

A Holistic Approach to Sustainability: Lessons from the Lafitte Greenway Project in New Orleans, Louisiana

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ABSTRACT

The Lafitte Greenway is a 3.1 mile linear park of 65 acres (26 hectares) running from New Orleans' famous French Quarter through nine of the city's most historic neighborhoods. In addition to the greenway design, the project involved the creation of a revitalization plan for the adjoining neighborhoods and an operation and management plan for the greenway. A multi-disciplinary team, led by landscape architects included architects, civil engineers, ecologists, economists, as well as, experts in park management and operations and crime prevention through environmental design. An extensive public engagement process was also utilized.

The design methodology employed an evidence-driven approach considering over thirty categories of metrics embracing issues of environment, community, economics, and art. The project was benchmarked against the standards of LEED and Sustainable Sites but goes far beyond these frameworks to establish a new standard for sustainable design. Factors considered include: stormwater management, urban heat island, urban wildlife, native plant use, recycled content, public health, employment, tax generation, housing values, crime rates, and safe routes to school. The Lafitte Greenway and Revitalization Plans illustrate the benefits and challenges of a holistic approach to planning and design with lessons for future projects of all scales.

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Figure 1: The Lafitte Greenway is a 3.1-mile long city-owned right-of-way that was once used for the transportation of goods along an active rail corridor. It is currently envisioned as a vibrant multi-modal transportation corridor linking residents to City Park, the French Quarter and the heart of the city.



INTRODUCTION

The 3.1-mile (4.99 kilometer) linear Lafitte Greenway, one of the first revitalization projects since Hurricane Katrina (2005), is designed to become a vibrant, multi-modal transportation corridor linking residents to the heart of New Orleans. A multi-disciplinary team of landscape architects, civil engineers, ecologists, economists, crime prevention experts, park management consultants, and public engagement specialists incorporated public input, synthesized measurable objectives, and worked across a range of scales to plan and design one of the most important planned public spaces since the hurricane.

The footprint of the 65-acres (26 hectare) Lafitte Greenway (hereafter Greenway) includes what was once the Carondelet Canal (in existence between 1790s and the 1930s) and railroad rights-of-way (active 1850s-1950s). The Carondelet Canal, connecting the colonial community to Bayou St. John and then to Lake Pontchartrain, was one route through which commercial goods entered the city, first on shallow-draft boats (until the 1840s) and then via rail. The Lafitte Corridor (hereafter Corridor) includes the canal site and rail rights-of-way as well as adjacent neighborhoods in three blocks on either side of the Greenway (Figure 1).

The Corridor contains 13,583 residents and traverses a cross-section of the City reflecting its 200-year settlement pattern (from the colonial-era settlement of the Vieux Carré to the mid-twentieth-century suburban neighborhood of Mid-City). Presently, this district contains a vast spectrum of socio-economic conditions and racial compositions, creating a challenging context for community engagement. High crime rates in some of the neighborhoods required sensitivity to and special focus on safety and crime prevention.

This article described the design process and proposed design interventions as developed by Design Workshop (DW) for the Lafitte Project (Project), which includes design strategies for the Greenway and an economic revitalization plan for the Corridor. The design approach deploys research methods that seek to accomplish three objectives:

1. to measure the baseline site conditions;
2. to establish benchmarks with which the proposed design can be measured against comparable projects and established standards; and
3. to create a framework for determining the success of the design intervention over time.

The project began in spring 2009 is scheduled to begin construction in the fall of 2012.

LITERATURE REVIEW

The design team drew upon a broad range of writings, research, and previous experience to inform the design process and research methodologies. Over the last century authors such as Patrick Geddes (Geddes, 'Cities in Evolution'), Ian McHarg (McHarg, 'Design with Nature'), Ann Spirn (Spirn, 'The Granite Garden'), Michael Hough (Hough, 'Cities and Nature Process'), Danilo Palazzo, and Frederick Steiner (Palazzo and Steiner, 'Urban Ecological Design') have sought to define an ecological approach to urban design and planning. More recently, Charles Waldheim (Waldheim, 'The Landscape Urbanism Reader') and other writers in the field of landscape urbanism proposed that landscape design, rather than architecture, should become the primary means of giving form to the urban environment. Though these writers often reference empirical data in their writings, they seldom draw upon original research to test their theories. The absence of such empirical research suggests the need for landscape architects and other designers of the built environment to provide evidence of the benefits of McHarg's charge that we should "design with nature."

