

CITY OF ST. JOSEPH WATER FILTRATION PLANT

OPERATIONAL REPORT

MAY 2014



Mission Statement

WSJOB- The City and Authority working together to provide safe drinking water of the highest quality to all of our customers at the lowest possible price.

WATER PLANT REPORT-MAY 2014

Water demand in May down 11,729,561 gallons from last year which represents a 9.2% decrease. This year 127,550,790 gallons were delivered which compares to 139,280,351 gallons delivered in May of 2013. The 2014 May pumpage ranked 28th in the 30 year tabulation dating back to 1985.

GENERAL ACTIVITIES

Water Plant Security

Now that the security gates and perimeter fence are complete attention has turned to the installation of security cameras and access control for the water plant.

As you may recall in 2012 we invited area law enforcement and Homeland Security to the water plant to tour the facility and provide recommendations for security enhancements. From these recommendations plant staff and WSJOB developed plans and allocated funds. To date, \$35,000 has been spent on the security gates and the perimeter fence which are not complete. In addition, \$50,000 was set aside in the 2013/2014 budget for the installation of security cameras and access control.

In 2013, Mr. Lewis appointed a committee to review security at City Hall and all other facilities. The committee determined that the most cost effective approach was to upgrade the existing Simplex Grinnell system at City Hall and integrate it with a new security at the water plant with the server being located at City Hall. Plant staff met with James Corson of Simplex Grinnell at the water plant on March 10th. Mr. Corson provided a proposal to furnish and install cameras and readers and expressed confidence that the system could be installed by June 30th. The proposal was approved by the WSJOB and St. Joseph City Commission.

I also spoke with the Saginaw Water Plant Superintendent at the Borchardt Conference in February regarding security upgrades there which he will present at the Annual AWWA conference in Boston in June. Mr. Rheinsch invited us to tour his facility in Saginaw to learn from what they have done there.

Lead & Copper Monitoring

Lead and copper enter drinking water primarily through plumbing materials. Exposure to lead and copper may cause health problems ranging from stomach distress to brain damage. On June 7, 1991, EPA published a regulation to control lead and copper in drinking water. This regulation is known as the Lead and Copper Rule (also referred to as the LCR or 1991 Rule).

The treatment technique for the rule requires systems to monitor drinking water at customer taps. If lead concentrations exceed an action level of 15 ppb or copper concentrations exceed an action level of 1.3 ppm in more than 10% of customer taps sampled, the system must undertake a number of additional actions to control corrosion. If the action level for lead is exceeded, the system must also inform the public about steps they should take to protect their health and may have to replace lead service lines under their control.

On June 3rd sample bottles were distributed to customer homes served by the City of St. Joseph. Customers were asked to fill the bottles with first draw samples taken after the water had been allowed to sit in the pipe for a minimum of six hours. The samples were then picked up and will be shipped to the MDEQ laboratory. The results are expected by the end of June and will be forwarded to those who participated in the monitoring group. MDEQ will review the results and determine the system compliance. The City of St. Joseph has been in full compliance with the Lead & Copper Rule since its inception in 1991.

2013 Consumer Confidence Report (To Issue June 2014)

The 2013 Consumer Confidence Report is complete. The feature articles and format are identical to last year. The lead article will again be the Odd-Even Sprinkling Ordinance which is followed by the article on the background and make up of the area water and wastewater authorities. The color format was changed. The reports will be mailed to our customers and posted on the City website by the third week of June. We are pleased to report that water quality has been excellent and the City of St. Joseph remains in full compliance with the Safe Drinking Water Act.

Strategic Capital Improvement Plan

Plant staff met with Tony Myers of CH2M Hill at the water plant on April 30th for the On-site Facility Review and Assessment phase of the SCIP. Staff completed an Asset Hierarchy that was forwarded to Hill and was discussed and further developed in phone conference meeting on May 12th and May 21st. The asset hierarchy is part of an extensive database developed by Hill that will include asset rankings based on a number of criteria such as regulatory compliance, consequence of failure and water quality. The anticipated completion date is in October.

MDEQ Sanitary Survey-City of St. Joseph WSSN#6310

Gary Wozniak, MDEQ District Engineer completed the 2013 Sanitary Survey which was forwarded to City staff for review. This is a time consuming but vital task for Mr. Wozniak and we thank him for his effort and dedication. The primary purpose of a sanitary survey is to evaluate and document the capabilities of the water system's sources, treatment, storage, distribution network, operation and maintenance, and overall management to continually provide safe drinking water and to provide a safe reliable water supply. In addition, sanitary surveys also aid in the process of evaluating a public water system's progress in complying with federal and state regulations which require the improvement of the capabilities of the system to provide safe drinking water. Sanitary surveys provide the water system with technical and management information regarding the operation of the system from the water source, through the water plant and the distribution system. The MDEQ conducts sanitary surveys every three years. The completed survey was formally presented to the City on June 5th.

Benton Harbor Emergency Interconnect

Work is currently underway on the rehabilitation of the M63 Interconnect. Staff has ordered replacement bolts for all of the pipe flanges and valve housings located inside of the vault. Air Therm is replacing the bolts by cutting out the old ones with a welder and installing new. Staff is looking into the replacement of the roof slab and reinforcement of the walls. The City of Benton Harbor has expressed interest in contributing to this effort.

In addition, the Cities of St. Joseph and Benton Harbor are working together to draft an emergency interconnect agreement. The City Managers and Mr. Alimenti met on May 6th to review the draft document.

Sedimentation Basins

The sedimentation basins were inspected by Dixon Engineering in November. For the first time we saw evidence of leaks in the top of the basins. There is one transverse crack in the West chamber and approximately four to five closely placed cracks in the East chamber. Melting snow during the inspection provided excellent conditions to bring about and reveal the leakage. Staff is currently looking at mapping the locations of the leaks and procuring a firm to excavate the 18" of topsoil by hand shovel and sealing the cracks from above once this season's deep frost melts. The sedimentation basins are underground under the grassy area adjacent to the back parking lot. They were part of the treatment train for the 1931 plant and currently are used to provide contact time for chlorine.

The plant can be operated without the sedimentation basins since sufficient contact time is provided by the clarifiers, filters and reservoir. Concern remains however that the buffering capacity of the basins during thermal upsets in the clarifiers would be lost. In addition, filters 1-4 will have to be isolated from the sedimentation basins if they are to remain dry. These filters account for 4 MGD of the plant's total 16 MGD capacity and are needed to enable the plant to meet peak summer demand. Staff isolated the sedimentation basins from the filters in May 2014 by installing 2x12's in the preexisting 1931 sluice gates located under the museum room. In consultation with Dixon we have learned that if extensive cracking is found a membrane would have to be installed. Ira Gabin, Vice President of Dixon has estimated the cost of a membrane to be \$45,000. B&Z provided a quote for the removal and replacement of topsoil. Staff is currently seeking other competitive quotes for this work.

