CITY OF ST. JOSEPH WATER FILTRATION PLANT

OPERATIONAL REPORT

JANUARY 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- JANUARY 2021

Water demand in January was up by a mere 150,496 gallons representing a .2% increase from 2021. This year 85,696,372 gallons were delivered which compares to 85,545,876 gallons in 2021. The January 2022 pumpage ranks 28th in the thirty-year tabulation dating back to 1993 beating out 2008 and 2020.

GENERAL ACTIVITIES

Stage 2 Disinfection/Disinfectant Byproduct Rule

Staff collected two sets of samples at the DBP 1 and DBP 2 sample sites in the Authority service area in January. We were disappointed to learn that the first set of compliance samples had been received broken in transit. A second set of samples was taken on January 20th which was still comfortably within the January monitoring period for the first quarter. Given the cold water temperature and low UV254 the results revealed lower numbers especially for trihalomethanes (TTHM) which had been high in the third and fourth quarters of 2021. Haloacetic acids (HAA5) which were low in 2021 remained so in the first quarter of 2022. Of note the TTHM sample bottle from the first shipment arrived unbroken and yielded an even lower result than that of the second sample but could not be counted since under the rule both TTHM and HAA5 much be collected together at the same time from the same location.

Travel and Training

Staff visited the Grand Rapids Water Plant as guests of the City of Grand Rapids and FTCH design engineers. The old upflow clarifiers at the plant were recently retrofitted with new flocculation units and plate settlers. Two of their old clarifiers which were no longer in service appeared identical to our clarifiers only considerably larger.

Lead Service Line Replacement-Ongoing

Staff continues to meet weekly with the lead service line replacement team to discuss lead service line identification, replacement, water sampling and planning.

Treatment Optimization

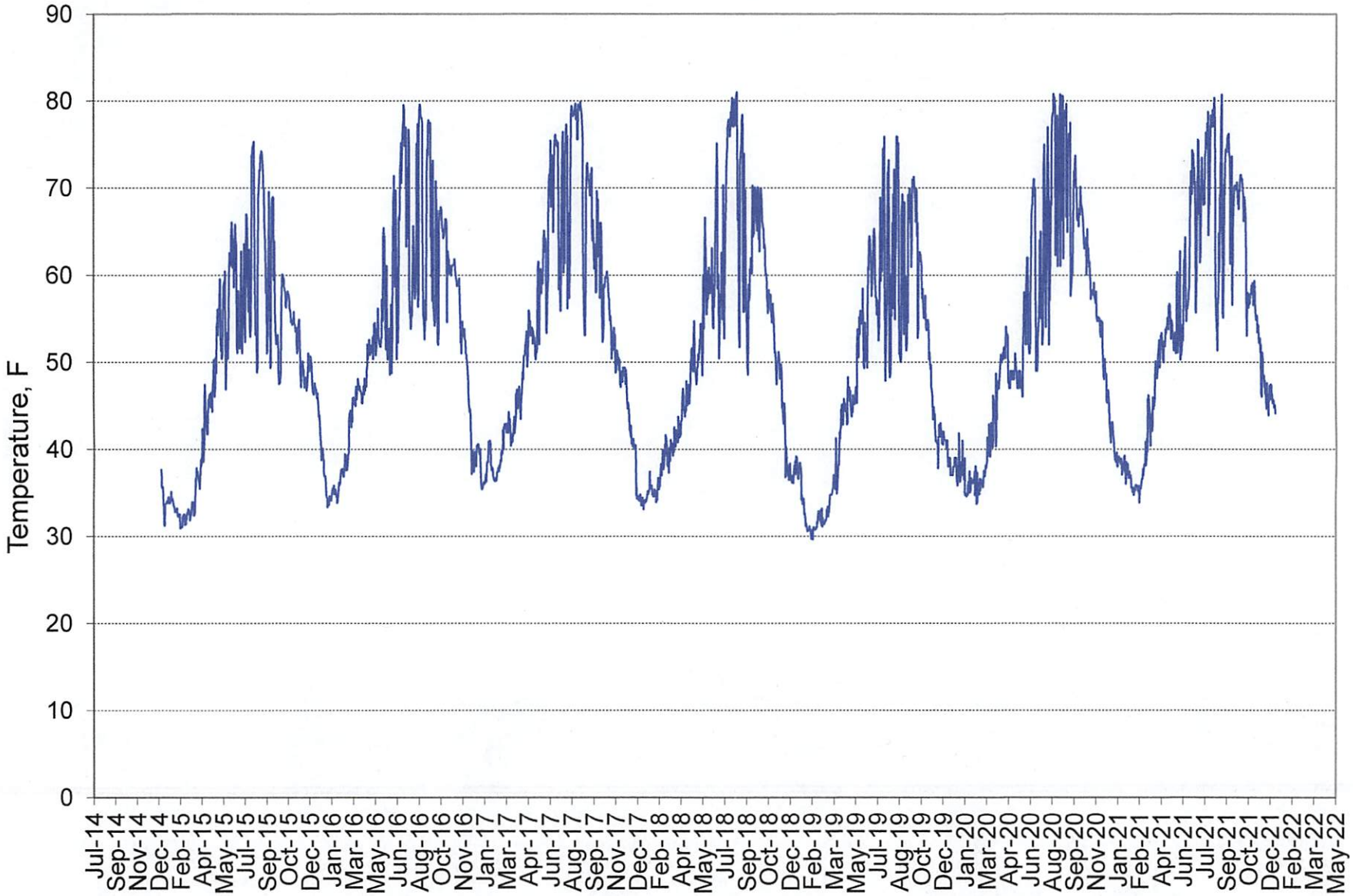
Plant staff met with Alex Yavitch of Optimization Solutions to discuss increasing disinfection byproduct levels in the distribution system during the summer and fall of 2021 as well as trends in raw water and finished water quality and treatment optimization. He pointed out that UV 254 is an important indicator and predictor of coagulation, sedimentation and filtration performance as well as disinfection byproduct formation. The St. Joseph Water Plant staff has been monitoring raw and finished water UV254 for several years and we learned that our raw U254 is significantly higher than that of other east shore Lake Michigan plants. This is likely due to the St. Joseph River. Interestingly, only one plant, Fort Wayne, IN recorded higher results and their source is the St. Joseph River. The St. Joseph Water Plant intake is located just over a mile from the mouth of the St. Joseph River and depending on lake currents and wind, river water can be drawn into the plant. Dr. Yavitch also confirmed our observations of higher temperatures in 2021 which factored into disinfection byproduct formation.

In terms of treatment optimization, filtered water turbidity has decreased and is more stable. This is likely due to the new coagulant feeders installed in the SCIP Phase 1 project which are now flow paced thereby making dosage control more consistent. This can be seen in the Alum graph which depicts alum

dosage. The old feeders dating back to 1957 were flow paced but undependable and such dosage was adjusted manually by the plant operator. (Please see graphs, *Filtered Turbidity, Raw UV254, Temperature* and *Alum*).

SCIP (Strategic Capital Improvement Plan) Phase 1 Construction Retainage Release

Now that the outstanding high service pump issues have been addressed the remaining retainage on the project is being released as recommended by CH2M Jacobs. In January high service pump #3 was returned to the water plant after replacement of the top motor bearing. Heco of Kalamazoo was contracted by the manufacturer to tear the motor down and determine the cause of the failure. They found that arcing was occurring between the grounding ring and shaft due to a manufacturing defect. Specifically, the shaft had been painted and the thin coating was blocking the electrical current to ground. Given that pump #1 is identical to this pump it was pulled in January and will be retrofitted at no cost to the City. The warranty which is one year will begin when the pumps are placed back in service. As you may recall pumps two and four exhibited excessive vibration in the operating range and were pulled in 2021 and retrofitted with tuning plates. At this time all issues have been addressed and all pumps are performing satisfactorily The test report on High Service Pump #3 is attached.


