

**Appleton Wastewater Treatment Plant
Operations Synopsis
October 2020 – December 2020**

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 eight days. Dewatering processes functioned well and converted 16.9 Million Gallons (MG) of primary digested sludge to biosolids.

Summary of Treatment

Parameter	October	November	December	Average
Industrial Flow (MG)	38.2	33.4	34.9	35.5
Domestic Flow (MG)	269.8	298.3	235.5	267.9
Total Flow (MG)	308.0	331.7	270.4	303.4
Influent CBOD Load (Avg Daily lbs)	23,338	19,737	23,363	22,146
Influent TSS Load (Avg Daily lbs)	44,850	41,426	46,762	44,346
Influent Phosphorous Load (Avg Daily lbs)	509	384	503	465
Influent Ammonia Load (Avg Daily lbs)	1,858	1,950	2,357	2,055
Effluent CBOD Load (Avg Daily lbs)	491	562	501	518
Effluent TSS Load (Avg Daily lbs)	373	286	347	335
Effluent Phosphorous Load (Avg Daily lbs)	26	18	20	21
Effluent Ammonia Load (Avg Daily lbs)	85	56	283	141
% Treatment Removal of CBOD	97.9	97.2	97.9	97.6
% Treatment Removal of TSS	99.2	99.3	99.3	99.2
% Treatment Removal of Phosphorous	94.9	95.3	96.0	95.4
% Treatment Removal of Ammonia	95.4	97.1	88.0	93.5

Work in Progress:

- 2017 Appleton Wastewater Plant Improvement Projects: (WAS Pumping System Replacement, High Pressure Blower #3 Replacement, Digester Biogas Mix Compressor Glycol Cooling System): Start-up of High-Pressure Blower #3 and new WAS pumps occurred during the first half of 2020. Final project completion was delayed in the quarter as the contractor completed the remaining punch list items. Final project completion is now expected to occur early in the first quarter of 2021.
- 2019 Appleton Wastewater Plant Improvement Projects: McMahon under professional engineering service contract for the multi-process improvements project. The project includes replacement of the Return Activated Sludge (RAS) pumps, process piping modifications (e.g. blended sludge, filtrate, waste gas flare), outside secondary chemical offloading containment repairs, primary clarifiers #5 & #6 drive replacements (2020 CIP), and H-Building effluent pump replacements (2020 CIP). On November 18, 2020 Common Council approved contract amendment #1 with McMahon. This contract amendment accounted for the additional costs of engineering services associated with the 2020 CIPs previously mentioned that were not part of the original contract. The public construction bid process was completed in late November 2020. The City opened and reviewed the

bids from three contractors. Staab Construction (Staab) was the least cost responsible bidder. Common Council approved the construction contract with Staab on December 2, 2020. A virtual construction kick-off meeting was held with Staab, McMahon, and AWWTP staff on December 18, 2020. Active construction is anticipated to occur beginning in mid to late January 2021.

- Engineering Services RFP 2021 Appleton Wastewater Plant Sludge Storage Building Addition: On November 17, 2020 Requests for Proposals (RFP) were sent to four engineering firms as part of the 2021 Appleton Wastewater Plant Sludge Storage Building Addition. The deadline for RFP submission was Friday, January 8, 2020. Engineering services sought as part of this RFP will provide a path forward to construct 5,000 cubic yards of additional biosolids storage capacity. The additional storage will address long time deficiencies associated with satisfying the Department of Natural Resources 180-day storage requirement based on annual production. The firm awarded this contact will also be required to design a 600 cubic yard biosolids compost processing area as part of the future construction project.
- Engineering Services RFP: 2021 Appleton Wastewater Plant Solids Dewatering Equipment Upgrades: On November 17, 2020 Requests for Proposals (RFP) were sent to four engineering firms as part of the Appleton Wastewater Plant Solids Dewatering Equipment Upgrades. Sustained increases in annual biosolids production rates coupled with aging and less efficient dewatering equipment have necessitated this project. The deadline for RFP submission was Friday, January 8, 2020. Engineering services sought as part of this RFP will evaluate needs and the type of dewatering technology to be advanced as part of a 2022 construction project.

Regulatory Summary

- Monthly Discharge Monitoring reports for October, November, and December were filed electronically on time for regulatory compliance.

Laboratory

- All sampling and laboratory testing procedures were performed in accordance with requirements outlined in the AWWTP Wisconsin Pollutant Discharge Elimination System (WPDES) permit.
- Discharge Monitoring Report (DMR) and Health Department testing program objectives associated with sampling and analysis were met during the reporting period.
- Analysis of Single-Blind Proficiency samples for laboratory recertification occurred during the reporting period.
- Sampling of influent in support of Wisconsin State Lab of Hygiene COVID Sewage Surveillance was initiated during the reporting period.

