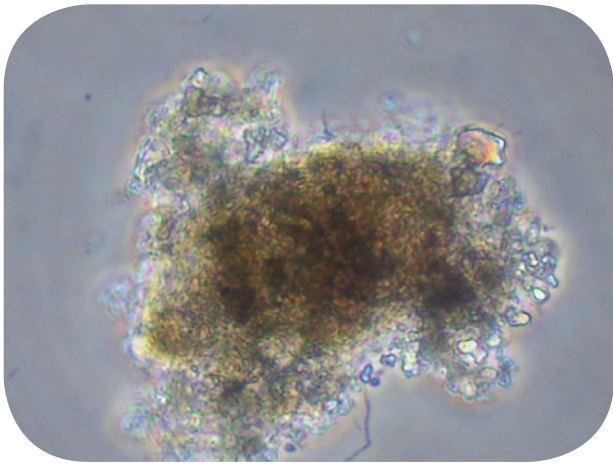


## Biomass Analysis and Lagoon Winterizations Program™

In support of Wastewater Treatment Operations, Columbia Analytical Services, Inc. and Advanced Biological Services (ABS) are providing expanded services and improved options for wastewater treatment system operators.

**Image 1** - Good Floc Structure



Chemical analysis alone is not always enough to properly manage a wastewater treatment system and avoid permit violations. Obtaining regular and detailed biological information can be the key to a better understanding and management of system performance, while avoiding costly problems.

Biological problems can be manifested as poor settleability such as filamentous or Zoogloea bulking. Or high turbidity in the final effluent caused by dispersed floc structure related to loading problems or poor treatment results due to toxicity issues

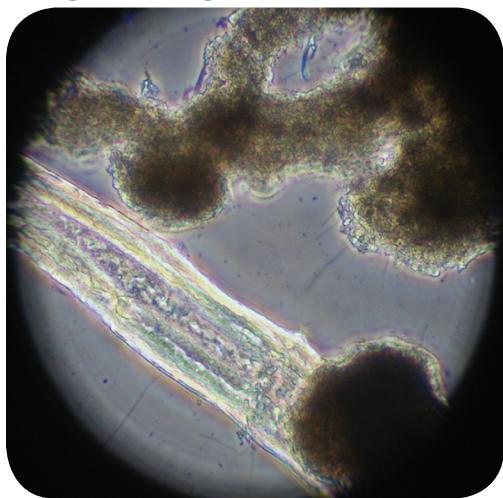
Biomass analysis can be defined as the evaluation of the overall health of the biology of a wastewater treatment system. This involves examining floc structure (Image 1), higher life forms (HLFs), the degree of undesirable microbes (such as filamentous types (Image 2) or Zoogloea (Image 3 on reverse side), as well as the viability and diversity of the bacteria, which are the workhorse of the system. Sometimes operators carry out microscopic analyses, focusing solely on the HLFs. While HLFs are indicators of health, viable counts evaluation of ALL of the biological data (including floc structure, degree of filamentous bacteria, presence or absence of Zoogloea as well as HLFs) determine true treatment system health. Use of biomass analysis can determine biological problems, early on.

**Image 2** - Undesireable Filamentous Microbes



Dr. Rob Whiteman of ABS has 25 years experience evaluating biological systems and, along with Columbia Analytical, provides comprehensive bioanalysis services. Columbia Analytical and ABS can arrange for sample collection or provide written instructions to train plant staff on how to properly collect the samples.

**Image 3** - Zoogloea and Fiber



Clients receive a report that includes digital pictures of the treatment system's biomass. Each report contains concerns regarding the state of the biology with recommended changes to improve the operating conditions of the system.

Another important issue is understanding seasonal fluctuations for wastewater treatment plant biological health. In the winter, lower temperatures in combination with a lack of nutrients or dissolved oxygen and surgeloads can result in the potential violation of an NPDES permit. As a result, ABS has developed a "Lagoon Winterization Program™" to provide early warning and mitigation of potential biomass problems.

Under this program, ABS evaluates a system for winterization concerns and recommends specific steps needed to enable smooth operation as winter approaches. The program begins with obtaining baseline data to measure biomass health and monthly status checks to provide early warning of potential problems. Archiving of biomass for use in system recovery along with the ABS on-site fermentation process (patent pending) can also be provided.

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To learn more about the program or take advantage of these services contact Tom Kissinger at our Jacksonville Laboratory.

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