UCMR III Monitoring

Plant staff is now collecting samples for both the City and Authority under the Unregulated Contaminant Monitoring Rule. EPA is funding the City monitoring costs since it is a community water supply serving a population under 10,000. The monitoring period is one year.

Hilltop Booster Station Pump #2

Earlier this year plant staff reported vibration and the loss of adjustment shims in the base on pump #2. As you may recall this pump and motor combination has presented problems in the past. Peerless Midwest was called in to evaluate the system and make a recommendation as to the proper resolution of the problem. Their team performed vibration analysis on the pump and motor while connected and the motor alone while disconnected and found that the motor exhibited excessive vibration. This motor was rebuilt in July of 2012 by Kerr Pump after a vibration problem was found at that time. The possibility of piping misalignment was checked as well by the removal and reinsertion of all of the pipe/pump flange bolts. No problem was found. Pump #1 was realigned by Peerless while on site. Peerless spent an inordinate amount of time and effort to align this pump and motor.

The conclusion that we have drawn at this point and this is based on what Mark Thornton had theorized at the onset is that the rolled steel motor housing of the Baldor motor is inadequate and cannot withstand the forces of pump torque in this application. Staff recommended the replacement of the motor on Pump #2 with a U.S. Motor equipped with an integral cast iron housing identical to Pump #1 at Cleveland Booster Station which had been replaced two years ago. The new motor was ordered and installed during the week of May 26th.

To date staff has reported a significant reduction in vibration and noise. We tested the motor at all rpm ranges and are impressed with the new motor. Given this result and the improved performance obtained from the #1 pump at Cleveland we will be recommending the replacement of the #1 motor at Hilltop this Fall when water demands permit. This replacement had been programmed into the 2016/2017 fiscal year since it was thought that the recently re-aligned #1 would provide two years of additional service. However, we are concerned that the vibration in the motor will telegraph to the pump itself thereby causing damage and necessitating a rebuild.



Hilltop Booster Station #2 Motor (Original Baldor installed 2007). The cylindrical motor housing is constructed from rolled steel which is tack welded to the motor mount.



Hilltop Booster Station #2 Motor (U.S. Motor installed May 2014). The heavy cast steel motor housing is integral to the motor mount.

Stage 2 D/DBP Monitoring Results-Authority

The Stage 2 DBP rule is one part of the Microbial and Disinfection Byproducts Rules (MDBPs), which are a set of interrelated regulations that address risks from microbial pathogens and disinfectants/disinfection byproducts. The stage 2 DBP rule focuses on public health protection by limiting exposure to DBP's, specifically total trihalomethanes (TTHM) and five haloacetic acids (HAA5) which can form in water through disinfectants used to control microbial pathogens. The St. Joseph Water Plant utilizes chlorine as a disinfectant.

In April the HAA5 level recorded was elevated at 72 ppb. This was likely due to high organics from Spring runoff and the lack of mixing in the lake given the unusually long ice cover. Community water supplies cannot exceed 60 ppb as a running annual average. Given the seasonal nature of HAA5, production, we expect the running annual average to remain well below the limit. The HAA5 running annual average is now 38 ppb. The last time the system recorded elevated HAA5 numbers was in April of 2008 in the City. In June of that year levels returned to normal.

Benton Township F-2 Coverage/Joint Sharing of Water Plant Superintendent

The warranty replacement of the membrane filter modules is now complete. Back in April of 2013, modules began failing at the potted ends of the cylinders. In November an additional 24 modules were found to have cracked pots. Staff began replacing the modules under the provisions of a prorated warranty. On December 13th we received word that Siemens would replace all of the remaining modules at no cost to the Township and in April 2014 all remaining modules were replaced.

We expect the need for our management assistance to the Township to come to an end once test results are received for Township water plant staff who took the F-2 examination on May 1st. In addition, a licensed F-1 shift operator was hired to fill a vacancy at the plant who could cover the requirement if staff did not pass the exam. The Shared Services Agreement expires on July 1st.

Intake Inspections

Both the north and south St. Joseph Water Plant intakes were inspected in May. Seebrex Diving recorded 1.5 ft of accumulated sand in the bottom of intake structures and in the pipe extending past the Y. A full report and video was presented to plant staff. Cleaning will be done in July/August as weather permits.

Intake Raw Water Sample Line

The raw water sample line is a ¾" HDPE pipe that extends from the low service pumping station to the north intake structure. The line provides plant staff with the capability of obtaining real time raw water data which is unaffected by the chlorine feed in the intake. The line must be periodically backflushed with tap water which contains chlorine. The current setup as designed is set to backflush to an end point wherein no chlorinated water reaches the lake. Plant staff is concerned however that the chlorine residual is weakened to such an extent by the time the stream reaches the intake that no protection against mussel growth in the line is achieved. Staff has been in discussion with DEQ Lansing regarding acceptable NPDES chlorine discharge limits and sampling protocols. Given the stringent limits an alternate design has been developed wherein the installation of a check valve and bypass inside of the intake structure has been devised and will be installed by Seebrex Divers. This bypass and check will redirect the backflush water into the intake which will then be drawn into the intake pipe and not discharged to the lake. A screen dome will be fabricated and placed on the existing sample line strainer located outside of the intake (on the 'roof') which will be cleaned by divers semi-annually.

