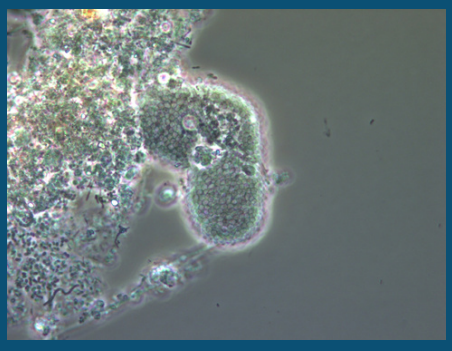
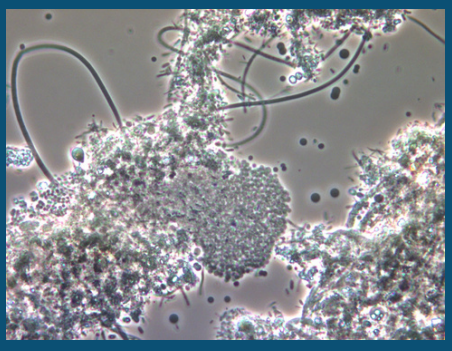
WASTEWATER BUG SPOTLIGHT
NITRIFYING BACTERIA

At the El Estero Water Resource Center, a multi-step biological process of nitrification is used to clean wastewater before safely sending it out to the ocean. This incredibly important role in wastewater treatment is performed by maintaining two types of bacteria: Nitrosomonas and Nitrobacter. Incoming wastewater, rich with ammonia, is fed into basins where Nitrosomonas converts the ammonia into nitrite. This nitrite is then converted into nitrate by the aptly named Nitrobacter. The nitrate is then converted to nitrogen gas by other bacteria known as denitrifiers and released back into the atmosphere. There are many factors at play that lead to our nitrifying friends happily doing their job, but why is nitrification important in the first place?

While nitrate is generally considered harmless to fish in natural waters, ammonia is a toxic compound that, in excess, can adversely affect fish health. A process known as eutrophication can also take place if too much nitrogen quickly enters a body of water. In eutrophication, nitrogen enriches water, causing excessive growth of plants and algae called phytoplankton. When these phytoplankton decompose, it consumes a sizable amount of dissolved oxygen in the water, which fish and other organisms rely on to survive. If the dissolved oxygen concentration in a body of water is too low, it turns into an aptly named “dead zone” in which aquatic life is scarce or altogether gone. Nitrification is one of many natural processes that El Estero Water Resource Center utilizes in order to treat, recycle, and ultimately recirculate water throughout our local ecosystems.





Nitrosomonas found under the microscope at the City's El Estero Water Resource Center, magnified x1000

El Estero
WATER RESOURCE CENTER

For more information on wastewater treatment visit www.SantaBarbaraCA.gov/ElEstero