

Chemical Use Report for 2023

The attached chemical use report shows the amount of chemicals used in gallons and dollars for the year 2023. The cost and quantity to treat a million gallons of wastewater at the plant of each chemical is also included in this report on page 1.

The gas, electric, and water consumption is on page 2 for the plant. The last page is total pounds removed and removal efficiency of solids, phosphorus, ammonia and BOD.

The total cost for chemicals is very comparable from 2022 to 2023 with the additional cost due to increases in price per gallon of chemical. Total loads of ferric sulfate delivered to the plant was 50 in both years.

We had a reduction in total cost per million gallons treated which shows that operations are continually being optimized by the crew and the plant is doing well overall.

Dustin Jerabek

Director of Operations and Maintenance

2023 CHEMICAL USE REPORT

GALLONS	2016	2017	2018	2019	2020	2021	2022	2023
<u>TOTAL INFLUENT FLOW</u>	2,020,671,000	2,094,199,000	2,127,692,000	2,493,211,300	2,170,385,000	2,302,155,000	2,324,470,000	2,454,679,000
**FLOW, MAY - SEPTEMBER	769,869,000	902,376,000	923,535,000	1,015,345,000	911,676,000	1,101,997,000	1,028,457,000	919,199,000

TOTAL \$ COST OF PURCHASES

TREATMENT CHEMICAL	2016	2017	2018	2019	2020	2021	2022	2023
FERRIC SULFATE - ACTIFLO	\$306,169.00	271,749.00	\$250,405.00	\$327,298.00	\$379,168.00	\$329,078.00	\$416,948.00	\$ 422,127.66
POLYMER - ACTIFLO	48,185.00	41,528.00	46,772.00	39,909.00	44,871.00	\$49,107.00	\$44,965.00	\$ 51,520.00
POLYMER - DAF	26,910.00	26,910.00	39,184.00	30,997.00	37,257.00	\$41,034.00	\$41,561.00	\$ 46,805.00
SULFURIC ACID - BIOFILTER	35,368.00	26,291.00	26,159.00	36,122.00	31,631.00	\$57,259.00	\$50,078.00	\$ 44,563.81
SODIUM HYPOCHLORITE**	14,530.00	19,726.00	21,049.00	29,565.00	35,922.00	\$31,117.00	\$47,538.00	\$ 45,472.60
SODIUM BISULFATE**	3,943.00	2902.00	4682.00	5455.00	5641.00	\$10,466.00	\$9,520.00	\$ 7,471.26
TOTAL	\$435,105.00	\$389,106.00	\$388,251.00	\$469,346.00	\$534,490.00	\$518,061.00	\$610,610.00	\$ 617,960.33

\$ COST / MGD TREATED

TREATMENT CHEMICAL	2016	2017	2018	2019	2020	2021	2022	2023
FERRIC SULFATE - ACTIFLO	\$151.49	\$129.76	\$117.00	\$131.28	\$174.70	\$142.94	\$179.37	\$ 171.97
POLYMER - ACTIFLO	23.84	19.83	22.00	16.01	20.67	\$21.33	\$19.34	\$ 20.99
POLYMER - DAF	13.32	12.84	18.00	12.43	17.17	\$17.82	\$17.87	\$ 19.07
SULFURIC ACID - BIOFILTER	17.50	12.55	12.00	14.49	14.57	\$24.87	\$21.54	\$ 18.15
SODIUM HYPOCHLORITE**	18.87	21.86	22.80	29.12	39.40	\$28.24	\$46.22	\$ 49.47
SODIUM BISULFATE**	5.12	3.22	5.10	5.37	6.19	\$9.50	\$9.26	\$ 8.13
TOTAL	\$230.14	\$200.06	\$196.90	\$208.70	\$272.70	\$244.70	\$293.60	\$ 287.78

TOTAL GALLONS PURCHASED

TREATMENT CHEMICAL	2016	2017	2018	2019	2020	2021	2022	2023
FERRIC SULFATE - ACTIFLO	171,981	179,228	178,333	217,049	205,853	173,953	178,525	183,815
POLYMER - ACTIFLO	5,502	4,731	5,225	4,402	4,952	5,225	4,677	4,125
POLYMER - DAF	2,476	2,476	3,575	2,751	3,301	3,575	3,577	3,025
SULFURIC ACID - BIOFILTER	13,067	10,062	10,062	13,336	11,729	15,022	13,497	11,730
SODIUM HYPOCHLORITE**	9,116	12,360	13,156	16,628	18,360	13,816	14,726	13,580
SODIUM BISULFATE**	2,396	1,754	2,838	3,078	3,051	4,486	3,205	2,492

