

**CITY OF ST. JOSEPH WATER FILTRATION PLANT**  
**OPERATIONAL REPORT**  
**FEBRUARY 2016**



**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-FEBRUARY 2016

Water demand in January was up by 8,894,151 gallons or 10.8% from last year. This year 90,978,083 gallons were delivered which compares to 82,083,932 gallons delivered January of 2015. The February 2016 pumpage ranked 26<sup>th</sup> in the thirty year tabulation dating back to 1987. A significant portion of the increase was due to the extra day in February this year and the hydrant break on Demorrow Road which occurred on the 13<sup>th</sup>.

### **GENERAL ACTIVITIES**

#### Phase 1 SCIP

The RFP for the filter capacity study was revised based upon WSJOB comment and issued on March 10<sup>th</sup>. The bid opening is March 30<sup>th</sup>. The filter capacity study was identified in the Strategic Capital Improvement Plan (SCIP). The filter study will address hydraulic limitations in the filter piping and assess the feasibility of rerating filters 5-12. In addition a new DWRP project plan will have to be done for the SCIP. The last project plan was completed in 2007 and included the intake, E&P improvements and clarifier upgrades. The DWRP project plan will include the City of St. Joseph distribution system and be submitted in late 2016 upon completion of the filter study. Staff attended an infrastructure financing seminar in Lansing on February 2<sup>nd</sup> to learn of recent changes in the DWRP program.

#### St. Joseph High School Career Fair

Water Plant staff will attend the St. Joseph High School Career Fair. Greg Alimenti contacted Bay De Noc Community College on the school's behalf. College representatives will make a presentation on careers in the water and wastewater industry. Bay graduates are currently employed by the City of St. Joseph, Benton Charter Township and Lake Charter Township.

#### Michigan OSHA SARA Title III Annual Report

The 2015 Hazardous Chemical Inventory Report was submitted on February 26<sup>th</sup>.

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

MDEQ District Engineer Gary Wozniak completed his first site visit as part of the 2016 Sanitary Survey of the City of St. Joseph community water supply. The sanitary survey is required every three years under Public Act 399.

#### Pipe Insulation Project

Plant staff has contracted to replace pipe insulation on the boiler steam lines in the water plant. This work began last year in the north wing of the building and will continue this year in the middle filter bays and clarifier rooms. Prior to any work in this older section of the plant the existing pipe insulation will be tested for asbestos content. Prism Science & Technology of St. Joseph will conduct this testing.

### Demorrow Road Hydrant Break

On February 13<sup>th</sup> a pickup truck struck a fire hydrant on Demorrow Road just south of Stevensville Village resulting in the separation of the barrel from the base. The open hydrant base flowing at system pressure resulted in an immediate drop in the water level at the Lincoln water tower and triggering of the pressure sustaining valves at the booster stations. Over the course of the ensuing several hours needed to isolate the hydrant some 1.15 million gallons of system water were lost. The lost water along with staff overtime and equipment use was filed and submitted to the driver's insurance company.

### Lead & Copper Rule

Water Plant staff conducted a pipe material survey of the homes in our sample pool to verify that the plumbing in the homes is in compliance with the Lead & Copper Rule. Site visits were conducted and information was gathered regarding pipe material, water filters and softeners. (Samples taken downstream of filters and softeners are not permitted). Compliance sampling is done every three years and is due again in 2017.

The City of St. Joseph most recently sampled for Lead and Copper during the summer of 2014. We were notified by the MDEQ of our compliance with the Safe Drinking Water Act. Our results of 2.0 parts per billion (ppb) for Lead is considerably lower than the action level of 15 ppb for compliance with the SDWA.

### Spring Intake Inspections/Repair

As soon as weather permits divers will be called in to inspect both intakes. The focus will be on repairing the emergency riser on the South intake. Last season divers discovered that the riser had separated from the pipe. A temporary ballasted plate was placed over the opening at that time.

