



**TOWN OF WAREHAM**  
**Water Pollution Control Facility**  
**6 Tony's Lane Wareham, MA 02571**

**Head-Works and Clarifiers**

What is a Head-Works Facility? The head-works system is made up of the structures and equipment at the beginning of the wastewater treatment process, including gates and flow controls, metering equipment, pumps, mechanical screens, and grit removal systems. Debris (such as baby wipes) and grit (like sand) are removed from the wastewater stream, as well as materials like trash, branches, orange peels, and more. This process is critical to protect downstream equipment, help control odors, and ensure that the SEP can operate efficiently. Existing old head-works facility are at the end of its useful life and is unable to adequately perform these functions. Being Unable to perform these functions can relate to costly repairs and replacements of pumps and other expensive equipment.

Here are some indications of a failing Head-works facility:

- Surcharge conditions in the influent sewer lines
- Excessive screen clogging
- Excessive buildup of debris against screen
- Oil and grease buildup
- Excessive scouring velocities through the screen during cleaning
- Improper disposal of screened material
- Excessive odors
- Pass through of grease and debris that shows up in the final effluent

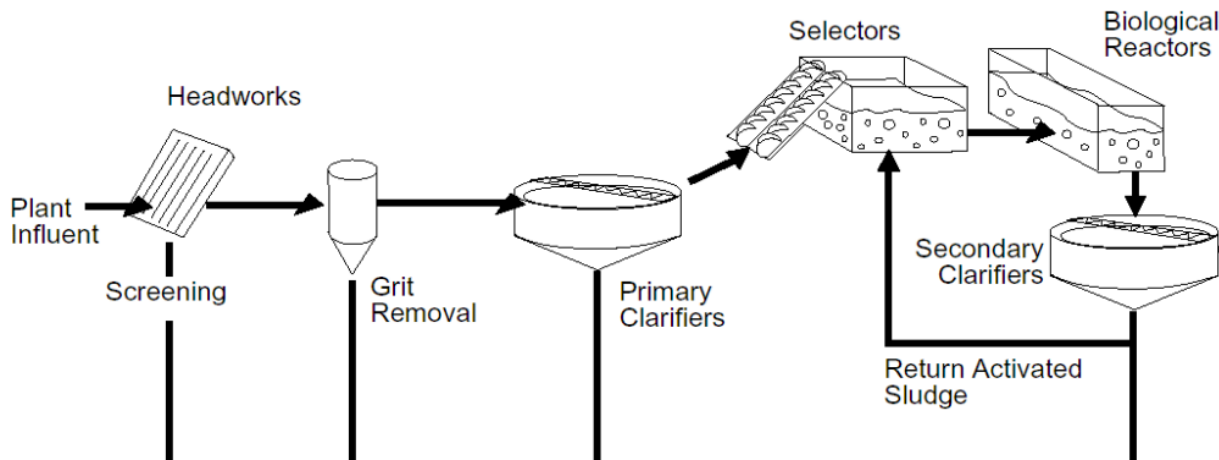


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Below is a simplified version of the head-works facility and the beginning of the clarifiers process.



What is a Clarifier? Clarifiers are designed for separation of water and suspended solids allowing for a clear overflow. A clarifier is divided into two categories: a primary clarifier and a secondary clarifier.

- **1. Primary Clarifier:** These clarifiers are used to separate the settleable solids from the incoming raw wastewater. They are located the downstream of plant's screening process. This whole process is known as primary clarification, also known as sedimentation.
- **2. Secondary Clarifier:** These clarifiers are located downstream of biological treatment. Their primary purpose is to separate the treated wastewater from the natural mass. Its main goal is to return the activated sludge. The whole process is known as secondary clarification.

Clarifiers form part of the process known as sedimentation. Sedimentation is the process of separating suspended solids from a liquid. If sedimentation occurs due only to the force of



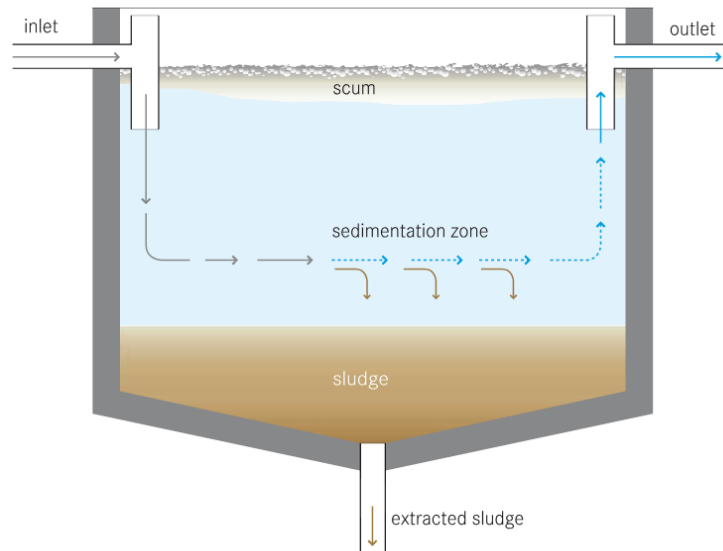
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gravity, sedimentation basins or settling tanks are used. Clarifiers are defined as machines that perform the process of sedimentation via mechanical means (saVRee).

Below is a diagram to show the simplified version on how a clarifier works.



Below are some indicators of a failing [Primary Clarifier](#):

- Excessive gas bubbles or grease on surface
- Black and odorous wastewater
- Poor removal of suspended solids in primary clarifier
- Excessive buildup of solids in center well of circular clarifier
- Unlevel discharge weirs
- Fouling of overflow weirs
- Evidence of short circuiting
- Ineffective scum rake
- Scum overflow or lack of adequate scum disposal, full scum pit
- Excessive floating sludge and/or scum (high sludge blanket level)
- Excessive sludge on bottom, inadequate sludge removal



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- Noisy sludge scraper drive
- Broken sludge scraper equipment
- Poor maintenance of sludge pumps (leaking) or pump gallery

The same indications listed above also go for the secondary clarifier.

The following [PDF](#) includes a troubleshooting guide relating to primary and secondary clarifiers that explains in detail the effects of failing of equipment. Failing equipment can not only lead to very costly repairs, but if the equipment stops functioning to its full capability the environment, receiving waters, and organisms inhabiting the receiving waters can suffer from extreme contamination and other detrimental consequences. With the Town of Wareham being surrounded by water, having clean receiving waters is important to having clean rivers and beaches to enjoy year-round.

***Please do not hesitate to call the office for any questions or for a tour of the Wareham Water Pollution Control Facility. We are open Monday – Friday 7am to 3:30pm. (508) 295- 6144.***





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## **Works Cited**

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