



Green Design Options for the Moran Center at Waterfront Park Revitalization Project

Sustainability Pilot Background

EPA's Brownfields Sustainability Pilots provide technical assistance to assist communities in achieving greener, more sustainable results when redeveloping brownfields. These pilots also provide models for other communities across the country.

EPA provided technical assistance to Burlington, Vermont's Community and Economic Development Office (CEDO) to develop a Sustainable Infrastructure Plan for the redevelopment of the Moran Plant. The property is a former coal fired electric generating facility on Burlington's waterfront. EPA's technical assistance team helped analyze the site and conceptual design plans to develop recommendations for incorporating green infrastructure, green building design and wetland restoration at the Moran project site.



Moran Center at Waterfront Park Background

The Moran Center at Waterfront Park was the former generating plant for the Burlington Electric Department. Decommissioned in 1986, the plant remains vacant. The site was also used for a variety of industrial activities including: railroad and lumber mill uses, and the storage and transportation of petroleum and petroleum related products. Using EPA Brownfields Assessment grants, the Chittenden County Regional Planning Commission conducted Phase I and Phase II environmental site assessments that revealed trichloroethylene in the soil and ground water as well as polycyclic aromatic hydrocarbons, lead paint and asbestos in building materials.

CEDO's redevelopment plan proposes that the site be an extension of the waterfront park with improved pedestrian, bicycle, transit and vehicle amenities, and serve as a mixed use community center. Some of the proposed programming components include a children's splash park, a skating rink, a remodeled skate park, a rock climbing wall, the first indoor ice climbing wall in North America, the Green Mountain Children's Museum, and expansion of the Community Sailing Center.

Project Highlights

EPA's technical assistance to CEDO included evaluating the Moran Center site, conceptual design plans and green design options. The technical assistance team developed a report that summarizes recommendations related to green infrastructure of the Moran Center site plan, green building design of the proposed Moran Building, and wetland restoration. The recommendations outlined in the report are based on three primary project goals: creating a viable and sustainable visitors' destination; identifying cost effective green infrastructure and site plan opportunities; and identifying cost effective green building opportunities.

EPA's technical assistance team created technical drawings illustrating recommendations for incorporating green infrastructure design options at the Moran Center project site which include the following elements:

- Riparian buffers
- Wildlife corridors
- Native planting
- Alternatives to pesticide use in landscape maintenance
- Alternatives to salt use for de-icing
- Reconstructed wetlands
- Tree planting and urban forestry
- Structural soil cells
- Porous paving
- Bioswales and rain gardens
- Water art and play features
- Rainwater harvesting

Technical drawings highlighting recommendations for green building design options development by the technical assistance team incorporate the following elements:

- Natural lighting
- Natural ventilation
- Greenhouse
- Energy-efficient mechanical heating and cooling
- Reduction of carbon footprint

Challenges and Lessons Learned

Integrated Design Approach

CEDO intends for the Moran Center to be a sustainable site and a community center. EPA's technical assistance team suggests developers and engineers use an integrated design approach to incorporate sustainable features in all phases of development. Cost effective and feasible sustainability strategies must be identified before construction begins.

Identifying Cost Effective Sustainable Design Features

EPA's technical assistance team suggested that many cost effective and environmentally beneficial elements of green design are in the landscape and site infrastructure. Many of these green design options are easily incorporated and can reduce the cost of constructing and maintaining the site's infrastructure.



*The Moran Center at Waterfront Park project
in Burlington, Vermont.*

The technical assistance team aided in evaluating which of the sustainable infrastructure and green building options recommended in the report represent easily implementable and cost effective means to meeting key project goals. The report identified the following options:

- Curtailing landscape maintenance through reduction and elimination of lawn areas that requires regular mowing and replacing large lawn areas with native planting.
- Replacement of gas fired mowers and blowers with electric options.
- Gravity flow stormwater infrastructure with retainage basins, rain gardens and structural soil cells for trees and planting areas.
- Passive design for natural lighting, sun tempering and ventilation to reduce HVAC and electric lighting requirements.
- Photovoltaic panels for electric generation, especially to reduce and eventually eliminate need for peak power plant operation.

In addition, EPA's technical assistance team recommended an approach for wetland restoration that balances the perspectives of ecological, engineering, planning and community stakeholders. Shading the area and establishing a swamp forest ecosystem could improve project sustainability. The final report describes and estimates a budget for a feasibility analysis, conceptual and schematic ecosystem restoration design, design and construction documents, and construction. In August 2009, the City of Burlington received an additional \$3 million in financial support from the U.S. Department of Housing and Urban Development to continue redevelopment of the Moran Center.

Sources for Additional Information

For more information on this project, please see the full Moran Center technical assistance report at:
http://www.epa.gov/brownfields/sustain_plts/factsheets/moran.pdf

Additionally, please see: *Moran Center at Waterfront Park: Guide to the Redevelopment of the Moran Plant* at:
www.cedoburlington.org/waterfront/moran_plant/redevelopment_proposal.htm

Updates on the Moran Center at Waterfront project can also be found at:
www.cedoburlington.org/waterfront/moran_plant/moran_plant_redevelopment.htm

Regional Contact Information

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