City of Janesville

Water Utility

Water Conservation Plan

April 2010

Introduction

The Public Service Commission (PSC) has required a number of communities to develop a water conservation plan in order to address the issue of protecting Wisconsin's water resources. The Janesville Water Utility is submitting this report to the Public Service Commission, as required by the Commission's rate order in docket 2740-WR-107. In addition to the water rates, the docket orders the following:

> "Within 6 months of the mailing of this order to the parties in the proceeding, Janesville Water Utility shall perform and submit to the Commission a comprehensive conservation study and plan. Based on this study and plan, Janesville Water Utility shall design and implement a conservation program within one year of the mailing of this order. This program shall include, at a minimum, community education, a residential rebate program, and commercial, industrial, and public authority water use audits."

Clean Wisconsin, an environmental advocacy group, intervened during the rate hearing to ensure that water conservation efforts would be implemented. Attached in Appendix 1 is a copy of the agreement between the City of Janesville and Clean Wisconsin as approved by the PSC.

The Water Conservation Report for the City of Janesville addresses strategies to manage the preservation of one of Wisconsin's greatest natural resources. In order to ensure that the ground water aquifers remain at current levels, municipalities must do their part to address the issue. The City of Janesville currently has few negative water quality or quantity issues, but knows it is important to take a proactive approach to protect the water supply for future generations.

Water conservation is a regional and national issue as evidenced in Wisconsin communities and in the Southwest and Southeast of the nation. Communities struggle to address declining aquifer levels and save dwindling water resources. The City of Janesville realizes the importance of addressing this problem at a local level. Even though water levels are stable, it is important to plan for continued growth and the demand these aquifers will face, as areas as close as Dane County to our north, Waukesha and Milwaukee Counties to our east and Brown County to our northeast have already begun to experience declining aquifer levels. If effective water conservation measures can be realized, the City of Janesville may be able to avoid the construction of costly new wells and pumping facilities.

The City of Madison, Wisconsin has developed a water conservation plan to address the growing needs of their community and the City of Janesville concurs with their rationale for developing conservation strategies. The following passage is taken directly from the City of Madison Water Utility Plan.

> It may seem counterintuitive for a utility that derives its income from selling water to plan for conservation, as more water sold means more income for the utility, on a unit by unit basis. But if the utility has to meet rising customer demand every year, it has to continually increase its pumping and delivery capacity, and it may eventually have to find additional sources of water if its primary source is overwhelmed. Each increase in capacity and supply costs the utility money to develop and operate, and it is actually cheaper for both the utility and its customers to invest in water efficiency rather than increased supply. Additional benefits of water conservation include improved water quality; a reduced burden on surface water quality, as less wastewater is generated; reduced greenhouse gas emissions due to reduced energy spent on water pumping; and increased spring, stream, and river flows, as less of the groundwater that feeds them is withdrawn.

GROUNDWATER

The state of Wisconsin has over 1.2 quadrillion gallons of groundwater. However, each day an estimated 330 million gallons of water are used for municipal purposes (Kassulke & Chern, 2006). In 2009, the City of Janesville's usage averaged over 10 million gallons per day. Ground water levels are partially restored by rainwater, but only about 18-30% of rainfall soaks back into the ground. The rest either runs off to the nearest water body or evaporates. Despite the apparent abundance of water in Wisconsin, water conservation is still an important issue. This is because groundwater moves much slower than surface water making it a challenge to regenerate depleted ground water supplies let alone bring them back to normal levels.

The last time the Wisconsin Geological and Natural History Survey conducted a *Ground-Water Quality of Rock County, Wisconsin* study in 1982, Rock County had adequate supplies of ground water to cover the needs of its citizens, commerce, agriculture and industry. According to that report, ground water was almost the sole source of water used in the county. The study states that as of 2000 Rock County would only be using an estimated 22% of the total amount of water that infiltrates to the ground water (Zaporozec, 1982). The City is currently working on an

aquifer study and once it is completed it will allow for the City to update Janesville's water resource profile.

An additional challenge in maintaining quality groundwater for drinking water supply is preventing contamination. Industrial and other potential groundwater contaminants are abundant in urban areas, and keeping them out of the aquifer requires widespread acceptance of water quality protection plans. When groundwater becomes contaminated, it can become unusable as a drinking water source for many years. With over 70% of Wisconsinites using groundwater for their water supply and various industries relying on it for their livelihood, it is imperative that we keep this resource plentiful and free of human-generated contaminants (GCC, 2006).

With the exception of its western and southwestern edges, Rock County is located within the Rock River Basin and has three generalized regional aquifers and one regional confining unit. Under the City of Janesville, the Rock River Basin groundwater system is made up of glacial and post-glacial sediments, and bedrock of the Cambrian and Ordovician ages. These glacial and post-glacial sediments vary in thickness and permeability and almost completely cover the bedrock formations within Rock County.

GROUND WATER PRODUCTION RATES

The City of Janesville operates eight high-capacity municipal wells. Four of them -- Wells 6, 7, 8 and 9-- are relatively shallow (99 to 215 ft deep) and are completed in outwash deposits. The outwash wells could easily satisfy all of Janesville water demand but this water has elevated nitrate concentrations. The other four wells draw from the sandstone aquifer over 1,100 feet deep.

