

**Appleton Wastewater Treatment Plant
Operations Synopsis
July 2023 – September 2023**

Wastewater Treatment Program

- The Appleton Wastewater Treatment Plant (AWWTP) final effluent met Wisconsin Department of Natural Resources (WDNR) discharge monitoring reporting limits for carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), phosphorous, and ammonia. The plant maintained good treatment and a healthy microbiological population with a sludge retention time of 9 days. Dewatering processes functioned well and converted 16 million gallons (MG) of primary digested sludge to biosolids.

Summary of Treatment

Parameter	July	August	September	Quarter Average
Industrial Flow (MG)	27.3	30.6	30.7	29.5
Domestic Flow (MG)	235.4	265.0	218.0	239.5
Total Flow (MG)	262.7	295.6	248.7	269.0
Influent CBOD Load (Avg Daily lbs)	24,730	25,291	24,285	24,769
Influent TSS Load (Avg Daily lbs)	57,948	55,051	53,040	55,346
Influent Phosphorous Load (Avg Daily lbs)	490	489	449	476
Influent Ammonia Load (Avg Daily lbs)	2,249	2,609	2,875	2,578
Effluent CBOD Load (Avg Daily lbs)	274	316	313	301
Effluent TSS Load (Avg Daily lbs)	104	177	220	167
Effluent Phosphorous Load (Avg Daily lbs)	19	24	27	23
Effluent Ammonia Load (Avg Daily lbs)	46	91	55	64
% Treatment Removal of CBOD	98.9	98.8	98.7	98.8
% Treatment Removal of TSS	99.8	99.7	99.6	99.7
% Treatment Removal of Phosphorous	96.1	95.1	94.0	95.1
% Treatment Removal of Ammonia	98.0	96.5	98.1	97.5

Project Updates

- Appleton Wastewater Treatment Plant Sludge Storage Building Addition: The construction contract with Miron Construction in the amount of \$5,330,989 was approved by Common Council on July 20, 2022. Active construction proceeded during the quarter with the building addition approximately 80% complete. Remaining project highlights include electrical, interior and exterior lighting, conveyor installation and commissioning, outside pavement installation, and site restoration. Final completion is projected to occur in February 2024.
- Phase I Appleton Wastewater Plant Belt Filter Press Equipment Upgrades: The construction contract with Staab Construction (Staab) in amount \$5,063,000 was approved by Common Council on December 7, 2022. Construction activities during the reporting period included demolition of a remnant polymer system and associated piping, installation of the new make-up air unit, and various electrical work that will support the two new belt filter press units. February 2024 remains the contractual final completion date but will likely need to be extended because longer than expected equipment lead times.

- Phase II Appleton Wastewater Plant Belt Filter Press Equipment Upgrades: McMahon is currently under contract for Phase II Solids Dewatering Equipment Upgrades engineering services. The construction bid documents are approximately 98% complete with project public bidding projected to occur in the 4th Quarter based on the projected equipment lead times associated with the Phase I construction.
- Grit Trap Vortex System Drive and Raw Sludge Pump Replacement Projects – The construction contract with August Winter and Sons, Inc. in the amount of \$573,355 was approved by Common Council on September 6, 2023. The contract was subsequently executed in early October. The construction submittal process immediately pursued with active construction not expected to occur until June 2024 because of extremely long equipment lead times.
- Digester Circulation Piping, Blended Sludge Piping, and Heat Exchanger Replacement Project – McMahon is under contract to provide engineering, contract administration, contract management, field services, and construction management services as part of a project that will address the compromised integrity of pipe which support primary anaerobic digester processes (e.g., sludge feed, sludge circulation, and sludge heating pipe) caused by over 20 years of erosion and corrosion. McMahon advanced preliminary design plans and specification during the reporting period and anticipate publication as part of public bidding to occur prior to year-end 2023.

Regulatory Summary

- Monthly Discharge Monitoring reports for July, August, and September were filed electronically on time for regulatory compliance.
- The AWWTP Wisconsin Pollution Discharge Elimination System (WPDES) electronic permit application was submitted on October 2, 2021, as part of reissuance. The current WPDES permit expired on March 31, 2022. The AWWTP continues to operate under the expired permit limits until DNR reissues a permit. Procedurally, the DNR has yet to submit a draft permit for review and public comment. The exact timeline remains unknown for when that step will occur. However, we are anticipating that the reissued permit will be administered sometime in early 2024.

Laboratory

- All sampling and laboratory testing procedures were performed in accordance with requirements outlined in the AWWTP WPDES permit.
- Discharge Monitoring Report (DMR) and Health Department testing program objectives associated with sampling and analysis were met during the reporting period.
- Sampling of influent in support of Wisconsin State Lab of Hygiene COVID Sewage Surveillance continued during the reporting period.

Staffing & Training

- Staffing levels remain reduced following the resignations of two Wastewater Plant Relief Operators in late 2022. One of those vacancies was filled in January 2023. The other Relief Operator vacancy was filled when an existing Wastewater Plant Operator transferred positions. This in turn left two open Wastewater Plant Operator Positions. Two qualified Wastewater Plant Operator candidates were hired in the 3rd quarter and are currently job shadowing until their training process is complete.
- Maintained operations schedules with overtime and deferred maintenance work assignments as a result of the ongoing Wastewater Plant Operator training.