**ST. JOSEPH WATER FILTRATION PLANT
1701 LIONS PARK DRIVE
SAINT JOSEPH, MI. 49085**

**By: Greg Alimenti
St. Joseph Water Plant
700 Broad St.
Saint Joseph, MI. 49085-1276
(269) 983-1240**

MAY 2014

DISTRIBUTION:	
Total Gallons	127,550,790
Average Day	4,114,542
Maximum Day	5,947,118
Minimum Day	2,833,465

TREATMENT:	
Total Low Service	131,055,589
Wash Water Gals.	1,843,939
Wash Water %	1.48%
Plant Use Gals.	1,542,407
Plant Use %	1.22%

FILTRATION:		
Ave. Filter Run	88.1	hours
Ave. Filter Rate	2.05	g/sqft/min
Filter Eff. Index	576.6	
Ave. Loss of Head	1.0	feet
Plant Sewer Usage		

LABORATORY REPORT		
Average of	Raw	Tap
Chlorides mg/L	19.8	19.4
Fluoride mg/L	0.14	0.96
Alkalinity mg/L	113	100
Hardness mg/L	142	139
pH	7.8	7.1
Calcium mg/L	38	38
Magnesium mg/L	12	11
Turbidity NTU	1.21	0.03
Temperature °F	50	
Total Coliform		0.0
Chlorine Residual		
Mixing Basin		mg/L Free
Applied		1.53
Tap		1.65
Distribution		1.46
		1.05

TREATMENT CHEMICAL SUMMARY:					
	Applied mg/L	Total Lbs.	Cost	Inventory lbs.	Days Supply
		CHEMICAL			
Alum (Al ⁺³)	1.59	1,710	\$4,975.18	4,308	78
Chlorine (Cl ₂)	2.76	2,973	\$772.98	11,309	118
Fluoride (F ₂)	0.71	769	\$2,305.65	3,066	124

		REMARKS:			
Total Cost all Chemicals	\$8,053.81				
Chemical Cost per Mil. Gallon Treated	\$61.45				
Chemical Cost per Mil. Gallon Delivered	\$63.14				
PLANT UTILITIES SUMMARY					
Electric:					
Total KWH	247,840	***includes measure of melted snow			
Total Power Cost	\$17,268.01	visit the City of Saint Joseph's Home page at www.sjcity.com			
Power Cost per Million Gallon Treated	\$127.62	e-mail comments to either: operator@sjcity.com or alimenti@sjcity.com			
Power Cost per Million Gallon Delivered	\$140.38	WEATHER CONDITIONS AT THE PLANT		Air Temp. °F	
Gallons Pumped per KWH	515	SJWW Weather Computer		Avg.	
		Rain Guage, Inches	2.21	Max.	
		days it rained***	13	Min.	
Natural Gas:		Wind Speed, Avg		Lake Temp. °F	
Metered Cubic Feet	0	Wind Speed, Max		Avg.	50.1
Natural Gas Cost	-	Prevailing Wind Dir.		Max.	56.6
Emergency Power Diesel Fuel Inv., Gals.		Lake Level (USACE)	578.54	Min.	44.5

Monthly Maintenance Notes

May 2014

Normal PM Maint. done Monthly	Check all High Service and Low Service Pumps, BPS pumps, Service BPS Chlorinators, Change out air filters on VFD Drives and Air Handlers. Mow and Grounds Maintenance at Plant, Booster Stations and Towers
05/04/14	Filled Clarifier # 2 and put in service
05/06/14	Installed New Vacuum Primer Pump # 2
05/08/14	Repaired West Gate Key Pad Mount
5/7 to 5/9/14	Painted Vacuum Primer Piping
05/13/14	D.A.Dodd - Installed new 3" boiler line in North Boiler Room and Repaired leaking fittings on unit heater in Clarifier 2 & 3 room
05/13/14	Installed New Boards to block off filtered water channel for filters 1-4 from settling basin
05/16/14	Opened valve to fill filtered water channel for Filters 1-4 to go back into service, washed Filters 3 & 4
05/19/14	Repaired roof top exhaust fan for garage, replaced belt and greased bearings
05/27/14	Installed new belt on Clarifier 2 & 3 Exhaust Fan.
05/27/14	Clarifier # 1 Off Line, Started Draining for Cleaning
05/29/14	Peerless Midwest - Installed new motor on Pump # 2 at Hilltop BPS. Pump Back In Service
05/29/14	Installed new solenoid valves for water supply on chlorinator at Hilltop BPS. Replaced cracked piping on effluent side of the LMI dosing pump
05/28/14	Daves Tree Service - Removed Tree on east side of plant by settling basin and cleared brush on east hill by 1931 section.
05/30/14	Cleaned Clarifier # 1

