

**ORLEANS WASTEWATER
POST JULY 2023 FLOOD
TREATMENT PLANT ASSESSMENT
ORLEANS COUNTY, VERMONT**

**NPDES PERMIT NUMBER VT0100251
STATE OF VERMONT PERMIT NUMBER 3-1201**

October 3, 2023

This report was prepared based on observations made during July 20, 2023 site visit by Heather Collins, VT DEC, WSMD, WWMP in conjunction with the US EPA Region 1 representative.

REPORT LIMITATIONS

This report was prepared from visual observations and operator conversations during site visits. No testing of equipment or measuring of components was performed.

MAIN PLANT

FACILITY DESCRIPTION

The facility is an activated sludge treatment plant with a design flow of 190,000 gallons per day (gpd). The operator stated incoming average plant flows are approximately 65,000gpd. Flow at the plant the day of the flood was 1 million gallons per day (MGD) before the flow meter lost electronic communications.

OBSERVATIONS

At the time of the assessment, the plant appeared to be fully operational. The majority of the plant's components did not flood due to elevation; however heavy flows from the river did back up through the outfall and into the effluent building. Approximately two feet of flood water entered the basement of the main building.

Headworks: The headworks received a large amount of gravel, grit and debris. The Lakeside fine screen auger pump was damaged due to pumping the gravel, grit, and debris.

Treatment Tanks: On the day of the assessment, the facility unplugged the equalization basin decant pump and found it to be full of debris and silt. The equalization basins will need to be dewatered and cleaned and the decant pump will need to be rebuilt or replaced. All clarifiers, aeration, sludge holding, etc tanks received large amounts of debris, sand and silt and will need to be drained and cleaned. Additionally, there was damage to the three anoxic mixers as a result of heavy solid and repairs/replacement are expected.

Main Building: Two feet of flood water entered the basement of the main building that houses the blower room where four Crown Triton Hyundai blowers and motors were damaged. The basement also houses the plant boiler. The Smith boiler supplies heat and hot water and is expected to be damaged although it has not been turned on given the hot summer months.

Effluent Building: Heavy flows from the river backed up through the effluent pipe into the effluent outbuilding. As a result, the flow meter gauge (picture #1) was damaged, and all electrical components will need to be replaced due to corrosion. Temporary power had been restored to the area.

PUMP STATIONS

One of the eight pump stations in the collection system was heavily damaged.

BLANCHARD OIL PUMP STATION

OBSERVATIONS

The Blanchard Oil pump station was completely submerged and two pumps were not operable during the site visit. The control panel and associated electrical components were almost completely submerged as well and will likely need replacement.

COLLECTION SYSTEM

FACILITY DESCRIPTION

The collection system consists of varying sizes of acrylonitrile butadiene styrene and polyvinyl chloride sewer pipes piping with approximately 150 manholes.

OBSERVATIONS

Overall, the collection system received large amounts of grit/silt/debris.

RECOMMENDATIONS

SHORT TERM

- The Lakeside fine screen auger pump needs to be repaired/replaced.
- The facility will need to drain all treatment tanks to remove silt, sand, and grit.
- The plant will need to do a full calibration of the new flow meter since the meter

gauge was damaged.

- The equalization basins will need to be dewatered and cleaned. The pump will need to be rebuilt/replaced.
- Complete replacement or professional rehabilitation of all electrical and mechanical equipment and instrumentation below the high-water mark at the Blanchard Oil pumpstation. Evaluate all pump station pumps for future efficiency.
- The Crown Triton Hyundai blowers need to be professionally evaluated for damage and subsequent repair/replacement.
- The plant's boiler needs to be evaluated for damage and subsequent repair/replacement.
- Jetting and camera inspection of low-lying collection system areas as the collection system received an appreciable amount of grit/silt/debris. Camera inspections should be explored to ascertain collection system damages.
- Have Reduced Pressure Zone Backflow Preventers (RPZBP) at the facility inspected and tested to ensure they are properly functioning.