The Rock River Basin Model (USGS, 2009) database includes 30 high-capacity public wells and 190 irrigation, industrial and community wells within the boundaries of the entire Rock County. From 1997 through 2006, these two groups of wells were producing on average 7.84 and 3.19 billion gallons of groundwater per year, respectively (USGS, 2009). This database does not include private, domestic and stock wells that provided water to people in rural areas and produced an estimated one-sixth of the total groundwater production of the county in 1957

(USGS, 1963). Assuming that the county's domestic and stock wells presently pump about one-fifth of the total produced from public wells, the total annual groundwater production of the county is about 12.6 billon gallons of groundwater. This represents about 15% of annual recharge through precipitation to the groundwater system, assuming that the average recharge is 6.3 inches per year over the entire area of the county. Groundwater information will be updated as new information is made available.

The City of Janesville projects that by 2030 water demand for the City will increase by about 50% compared to the City's current water demand. It is reasonable to assume that a similar increase in demand will affect the entire county (AECOM 2009). Thus, by 2030 over 20% of recharge to groundwater will be intercepted by production wells in Rock County.

HUMAN IMPACT & CONSUMPTION

The City of Janesville's population in 2008 was 63,540. According to the City of Janesville Comprehensive Plan completed in 2009, the City's estimated 2010 population will be 67,529. That number is expected to grow to 82,408 by the year 2030. Comparatively the 1990 population for the City of Janesville was 53,284. The city population is projected to increase approximately 20 percent in the past 17 years. There is generally a close relationship between a community's population and its total water consumption. Similarly, commercial, public, and industrial water consumption also tends to vary proportionally with the growth of the community.

The Janesville Water Utility Master Plan Update (AECOM, 2009), analyzes past water consumption characteristics by reviewing annual pumpage and water sales records from 1980 to 2007. Average and maximum day water consumptions during this period, together with the amount of water sold in each customer category, are analyzed. Projections of future water requirements are based on the results of this analysis coupled with estimates of population and community growth.

A summary of the City's historical water sales and pumpage is provided in Table 1. Over the 27-year period summarized in the table, water sales varied from a low of 3.104 billion gallons per

year (BGY) in 1981 to a high of 4.291 BGY in 2000. Total water sales have increased roughly 11 percent since 1980 (water sales increased nearly 35 percent from 1980 to 2000), while total City of Janesville pumpage has increased by roughly 22 percent over the same period. Since the peak in water sales in 2000, total sales have decreased approximately17.5 percent to 3.54 BGY in 2007. A large portion of the decrease in total sales is attributed to the nearly 38 percent reduction in industrial sales over the same time period. Sales to General Motors (Janesville's largest customer) were reduced by roughly two thirds from 2000 to 2007.

The number of Water Utility metered customers continues to increase steadily, with the only exception being industrial customers, which peaked in 1997. In recent years even though the number of residential customers has increased, water sales to residential customers have decreased. One reason for this is the larger amounts of rainfall the Rock County area received in recent years, particularly 2006 and 2007.

A historical summary of the number of Utility customers served is provided in Table 2.

From the data presented in Table 1 and Table 2, residential customers currently account for approximately 90 percent of the City of Janesville customers and 38 percent of the total sales. Commercial water use in 2007 accounted for approximately 7 percent of the City customers and 17 percent of total sales. Metered industrial sales currently account for less than 0.5 percent of the City of Janesville customers but 39 percent of total sales.

PER CAPITA WATER USAGE

The per capita water usage was evaluated in the Janesville Water Utility Master Plan Update. The evaluation reported that residential, commercial, and public water usage is often correlated to a community's population. Table 3 shows the results of an analysis of the City's per capita water consumption for each of these customer classifications that was made from the available sales records. As indicated in the table, per capita sales to residential, commercial, and public customers have followed certain trends over the previous years.

The apparent trend in per capita residential water usage in Table 3 is consistent with observed results for other Wisconsin municipal water utilities. Although per capita residential water usage in the U.S. had consistently increased until the early 1970s, water usage statistics indicate that the increasing rate of per capita consumption has leveled off. This may be due in part to residential customers becoming more aware of water costs, and water conservation measures becoming more common.

The City of Janesville's residential per capita consumption has remained fairly constant over the previous 15 years, averaging approximately 63 gallons per capita per day (gpcd). Since 1990, per capita residential demand has remained between 60 and 70 gpcd nearly every year. The residential per capita consumption used to project future water demands is 65 gpcd, and the commercial per capita consumption is projected at 28 gpcd. Residential per capita consumption in Janesville remains high compared with other Wisconsin utilities as indicated in Table 4. The per capita residential consumption of Janesville's peer cities, shown in bold on Table 4, averaged 50 gpcd in 2007 with a high of 64 gpcd.

