



MICHIGAN SECTION AMERICAN WATER WORKS ASSOCIATION 2009 Teacher Grant Application

Email to csnitzley@miterpc.org or fax to Christine Spitzley at 517-393-4424 no later than April 11, 2009. Call Christine at 517-393-0342 with any questions.

Teacher Name: _____

School Name: _____

School Address: _____

Phone #: _____ Fax#: _____

Email Address: _____

Project Objective (not to exceed 2 pages)

See Attached

Project Summary (not to exceed 2 pages)

See Attached

Timeline and Funding Method for Program Continuation (Anticipated start and end date of project. If continual funding is required, how do you plan to fund this project in years to come?) See Attached

Budget (include additional items if necessary):

Expenses	Total Cost	In-Kind	Request
1) Hach Chemicals	\$600.00		\$600.00
2) Groundwater Flow Model	\$400.00		\$400.00
3)			
4)			
5)			
6)			

Totals: \$1000.00

Project Objective:

The objective of the Pine River Monitoring Project is to monitor the health of the Pine River watershed in Gratiot County. The project demonstrates the interdisciplinary nature of science, policy and education as students engage in a real application to local problems. The project also engages and empowers the local community in a long-term project that incorporates public school students working with faculty and college students to provide an educational outreach program to help create awareness and generate solutions to local environmental problems.

Project Summary:

Over the past two years, students at Alma High School and Saint Louis High School have been working collaboratively each month to monitor the health of the Pine River. Students collect water samples at each site, make observations, and run chemical analysis on the samples. All data is then posted on the pinerivermonitoringproject.googlepages.com website so that the general public can be informed of the Pine River's health.

Because of the history of the Alma/St. Louis area, the past contamination from Michigan Chemical and Total Petroleum, residents today are facing drinking water issues. Wells are currently being dug to determine whether or not the ground water would be suitable for drinking water for both cities.

The money from the grant would allow for the purchase of chemicals that would be used for testing in the 2009-10 school year and to also purchase a groundwater flow model. The groundwater flow model would be an awesome tool to demonstrate to students what is actually happening in our area below ground.

Timeline:

The Pine River Monitoring Project is an on-going project. The purchase of major pieces of equipment for this project has already been made. Any additional funding is obtained through grants.



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Project Objective (not to exceed 2 pages)

Project Summary (not to exceed 2 pages)

Timeline and Funding Method for Program Continuation June 1st and June 2nd

Time at Hawwoods Nature Center 10:am-12noon, 3pm-5pm 1st and 2nd/

Fundraisers. (car wash, bake sale, etc.)

Budget (include additional items if necessary):

<u>Expenses</u>	<u>Total Cost</u>	<u>In-Kind</u>	<u>Request</u>
1)Water Kit	\$ 339.00		\$339.00
2)D-Frame Aquatic Nct	\$214.00		\$214.00
3)Waders	\$138.00		\$138.00
4)Stream Ecology Kit	\$76.46		\$76.46
5)Covers/Trays	\$101.50		\$101.50
6)Aquatic Bulbs	\$56.00		\$56.00
Totals:			\$924.96

Project Objective:

**"Strap yourself in and flip the switch 'cause you're about to get a Truthocution."
-Stephen Colbert**

The project objective is to acquaint students with the environmental problems and characteristics of their local community giving them "hands on experience in chemical, biological, and sociological research. By empowering students through community problem solving strategies, students will be able to see the relevance of subjects they study in school to the real world. Students will take a overnight trip to Hawkwoods Nature Center to monitor pond water, they will divide the pond into four different locations. After students have completed a physical survey of the area sounding the water source, they will run various chemical water quality tests such as nitrates, dissolved oxygen, pH, phosphates, turbidity, temperature and total solids. All data collected will be tested and evaluated by use of computers and scientific equipment. Students will also study phytoplankton and no water quality study would be complete without also studying phytoplankton and macro-invertebrates. Since many insect larvae can be somewhat sensitive to polluted water. Taking samples of plants, including grass clippings and insect populations, students will learn the health of the natural habitats, population size of life forms and the well-being of the ecosystem. In the evaluation students will study all the results of each test and study how human use of the land affects the quality of the water.