2023 CHEMICAL USE REPORT

GALLONS OF CHEMICAL / MGD TREATED

TREATMENT CHEMICAL	2016	2017	2018	2019	2020	2021	2022	2023
FERRIC SULFATE - ACTIFLO	85.10	85.61	85.2	87.1	94.8	75.6	76.80	74.88
POLYMER - ACTIFLO	2.72	2.26	2.5	1.77	2.28	2.27	2.01	1.68
POLYMER - DAF	1.23	1.18	1.7	1.10	1.52	1.55	1.54	1.23
SULFURIC ACID - BIOFILTER	6.47	4.80	4.7	5.36	5.4	6.53	5.81	4.78
SODIUM HYPOCHLORITE**	11.84	13.69	14.2	16.38	20.14	12.54	14.32	14.77
SODIUM BISULFATE**	1.19	1.94	3.0	3.03	3.35	4.07	3.12	2.71

**** May through September chemical use only**

Emptied bulk tank contents and switched to totes. Gallons estimated.

GAS, ELECTRIC AND WATER CONSUMPTION

NATURAL GAS

	2016	2017	2018	2019	2020	2021	2022	2023
Therms	70,013	76,013	89,690	82,885	200,826	200,641	141,855	120,523
Cost \$	\$38,836.02	\$44,583.71	\$47,502.00	\$42,814.71	\$36,413.73	\$35,034.20	\$49,789	\$ 56,136
\$ Cost / MGD Treated	-	-	\$22.33	\$17.00	\$16.78	\$15.22	\$21.42	\$ 22.87
Therms / MGD Treated	-	-	-	-	92.53	87.15	61.03	49.10

POTABLE WATER

	2016	2017	2018	2019	2020	2021	2022	2023
Cubic Feet	380,677	458,500	476,500	491,400	464,900	502,581.00	359,324	617,433
Cost \$	\$20,436.52	\$22,278.74	\$22,655.00	\$24,437.90	\$21,920.54	\$24,462.34	\$19,996	\$ 28,407
\$ Cost / MGD Treated	-	-	\$10.65	\$9.80	\$10.10	\$10.63	\$8.60	\$ 11.57
Cubic Feet / MGD Treated	-	-	224	197	214	218	155	251

ELECTRICAL POWER

	2016	2017	2018	2019	2020	2021	2022	2023
KWH	7,446,624	7,468,201	7,682,476	8,051,500	7,957,863	8,189,111	8,307,941	8,358,112
COST \$	\$499,300.03	\$509,871.00	\$508,330.00	\$504,393.43	\$494,540.75	\$537,709.43	\$598,456	\$ 626,120
KWH / MGD Treated	3,684.62	3,566.14	3,610	3,229.38	3,664.85	3,557.08	3,574.08	3,405
\$ Cost / MGD Treated	-	-	\$238.91	\$202.31	\$227.86	\$233.56	\$257.46	\$ 255.07

2023 CHEMICAL USE REPORT

REMOVAL EFFICIENCY

<u>SOLIDS</u>				2019	2020	2021	2022	2023
Raw Influent				-	-	3,792,868	3,702,791	3,875,276
Final Effluent				-	-	131,927	179,960	208,640
Total Pounds Removed				-	-	3,660,941	3,522,831	3,666,576
Percent Removed				-	-	97%	95%	95%

<u>PHOSPHORUS</u>				2019	2020	2021	2022	2023
Raw Influent				75,998	84,460	91,720	88,454	96,111
Final Effluent				3,648	5,006	3,434	3,695	4,818
Total Pounds Removed				72,350	79,454	88,286	84,759	91,293
Percent Removed				95%	94%	96%	96%	95%

<u>AMMONIA</u>				2019	2020	2021	2022	2023
Raw Influent				-	-	705,049	653,175	673,897
Final Effluent				-	-	4,789	7,348	8,103
Total Pounds Removed				-	-	700,260	645,827	665,794
Percent Removed				-	-	99%	99%	99%

<u>BOD</u>				2019	2020	2021	2022	2023
Raw Influent				-	-	5,006,411	5,129,073	4,922,443
Final Effluent				-	-	110,270	130,962	130,231
Total Pounds Removed				-	-	4,896,141	4,998,111	4,792,212
Percent Removed				-	-	98%	97%	97%