TABLE 1

WATER SALES AND PUMPAGE HISTORY

JANESVILLE WATER UTILITY

CITY OF JANESVILLE, WISCONSIN

Year	Annual Water Sales (MGY)					Total Sales (MGY)	Total Pumpage (MGY)	Not Sold But Accounted (MGY)	Unaccounted For Water (MGY)	Percent Pumpage Metered
	Residential	Commercial	Industrial	Public	Commercial Unmetered					
1980	1,225.6	486.7	1,407.5	69.2	-	3,188.9	3,669.3	-	480.3	86.9%
1981	1,340.9	603.3	1,102.0	57.7	-	3,103.9	3,905.6	-	801.8	79.5%
1982	1,250.6	643.0	1,317.2	65.6	-	3,276.4	3,813.5	-	537.7	85.9%
1983	1,571.3	521.2	1,377.7	138.5	-	3,608.7	4,202.7	-	594.3	85.9%
1984	1,329.6	438.6	1,648.7	127.4	-	3,544.4	4,259.6	-	336.1	92.1%
1985	1,338.2	417.9	1,737.0	131.8	-	3,624.9	4,069.1	-	443.9	89.1%
1986	1,393.8	560.7	1,469.3	148.3	-	3,572.2	4,195.5	-	623.2	85.1%
1987	1,430.6	577.7	1,916.0	175.2	-	4,099.5	4,329.2	-	229.7	94.7%
1988	1,466.2	558.0	1,715.2	181.4	-	3,920.7	4,720.4	-	799.6	83.1%
1989	1,299.9	549.5	1,635.5	192.9	-	3,677.9	4,308.6	-	630.8	85.4%
1990	1,186.9	543.1	1,646.1	220.3	-	3,596.3	3,992.9	-	396.5	90.1%
1991	1,381.9	557.6	1,603.9	209.3	0.3	3,753.1	4,294.0	-	540.9	87.4%
1992	1,353.8	528.3	1,749.7	189.2	0.3	3,821.3	4,356.6	-	535.3	87.7%
1993	1,221.2	505.7	1,943.3	171.6	0.2	3,842.1	4,242.9	-	400.8	90.6%
1994	1,302.5	531.9	2,074.9	158.7	4.2	4,072.1	4,600.2	-	528.1	88.5%
1995	1,301.4	542.7	2,174.9	141.9	5.8	4,166.6	4,566.1	-	399.5	91.3%
1996	1,341.5	553.5	2,107.6	149.3	2.4	4,154.3	4,765.6	-	611.4	87.2%
1997	1,302.4	544.3	2,152.3	148.4	2.8	4,150.3	4,699.5	-	549.3	88.3%
1998	1,325.0	575.3	2,028.8	147.8	2.5	4,079.4	4,713.5	-	634.1	86.5%
1999	1,351.2	605.1	2,187.3	143.0	2.3	4,289.0	5,074.3	21.0	764.4	84.9%
2000	1,342.3	601.0	2,198.1	146.9	2.4	4,290.8	4,977.1	21.0	665.4	86.6%
2001	1,380.0	604.2	1,943.2	145.0	3.2	4,075.6	4,851.3	46.0	729.6	85.0%
2002	1,483.2	584.6	1,829.4	150.4	3.5	4,051.1	4,897.6	89.4	757.0	84.5%
2003	1,478.4	604.1	1,822.1	150.4	7.2	4,062.2	4,920.9	106.2	752.5	84.7%
2004	1,392.5	580.0	1,546.9	144.7	8.5	3,672.6	4,547.8	196.1	679.1	85.1%
2005	1,546.7	619.4	1,365.2	183.6	7.9	3,722.9	4,789.7	331.7	735.1	84.7%
2006	1,369.5	568.4	1,497.7	160.9	4.3	3,600.7	4,509.6	464.7	444.2	90.2%
2007	1,379.0	591.3	1,364.7	202.3	3.0	3,540.3	4,479.0	268.4	670.3	85.0%

Maximum Value in each category is highlighted blue =

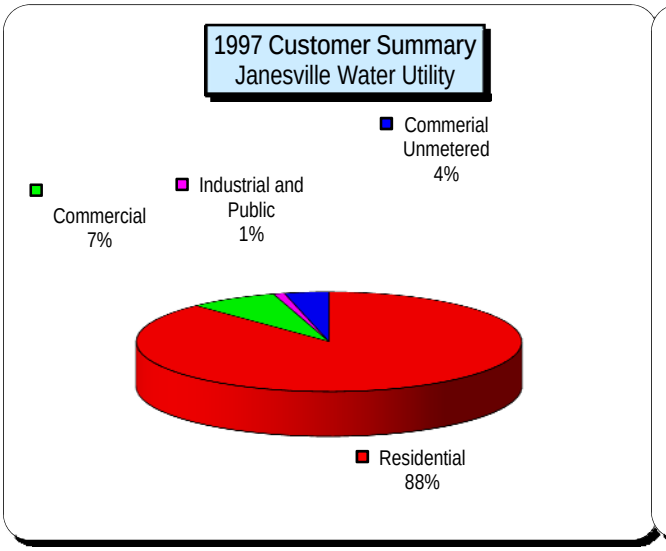
TABLE 2

HISTORICAL NUMBER OF CUSTOMERS SERVED

JANESVILLE WATER UTILITY
CITY OF JANESVILLE, WISCONSIN

Year	Number of Customers					
	Residential	Commercial	Industrial	Public	Commerical Unmetered	Total
1980	15,219	1,160	75	38	-	16,492
1981	15,184	1,113	73	45	-	16,415
1982	15,306	1,104	74	88	-	16,572
1983	15,419	1,099	80	89	-	16,687
1984	15,509	1,103	80	89	-	16,781
1985	15,845	1,039	77	78	-	17,039
1986	16,160	1,143	74	79	-	17,456
1987	16,291	1,197	74	85	-	17,647
1988	16,390	1,292	76	90	-	17,848
1989	16,405	1,408	76	109	-	17,998
1990	16,361	1,434	75	109	-	17,979
1991	16,644	1,429	76	109	-	18,258
1992	16,958	1,440	76	118	-	18,592
1993	17,254	1,474	78	111	-	18,917
1994	17,569	1,499	78	107	-	19,253
1995	17,943	1,519	79	108	-	19,649
1996	18,401	1,568	82	114	-	20,165
1997	18,827	1,600	82	119	798	21,426
1998	19,124	1,657	80	117	336	21,314
1999	19,429	1,720	80	117	284	21,630
2000	19,789	1,763	81	121	225	21,979
2001	20,037	1,701	78	113	208	22,137
2002	20,362	1,736	77	125	263	22,563
2003	20,654	1,750	75	125	419	23,023
2004	20,975	1,770	76	126	487	23,434
2005	21,349	1,784	76	132	595	23,936
2006	21,681	1,795	76	132	510	24,194
2007	21,942	1,816	75	132	379	24,344