Temperature, F
90
80
70
60
50
40
30
20
10
0
Jul-14
Sep-14
Nov-14
Dec-14
Feb-15
Apr-15
May-15
Jul-15
Sep-15
Oct-15
Dec-15
Jan-16
Mar-16
May-16
Jun-16
Aug-16
Oct-16
Nov-16
Jan-17
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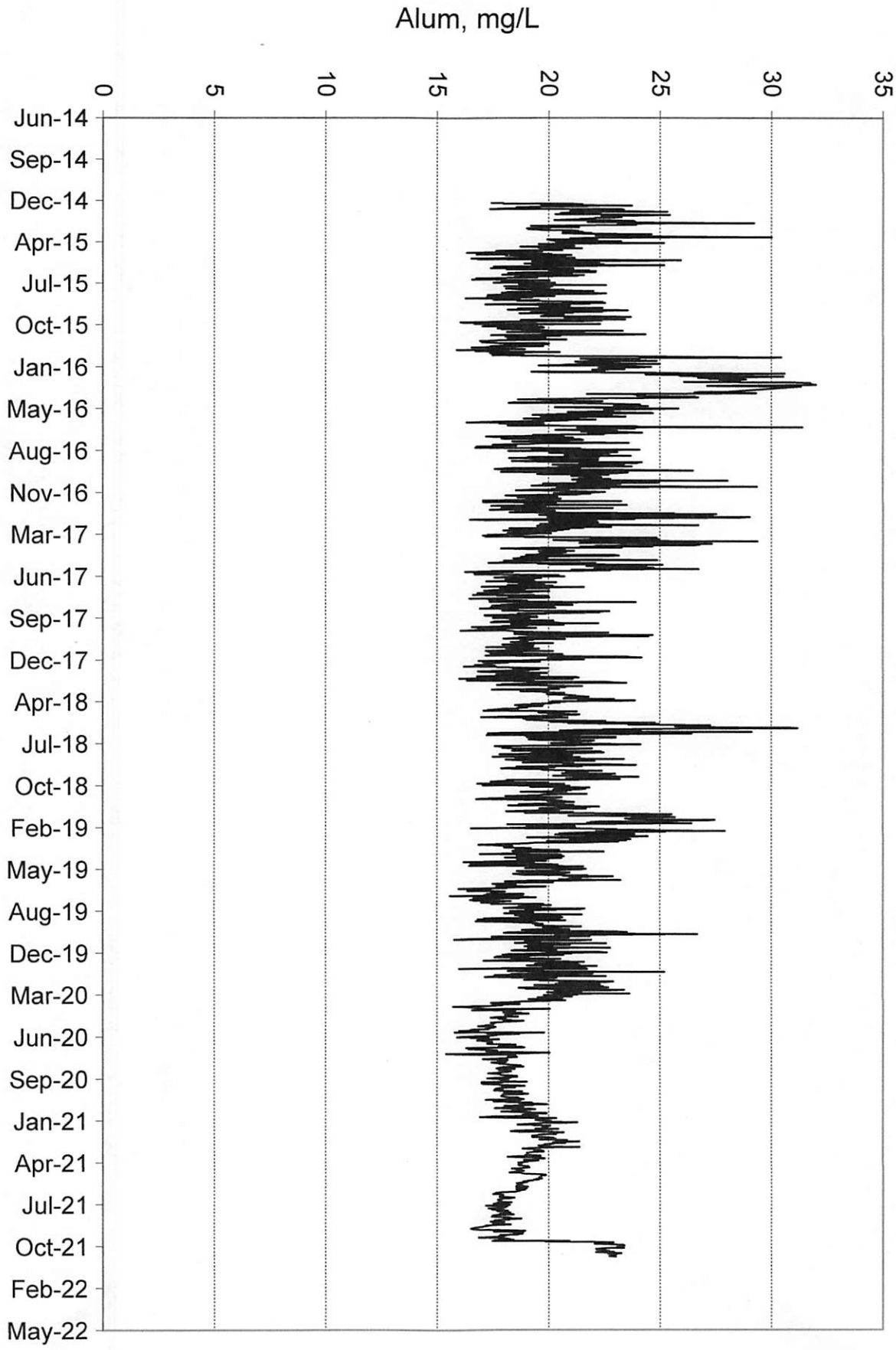
May-22


Alum, mg/L
0
5
10
15
20
25
30
35
Jun-14
Sep-14
Dec-14
Apr-15
Jul-15
Oct-15
Jan-16
May-16
Aug-16
Nov-16
Mar-17
Jun-17
Sep-17
Dec-17
Apr-18
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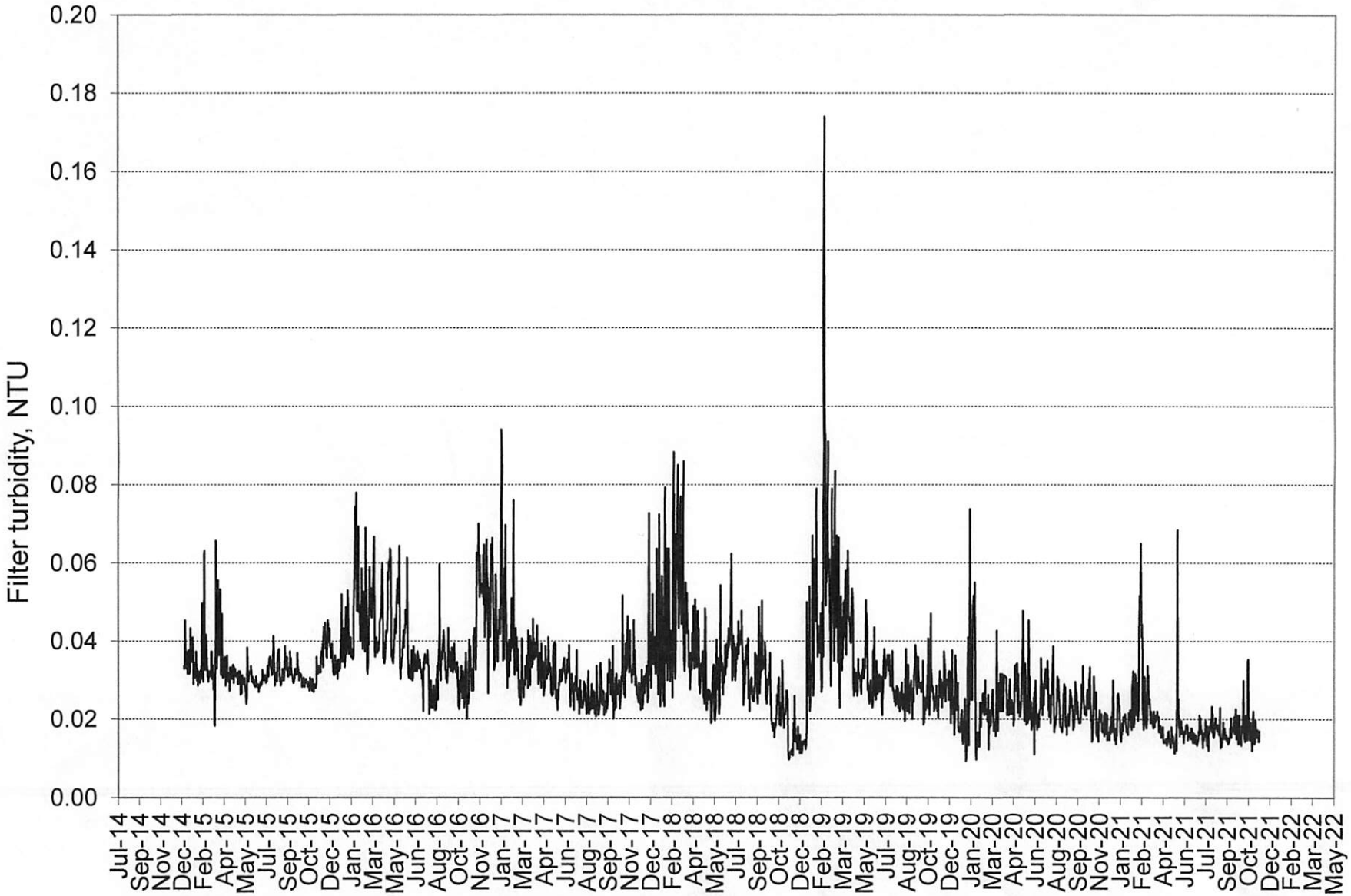
Feb-22
May-22


