

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

**NPDES PERMIT NUMBER VT0100641
STATE OF VERMONT PERMIT NUMBER 3-1202**

October 09, 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 aerated lagoon system with a design flow of 265,000 gpd. Flow at the facility the day of the assessment was 251,000 gpd. The operator reported that average daily flows are approximately 85,000 gpd and the flow the day of the flood was 1.5 million gallons per day (MGD) before the flow meter was submerged and lost electronic communications.

Wastewater is pumped from the main pump station to an influent trough then is gravity fed to two lagoons operating in series. Wastewater then flows into the treatment building where polymer is added prior to the Roberts Filter, which is currently operating as a floc tank and clarifier for additional phosphorus and solids removal. Treated effluent then flows to the chlorine contact chamber where sodium hypochlorite is injected. At the end of the chlorine contact chamber sodium bisulfite is injected for dichlorination prior to discharge to the Barton River.

OBSERVATIONS

At the time of the assessment, the plant appeared to be fully operational. The plant did not flood but heavy flows lead to Lagoon 1 overflowing into the effluent outfall building which caused the water level to rise above and damage the flow meter. A new flow meter was purchased, installed, and elevated to above grade so flows could be measured prior to the assessment. Water backed up from the outfall building into the filter room, likely through the chemical feed conduit, but floor drains captured all water and there was no apparent damage.

PUMP STATION

MAIN PUMP STATION

All of the wastewater collected in the Village and from Glover is pumped to the WWTF through the Main pump Station. The Main pump station includes a headworks with a bar rack and grit removal pump.

OBSERVATIONS

Excessive flows into the pump station caused the water level to rise and overflow raw wastewater via the overflow pipe into the river. It is expected that pump station pumps will need to be rebuilt or replaced due to heavy silt and grit in valves that will cause premature wear over time. The grit pump was pumping large amounts of grit and will likely need to be rebuilt/replaced.

COLLECTION SYSTEM

FACILITY DESCRIPTION

The collection system consists of a combination of varying sizes of old vitrified clay sewers, acrylonitrile butadiene styrene, asbestos cement and polyvinyl chloride sewer pipes.

OBSERVATIONS

The operator expressed concern that there may be breaks in some lines that are allowing excess inflow/infiltration including a sewer line that runs under the river that is possibly damaged. Overall, the collection system received large amounts of grit/silt/debris.

RECOMMENDATIONS

SHORT TERM

- The plant will need to do a full calibration of the new flow meter since the meter gauge was damaged.
- The grit pump will need to be repaired/replaced.
- Evaluate and rebuild or replace all pump station pumps for future efficiency.
- In order to prevent water from backing up into the filter room, the facility should remove and relocate the chemical feed lines and piping from the effluent room that runs to that area. The internal piping of those lines allows high effluent water to back up into the filter room.
- Bulk chemical (sodium hypochlorite and metabisulfite) storage should be moved to a new outbuilding adjacent to the effluent room.

- 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.
- A leak or smoke test should be performed of the river crossing sewer line since it appears there is excessive flow (inflow/infiltration) entering the sewer line from the river.

LONG TERM

Long term recommendations to potentially mitigate future flooding impacts include:

- The 10 inch crossover pipe between the two lagoons does not appear to be properly sized and should be increased. Increasing the size will allow more flow between the lagoons and reduce any high-water overflows.
- The generator at the pump station was very close to being underwater but did not flood. Therefore, the plant should consider elevating the generator.
- The facility should install a back flow preventer on the effluent pipe to the river to prevent the back up of river water from entering the facility.
- 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- Old Flow Meter (Note Flood Water Line Was 12 Inches Above Meter as Depicted by the Lighter Gray Line on Wall)



2- New Flow Meter Elevated to Above Grade Just Inside the Doorway of the Outfall Building



3- Main Pump Station Overflow Pipe Noted



4- Grit pump in Main Pump Station



5- Excessive Grit from Grit Pump in Main Pump Station



5- Bridge Above Submerged Sewer Line Under the River. Manholes are Located on Both Sides of the River