Environmental Education Grants

Michigan Association of Environmental Professionals
Annual Meeting
Dec. 6, 2012

Environmental Education Grant Committee

- Kathleen Klein
- Steve Kulpanowski
- Diane O'Connell
- Tammy Rabideau

- Detroit Science Fair
  - Awarded Feb, 2012

- Michigan Alliance of Environmental and Outdoor Education
  - Awarded Sept, 2012

Arno Elementary

Caring Cougars
Community Compost

Vision

- We have a vision for an interactive and hands-on environmental education curriculum where Caring Cougars are given the opportunity to be stewards of the environment.

Location

- We are in the process of building an outdoor classroom in our courtyard with the goal of including both composting and gardening.

Materials

- From MI Rain Barrel
  - Rain Barrels and Rain Saucers

  - Outdoor Compost Tumblers

  - Indoor Composting Bins with Worms

- From Home Depot
  - Gardening supplies

- From Block's Stand and Greenhouse
  - Vegetable plant flats

A look into the future…

- We hope to create a garden with enough produce to bring with us to our city's weekly farmer's market in order to generate funds to continue environmental education within our school and community.

Carter Middle School

- *Waste to Wealth*
- Carter Middle School Ecology Club
- Build a compost area on campus
- Continue the Zero Waste Lunch Program
- Plant a Greenhouse Garden
- Invite a chef to demonstrate meals using ingredients grown in the greenhouse

Clinton River Watershed Council

- *Stream Leaders*

- The program provides 3rd to 12th grade students with experience in water quality monitoring, data interpretation, and citizen action

Detroit Collegiate Prep High School

- *Belle island Project*
- Analyze bodies of water within Belle Island
- Demonstrate water quality testing techniques
- Promote water flow by clearing debris
- Data will be shared with Department of Natural Resources, Friends of Belle Island and Detroit Public Schools

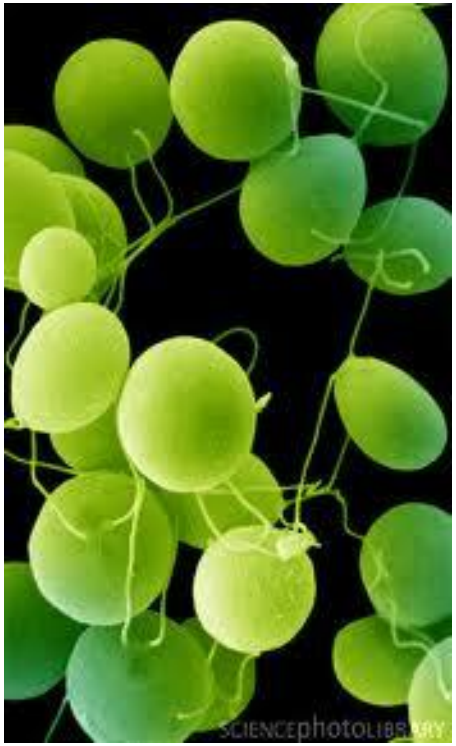
Eaton Rapids High School

- *The Production of Hydrogen Gas from Algae and Hyperthermophilic Bacteria*
- Study growth process of algae and bacteria
- Build a bioreactor that eliminates greenhouse gases and produces hydrogen
- Build a turbine generator to create electrical energy