Maximum Value in each category is highlighted blue =



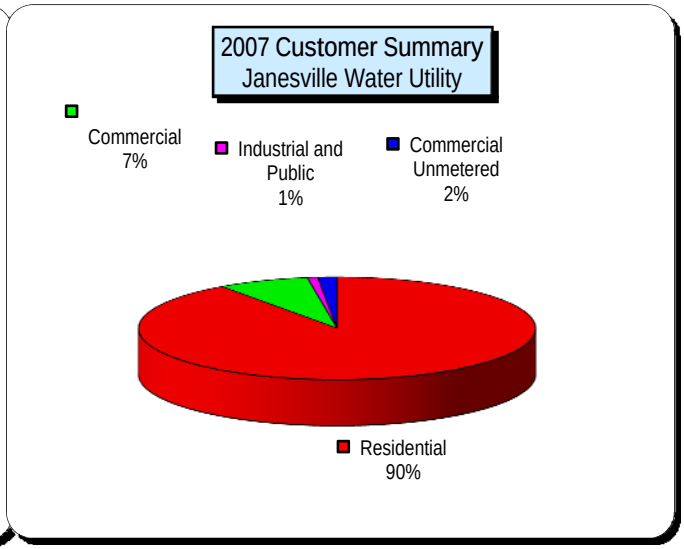


TABLE 3

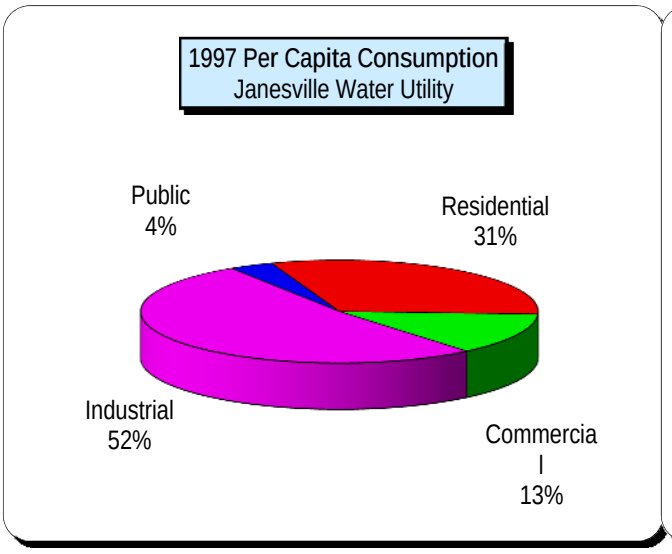
HISTORICAL PER CAPITA CONSUMPTION

JANESVILLE WATER UTILITY
CITY OF JANESVILLE, WISCONSIN

Year	Estimated Population[1]	Gallons per Capita per Day					
		Residential	Commercial	Industrial	Public	Commerical Unmetered	Total
1980	51,000	65.8	26.1	75.6	3.7	-	171
1981	51,101	71.9	32.3	59.1	3.1	-	166
1982	51,165	67.0	34.4	70.5	3.5	-	175
1983	51,096	84.3	27.9	73.9	7.4	-	193
1984	52,085	69.9	23.1	86.7	6.7	-	186
1985	51,928	70.6	22.0	91.6	7.0	-	191
1986	52,202	73.2	29.4	77.1	7.8	-	187
1987	52,336	74.9	30.2	100.3	9.2	-	215
1988	52,381	76.7	29.2	89.7	9.5	-	205
1989	52,826	67.4	28.5	84.8	10.0	-	191
1990	53,284	61.0	27.9	84.6	11.3	-	185
1991	52,538	72.1	29.1	83.6	10.9	0.0	196
1992	53,358	69.5	27.1	89.8	9.7	0.0	196
1993	54,022	61.9	25.6	98.6	8.7	0.0	195
1994	54,553	65.4	26.7	104.2	8.0	0.2	205
1995	56,141	63.5	26.5	106.1	6.9	0.3	203
1996	57,928	63.4	26.2	99.7	7.1	0.1	196
1997	58,639	60.9	25.4	100.6	6.9	0.1	194
1998	59,223	61.3	26.6	93.9	6.8	0.1	189
1999	59,626	62.1	27.8	100.5	6.6	0.1	197
2000	59,794	61.5	27.5	100.7	6.7	0.1	197
2001	60,483	62.5	27.4	88.0	6.6	0.1	185
2002	60,775	66.9	26.4	82.5	6.8	0.2	183
2003	61,110	66.3	27.1	81.7	6.7	0.3	182
2004	61,310	62.2	25.9	69.1	6.5	0.4	164
2005	62,130	68.2	27.3	60.2	8.1	0.4	164
2006	62,540	60.0	24.9	65.6	7.0	0.2	158
2007	62,720	60.2	25.8	59.6	8.8	0.1	155

Maximum Value in each category is highlighted blue =

[1] Estimated population data from Wisconsin Department of Administration.