CLEVELAND BOOSTER STATION

HILLTOP BOOSTER STATION

BOTH

DATE	MGD TREATED	FEED METER GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl ₂ RES PRE mg/l	Cl ₂ RES POST mg/l	Cl ₂ RES MON mg/l	MGD TREATED	FEED METER GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl ₂ RES PRE mg/l	Cl ₂ RES POST mg/l	Cl ₂ RES MON mg/l	MGD TREATED BOTH
1-Jan	0.000	0	0.00	0.00	1.31	1.24	1.26	2.013	55	7.80	0.46	2.35	1.78	1.91	2.013
2-Jan	1.980	68	9.64	0.58	1.78	1.52	1.53	0.000	0	0.00	0.00	1.99	1.56	1.63	1.980
3-Jan	1.050	18	2.55	0.29				1.042	25	3.54	0.41				2.093
4-Jan	1.050	18	2.55	0.29				1.042	25	3.54	0.41				2.093
5-Jan	1.050	18	2.55	0.29	2.12	1.50	1.51	1.042	25	3.54	0.41	2.31	1.49	1.54	2.093
6-Jan	0.353	4	0.57	0.19	1.68	1.33	1.38	1.801	23	3.26	0.22	2.11	1.51	1.54	2.154
7-Jan	2.196	30	4.25	0.23	1.77	1.58	1.61	0.281	6	0.85	0.36	1.36	1.71	1.73	2.477
8-Jan	1.941	26	3.69	0.23	1.73	1.41	1.48	0.655	26	3.69	0.68	1.36	2.14	2.19	2.596
9-Jan	1.457	12	1.70	0.14	1.27	1.33	1.29	1.450	24	3.40	0.28	1.35	1.48	1.53	2.907
10-Jan	1.594	57	8.08	0.61				0.847	31	4.40	0.62				2.441
11-Jan	1.594	57	8.08	0.61				0.847	31	4.40	0.62				2.441
12-Jan	1.594	57	8.08	0.61	1.29	1.51	1.59	0.847	31	4.40	0.62	2.46	1.90	2.04	2.441
13-Jan	2.663	53	7.51	0.34	1.26	1.36	1.28	0.000	0	0.00	0.00	1.55	1.72	1.81	2.663
14-Jan	0.000	0	0.00	0.00	1.33	1.35	1.32	2.459	52	7.37	0.36	1.92	1.73	1.80	2.459
15-Jan	2.133	21	2.98	0.17	1.31	1.31	1.37	0.000	0	0.00	0.00	1.65	1.57	1.61	2.133
16-Jan	2.169	58	8.22	0.45	1.84	1.58	1.39	0.000	0	0.00	0.00	1.42	1.38	1.36	2.169
17-Jan	1.177	41	5.81	0.59				1.219	26	3.69	0.36				2.395
18-Jan	1.177	41	5.81	0.59				1.219	26	3.69	0.36				2.395
19-Jan	1.177	41	5.81	0.59	2.11	1.74	1.83	1.219	26	3.69	0.36	1.98	1.34	1.43	2.395
20-Jan	1.071	29	4.11	0.46	2.36	1.62	1.78	1.451	39	5.53	0.46	2.46	1.67	1.81	2.522
21-Jan	2.871	47	6.66	0.28	1.60	1.41	1.40	0.008	0	0.00	0.00	1.21	1.35	1.36	2.880
22-Jan	1.857	22	3.12	0.20				1.007	1	0.07	0.01				2.864
23-Jan	1.857	22	3.12	0.20	1.49	1.30	1.28	1.007	1	0.07	0.01	1.01	1.11	1.10	2.864
24-Jan	2.463	71	10.07	0.49				1.180	4	0.57	0.06				3.643
25-Jan	2.463	71	10.07	0.49				1.180	4	0.57	0.06				3.643
26-Jan	2.463	71	10.07	0.49				1.180	4	0.57	0.06				3.643
27-Jan	2.463	71	10.07	0.49	1.58	1.26	1.26	1.180	4	0.57	0.06	1.27	1.31	1.31	3.643
28-Jan	3.305	103	14.60	0.53	1.28	1.23	1.23	0.325	24	3.40	1.25	1.19	1.22	1.25	3.630
29-Jan	1.767	56	7.94	0.54	1.36	1.61	1.65	0.022	0	0.00	0.00	0.98	1.10	1.09	1.789
30-Jan	3.581	75	10.63	0.36	1.46	1.65	1.68	0.001	0	0.00	0.00	0.86	0.81	0.90	3.582
31-Jan	4.092	122	17.30	0.51				0.340	10	1.42	0.50				4.432
TOTAL	56.606	1,380	195.66					26.864	522	74.01					83.470
AVE DAY	1.826		6.31	0.38	1.5965	1.442	1.456	0.8666		2.39	0.29	1.64	1.49	1.55	2.693
MAX	4.092		17.30	0.61	2.36	1.74	1.83	2.4595		7.80	1.25	2.46	2.14	2.19	4.432
MIN	0.000		0	0.00	1.26	1.23	1.23	0.0000		0	0.00	0.86	0.81	0.9	1.789
MONTHLY TOTALS:	Cleveland	Total MG Treated	56.606	SJCT EAST				Hilltop	Total MG Treated	26.864	Cleveland Pump Station:				56.606
		Untreated	56.606	AVE DAY	0.247				Treated	26.833	Hilltop Pump Station:				26.833
Total Authority Flow:	84.437		0.000	TOTAL MAY	7.664				Untreated	0.031	TOTAL AUTHORITY (Trted.)				83.439

DISTRIBUTION REPORT

For the Month of May 2014

Activity	Number	Description
Water Main Breaks	0	
MISS DIGS	449	
Delinquent Shut Off	17	City
Hydrants (Repaired/Replaced)	0	
Valves	0	
Taps (1")	4	2330 Autumn Ridge (LCT), Bad Well 4540 Bacon School Road (RCT), Bad Well 3181 West Marquette Woods Road (Located at PRV), BW 583 Summer Ridge Parkway (City). New construction
Service Work	1	900 State Street. (Replacement)
Water Service Repairs	1	6540 Fredonia Circle (Replace service-leaking under road)
Repair of Curb box/Shut-Off Valves	0	
Water Quality Complaint(s)	0	
Hydrant Flushing to maintain water quality	0	
Staff Education/Training	0	
Overtime-Total	33.5	
Turn Off	10	(Note: This number does not include delinquent Shut off)
Turn On	13	
Finals	116	
Meter Repair		
Meter Repair/Replacement	53	Verify Read
Per detail		New Installation 12
Meter leaking		New Installation-Benton Harbor
Stopped Meter		Replaced/various reasons
Faulty Register		Rockwell Replacement
Frozen Meter		Mxu Replaced
Move Meter Inside		Sprinkler meter removed/line capped
Hard to read		Removals 2
Replace/Adding Sprinkler Meter		Curb box location
Damage to Trt		Broken Remote
New Plumbing		Noisy Meter
New siding		Upgrade 5/8" to 3/4"
Meter sent out for testing		Meter Change/Benton Harbor

CITY OF ST. JOSEPH WATER MAIN BREAK REPORT

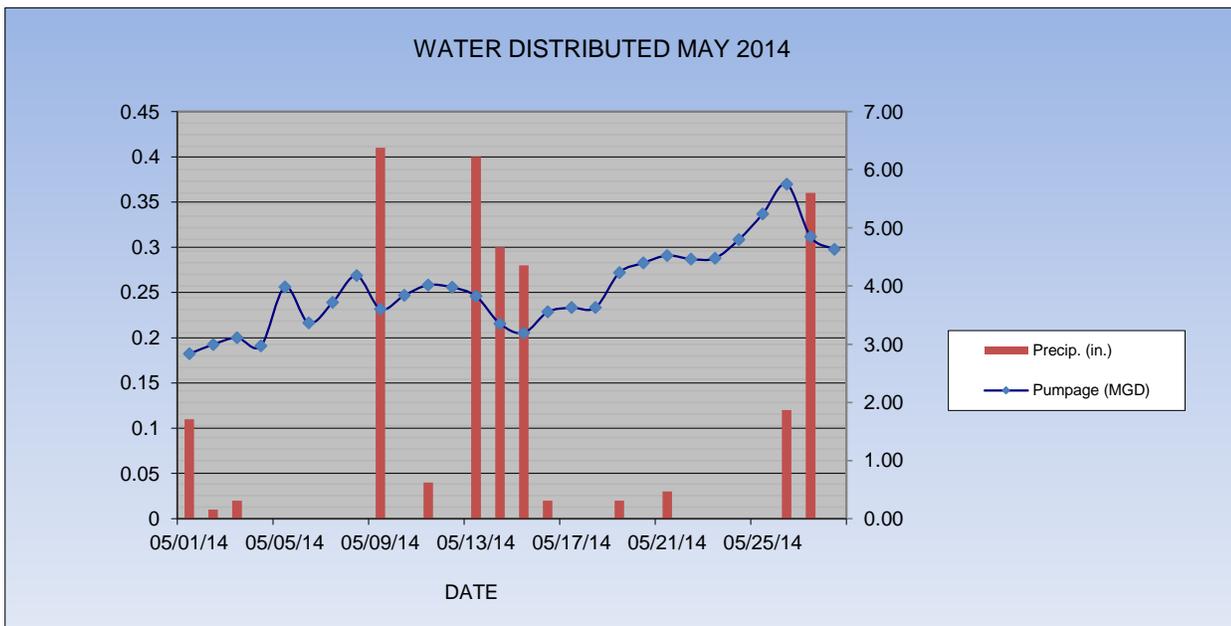
For the Month/Year of: May 2014

#	Date	Location	Main Size	Gallons Lost	Break Type	Valves Turned	City Twp	Labor	Remarks
1									
2									
3									
4									
5									
6									
		Total Gallons Lost		-					

**ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED/RAINFALL
MAY 2014**

DATE	PUMPAGE (gallons)	PUMPAGE (MGD)	Rainfall (in)	Day to Day Comparison 2014/2013	
				2014	2013
05/01/14	2,833,465	2.83	0.11	2,833,465	
05/02/14	2,995,376	3.00	0.01	2,995,376	
05/03/14	3,109,560	3.11	0.02	3,109,560	
05/04/14	2,970,596	2.97	0	2,970,596	
05/05/14	3,981,710	3.98	0	3,981,710	
05/06/14	3,364,337	3.36	0	3,364,337	
05/07/14	3,718,910	3.72	0	3,718,910	
05/08/14	4,177,584	4.18	0	4,177,584	
05/09/14	3,602,362	3.60	0.41	3,602,362	
05/10/14	3,839,959	3.84	0	3,839,959	
05/11/14	4,017,127	4.02	0.04	4,017,127	
05/12/14	3,976,766	3.98	0	3,976,766	
05/13/14	3,825,719	3.83	0.4	3,825,719	
05/14/14	3,353,211	3.35	0.3	3,353,211	
05/15/14	3,195,198	3.20	0.28	3,195,198	
05/16/14	3,554,358	3.55	0.02	3,554,358	
05/17/14	3,628,199	3.63	0	3,628,199	
05/18/14	3,630,240	3.63	0	3,630,240	
05/19/14	4,229,891	4.23	0.02	4,229,891	
05/20/14	4,397,188	4.40	0	4,397,188	
05/21/14	4,525,284	4.53	0.03	4,525,284	
05/22/14	4,464,095	4.46	0	4,464,095	
05/23/14	4,478,623	4.48	0	4,478,623	
05/24/14	4,799,185	4.80	0	4,799,185	
05/25/14	5,241,045	5.24	0	5,241,045	
05/26/14	5,751,277	5.75	0.12	5,751,277	
05/27/14	4,850,194	4.85	0.36	4,850,194	
05/28/14	4,630,466	4.63	0	4,630,466	
05/29/14	4,760,323	4.76	0	4,760,323	
05/30/14	5,947,118	5.95	0	5,947,118	
05/31/14	5,701,422	5.70	0	5,701,422	
TOTAL	127,550,790	127.55	2.12	127,550,790	-

Average Day	4,114,542
Maximum Day	5,947,118
Minimum Day	2,833,465

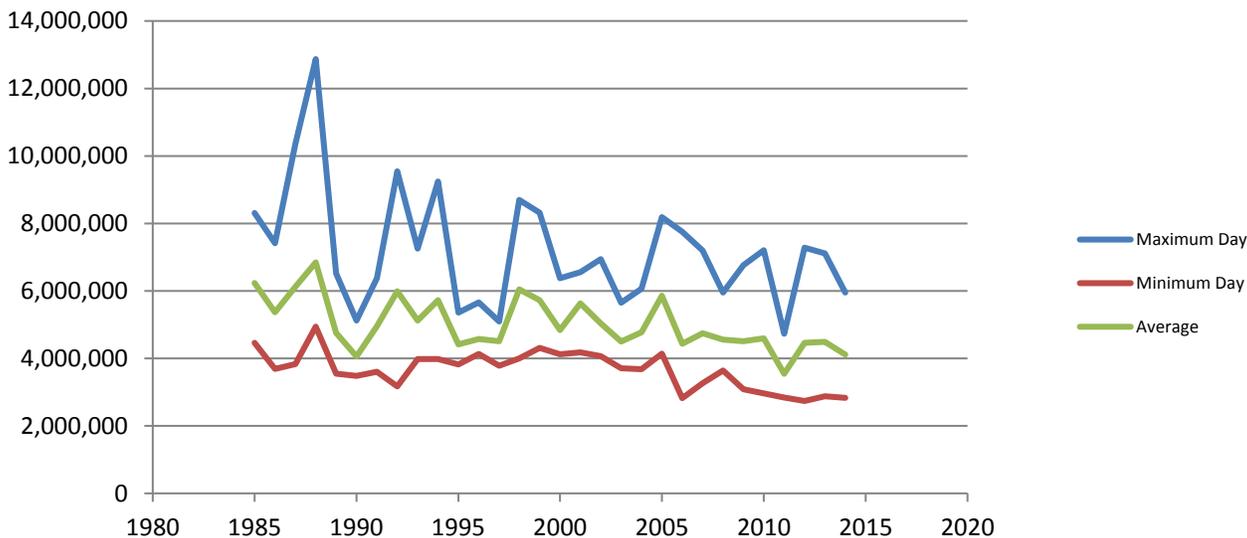


ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED

MAY 2014

Year	Average	Maximum Day	Minimum Day	Monthly Total
1985	6,233,139	8,308,600	4,458,400	193,227,300
1986	5,363,400	7,413,800	3,684,000	166,265,400
1987	6,124,184	10,353,600	3,834,000	189,849,700
1988	6,845,745	12,870,400	4,940,900	212,218,100
1989	4,755,961	6,516,400	3,543,800	147,434,800
1990	4,056,606	5,126,500	3,481,200	125,754,800
1991	4,951,545	6,376,200	3,603,700	153,497,900
1992	5,986,790	9,542,900	3,172,600	185,590,500
1993	5,125,539	7,254,700	3,981,000	158,891,700
1994	5,725,045	9,246,500	3,979,600	177,476,400
1995	4,415,565	5,361,200	3,822,400	136,882,500
1996	4,573,452	5,658,000	4,136,000	141,777,000
1997	4,510,768	5,092,100	3,779,700	139,833,800
1998	6,048,352	8,692,600	3,999,500	187,498,900
1999	5,722,849	8,319,100	4,309,900	177,408,307
2000	4,836,010	6,376,100	4,118,250	149,916,300
2001	5,634,882	6,553,750	4,176,030	174,681,340
2002	5,038,950	6,937,050	4,063,900	156,207,450
2003	4,496,300	5,648,500	3,709,610	139,385,290
2004	4,776,464	6,061,080	3,682,780	148,070,370
2005	5,855,014	8,182,500	4,142,130	181,505,420
2006	4,429,722	7,748,000	2,824,250	137,321,390
2007	4,742,185	7,192,750	3,267,390	147,007,740
2008	4,551,589	5,950,750	3,642,770	141,099,260
2009	4,508,448	6,759,230	3,083,300	139,761,901
2010	4,593,824	7,207,765	2,960,557	142,408,530
2011	3,543,478	4,730,395	2,839,172	110,258,444
2012	4,457,338	7,282,740	2,737,559	138,177,494
2013	4,492,914	7,113,301	2,877,192	139,280,351
2014	4,114,542	5,947,118	2,833,465	127,550,790