More than 85% of sicknesses in the world are due to unsafe water and poor sanitations. Over 4 million children below the age of five from the Third World Countries die each year directly from water pollution. This figure is larger than all deaths, at all age levels from all causes in Europe and North America combined. If there is no water treatment facilities available in certain areas of the world millions of pathogens are past into the drinking water. Therefore, students should be taught about the sustainability of water as a resource.

Objectives: Students will research.

- **Is the impact on land affecting the quality of water?**
- **Does pollution impact aquatic life and how?**
- **Monitoring and assess the presence of all life form at Hawkwoods Nature Center**
- **Analyze data and determine quality of water.**
- **Positive impact on No Child Left Behind**

Project Summary:
Engage –Educate –Evaluate

Students will gain knowledge of how the settlement and cultural relationships within the area will show the process of urbanizations, municipal sanitation and how concerns for the area (pond) are affected. Students will have provisions for field studies and excursions; and usage of maps and aerial images to note changing land-use practices, identification and recognition of the value of wetland areas. Students using benthic organisms will identify the diversity of aquatic life and show the value of biological monitoring. Students will study what organisms are present as well as which ones are missing. Students will begin water quality chemical testing for some of the physical or chemical parameters. Data collected will be tested and evaluated by use of the computers and lab equipment. Students could also study laws and regulation regarding the governing of water quality at Hawkwoods Nature Center. Students will also discuss the effects of future population growth in the area and possible affects that growth would have on the quality of the water. One of the most rewarding areas of science is studying what organisms are in pond water. It captivates students and encourages an exploration of an amazing world.



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Project Objective: The objective of our project is to purchase PASCO probe ware to create an annual Brownell sixth grade water testing field trip. The students will accomplish this project with the Advanced Water Studies Bundle from PASCO. Brownell Middle School does already have eight GLX Xplorers which can store and graph the data. These Xplorers were received from an ING Grant. Unfortunately, we do not have the correct probe ware to collect the data for water testing. The water bundle from PASCO will allow us that opportunity to take an extensive testing of our nearby resources. (There is an attached sheet with information.)

Project Summary: At a Detroit riverfront public park about two miles from our school, a series of water testing stations will be set up according to the Advanced Water Studies Bundle. Student with a chart for results will go to a pH station, a temperature station, a conductivity station, a dissolved oxygen station, a turbidity station, and flow rate station. We will discuss the results and store the data on a website. After each successive year,

averaged results from the following years will be written down and students will be able to compare and contrast the results.

Timeline and Funding Method for Program Continuation In the spring of 2009 I will order the Advanced Water Studies Bundle from PASCO. In July of 2009 I will set up and practice the field trip stations. In the second week of September I will have the students become acquainted with testing with the GLX Xplorers. The third week of September, 2009, we will go on the field trip. In early October we will publish our results on the website. Each year afterward, I will repeat the same timeline.

The cost of the bundle is \$1,269.00 and with shipping and handling the bundle will be \$1,353.60. If I receive this grant, the PTO at our school will cover the other \$353.60. The PTO was excited about this possibility, because they said this project would have the school more involved in our community.

Budget (include additional items if necessary):

<u>Expenses</u>	<u>Total Cost</u>	<u>In-Kind</u>	<u>Request</u>
1) PASCO GLX Water Bundle	1353.60.00 (Plus Shipping)	PTO Funding	1,000
2)			
3)			
4)			
5)			
6)			
Totals: \$1,000.00			



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Project Objective

Our project objective is to acquire a ground-water simulation system in order to visually demonstrate for our students basic groundwater principles. Our school is located on the shore of Lake Michigan in an area providing a natural laboratory for studies of hydrology. The Great Lakes are vital to the availability of drinking water, food, recreation and transportation. We feel it is important our students understand the groundwater system as a vital contributor to the sustainability of our waterways and the larger Great Lakes ecosystem.

