From Landfill to Landmark:

The Building of
The Save The Bay Center

Transforming a municipal dump into a nationally recognized coastal community resource

In the early 1900s, the area south of downtown Providence known as Fields Point was bustling with activity. It served as a popular getaway for Providence residents, who often strolled the length of a boardwalk and ate along the shore at Captain Atwood's Clambake, watching ships enter the Providence River. If those same people had returned in 2002, they would have found a dramatically altered and degraded shoreline, due to decades of use as an industrial site and later as a city dump. They would also have risked exposure to concentrations of methane gas, lead and arsenic dramatically exceeding the EPA's direct exposure limits for residential sites.

In the late 1990s, after 35 years of environmental protection and advocacy work, Save The Bay partnered with Johnson & Wales University to assemble the financial means, political will and engineering expertise to clean up this historic site and return it to a safe and vibrant community-oriented use.

Fields Point is one of many brownfield sites located along the Providence waterfront. Encompassing over 20 miles of shoreline with thousands of acres of adjacent property, the waterfront has long been a premium resource for supporting commerce and industry. Now, as a result of improving water quality and changing patterns of economic activity, the waterfront is regarded as a prime location for residential, recreational and mixed uses as well.

Smart Growth principles provide a valuable framework to balance economic, environmental and community goals throughout the Narragansett Bay watershed, and to highlight the benefits of redeveloping brownfields in urban coastal areas. Simply reusing a vacant brownfield in lieu of developing land elsewhere significantly reduces the impact on the environment by preserving alternative sites and promoting the use of existing infrastructure such as roads and sewers. Remediating or cleaning up a brownfield before development represents a second major benefit by eliminating a current and future environmental threat to the community and the surrounding watershed. If a brownfield is then developed in a way that further supports economic, community, environmental and public health goals, the benefits are compounded yet again.

Despite the benefits, there are significant obstacles that inhibit brownfield development. Completing the Save The Bay Center in 2005, Save The Bay learned firsthand about the additional effort and costs of acquiring the permits, community support, and financial resources necessary to redevelop a coastal brownfield site.

BACKGROUND

In the mid-1990's, Save The Bay recognized that it had outgrown its rented space in a decades-old former bank building. A study conducted in 1998 by a strategic consulting firm concluded that a new building would allow the organization to increase its operating efficiency and meet its growing commitment to Bay education and urban outreach.

A facilities committee was established to identify the organization's opportunities and requirements to meet its advocacy, outreach, and educational aspirations in a new

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administrative headquarters and visitor/education center. The committee delivered its report in October 1999, recommending that an environmentally responsible location and design be pursued to reflect Save The Bay's mission.

In many ways, location was as important as building design. Several factors led Save The Bay to the Fields Point site: First, proximity to the Bay was a strategic priority because it would provide Save The Bay with a means of running its water-based Bay education and habitat restoration programs. Second, reclaiming an urban brownfield reinforced Save The Bay's commitment to Smart Growth and sustainable development, and put Save The Bay close to the urban population whose connection to the Bay is so critical to long-term efforts to protect Narragansett Bay. Finally, being one of Providence's first coastal brownfield redevelopment projects allowed Save The Bay to make a statement and set a standard for Bay-friendly development.

Save The Bay actively searched for and considered several potential sites along the upper Narragansett Bay shoreline and the Providence River, finally selecting the Fields Point location off Harborside Boulevard in Providence, adjacent to Johnson & Wales' Harborside Campus. Securing development rights was made possible through a partnership with Johnson & Wales. In return for a long-term, $1-per-year lease, Save The Bay committed to cleaning and developing the site.

SITE HISTORY

Once an island called Sunshine Island, the Fields Point site is located less than three miles from downtown Providence on the southern tip of the former Fields Point Municipal Landfill. Used as a dump during the 1950s, 1960s and 1970s and then paved over as part of a drive-in theatre, the site is part of a larger 60-acre parcel owned by Johnson & Wales.

The Save The Bay parcel consists of 6.07 acres situated in an industrial setting, bounded to the east and south by the Providence River, to the north by a metal recycling facility and a chemical distributor, and to the west by a vacant lot.

Based on a review of historic aerial photographs, the earliest dating from 1939, it is evident that, during the dump's operation, approximately 22 acres of the Providence River were filled in with refuse dumped directly into the water. The photographs document that the area between the historic shoreline and Sunshine Island, which was previously located 500 yards offshore, was filled by 1965.[1]

In 1999, the pre-redevelopment topography of the site was relatively flat with a slight grade sloping downward to the west, and steeply sloping grades (15-20 ft. elevation differences) from the eastern and southern portions of the site down to the Providence River. Demolition debris was clearly visible along the slopes, with the remainder of the site overgrown with grasses and shrubs. No buildings or structures were present. Groundwater occurred from approximately 10-12 ft. below ground surface, and was classified as GB, presumed not suitable for human consumption without treatment. The site is located within the flood zone associated with Narragansett Bay.

