

## Microbial Community Structure in Storm Water Retention Ponds.

**J.E.M. Watts, R.E. Casey and S.M. Lev**

Due to urbanization and resulting increases in impervious surfaces, storm water retention ponds have become an important aspect of environmental runoff control. Often runoff contains a mixture of environmental contaminants, such as persistent organic pollutants, trace metals, petroleum and high levels of salt. Furthermore, high microbial concentrations are often found in runoff, this is of particular concern when it contains pathogenic species. These retention ponds function by collecting excess storm water before it enters and potentially contaminates other water bodies. Water is slowly removed from these ponds via natural processes such as evaporation and percolation, therefore, concentrating the pollutants and microbes in poorly functioning retention ponds. The pollutants can accumulate in the pond sediments, which may affect local microbial, plant, animal and human populations via bioaccumulation. In efficient retention ponds temperature, salinity, sunlight and predation by other microbes, all reduce levels of harmful pathogens in the runoff. Therefore, a critical component of the retention pond is a diverse microbial community, capable of assimilating high levels of nitrogen and other nutrients. This project will examine the microbial community across a retention pond transect in comparison to a pristine site. Previous studies (Casey and Lev, 2008) have examined the levels of trace metals, salts and other physical and chemical characteristics in this pond. Microbial community DNA will be extracted from the soils/sediments from the pond. Universal PCR will be used to amplify the microbial community, a combination of molecular approaches applied to profile and analyze the microbes present. Comparing the community fingerprints along the transect will provide information about the effects of runoff on the microbial diversity. With the identification of key species present in the pond, a better understanding of microbes involved in key processes and how they are affected by high salt and metals will be obtained.