Rank	Year	Monthly Total
1	1988	212,218,100
2	1985	193,227,300
3	1987	189,849,700
4	1998	187,498,900
5	1992	185,590,500
6	2005	181,505,420
7	1994	177,476,400
8	1999	177,408,307
9	2001	174,681,340
10	1986	166,265,400
11	1993	158,891,700
12	2002	156,207,450
13	1991	153,497,900
14	2000	149,916,300
15	2004	148,070,370
16	1989	147,434,800
17	2007	147,007,740
18	2010	142,408,530
19	1996	141,777,000
20	2008	141,099,260
21	1997	139,833,800
22	2009	139,761,901
23	2003	139,385,290
24	2013	139,280,351
25	2012	138,177,494
26	2006	137,321,390
27	1995	136,882,500
28	2014	127,550,790
29	1990	125,754,800
30	2011	110,258,444





JUNE 2014

ANNUAL Water Quality Report for 2013

We are proud to report that the water provided by the City of St. Joseph meets or surpasses established water quality standards

The purpose of this report is to provide you with information on the quality of the drinking water produced by the St. Joseph Water Treatment Plant during the 2013 calendar year. The federal government established the requirement for this Water Quality Report, more formally known as a Consumer Confidence Report, in 1998. We welcome this opportunity

to provide you with details of where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and Michigan Department of Environmental Quality (MDEQ) Standards. In addition to the required information, this report includes articles to help keep you informed on current and upcoming

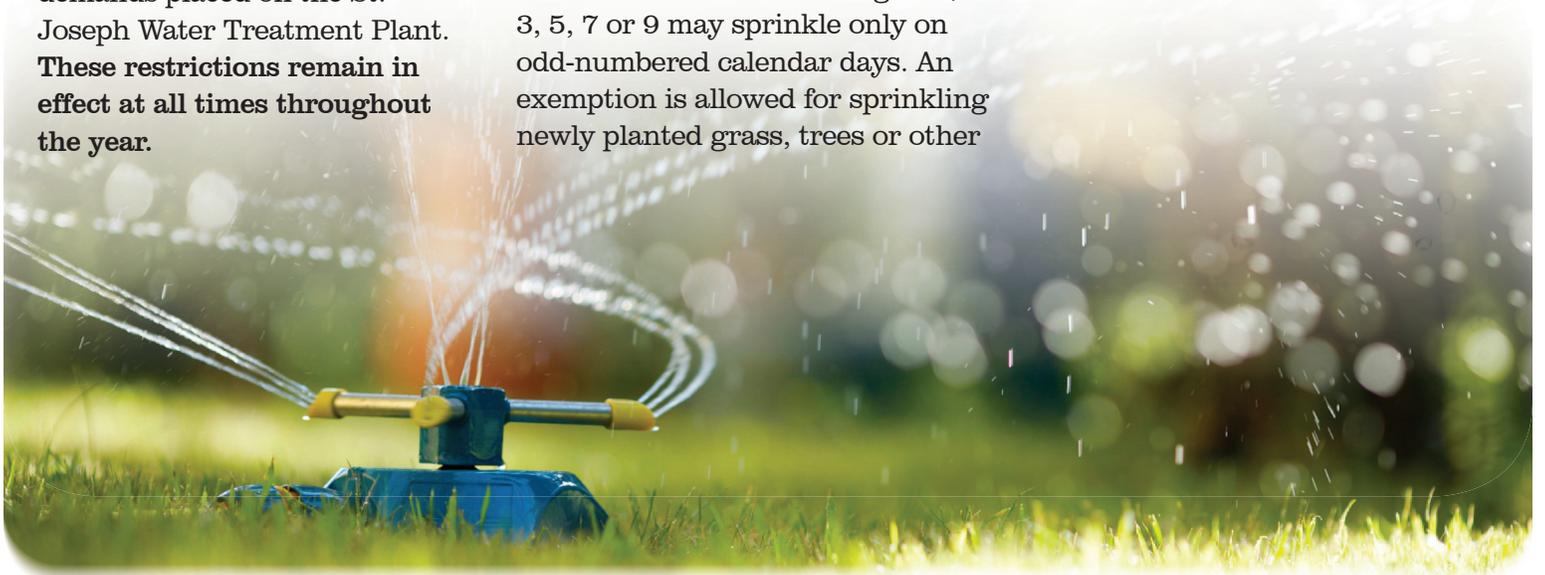
projects and the ongoing efforts by City of St. Joseph and Authority to meet the growing water demands of the service area in the most economical manner possible. Questions regarding this report can be directed to Greg Alimenti, Water Plant Superintendent. 

“Odd-Even” Sprinkling Ordinance Remains in Effect at All Times

In July of 2003, the City and the Lake Michigan Shoreline Water and Sewage Treatment Authority Municipalities introduced water conservation measures which restrict lawn sprinkling, with the goal of reducing the peak water demands placed on the St. Joseph Water Treatment Plant. **These restrictions remain in effect at all times throughout the year.**

Properties with “even” numbered street addresses, in which the last whole integer of the street address is 0, 2, 4, 6, or 8, may use water from the public water system for the purpose of sprinkling only on even-numbered calendar days. Likewise, “odd” numbered addresses ending in 1, 3, 5, 7 or 9 may sprinkle only on odd-numbered calendar days. An exemption is allowed for sprinkling newly planted grass, trees or other

plants for up to 30 days following planting, however, you should contact your City, Township or Village Hall to obtain a special permit in advance of watering under this exemption. 



Communities Cooperating to Provide Water and Sewer Services to the Area

WSJOB - The City and Authority working together to provide safe drinking water of the highest quality to all of our customers at the lowest possible rate.