The last decade has seen a growing emphasis on evidence-based design in architecture and landscape architecture. In addition, over 100 metrics-based rating and certification systems have been created worldwide for design projects, including the LEED (Leadership in Environment and Energy Development) program of the United States Green Building Council and the Sustainable Sites program of the American Society of Landscape Architects. While the project budget for the Lafitte Greenway did not allow for formal certification review of the project under these two programs, the landscape architects, nonetheless, utilized these scoring systems as one measure of success in the design process.

Although community or social factors (such as walking distance to desired attractions) are inherent in some of the measures found within the LEED and Sustainable Sites program, both programs are primarily

focused on environmental performance. Issues of economics, social benefits, or aesthetic outcomes are not addressed. Research in other fields, such as in Lawrence Frank's work in public health (Frank, 'Health and Community Design') and Timothy Crowe's work in the area of crime prevention (Crowe, 'Crime Prevention Through Environmental Design'), seek to provide evidence of the relationship of community design to human well-being. The architectural profession has made major strides in the area of evidence-based design, particularly as related to the design of health care facilities, (Chong, 'Design Informed'). Elen Deming, Simon Swaffield, and others (Deming and Swaffield, 'Landscape Architectural Research') have called upon a greater emphasis on research within the profession of landscape architecture. Although research has historically been the domain of the academy, increasingly private firms in the United States and elsewhere (including Design Workshop, Olin, Sasaki Associates, and Mithūn Partners), are incorporating research methods into daily practice.

The documentation of landscape architecture research and evidence-based design is accelerating in the United States, in large measure through the Case Studies Initiative of the Landscape Architecture Foundation. The organization's landscape performance series matches private firms with university programs in landscape architecture to evaluate critically the performance of built landscapes against measurable objectives. It is not likely that private firms will develop the focus and skills needed to produce research of the highest quality, nor is it likely that all firms will embrace research as a means of enhancing design. However collaborations between the profession's academic and practice branches, such as the LAF Case Study Initiative, offer promise for the future. The experience of the first author in this program in 2011 and 2012 in assessing the performance of new community and streetscape projects further informed the methodologies employed in the development of plans for the Lafitte Greenway and Corridor. It is anticipated that the Lafitte Project (including specific strategies for both the Greenway and the Corridor) will be a future subject of the Case Study Initiative.

OBJECTIVES

In 1987, The United Nation's World Commission on Environment and Development Report (World Commission On the Environment), often referred to as the Brundtland Commission Report, defined sustainable development as "development which meets the needs of current generations without compromising the ability of future generations to meet their own needs." The report placed emphasis on the protection of natural resources, and issues of economic and social development, particularly for low income populations. Consistent with this definition of sustainability, the Lafitte Greenway represents the application of evidence-based design techniques to landscape architectural design focused on a holistic approach to sustainability, including consideration of economic, community, and environmental factors. To this definition

of sustainability, DW has added a fourth dimension: art (or aesthetics). This holistic approach, which DW has termed DW Legacy Design, balances all of these factors in a manner that produces outcomes that can be measured and evaluated against initial pre-design conditions (Jost, 'The Measured Response').

This article describes the challenges, successes, and failures of this method as applied to the Lafitte Project and suggests the potential of the application of a holistic approach to sustainability to landscape architectural projects.

FINDINGS

DW was retained by the City of New Orleans in 2009 to lead a multi-disciplinary team to complete four comprehensive tasks:

1. the creation of a master plan for Greenway (Design Workshop, 2012);
2. the generation of an economic revitalization plan for the Corridor (Design Workshop, 2012),
3. the detailed design and construction documents for Greenway design construction; and
4. the preparation of an Operations and Management Plan for the Greenway (Greenplay, 2012).