Filter turbidity, NTU
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Jul-14
Sep-14
Nov-14
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Sep-15
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Mar-16
May-16
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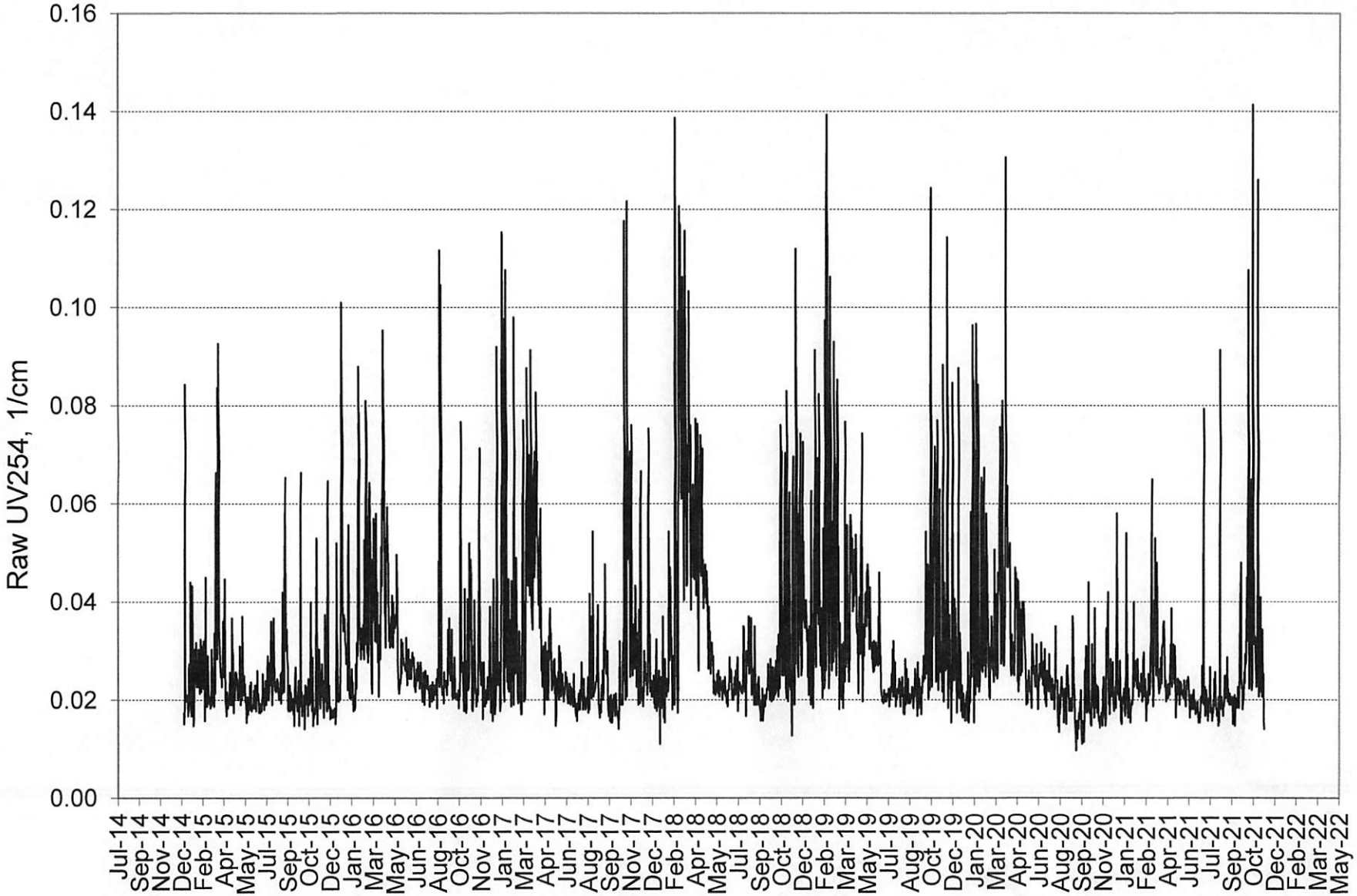
May-22


Raw UV254, 1/cm
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Jul-14
Sep-14
Nov-14
Dec-14
Feb-15
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Sep-15
Oct-15
Dec-15
Jan-16
Mar-16
May-16
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Feb-22
Mar-22
May-22

Monthly Maintenance Notes

January 2022

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
01/04/22	Installed new Sump Pump in 5-8 Filter Gallery
01/05/22	Verification of all Filter Turbidimeters
01/10/22	Installed new outlet for sump pump in 5-8 Filter Gallery
01/12/22	Pentair - Start up of # 3 H.S. Pump after motor rebuild. No issues
01/14/22	Installed new IT cabinet and riser in upper foyer by P-7 Panel
01/18/22	Andy Egan - Repaired steam leak in old lower maintenance shop. (3 1/2 in copper line)
01/21/22	FHC - Pulled HS Pump # 1 Motor for evaluation and rebuild per Pentair/GE
01/25/22	Filled Clarifier # 3 and put in service
01/27/22	Shut down and started draining Clarifier # 2 for yearly service.

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

JANUARY 2022

DISTRIBUTION:	
Total Gallons	85,696,372
Average Day	2,764,399
Maximum Day	2,977,948
Minimum Day	2,510,120

TREATMENT:	
Total Low Service	90,409,913
Wash Water Gals.	630,020
Wash Water %	0.71%
Plant Use Gals.	12,350
Plant Use %	0.01%

FILTRATION:		
Ave. Filter Run	270.5	hours
Ave. Filter Rate	1.28	g/sqft/min
Filter Eff. Index	385.9	
Ave. Loss of Head	1.3	feet
Plant Sewer Useage		

LABRATORY REPORT		
Average of	Raw	Tap
Chlorides mg/L	19.0	19.8
Fluoride mg/L	0.16	0.67
Alkalinity mg/L	125	115
Hardness mg/L	158	153
pH	8.1	7.5
Calcium mg/L	40	40
Magnesium mg/L	13	12
Turbidity NTU	0.86	0.04
Temperature `F	37	
Total Coliform		0.0
Chlorine Residual		mg/L Free
Mixing Basin		0.86
Applied		0.81
Tap		1.36
Distribution		1.15

TREATMENT CHEMICAL SUMMARY:

	Applied mg/L	Total Lbs.	Cost	Inventory lbs.	Days Supply
		CHEMICAL			
Alum (Al^{+3})	21.94	16,543	$5,395.67	37,850	35
Chlorine (Cl_2)	2.25	1,691	$1,262.31	6,194	114
Fluoride (F_2)	0.56	420	$736.37	23,053	323

Total Cost all Chemicals	$7,394.35
Chemical Cost per Mil. Gallon Treated	$81.79
Chemical Cost per Mil. Gallon Delivered	$82.48

PLANT UTILITIES SUMMARY

Electric:		
Total KWH		187,200
Total Power Cost	$	13,104.00
Power Cost per Million Gallon Treated	$	144.94
Power Cost per Million Gallon Delivered	$	175.48
Gallons Pumped per KWH		234
Natural Gas:		
Metered Cubic Feet		8408
Natural Gas Cost		$5,374.57
Emergency Power Diesel Fuel Inv., Gals.	North	400
	South	1200

REMARKS:

***includes measure of melted snow
visit the City of Saint Joseph's Home page at www.sjcity.com
e-mail comments to either: operator@sjcity.com or galimenti@sjcity.com

WEATHER CONDITIONS AT THE PLANT		Air Temp. 'F	
SJWW Weather Computer		Avg.	24.8
Rain Guage, Inches	0.1	Max.	44.1
days it rained***	4	Min.	5.9
Wind Speed, Avg	10.9	Lake Temp.'F	
Wind Speed, Max	30.5	Avg.	37.3
Prevailing Wind Dir.	North	Max	45.0
Lake Level (USACE)	579.23	Min	31.7