Project Timeline and goals

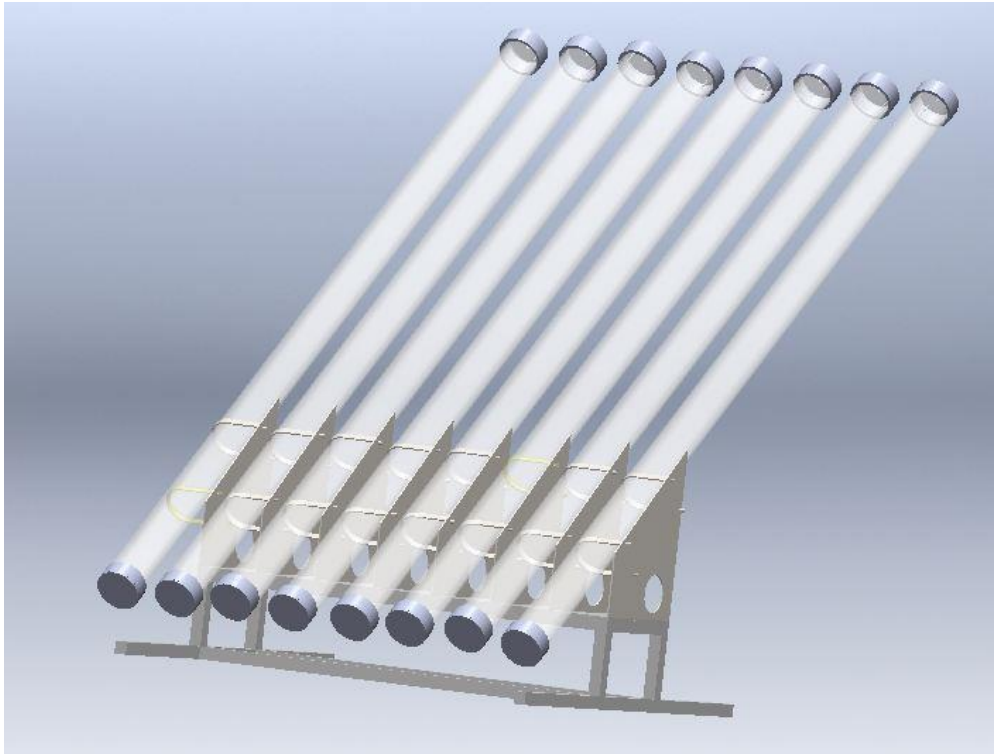
- Dec. 15th–Jan. 15th: Build 1st Bioreactor Prototype .
- Jan. 1st Feb. 15th: Begin testing on bioreactor with C. Nivalis.
- Feb. 1st–Feb. 29th: Integrate hydronase genes into a C. Nivalis culture.
- Feb. 15th–Apr. 15th: Test algae with hydronase gene in Bioreactor.
- Apr. 1st–Apr. 29th: Find locations where bioreactors can be integrated.
- Apr. 29th–May 31st: Write/Publish final research papers.

What will the benefits be?



- An increase in the overall efficiency of algae driven energy production.
- Elimination of harmful CO2, NOx and SOx air born compounds.
- Gives northern areas, like Michigan, the ability to harness the power of green energy.

Bioreactor Design



- Our first prototype design, showing the use of a bubbler-type bioreactor columns.
- Removable tubes make it easy to clean, repair and replace tubes.
- Since each tube is it's own bioreactor we can run multiple experiments on one frame .
- Reduces possibility of algal crashes due to bacteria.

"The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them."
Sir William Bragg

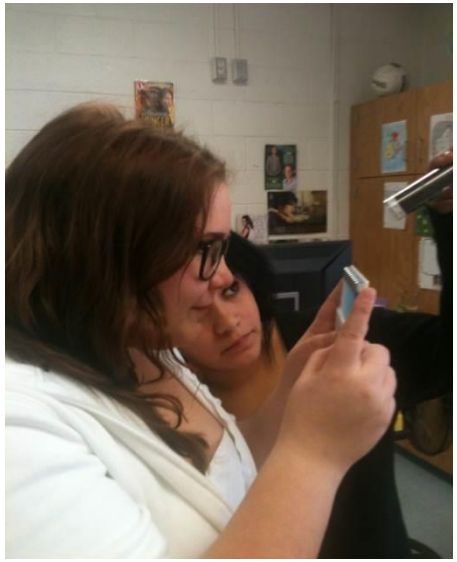
Emerson Middle School
Livonia Public School

Rouge Education Project
Nicolena Wojciechowski

Rouge Education Project

- Emerson Middle School will use their grant money to participate in the Rouge Education Project.
- 150 8th Grade students will travel to Bicentennial Park in Livonia to observe the health of Bell Creek.
- During the field trip students will perform the following chemical tests:
  * Dissolved Oxygen
  * Fecal Coliform
  * pH
  * Biochemical Oxygen Demand
  * Total Phosphates
  * Nitrates

- Physical analysis includes:
  - Turbidity
  - Total Solids
  - Change in Temperature
  - Overall physical survey (Ex: river bottom, course of river channel, bank sloping).
  - Macroinvertebrate Study



Data will be submitted to the Friends of the Rouge for further analysis to determine the health of the Rouge River Watershed.

