

**Appleton Wastewater Treatment Plant
Operations Synopsis
October 2019 – December 2019**

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 and one half days. Dewatering processes functioned well and converted 17.8 Million Gallons (MG) of primary digested sludge to biosolids.

Summary of Treatment

Parameter	October	November	December	Average
Industrial Flow (MG)	36.0	42.4	38.0	38.8
Domestic Flow (MG)	454.9	375.0	413.4	414.4
Total Flow (MG)	490.9	417.4	451.4	453.2
Influent CBOD Load (Avg Daily lbs)	29,424	24,164	24,672	26,087
Influent TSS Load (Avg Daily lbs)	41,799	40,646	44,536	42,327
Influent Phosphorous Load (Avg Daily lbs)	448	438	445	444
Influent Ammonia Load (Avg Daily lbs)	1,974	1,843	2,071	1,963
Effluent CBOD Load (Avg Daily lbs)	580	511	748	613
Effluent TSS Load (Avg Daily lbs)	409	333	411	384
Effluent Phosphorous Load (Avg Daily lbs)	20	15	17	17
Effluent Ammonia Load (Avg Daily lbs)	259	344	420	341
% Treatment Removal of CBOD	98.0	97.9	97.0	97.6
% Treatment Removal of TSS	99.0	99.2	99.1	99.1
% Treatment Removal of Phosphorous	95.5	96.6	96.2	96.1
% Treatment Removal of Ammonia	86.9	81.3	79.7	82.6

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): The construction notice to proceed was authorized on March 4, 2019. Construction activities remained ongoing through the reporting period. Project completion is anticipated in May 2020.
- **B-Building Biogas Boiler Project:** Work proceeded through the reporting period associated with the new high efficiency biogas (methane) boiler which will support the lower heating loop at the AWWTP. Work also included additional improvements that will complement both the new biogas boiler and existing biogas boilers (e.g. new biogas conveyance piping, gas mixing, gas compression system, and automated fuel controls). These aforementioned improvements are designed to optimize the use of two existing upper loop boilers in conjunction with the new lower loop boilers that will be fueled entirely on biogas from the anaerobic digesters. New equipment startup occurred in October, with the system currently operating.
- **Compost Site Evaluation:** Work remains in progress on final draft report by Coker Composting and Consulting (Coker).

- **2019 Midway Road Lift Station Phase II Improvements Project:** McMahon is under an engineering services contract to provide design, bidding and construction phase services as part of the second phase of the Midway Lift Station Improvements project. The project includes replacement of the existing pumps, deteriorated pump rails, and electrical control panel (nearly 30 years old). Construction activities began in November, with substantial completion in December.
- **2019 Appleton Wastewater Plant Improvement Projects:** McMahon was awarded the professional engineering service contract in May as part of the multi-process improvements project. The project includes replacement of the Return Activated Sludge (RAS) pumps, process piping modifications (e.g. blended sludge, waste gas, and filtrate), primary clarifier concrete recoating, and outside secondary containment repairs for iron salt chemical offloading. McMahon continued preliminary engineering phase efforts during the reporting period.

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 including those associated with the Health Department pool testing program.
- Successful Analysis of Single Blind Proficiency samples for laboratory recertification occurred during the reporting period.

Staffing & Training

- The Master Electrician position was over-hired on 12/9/19 to facilitate training before the retirement of Master Electrician Rich Kohl on 1/2/2020.
- Two department retirements are planned for the first quarter of 2020. The hiring process is in progress for those positions, which include Instrumentation Technician and Solids Operator.

EFFLUENT QUALITY SUMMARY
October 2018/2019 – December 2018/2019

Table 1 – 2018 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>	<i>25</i>	<i>30</i>	<i>1,322⁽³⁾</i>	<i>1</i>	<i>23⁽³⁾</i>	<i>10, 11, 4.4, 18</i>	<i>400 col/100ml Geo.Mean</i>	<i>0.038 mg/L daily</i>	<i>6.0 - 9.0 daily limit</i>
July 2018	5	5	354	0.61	41	0.77	11	<0.032	7.4/7.6
August 2018	6	4	375	0.64	51	1.40	56	<0.032	7.4/7.6
September 2018	6	4	940	0.56	71	1.49	10	<0.032	7.4/7.6
October 2018	5	4	510	0.26	32	0.89	NA	NA	7.4/7.6
November 2018	7	3	305	0.22	21	1.59	NA	NA	7.4/7.5
December 2018	5	4	673	0.30	28	3.25	NA	NA	6.2/7.5

Table 2 – 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.)
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

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.

YEAR 2019 RECEIVING STATION REVENUE

Hauler	January	February	March	April	May	June	July	August	September	October	November	December	Y-T-D Total
A & B Leist Trucking	\$ 192,964.32	\$171,666.63	\$ 206,654.56	\$ 205,765.77	\$ 218,421.63	\$ 213,640.81	\$ 236,349.22	\$ 220,225.61	\$196,456.10	\$ 175,140.16	\$ 172,628.39	\$ 83,852.74	\$ 2,293,765.94
Burtles Custom Ag *											\$ 9,321.90	\$ 20,008.86	\$ 29,330.76
Dean Foods	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Hickory Meadows	\$ 38,366.69	\$ 36,715.45	\$ 55,880.13	\$ 39,309.71	\$ 42,620.93	\$ 31,540.84	\$ 53,873.47	\$ 41,672.91	\$ 51,091.30	\$ 63,010.99	\$ 38,054.08	\$ 50,693.83	\$ 542,830.33
Holland Sanitary Dist. 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Jeff Waldvogel Trkg.	\$ 37,371.58	\$ 30,251.53	\$ 36,648.35	\$ 53,986.57	\$ 64,742.30	\$ 64,710.94	\$ 62,729.49	\$ 64,386.37	\$ 58,137.82	\$ 52,165.32	\$ 34,584.78	\$ 32,043.04	\$ 591,758.09
Movin Materials	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Waldvogel Trucking	\$ 2,514.92	\$ 1,833.16	\$ 2,605.28	\$ 2,063.25	\$ 1,994.54	\$ 1,964.68	\$ 2,045.01	\$ 2,187.28	\$ 2,105.35	\$ 2,095.02	\$ 1,873.10	\$ 2,016.28	\$ 25,297.87
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
2018 Total	\$230,054.73	\$225,457.71	\$278,712.95	\$330,081.94	\$416,028.68	\$333,628.29	\$322,323.96	\$276,553.18	\$328,181.16	\$302,376.00	\$274,097.90	\$ 258,720.18	\$ 3,576,216.68

*Burtles 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
Effective 5/1/19 Dean Foods is billed with Jeff Waldvogel Trucking

Date: January 15, 2020
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Utilities Committee