EFFLUENT QUALITY SUMMARY
April 2022/2023 – September 2022/2023

Table 1 – 2022 Monthly Permit Summary

Month	CBOD (mg/L)	TSS (mg/L)	TSS (lbs/day)	P (mg/L)	P ⁽³⁾ (lbs/day)	NH3-N ⁽¹⁾ (mg/L)	Fecal ⁽²⁾ Coliform Colonies/ (100 ml)	Chlorine ⁽²⁾ Residual (mg/L)	pH (s.u.)
Permit Limit	25	30	1,322 ⁽³⁾	1	23 ⁽³⁾	10, 11, 4.4, 18	400 col/100ml Geo.Mean	0.038 mg/L daily	6.0 - 9.0 daily limit
April 2022	5	2	371	0.13	20	0.42	NA	NA	7.1/7.2
May 2022	5	2	171	0.13	13	0.10	168	<0.032	7.0/7.3
June 2022	4	1	118	0.12	14	0.11	5	<0.032	6.9/7.2
July 2022	4	1	67	0.17	13	0.18	10	<0.032	6.9/7.4
August 2022	5	4	406	0.22	20	0.40	4	<0.032	7.0/7.4
September 2022	4	2	205	0.17	15	1.11	4	<0.032	7.0/7.2
		Nov - April Period Average ⁽³⁾		17.3					
		May - October Period Average ⁽³⁾		14.0					

Table 2 – 2023 Monthly Permit Summary

Month	CBOD (mg/L)	TSS (mg/L)	TSS (lbs/day)	P (mg/L)	P ⁽³⁾ (lbs/day)	NH3-N ⁽¹⁾ (mg/L)	Fecal ⁽²⁾ Coliform Colonies/ (100 ml)	Chlorine ⁽²⁾ Residual (mg/L)	pH (s.u.)
April 2023	4	3	757	0.12	25	0.53	NA	NA	7.0/7.3
May 2023	5	2	280	0.15	18	0.99	2	<0.032	6.9/7.2
June 2023	5	2	164	0.23	19	1.65	4	<0.032	6.5/7.1
July 2023	4	1	104	0.27	19	0.66	3	<0.032	6.7/7.2
August 2023	4	2	177	0.31	24	1.07	3	<0.032	6.8/7.2
September 2023	5	3	220	0.40	27	0.79	12	<0.032	6.8/7.1
		Nov - April Period Average ⁽³⁾		18.6					
		May - October Period Average ⁽³⁾		21.4					

NOTES:

- 1) Seasonal NH3-N limits: 10 mg/L Jan. 1 – Mar. 31, 11 mg/L Apr. 1 – May 31, 4.4 mg/L June 1 – Sep 30, 18 mg/L Oct 1 – Dec 31.
- 2) Seasonal fecal and residual chlorine limits are in effect May 1st through September 30th. Limit of Detection 0.032 mg/L.
- 3) April 1, 2017 WPDES Reissuance with new TSS limits expressed as monthly concentration limit (mg/L) and loading limit (lbs).
The future TMDL phosphorus limit will be 23 lbs/day expressed as a 6-month average during the months of May – October and November – April.

YEAR 2023 RECEIVING STATION REVENUE

Hauler	January	February	March	April	May	June	July	August	September	October	November	December	Y-T-D Total
A & B Leist Trucking	\$ 24,775.04	\$ 87,845.97	\$ 135,520.54	\$ 147,043.94	\$ 154,606.46	\$ 138,061.05	\$ 153,077.03	\$ 129,725.31	\$116,600.40				\$ 1,087,255.74
Hickory Meadows	\$ 16,496.13	\$ 39,715.07	\$ 86,342.34	\$ 66,164.99	\$ 47,542.59	\$ 32,600.64	\$ 29,379.84	\$ 36,167.31	\$ 31,851.46				\$ 386,260.37
Jeff Waldvogel Trkg.	\$ 3,550.74	\$ 6,998.07	\$ 13,327.59	\$ 18,096.78	\$ 21,051.79	\$ 19,501.51	\$ 21,847.95	\$ 21,782.35	\$ 24,835.12				\$ 150,991.90
Nate Waldvogel Trkg.	\$ 3,737.20	\$ 14,627.86	\$ 16,611.32	\$ 16,954.86	\$ 16,692.40	\$ 18,018.94	\$ 18,183.77	\$ 17,620.22	\$ 20,168.29				\$ 142,614.86
Waldvogel Trucking	\$ 1,073.70	\$ 2,169.20	\$ 2,106.81	\$ 2,363.40	\$ 2,348.35	\$ 1,922.67	\$ 2,258.02	\$ 2,565.07	\$ 2,395.26				\$ 19,202.48
2023 Total	\$ 49,632.81	\$151,356.17	\$ 253,908.60	\$ 250,623.97	\$ 242,241.59	\$ 210,104.81	\$ 224,746.61	\$ 207,860.26	\$195,850.53	\$ -	\$ -	\$ -	\$ 1,786,325.35
2022 Total	\$216,311.75	\$187,091.71	\$229,126.20	\$265,240.25	\$218,399.46	\$234,422.19	\$247,854.73	\$217,396.10	\$165,697.73	\$197,486.74	\$190,481.28	\$ 142,568.74	\$2,512,076.88

3% Rate Increase effective 1/1/18
 1% Rate Increase effective 1/1/19
 5% Rate Increase effective 10/1/20
 4% Rate Increase effective 01/01/22
 7% Rate Increase effective 01/01/23

*Nate Waldvogel Trucking - new hauler in 2023

Date: October 18, 2023
 Copies: K. Rindt (via email)
 C. Shaw (via email)
 B. Kreski
 Utilities Committee