.82</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>\$ 24,596.37</u>