

More than a ditch—*Green Infrastructure*



OAKLAND COUNTY PARKS



Photo courtesy of John Meyland

Take time to walk the pathways at the park and learn more about this project.

The swales before you are more than a ditch. They are engineered and designed to collect rainwater and runoff from the adjacent parking lot. These vegetated swales are strategically planted with native plants that remove silt and pollution from the water before it enters the Clinton River Watershed. Also known as *bioswales*, these landscape elements are part of a larger stormwater demonstration project at Waterford Oaks.



Runaway Water Runoff

Land development creates impervious surfaces like roads, sidewalks and rooftops. When it rains, these hard surfaces drain water quickly instead of allowing water to infiltrate the soil. Uncontrolled water runoff lowers the water table and causes flooding. Urban runoff is a problem and a major source of water pollution, since it can carry gasoline, heavy metals, motor oil, fertilizers, pesticides, sediments and trash into waterways.

Protecting Water Quality with Plant Power

The bioswales in this parking lot are sloped to collect and retain water runoff. During heavy rains, bioswales control the volume of water discharged by the parking lot. Water is retained, slowly filtering into the soil and recharging groundwater. Plants also help remove some of the pollutants through a process known as *phytoremediation*.

Phytoremediation combines phyto which is a Greek word for "plant" and remedium, Latin for "restoring balance."



Certain plants have the ability to remove pollutants from the air, soil and water. Accumulating contaminants within the plant structure, degrading them and then rendering these toxins harmless—plants have powers people have yet to understand.

Going Native

Native plants are adapted to Michigan's climate and soils. They require less maintenance, including the use of fertilizers and irrigation. Their extensive root system allows for water infiltration in the soil. Native plants also improve air quality by removing carbon from the air; and provide habitat for native wildlife by offering food and shelter.

Ninety-six percent of songbirds depend on insects to rear their young. Native plants attract butterflies, bees, birds, mammals and more. As part of the landscape, native plants help pollinators survive. Look for plant labels in the bioswales to learn more about each plant.



Photo courtesy of John Meyland



Places for pollinators

Each of us depends on the industrious work of pollinators to provide many of the foods we eat. It is estimated that pollinators like bees are responsible for the pollination of one third of human food crops. Pollinators are part of diverse natural communities that provide beauty and quality to our lives.

Sadly, many pollinators are declining, and the ripple effect that follows will eventually impact all of us. Pollinators are keystone species needed for a healthy ecosystem and food production worldwide, but they are threatened by loss of habitat, disease and the inappropriate use of pesticides. Bioswales not only protect water quality, but also provide places for pollinators.

There are nearly 4,000 native bees in the United States. The honeybee is actually not native – it was imported from Europe about 400 years ago.



Orchard Bee

Pollination is part of the life cycle of flowering plants. The transfer of pollen from the flower creates fruits and seeds. The work of pollinators ensures a full harvest and healthy plants.

Into the Watershed

Whatever happens on land goes into the watershed. Oakland County Parks and Recreation understands the connection between land use and water quality. The Stormwater Demonstration Project at Waterford Oaks is an example of the Parks Commission's commitment to stewardship.



In one of the most populated places in Michigan, Clinton River Watershed drains 760 square miles of land. Adding bioswales to the landscape benefits the communities and region in many ways:

- . Recharging the groundwater
- . Improving water quality
- . Reducing flooding
- . Providing habitat
- . Improving air quality and climate
- . Adding beauty to the landscape
- . Enhancing the quality of life
- . Improving fisheries and recreation opportunities

Bioswales serve a purpose. They are not the result of lack of care, but carefully planned elements of a healthy green landscape with benefits for all.