TECHNOLOGY MEETS AESTHETICS IN THE CITY OF TAVARES

What is a Beemat?

The Ruby Street Storm water improvement and beautification plan is now underway, en route to creating an eight-acre walkable park consisting of a series of lovely ponds and wooden bridges which will serve as a sustainable storm water treatment area.

Technology and practicality will bring together floating flowers and fauna called “Beemats” to fill the ponds. This cutting edge storm water treatment “park” will not only create a scenic green space for the Tavares downtown area, but equally as important, will contribute to reducing and removing the flow of pollutants into Lake Dora.

The Ruby Street project was designed to improve and protect the water quality of Lake Dora, which was designated as an impaired lake by the EPA.

The City of Tavares will also be replacing the 50-year old drainage pipes and outfalls in order to reduce the alleviate the flooding issues that currently plague Ruby Street during heavy rains which, in turn, flood the roadways and carry additional pollutants back into Lake Dora.

The project will also be used to inform and educate the public about storm water pollution issues and the value of using floating plants built on mats in the storm water ponds for beauty as well as practicality.

Called “Beemats”, this new technology is also known as “floating treatment wetlands” and are new and powerful tool in water stewardship. They *biomimic* natural floating islands to create a concentrated wetland effect that effectively remove 20 times more nitrates, ten times more phosphate and 11 times more ammonia from stormwater than traditional methods. They are extremely effective at reducing total suspended solids and dissolved organic carbon in waterways. Although nitrogen and phosphorus are nutrients that are essential for plant growth, fertilizers used extensively for agriculture and ornamental landscapes can enter the aquatic environment through run off and cause pollution problems that contribute to eutrophication. Eutrophication is defined as excessive richness of nutrients in a lake or other body of water due to runoff. This condition causes a dense growth of plant life as well as death of animal life from lack of oxygen.

Most of the treatment of nutrient rich water within a wetland occurs in the thin layer at the surface of the soils within plant communities. In an effort to more efficiently utilize the natural ability of macrophytes to extract and store nutrients from surface water, the floating mat system is designed to suspend native emergent plants and grasses.

By expanding the root zone that is in contact with water, the thickness of the surface layer increases, resulting in accelerating the rate at which nitrogen is removed from the aquatic environment. This greatly expanded root mass also facilitates increased water uptake and storage of phosphorus in the plant tissues by creating more surface area for beneficial bacterial colonization.

The Beemats can be launched in either shallow or deep water. After the mats are connected, plants are inserted into precut holes. The plants can be any species of emergent aquatics and

can be securely anchored or tethered in a specific location. As plants grow, the excess nutrients and pollutants are taken up and stored in their tissues.

Periodic harvesting of the mature plants prevents the stored nutrients from re-entering when the plants die or decompose. Beemats are easy to remove or replace when necessary. They also have an innate ability to withstand fluctuations in water levels which makes them suitable for the treatment of runoff and drainage

By introducing Beemats to the Ruby Street Storm water project, the City of Tavares is ahead of the curve in creating wetlands for bioremediation, even before regulatory agencies widely adopt this practice. The eight-acre park will serve to educate residents and students about wetland functions and responsible care for our lakes and waterways. In addition, it will serve as a viewpoint and lovely setting for the whole downtown area, creating a new image as a destination spot.

During construction, it is important to note that all the businesses involved in this project will remain open and welcoming of the community. Parking and accessibility will be visible in order to provide convenience to take advantage of retail, restaurants and festivals. The city will update construction and traffic schedules at www.tavares.org and its face book page, “City of Tavares – American’s Seaplane City.”

For more information on the Ruby Street Beautification and Stormwater Upgrades Project, please contact Amanda Wettstein at 352.406.0422 or mandywettstein@gmail.com