PREVIOUS ENVIRONMENTAL INVESTIGATIONS (1987 TO 1992)

In August 1988, the US Environmental Protection Agency (EPA) listed Fields Point City Dump on its list of potential hazardous waste sites as part of the Superfund identification process. In 1990, the Rhode Island Department of Environmental Management (DEM) performed a Preliminary Assessment, including a file review of historical inspection reports, aerial photographs, and a limited site visit. No sampling was performed at that time. The Preliminary Assessment found indications of various types of wastes including household, commercial and industrial waste, demolition debris, junked vehicles, incinerator ash, and wood. The site visit identified piles of solid waste at the site including wood, plastic, papers, wire, tires, bricks, and empty rusted drums. Piles of asphalt, concrete, soil, steel grindings, and several junked cars were also documented. The Preliminary Assessment recommended completion of a full Site Inspection to more accurately assess potential hazards.

DEM subsequently completed a Site Inspection in December 1992. The Site Inspection included a file review, site visit, and four soil samples. The soil samples contained concentrations of polychlorinated biphenyls, semi-volatile organic compounds, and metals at levels exceeding the current Rhode Island State Industrial and Commercial Direct Exposure Criteria.

The 1992 Site Inspection Report recommended further investigative work under the Comprehensive Environmental Response, Compensation and Liability Act in order to more accurately assess the site's potential hazard. There was no further activity associated with the site until 1998.

SAVE THE BAY BECOMES INVOLVED WITH THE SITE

In 1998 Johnson & Wales University executed an option to buy the 60-acre parcel from then-owner David Friedman. Shortly thereafter, Save The Bay approached the University about the possibility of buying or leasing Lot 257 and building a new headquarters and education center. Johnson & Wales, having struggled with DEM over a settlement agreement, saw Save The Bay's interest as an opportunity to partner with an organization that could add momentum and a new perspective to the permitting process.

In 1999, Save The Bay was awarded an EPA Targeted Brownfield Site Assessment Grant. Knowing it would clarify the environmental problems and create the basis for estimating cleanup costs eliminated much of the risk associated with reaching a formal agreement with Johnson & Wales. In January 2001, Johnson & Wales and Save The Bay signed a 50-year lease. Save The Bay received the development rights to the property, but also committed to funding the clean-up and development of the coastal brownfield site.

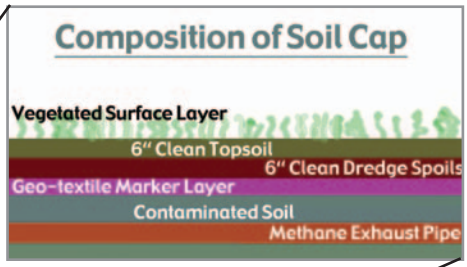
The Targeted Brownfield Assessment conducted in May 2001 included taking soil samples from 22 test pits and five soil borings. Four of the soil borings were used as landfill gas screening wells, and one was used as a groundwater monitoring well. The soil samples revealed the widespread presence of contamination at the site in the form of Total Petroleum Hydrocarbons (TPH); Semi-Volatile Organic Compounds (SVOCs); arsenic and lead; manmade fill or landfill material; and landfill gas containing methane. In August 2001, additional landfill gas screening wells were drilled. As a result, methane "hotspots" were identified in the west-central and northeast portions of the site.

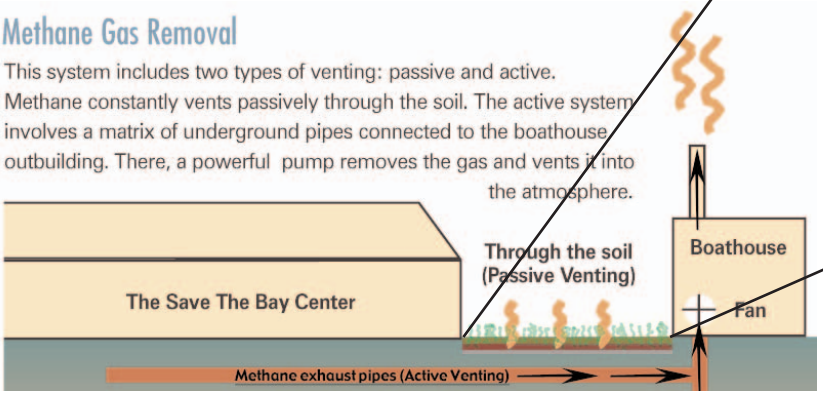
FINAL CLEANUP SOLUTIONS

To receive final approval from Rhode Island Department of Environmental Management, Save The Bay's environmental consultants prepared a Remedial Action Work Plan outlining the site remediation design documents, specifications and safety plans. The two main environmental concerns identified during the Site Assessment were soil contamination, particularly from lead and arsenic, and methane gas from decomposing organic fill material.