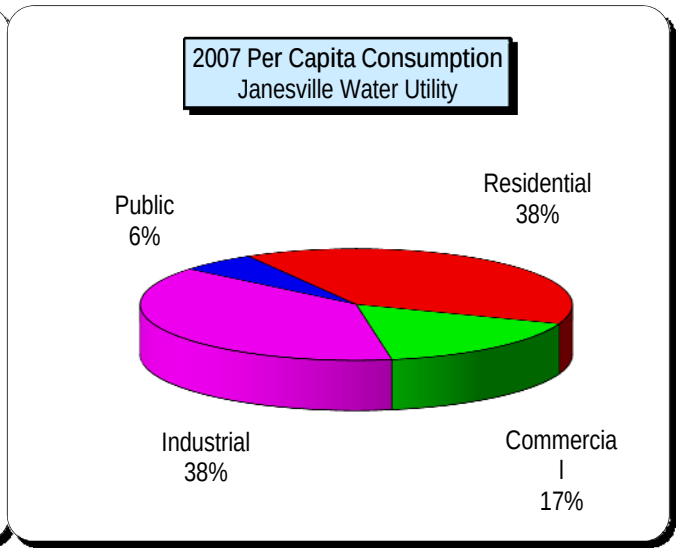


TABLE 4-4

UTILITY RESIDENTIAL PER CAPITA CONSUMPTION COMPARISONS

JANESVILLE WATER UTILITY
CITY OF JANESVILLE, WISCONSIN

Wisconsin Water Utility	*2007 DATA*				
	Residential Sales (MGY)	Total Sales (MGY)	Residential to Total Sales Percentage	Population Estimate	Per Capita Residential Sales (gpcd)
Hudson	406	735	55.2%	11,770	94.5
Racine	**1,872**	**6,741**	**27.8%**	**80,060**	**64.1**
Janesville	**1,379**	**3,540**	**39.0%**	**62,720**	**60.2**
Fort Atkinson	260	674	38.6%	12,125	58.7
Eau Claire	**1,386**	**2,965**	**46.7%**	**65,202**	**58.2**
Grafton	240	366	65.6%	11,420	57.6
Milwaukee	12,101	35,050	34.5%	590,190	56.2
Beloit	**750**	**1,989**	**37.7%**	**37,110**	**55.4**
West Bend	606	1,020	59.4%	30,220	54.9
Cedarburg	225	410	54.9%	11,440	53.9
Manitowoc	**668**	**2,512**	**26.6%**	**34,620**	**52.9**
Sheboygan	**976**	**4,987**	**19.6%**	**50,600**	**52.8**
Stevens Point	484	2,077	23.3%	25,370	52.3
Kenosha	**1,814**	**4,141**	**43.8%**	**95,530**	**52.0**
La Crosse	**933**	**3,338**	**28.0%**	**51,580**	**49.6**
Weston	249	655	38.0%	13,805	49.4
Brown Deer	210	455	46.2%	11,715	49.1
Wisconsin Rapids	329	798	41.2%	18,500	48.7
Hartford	235	524	44.8%	13,550	47.5
Chippewa Falls	234	1,235	18.9%	13,515	47.4
Wausau	**680**	**1,418**	**48.0%**	**40,080**	**46.5**
Green Bay	**1,755**	**6,653**	**26.4%**	**104,020**	**46.2**
Plover	193	373	40.4%	11,580	45.7
Appleton	**1,193**	**2,897**	**41.2%**	**72,158**	**45.3**
Watertown	380	706	53.8%	23,166	44.9
Waukesha	**1,087**	**2,448**	**44.4%**	**67,880**	**43.9**
Fond du Lac	**668**	**1,461**	**45.7%**	**43,270**	**42.3**
Marshfield	290	674	43.0%	19,346	41.1
Grand Chute	297	676	43.9%	20,465	39.8
Oshkosh	**906**	**1,947**	**46.5%**	**65,810**	**37.7**

Notes

Communities in **Bold Font** are City of Janesville Peer Cities.
Water use data from Wisconsin Public Service Commision.
Population estimates from Wisconsin Department of Administration.

WATER CONSUMPTION AND PUMPAGE PROJECTIONS

Future sales and pumpage projections are based on assumptions of water demand, coupled with estimates of future population and community growth previously discussed. A detailed summary of the individual components of projected water sales and pumpage requirements is provided in Table 5.

TABLE 5
WATER SALES AND PUMPAGE PROJECTIONS
JANESVILLE WATER UTILITY
CITY OF JANESVILLE, WISCONSIN

Water Sales Classification	Actual 2007	Projected 2010	Projected 2020	Projected 2030
City of Janesville Population Served	62,720	67,529	74,857	82,408
Residential Sales				
Per Capita Sales (gpcd)	60.2	65.0	65.0	65.0
Annual Sales (MGY)	1,378.97	1,600	1,780	1,960
Commercial Sales				
Per Capita Sales (gpcd)	26.0	28.0	28.0	28.0
Annual Sales (MGY)	594.32	690	770	840
Public Sales				
Per Capita Sales (gpcd)	8.8	8.0	8.0	8.0
Annual Sales (MGY)	202.32	197	219	241
Industrial Sales				
Annual Sales:				
Existing Sales (MGY)	1,364.7	1,400	1,400	1,400
Future Sales (MGY)		160	560	960
TOTAL METERED SALES (MGY)	**3,540**	**4,050**	**4,730**	**5,400**
Accounted-For Water (MGY)	270	510	590	680
Unaccounted-For Water (MGY)	670	510	590	680
TOTAL PUMPAGE (MGY)	**4,480**	**5,060**	**5,910**	**6,750**

Notes

Population projections from City of Janesville Planning Department.
Future Industrial sales projected based on 1,500 gpd/acre with industrial growth potential of 1,750 acres by 2030.
Accounted-for water was projected at 10% of total pumpage for future years for water production purposes.
Unaccounted-for water was projected at 10% of total pumpage for future years.

INDUSTRIAL WATER USAGE

Industrial water consumption can vary widely on an annual basis depending on the types of industries served and the annual level of production activity. Fluctuations in water consumption for a particular industrial firm can be attributed to several factors including:

1. Changes in production schedules or operational capacity.
2. Changes in manufacturing processes.
3. Changes in the number of persons employed.
4. Addition or deletion of product lines.
5. Seasonal variation in cooling requirements.
6. Seasonal changes in business activity.
7. Implementation of conservation measures.