MONTH **YEAR**

SOUTHWEST MICHIGAN REGIONAL SANITARY SEWER & WATER AUTHORITY WSSN 3726

	CLEVELAND BOOSTER STATION								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-Jan	0.722	88	12.48	2.07					1.205	81	11.48	1.14				1.927
2-Jan	0.722	88	12.48	2.07					1.205	81	11.48	1.14				1.927
3-Jan	0.722	88	12.48	2.07	1.25	1.22	1.17		1.205	81	11.48	1.14	1.23	1.33	1.33	1.927
4-Jan	1.844	220	31.19	2.03	1.31	1.32	1.28		0.004	0	0.00	0.00	1.42	1.34	1.39	1.848
5-Jan	0.000	0	0.00	0.00	1.06	1.23	1.19		1.922	133	18.86	1.18	1.26	1.28	1.24	1.922
6-Jan	1.845	217	30.77	2.00	1.25	1.24	1.24		0.000	0	0.00	0.00	1.10	1.07	1.14	1.845
7-Jan	0.011	0	0.00	0.00	1.07	1.18	1.16		2.024	142	20.13	1.19	1.56	1.28	1.45	2.035
8-Jan	1.306	0	0.00	0.00					0.599	37	5.25	1.05				1.905
9-Jan	1.306	0	0.00	0.00					0.599	37	5.25	1.05				1.905
10-Jan	1.306	0	0.00	0.00	1.32	1.31	1.27		0.599	37	5.25	1.05	1.95	1.85	1.59	1.905
11-Jan	0.004	0	0.00	0.00	1.16	1.17	1.16		2.191	111	15.74	0.86	1.38	1.32	1.30	2.195
12-Jan	1.837	227	32.18	2.10	1.36	1.28	1.25		0.003	0	0.00	0.00	1.40	1.22	1.25	1.840
13-Jan	0.011	0	0.00	0.00	1.29	1.76	1.57		2.042	108	15.31	0.90	1.36	1.33	1.34	2.053
14-Jan	1.789	211	29.92	2.00	1.34	1.29	1.22		0.000	0	0.00	0.00	1.16	1.27	1.22	1.789
15-Jan	1.044	123	17.44	2.00					1.077	55	7.80	0.87				2.121
16-Jan	1.044	123	17.44	2.00					1.077	55	7.80	0.87				2.121
17-Jan	1.044	123	17.44	2.00					1.077	55	7.80	0.87				2.121
18-Jan	1.044	123	17.44	2.00	1.39	1.21	1.16		1.077	55	7.80	0.87	1.05	1.49	1.50	2.121
19-Jan	0.031	0	0.00	0.00	1.00	1.12	1.12		2.060	101	14.32	0.83	1.25	1.24	1.28	2.091
20-Jan	1.930	236	33.46	2.08	1.68	1.32	1.25		0.000	0	0.00	0.00	0.90	1.47	1.09	1.930
21-Jan	0.000	0	0.00	0.00	1.13	1.20	1.17		1.973	97	13.75	0.84	1.20	1.24	1.27	1.973
22-Jan	1.333	159	22.54	2.03					0.676	34	4.82	0.86				2.008
23-Jan	1.333	159	22.54	2.03					0.676	34	4.82	0.86				2.008
24-Jan	1.333	159	22.54	2.03	1.48	1.28	1.26		0.676	34	4.82	0.86	1.74	1.62	1.72	2.008
25-Jan	0.000	0	0.00	0.00	1.23	1.14	1.20		1.943	100	14.18	0.87	1.62	1.29	1.32	1.943
26-Jan	1.947	230	32.61	2.01	1.41	1.31	1.26		0.003	0	0.00	0.00	1.62	1.38	1.36	1.950
27-Jan	0.000	0	0.00	0.00	1.26	1.19	1.19		2.012	100	14.18	0.85	1.78	1.65	1.45	2.012
28-Jan	1.925	223	31.62	1.97	1.42	1.36	1.31		0.012	0	0.00	0.00	1.63	1.68	1.64	1.936
29-Jan	0.646	77	10.92	2.03					1.390	71	10.07	0.87				2.036
30-Jan	0.646	77	10.92	2.03					1.390	71	10.07	0.87				2.036
31-Jan	0.646	77	10.92	2.03	1.22	1.27	1.21		1.390	71	10.07	0.87	1.31	1.22	1.25	2.036
TOTAL	29.369	3,028	429.3						32.103	1,781	252.51					61.472
AVE DAY	0.947		13.8	1.31	1.3	1.3	1.2		1.0356		8.1	0.73	1.40	1.38	1.36	1.983
MAX	1.947		33.5	2.10	1.7	1.8	1.6		2.1909		20.1	1.19	1.95	1.85	1.72	2.195
MIN	0.000		0.0	0.00	1.0	1.1	1.1		0.0000		0.0	0.00	0.9	1.07	1.09	1.789

MONTHLY TOTALS:	Cleveland	Total MG		SJCT EAST			Hilltop	Total MG		Cleveland Pump Station:	29.369
Average Day	1.983	Chl Add	24.748	Average Day	0.152			Chl Add	30.691	Hilltop Pump Station:	32.103
Max Day (Est)	2.363	No Chl Add	4.621	Max Day (Est)	0.168			No Chl Add	1.412	TOTAL AUTHORITY (Trted.)	61.472
Total Authority Flow:	61.472			Month Total	4.697						

STAGE 2 D/DBPR MONITORING-TTHM

JANUARY 2022

WSSN 3726

Date	04/14/21	04/14/21
Site	Lincoln Twp Hall (DBP-1)	JR Automation (DBP-2)
Bromodichloromethane	14	13
Bromoform	<0.5	<0.5
Chloroform	50	46
Dibromochloromethane	4.7	4.7
Total Trihalomethanes	*68.7*	*63.7*

Date	07/12/21	07/12/21
Site	Lincoln Twp Hall (DBP-1)	JR Automation (DBP-2)
Bromodichloromethane	16	13
Bromoform	0.6	<0.5
Chloroform	73	46
Dibromochloromethane	6.8	5.2
Total Trihalomethanes	*96.4*	*64.2*

Date	10/29/21	10/29/21
Site	Lincoln Twp Hall (DBP-1)	JR Automation (DBP-2)
Bromodichloromethane	18	17
Bromoform	<.5	<0.5
Chloroform	62	58
Dibromochloromethane	4.9	5.1
Total Trihalomethanes	*84.9*	*80.1*

Date	01/20/22	01/20/22
Site	Lincoln Twp Hall (DBP-1)	JR Automation (DBP-2)
Bromodichloromethane	10	12
Bromoform	<.5	<0.5
Chloroform	23	32
Dibromochloromethane	3.3	4.8
Total Trihalomethanes	*36.3*	*48.8*

	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
RAA (ppb)	**71.6**	**64.2**

STAGE 2 D/DBPR MONITORING-HALOACETIC ACIDS

JANUARY 2022

WSSN 3726

Date	04/14/21	04/14/21
Site	Lincoln Twp Hall (DBP-1)	JR Automation (DBP-2)
Dibromoacetic acid	<1	<1
Dichloroacetic acid	16	14
Monobromoacetic acid	<1	<1
Monochloroacetic acid	2.1	<2
Trichloroacetic acid	16	14
Total HAA5	*34.1*	*28.0*

Date	07/12/21	07/12/21
Site	Lincoln Twp Hall (DBP-1)	JR Automation (DBP-2)
Dibromoacetic acid	<1	<1
Dichloroacetic acid	15	15
Monobromoacetic acid	<1	<1
Monochloroacetic acid	<2	<2
Trichloroacetic acid	11	13
Total HAA5	*16.1*	*28.0*

Date	10/29/21	10/29/21
Site	Lincoln Twp Hall (DBP-1)	JR Automation (DBP-2)
Dibromoacetic acid	5.3	5.1
Dichloroacetic acid	6.4	5.3
Monobromoacetic acid	<1	<1
Monochloroacetic acid	<2	<2
Trichloroacetic acid	20	19
Total HAA5	*31.7*	*29.4*

Date	01/20/22	01/20/22
Site	Lincoln Twp Hall (DBP-1)	JR Automation (DBP-2)
Dibromoacetic acid	<1.0	<1.0
Dichloroacetic acid	12	7.5
Monobromoacetic acid	<1	<1
Monochloroacetic acid	<2	<2
Trichloroacetic acid	15	11
Total HAA5	*27*	*18.5*

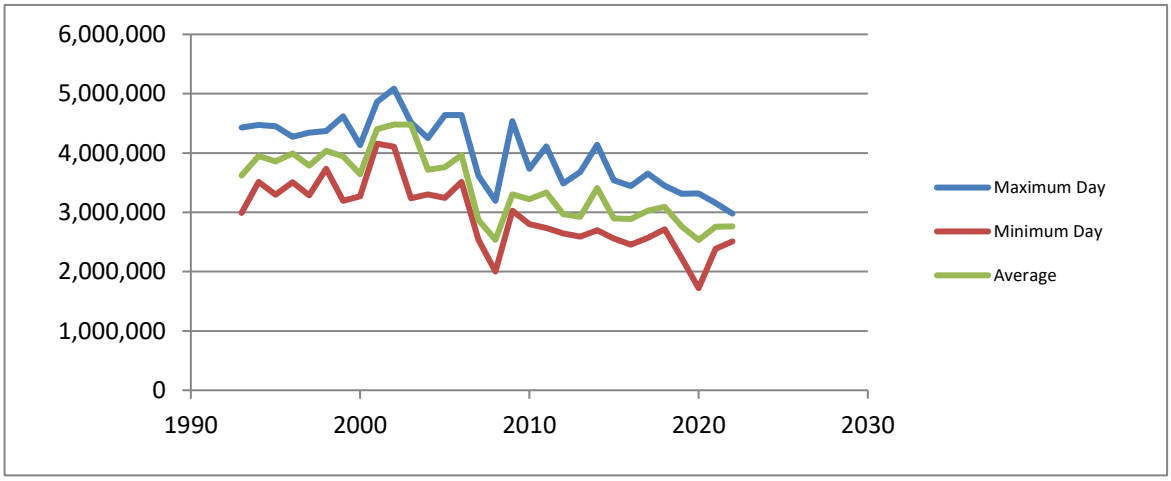
	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
RAA (ppb)	**27.2**	**26.0**

