

A CASE STUDY: PRIORITIZING A CONTAMINATED BROWNFIELD SITE WITHIN MIAMI-DADE COUNTY IN THE CITY OF OVERTOWN

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FOR CLEANUP, REDEVELOPMENT AND REMEDIATION

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INTRODUCTION

- A brownfield is a former industrial or commercial site for which reuse or redevelopment may be complicated by presence of hazardous contaminants and pollutants (Environmental Protection Agency (EPA), 2018). While brownfields are generally understood to be former industrial sites, an estimated 500,000 to 1 million of those in the United States are smaller, abandoned properties such as gas stations, vacant lots, and dry cleaners (Bartsch, et al., 2005).
- The Brownfields and Land Revitalization Program was created under the EPA to issue grants and technical assistance to stakeholders, citizens, developers, etc. to provide resources needed to assess, clean up and reuse contaminated property.
- The EPA estimates there are more than 450,000 Brownfields in the United States alone and has been focusing their efforts in cleaning up these sites.
- Brownfield redevelopment is important as it provides socioeconomic value and opportunity by removing potential toxic contamination, subsequently providing jobs, contributing to the greater welfare of communities, and fostering relationships between investors and citizens within neighborhoods considered for redevelopment.
- The purpose of this study was to 1) select brownfield sites in the Southeast Region of FL that are most susceptible to sea level rise and 2) upon selection, recommend potential redevelopment projects by using one brownfield site as a case study.



Cleanup Grant Success Story in Tallahassee, FL, Before and After Remediation. After awarded Revolving Loan Fund in 2011, the City of St. Marks in Tallahassee, FL remediated a vacant lot filled with harmful toxins on Gaines Street and created a vibrant retail and apartment complex which added \$21.8 million in new value when added to tax rolls. (City of Tallahassee, 2011).

MATERIALS AND METHODS

- A dataset of brownfield sites from Miami-Dade, Indian River, St. Lucie, Martin, Palm Beach, Monroe and Broward the seven Counties made up the study area.
- GIS Data Mining:** a map overlay was created showing interconnecting sites with socioeconomic variables including: population density, percent of people below poverty, percent of people receiving food stamps and disabled, those that received bachelor's degree, those that completed high school, percentage who work between 25-44, percentage that do not work between 25-44, median income. Environmental hazards were collected for each county as well (registered polluters, radon index, Superfunds within 1 mile, number of tanks and spills, percent air quality, and UV index).
- Using GIS for site selection:** The study area was input into ArcGIS and a story map was created. Brownfield sites were ultimately ranked according to their vulnerability to SLR and various socioeconomic factors. A site that ranked highest in vulnerability was selected in Overtown, Miami, FL.
- A literature review of brownfield mitigation strategies and redevelopment projects:** Upon deciding on a site, I conducted more research on a brownfield in the city of Overtown. Further research was done on redevelopment techniques and processes done with other brownfield sites in areas or neighborhoods of a similar demographic caliber as Overtown, Miami, FL.

RESULTS



Figure 1. Map of Study Area: This figure maps the geographic makeup of the northern land region from Indian River County to the southern in Miami-Dade, Miami, St. Lucie, Martin, Palm Beach, Monroe and Broward are the seven Counties included in the study area. Vero Beach, Sebastian, Fort Pierce, Stuart, West Palm Beach, North Miami, Fort Lauderdale, Hollywood, Miami Beach, Homestead, Hialeah, Miramar, Boynton Beach, Boca Raton are major cities included within these counties.

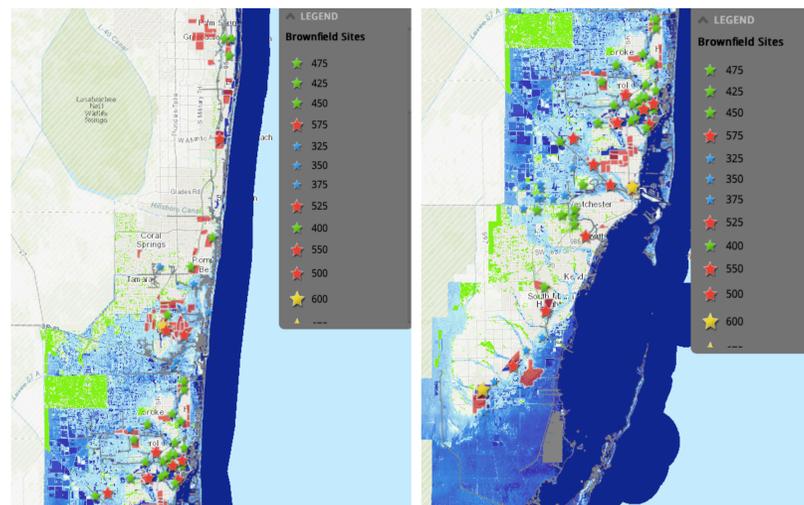


Figure 2a. Northern Region of Study Area: Brownfield sites ranked in terms of vulnerability. Green indicates the least vulnerable and yellow shows the most vulnerable. Those that scored the highest and are potential sites for environmental cleanup and redevelopment are yellow.