Soil Cap

To protect future users from direct exposure to contaminated soil, the entire site is "capped." The engineered cap is composed of a geo-textile "marker layer," six inches of clean dredge spoils, six inches of clean loam or top soil and a vegetated layer composed of plants selected for their shallow root systems that will not penetrate into the contaminated soils over time.





Methane

At various concentrations methane gas can have an unpleasant odor, be explosive or displace vital oxygen. Three systems were installed to protect the Save The Bay buildings from methane infiltration. The primary defense is an active venting system comprised of a matrix of perforated pipes connected to a large vacuum pump that draws methane out from underneath the building's foundation 24 hours per day. The second layer of defense is a spray-on rubber liner isolating the building's foundation and interior spaces from the methane-containing soils. If the vacuum pump were to fail because of a power outage, for example, the rubber liner would prevent methane from entering the building. The final level of protection is a methane detection system that would sound the building alarm if methane concentrations in the building were to exceed the safety benchmarks.

SITE HIGHLIGHTS

Storm Water Management: The six-acre site incorporates a number of innovative techniques to capture, filter and retain storm water. Pervious materials were used in the parking lot to reduce runoff. The lot is surrounded by bioretention swales and basins. This system captures and filters storm water that would otherwise flood the parking area and mix with road salts, oil and nutrients. The plants within the basins consume water and nutrients. Any remaining water eventually evaporates.

Public Access: The Save The Bay Center provides a public access point to connect the Bay and the surrounding community for the first time in almost 100 years. Thousands of visitors enjoy Narragansett Bay from this former brownfield and landfill site through our education programs, organized tours or by simply visiting the site to fish or picnic anytime between dawn and dusk.

Habitat Restoration: Save The Bay created a salt marsh and planted a coastal buffer of 20 different species of native shrubs, trees and grasses to act as a demonstration for both coastal brownfield property owners and coastal homeowners.

Over 3500 cubic yards of landfill from one-half of the site's shoreline were removed to create intertidal salt marsh habitat. A protective stone structure was placed at the seaward side of the salt marsh to reduce wave energy at this highly exposed site. Staff and volunteers planted salt marsh vegetation and annually monitor and maintain the plantings.

Save The Bay protects and restores salt marshes because they are an invaluable habitat for many animals including commercially important fish and shellfish, they protect shorelines from erosion and they trap sediments and pollutants that would otherwise end up in the Bay.

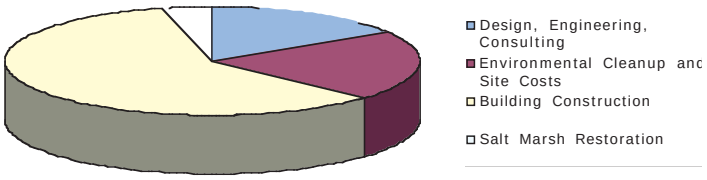
Green Building: The Save The Bay Center is a special building with a special mission. It provides classrooms for Bay educational programs as well as community meeting spaces. The building itself represents Save The Bay's approach to promoting environmentally smart building design. The vegetated roof reduces storm water runoff by absorbing rainwater. The building's southern orientation maximizes natural daylight, reducing the amount of energy we consume from interior lighting. Additional energy efficiency features mean that we consume half as much energy as a comparable structure built to current building standards.

CHALLENGES

Redeveloping an urban coastal brownfield presents many challenges. Save The Bay negotiated the complex state and federal permitting process, addressed long-term pollution liability issues, secured the necessary capital and long-term financing and grappled with the technical and engineering challenges associated with a coastal brownfield site. As an inexperienced developer with a social mission, Save The Bay learned many lessons the hard way, through trial and error. Our experience has been analyzed and documented in *From Landfill to Landmark: Highlights of Policy Lessons from the Coastal Brownfield Development of Save The Bay Center*, also available from Save The Bay.

COST SUMMARY

Design, engineering and consulting fees:	16%
Environmental Cleanup and Site Costs:	21%
Building Construction Costs:	59%
Salt Marsh Restoration:	4%
Total Project Cost:	**$7 Million**



Funding sources for Save The Bay Center project

NOAA National Ocean Service
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EPA – Brownfield Cleanup Revolving Loan Fund Administered through the RI Economic Development Corporation
U.S. Department of Agriculture Natural Resources Conservation Service
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[1] *Project Summary,*
Save The Bay Brownfields Redevelopment Project, EA Engineering