City of St. Joseph

The City of St. Joseph owns and operates the St. Joseph Water Plant. The Water Plant's average day demand is 4.3 million gallons per day (MGD) with a design capacity of 16.0 MGD. The maximum day water demand in 2012 was 11.2 MGD which occurred on July 4, 2012. The Water Plant provides water to approximately 34,000 people which include 8,800 in the City of St. Joseph and 25,000 in the townships.

Under the 2009 Water Service Agreement, the City sells water, provides maintenance and bills customers in the townships of Lincoln, St. Joseph and Royalton. The City bills all customers for water and sewer and then remits sewer charges and township water surcharges, in full, to the respective townships. Customers are billed quarterly: St. Joseph and Royalton Township customers are billed in January, April, July and October; St. Joseph Township Customers are billed in February, May, August and November; Lincoln Township customers are billed in March, June, September and December. Bills are mailed on the first of the month and due on the 21st of the month or the next business day.

Southwest Michigan Regional Sewer and Water Authority

The Lake Michigan Shoreline Sewer & Water Authority was formed in 1964 by the communities of St. Joseph and Lincoln Charter Townships to represent their residents as they negotiated water and sewer services from the City of St. Joseph. Royalton Township joined the Authority in 1996. In 2008, the Southwest Michigan Regional Sewer and Water Authority (SMRS&WA) was formed to replace the Lake Michigan Shoreline Sewer & Water Authority. Each of the three townships owns and operates their local water and sewer mains; the SMRS&WA owns and operates shared system assets including the sewer interceptor, water booster stations and water towers. Township representatives work together through the SWRS&WA to ensure that the

three individual water and sewer systems operate cooperatively as one Authority System. The townships each contribute annually to the SMRS&WA, providing the revenue necessary to maintain these shared capital assets and to deliver common maintenance services to the individual township systems; however each township is responsible for the repair and replacement of their own sewer mains, and for the replacement of their own water mains.

Joint Water Services Board -WSJOB

In 2009 area municipalities in northern Berrien County served by the St. Joseph water system approved a new 30 year water contract that included a new operating structure and established a new level of municipal cooperation.

The three communities that make up the Authority include: Lincoln Charter Township, Royalton Township and St. Joseph Charter Township.

Under the agreement, members of the WSJOB set the water rate for all water system customers; all water users are charged the same rate. The WSJOB is charged with the responsibility of setting a rate sufficient to generate the revenue necessary to pay all costs associated with the operation and maintenance of the water plant and important shared system components as well as the routine maintenance of the distribution system of the entire system. Each community then establishes its own separate water rates to fund the installation and replacement of that community's own water mains. Surcharges previously charged to Authority customers have been eliminated.

The 2009 agreement made it possible for the water system to obtain funding



at favorable rates through the State of Michigan revolving loan program for improvements to the St. Joseph Water Plant, including construction of a new intake as well as electrical upgrades and filter replacements, which were completed in 2012. The projects also received several million dollars in federal funding, further reducing the cost to residents.

Joint Board of Commissioners of the Benton Harbor-St. Joseph Wastewater Treatment Plant

The Joint Board of Commissioners is the governing body of the Benton Harbor-St. Joseph Joint Wastewater Treatment Plant. The Joint Plant treats an average daily flow of about 8.5 million gallons per day (MGD) with a design capacity of 15.3 MGD. The Joint Plant serves approximately 60,000 people in its north Berrien County service area.

Established in 1951, the Joint Board provides oversight of the treatment plant's operation. This oversight extends to all aspects of facility operation, maintenance and improvement. The current eight member board consists of the Benton Harbor and St. Joseph City Managers (designated representatives by ordinance), two additional representatives from each city, and one representative each from Benton Township and the Lake Michigan Water & Sewage Treatment Authority. The Joint Board meets monthly on the third Thursday of the month at 11:00 a.m. 



Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2013 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 – December 31, 2013. The State allows

us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All of the data is representative of the water quality, but some are more than one year old. Chlorine, HAA5 and TTHM results are reported as “Running Annual Averages” (RAAs). 

Regulated Contaminant	MCL	MCLG	Your Water	Range	SAMPLE DATE	VIOLATION YES/NO	TYPICAL SOURCE OF CONTAMINANT
Fluoride (ppm)	4	4	1.1	N/A	4/10/2013	No	Water additive to protect teeth.
Barium (mg/L)	2	2	.02	N/A	1/24/2011	No	Discharge of drilling wastes, discharge from metal refineries, erosion of natural deposits.
TTHM - Total Trihalomethanes (ppb)	80	N/A	70.2	13 to 72	4 quarters	No	Byproduct of drinking water disinfection.
HAA5 Haloacetic Acids (ppb)	60	N/A	38.1	8 to 38	4 quarters	No	Byproduct of drinking water disinfection.
M&P-Xylene	1000	NA	0.5		6/19/2012	No	Discharge from petroleum factories, discharge from chemical factories.
Chlorine (ppm)	4	4	1.00	0.84 to 1.10	Daily	No	Water additive used to control microbes.
Gross Alpha	15	0	0.48	N/A	4/22/2013		
Beta emitters (pCi/L)	50	0	0	N/A	1/21/2010	No	Decay of natural and man-made deposits.
Combined radium (pCi/L)	5	0	2.2	N/A	4/22/2013	No	Erosion of natural deposits.
Special Monitoring and Unregulated Contaminant **			Your Water	Range	SAMPLE DATE	TYPICAL SOURCE OF CONTAMINANT	
Sulfate (ppm)			37	N/A	4/10/2013	Treatment process additive to help remove suspended particles in water & erosion of natural deposits.	
Sodium (ppm)			9	N/A	4/10/2013	Erosion of natural deposits.	
Contaminant Subject to AL	Action Level	MCLG	90% OF SAMPLES < THIS LEVEL	SAMPLE DATE		NUMBER OF SAMPLES ABOVE AL	TYPICAL SOURCE OF CONTAMINANT
Lead (ppb)	15	0	2.4	9/21/2011		0	Corrosion of household plumbing systems.
Copper (ppb)	1300	1300	120	9/21/2011		0	Corrosion of household plumbing systems.



Water Quality Data (continued)

Microbial Contaminants	MCL	MCLG	Number Detected	Violation Yes / No	Typical Source of Contaminant	
Total Coliform Bacteria	>1 positive monthly sample (>5% of monthly samples positive)	0	0	No	Naturally present in the environment	
Fecal Coliform and E. coli	Routine and repeat sample total coliform positive, and one is also fecal or E. coli positive	0	0	No	Human and animal fecal waste	
Substance (units)	MCL	MCLG	Highest Level Detected	Range of Detection	Violation Yes/No	Typical Source of Contaminant
Turbidity (NTU)	TT= 1 NTU TT=percentage of samples equal to or below 0.3 NTU	N/A	0.17	0.03 - 0.17	No	Soil Runoff

If present, elevated levels of lead can cause serious health problems, especially for pregnant woman and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of St. Joseph Water Treatment Plant is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are

concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

Turbidity is a measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system. Nephelometric Turbidity Units (NTU) is a measure of the clarity of water.