Figure 2b. Southern Region of Study Area: Brownfield sites ranked in terms of vulnerability. Green indicates the least vulnerable and yellow shows the most vulnerable. Those that scored the highest and are potential sites for environmental cleanup and redevelopment are yellow.

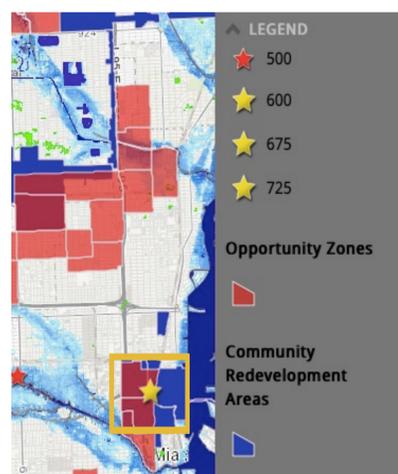


Figure 3. SE Overtown, Miami FL Brownfield Site: This brownfield site in SE Overtown was ranked as a highly vulnerable brownfield site in Miami-Dade County (MDC). Out of the larger study set, it was selected as a priority site for potential environmental cleanup and redevelopment.

Table 2. Environmental Hazards Data of Overtown, Miami, FL 33101: Variables that qualified the brownfield site in Overtown as highly vulnerable. (Homefacts, 2019)

| Type of Environmental Hazards | |
|--|--------------------------------------|
| Number of Registered Polluters | 12 |
| Number of Superfunds (within 1 mile) | 4 |
| Number of Tanks & Spills (within 1 mile) | 131 |
| Percent Air Quality | 95.02% |
| Radon (county and pCi/L) | ZONE 2 COUNTY (between 2 and 4pCi/L) |
| UV Index | VERY HIGH 8.53 Average |

Table 3. Demographic Characteristics of Overtown, Miami, FL (Statistical Atlas; US Census Bureau, 2017)

| Demographic Characteristics of Overtown, Miami, FL | |
|--|---------------------------|
| Race and Ethnicity | |
| Mixed | 0.7% or 68 individuals |
| White | 7.2% or 722 individuals |
| Hispanics | 23.7% or 2375 individuals |
| Black | 67.6% 6762 individuals |
| Asian | 0.8% or 77 individuals |
| Total Population | 10,004 individuals |
| Median Household Income | \$18.3k |
| Employment Status (25-64 years old) | 37.4% employed |
| High School Diploma | 45.6% or 3259 individuals |
| No High School Diploma | 33.4% or 2390 individuals |

DISCUSSION

- The results of my study led me to prioritize a brownfield site within Overtown to be redeveloped and remediated. Overtown was selected due to its high vulnerability ranking, with respect to sea level rise, demographic data, and environmental hazards within the area.
- Relative literature in comparable areas analyzed how community visioning and private-public partnerships effectively transform contaminated sites and increase socioeconomic value.
- Climate gentrification (CG) is making high ground the most valuable property and attractive to developers. Yet many people are already living in these neighborhoods surrounding these areas, which adds an environmental justice issue into the framework.
- Prioritizing brownfield clean up is essential to combating a public health concern, but redevelopment can only be fairly implemented if it takes all interest groups into consideration.
- Public-private participation tactics may include: sharing information via bill stuffers, community events/briefings, providing feedback via comment forms, a toll-free hotline and implementation of community facilitators to conduct public outreach. Additional tactics in bringing the community together included workshops, town meetings, and intensive sessions where participants design project features.
- Based on the similarities these case studies have with Overtown, I recommend developing a series of tactics to instigate connections between interest groups.

SUMMARY

Even though environmental pollution continues to become a real threat, there are still many brownfield areas that have not been properly cleaned up and redeveloped. In this study, we evaluated which brownfield sites in the Southeast region of FL were most susceptible to sea level rise and flooding impacts, cross-referencing these sites with socioeconomic data to determine community vulnerability to potential toxic contamination. The results showed that sea level rise in combination with these variables determined correlation with the vulnerability of brownfield sites. This understanding led to the selection of a site within the city of Overtown. Comparison of similar neighborhoods where brownfield redevelopment was instigated successfully, suggested that tactics and measures which enable public-private participation will foster successful redevelopment that benefit local stakeholders, developers, and simultaneously address implications of climate change. A change in action from top down to grassroots efforts would aid in the progress of sustainable development. In moving forward with redevelopment, it is important to develop a clean up plan that also addresses the needs of all parties involved. This can limit potential of an environmental and climate justice issue. There needs to be a balance between preservation of community culture, interests of developers to create a prosperous city, and actions to mitigate the consequences of climate change. Brownfield redevelopment can successfully clean up an area of potential contamination while developing opportunities to create a network of relationships among public and private sectors regarding sustainable living in an ever changing environmental world.

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