

The GREEN Institute
(GREEN – Gaining Research Experience in the ENvironment)
and
Open Space Stewardship

Brookhaven National Laboratory's Office of Educational Programs has initiated an innovative educational program for Suffolk County students. The GREEN (Gaining Research Experience in the ENvironment) Institute provides an opportunity for students from kindergarten through college to participate in open space stewardship through environmental research projects in their neighborhoods and in their classrooms. Brookhaven National Laboratory (BNL) is interested in initiating this program for a variety of reasons. BNL has long history of running outstanding educational programs for students and teachers to enhance science and math skills, science literacy and motivation to pursue careers in science. Approximately 30,000 participants are involved in BNL programs each year. BNL, similar to local townships, the County and the State, also has an environmental stewardship role for its 5,000 acres of property. This stewardship includes a variety of natural resource management and environmental restoration activities – assisting our local community in this endeavor is considered an important part of being a good neighbor. The Lab also has the necessary intellectual resources such as scientific staff and technicians to help make the program a success.

New York State, Suffolk County and other local government agencies have successfully preserved many parcels of open space properties. While this has added a challenge for long-term property management, it has also created a unique educational opportunity. The GREEN Institute is an umbrella program that incorporates numerous environment related educational programs and initiatives. A flagship program within the GREEN Institute will be the Open Space Stewardship Program. This program will establish long-term relationships between those responsible for managing publicly owned properties and local school districts. Those responsible for managing open space properties, with the support of local environmentalists, will identify parameters of importance for long-term stewardship. The property owners and ecologists will work with local teachers to develop research protocols necessary for property stewardship. These protocols may be generic to many properties, specific to certain habitats, or specific to a particular piece of property. Teachers will be trained to conduct these protocols through workshops conducted at Brookhaven National Laboratory. Students will collect scientific data, enter it into a database maintained by Brookhaven National Laboratory and analyze it for trends, indicators and other related parameters. Support for the teachers and the students will be provided by property owner liaisons and other environmentally based organization staff. New projects for individual students are expected to emerge from the research conducted on selected properties. The primary program objectives are listed below:

- Students learn scientific protocol, analytical techniques and data collection and analysis skills
- Students will develop a sense of civic responsibility as they become an integral part of stewardship of public lands within their own communities

- Provide curriculum relevance through the collection of data and participation in a meaningful scientific endeavor
- Data collected will provide important information for land owners (State, County, Town, etc.) to enhance stewardship
- Create an interface between students, government agencies and elected officials through student presentation of data, conclusions and emerging issues
- Teachers will enhance the relevance of their curriculum with activities and concepts supportive of many State and National teaching standards
- Enhance teacher skills through workshops and peer interaction
- Enhance the learning experience for students and teachers through an interactive relationship with environmentalists, scientists and government officials
- Provide a venue for students to conduct and present independent scientific research

Example of how program would function:

Children in early grades might work on less complex projects as simple as the frequency of littering. Middle school and high school students will take and analyze water and soil samples, or they may assess the presence and impact of animal and insect populations. Advanced high school students and college students can undertake projects such as plant and animal DNA analysis and may mentor younger students. Data collected by students will be recorded through a database maintained at Brookhaven National Laboratory. These data will be publicly available to enable students from all County locations to conduct comparisons within their own assigned locations from year to year, or between similar habitats in other parts of the County where they are monitored by other school classes. More advanced students will be able to take on more detailed analysis of data as a higher-level individual research project.

This program will provide another method for teachers to reinforce student research skills, particularly in the areas of math and science. Of equal importance, it will foster a sense of ownership and responsibility for their neighborhoods and open space in Suffolk County.

Brookhaven National Laboratory's Office of Educational Programs and the BNL Natural Resource Manager have already worked with teachers in Miller Place, Longwood, and William Floyd School Districts over the past summer (2005) to develop curriculum to take advantage of this type of research activity at the middle and high school levels. These master teachers will teach the GREEN Institute protocols to other Suffolk County teachers, gradually expanding the program throughout the county and beyond.

The intent is to gain the required support in the spring of 2006, develop and implement teacher workshops in the summer of 2006 and deploy student participation in the program in September of 2006.