The top five water users of the Janesville Water Utility (in descending order) ABITEC Corporation, Evonik Degussa Corporation, Seneca Foods Corporation, Rath Gibson Inc., and Goex Corporation in order of 2009 water sales. A review of the 2009 water sales indicates that these top five high-volume industrial water users consumed about 89 percent of the total industrial sales. Overall, these five users consumed roughly 35 percent of the total water sales. Consequently, any significant changes in water consumption characteristics by these high volume users will have an impact on total water requirements. The 2009 totals included some use by General Motors (GM), which no longer operates in the City. Therefore the 2010 industrial total will be less than the 1.38 million gallons that were used in 2009.

WATER CONSERVATION PLAN

Goal: To implement an effective water conservation program that creates awareness of water conservation strategies and offers incentives to do so.

This plan has been compiled by administration personnel with the City of Janesville as a guidance document to maintain the current annual rate of groundwater pumping, anticipating growth in new areas, and providing that the additional consumption required to meet the demand in these new areas is sustainable. The City of Janesville has different types of customers who

use water in different ways. As required by the Public Service Commission of Wisconsin, the conservation plan will contain three fundamental categories which will be discussed in more detail in the following sections. The basic components of this plan include:

1. Residential Rebates—the Utility will begin to offer financial rebates to residential customers who purchase water conserving fixtures.
2. Commercial/Industrial Water Audits—this component will offer (and in the future possibly require) commercial, industrial and municipal/government customers the opportunity to participate in an on-site audit of their facility intended to help them identify ways to reduce their water consumption.
3. Public Education—the Utility, in cooperation with the Wisconsin Department of Natural Resources, the Public Service Commission of Wisconsin, the Rock County Environmental Health Department and other interested groups or organizations will develop and distribute information designed to educate our customers about the value of water conservation. Conservation information will be developed to meet the various water needs of our customers (i.e. schools, home restaurants, car washes, lawn irrigation, and other water using activities).

Other water conserving practices or procedures will be included as this program develops. Some water conservation practices, ideas and programs outside of the three components listed above are included in this report and may become part of the City's conservation program, but others will be incorporated into the program as their applicability is demonstrated. Appendices 2 and 3 list other communities' water conservation strategies that were used as a reference for developing Janesville's strategies.

Some of the conservation steps outlined in this plan are further divided into sections corresponding to each customer group: residential, commercial, industrial, and municipal/government. The strategies in this plan are not meant to be all inclusive. Staff will continue to evaluate potential ways to promote water conservation within the city. Additionally strategies listed below can be amended as more effective implementation strategies are developed through trial and error.

In May of 2006 the Public Service Commission (PSC) and the Department of Natural Resources (DNR) sponsored a statewide Symposium on demand side management strategies. The Symposium provided an overview of how water demand side conservation efforts fit into a variety of events and activities. Speakers presented solutions for effective conservation efforts that have been used across the United States, and addressed water conservation issues unique to Wisconsin. A number of the strategies presented in this report are based on the information provided in the presentations.

RESIDENTIAL

The Janesville Water Utility serves 24,467 (2009 PSC Annual report) customer accounts in the City of Janesville. Residential accounts (22,216) far exceed the number of commercial, industrial and public authority (government) accounts. For any conservation plan to be considered a success, it must build on a strong platform designed to meet the needs of our residential customers.

The City of Janesville will focus water conservation strategies around a number of different areas.

- Seasonal Water Use
- Water Rates
- Educational awareness
- Incentive programs for high efficiency fixtures and appliances
- Landscaping

Seasonal Water Use

For many residents, water use increases significantly in the summer due to outdoor activities such as car washing, lawn care and swimming pool use. According to the EPA, lawn care makes up about 1/3 of all outdoor water use nationwide. For example, when using a hose to wash off sidewalks and driveways, about 50 gallons of water is used every 5 minutes.

The City will research ordinance changes that restrict the use of outdoor water use for the watering of lawns during the hottest parts of the day in the summer time. Additionally as part of the educational awareness component of the Water Conservation Plan the city will provide useful information to help residents conserve water during the summer months.

Water Rates

Basic economic principles dictate that higher prices will decrease demand for nearly any good, and water is no exception. Conservation rate structures create a higher rate charge when water use exceeds a predetermined level. Rate structure may also have multiple tiers with an increasing rate associated with each subsequent tier.

At the last rate increase in 2009, prior to the development of a water conservation program, the Janesville Water Utility applied for inclining rate tiers for residential users. This rate adjustment was granted by the Public Service Commission. There was no change in the rate structure (declining rate tiers) for industrial, commercial or public authority. The following table compares the previous residential rates with the conservation rates that were put into effect in October 2009.

Residential Rates – Prior to Oct. 2009 (Declining Tiers - Volume Charges)			Residential Rates – After Oct. 2009 (Inclining Tiers - Volume Charges)		
Rate Steps (CCF)		Rate/CCF	Rate Steps (CCF)		Rate/CCF
0 -	100	$1.08	0 -	15	$0.95
100 -	2,000	$0.85	15 -	40	$1.26
> 2,000		$0.76	> 40		$1.65

The conservation rates have not been in effect for one calendar year; therefore, customers have not seen the cost of water use during spring and summer months. Evaluation will have to be done in the future to assess the effectiveness of the rate adjustment.

Educational Awareness

Creating a successful public education program is one of the major strategies that will be used to promote water conservation. The City of Janesville will work to publicize and promote water conservation strategies in the community. In order to build awareness it is important to reach out and inform residents of the impact they can have on water conservation, and the strategies they can use. The City of Janesville will implement a number of different strategies as part of the public education component of the plan.