Staffing & Training

- In response to COVID-19, adjustments have been made to staff schedules and work areas, as well as virtual meetings which limit group sizes and face-to-face contact among employees.

EFFLUENT QUALITY SUMMARY
July 2019/2020 – September 2019/2020

Table 1 – 2019 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.)
<i>Permit Limit</i>	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
July 2019	5	2	150	0.14	13	1.85	4	<0.032	6.8/7.1
August 2019	4	1	98	0.17	14	1.60	10	<0.032	6.8/7.2
September 2019	5	3	525	0.17	21	2.33	53	<0.032	7.1/7.3
October 2019	4	3	409	0.16	20	1.98	NA	NA	7.1/7.4
November 2019	5	3	333	0.13	15	2.91	NA	NA	7.2/7.4
December 2019	5	3	411	0.13	17	3.65	NA	NA	7.1/7.4
May - October Period Average⁽³⁾					17				

Table 2 – 2020 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.)
July 2020	4	2	311	0.25	30	0.73	4	<0.032	6.7/6.9
August 2020	6	3	189	0.30	19	1.15	11	<0.032	6.6/7.2
September 2020	6	3	191	0.34	23	0.81	8	<0.032	6.8/7.2
October 2020	6	4	373	0.31	26	0.88	NA	NA	7.1/7.4
November 2020	6	3	286	0.19	18	0.59	NA	NA	6.9/7.2
December 2020	7	5	347	0.28	20	3.96	NA	NA	6.88/7.11
May - October Period Average⁽³⁾					21				

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 2020 RECEIVING STATION REVENUE

Hauler	January	February	March	April	May	June	July	August	September	October	November	December	Y-T-D Total
A & B Leist Trucking	\$ 78,336.68	\$ 78,457.11	\$ 88,498.49	\$ 92,808.40	\$ 99,535.11	\$ 100,563.41	\$ 103,701.53	\$ 107,300.47	\$ 101,620.13	\$ 114,710.23	\$ 104,185.37	\$ 105,138.08	\$ 1,174,855.01
Buttles Custom Ag *	\$ 4,350.46	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,350.46
Dean Foods	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Hickory Meadows	\$ 36,386.43	\$ 26,652.57	\$ 52,134.86	\$ 47,032.79	\$ 37,834.45	\$ 47,374.78	\$ 52,505.79	\$ 24,017.66	\$ 25,463.54	\$ 40,005.22	\$ 54,115.44	\$ 42,457.48	\$ 485,981.01
Holland Sanitary Dist. 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Jeff Waidvogel Trkg.	\$ 32,158.85	\$ 30,912.64	\$ 33,131.12	\$ 37,695.30	\$ 41,634.20	\$ 51,895.76	\$ 46,871.88	\$ 41,576.05	\$ 41,167.54	\$ 39,423.40	\$ 28,191.89	\$ 31,119.30	\$ 455,777.93
Movin Materials	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Waidvogel Trucking	\$ 2,194.20	\$ 1,954.49	\$ 2,113.56	\$ 2,350.76	\$ 2,554.51	\$ 2,295.43	\$ 2,477.14	\$ 2,677.33	\$ 2,428.05	\$ 1,743.44	\$ 1,820.71	\$ 1,936.46	\$ 26,546.08
2020 Total	\$ 153,426.62	\$ 137,976.81	\$ 175,878.03	\$ 179,887.25	\$ 181,558.27	\$ 202,129.38	\$ 205,556.34	\$ 175,571.51	\$ 170,679.26	\$ 195,882.29	\$ 188,313.41	\$ 180,651.32	\$ 2,147,510.49
2019 Total	\$ 271,217.51	\$ 240,466.77	\$ 301,788.32	\$ 301,125.30	\$ 327,779.40	\$ 311,857.27	\$ 354,997.19	\$ 328,472.17	\$ 307,790.57	\$ 292,411.49	\$ 256,462.25	\$ 188,614.75	\$ 3,482,982.99

*Buttles Custom Ag new customer in November 2019

Holland Sanitary District 1 new customer in March 2018

Dean Foods new customer in April 2018

3% Rate Increase effective 1/1/18

1% Rate Increase effective 1/1/19

5% Rate Increase effective 10/1/20

Effective 5/1/19 Dean Foods is billed with Jeff Waidvogel Trucking

Date: January 20, 2021

Copies: K. Rindt (via email)

C. Shaw (via email)

B. Kreski

Utilities Committee