LONG TERM

Long term recommendations to potentially mitigate future flooding impacts include:

- The facility should install a back flow preventer or duckbill on the effluent pipe to the river to prevent the back up of river water from entering the facility.
- Consider relocating the flow meter within the main building.
- Controls for pump stations should be elevated above flood stage.
- High flows may exceed the working capacity of chemical pumps. Additional pumps should be provided to deliver process and disinfection chemicals during high flows. Larger day tanks and supplies of chemicals on hand may be needed.
- Consider portable or fixed pumps to discharge effluent if gravity flow is no longer possible.

PHOTOS



1- Lakeside Fine Screen Auger with Residual Gravel Noted



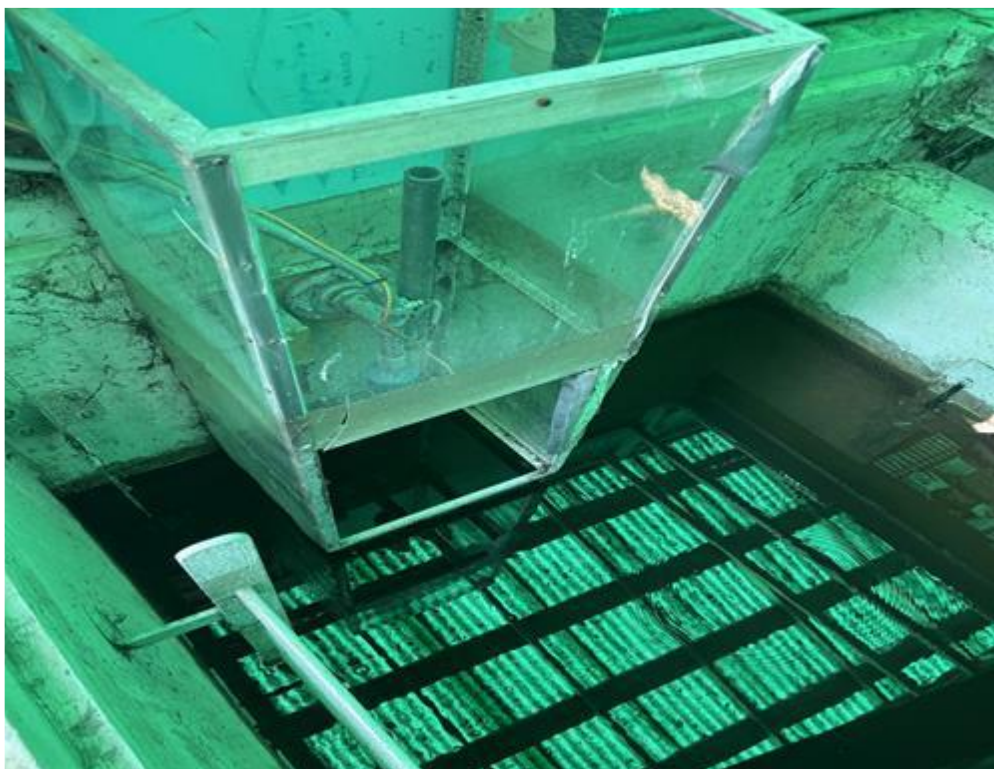
2- Crown Triton Hyundai Blowers and Motors



3- Blower Room Showing High Water Mark at Approximately 2 Feet



4- Smith Boiler in Basement of Main Building



6- Effluent Flow Metering Guage and Wiring (Photo Courtesy of US EPA Region 1)



7- New Flow Meter with Temporary Wiring



8- Blanchard Oil Pump Station with Control/Electrical Panel (Photo Courtesy of Chief Operator Phil Laramie)

9- Blanchard Oil Pump Station Control/Electrical Panel with Finger Pointing to High Level Water Mark (Photo Courtesy of Chief Operator Phil Laramie)