

Portable Treatment Facility

The Ontario Clean Water Agency's Portable Treatment Facility (PTF) is a valuable tool for maintaining service while performing maintenance and repair of all small sewage treatment plants.

The Portable Treatment Facility allows you to:

- inspect and repair your single unit sewage treatment plants without by-passing;
- isolate a primary or secondary clarifier or aeration tank and perform that required major breakdown repair or scheduled overhaul; and
- isolate an aeration cell and repair the air diffusers.

The mobile unit is capable of treating flows up to 1000 m³/day as a clarifier, up to 1500 m³/day as an aeration tank or up to 600 m³/day as a sequential batch reactor (SBR). The unit can be transported to your site and set up allowing repairs for your permanent process unit(s).



This mobile unit has been used in numerous locations throughout the Provinces of Ontario and Quebec:

McFarlane Lake WPCP: PTF was used as a primary clarifier, with 19 mg/L BOD, 20 mg/L SS in the effluent.

Cayuga WPCP: The PTF used as a clarifier and aeration tank.

Barry's Bay WPCP: The PTF was used as a primary clarifier to facilitate an inspection of the STP. Produced a primary effluent of approx. 48 mg/L BOD (71% removal), and 70 mg/L TSS (65% removal) at an average day flow of approximately 700 m³/d.

Burritt's Rapids WPCP: PTF was used as a primary clarifier to allow the extended aeration facility to be retro-fitted. Flow – 80 m³/day, 131 mg/L BOD (52% removal), 59 mg/L TSS (81% removal).

Chibougamou: The PTF was used in an industrial application as a clarifier.

St. Jacobs: The PTF was used as an aeration tank in the Town of St. Jacobs when the existing aeration facility was being upgraded.

The effluent, after clarification, met the MOE Guideline F-5 effluent requirements at an average daily flow of 900 m³/d.

Conestoga Meat Packers: The PTF was used as an SBR at the meat packing company during the building of the company's treatment facility. This highest strength waste was processed successfully and the effluent was discharged to the sewer system.

The high strength wastewater (2000 mg/L BOD, 1000 mg/L SS) at an average daily flow of 36 m³/day was treated at 99.2% BOD and 94% SS removal was achieved.

Durham: The PTF was mobilized in the Town of Durham, Municipality of West Grey. The liner in the bermed aeration basin was leaking and needed replacement. The PTF was set up and successfully processed the Town's sewage as an aeration basin on flows up to and occasionally exceeding 1500 m³/day. All MOE CofA criteria were met.



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The design features of OCWA's portable treatment facility meets or exceeds the general Ministry of Environment guidelines controlling the efficiency of clarifiers and the prescribed limits on surface area (for the surface settling rate), the length of outlet weir (to control the weir loading rate), the velocity of the flow entering the head of the tank (as controlled by the inlet ports) and the return sludge pumping requirements.

Design Specifications

1. Tankage

The largest size tank that can be transported under a permit has a length of 14.45 metres and a width of 3.45 metres. Total capacity of the tank is 120 m³.

2. Inlet Pumping

Four pumps rated at 12L/sec (48L/sec) are designed to handle the pumping of all incoming flows from the aeration tanks. One standby pump is provided. Based upon existing static head conditions and 100 mm diameter flexible hosing of varying lengths, the Flygt 3085 MT submersible pump will deliver between 10 to 25 L/sec (information taken from Pump Curve for Flygt 3085 Mt Pump).

Submersible pumps are placed in the final stage of the aeration tanks to provide pumping from the aeration tanks to the clarifier unit. The pumps are controlled by pumping the aeration tank down approximately 450 mm in order to allow liquid level control for the four pumps installed in the aeration tank.

3. Return Sludge Pumping

Five pumps; identical to the inlet pumps, are evenly spaced across the bottom length of the hopper shaped tank. These pumps operate in a sequential fashion to pump the settled sludge back to the head of the aeration tanks (or to waste). The pumping duration and pause time can be adjusted based upon site conditions.

4. Instrumentation and Controls

The inlet pumps are controlled through the use of a five-plex grouped motor control panel. Control is achieved through the use of a Milltronics depth measuring and pump control equipment installed in the panel with the transducer installed above the head of the aeration tank.

The return sludge pumps are controlled through the use of a five plex grouped motor control panel. Control is achieved through the use of a programmable controller/sequencer.

5. Electrical Power

A 600 volt, 3-phase power supply is required for the mobile clarifier unit. It is used to power the main control panel that in turn feeds the two five-plex grouped motor control panels. In most cases, this power is available at the site by connecting to the existing power supply.

If power is not available at the proposed site, power can be provided by utilizing a mobile 600 volt, 3-phase, 25 kilowatt generator.

6. Flexible Piping

A combination of flexible rubber and collapsible 100 mm and 150 mm diameter hose sections are used. All sections are connected together and to the pumps and clarifier tank through the use of "Camloc" type quick disconnect fittings.

It is assumed that the mobile tank can be set up close to the aeration tanks such that a maximum of 30 metres of hose is required for each pump discharge hose.

7. Support Vehicle and Crane

On-Site Setup:

Reinforced concrete pads are required to be poured at the site to support the mobile clarifier.

Specifications and drawings for the pouring of these pads are provided to the client. Once the support pads are in place the mobile clarifier can be transported and placed on the concrete pads. OCWA staff will arrange for a crane to remove and set up the equipment. Arrangements can be made to use local equipment as available. This facilitates the unloading and assembly of equipment.

8. Clarifier

The PTF originally designed for clarification as noted above has been used successfully in numerous locations and can treat an average daily flow of 1200 m³/day. Design specifications are available on request.

9. Aeration Tank

The PTF includes a unique aeration system used to convert the tank to an aerated basin capable of operating in the high rate or normal extended mode. The unit is capable of up to 1500 m³/day depending on existing plant clarifiers and typical permanent plant performance. Aeration performance available on request.

10. Sequencing Batch Reactor (SBR)

The PTF can be used as a SBR to handle typical small facility loadings and flows up to 600 m³/day. OCWA will determine if the PTF can be used as a SBR on a site specific basis.

11. Auxiliary Equipment and Support

Chemical storage tanks, chemical metering pumps and tank mixers can be supplied as required. The services of our operational staff or one of our Process Specialists can also be arranged.



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