ST. JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED

January 2022

Year	Average	Maximum Day	Minimum Day	Monthly Total
1993	3,622,235	4,431,700	2,990,500	112,289,300
1994	3,948,248	4,470,100	3,510,400	122,395,700
1995	3,859,761	4,448,700	3,299,200	119,652,600
1996	3,993,939	4,272,000	3,505,300	123,812,100
1997	3,788,782	4,344,400	3,286,700	117,452,250
1998	4,035,369	4,369,050	3,735,900	125,096,450
1999	3,946,455	4,616,550	3,193,000	122,340,100
2000	3,640,661	4,130,300	3,267,250	112,860,500
2001	4,400,261	4,858,780	4,157,200	136,408,100
2002	4,479,403	5,084,950	4,107,000	138,861,500
2003	4,479,403	4,514,060	3,238,250	113,163,010
2004	3,715,344	4,250,750	3,301,000	115,175,650
2005	3,758,500	4,641,410	3,240,000	116,513,490
2006	3,967,646	4,638,500	3,513,500	122,997,040
2007	2,872,435	3,614,000	2,534,000	89,045,500
2008	2,534,919	3,195,250	1,999,500	78,582,500
2009	3,302,903	4,536,750	3,024,250	102,390,440
2010	3,222,808	3,731,500	2,802,510	99,907,060
2011	3,336,597	4,108,987	2,735,414	103,434,507
2012	2,967,282	3,484,780	2,645,356	91,985,729
2013	2,923,828	3,681,495	2,588,294	90,638,675
2014	3,407,415	4,138,686	2,697,384	105,629,857
2015	2,898,958	3,539,342	2,559,148	89,867,686
2016	2,884,653	3,443,767	2,455,434	89,424,242
2017	3,027,535	3,650,980	2,569,355	93,853,596
2018	3,089,481	3,449,069	2,712,610	95,773,901
2019	2,764,300	3,312,744	2,226,281	85,693,311
2020	2,532,278	3,318,465	1,720,516	78,500,621
2021	2,759,544	3,154,981	2,382,104	85,545,876
2022	2,764,399	2,977,948	2,510,120	85,696,372

Rank	Year	Monthly Total
1	2002	138,861,500
2	2001	136,408,100
3	1998	125,096,450
4	1996	123,812,100
5	2006	122,997,040
6	1994	122,395,700
7	1999	122,340,100
8	1995	119,652,600
9	1997	117,452,250
10	2005	116,513,490
11	2004	115,175,650
12	2003	113,163,010
13	2000	112,860,500
14	1993	112,289,300
15	2014	105,629,857
16	2011	103,434,507
17	2009	102,390,440
18	2010	99,907,060
19	2018	95,773,901
20	2017	93,853,596
21	2012	91,985,729
22	2013	90,638,675
23	2015	89,867,686
24	2016	89,424,242
25	2007	89,045,500
26	2022	85,696,372
27	2019	85,693,311
28	**2021**	**85,545,876**
29	2008	78,582,500
30	2020	78,500,621



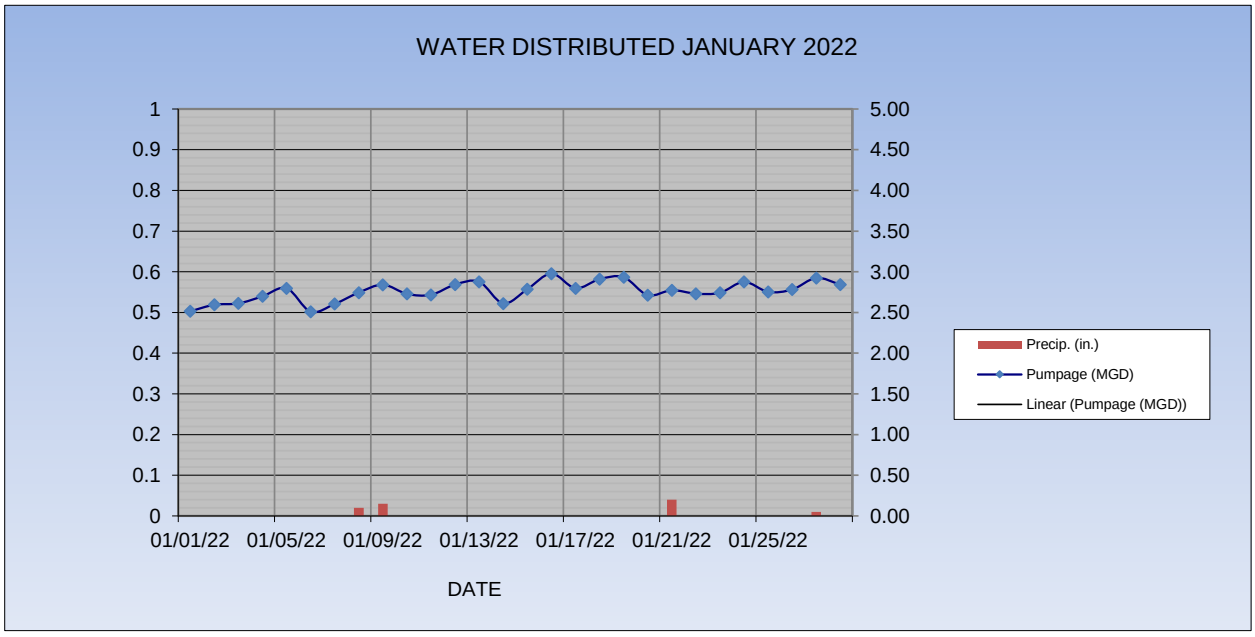
ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED/RAINFALL
JANUARY 2022

				Day to Day Comparison 2022/2021	
DATE	PUMPAGE (gallons)	PUMPAGE (MGD)	*RAINFALL (in)	2022	2021
01/01/22	2,514,724	*2.51*	0	2,514,724	2,575,411
01/02/22	2,594,581	*2.59*	0	2,594,581	2,566,022
01/03/22	2,611,262	*2.61*	0	2,611,262	2,607,020
01/04/22	2,698,014	*2.70*	0	2,698,014	2,950,989
01/05/22	2,797,751	*2.80*	0	2,797,751	2,832,564
01/06/22	2,510,120	*2.51*	0	2,510,120	2,708,130
01/07/22	2,605,089	*2.61*	0	2,605,089	2,759,255
01/08/22	2,744,686	*2.74*	0.02	2,744,686	2,819,778
01/09/22	2,841,180	*2.84*	0.03	2,841,180	2,900,191
01/10/22	2,728,410	*2.73*	0	2,728,410	2,838,567
01/11/22	2,716,811	*2.72*	0	2,716,811	2,890,788
01/12/22	2,843,353	*2.84*	0	2,843,353	3,154,981
01/13/22	2,877,129	*2.88*	0	2,877,129	2,816,756
01/14/22	2,610,871	*2.61*	0	2,610,871	2,679,382
01/15/22	2,786,073	*2.79*	0	2,786,073	2,734,395
01/16/22	2,977,948	*2.98*	0	2,977,948	2,382,104
01/17/22	2,797,227	*2.80*	0	2,797,227	2,828,957
01/18/22	2,909,078	*2.91*	0	2,909,078	2,500,454
01/19/22	2,933,577	*2.93*	0	2,933,577	2,730,282
01/20/22	2,712,685	*2.71*	0	2,712,685	2,698,309
01/21/22	2,773,654	*2.77*	0.04	2,773,654	2,805,472
01/22/22	2,730,986	*2.73*	0	2,730,986	2,699,216
01/23/22	2,741,920	*2.74*	0	2,741,920	3,066,493
01/24/22	2,875,704	*2.88*	0	2,875,704	2,489,159
01/25/22	2,753,363	*2.75*	0	2,753,363	2,806,644
01/26/22	2,781,665	*2.78*	0	2,781,665	2,592,010
01/27/22	2,924,275	*2.92*	0.01	2,924,275	2,705,529
01/28/22	2,843,072	*2.84*	0	2,843,072	2,792,557
01/29/22	2,746,448	*2.75*	0	2,746,448	2,886,326
01/30/22	2,889,499	*2.89*	0	2,889,499	2,708,678
01/31/22	2,825,216	*2.83*	0	2,825,216	3,019,455
TOTAL	85,696,372	85.70	0.10	85,696,372	85,545,876

Monthly Average/Max Day/Minimum Day

Average Day	**2,764,399**
Maximum Day	**2,977,948**
Minimum Day	**2,510,120**

*Includes measure of melted snow.