### Travel & Training

Staff attended the Infrastructure Financing Seminar in Lansing on February 2<sup>nd</sup>. Staff also attended the MWEA/Michigan Section AWWA Expo at the Lansing Center on that date.

### Fairplain Interconnects

The Fairplain interconnect project has been postponed until Spring 2016.

# Monthly Maintenance Notes

February 2016

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. Snow Removal at Plant, Booster Stations and Water Towers
02/01/16	Clarifier # 3 out of service for Maint., started draining @ 7:45 am
2/2 & 2/3/16	Cleaned Clarifier # 3
02/05/16	Topped off Diesel Fuel in Plant Generators and Cleveland BPS. (1300 gal total)
02/10/16	Installed new light fixture in North Boiler room
02/10/16	Changed oil and installed new drive belt on Stober Drive for rotor on Clarifier # 3
02/10/16	Installed spare drive motor on scraper drive for Clarifier # 2. Existing motor removed due to excessive noise and vibration, ordered replacement motor.
02/12/16	Cummins Bridgeway - Semi-Annual Service and PM Inspection of Plant and BPS Generators per agreement
02/17/16	DA Dodd - Service call, North Boiler/ replaced control panel
2/16 & 2/17/16	Installed new top rollers on Clarifier # 3
02/17/16	Installed new sample pump for filters 1-4
02/19/16	Installed new thrust bearings for moving wing on Clarifier # 3
02/26/16	Hach - Service and Calibration on all Filter Turbidimeters
02/29/16	Installed new thrust bearings for scaper arm on Clarifier # 3