Contaminant and Unit of Measurement	MCL	MCLG	Lowest Running Annual Average, Computed Quarterly, of Monthly Removal Ratios	Range 2013	Violation Yes/No	Likely Source of Contamination
Total Organic Carbon	TT	N/A	1.20	1.18 - 1.36	No	Naturally present in the environment

**Treatment Technique for TOC is based on the lowest running annual average of the monthly ratios of the % TOC removal achieved to the % TOC removal required. A minimum ratio of 1.00 is required to meet the TT.

- The average water hardness is 138mg/l or 138 ppm (as CaCO₃) - This equates to 8.1 Grains

What are PPM and PPB?

Parts per million (ppm) and parts per billion (ppb) are units used to measure the concentration of a substance in water. Here are some examples that illustrate how small a ppm and ppb actually are:

One part per million (ppm) is the same as:

- One drop of gas in the gas tank of a mid-sized car
- One second in 11 days; one minute in two years
- One car in bumper-to-bumper traffic from St. Joseph to Cleveland
- One penny in \$10,000
- One dollar bill in a stack of new dollar bills 250 feet high

One part per billion (ppb) is the same as:

- One drop in a railroad tanker car
- One second in 32 years; one minute in 1900 years
- One four-inch hamburger in a chain of hamburgers circling the earth at the equator 2.5 times
- One inch in the distance from St. Joseph to Hong Kong and back
- One silver dollar in a roll of silver dollars from Detroit to Salk Lake City 



Contamination from Cross-Connections

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment systems containing chemicals (air conditioning systems, fire sprinkling systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to main breaks

causing contaminants to be siphoned out from the equipment and into the drinking water line (backsiphonage).

The most common sources of cross-connection contamination at home is outside water taps and garden hoses. Garden hoses create hazards when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools or garden chemicals. Improperly installed valves in your toilet could be a source of cross-connection contamination. Community water supplies are

continuously jeopardized by cross-connections unless appropriate prevention assemblies, known as backflow prevention assemblies, are installed and maintained. We continually survey all commercial and institutional facilities in our service area to make sure that all potential cross-connections are identified and eliminated or protected by a backflow preventer.

For more information, you can call the Safe Drinking Water Hotline at (800) 426-4791 or review the Cross-Connection Control Manual at the U.S. EPA's website: www.epa.gov/safewater/crossconnection.html. 

Water Conservation Tips for Consumers

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference—try one today and soon it will become second nature.

- Take short showers—A 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.

- Use water-efficient showerheads. They are inexpensive, easy to install, and can save you up to 750 gallons a month.
- Water plants only when necessary.
- Fix leaking toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.

- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!

Visit www.epa.gov/watersense for more information. 



General Information

Contaminants and their presence in water: Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

Vulnerability of sub-populations: Some people may be more vulnerable to contaminants in

drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the **Safe Drinking Water Hotline (800-426-4791)**.

Sources of drinking water: The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. Our water comes from surface water. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture and residential uses.
- Radioactive contaminants, which are naturally occurring or the result of oil and gas production and mining activities.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

In order to ensure tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which provide the same protection for public health. Many water suppliers add a disinfectant to drinking water to kill germs such as giardia and E. coli especially after heavy rainstorms. Your water system may add more disinfectant to guarantee that these germs are killed. 🌍

Terms and abbreviations used on the facing page

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Residual Disinfectant Level (MRDL): means the highest level of a disinfectant allowed in drinking water.

There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): means the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

N/A: Not applicable ND: not detectable at testing limit ppb: parts per billion or micrograms per liter ppm: parts per

million or milligrams per liter pCi/l: Picocuries per liter (a measure of radioactivity).

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. 🌍

* EPA considers 50 pCi/l to be the level of concern for beta particles.

** Unregulated contaminants are those for which EPA has not established drinking water standards. Monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.



Your Opinion Counts

The Water Services Joint Operating board meetings are held at the St. Joseph Water Plant, 1701 Lions Park Drive on the third Wednesday of each month at 4:00 PM. We recommend that you call to confirm the meeting time and date prior to attending or visit our website at www.sjcity.com for the exact date and time of the meetings.

Lake Michigan...

is the source of the water for the St. Joseph Water Treatment Plant. The new intake construction in 2011 extends approximately one mile into the Lake. In 2004 a Source Water Assessment was conducted by the Michigan Department of Environmental Quality using procedures established in the Great Lakes Protocol, Source Water Assessment Program. The criteria were used to develop a “sensitivity” rating, which reflects the natural ability of our

source water area to provide protection against contamination of the water supply. A water source “susceptibility” rating was then established based upon the sensitivity rating coupled with other factors that affect whether a contaminant reaches the intake. Surface source sensitivity and susceptibility ratings range from moderate sensitivity/moderately low susceptibility to very high sensitivity/very high susceptibility. The conclusion of the assessment

indicated the Lake Michigan water used by the St. Joseph Water Treatment Plant is considered highly sensitive and highly susceptible to potential contamination but the report also stated the “City of St. Joseph Water Treatment Plant has effectively treated this source water to meet drinking water standards.” A copy of the Source Water Assessment Report is available at the Water Treatment Plant, Superintendent office. 

The St. Joseph Water Plant quality control laboratory performs more than 58,000 water tests annually on your water before it reaches you.



CITY OF St. Joseph

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The St. Joseph Water Treatment Plant was originally constructed in 1892 serves the St. Joseph area with water drawn through the 48” diameter intake pipe installed in 2011. Treatment plant processes include screening, disinfection, settling and filtering. The treatment plant is manned 24 hours per day and your water is constantly monitored for quality. The current Water Plant personnel, listed here, have more than 80 years of collective experience at the St. Joseph Water Treatment Plant and are dedicated to providing safe and reliable drinking water to our community. 

Contact Information:

Water Plant Superintendent:Greg Alimenti
.....Email: galimenti@sjcity.com
Chief Plant Operator:Shawn Orlaske
Maintenance Foreman:Mark Thornton
Water Plant Operators:Jeff Faultersack, Jerrold Thomas, Jeff Peden
Rory Dickey, Josh Frazee
Water Treatment Plant Phone:269-983-1240
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