

CITY OF ST. JOSEPH WATER FILTRATION PLANT

OPERATIONAL REPORT

FEBRUARY 2021



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/DISTRIBUTION REPORT- February 2021

Water demand in February was down by 1.9 million gallons representing a 2.3% decrease from 2020. This year 83,066,087 gallons were delivered which compares to 85,003,931 gallons in 2020. The February 2021 pumpage ranks 28th in the thirty year tabulation dating back to 1992.

GENERAL ACTIVITIES

Operational Shift Schedule

The WTP operational schedule reverted to the eight hour shift in February. The schedule had been changed in March of 2020 in order to minimize contact time between operators and extend off-shift periods as a means of reducing Covid-19 risk.

EGLE MOR Maximum Turbidity

The City is required to report maximum daily turbidity reads on applied and individual filters per a recommendation made in the 2020 EGLE Sanitary Survey. Although water quality was excellent in February and in full compliance there were individual filter reads that exceeded the standard. This may have been due to elevated applied turbidity reads from clarifiers #1 and #2. The north clarifiers will be replaced with plate settlers as part of the upcoming SCIP Phase Two project in 2023 and Clarifier #1 which was built in 1957 will be retired. Plate settlers provide more consistent water quality and reduced chemical feed. In addition, staff will be replenishing media in the filters this spring which should help. Of note, the older Clarifier #1 continues to outperform Clarifiers 2 and 3 which date to the 1970's.

Clarifier #2 Structural Inspection

Clarifier #2 will be inspected in March while it is out of service for seasonal maintenance. It was last inspected in 2011.

South Reservoir Structural Inspection

The south reservoir will be taken out of service in April for a dry inspection. The new yard piping and valves will greatly benefit this work. When the basin was last inspected in 2014, an inflatable plug had to be inserted into one of the service lines in order to stop the flow of water resulting from an old isolation valve that would not fully close.

Staff Position Changes

Water Plant Operator Kevin Kelly applied was awarded the position of meter reader in the distribution department. Kevin will replace Deb Collins who retired. The vacant water plant operator position was posted internally on 2/12/2021 for a period of ten days per City personnel policy and there were no bids. Subsequently it was advertised. As of March 12th six applications had been received.

Travel and Training

Greg attended a virtual meeting of the Michigan Section AWWA Conference and Recognition Committee. Greg provided an article for the Michigan Waterworks News entitled, *A City Water Supply in 1896* which is reprinted below. St. Joseph mayor John V. Starr served as mayor around the turn of the twentieth century. He spearheaded the construction of the early water distribution system and steam plant in St. Joseph and left the city on good terms. He retired from public office and moved to Denver, Colorado.

A City Water Supply in 1896

The following article is an editorial taken from the St. Joseph Herald in 1896 recounting the history of the St. Joseph, Michigan water supply from the manual collection of river water to a town pump and finally a Lake Michigan intake in 1892. It should be pointed out that the town pump in addition to being very shallow was located close to the St. Joseph River with no treatment of any kind. The photograph was taken of the 1892 steam powered pumping station which was replaced by a full treatment plant in 1931. The 1931 plant was decommissioned in 2020 with the SCIP (Strategic Capital Improvement Plan) Phase 1 improvements.

“There was a time when the residents of St. Joseph drank nothing but water, but that was several years before the silver question became an issue and is but a dim recollection in the minds of even the clearest headed members of our present populace. There was a time when the residents of St. Joseph took turns carrying the gourd to the river and bringing it back full of sparkling water to quench their thirst and to use in the cooking of slap jacks or the brewing of family medicines. But that was a long time before Mayor Starr became a popocrat or before the town learned to know what a genuine comfort a mayor was. It was in the days that the hardy swain yanked the milk from the festive goat and the housewife cooked the same into delicious corn bread. Well, the town grew and a generation or two after, the carrying of the gourd to the river ceased to be an anticipated pleasure and it was decided by common consent of all the people to have a town pump. The well was dug and the town took a holiday and put in the pump. The pump was made after a special order, complied, signed, sealed and delivered by a committee of ten trusted citizens. The pump was a mammoth affair and began coming from the factory two months before the last piece arrived. It had laid corded up in back of the town hall until all of its numerous parts arrived, then the various parts were put together and as we have mentioned, the town took a day off and put in the pump. There were speeches by some of the leading lights of the town and singing of patriotic songs by the entire assemblage. Then there was a scramble to get the first glass of water. A deacon of the Methodist church, the only man in town who could swear under his breath, and an able body of assistants reverently grasped the handle of the pump-and pumped. The man who by dint of muscle got the cup for the first drink, gulped down a pint of fluid which was a delightful mixture of oil, sand, grease and earth gas, went home and was sick seven months with a delirium fever. But after judicious legislation and the death of a few brave souls, confidence was restored and the policy of town pumpism grew steadily in public favor. A few public spirited citizens and leaders of fashion took to drinking pump water and the infant enterprise did business 24 hours a day and a side door business every Sunday. The pump was located right at the present corner of State and Ship streets and was the cause of constant anxiety to the town authorities. It was constantly getting out of repair and there were only two men in town who could fix it. They were Joe Hagar and Joe Hone. The old pump with its forty feet of pipe used to be hauled out onto dry land about three times a week on the average and it came about that in later years the first item in the annual appropriation bill of the town board would be, ‘Repairs on the town pump. \$1,797.46’. But one day something happened that changed all this, and those readers who remember the occurrence will vouch for our veracity. The pump one morning began giving mineral water. The most nauseating liquid ever came out of the ground was brought to light by that pump. But some men about town who had tasted mineral water said that this was thus and so it went out that we had an overflowing well of fine mineral water. Its healing propensities were great. One man tried it for consumption. It fixed the consumption all right for the man died. Then the pump experts took up the machine and found that a rat had crawled into the pipe and died. There was only one thing to do then and that was to have a water works. It was put to a vote and an overwhelming majority said that it should be built. I.W. Newcomer did a good job building the waterworks and today it stands as one of the most complete systems in Michigan. The water has been carefully tested and it would be difficult to get a purer liquid. It is taken a sufficient distance out in the lake to keep it pure and fresh.”