**DISTRIBUTION REPORT**

*For the Month of February 2016*

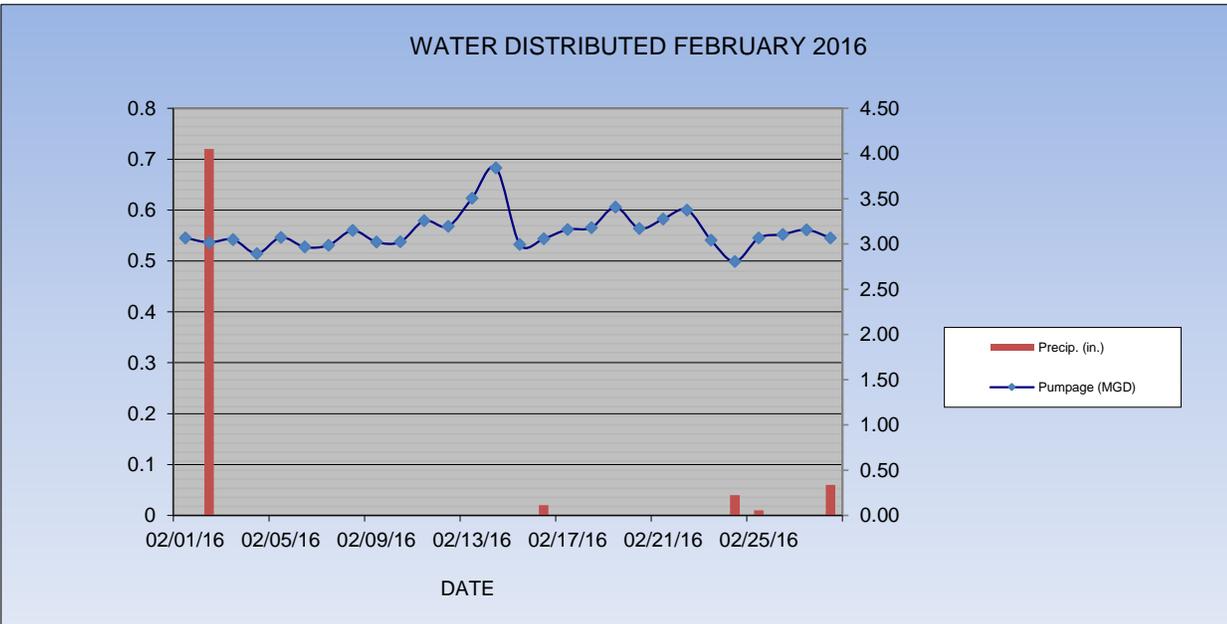
Activity	Number/Description	
Water Main Breaks	4	
MISS DIGS	113	
Delinquent Shut Off	22	19 City, 3 RCT
Delinquent Shut Off (Broken Payment Plans)	0	
Hydrants (Repaired/Replaced)	1	410 Water Street (hit by car)
		2 Hydrants replaced (756 Tucker Drive SJT, 2130 Samual Avenue (SJCTE))
Valves	0	
Taps (1")	0	
Cross Connection Control (Hydro Designs)		
Service Work (System Valves)		
Repair of Curb box/Shut-Off Valves	0	
Service Repair	1	2683 Franklin St. (LCT), bad curb box leaking
Service Replacements	5	2814 Willa Dr.(Main to curb stop, Ld serv. Leak. (Copper cust)
		1456 Main St. (City), Ld serv leak. 3/4 copper cust side
		922 Wolcott (City) Ld service leak. 3/4 copper cust side
		1407 Wolcott (City) Ld service leak. 3/4 galvanized cust side
		421 Briar Court (City Ld serv leak) to 1", 3/4 copper on cust side
Water Quality Complaint(s)	0	Demorrow Rd, Windstone, Laurel Lane (due to hyd. break)
Hydrant Flushing to maintain water quality	0	
Hydrant Flushing (Stage 2 Rule)		
Service line complaints (customer side)	2	
Staff Education/Training	0	Pipe repair training class
Overtime-Total	232.5	(Including Sanitary and Storm)
Turn Off	8	(Note: For delinquent Shut off see above)
Turn On	12	
Finals	69	
<b>Meter Repair/Replacement</b>		
		Audit Meter
		Verify Read
		Move Mxu Box
Meter Repair		New Installation
Per detail		
Meter leaking	1	New Installation-Benton Harbor
Stopped Meter	17	Replaced/various reasons (1 downsize, 1 defective)
Faulty Register		Rockwell Replacement
Frozen Meter	3	Mxu Replaced
Move Meter Inside		Sprinkler meter removed/line capped
Hard to read	13	Removals/demo
Replace/Adding Sprinkler Meter		Curb box location
Damage to Trt		Broken Remote
New Plumbing	3	Noisy Meter
New siding	1	Upgrade 5/8" to 3/4" (upgrade to 1")
Meter sent out for testing		Meter Change/Benton Harbor

CITY OF ST. JOSEPH WATER MAIN BREAK REPORT									
For the Month/Year of: February 2016									
#	Date	Location	Main Size	Gallons Lost	Break Type	Valves Turned	City Twp	Labor	Remarks
1	2/4/2016	Donald Drive at John St.	8	6,000	Crack	3	LCT	12.5	5 ft deep, sandy soil, cast iron, no cathodic,
2	2/13/2016	6000 Block Demorrow Rd.	16	1,150,000	Hydrant impact	5	LCT	60.0	Hydrant hit by car.
3	2/20/2016	2006 Niles Avenue	6	4,500	Circum crack	6	City	50.0	8 ft deep, clay soil, 2 laborers from B&Z, no cathodic, Cl
4	2/20/2016	Main St. and Elm	6	12,000	Circum crack	3	City	55.0	6 ft deep, clay soil, no cathodic, Cl
5	2/26/2016	1620 Colfax at Chippewa	6	1,200	Circum crack	3	SJCT	6.5	5 ft. deep, sandy soils, no cathodic, Cl
6									
TOTALS				1,173,700		20		184.0	

**ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED/RAINFALL  
FEBRUARY 2016**

DATE	PUMPAGE (gallons)	PUMPAGE (MGD)	Rainfall (in)	Day to Day Comparison 2016/2015	
				2016	2015
02/01/16	3,068,229	3.07	0	3,068,229	2,577,683
02/02/16	3,017,194	3.02	0.72	3,017,194	2,896,592
02/03/16	3,049,973	3.05	0	3,049,973	3,025,417
02/04/16	2,893,817	2.89	0	2,893,817	2,833,336
02/05/16	3,073,739	3.07	0	3,073,739	3,039,160
02/06/16	2,966,848	2.97	0	2,966,848	3,083,909
02/07/16	2,986,993	2.99	0	2,986,993	2,702,337
02/08/16	3,149,231	3.15	0	3,149,231	2,798,068
02/09/16	3,022,736	3.02	0	3,022,736	3,050,144
02/10/16	3,023,993	3.02	0	3,023,993	2,930,445
02/11/16	3,257,008	3.26	0	3,257,008	2,732,348
02/12/16	3,194,816	3.19	0	3,194,816	2,582,391
02/13/16	3,506,370	3.51	0	3,506,370	2,993,542
02/14/16	3,842,215	3.84	0	3,842,215	2,699,053
02/15/16	2,995,829	3.00	0	2,995,829	2,833,388
02/16/16	3,058,680	3.06	0.02	3,058,680	3,112,580
02/17/16	3,160,915	3.16	0	3,160,915	3,001,125
02/18/16	3,180,782	3.18	0	3,180,782	2,979,162
02/19/16	3,407,775	3.41	0	3,407,775	2,793,641
02/20/16	3,171,875	3.17	0	3,171,875	3,406,111
02/21/16	3,275,906	3.28	0	3,275,906	2,799,978
02/22/16	3,375,908	3.38	0	3,375,908	3,224,858
02/23/16	3,043,281	3.04	0	3,043,281	2,903,668
02/24/16	2,805,609	2.81	0.04	2,805,609	2,808,292
02/25/16	3,065,476	3.07	0.01	3,065,476	3,178,319
02/26/16	3,107,044	3.11	0	3,107,044	3,042,332
02/27/16	3,157,022	3.16	0	3,157,022	3,049,563
02/28/16	3,067,762	3.07	0.06	3,067,762	3,006,492
02/29/16	3,051,057		0.03	3,051,057	
<b>TOTAL</b>	<b>90,978,083</b>	<b>87.93</b>	<b>0.88</b>	<b>90,978,083</b>	<b>82,083,932</b>

<b>Average Day</b>	<b>3,137,175</b>
<b>Maximum Day</b>	<b>3,842,215</b>
<b>Minimum Day</b>	<b>2,805,609</b>

