



January 11, 2023

Daniel Ortiz-Hernandez
400 Second Street
P.O. Box 217
Webster City, IA 50595

Subject: Facility Plan Approval

Re: Wastewater Treatment Facility Improvements
DNR Project No. S2017-0216

Dear Daniel:

The Iowa Department of Natural Resources has reviewed the August 31, 2022 Facility Plan for the above-referenced project. The Facility Plan is approved. The following is a brief summary:

Extended Aeration UCT Process

This involves the construction of a new extended aeration treatment facility that utilizes the principles of the activated sludge process for biological nutrient removal referred to as the University of Cape Town (UCT) process. The UCT process achieves biological nitrogen and phosphorus removal with the use of anaerobic, anoxic, and aerobic treatment tanks. The facility will be designed to achieve biological nutrient removal and to treat 20-year projected flows and loadings as specified below and continuously discharge effluent to the Boone River at proposed Outfall 001, just downstream of Drainage Ditch No. 166.

Construction of the extended aeration treatment facility includes the following major process components:

- Renovate Raw Waste Lift Station at Existing Plant Site (with force main to new site):
Replace existing lift pumps with dry pit submersible wastewater pumps sized to pump all wastewater to the proposed treatment plant site.
- Wet Weather Flow Equalization Lagoon:
14-million-gallon operating capacity.
- Preliminary Treatment Building:
Mechanical fine screen
Vortex grit removal and classifier
Magnetic flowmeter for flow measurement
- Operations Building:
Aeration blowers
Clarifier RAS/WAS/Scum pumps and associated piping and valves
Rotary drum thickener for sludge thickening
Digester transfer pumps
Chemical feed pumps and storage

- Process operations lab, office, meeting room, and restrooms
- Aeration basin treatment train – Two complete trains for redundancy.
 - Anaerobic tank - Two (2) tanks at 145,000 gallons each for 290,000 gallons total capacity
 - Anoxic tank - Two (2) tanks at 250,000 gallons each for 500,000 gallons total capacity
 - Aeration tanks - Two (2) tanks at 1.3 MG each for 2.6 MG total capacity
- Final clarifiers - Three (3) tanks at 68-foot diameter
- Fermentation Tank - 460,000-gallon capacity
- Magnetic flow meter or Parshall flume for effluent flow monitoring
- Reaeration basin
- RDT Holding Tank - One (1) tank at 270,000-gallon capacity
- Aerobic Digester - Two (2) tanks at 395,000 gallons each for 790,000 gallons total capacity.
- Press Holding Tank - 80,000 gallons for one-week storage to provide consistent feed stock to sludge press
- Cake Storage Building - 365-days storage of dewatered cake biosolids

Plant designed to meet Iowa Wastewater Facilities Design Standards (IWFDS) chapters 14, 15, 16, 17, 18B (except for previously approved waiver on 18B.5.1), and 19.

Ultraviolet disinfection system capable of treating a total peak flow of 11.78 MGD. UV disinfection designed to meet IWFDS Chapter 20.

Sanitary sewer designed to meet IWFDS Chapter 12. Pumping systems designed to meet IWFDS Chapter 13.

Design Flows and Loads

Design Flows			Peak Month Design Loadings	
ADW	1.989	MGD	BOD ₅	7,446 lbs./day
AWW	4.586	MGD	TSS	8,104 lbs./day
MWW	9.430*	MGD	TKN	845 lbs./day
PHWW	11.780*	MGD	*Hydraulic capacity of the mechanical plant is 5.086 MGD after flow EQ.	

Schedule

The anticipated schedule for the project is as follows:

- | | |
|-----------------------------------|-----------------|
| 1. Submit Plans and Specs to IDNR | June, 2023 |
| 2. Bid Project | September, 2023 |
| 3. Begin Construction | October, 2023 |
| 4. Complete Construction | October, 2025 |

Department approval does not eliminate the need for the facility to comply with all federal, state and local regulations. This department must be notified of any change in your proposal and approve the change prior to incorporation in plans and specifications.

If you have any questions or comments concerning this project, please feel free to call me at 515/725-8428 or email me at james.oppelt@dnr.iowa.gov

Sincerely,

James C.
Oppelt

Digitally signed by
James C. Oppelt
Date: 2023.01.11
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James C. Oppelt, P.E.
Project Manager
Water Quality Bureau

cc: Bolton & Menk, Inc. / Andrew Sindt, P.E.
DNR Field Office 2
DNR Sewage File 6-40-63-0-01
CWSRF File CS1921085 01