Monthly Maintenance Notes

February 2021

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. Grounds work at Plant, Booster Stations and Water Towers
02/02/21	Kennedy Ind. - Rebuild work on PRV
02/04/21	Installed new wet end pump assembly on circulation pump for chlorinator at the Cleveland BPS.
02/05/21	Installed new wet end pump assembly on circulation pump for chlorinator at the Hilltop BPS.
2/8 to 2/11/21	Davis - Misc work related to construction project, patch garage floor, clean up high service pipes, paint beams, scrape wall in chem feed.
02/12/21	Installed new blower motor in unit heater, Clarifier # 3
2/4 to 2/23/21	Yearly Maintenance on Clarifier #2, Installed New Rear bearings on Both Drive Units, (Rotor and Scraper). Installed Timing belt on Rotor drive. Installed New Thrust Bearings for the wing arms and pivot block, new bushing and bolt for wheel. New bolts for Counter weight. Repaired broken counter weight.
02/24/21	Hydrocorp - Backflow device inspection

DISTRIBUTION REPORT

For the Month of February 2021

Activity	Number/Description
Water Main Breaks	16
MISS DIGS	191
Delinquent Shut Off	0 No delinquent shut off's per Governor Exeuctive Order
Hydrants (Repaired/Replaced)	
Valve Turning	
Valves	2 Found left hand valve at Langley closed, reopened and flushed. See Pixley WM break Repaired a valve at Kingsley and Lakeshore
Taps (1")	3 4826 Lauren Lane, (LCT) Well conversion 6080 Blackhawk. (LCT), New house, old development 671 Sheridan (SJCT), New house on empty lot
Cross Connection Control	30 Commerical facility inspections (S). Hydro Corp
Service Retirement	1 Colfax & Lorimar. Directional bore hit abandoned service from BCT.
Service Replacement (Lead)	2 1216 and 1217 Hillcrest (S)
Service Repair	
Frozen services	0
Repair of Curb box/Shut-Off Valves	6 Various; froze up, bent curb box, rod broken, adjust.
Replace Curb box	
Meter pit/service replacement	0
Water Quality complaints	4 Water quality/pressure
Hydrant flushing to maintain water quality	0
Service line complaints (customer side)	6 leaks, high water use, misreported stormwater, snowbirds, low pressure
Private Service break	0
Staff Education/Training	0 No training in January
Overtime-Total	161
Meter Service Report-A detailed meter report for February 2021 will be provided at a later date.	
Turn Off	Defective meter
Turn On	Sensors bad
Finals	Downsize meter
Meter Repair/Replacement	TRT missing
Meter Repair	Audit Meter
Per detail	Verify Read
Meter leaking	Move Mxu Box
Stopped Meter	New Installation
Faulty Register	
Frozen Meter	Replaced/various reasons (e.g.,downsize, defective)
Move Meter Inside	Rockwell Replacement
Hard to read	Mxu Replaced
Replace/Adding Sprinkler Meter	Sprinkler meter removed/line capped
Damage to Meter/TRT/wire damaged	Removals/demo
New Plumbing	Curb box location
New siding	Broken Remote
Lead services	Noisy Meter
	Upgrade 5/8" to 3/4" (upgrade to 1")