In planning and designing the Greenway, consultants followed a rigorous process to ensure that the work resulted in extraordinary outcomes with measurable results. Understanding critical questions through five overarching design principles (History, Environment, Art, Community and Economics) were pursued to create a project that incorporated long-term sustainability. Questions from these perspectives helped the design team form goals that were "SMART": specific, measurable, action-oriented, realistic and time-based. For each SMART goal, there was at least one metric with an associated baseline existing condition. Best practices, case studies and research from sources such as LEED ND and American Forests were compared to establish a benchmark for each metric. Evaluation of the community's issues and opportunities were then completed for each metric to help better understand how to accomplish the goals. The completed analysis of the baseline, benchmarks, issues and opportunities formed the target for each metric. Each metric has a set of strategies that has been integrated into the design of the Greenway and the revitalization recommendations for the Corridor.

The community engagement approach was comprehensive and inclusive of all segments of the New Orleans community, with specific focus on those neighborhoods and organizations within the Corridor. The overall strategy involved a series of three public meetings. The consultant team organized and led eight public presentations, held over 75 stakeholder meetings, posted on-line surveys and engaged eight constituent groups

Figure 2: Pre 1700's [Cypress Forest] Ciprière au Bois, also known as cypress forest in French, covered the land now known as the Lafitte Greenway.

1800's [Cypress Forest + Carondelet Canal] The canal became a key extension of the Bayou for maritime trade to the city and served as a public amenity and pedestrian promenade.

1900's [Cypress Forest + Carondelet Canal + Railroad] During the turn of the century, the rail line filled the site, further facilitating trade to the city, but also contributing to environmental degradation and a severe reduction in tree canopy. The bayou was channelized, and the negative effects of urbanization began.

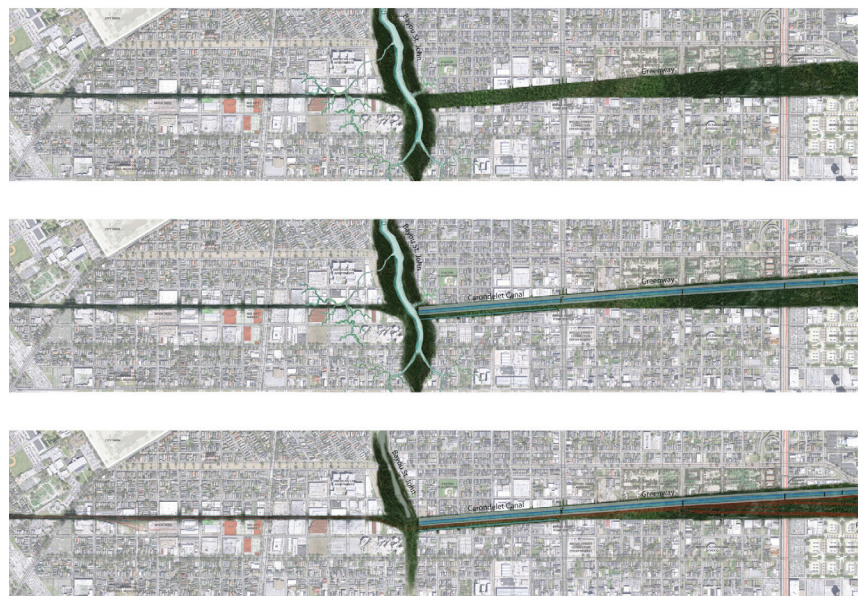
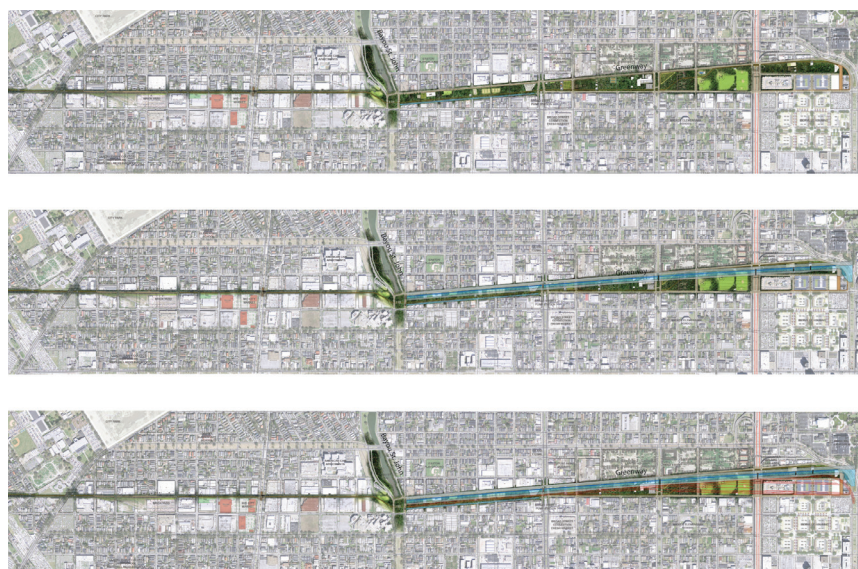


