



From Brown to Green: Restoring Ecosystems on Former Brownfields



*Residents Enjoy the Belle Isle Coastal Preserve
at the Ribbon Cutting Ceremony.*

Ecological Restoration

In most areas of the country, brownfields redevelopment projects are becoming more common. As real estate and transportation costs continue to rise, it makes sense to redevelop brownfields sites close to urban centers or transportation corridors; this helps create new jobs, and commercial and residential opportunities. However, brownfields sites are not only suited to commercial or residential development; they can become parks and open space as well! The three innovative examples highlighted herein show that former brownfields can provide habitat, recreation and even contribute to the cleanup of the environment.

Belle Isle Coastal Preserve, Boston, Massachusetts

The Belle Isle Coastal Preserve was not always as pristine as the name might imply. The former salt marsh was the site of commercial and industrial uses for years; first as the location of the Belle Isle Fish Company and later a site for dumping and filling as the site fell further into disrepair. Eventually the site became littered with discarded construction and demolition debris, appliances and heavy equipment. Adjacent to the much larger Belle Isle Marsh Reservation, the 1.6-acre parcel provided the City of Boston with a unique opportunity for restoration.

Brownfields developments can be challenging even when the target site will be redeveloped for a lucrative commercial, residential, or mixed-use development. Redeveloping a site for an ecological purpose often requires even more creativity when it comes to partnering and securing funding. In 2004, armed with a \$200,000 EPA Brownfields Cleanup grant, the Boston Redevelopment Authority leveraged another \$393,000 from the City of Boston to clean up contamination at the site. A group called Friends of the Belle Isle Marsh assisted with the cleanup and served as an advocate throughout the life of the project.

The cleanup activities removed approximately 8,600 cubic yards of soil contaminated with petroleum, asbestos, lead and polycyclic aromatic hydrocarbons (PAHs). To restore the salt marsh at the site, the City of Boston contributed \$60,000 and received \$55,000 from the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service.

JUST THE FACTS:

- Brownfields can be used for more than just construction of new buildings – they can become open spaces, parks and wildlife habitat.
- Opportunities abound – the City of Boston used cleanup funds to jump start restoration of a salt marsh; the City of Rock Island created a riverfront park; and Kitsap County restored salmon habitat.
- Benefits go beyond site boundaries – all three of these sites provide habitat for migratory fish or birds; two of the sites provided vital links in regional trails; and two of the sites help improve local water quality.

*"You've got to think long term.
We divided the project into
four phases and
bit off small chunks."*

– Sally Heffernan,
City of Rock Island

The restoration consisted of planting native marsh vegetation and restoring some of the tidal flow to the site. The city contributed the majority of the \$92,000 to complete landscaping and pathways on the site.

The cleanup and redevelopment turned this brownfield into a park, popular for taking walks and bird watching. In addition to creating new open space, the redevelopment is linked to Belle Isle Marsh Reservation, providing access to a 152-acre recreation area. This access to open space is especially important for this neighborhood of East Boston, which has limited access to natural resources. With the Belle Isle Coastal Preserve completed in 2006, the local population has a renewed opportunity to experience the diverse ecosystem that the Massachusetts Bay once was.



The Sylvan Slough Natural Area.

Sylvan Slough Natural Area, Rock Island, Illinois

The City of Rock Island, Illinois, found itself faced with the challenge of what to do with a 5.5-acre brownfield, located on the banks of the Mississippi River. The Midway Oil site was a former bulk oil storage facility, fueling station and warehouse. However, along with many other properties in the city, industrial closures left the Midway Oil site and neighboring properties vacant or underutilized.

What appeared to be just another example of industrial blight provided the city with an opportunity to reclaim a section of riverfront and create a demonstration project to reduce nonpoint source pollution to the Mississippi.