CITY OF ST. JOSEPH WATER MAIN BREAK REPORT-February 2021

Date	Location	Main Size	Gallons Lost	Break Type	Valves Turned	City Twp	Labor	Remarks
2/5/2021	2408 Lake Shore Drive	6	12,427	Circumferential	7	City	34.5	5 ft cover, sand, no cathodic
2/5/2021	Carrie Lane S. of Wedgewood	6	24,466	Circumferential	4	SJCT	17.5	5.5 ft. cover, sand, no cathodic
2/5/2021	1225 Mohawk/1920 Langley	6	27,961	Circumferential	2	City	32	4.5 ft cover, clay, no cathodic
2/8/2021	2460 Lake Shore Dr.	6	18,640	Circumferential	2	City	27.5	4.0 ft. cover, no cathodic
2/9/2021	2880 Veronica	6	15,310	Circumferential	3	City	13.25	4.0 ft cover, loose clay, no cathodic
2/12/2021	5237 St. Joseph Ave.	6	29,779	Circumferential	2	LCT	63.75	5.0 ft cover, no cathodic, Behind Center St.
2/14/2021	1915 Langley	6	31,906	Circumferential	1	City	19	5 ft cover, clay, circular crack, no cathodic, Manley Ct WM
2/17/2021	2507/2511 S. State	10	42,541	Circumferential	7	City	46.25	6 ft. cover, clay, cathodic yes
2/17/2021	2909 Thayer	6	40,100	Circumferential	2	City	5	5 ft. cover, clay, B&Z did most of the work
2/17/2021	1105/1111 Napier	6	100,804	Two Circ Cracks	4	City	36	5 ft. cover, clay, no cathodic
2/20/2021	714 Myrtle	6	26,588	Hole		City	18	5 ft. cover, clay, 2 in. hole
2/21/2021	2810 Willa	6		Circumferential	3	City	14.25	5 ft. cover, clay, no cathodic
2/24/2021	5468 Ridge Road	6	37,281	Circumferential		City	35	6 ft. cover, sand, circ crack and hole around copper service
2/25/2021	3425 Lake Shore Dr.	6	34,033	Hole		City	3	5 ft. cover, clay, no cathodic
2/26/2021	470 S. Ottawa	6	12,760	Circumferential	7	SJCT	15.25	6.5 ft cover, sand
2/27/2021	Wolcott and Pixley	6		Circumferential	3	City	11.25	5 ft. cover, sand, nc, found left hand valve at Langley closed
TOTALS			251,566					

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 2021

DISTRIBUTION:	
Total Gallons	83,066,087
Average Day	2,966,646
Maximum Day	3,296,397
Minimum Day	2,594,201

TREATMENT:	
Total Low Service	83,861,676
Wash Water Gals.	479,906
Wash Water %	0.57%
Plant Use Gals.	30,896
Plant Use %	0.04%

FILTRATION:		
Ave. Filter Run	72.0	hours
Ave. Filter Rate	1.75	g/sqft/min
Filter Eff. Index	432.9	
Ave. Loss of Head	1.2	feet
Plant Sewer Useage	2,154	ccf

LABORATORY REPORT		
Average of	Raw	Tap
Chlorides mg/L	19.4	21.4
Fluoride mg/L	0.14	0.72
Alkalinity mg/L	120	106
Hardness mg/L	156	142
pH	8.1	7.5
Calcium mg/L	39	38
Magnesium mg/L	14	11
Turbidity NTU	1.37	0.06
Temperature °F	36	
Total Coliform		0.0
Chlorine Residual		mg/L Free
Mixing Basin		0.83
Applied		0.80
Tap		1.13
Distribution		1.14

TREATMENT CHEMICAL SUMMARY:					
	Applied mg/L	Total Lbs.	Cost	Inventory lbs.	Days Supply
		CHEMICAL			
Alum (Al ⁺³)	20.17	14,118	\$4,604.80	36,089	35
Chlorine (Cl ₂)	1.83	1,280	\$955.94	4,784	105
Fluoride (F ₂)	0.61	424	\$743.70	29,119	365

			REMARKS:			
Total Cost all Chemicals		\$6,304.44				
Chemical Cost per Mil. Gallon Treated		\$75.18				
Chemical Cost per Mil. Gallon Delivered		\$75.90				
PLANT UTILITIES SUMMARY						
Electric:						
Total KWH		193,200	***includes measure of melted snow			
Total Power Cost		\$ 13,524.00	visit the City of Saint Joseph's Home page at www.sjcity.com			
Power Cost per Million Gallon Treated		\$ 161.27	e-mail comments to either: operator@sjcity.com or galimenti@sjcity.com			
Power Cost per Million Gallon Delivered		\$ 192.92	WEATHER CONDITIONS AT THE PLANT		Air Temp. °F	
Gallons Pumped per KWH		263	SJWW Weather Computer		Avg.	25.1
			Rain Guage, Inches	0.4	Max.	52.1
			days it rained***	9	Min.	7.6
Natural Gas:			Wind Speed, Avg	9.3	Lake Temp. °F	
Metered Cubic Feet		3,652	Wind Speed, Max	51	Avg.	35.6
Natural Gas Cost		\$1,815.31	Prevailing Wind Dir.	SSE	Max	37.0
Emergency Power Diesel Fuel Inv., Gals.	North	700	Lake Level (USACE)	580.64	Min	33.8
	South	2400				