Figure 3: 2000's [Community Plan + Cypress Forest] As the area re-emerged as a potential Greenway, the consultant team investigated restoring the historic cypress canopy within new programmatic elements.

2000's [Community Plan + Cypress Forest + Carondelet Canal] Natural depressions and the historic alignment of the canal informed the design of a linear rain garden, which serves to reduce localized flooding for adjacent communities.

2000's [Community Plan + Cypress Forest + Carondelet Canal + Railroad] Artifacts and remnants of the partially removed railway become a catalyst for renewal and provide the framework for a "new" transportation network.



local schools (both high school and elementary.) This extensive public engagement strategy ensured a plan represented community input. Participants expressed appreciation for the public input process since it allowed them to see immediate results of their work in the actual design.

The overall design concept draws upon principles of historic ecology and is built upon a palimpsest which honors the rich layers of the site's history (Figure 2 and Figure 3) while it also takes community input, previous plans, project goals and metrics of success into account. The

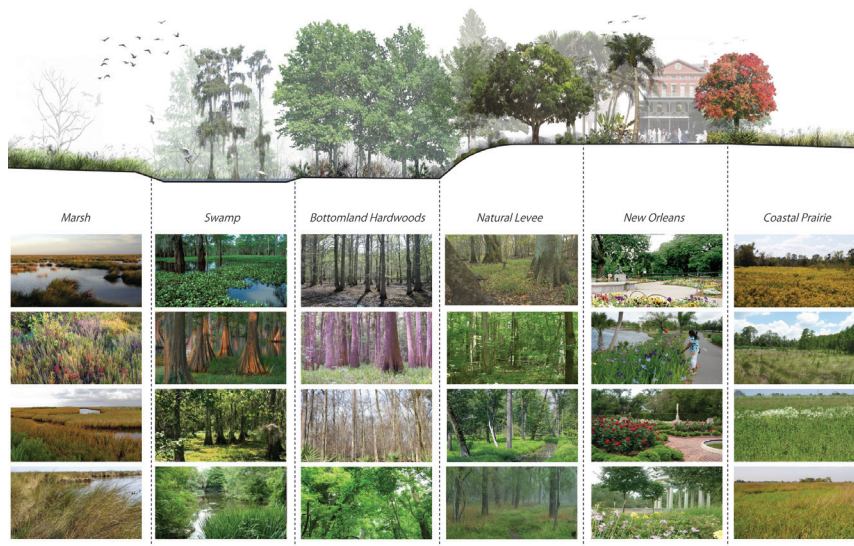


Figure 4: An in-depth analysis of the landscape typologies of the Greenway shows the diverse ecotones that bisect the Corridor and Greenway. Subtle changes in elevation inform the design of which types plant species will thrive in this complex environment.