DISTRIBUTION REPORT *For the Month of January2021*

Activity	Number/Description	
Water Main Breaks	9	
MISS DIGS	268	
Delinquent Shut Off	0	
Hydrants (Repaired/Replaced)	1	221 Hilltop (City) Hit, repaired.
Valve Turning	0	
Valves	0	
Taps (1")	5	6101 Blackhawk Court (LCT), New build in old subdivision
		2561 Bell Circle (LCT), New build in old subdivision
		2603 Bell Circle (LCT), New build in old subdivision
		4007 Deja (RCT) New build in old subdivision
Cross Connection Control	25	Hydro Corp inspected in City
Service Retirement	2	2416 Niles, Margaret Place
Service Replacement (Lead)		1100 Flanders Place Lead on public side/copper on private side
		1101 Flanders Place-Lead on public side/copper on private side
		1807 Forres-Lead on public side/galvanized on private side
		926 Wolcott-Lead on publc side/copper on private side
Service Repair	0	
Repair of Curb box/Shut-Off Valves	3	Various; froze up, bent curb box, rod broken, adjust.
Replace Curb box	3	
Meter pit/service replacement	0	
Water Quality complaints	6	Water quality/pressure
Hydrant flushing to maintain water quality	2	
Service line complaints (customer side)	4	leaks, high water use, misreported stormwater, snowbirds, low pressure
Private Service break	1	3606 Lake Shore Dr (City). Private WM break 6". Supplied band to contractor
Staff Education/Training	107	Sewer Training
Overtime-Total	121.5	

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")	

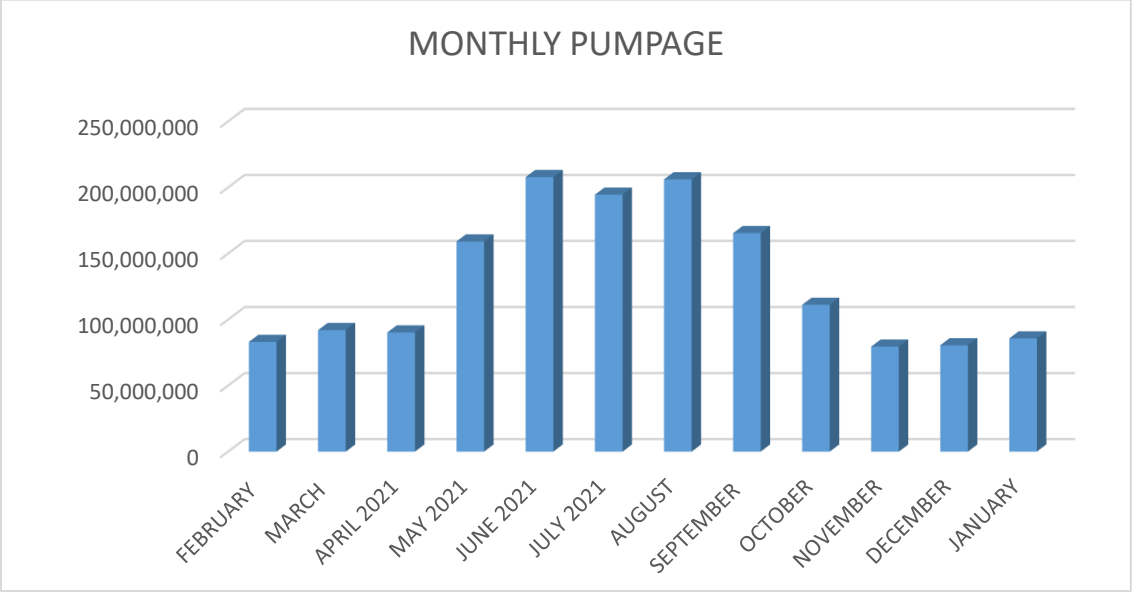
CITY OF ST. JOSEPH WATER MAIN BREAK REPORT- January 2022

Date	Location	Main Size	Gallons Lost	Break Type	Valves Turned	City Twp	Labor	Remarks
1/2/2022	1338 Aurelia Dr.	6	3,883	Circumferential	3	SJCT	25.5	B&Z + Staff (5.5 hrs). 5', sand. Outsourced due to lack of staff.
1/9/2022	814 St. Joseph Drive	6	20,325	Circumferential	3	City	12	5', clay, 50 yards from 814 St. Joseph Dr. on same day
1/9/2022	816 St. Joseph Drive	6	21,270	Circumferential	3	City	14	5' deep,clay. 50 yds from 814 St. Joseph Dr.break on same day
1/14/2022	Ansley Dr. & Kim St.	6	27,961	Band failure	5	SJCT	30	6' deep, sand. Repair band failed due to corrosion
1/18/2022	1614 Trebor Rd.	8	34,951	Circumferential	3	SJCT	22.25	5' deep, sand. Running 3 days prior
1/19/2022	3928 Meadow Lane	6	17,475	Circumferential	3	LCT	22.5	5' deep, sand. Hit sewer lateral repaired and contained
1/25/2022	East Hiawatha Lane & Mohican	6	34,951	Circumferential	3	LCT	29.5	6' deep, sand.
1/27/2022	2416 Niles Ave	6	22,145	Circumferential	2	City	22	4.5' deep, clay. B&Z patched road for City by MDOT request
1/29/2022	1424 Michigan	6	83,884	Circ/Hole	2	City	12	6.5 deep, clay. Hole and crack 4' apart.
TOTALS			266,845				38	

ST. JOSEPH WATER PLANT-YEAR TO DATE PUMPAGE

JANUARY 2021

	Pumpage Month	Pumpage FISCAL YTD	By Quarter
FEBRUARY	83,066,087	83,066,087	
MARCH	92,000,552	175,066,639	175,066,639
APRIL 2021	90,196,764	265,263,403	
MAY 2021	159,086,815	424,350,218	
JUNE 2021	207,863,490	632,213,708	457,147,069
JULY 2021	194,516,481	194,516,481	
AUGUST	206,106,524	400,623,005	
SEPTEMBER	165,413,457	566,036,462	566,036,462
OCTOBER	111,150,956	677,187,418	
NOVEMBER	79,512,900	756,700,318	
DECEMBER	80,497,727	837,198,045	271,161,583
JANUARY	85,696,372	922,894,416	
TOTAL	1,555,108,124		



MONTHLY CLIMATOLOGICAL SUMMARY **January** **2022**

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	32.9	26	**43.8**	12:30a	33	51	1952	**23.9**	12:00m	19	-10	1964	32.1	0	**0**	**9**	**25**	11:00a	NNE
2	24.1	26	**27.7**	3:30p	33	50	1950	**20.3**	5:00a	19	-1.5	2018	40.9	0	**0**	**4.5**	**22**	3:30a	NE
3	25.2	26	**28.6**	8:00a	33	66	1950	**20.8**	10:00p	18	-3	1979	39.8	0	**0**	**8.8**	**24**	2:30p	SSE
4	29.4	26	**36.6**	12:00m	33	59	1997	**21**	2:30a	18	-2	1979	35.6	0	**0**	**8.5**	**29**	11:30p	SSE
5	26.7	26	**38.1**	1:30a	33	62	1997	**19.1**	4:00p	18	-15	1999	38.3	0	**0**	**30.5**	**55**	3:00p	SW
6	23.2	26	**24.5**	4:30a	33	55	1998	**21.4**	12:30a	18	-2	1979	41.8	0	**0**	**21.4**	**40**	1:30a	W
7	20	26	**24.8**	12:30a	33	53	2019	**8.6**	10:30p	18	-10	1988	45	0	**0**	**17.4**	**42**	4:30a	W
8	23.1	25	**34.9**	12:00m	33	62	1965	**9.2**	12:30a	18	-13	1988	41.9	0	**0.02**	**6.2**	**23**	12:00p	SSE
9	29.4	25	**37**	3:30a	33	61	1965	**20.9**	12:00m	17	-1	1979	35.6	0	**0.03**	**24.1**	**48**	12:00p	N
10	19.8	25	**22.4**	6:30a	33	60	1975	**17.3**	4:30p	17	-7	1962	45.2	0	**0**	**21.6**	**42**	6:30a	N
11	22.7	25	**35.5**	12:00m	32	59	1975	**13.1**	9:00a	17	-10	1962	42.3	0	**0**	**10**	**38**	10:30p	SSE
12	37.3	25	**39.8**	4:30p	32	58	1960	**34.1**	12:00m	17	-1	1997	27.7	0	**0**	**9.8**	**37**	1:00a	SW
13	34.8	25	**36.9**	1:00p	32	59	1950	**32.5**	4:30a	17	-7	1977	30.2	0	**0**	**4.1**	**16**	3:30p	NNE
14	29.6	25	**36.8**	12:30a	32	53	1950	**20.3**	12:00m	17	-1	1988	35.4	0	**0**	**4.8**	**22**	6:30a	NE
15	18.6	25	**24.6**	5:00p	31	60	1949	**14**	9:30a	17	-7	1972	46.4	0	**0**	**3.5**	**18**	11:00a	ENE
16	20.3	25	**30.5**	12:00m	31	60	1949	**10.4**	7:30a	17	-17	1994	44.7	0	**0**	**2.2**	**15**	12:00m	ESE
17	30.9	25	**32**	2:30a	31	59	1952	**29.8**	6:00a	17	-7	1957	34.1	0	**0**	**17**	**33**	8:00a	NNW
18	34	24	**44.1**	10:30p	31	57	1996	**25.7**	8:30a	17	-7	1994	31	0	**0**	**10.9**	**40**	10:30p	SSE
19	29.7	24	**41.5**	12:30a	31	57	1996	**22.2**	4:30p	16	-17	1994	35.3	0	**0**	**19.5**	**36**	4:00p	N
20	19.5	24	**25.3**	1:00a	31	52	1954	**16.8**	8:30a	16	-10	1985	45.5	0	**0**	**4.2**	**29**	1:00a	E
21	18.5	24	**24.7**	3:00p	31	62	2017	**13**	8:30a	16	-13	1984	46.5	0	**0.04**	**3**	**14**	12:00m	SSE
22	25.4	24	**31.8**	5:30p	31	56	1957	**16.2**	12:30a	16	-9	1970	39.6	0	**0**	**17.8**	**36**	1:30p	SW
23	22.6	24	**26.5**	12:30a	31	56	1967	**18.7**	10:00a	16	-4	1963	42.4	0	**0**	**8.5**	**27**	12:30a	NNE
24	22.2	24	**28.4**	1:30p	31	64	1967	**14.5**	4:00a	16	-6	1963	42.8	0	**0**	**11.5**	**31**	7:30p	SSE
25	20.5	24	**26.4**	12:30a	31	68	1950	**15.8**	11:00p	16	-8	1961	44.5	0	**0**	**16.1**	**31**	1:30p	N
26	13.7	24	**17.7**	10:00a	31	66	1950	**5.9**	10:30p	16	-5	1987	51.3	0	**0**	**10.4**	**28**	2:30a	N
27	24.6	24	**32.8**	7:30p	32	54	1973	**7.4**	12:30a	16	2	1986	40.4	0	**0.01**	**13.7**	**34**	12:00p	SSE
28	19.6	25	**26.4**	12:30a	32	52	1970	**14.4**	8:30a	16	-7	1977	45.4	0	**0**	**5.4**	**21**	4:00p	NE
29	18.6	25	**22.8**	5:00p	32	49	1975	**11.8**	8:00a	16	-8	1955	46.4	0	**0**	**7.3**	**21**	2:00p	SSE
30	23.2	25	**28.8**	7:00p	32	56	1988	**14.6**	8:00a	16	-8	1949	41.8	0	**0**	**3**	**12**	4:30p	ESE
31	29.9	25	**34**	4:00p	32	62	1989	**28.4**	1:30a	16	-9.1	2019	35.1	0	**0**	**3.5**	**19**	10:30p	SSE
AVE	**24.8**	**24.9**											**40.2**	**0.0**	**0.0**	**10.9**	**29.3**		SSE
MAX	**37.3**	**26**	**44.1**			**68**		**34.1**		**19**	**2**		**51.3**	**0**	**0.04**	**30.5**	**55.0**		
MIN	**13.7**	**24**	**17.7**					**5.9**		**16**	**-17**		**27.7**	**0**	**0**	**2.2**	**12**		
TOTAL															**0.1**				