FEBRUARY 2021

SOUTHWEST MICHIGAN REGIONAL SANITARY SEWER & WATER AUTHORITY
CLEVELAND BOOSTER STATION

WSSN 3726

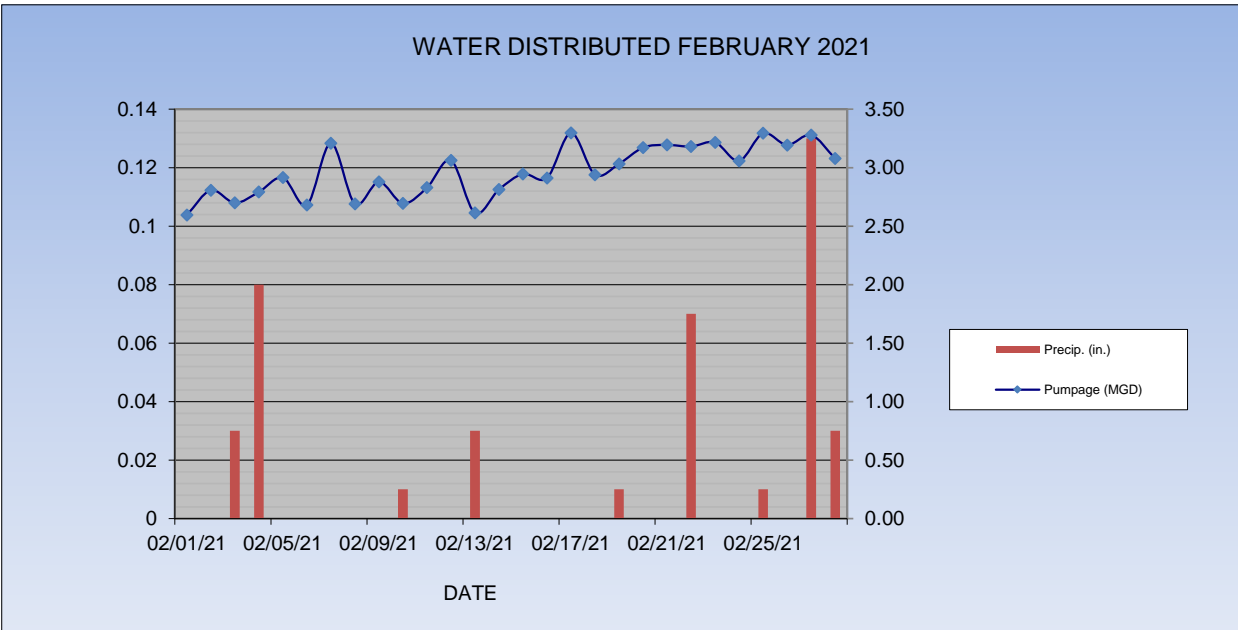
HILLTOP BOOSTER STATION

DATE	FLOW MGD	FEED GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl ₂ PRE mg/l	Cl ₂ POST mg/l	Cl ₂ MON mg/l	FLOW MGD	FEED GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl ₂ PRE mg/l	Cl ₂ POST mg/l	Cl ₂ MON mg/l	BOOSTER MGD	
1-Feb	0.653	98	13.89	2.55	1.09	1.10	1.01	1.398	120	17.01	1.46	1.29	1.18	1.16	2.050	
2-Feb	1.872	295	41.83	2.68	1.16	1.10	0.85	0.000	0	0.00	0.00	1.32	1.10	1.35	1.872	
3-Feb	0.000	0	0.00	0.00	1.24	1.42	1.20	1.974	168	23.82	1.45	1.13	1.05	1.07	1.974	
4-Feb	1.889	271	38.42	2.44	1.05	1.01	0.98	0.000	0	0.00	0.00	1.27	1.15	1.35	1.889	
5-Feb	0.000	0	0.00	0.00	1.24	1.00	1.30	1.924	158	22.40	1.40	1.04	1.24	1.04	1.924	
6-Feb	1.333	196	27.79	2.50				0.695	57	8.08	1.39				2.028	
7-Feb	1.333	196	27.79	2.50				0.695	57	8.08	1.39				2.028	
8-Feb	1.333	196	27.79	2.50	1.11	1.07	1.08	0.695	57	8.08	1.39	1.31	1.12	1.35	2.028	
9-Feb	0.000	0	0.00	0.00	1.19	1.01	1.02	2.103	170	24.10	1.37	1.19	1.11	1.16	2.103	
10-Feb	1.860	257	36.44	2.35	1.21	1.07	0.96	0.000	0	0.00	0.00	1.18	1.39	1.25	1.860	
11-Feb	0.000	0	0.00	0.00	1.36	1.05	1.28	1.948	157	22.26	1.37	1.21	1.08	1.14	1.948	
12-Feb	1.908	259	36.72	2.31	1.07	1.04	1.07	0.000	0	0.00	0.00	1.25	1.18	1.22	1.908	
13-Feb	0.968	145	20.56	2.55				0.993	83	11.77	1.42				1.961	
14-Feb	0.968	145	20.56	2.55				0.993	83	11.77	1.42				1.961	
15-Feb	0.968	145	20.56	2.55				0.993	83	11.77	1.42				1.961	
16-Feb	0.968	145	20.56	2.55	1.16	1.26	0.99	0.993	83	11.77	1.42	1.23	1.40	1.46	1.961	
17-Feb	0.000	0	0.00	0.00	1.09	1.21	1.25	1.996	166	23.54	1.41	1.36	2.04	1.79	1.996	
18-Feb	1.983	317	44.94	2.72	1.17	1.29	0.98	0.000	0	0.00	0.00	1.43	1.81	1.77	1.983	
19-Feb	0.000	0	0.00	0.00	0.94	1.40	1.24	2.1	179	25.38	1.46	1.30	1.73	1.50	2.080	
20-Feb	1.354	191	27.08	2.40				0.690	61	8.65	1.50				2.044	
21-Feb	1.354	191	27.08	2.40				0.690	61	8.65	1.50				2.044	
22-Feb	1.354	191	27.08	2.40	1.11	0.98	1.05	0.690	61	8.65	1.50	1.29	1.65	1.44	2.044	
23-Feb	0.000	0	0.00	0.00	0.87	1.04	1.00	1.894	148	20.98	1.33	1.06	1.03	1.02	1.894	
24-Feb	2.291	318	45.09	2.36	1.10	0.98	1.05	0.000	0	0.00	0.00	0.97	1.32	1.30	2.291	
25-Feb	0.000	0	0.00	0.00	1.15	0.91	0.98	2.205	175	24.81	1.35	1.36	1.11	1.14	2.205	
