

**Appleton Water Treatment Plant
Operations Synopsis
July, August, September 2013**

Summary

All produced water met Wisconsin Department of Natural Resources (WDNR) and Safe Drinking Water Act (SDWA) Standards during the quarter. The following table summarizes selected water production and quality performance metrics for the current and previous reporting periods.

During the quarter, water production increased nearly 10% due to summer season demand. Average raw water turbidity increased nearly 250% from the preceding quarter leading to increased chemical demand and backwashing energy expense.

WATER PLANT PARAMETERS	Previous (Q2)			Current (Q3)		
	April	May	June	July	August	September
Water Treated						
Finished (million gallons)	242	273	263	297	306	280
Finished (million gallons / day)	8.1	8.8	8.8	9.6	9.9	9.3
Electrical Energy (WTF)						
Consumption (Megawatt-hours)	511.8	544.2	526.1	627.7	645.7	583.7
MWH / million gallons produced	2.11	1.99	2.00	2.11	2.11	2.09
Turbidity						
Lake (NTU)	11.9	11.4	10.5	32.0	41.3	47.7
Finished (NTU)	0.02	0.02	0.02	0.02	0.02	0.02
Finished (<0.1 NTU standard)	100%	100%	100%	100%	100%	100%
Water System Microbial Quality						
Total Coliform Samples	81	81	81	81	81	81
Compliance with Standard	100%	100%	100%	100%	100%	100%
Disinfectant Contact Time						
Minimum CT Ratio Required	1.0	1.0	1.0	1.0	1.0	1.0
Minimum CT Ratio Achieved	1.82	1.94	1.79	1.76	1.90	1.92
Hardness						
Lake Total / Calcium (mg/L)	207/111	185/98	180/93	167/88	165/81	165/81
Finished Total / Calcium (mg/L)	102/42	97/28	90/21	93/15	84/17	86/19
Finished Water Quality						
Total Chlorine (mg/L)	2.25	2.23	2.13	2.13	2.32	2.27
pH	8.8/9.2	8.8/9.2	8.7/9.2	8.6/9.2	8.6/9.2	8.6/9.2
Water Temperature (Degrees F)	39.2	56.5	69.3	76.5	74.5	70.1
Fluoride (mg/L)	0.75	0.74	0.73	0.72	0.71	0.75
Orthophosphate (mg/L)	0.70	0.73	0.75	0.78	0.78	0.79

Laboratory

- In support of plant operations, staff conducted successful analyses according to method protocols for all parameters including pH, turbidity, alkalinity, hardness, free and total chlorine, ammonia, phosphorus, and fluoride.
- In support of distribution operations, staff performed required 81 monthly Coliform bacteria analyses along with heterotrophic plate count (HPC) testing.

- In August, staff reviewed sampling, analytical, and reporting procedures and protocols associated with unsafe bacteriological results. The review was triggered by several unsafe sample results associated with water main construction in the Lynndale area. The unsafe sample results did not trigger any public notification or regulatory actions. The review activity included coordination with WDNR, private party testing laboratories, the Appleton Department of Public Health, and DPW staff.

Safety

- WTF Safety programs were maintained by completing monthly safety meetings and all inspections. There were no incidents to report.

Water Plant Projects

- **WDNR Tour:** On August 28, AWTF management staff hosted an extended facility tour and discussion for the WDNR Water Management Team annual meeting. The AWTF was selected by WDNR as an example of a large, complex surface water treatment facility. The team's leaders sought to educate team members regarding the real-world challenges facing municipalities in meeting demanding regulatory requirements in a cost-effective manner.
- **RUPIP:** The Regulatory Upgrade and Process Improvement Project (RUPIP) work continued apace during the quarter.
 - Additional design review meetings at the 60 and 90% design levels were conducted by the Engineer during the quarter. Topics included detailed review of lime and ammonia feed systems, dual-media filtration modifications, disinfection contact basin modifications, and interconnecting piping configurations. The project is expected to bid in the 4th quarter.
 - Plant staff completed informal demonstration testing of the GAC Filters to meet more stringent effluent turbidity goals. Testing objectives included simulated operations to accommodate expected construction sequencing and increased hydraulic loadings. Preliminary results indicate that lime system improvements and filter aid chemical systems will be required to meet regulatory goals. Increased GAC Filter backwash frequencies will be experienced especially during periods of high raw water turbidity. Testing also underscored the need to perform "jar" testing on a more frequent basis to optimize lime and coagulant doses.
- **Membrane Operations:** Full-scale testing of the TARGA II product from Koch Membrane Systems was conducted during the quarter. Preliminary indications are that the product meets or exceeds performance requirements. The KMS pilot plant will be removed from the facility during the 4th quarter.

Staffing & Training

- Jim Nikolai accepted a transfer from the Wastewater division to fill the vacancy created when Relief Operator Brian Kreski accepted a promotion to Environmental Programs Coordinator.
- Tim Elchlepp joined the Water division as a Relief Operator filling the vacancy created when Adam Smith resigned to accept a similar position.
- Several staff members received external technical training required by WDNR operator certification regulations. In addition, staff received city sponsored General Employee, Supervisory, Safety, and NEOGov Performance Evaluation System training.