Using "Green" Buildings on Brownfields: Using Innovative Architecture to Improve Performance

EPA's Brownfields Program is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields. A brownfield is a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. EPA's Brownfields Program provides financial and technical assistance for brownfield revitalization, including grants for environmental assessment, cleanup, and job training.

Green Buildings

Green buildings complement EPA's philosophy that brownfields redevelopment projects should be environmentally friendly, energy-efficient, long-lasting, and safe for the local community. Green buildings represent resource-efficient models of construction and operation that are designed to use fewer resources and generate less pollution. As part of its Green Buildings on Brownfields Initiative, EPA selected eight communities for Green Buildings on Brownfields Pilot projects. Through these Pilots, EPA has been working with communities to incorporate environmental considerations into the planning, design, and implementation of their brownfields redevelopment projects.

Some of the design considerations associated with green buildings include:

- use of environmentally safe and/or recycled construction materials in design;
- landscaping that reduces runoff and shades the structure;
- designs that reduce the amount of water and energy consumption by occupants; and
- green roofs (roofs with plant covering to reduce direct heating and improve a building's appearance).

EPA's initial eight Green Buildings on Brownfields Pilot projects are now underway, and it is hoped that their progress and accomplishments will serve as models for similar projects to follow. Assistance from EPA for these Pilots comes in the form of technical, financial, planning, and outreach services; design expertise; and/or other needed expertise as identified by the community. The Pilots are described below.

The Community Center Building, Springfield, Massachusetts

With assistance from EPA and the local government, the New North Citizen's Council (NNCC), a non-profit social service organization, plans to build a two-story, 25,000-square-foot building to replace its cramped and deteriorated offices. The project site is located on 1.2 acres, which

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The new Montgomery Park Business Center in Baltimore, Maryland.

JUST THE FACTS:

- Sustainable development ensuring that property reuses are environmentally sound, safe, and beneficial to the community has always been one of the most important aspects of EPA's Brownfields Program.
- In Baltimore, Maryland, the city's Brownfields Assessment Pilot helped facilitate redevelopment of an historic catalogue distribution center into a model green building for office and technology uses.
- Baltimore's new facility offers low-energy heating, cooling, and lighting systems; use of recycled materials; insulated windows; a green roof that incorporates soil planting for added insulation; abundant natural light; and bike lockers and showers for employees who ride to work.

includes NNCC's current offices and other city-owned brownfields. The Pilot project aims to meet the criteria and gain the certification of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program and the Energy Star for Buildings program.

The National Aquarium in Baltimore's Center for Aquatic Life and Conservation, Baltimore, Maryland

To meet the needs of a rapidly growing collection of current and future exhibits, as well as expanding programs in research, husbandry, and conservation, the National Aquarium in Baltimore is building a new aquatic animal care center. A seven-acre brownfield located near major highways and bus routes in Baltimore City is the planned location for the new facility. The Aquarium will seek a Gold or Silver LEED rating for the center.

Community Culture and Commercial Center, Kauai, Hawaii

This project is located on the island of Kauai, in Anahola, on a property that has frequently been used for the illegal disposal of automobiles, tires, appliances, batteries, and other items. Reuse plans for the state-owned property include a senior care living center, an elderly independent living facility, a charter school, retail stores, office space, and other facilities. The state plans to design the buildings and landscape to be energy- and resource-efficient, using local building materials wherever possible, and to attain LEED certification. Some of the sustainable design measures being considered include alternative energy generation, natural ventilation and day-lighting, the use of recycled building materials, and the use of non-toxic finishes and materials.

World Headquarters for Heifer International, Little Rock, Arkansas

Heifer International, a non-profit organization devoted to ending world hunger, is developing its new world headquarters and an education center on a 28-acre brownfield in a former industrial area in downtown Little Rock. Heifer will seek a Gold LEED rating for the 100,000-square-foot building. Sustainable, environmentally sound features of the building will be highlighted in public education programs to illustrate environmentally responsible building practices.

Volcanic Legacy Discovery Center, Mt. Shasta, California

The redevelopment plan for this 127-acre former lumber mill property includes 10 acres for the Volcanic Legacy Center. The center will be the centerpiece of a scenic byway stretching from Crater Lake in Oregon to Lassen Peak in California, and is expected to receive thousands of visitors each year. The center will include a 20,000-square-foot building with an auditorium, exhibit spaces with interactive and educational displays (including a section to demonstrate green building materials), a gift shop, other auxiliary spaces, and parking. Sustainable landscape design features may be incorporated into the reuse plan, with an area for shrubs and plants, a vegetative filter area, a wildlife pond, and a stormwater retention basin among the possibilities.

ReGenesis Medical Center, Spartanburg, South Carolina

ReGenesis, Inc., a community non-profit corporation, is purchasing a 33-acre brownfield for redevelopment as a health and wellness park. The property will include a community medical center providing integrated healthcare. Using green building technologies, the center will be designed to protect indoor air quality, reduce operation and maintenance costs, and protect the watershed of a nearby creek.