Max Rain: 0.04 ON 01/21/22
Days of Rain: 3 (>.01 in) 0 (>.1 in) 0 (>1 in)

HECO
All systems go
Electric Motors • Performance Systems

Final Report

AC VERTICAL FINAL MOTOR REPORT

CUSTOMER	ST JOE WATER TREATMENT
HECO JOB#	19736
CUSTOMER P/O#	21-0914-RM01
TAG#	55862
PLANT	ST. JOE
MACHINE	AC Vert Ball Bearing
PICK-UP DATE	10/12/21
SHIP DATE	12/13/21
REPORT DATE	01/06/21

HP	RPM	FRAME	VOLTS	AMPS	MFG
500	1785	L5013VP24	460	533	GE
SERIAL#	**MODEL#**	**DE BRG TYPE**	**DE BRG #**	**ODE BRG TYPE**	**ODE BRG #**
LNFT317U025	SKS513SAE6467	Ball	6219 ZC3	Roller	29426 E

WORKSCOPE SUMMARY

Dismantle & inspect cooling coil for possible leaks.
Clean to remove excess oil.
Install new bearings.
Correct Aegis grounding ring install
Assembly
Final electrical tests.
Final test run at full rated volts.
Vibration spectrum analysis.
Paint.
GE warranty repair

HECO REPAIR FINAL REPORT

INCOMING ELECTRICAL TESTS	
TEMP:	70
PHASE RESISTANCE (OHMS)	
A - B	.006
B - C	.006
C - A	.006
I.R. TO GROUND	
TEST VOLTS	500
MEGOHMS	54400
CORRECTED TO 40°C	42432
DC HI POT TEST	
TEST VOLTS	N/A
MICROAMP LEAKAGE START	---
MICROAMP LEAKAGE FINISH	---
SURGE COMPARISON	
TEST VOLTS	N/A
PATTERN	---

OUTGOING ELECTRICAL TESTS	
TEMP:	70
PHASE RESISTANCE (OHMS)	
A - B	.006
B - C	.006
C - A	.006
I.R. TO GROUND	
TEST VOLTS	500
MEGOHMS	76500
CORRECTED TO 40°C	59670
DC HI POT TEST	
TEST VOLTS	1900
MICROAMP LEAKAGE START	7.1
MICROAMP LEAKAGE FINISH	.2
SURGE COMPARISON	
TEST VOLTS	1200
PATTERN	Good

INCOMING / INITIAL TEST RUN			
VOLTS			
AMPS		N/A	
VIBRATIONS (IN/SEC)	DE 0°	DE 90°	DE AXIAL
	ODE 0°	ODE 90°	ODE AXIAL
FINAL BEARING TEMPS (°F)	DE / ODE		

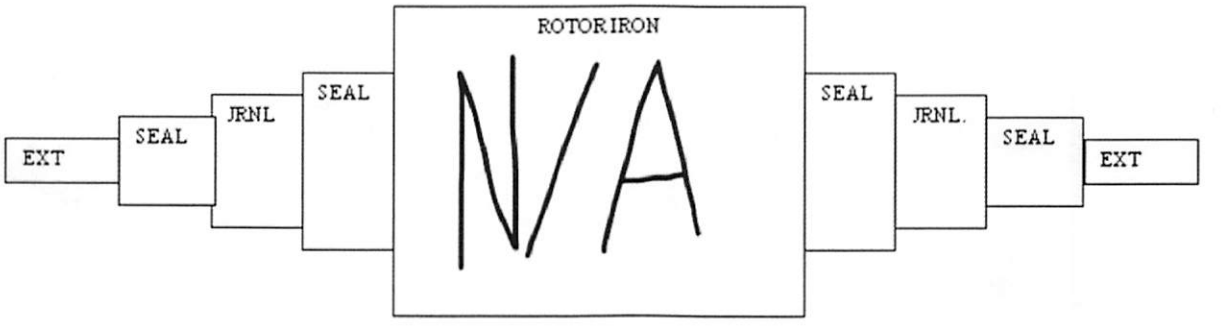
OUTGOING / FINAL TEST RUN			
VOLTS	460	460	460
AMPS	99.2	97.7	97.2
VIBRATIONS (IN/SEC)	DE 0°	DE 90°	DE AXIAL
	.0383	.0175	N/A
	ODE 0°	ODE 90°	ODE AXIAL
	.0391	.0406	.0156

HECO REPAIR FINAL REPORT

FINAL TEST RUN BEARING TEMPS			
°F	DE	ODE	KINGS.
START	NA		
1 MIN		76.8	
5 MIN		89.0	
10 MIN		103.7	
15 MIN		110.1	
20 MIN			
30 MIN			
40 MIN			
50 MIN			
60 MIN			
70 MIN			
80 MIN			
90 MIN			
100 MIN			
110 MIN			
120 MIN			
130 MIN			
140 MIN			
150 MIN			
160 MIN			
170 MIN			
180 MIN			
190 MIN			

POLARIZATION INDEX TEST		
(MEGOHMS)	INCOMING:	OUTGOING:
0.5 MIN	33030	43100
1 MIN	54400	76500
2 MIN	92100	128800
3 MIN	125700	175100
4 MIN	153300	211900
5 MIN	171300	236400
6 MIN	193500	272200
7 MIN	208800	313800
8 MIN	256200	351600
9 MIN	255600	372400
10 MIN	270200	372500
VALUE = 10MIN/1MIN		
VALUE	4.97	4.87