26-Feb	2.081	281	39.84	2.30	1.16	1.04	1.02	0.000	0	0.00	0.00	1.24	1.34	1.22	2.081	
27-Feb	0.711	109	15.45	2.61				1.428	135	19.14	1.61				2.139	
28-Feb	0.711	109	15.45	2.61				1.428	135	19.14	1.61				2.139	
TOTAL	27.894	4,055	574.9					28.505	2,397	339.85					56.398	
AVE DAY	0.996		20.5	1.78	1.1	1.1	1.1	1.0180		12.1	1.08	1.23	1.32	1.30	2.014	
MAX	2.291		45.1	2.72	1.4	1.4	1.3	2.2047		25.4	1.61	1.43	2.04	1.79	2.291	
MIN	0.000		0.0	0.00	0.9	0.9	0.9	0.0000		0.0	0.00	0.97	1.03	1.02	1.860	
MONTHLY TOTALS:	Cleveland Total MG Chlorine Adc 27.894				SJCT EAST Average Day 0.160				Hilltop Total MG Chlorine Adc 28.505				Cleveland Pump Station: 27.894			
Total Authority Flow:	56.402	No Chl Add	0.000	Month Total 4.491				No Chl Add 0.000				Hilltop Pump Station: 28.505				
															TOTAL AUTHORITY (Trted.)	56.399

**ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED/RAINFALL
FEBRUARY 2021**

DATE	PUMPAGE (gallons)	PUMPAGE (MGD)	Rainfall (in)	Day to Day Comparison 2021/2020	
				2021	2020
02/01/21	2,594,201	2.59	0	2,594,201	2,911,718
02/02/21	2,806,624	2.81	0	2,806,624	2,864,012
02/03/21	2,698,542	2.70	0.03	2,698,542	2,953,289
02/04/21	2,791,769	2.79	0.08	2,791,769	2,742,952
02/05/21	2,914,619	2.91	0	2,914,619	3,393,711
02/06/21	2,680,046	2.68	0	2,680,046	2,643,038
02/07/21	3,209,042	3.21	0	3,209,042	3,033,163
02/08/21	2,690,849	2.69	0	2,690,849	2,828,666
02/09/21	2,878,690	2.88	0	2,878,690	3,001,882
02/10/21	2,694,555	2.69	0.01	2,694,555	2,940,572
02/11/21	2,828,454	2.83	0	2,828,454	2,866,450
02/12/21	3,062,283	3.06	0	3,062,283	3,325,169
02/13/21	2,612,624	2.61	0.03	2,612,624	2,384,765
02/14/21	2,813,122	2.81	0	2,813,122	3,136,282
02/15/21	2,946,147	2.95	0	2,946,147	2,641,191
02/16/21	2,911,237	2.91	0	2,911,237	3,324,009
02/17/21	3,296,397	3.30	0	3,296,397	3,022,742
02/18/21	2,939,806	2.94	0	2,939,806	3,074,979
02/19/21	3,032,821	3.03	0.01	3,032,821	2,959,841
02/20/21	3,171,732	3.17	0	3,171,732	3,074,319
02/21/21	3,194,586	3.19	0	3,194,586	3,081,924
02/22/21	3,180,463	3.18	0.07	3,180,463	2,930,505
02/23/21	3,215,764	3.22	0	3,215,764	2,976,335
02/24/21	3,057,639	3.06	0	3,057,639	2,938,195
02/25/21	3,293,359	3.29	0.01	3,293,359	2,941,676
02/26/21	3,193,330	3.19	0	3,193,330	2,701,739
02/27/21	3,278,807	3.28	0.13	3,278,807	2,550,526
02/28/21	3,078,579	3.08	0.03	3,078,579	2,905,460
		0.00			2,854,820
TOTAL	83,066,087	83.07	0.40	83,066,087	85,003,931

