



Legislation Text

File #: 21-330, **Version:** 1

City Council Meeting Date: June 8, 2021

To: Mayor and City Council
City Administrator

From: Justin Wagner, Utilities Manager
David Bennett, P.E., Public Works Director/City Engineer

Discussion of the Wastewater Treatment Plant's Facility Study Update.

Action Requested:

The Northfield City Council discusses the Wastewater Treatment Plant's Facility Plan Update.

Summary Report:

On August 5, 2019, the City of Northfield hired Jacobs Engineering Group (Jacobs) to provide the following services as part of the contract:

- 1) Phase 1 - Operations Assessment, previously presented to Council
- 2) Phase 2 - Condition Assessment - previously presented to Council
- 3) Phase 3 - Facility Plan (Attachment 1) - current discussion tonight with Council

Tonight's discussion is an update of the Facility Plan. As part of the Facility Plan, Jacobs Engineering Group updated the Wastewater Treatment Plant's Facility Plan from 2016. The objectives of this Facility Study update included:

- 1) Review and update projected flows and loads to 2040.
- 2) Review the 2016 Facility Plan improvement alternatives, document the updated status of improvements that have already been completed, and identify additional improvement alternatives that were uncovered as part of the Operational Assessment and Condition Assessment. Provide updated cost estimates for updates and revisions that are identified.
- 3) Review the 2016 Facility Plan project costs and provide updated cost summaries based on the status of improvements that are already completed and the updates and revisions identified for this Facility Plan Update.

As part of the flows and loads projections through 2040, the following plant influent load projections were identified in Table 2-5 of the Facility Plan Update which is listed below.

Table 2-5. Design Capacity and Projected Flows and Loads

Item	Original/Permitted Design Basis ^a	Updated Design Basis ^b	2025	2030	2035	2040
Population			23,228	24,174	25,155	26,177
AWW Flow (mgd)	5.2	5.2	3.25	3.38	3.51	3.65
CBOD ₅ - Average	6,200	7,440	5,881	6,010	6,145	6,285
CBOD ₅ - Max Monthly	7,999	9,239	7,504	7,657	7,817	7,984
TSS - Average Daily	5,001	6,001	5,855	6,040	6,240	6,444
TSS - Max Monthly	6,400	7,400	8,817	9,118	9,432	9,758

^a From Wastewater Treatment Facilities Improvements contract drawings (Bolton & Menk, Inc., 1999) and Northfield Wastewater Treatment Facility Plan (Bolton & Menk, Inc., 2016)

Based upon the level of TSS above the Updated Design Basis, Jacobs along with Kruger (now Veolia) completed a further review of the loading capacity of the Wastewater Treatment Plant. The Veolia team indicated that because Northfield’s installation was one of the first of its kind, the design tools used for sizing were more conservative than the design tools used today for sizing new BAF plants. Veolia offered to review the Northfield performance data and model the plant’s performance using their latest process design tools. Their results confirmed the existing 10 cell BAF process can handle the future flow and load cases through 2040 easily with 10 cells in service and can even handle more flow or higher strength wastewater. Based on Veolia’s recommendation the City will be able to handle and influent load between 10,000 and 17,500 pounds per day of Total Suspended Solids. This indicated the City will have the ability to handle the influent load for TSS past 2040 projections.

The Facility Plan Updated costs to all projects from the 2016 Facility Plan and identified additional projects to be completed at the WWTP. Table 4-2 of the Facility Plan lays out the implementation plan with the project costs based on 2021 dollars for a total of \$14,694,356. When staff develops the Capital Improvement Plan, staff will allocate inflation costs for the projects. Staff is working with Baker Tilly to update the Rate Study that was completed in 2018 to determine if the current rate adjustments are adequate for funding the projects.

Table 4-2. Implementation and Spending Schedule

Item	2022-2025	2026-2030
Liquid Sludge Storage	\$3,820,313	
Biosolids Cake Storage		\$3,945,875
Influent Lift Pumps	\$720,000	
Preliminary Treatment		\$300,000
Primary Clarification	\$354,000	
Process Lift Pumps		\$210,000
BAF Blower Replacement	\$1,901,600	
Control System and Card Access Upgrades	\$864,000	
HVAC Equipment Replacement	\$215,568	
Water Supply System		\$1,000,000

Roof Replacement	\$763,000	
Standby Generator		\$600,000
Total	\$8,638,481	\$6,055,875

Tentative Timelines:

July 6, 2021 - Final Approval of Facility Study with Operation Assessment and Condition Assessment as Appendices.