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The Trailhead Building, St. Louis, Missouri

Trailnet, Inc., a non-profit organization whose mission is to develop a system of trails, known as the Greenway, in the greater St. Louis metropolitan area, is converting a former power plant into an environmentally friendly building for office space. The building will also serve as a public place for people to meet, eat, get directions and information on the Greenway, and learn about the planet's third-largest watershed. Trailnet, working with local stakeholders and partners, aims to achieve a Gold LEED rating for the building.

Marina District Redevelopment, Toledo, Ohio

The Toledo-Lucas County Port Authority is in the process of redeveloping the 120-acre Marina District brownfield on the east bank of the Maumee River, directly across from downtown Toledo. The redeveloped area will include residential, commercial, recreational, and entertainment facilities. The Port Authority intends to use expert services provided through the Pilot to identify opportunities to employ green building technologies such as energy conservation measures, natural landscaping, natural stormwater management, and pedestrian-friendly site designs.

Green Building Practices on Existing EPA Brownfields Pilots

Sustainable development ensuring that property reuses are environmentally sound, safe, and beneficial to the community has always been one of the most important aspects of EPA's Brownfields Program. Incorporating green building designs into redevelopment plans has already proven successful for a number of EPA Brownfields Pilot projects.

Washington, D.C.

In southwest Washington, D.C., a former pumphouse along the Anacostia River has taken on a new life. Once the city's Brownfields Redevelopment Action Team (BRAT) had identified the pumphouse as having redevelopment potential, the Brownfields Pilot leveraged $600,000 in U.S. Department of Housing and Urban Development (HUD) funds for cleanup and infrastructure improvements.

The Earth Conservation Corps (ECC), a District-based non-profit group, helped redevelop the site and opened the Matthew Henson Earth Conservation Center there in 2001. ECC partnered with Sustainable DC, a nonprofit organization focusing on best practices in sustainable development, to determine the design of the facility by involving the community and obtaining feedback through several design charrettes. A green roof for the building was constructed that filters stormwater before it runs into the river and reduces the building's heating and cooling costs.



A former pumphouse property in Washington, DC has been redeveloped into a conservation center with a green roof.

In addition to the new Conservation Center, the former pumphouse site is now a place for community members to picnic and relax. Two fishing piers, constructed on either side of the center, provide the community access to the river. James Willie, Program Manager for ECC put it this way: "To take a part of DC that has been completely industrial and to make greenspace out of it; to make it an ecological example of what kinds of things can be done in

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a greenhouse space...not just a post-industrial space, but utilizing green roofs and making other innovative projects work here, it has really become a great example unto itself."

Baltimore, MD

In Baltimore, Maryland, the city's Brownfields Assessment Pilot helped facilitate redevelopment of the historic Montgomery Ward catalogue distribution center into a model green building for office and technology uses, called the Montgomery Park Business Center. The Montgomery Ward warehouse was built from 1925 to 1927 and at that time was the largest mercantile building in Baltimore. The building is listed in the National Register of Historic Places, making its redevelopment into a green facility an historic event as well.

The business closed its doors in 1985, and in 1995 the Baltimore Brownfields Pilot targeted the site for assessment, cleanup, and redevelopment. The developer put the site through Maryland's Voluntary Cleanup Program and proceeded with a $3 million cleanup, which included removal of lead paint, asbestos, petroleum, and PCBs. Now the 1.3-million-square-foot Montgomery Park Business Center offers low-energy heating, cooling, and lighting systems; innovative uses of stormwater in toilet water; use of recycled materials; windows with insulated "Low-E" glazing; a green roof that incorporates soil planting for added insulation; abundant natural light; and bike lockers and showers for employees who ride their bikes to work. When fully occupied, the Business Center, which is located in an Empowerment Zone, will employ 3,500 to 5,000 people. Total private and public investment will reach $100 million, including $9 million in grants and loans from HUD and $2 million from Maryland's Brownfields Revitalization Incentive Program for lead abatement.

Cape Charles, VA

In August 1994, the President's Council on Sustainable Development selected Cape Charles, Virginia, as one of four sites for a national eco-industrial park demonstration project, to showcase advanced facilities in resource efficiency and pollution prevention. An EPA Brownfields Assessment Pilot and an EPA Brownfields Showcase Community grant added to a growing commitment of private, state, and federal funding for this project.



The first building available for lease in Cape Charles, Virginia's eco-industrial park.

EPA's Brownfields grants funded environmental assessments on an abandoned 25-acre dump as the center of a new 200-acre eco-industrial park. The eco-industrial park's first building, funded with a $2.5 million county bond, was a 30,930-square-foot facility that included a solar electric roof system. The largest of its kind in North America, this roof is capable of generating 42 kilowatts of power for the building's tenants.

To find out more about EPA's Brownfields Pilots and the Green Buildings on Brownfields Initiative, visit EPA's Brownfields web site at http://www.epa.gov/brownfields/ or call EPA's Office of Brownfields Cleanup and Redevelopment at (202) 566-2777.

Serving as Examples for Future Green Building Projects

As more and more brownfields redevelopment projects utilize green building practices, EPA expects that they will serve as models for future projects. EPA hopes that eventually, most developers will recognize the environmental and economic benefits of green buildings, and that such designs will proliferate. By conserving resources and lessening the usual environmental impact of new construction, green buildings have the potential to improve the environment one structure at a time.