Environmental
Conservation
Coalition

Gardening at Burton

A pilot program presented by
Environmental Conservation Coalition

About Us

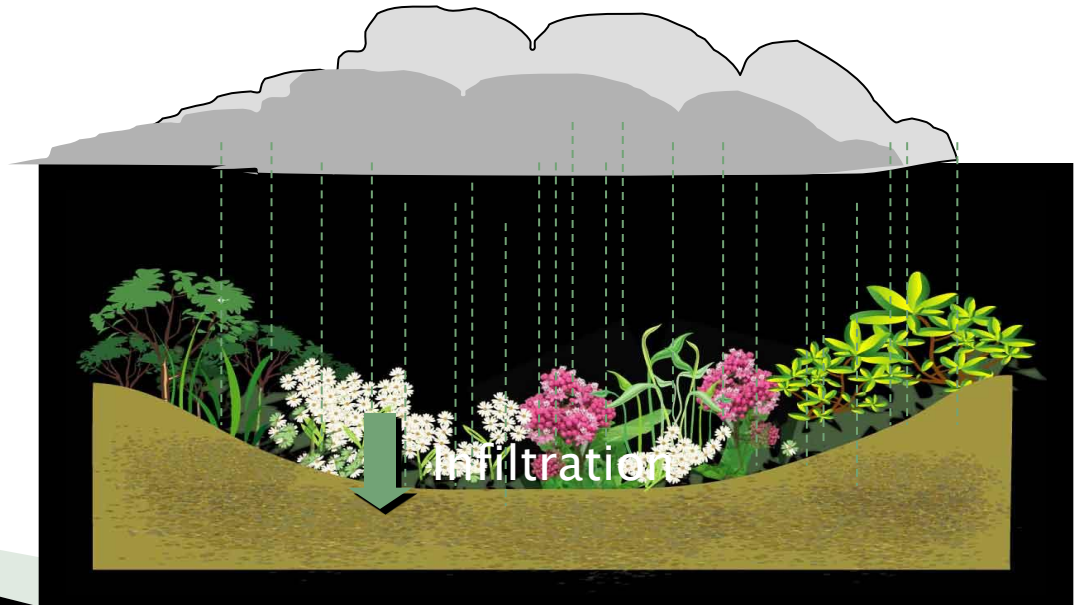
- Our mission is to bring human behavior into balance with ecological principles by assisting in creating and sustaining a clean, eco-friendly, and human healthy environment while also connecting and uniting the community of West Michigan.
- Three Initiatives:
  - Environmental Education
  - Community Connect
  - Community Engagement

Gardening at Burton

- Students k-5 will be taught gardening concepts
- Students participating in LOOP will be exposed to hands on lessons after school
- Main objective: Introduce concepts of sustainability to children through hands on gardening coursework while also re-enforcing concepts of ELA, science, and math to have an impact on student benchmark proficiency

Friends of the Rouge

- Mission: To promote the restoration and stewardship of the Rouge River ecosystem through education, citizen involvement and other collaborative efforts, for the purpose of improving the quality of life of the people, plants and animals of the watershed
- Project: *Rain Gardens for the Rouge River Workshop*