Average Day	2,966,646
Maximum Day	3,296,397
Minimum Day	2,594,201

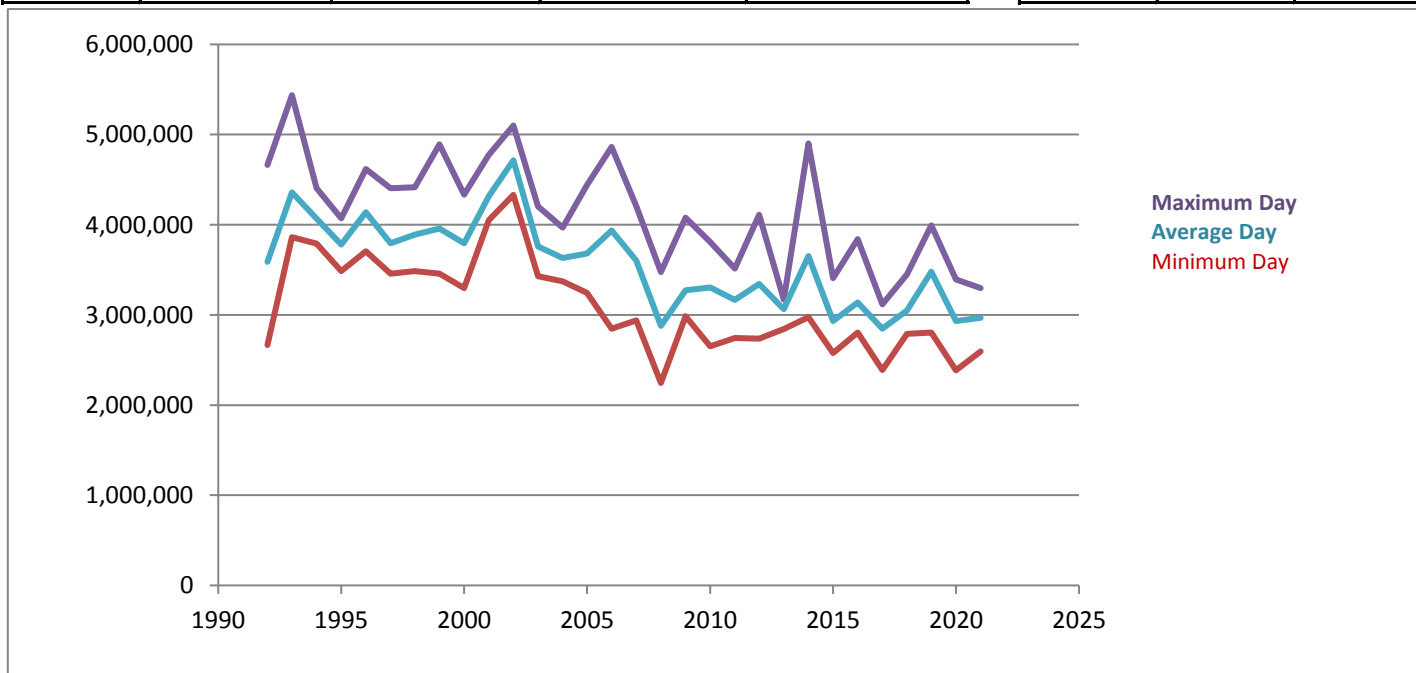


ST. JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED

FEBRUARY 2021

Year	Average	Maximum Day	Minimum Day	Monthly Total
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
2017	2,847,483	3,117,688	2,388,047	79,729,518
2018	3,048,373	3,450,397	2,790,662	85,354,448
2019	3,477,897	3,994,547	2,802,817	97,381,118
2020	2,931,170	3,393,711	2,384,765	85,003,931
2021	2,966,646	3,296,397	2,594,201	83,066,087