The City of Janesville will create a water conservation presentation to share with area schools that request it. The presentation will cover the importance of water conservation in the community and go through individual practices that will help to conserve water. The City will pull information from the EPA WaterSense Program and other valuable resources to effectively inform students. The City's Green Team, Water Utility Department and management staff will work together to develop the program. The purpose of the program will be to create awareness in the youth of Janesville to impact the long range goals of water conservation.

Additionally staff will develop a pamphlet that outlines the residential components of the Water Conservation Plan and the benefits available to citizens through the program. The pamphlet will be mailed out to all residential customers and made available at other public facilities.

Toilet & Fixture Incentive Programs

The City will institute a broad incentive program to encourage residents to replace old appliances and fixtures with new ones that are able to conserve and preserve water. A rebate of $25 will be given to residential water customers who replace old inefficient fixtures (i.e. shower heads and faucets) with new ones. $50 rebates will be offered to individuals who replace inefficient toilets with newer and efficient ones. The City researched a number of similar programs that are offered in other communities to determine what incentives to offer for water efficient appliances. The list of fixtures will be updated as more effective sources and ways of promoting water efficiency are found. For example, the City will look into offering rebates for appliances such as dishwashers and washing machines. The details of the program are below.

Toilet Rebate Program

Toilets are by far the main source of water use in the home, accounting for nearly 30 percent of an average home's indoor water consumption. Older, inefficient toilets also happen to be a major source of wasted water in many homes. Replacing these toilets with more efficient ones can save nearly 11 gallons per toilet per day (WaterSense). By federal law, manufacturers may not make a toilet that uses more than 1.6 gallons per flush (residential and commercial). A model that uses 1.6 gallons per flush (GPF) is considered a "low-flow" toilet, whereas a high-efficiency toilet (HET) uses no more than 1.28 GPF.

The City of Janesville will create a new program that will offer incentives to replace old, inefficient toilets with high-efficiency models, similar to the lead pipe replacement program that the utility offered in past years. A $50 rebate will be offered for any toilet that uses 3.5 gallons per flush that is replaced. In order to receive the rebates, residents would have to prove that older toilets were actually replaced, and each household would be eligible for a rebate on only one toilet. After the first year of the program, staff will reevaluate whether to offer additional rebates per household. The City should attempt to impact as many citizens as possible with the rebate for the first year, and offering only one rebate per customer allows the opportunity for other customers to participate. Additionally, the toilets that are being replaced would have to be older models that are inefficient, so that the new toilets would provide significant water savings.

Showerhead Rebate Program

Showering is another one of the leading ways that residents use water in their home. Showering accounts for nearly 17 percent of residential indoor water use, or about 30 gallons per household per day (WaterSense). According to the EPA, more than 2,300 gallons of water per year can be saved by installing WaterSense labeled showerheads. Also, water savings will reduce demands on water heaters and save energy for households. A household could save 300 kilowatt hours of electricity annually. In order to eligible for a $25 showerhead rebate, a WaterSense certified showerhead must be installed that uses no more than 2.0 gallons of water per minute. The standard showerhead uses over 2.5 gallons per minute. There will be a limit of 1 showerhead per water customer billed.

Bathroom Sink Faucets & Accessories Program

There are many ways to save water when using faucets. For example, turning the faucet off while brushing your teeth can save as much as 3,000 gallons of water per year (WaterSense). There are also a number of products available that will help save water as well. There are high-performing, water-efficient fixtures that help reduce water use in homes and save money on water bills. Faucets account for 15 percent of indoor household water use. More efficient faucets can reduce a sink's water flow by 30 percent or more without sacrificing performance.

The City will offer a $25 rebate for water customers who replace their old, inefficient faucets with new WaterSense labeled efficient ones. A limit of 2 faucets per customer will be allowed and proof of purchase and installation must be shown before the rebate is given.

Landscaping

The City of Janesville will also research ordinances that regulate watering with the goal of promoting water conservation. Other communities have enacted similar ordinance changes and staff will determine if similar restrictions will be beneficial to Janesville. Additionally information on how to maintain lawns by using water efficient practices will be distributed to citizens as one of the components of the public awareness program.

Rain Barrels/Rain Gardens

Rain barrels can be used at residential buildings to catch rainwater and reuse the water for lawn/flower watering. Rain gardens may be used to reduce runoff where appropriate.

COMMERICAL

The City of Janesville will also develop strategies for commercial water customers to promote water conservation. For billing purposes, commercial accounts refer to businesses as well as multi-family housing (more than 3 units). Conservation strategies have been developed and will continue to be looked at to promote effective water conservation with businesses and multi-family housing.

Commercial Education Program

The City of Janesville will work with businesses to promote water conservation awareness. Brochures and other informational sources will be created and distributed to local businesses, restaurants and multi-family residences. Information will include useful tips for saving water, sources for other water conservation strategies and an overview of the City of Janesville water conservation program.

The City will also work with local business groups to develop seminars that provide useful strategies and information on water conservation for businesses. The City will contact experts in the field who are familiar with successful strategies and research information that will be helpful to businesses. Topics will include the use of water efficient landscaping, LEED certification, water efficient appliances and a variety of other topics.

Rinse Smart - Pre Rinse Spray Valve Program

This program will focus on the replacement of high water use, low pressure pre-rinse spray valves that are initially used by many food service establishments to remove food particles before plates and trays are placed within commercial dishwashers. Nearly two-thirds of water use in restaurants is used in washing dishes. A similar program has been in place in California for several years. Tracking reports have shown that a medium size restaurant can save an average of 50,000 gallons of water per year. The new sprayer can cut pre-rinse water use by 40 percent, with less hot water and less energy used. Valves can help to decrease the amount of water used, and will also save energy. The City will use educational and informational resources to inform these types of businesses of the benefits of having a pre-rinse spray valve system in place. The City will also offer a rebate program to commercial entities who successfully install spray valves that are more water efficient. The rebate amount will be developed based on the average cost of purchasing and installing the valve. The commercial rebate funding will be included as part of the residential rebate funding amount.