Project Summary (not to exceed 2 pages)

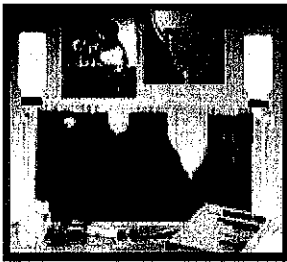
About Our School - www.blackriverpublicschool.org

Chartered by Grand Valley State University, Black River Public School is a non-profit public school located in the core city of Holland, MI and serving the greater Holland community. The school was founded in 1996 by a group of local parents, business, civic and educational leaders who believed strongly in the need for an academically challenging, tuition-free, college preparatory public school. The founders understood the importance of small class size to the quality of the educational experience and the importance of remaining a small school.

Black River opened its doors in the fall of 1996, welcoming 209 students and their families. Today, we are a thriving and award-winning k-12 program, fully enrolled at 800 students. Our mission remains to prepare students for college and for life. BRPS students consistently achieve beyond local, state and national norms for standardized testing, and our school has been included on the list of our nation's Top 100 High Schools for the past three years. Our school has been the recipient of Teacher of the Year, Administrator of the Year and School of Excellence awards from our state charter school organization.

Because we believe experience to be the best teacher, Black River provides an opportunity outside the traditional classroom setting for all students to learn hands-on. Our Project Term, unique in the area, is held during the last four weeks of school. During this time students take classes covering a wide range of subjects such as: fencing, foreign travel, robotics, money management, comparative law, computer assembly, creative writing, drama, forensic chemistry, linguistics and many other topics.

As a charter school we are prohibited from either charging tuition or financing through public tax vehicles (millage). This means we must find creative ways to pay for our own facilities and equipment, usually through donations from our benefactors, bank financing, and grant support for specific needs.



As part of our ongoing effort to bring hands-on experience to every aspect of our students' education, we are applying for your grant as the means of purchasing a groundwater simulation system. This system would be integrated into our middle school and high school earth science classes, with the following general objectives:

- 1) Describe the water cycle including evaporation, transpiration, condensation, precipitation, infiltration, surface runoff, groundwater, and absorption.
- 2) Analyze the flow of water between the elements of a watershed, including surface features (lakes, streams, rivers, wetlands) and groundwater.
- 3) Compare and contrast surface water (lakes, streams, rivers, and wetlands) and groundwater in regard to their relative sizes on Earth's freshwater reservoirs and the dynamics of water movement (inputs and outputs, residence times, sustainability).
- 4) Explain the features and processes of groundwater systems and how the sustainability of North American aquifers has changed in recent history (e.g., the past 100 years) qualitatively using the concept of recharge, residence time, inputs, and outputs.
- 5) Explain how water quality in both groundwater and surface systems is impacted by land use decisions.

In addition to sharing the use of the system between our teachers during regular classes, we envision other uses for the system. The first would be as part of the Project Term sessions briefly described above. Preparation in groundwater studies would be very valuable to the groups which go each year to study the ecosystems of Sleeping Bear Dunes and Beaver Island. Likewise the system could become part of current courses entitled "Green" and "Nature's Classroom". The system could form the basis for an entire session focused on West Michigan watershed studies.

An additional use for the system would be for our annual spring Science Fun Fair. This is a day of hands-on activities planned and executed by a combination of parent volunteers, teachers and area scientists from such organizations as Pfizer, Gentex, Hope College and Grand Valley University. This annual day gets our students excited about science in a hands-on way, as well as helping to raise funds to better equip our school laboratories.

Timeline and Funding Method for Program Continuation (Anticipated start and end date of project. If continual funding is required, how do you plan to fund this project in years to come?)

Our Science Fun Fair is scheduled for April 18, 2009. We would very much like to have the system available at that time for demonstrations. Though this year's Project Term courses are set to begin in May, we would be able to integrate the system into planning for next year's course offerings. Earth Science class waterway studies are currently underway and teachers would be enthusiastic about receiving the system at the earliest possible opportunity.

As this is a one-time purchase additional funding, except for supply renewal, would not be required. Renewal of basic supplies would be handled via the general school budget for our science department.

Thank you for your kind consideration of our request.

Budget (include additional items if necessary):

<u>Expenses</u>	<u>Total Cost</u>	<u>In-Kind</u>	<u>Request</u>
1) \$750.00 Ward's Groundwater Simulation System including shipping.	\$750.00		\$750.00
2)			
3)			
4)			
5)			
6)			
Totals:	<u>\$750.00</u>		