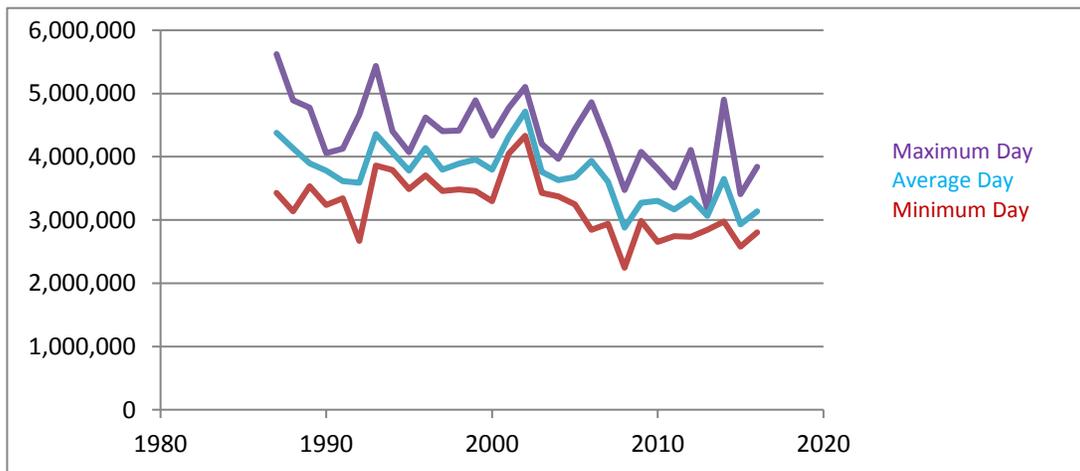


# ST. JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED

FEBRUARY 2016

Year	Average	Maximum Day	Minimum Day	Monthly Total
1987	4,379,396	5,622,900	3,428,500	122,623,100
1988	4,130,831	4,890,600	3,138,700	119,794,100
1989	3,896,614	4,776,800	3,533,800	109,105,200
1990	3,781,114	4,055,500	3,238,800	105,871,200
1991	3,614,668	4,127,700	3,343,600	101,210,700
1992	3,589,610	4,663,800	2,667,100	104,098,700
1993	4,359,857	5,437,500	3,863,000	122,076,000
1994	4,068,932	4,403,900	3,790,300	113,930,100
1995	3,780,939	4,070,400	3,486,900	105,866,300
1996	4,139,836	4,618,600	3,707,400	120,055,250
1997	3,794,300	4,405,450	3,457,450	106,240,400
1998	3,889,309	4,414,250	3,484,750	108,900,650
1999	3,956,513	4,890,200	3,458,750	110,782,350
2000	3,793,840	4,335,000	3,296,500	110,021,350
2001	4,315,793	4,772,950	4,049,250	120,842,190
2002	4,714,817	5,101,500	4,331,500	132,014,880
2003	3,760,648	4,202,000	3,429,000	105,298,140
2004	3,631,798	3,969,250	3,372,750	105,322,150
2005	3,679,712	4,441,000	3,245,000	103,031,930
2006	3,937,157	4,861,980	2,846,500	110,240,400
2007	3,604,080	4,207,250	2,938,000	100,914,250
2008	2,879,290	3,473,690	2,245,000	83,499,400
2009	3,274,119	4,077,520	2,987,140	91,675,320
2010	3,304,309	3,807,000	2,651,500	93,604,760
2011	3,165,779	3,514,477	2,743,542	88,641,802
2012	3,342,940	4,108,987	2,735,414	96,945,246
2013	3,064,325	3,170,509	2,844,135	85,801,113
2014	3,651,199	4,900,738	2,974,968	102,233,578
2015	2,931,569	3,406,111	2,577,683	82,083,932
2016	3,137,175	3,842,215	2,805,609	90,978,083

Rank	Year	Monthly Total
1	2002	132,014,880
2	1987	122,623,100
3	1993	122,076,000
4	2001	120,842,190
5	1996	120,055,250
6	1988	119,794,100
7	1994	113,930,100
8	1999	110,782,350
9	2006	110,240,400
10	2000	110,021,350
11	1989	109,105,200
12	1998	108,900,650
13	1997	106,240,400
14	1990	105,871,200
15	1995	105,866,300
16	2004	105,322,150
17	2003	105,298,140
18	1992	104,098,700
19	2005	103,031,930
20	2014	102,233,578
21	1991	101,210,700
22	2007	100,914,250
23	2012	96,945,246
24	2010	93,604,760
25	2009	91,675,320
<b>26</b>	<b>2016</b>	<b>90,978,083</b>
27	2011	88,641,802
28	2013	85,801,113
29	2008	83,499,400
30	2015	82,083,932