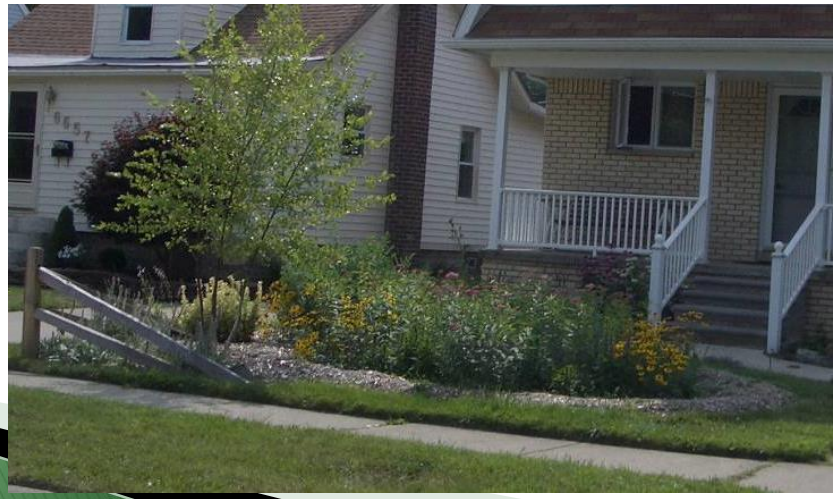
Friends of the ROUGE

Rain Garden Workshop Objectives

- To educate the public about the impact of impervious land cover and stormwater pollution
- To encourage the use of native plant rain gardens in residential landscapes to reduce non-point source pollution
- To provide attendees with the tools and information necessary to install a residential rain garden

Thank you MAEP

- Promoting native plants
- Improving water quality
- Reducing surges in peak flows following wet weather
- Improving wildlife habitat



Friends of the ROUGE

Ronald Brown Academy

Detroit Public Schools

Pond Explorers

Kathy Sergeant and Jennifer Edwards

With special help from Hawk Woods Nature Center and Mike Mansour

Students will explore a pond ecosystem at Hawk Woods Nature Center. They will also help with the fight against invasive species by participating in a garlic mustard pull.

Back at school, over 100 fourth grade students will create ecosystems out of 2 liter bottles, research Michigan pond ecosystems, and add a pond with a solar-powered pump to the greenhouse.

Western Upper Peninsula Center for Science, Mathematics & Environmental Education

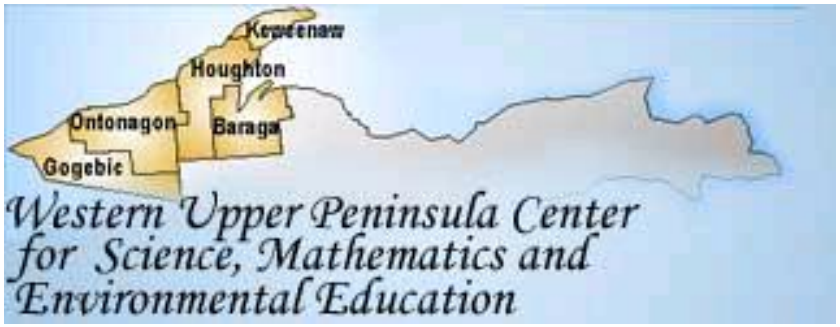
MISSION

To enhance the teaching and learning of science, math, and environmental education amongst K-12 schools and communities in the five Western U.P. Counties

Center Programs

- K-12 Curriculum Development
- Teacher Professional Development Programs
- Family Science and Engineering Nights
- Outdoor Science Investigation Field Trips

New Location
Great Lakes Research Center
Michigan Technological University
1400 Townsend Drive
Houghton, MI 49931



Outdoor Science Investigations Field Trips

2011-2012 School Year: 218 field trips; 26 schools; over 4000 students

Field Trip Topics include:

- Stream Monitoring
- Weather Forecast
- Animal Tracking
- Fabulous Fungus
- Trees and Seeds
- Goldenrod Gall Study
- Tree Identification
- Animal Adaptations

For more information

Michelle Miller, Outdoor Field Trip Coordinator
(906) 487-3341 michellem@mtu.edu
www.wupcenter.mtu.edu

Proposed Project: Winter and Spring Field Trips in Gogebic and Ontonagon Counties

•Conduct at least 20 field trips during the Winter and Spring Seasons in Gogebic and Ontonagon County schools, which are located 50-100 miles from the WUP Center. This will be in addition to the 50+ field trips conducted in Houghton, Baraga and Keweenaw counties.

• Purchase additional field guides to enhance the winter tracking field trip and winter and spring bird field trips.
Mammal Tracks and Scat by Lynne Levine
Birds of Michigan by Stan Tekiela