historic alignment of late 18th-century Carondelet Canal is marked by a mile-long bosque of native bald cypress (*Taxodium distichum*), evocative of the *ciprière au bois* (Cypress Forest) which once covered the site. Within this grove is an ephemeral rain garden filled with seasonal displays of native Louisiana iris (*Iris fulva* spp). Rust-stained bands of paving trace the location of the train tracks which once traversed the site. Plantings reflect the natural vegetation patterns of south Louisiana with swamp species along Bayou St. John which then transition to bottomland hardwoods and upland species as the Greenway rises to the Metairie Ridge (Figure 4).

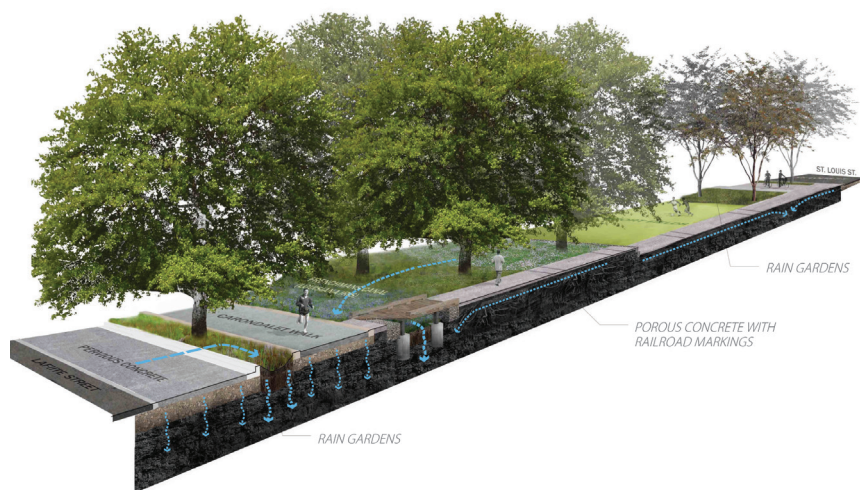
Programmed spaces were derived directly from the desires of surrounding community members and stakeholders. The design creates synergies between existing community facilities and designed elements of the Greenway, providing open space for formal and informal activities. Geo-referencing of 18th century maps identified the location of the Carondelet Walk, the historic tow path and public promenade of the Carondelet Canal. The new Carondelet Walk of crushed, recycled brick provides a secondary path within the park and a grand promenade, much as the original had done 200 years before. In addition to a being fine walking surface, a line of red brick dust wards away enemies and evil spirits, according to local tradition! A new community garden is placed where the Lafitte community garden, once the longest continuously operated community garden in America, was located.

The concept of the Lafitte Greenway was first put forth by a grassroots citizen organization, the Friends of Lafitte Corridor, and documented in an initial concept plan by Brown + Danos landdesign titled 'Lafitte Greenway Master Plan'. A second study by Waggonner + Ball Architects (Waggonner + Ball, 'Lafitte Greenway: Sustainable Water Design') proposed a stormwater strategy for the Greenway. In 2011, Design Workshop was hired to further advance a vision for the Greenway and for the revitalization of the adjacent neighborhoods.

The landscape architects created a system of performance metrics, baseline measurements and benchmarks in each of the categories of environment, community, economics and aesthetics. A number of positive outcomes will be achieved. For example, restoring the historic cypress tree canopy will result in an increase of 46 percent tree canopy coverage in the Greenway, and 100 percent of the stormwater falling on-site during the ten-year storm will be captured without the use of drainage infrastructure (Figure 5), thereby lessening the load on New Orleans' already overtaxed stormwater system. By retaining water on-site and allowing it slowly percolate back into the ground, the impact of soil subsidence will, over time, be substantially reduced. Finally, through the total use of native plant material, wildlife and bird populations are projected to quadruple.