CLEVELAND BOOSTER STATION

HILLTOP BOOSTER STATION

DATE	FLOW MGD	FEED GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl <sub>2</sub> PRE mg/l	Cl <sub>2</sub> POST mg/l	Cl <sub>2</sub> MON mg/l	FLOW MGD	FEED GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl <sub>2</sub> PRE mg/l	Cl <sub>2</sub> POST mg/l	Cl <sub>2</sub> MON mg/l	BOOSTER MGD
1-Feb	0.000	0	0.00	0.00	1.64	1.75		1.834	70	9.92	0.65	2.72	2.49	2.86	1.834
2-Feb	0.000	0	0.00	0.00	1.55	1.74		2.772	32	4.54	0.20	1.97	1.76	2.00	2.772
3-Feb	0.000	0	0.00	0.00	1.34	1.71		1.758	46	6.52	0.44	2.17	1.93	2.18	1.758
4-Feb	0.000	0	0.00	0.00	1.31	1.65		1.673	25	3.54	0.25	1.80	1.71	0.95	1.673
5-Feb	0.000	0	0.00	0.00	1.26	1.60		1.787	31	4.40	0.29	1.96	1.71	1.82	1.787
6-Feb	0.000	0	0.00	0.00				1.780	22	3.12	0.21				1.780
7-Feb	0.000	0	0.00	0.00				1.780	22	3.12	0.21				1.780
8-Feb	0.000	0	0.00	0.00	1.16	1.36		1.780	22	3.12	0.21	1.53	1.45	1.62	1.780
9-Feb	0.000	0	0.00	0.00	1.01	1.31		1.887	51	7.23	0.46	1.98	1.69	1.95	1.887
10-Feb	0.000	0	0.00	0.00	1.01	1.25		1.707	26	3.69	0.26	1.59	1.66	1.57	1.707
11-Feb	0.000	0	0.00	0.00	0.99	1.23		1.919	35	4.96	0.31	1.97	1.75	1.90	1.919
12-Feb	0.000	0	0.00	0.00	0.96	1.34		1.767	33	4.68	0.32	1.57	1.42	1.56	1.767
13-Feb	0.312	0	0.00	0.00				1.809	29	4.11	0.27				2.121
14-Feb	0.312	0	0.00	0.00				1.809	29	4.11	0.27				2.121
15-Feb	0.312	0	0.00	0.00				1.809	29	4.11	0.27				2.121
16-Feb	0.312	0	0.00	0.00	0.94	1.06		1.809	29	4.11	0.27	1.43	1.39	1.48	2.121
17-Feb	0.000	0	0.00	0.00	0.84	1.08		1.777	50	7.09	0.48	1.99	1.65	1.81	1.777
18-Feb	0.000	0	0.00	0.00	0.88	1.08		1.866	59	8.37	0.54	2.09	1.69	1.91	1.866
19-Feb	0.000	0	0.00	0.00	0.78	0.98		1.801	52	7.37	0.49	1.79	1.72	1.95	1.801
20-Feb	0.000	0	0.00	0.00				1.861	42	5.95	0.38				1.861
21-Feb	0.000	0	0.00	0.00				1.861	42	5.95	0.38				1.861
22-Feb	0.000	0	0.00	0.00	0.90	1.16		1.861	42	5.95	0.38	1.27	1.25	1.33	1.861
23-Feb	0.000	0	0.00	0.00	0.91	1.18		1.732	37	5.25	0.36	1.77	1.56	1.66	1.732
24-Feb	0.000	0	0.00	0.00	0.79	1.10	1.13	1.985	25	3.54	0.21	1.74	1.48	1.57	1.985
25-Feb	0.000	0	0.00	0.00	0.82	1.21	1.13	1.822	22	3.12	0.21	1.53	1.42	1.55	1.822
26-Feb	0.000	0	0.00	0.00	0.89	1.22	1.20	1.897	23	3.26	0.21	1.59	1.54	1.64	1.897
27-Feb	0.000	0	0.00	0.00				1.831	29	4.11	0.27				1.831
28-Feb	0.000	0	0.00	0.00				1.831	29	4.11	0.27				1.831
29-Feb	0.000	0	0.00	0.00	0.85	1.22	1.17	1.831	29	4.11	0.27	1.72	1.61	1.72	1.831
TOTAL	1.249	0	0.0					53.633	1,012	143.48					54.882
AVE DAY	0.043		0.0	0.00	1.0	1.3	1.2	1.8494		4.9	0.32	1.81	1.64	1.75	1.892
MAX	0.312		0.0	0.00	1.6	1.8	1.2	2.7718		9.9	0.65	2.72	2.49	2.86	2.772
MIN	0.000		0.0	0.00	0.8	1.0	1.1	1.6729		3.1	0.20	1.27	1.25	0.95	1.673
MONTHLY TOTALS:	Cleveland	Total MG Treated	0.000	1.249	SJCT EAST				Hilltop	Total MG Treated	54.882	Cleveland Pump Station:			0
		Untreated	1.249		Average Day			0.2218		Untreated	0.000	Hilltop Pump Station:			54.882
Total Authority Flow:	58.1308				Month Total			6.432				TOTAL AUTHORITY (Trted.)			54.882