INDUSTRIAL

In 2009 there were 29 industrial water customers in the City of Janesville that used a total of 1.38 billion gallons of water. Identifying strategies that will reduce consumption of the 29 industrial customers will help to reduce the overall water consumption of the City. There is no group of customers that has a higher per capita impact than industrial customers. For this reason it is essential that effective strategies be developed for these types of customers.

The City will develop a water audit program that industrial water customers can use in order to assess their current operations. Staff will review the current infrastructure the industrial customer has in place and recommend changes to become more water efficient. The program will be advertised to industrial customers through the aggressive public education program that will be developed to address the different types of water customers.

MUNICIPAL

The enacting of water conservation measures within the Water Utility can serve as a model for other governmental buildings as well as the other government/municipal entities. Before conservation measures are implemented, an audit shall be performed of all Water Utility buildings, and toilets, showerheads, and sink aerators will be checked for compliance with current water conservation standards for new construction. All new Water Utility buildings will be built with water conservation measures in mind.

The following are water saving programs that can be instituted at the Water Utility:

Emphasize and expand the leak detection program: Many leaks in the water distribution system go undetected. The Utility has leak detection equipment, but devoting the necessary work-hours, to this task has proven difficult. Older pipes and those in areas prone to main leaks will be checked on a systematic basis.

Install low-flush toilets, low-flow showerheads, and sink aerators: Following the internal audit, old toilets shall be replaced with high-efficiency models, showerheads changed to low-flow, and aerators placed on sinks without them.

Quantify water use by utility through better record keeping: Improve record keeping concerning the amount of data gathered on Water Utility (and other City departments) water use activities and centralize this data for ease of accessibility and comparability. Identify the amount of water used during hydrant flushing, amount of water lost from a main breaks and service leaks, by the Fire Department used in training and fighting fires, by the Operations Department on water used for street sweeping, etc. This information will help the Utility more accurately determine the amount of water that is unaccounted when compiling it's annual audit of water pumped.

Installation of process meters in pumping stations: Some Water Utility pumping stations (and other city facilities) currently do not have meters for the water that is used inside the building (i.e., sinks). The feasibility of placing meters in these facilities will be investigated.

Water main flushing: Historically, the Water Utility has employed conventional flushing twice a year to remove mineral sediment from water mains. The Utility will continue to evaluate its flushing program to minimize the amount of water needed to clean its mains

Other Governmental Buildings

Audits will be performed of all other governmental buildings served by the Water Utility. Individuals in charge of the buildings may perform the audits. A questionnaire would be provided to assist individuals in auditing their own buildings, and further information will be provided to explain potential water saving programs.

Water conservation measures may include replacing old toilets, installing sink aerators, and installing rain gardens and rain barrels. The Janesville City Council recently adopted policies to help insure that city buildings will be as energy-and water-efficient.

CONCLUSION

The City of Janesville will continue to work on developing strategies to encourage water conservation throughout the community. The City will focus their strategies around educational awareness, residential rebates for water appliances, toilets and water audits. Staff will evaluate the success of the programs offered and determine if adjustments should be made. In order to

change the way people look at water conservation, it is important to educate citizens. The City will accomplish this by multiple strategies.

The Public Service Commission requires the City of Janesville to spend $75,000 for the first year of the program. Of that, an estimated $20,000 will be dedicated to publication of educational information, which includes brochures, visits to schools and service groups on the benefits of water conversation and all other forms of public information that will be generated. $40,000 will be dedicated to rebates for residential customers for water fixture/appliance and toilet rebates. Finally $15,000 will be used to fund a water audit program that will be offered to industrial customers. At the end of the first year, the program's success will be evaluated and changes and additions to the program will be made as needed. The City of Janesville recognizes the importance of continuing to develop strategies that can be offered to all water customers in order to successfully and positively impact the rate at which water is consumed.

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Appendix 2

Utilities with PSC-Approved/Regulated Water Conservation Programs

Utilities with Inclining Block Rates

- Waukesha
- Fitchburg
- Weston
- Allouez
- Janesville
- Franklin

Utilities with Uniform or other Residential Class Rates

- Madison
- Lancaster
- Grafton
- Sun Prairie

Utilities with Rebate/Incentive Programs

- Madison
- Kaukauna
- Marshfield
- Waukesha
- Sun Prairie
- Fitchburg
- New Berlin

Utilities with Other Conservation Programs

- New Berlin

Appendix 3

Utilities with Rebate/Incentive Programs

Utilities with PSC-Approved Toilet Rebate Programs

Utility Name	Date Approved	Description	Rebate Amount
Waukesha Water Utility	6/5/2009	Rebates for residential customers	$25
Madison Water Utility	12/23/2008 12/22/2009	Rebates for residential customers and commercial apartments.	$100
Kaukauna Utilities	5/4/2009	Rebates for residential customers.	$50
Marshfield Utilities	5/21/2009	Rebates for residential customers.	$50
New Berlin Water Utility	4/1/2010	Rebates for residential customers	$100

Utilities with Toilet Rebate Programs Not Approved by PSC

Utility Name	Date Approved	Description	Rebate Amount
Fitchburg	2/16/10	Toilet rebates for residential /non-residential customers paid with sewer revenues, not water.	$100