The success of this project depended on a variety of partners for funding and technical support. The city received assessment funds from the Illinois Environmental Protection Agency's Brownfield Redevelopment Grant Program and oversight through IEPA's Site Remediation Program. The Illinois Department of Natural Resources provided 50% of the funding to purchase the sites, through an open lands trust grant. This required the site to remain open space in perpetuity. In 2003, EPA awarded the city a Brownfields Cleanup grant in the amount of \$97,750 to clean up petroleum contamination. Rock Island had support from River Action, a local nonprofit environmental organization which promotes the site through its "Retain the Rain" program. River Action paid for design of the Natural Area, the permeable concrete parking lot, and interpretive signage. Finally, \$60,550 of stormwater reduction projects were funded by the City as a supplemental environmental project in lieu of paying a fine as agreed in a Consent Decree with EPA.

The cleanup involved demolishing existing structures on the site and remediating contaminated soil; however the city used some innovative approaches to both tasks. Materials from the buildings were salvaged and reused on the site, whenever possible. For example, bricks were processed to use in permeable walking paths. Inert materials (e.g., concrete) were used to fill basement spaces. Pre-cast concrete panels from former buildings were used for sidewalks and to delineate planting areas. Another innovative cleanup practice was using bioremediation to clean up contaminated soil. First, 400 cubic yards soils were excavated and mixed with wood chips and manure to break down the mostly petroleum-based contaminants. The mixture was wrapped in black plastic and hydrated as necessary. Within six months, the soil was clean and returned to the excavations to be used as compost.

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Once cleanup activities were complete, the city replanted with native species to restore this section of riverfront. But they did not stop there – to further clean up water headed for the Mississippi, Rock Island used bioswales, permeable paving, a permeable parking area, water garden, and other best management practices (BMPs) to improve the quality of stormwater runoff from the site. The site also captures and filters run-on from an adjacent two-million square-foot industrial complex. These features have the twofold benefit of improving water quality and helping educate the visiting public about urban nonpoint source pollution through interpretive signs around the site.

In addition to the built features on the site, the Sylvan Slough Natural Area provides a variety of recreational opportunities. The site features a Bald Eagle observation area, a picnic area and parking for an adjacent 64-mile riverfront trail and bicycle path. Interpretive signs describe the historic context of the site, the creative cleanup and bioremediation, the water quality features, and the natural resources present onsite today.

Sinclair Inlet Restoration Project, Kitsap County, Washington

In Kitsap County, Washington, EPA partnered with the county government, local residents and other public agencies to turn a group of four contaminated properties into viable waterfront habitat for salmon and other native species. Kitsap County lies west of Seattle and has seen its population increase over the past quarter century, placing increased pressure on the area's natural resources.

Past activities on the sites included the Evergreen Auto Wrecking site, a concrete batch plant, lumber mills, a roofing contractor, and a sand and gravel plant, among other industrial uses. In the past, some of these operators filled portions of the Gorst Creek Estuary to increase the useable land on their property. In addition to the fill, soil and ground water on these parcels became contaminated with petroleum products, metals and PAHs.

Around 2003, these areas were being eyed for potential restoration to benefit native salmon populations and help improve water quality; however, an assessment would have to be performed first. To get things moving, EPA awarded three Brownfields Cleanup grants, totaling \$400,000. The assessment enabled the county to secure additional funding from EPA, Washington State and the Port of Bremerton to help with cleanup, community involvement, and restoration activities. In addition, the county was able to exchange surplus, county-owned property for one of the waterfront properties.

Taken together, these four sites were a catalyst for the restoration of nearly 11 acres of shoreline and salt marsh habitat. The new riparian and salt marsh areas provide recreational opportunities and habitat, and are helping to improve local water quality. In addition, the Sinclair Inlet area will be connected to a regional trail system called the Mosquito Fleet Trail, a bike and pedestrian trail that runs along the shoreline of Kitsap County.

As these three examples show, brownfields can be turned into more than buildings and parking lots – they can be used for waterfront recreation, natural stormwater treatment areas and wildlife habitat. As with most brownfields projects, partnerships and dedicated local support are crucial for project success. When combined with the vision to restore a site, these attributes can turn brown to green.

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www.epa.gov/brownfields/