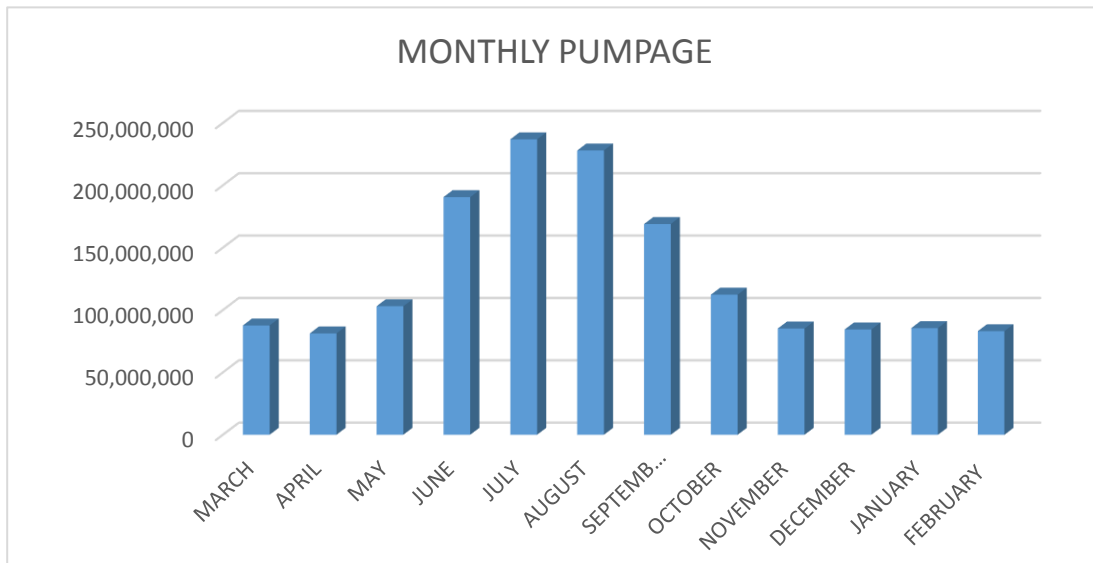
Rank	Year	Monthly Total
1	2002	132,014,880
2	1993	122,076,000
3	2001	120,842,190
4	1996	120,055,250
5	1994	113,930,100
6	1999	110,782,350
7	2006	110,240,400
8	2000	110,021,350
9	1998	108,900,650
10	1997	106,240,400
11	1995	105,866,300
12	2004	105,322,150
13	2003	105,298,140
14	1992	104,098,700
15	2005	103,031,930
16	2014	102,233,578
17	2007	100,914,250
18	2019	97,381,118
19	2012	96,945,246
20	2010	93,604,760
21	2009	91,675,320
22	2016	90,978,083
23	2011	88,641,802
24	2013	85,801,113
25	2018	85,354,448
26	2020	85,003,931
27	2008	83,499,400
28	2021	83,066,087
29	2015	82,083,932
30	2017	79,729,518



ST. JOSEPH WATER PLANT-YEAR TO DATE PUMPAGE

February 2021

	Pumpage Month	Pumpage FISCAL YTD	By Quarter
MARCH	87,660,793		
APRIL	81,275,185		
MAY	103,081,905		
JUNE	190,552,034		374,909,124
JULY	236,887,854	236,887,854	
AUGUST	227,968,057	464,855,911	
SEPTEMBER	168,999,470	633,855,381	1,335,599,146
OCTOBER	112,348,772	746,204,153	
NOVEMBER	85,192,969	831,397,122	
DECEMBER	84,424,836	915,821,958	281,966,577
JANUARY	85,545,876	1,001,367,834	
FEBRUARY	83,066,087	1,084,433,921	
TOTAL	1,378,391,875		



	TOC Compliance							
	Treated	Source	Formula		Req. TOC	Actual	Alternative	Compl. Perf.
	Tap	Tap	Ratio	Alka- linity	Removal	Ratio/ Remov	Criteria Complied Y/N	
March	1.74	2.07	15.9	137	15	1.06	N(Removal)	1.06
Qtr Average						1.06		
April	1.70	1.93	11.9	113	25	0.48	Yes	1.00
May	1.60	1.97	18.8	110	25	0.75	Yes	1.00
June	1.44	1.72	16.3	112	25	0.65	Yes	1.00
Qtr Average						0.63		
July	1.65	1.92	14.1	109	25	0.56	Yes	1.00
August	1.72	2.01	14.4	109	25	0.58	Yes	1.00
September	1.49	1.83	18.6	110	25	0.74	Yes	1.00
Qtr Average						0.63	Yes	
October	1.47	1.98	25.8	131	15	1.72	N(Removal)	1.72
November	1.42	1.77	19.8	112	25	0.79	Yes	1.00
December	1.57	1.98	20.7	116	25	0.83	Yes	1.00
Qtr Average						1.11		
January	1.40	1.99	29.6	110	25	1.19	N(Removal)	1.19
February	1.40	1.80	22.2	112	25	0.89	Yes	1.00
Qtr Average						1.19		
Annual Avg.	1.55	1.91				0.92		1.08