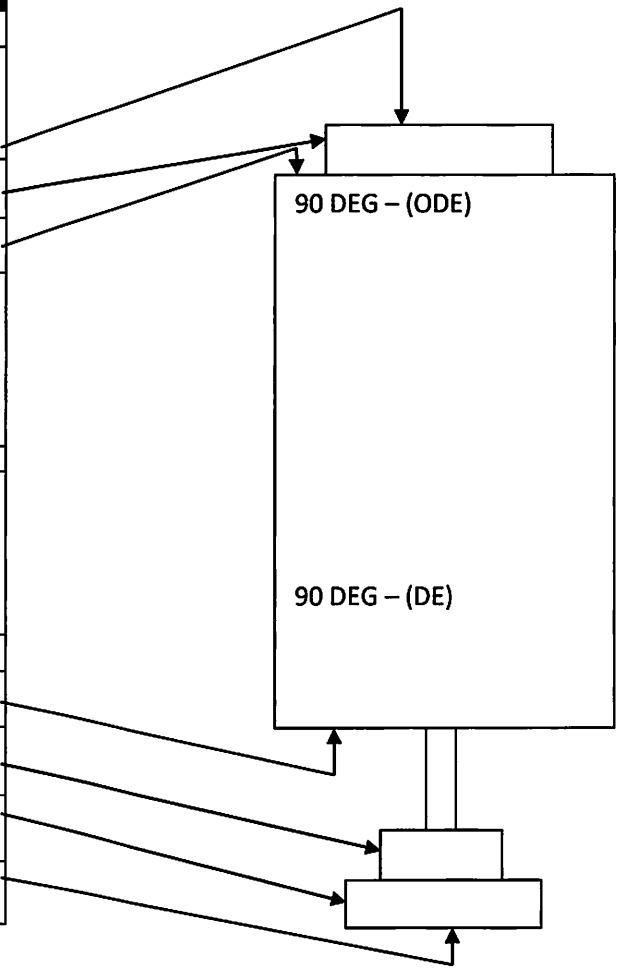
ADDITIONAL ROTOR INFORMATION		
# OF STATOR SLOTS	---	
# OF ROTOR SLOTS	---	
ROTOR BAR CONDITION	---	
SHORTING RING CONDITION	---	
LAMINATION CONDITION	---	
ROTOR FINAL BALANCE:	DE	ODE
MILS	---	---
IN/SEC	---	---



D.E. O.D.E.

INCOMING ROTOR RUN-OUTS								
EXT.	SEAL	JOURNAL	SEAL	IRON	SEAL	JOURNAL	SEAL	EXT.
OUTGOING ROTOR RUN OUTS								
EXT.	SEAL	JOURNAL	SEAL	IRON	SEAL	JOURNAL	SEAL	EXT.

VERTICAL RUN-OUTS		
	INCOMING	OUTGOING
TOP CARRIER FACE	NA	.003
CARRIER O.D.	NA	.0005
RABBIT FLANGE	NA	NA
MEASURE TOP LOCK NUT END OF SHAFT TO CARRIER FACE LOCK NUT	1 1/8" end of shaft to carrier face	1" 3/16end of shaft to carrier
MEASURE FACE OF COUPLING OR END OF SHAFT TO RABBIT FIT.	5 1/4 .end of shaft to rabbit face	5 1/4
RABBIT FIT	NA	.002
RABBIT FACE	NA	.0025
COUPLING RUN-OUT	NA	.002
COUPLING RUN -OUT	NA	N/A
COUPLING FACE	NA	N/A



NOTES:

HECO REPAIR FINAL REPORT

MOTOR FINDINGS

APPLICATION:	**TYPE OF STARTING:**
TIME IN SERVICE:	**REASON FOR REMOVAL OF UNIT:**

FINDINGS / OBSERVATIONS:
GE Manufacturing warranty. Send it due to possible water in the oil. Inspection show upper bearing damage due to
shaft currents. DE Aegis grounding ring was not in contact with the shaft.

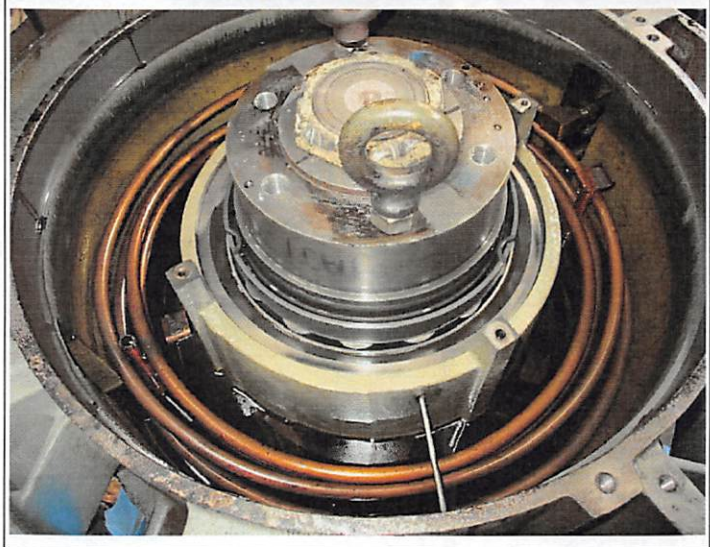
RELATIVE PICTURES ATTACHED

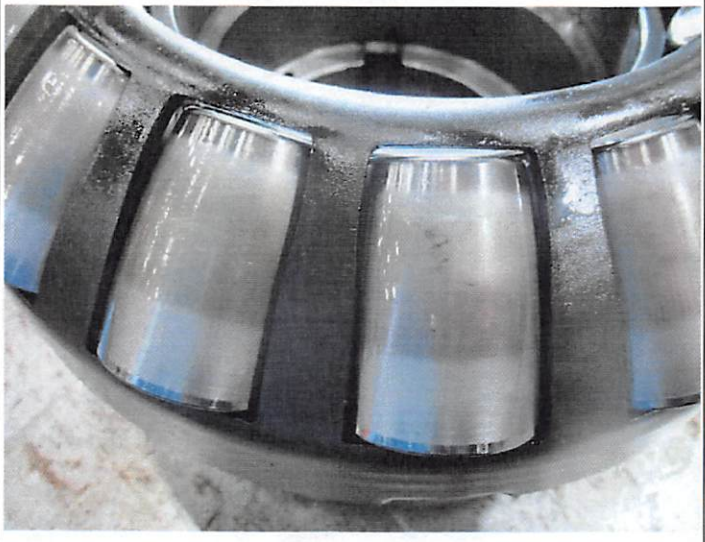
COMMENTS:

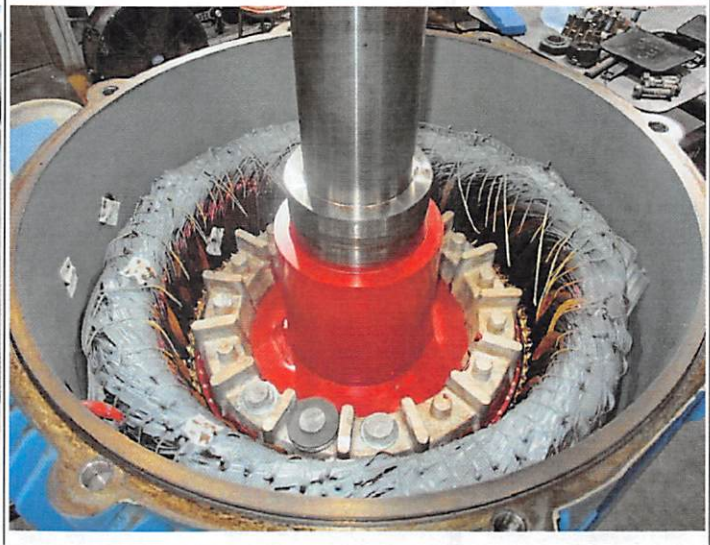
PRIMARY CATEGORY TO FINDINGS

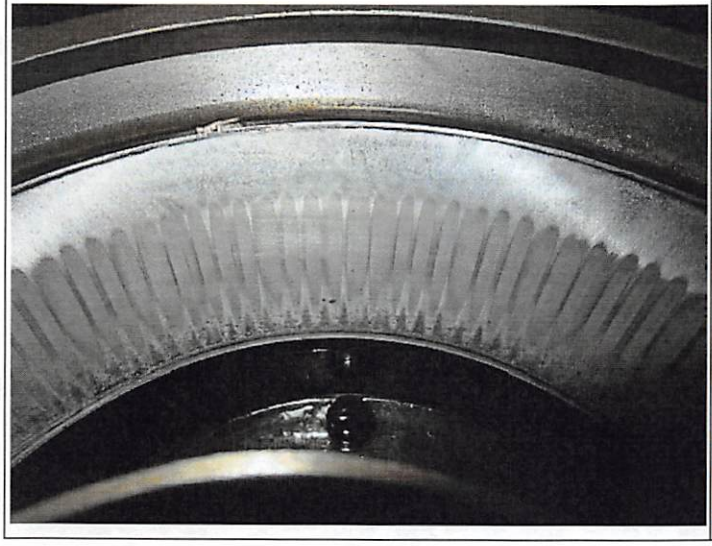
ELECTRICAL	MECHANICAL	CONTAMINATION	RECONDITION	INCONCLUSIVE
☐	☐	☒	☐	☐

INCOMING PICTURES









FINAL PICTURES