1. Category entered:

C. PLACES OF LEARNING

2. Describe the building location with respect to local and regional resources of its context.

The Blackrock Forest Center for Science and Education is located on a sloped, south-facing site within the 3,750 acre Blackrock Forest in Cornwall, New York. The Center provides a needed setting for environmental study and research for staff, scientific teams, and student groups ranging in age from kindergarten through graduate school within the vast forest. The center was conceived as a home for a non-profit consortium of 20 public and private schools, colleges, universities, and scientific and cultural institutions engaged in research, education, and conservation in the preserve. Before the Center was built, these groups had no local facilities within the forest to study and analyze the samples they collected.

The building was sited to have the least impact on the surrounding forest. Together with the client, we worked to determine the best—and not the most beautiful—site for the building. Near access roads, the building is located on the site of a former farm, where humans had already had already impacted the forest. On the site, the trees had already been cleared and the vegetation was not indigenous. By reusing this site, the construction of the center had the least impact on the natural ecosystem of the forest.

3. List the key sustainable design features

The sustainable design features of the building include:

· A rectangular footprint and east/west orientation to maximize solar exposure while minimizing building mass
· Southern window sunshades to minimize heat gain in summer and maximize it in winter
· A central atrium to bring in natural light and ventilation
· A geothermal heat pump system for heating and cooling
· Composting toilets

· Use of local materials, most harvested from surrounding forest

4. Describe relationships between the formal, programmatic, and high-performance design strategies and the site-that is, how the green architecture is linked to its site context.

The Consortium was founded on the belief that the forest could be used as a model site for learning basic scientific principles, emphasizing an experiential approach and fostering investigative and problem-solving skills. Students from grade school to graduate school researched the biological processes taking place in the forest soils, plants, bugs, and animals. The Center project represents the advancement of environmentally sustainable architecture in concert with technology, paralleling the philosophy and mission of the client.

The Center for Science and Education is an ideal venue from which to manage the Forest as an interactive part of a larger natural system. The center provides opportunities to learn, teach, and conduct research using the most modern equipment in a building that conveys an environmental conscience. Labs and lecture areas are connected to a network of computers and have access to the Internet. Data gathered in the forest can be accessed at any of the established computer terminals. Students can observe and monitor environmental changes in both the forest and the center.

5. Summarize the building's program and program specific features.

The two-story Center houses orientation, display and instructional space including wet/dry labs, research labs, a reference library and conference room, administrative offices, and a data center which serves as the base station for the Consortium's environmental monitoring system.

6. Provide the building's gross square footage.

The buildings gross square footage is 9,000 square feet.

7. Provide project cost (approximate total and per square foot).

The total project cost was $1,550,000. The cost per square foot was approximately $160.

8. Provide performance information, include BTUs per square foot per year and any additional information, measured or simulated.

Using a network of sensors monitoring the building and the environmental conditions, the consortium has been tracking the building's energy usage on an hourly basis since its opening. Theaverage cost for energy usage has been $2720, or $0.31 per square foot. Therefore, the annual energy use per square foot is approximately 26450 BTU (based on an estimated energy cost of $.04/kwH or $11.72/million BTU).

As stated in their Winter 2002 newsletter, "As a result of the green features incorporated into the design and construction of the [Center], its energy costs over the first two years of occupancy have been only 43% of those for a comparable building complying with state energy conservation codes, but lacking the [Center's] advanced features." In fact, the building is running well below annual projected heating and cooling costs. The energy efficient features of the Center, combined with the sensors that provide data on hourly energy use, also make it an important learning tool about the benefits of sustainable design for the students who use the facility.

9. Outline design intentions and methodological approach.

At the outset of the project, the consortium and the architect developed a statement of principles for the building, which states:

"The Center will be designed to demonstrate how we can learn about our natural world using a facility seamlessly incorporated into a natural setting in a sensible, sensitive, and sustainable manner. We want the building to be an embodiment of what the Consortium is all about."

The objective for the Center combines modern-day technology with environmental ideology. Careful planning was required to construct a building that addresses the needs of researchers,

educators, and hundreds of visiting students, without compromising the environmentally responsible ethic that is the foundation of the consortium's development and with minimal disturbance to the vast, delicate ecosystem of the surrounding forest.

As stated in the Consortium's newsletter when the building was completed: "The new center dramatically illustrates how a building can be seamlessly integrated into a natural setting in a sensible, sensitive, and environmentally sustainable manner. It reflects an understanding and embracing of nature and concern for the environment, and it is designed to serve an education and inspirational function for all who use it." The Center significantly reduces the Consortium's reliance on the planet's finite resources, and serves as a model of energy efficient, low-impact rural architecture.