3/18/2020

4/15/2020

5/20/2020

6/17/2020

7/15/2020

8/6/2020

9/16/2020

10/19/2020

11/10/2020

12/8/2020

1/20/2021

2/22/2021

MONTHLY CLIMATOLOGICAL SUMMARY

February 2021

NAME: sjwwweather

St. Joseph Water Plant - 1701 Lions Park Drive - St. Joseph, MI

DAY	MEAN TEMP	NORM MEAN TEMP	HIGH TEMP	TIME	NORM HIGH TEMP	REC HIGH TEMP	YEAR	LOW TEMP	TIME	NORM LOW TEMP	REC LOW TEMP	YEAR	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	30.7	25	34	9:30p	32	64	1989	27.7	8:00a	16	-3	1996	34.3	0	0	15.8	32	9:00p	NNE
2	31.9	25	34.7	4:00p	32	50	1968	28.7	5:00a	16	-12	1951	33.1	0	0	14.9	34	1:30a	NNE
3	32	25	41.6	1:30p	32	56	1991	26	6:00a	17	-10	1996	33	0	0.03	5.1	21	12:30a	ESE
4	32.1	25	37	12:30p	32	52	1991	27.6	12:30a	17	-6	1985	32.9	0	0.08	10.1	48	11:30p	SSE
5	21.1	25	29.4	12:30a	33	50	1964	18.2	12:00m	17	-7	1996	43.9	0	0	30.9	51	2:00a	WSW
6	18.4	25	19.4	3:00p	33	55	2017	17	11:00a	17	-6	1979	46.6	0	0	18.6	42	1:30a	W
7	12.6	26	17.7	12:30a	33	55	2017	7.6	12:00m	17	-13	1978	52.4	0	0	14.6	33	1:30a	WNW
8	13	26	18.6	4:00p	33	60	1990	7.7	12:30a	17	-8	1978	52	0	0	3.9	14	12:30p	SSE
9	18.1	26	21	5:30p	33	58	1990	15.4	12:30a	17	-12	1985	46.9	0	0	5.3	17	2:00p	WNW
10	20.4	26	24.2	3:00p	34	56	1999	15.7	8:30a	17	-12	1994	44.6	0	0.01	3.7	15	3:30a	WNW
11	19.2	26	23.1	3:30p	34	70	1999	15.5	8:30a	18	-4	1994	45.8	0	0	4.8	19	1:30p	ENE
12	21.7	26	25.4	2:00p	34	70	1999	18	1:30a	18	2	1967	43.3	0	0	6.6	24	2:00p	E
13	22.8	27	26.3	2:30p	34	56	1984	19.8	7:30a	18	-8	1955	42.2	0	0.03	6.8	39	7:00p	ENE
14	17.2	27	22.4	12:30a	35	58	1954	13.1	11:30p	18	3	1970	47.8	0	0	13.8	31	9:00p	NNW
15	12.6	27	16.1	2:00p	35	65	1954	10.5	8:00a	18	2	1963	52.4	0	0	7.1	26	2:30p	NNE
16	15.1	27	20.8	6:30p	35	64	1954	9.9	8:00a	19	-4	1985	49.9	0	0	7.3	28	4:30a	NNE
17	14.9	28	22.3	4:00p	35	61	2017	7.8	9:00a	19	-8	1979	50.1	0	0	2.9	10	5:00a	SSE
18	20	28	23.9	1:30p	36	63	1961	15.7	8:00a	19	0	1978	45	0	0	3.5	15	3:00p	ENE
19	19.5	28	24	8:00a	36	63	1994	13.2	9:00a	19	-1	1993	45.5	0	0.01	11.3	28	7:00p	WSW
20	22.4	29	28	5:30p	36	67	2017	16.6	10:00a	20	-5	1979	42.6	0	0	8.7	24	1:00a	W
21	27.3	29	35.8	3:00p	37	61	1983	17.4	4:30a	20	1	1963	37.7	0	0	6.2	23	7:30p	SSE
22	34	29	38.5	10:30p	37	62	2017	29.3	12:30p	20	-4	1963	31	0	0.07	17.3	36	6:00a	SW
23	37.2	29	41.8	9:30p	37	65	1984	34.3	7:30a	20	-1	1989	27.8	0	0	9.2	25	12:30a	SSW
24	38.2	30	47.6	6:00a	38	64	1984	32.3	11:30p	21	1	1989	26.8	0	0	8.1	27	6:30a	SSW
25	32.7	30	40.2	3:30p	38	64	1976	25.8	7:30a	21	-2	1993	32.3	0	0.01	4.2	16	1:30p	SSW
26	35.3	30	45.3	4:30p	38	60	1996	25	7:00a	21	-5	1963	29.7	0	0	5.1	22	3:00p	SSE
27	40	31	49.6	5:00p	39	71	1976	34.7	6:30a	22	-6	1994	25	0	0.13	6.1	19	10:30a	SSW
28	41.6	31	52.1	2:30p	39	63	1976	36.3	7:30p	22	2	1989	23.4	0	0.03	7.9	26	2:30p	ESE
29																			
30																			
31																			
AVE	25.1	27.4											39.9	0.0	0.0	9.3	26.6		SSE
MAX	41.6	31	52.1			71		36.3		22	3		52.4	0	0.13	30.9	51.0		
MIN	12.6	25	16.1					7.6		16	-13		23.4	0	0	2.9	10		
TOTAL															0.4				

Max Rain: 0.13 ON 02/27/21
 Days of Rain: 6 (>.01 in) 1 (>.1 in) 0 (>1 in)