**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**

**FEBRUARY 2016**

DISTRIBUTION:	
Total Gallons	90,978,083
Average Day	3,137,175
Maximum Day	3,842,215
Minimum Day	2,805,609

TREATMENT:	
Total Low Service	94,245,226
Wash Water Gals.	1,470,477
Wash Water %	1.52%
Plant Use Gals.	1,648,288
Plant Use %	1.76%

FILTRATION:		
Ave. Filter Run	73.5	hours
Ave. Filter Rate	1.94	g/sqft/min
Filter Eff. Index	315.1	
Ave. Loss of Head	1.5	feet
Plant Sewer Usage		

LABORATORY REPORT		
Average of	Raw	Tap
Chlorides mg/L	18.6	21.6
Fluoride mg/L	0.13	0.71
Alkalinity mg/L	120	104
Hardness mg/L	147	144
pH	8.1	7.3
Calcium mg/L	42	42
Magnesium mg/L	11	10
Turbidity NTU	1.41	0.04
Temperature °F	36	
Total Coliform		0.0
Chlorine Residual		
		mg/L Free
Mixing Basin		0.84
Applied		1.74
Tap		1.51
Distribution		1.16

TREATMENT CHEMICAL SUMMARY:					
	Applied mg/L	Total Lbs.	Cost	Inventory lbs.	Days Supply
		CHEMICAL			
Alum (Al <sup>+3</sup> )	2.26	1,773	\$5,837.41	94,945	1553
Chlorine (Cl <sub>2</sub> )	2.43	1,906	\$512.14	7,397	113
Fluoride (F <sub>2</sub> )	0.69	541	\$948.43	31,102	1666

		REMARKS:			
Total Cost all Chemicals	\$7,297.99				
Chemical Cost per Mil. Gallon Treated	\$77.44				
Chemical Cost per Mil. Gallon Delivered	\$80.22				
PLANT UTILITIES SUMMARY					
Electric:					
Total KWH	198,000	***includes measure of melted snow			
Total Power Cost	\$ 13,860.00	visit the City of Saint Joseph's Home page at <a href="http://www.sjcity.com">www.sjcity.com</a>			
Power Cost per Million Gallon Treated	\$ 147.06	e-mail comments to either: <a href="mailto:operator@sjcity.com">operator@sjcity.com</a> or <a href="mailto:galiment@sjcity.com">galiment@sjcity.com</a>			
Power Cost per Million Gallon Delivered	\$ 4,264.83	WEATHER CONDITIONS AT THE PLANT		Air Temp. °F	
Gallons Pumped per KWH		SJWW Weather Computer		Avg.	32.2
		Rain Guage, Inches	0.88	Max.	58.6
		days it rained***	6	Min.	9.6
Natural Gas:		Wind Speed, Avg	11.8	Lake Temp. °F	
Metered Cubic Feet	9,654.00	Wind Speed, Max	53	Avg.	35.9
Natural Gas Cost	\$4,851.04	Prevailing Wind Dir.	N	Max	38.3
Emergency Power Diesel Fuel Inv., Gals.	North	Lake Level (USACE)	579.3	Min	33.8
	South				