Figure 5: The historic alignment of the Carondelet Canal is retrofitted as a rain garden that mitigates stormwater runoff from damaging adjacent businesses and residences. The design achieves goals of sustainability and health and human comfort by providing essential park space within the city, and creating an iconic Greenway for the future of New Orleans.

Lafitte Greenway + Revitalization Corridor | Welcoming Stormwater



The design for the Greenway incorporates sustainable design through green stormwater infrastructure, native plantings, adaptive re-use of existing buildings (Figure 6) and the reduction of impervious surface. The Greenway will be the first project in New Orleans to create measurable outcomes that aim to reduce urban heat island effects and to increase stormwater management capacity. Specifically, the restoration of the natural edge conditions of Bayou St. John will encourage fish and wildlife habitat, support bio-diversity and increase water quality. The re-configured community space, associated with the intersection of the Greenway and Bayou St. John, will provide a hill (in a landscape with no change in elevation) and amphitheater for local community festivals such as Bayou Boogaloo. More importantly, design attention to this area effectively creates a significant community-oriented urban space within an area of historical, economic, and geographical significance that heretofore had been ill-defined, ignored, and underappreciated.

The consulting team was charged with developing an economic revitalization strategy for the Corridor, areas adjacent to both sides

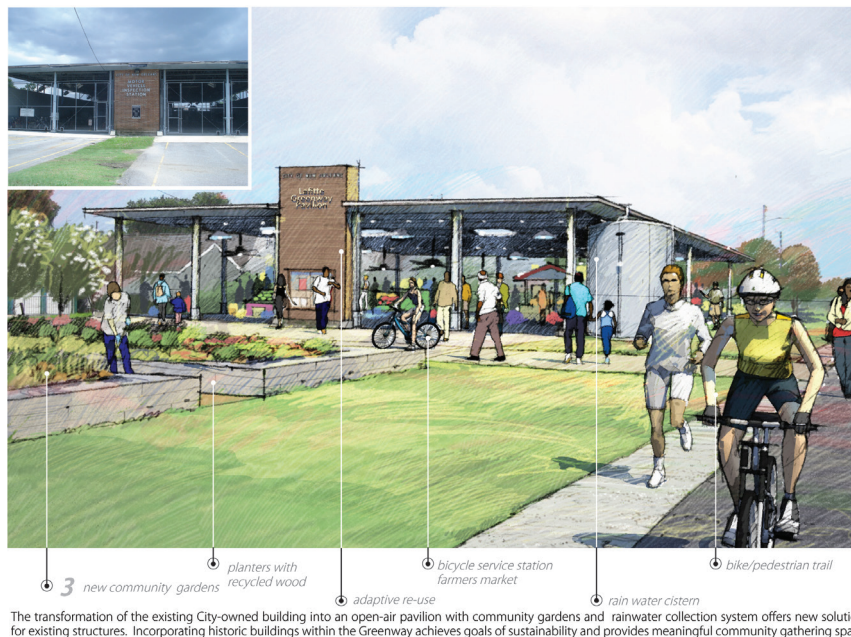


Figure 6: The transformation of the existing City-owned building into an open-air pavilion with community gardens and rainwater collection system offers new solutions for existing structures. Incorporating historic buildings within the Greenway achieves goals of sustainability and provides meaningful community gathering space.

of the Greenway. Included are strategies for Safe Routes to School; for a dramatic expansion of the community gardening program, meeting or exceeding LEED standards; and for the creation of mixed-use developments at major intersections. The landscape architects worked with community groups and other constituencies to ensure the Greenway was zoned as open space, thus avoiding use of the land for other purposes. A set of form-based development standards will supplement the City's new zoning ordinance to ensure orderly infill in response to this new civic asset. A corridor-wide strategy for stormwater management will also address the district's historic flooding problems.

As the Greenway will employ the most extensive use of green infrastructure and native plant material in New Orleans, the design team knew that it would be insufficient merely to build the Greenway, but also outline strategies and guidelines for operation and management. New Orleans may be unique among American cities in that responsibilities for its open spaces are divided between two City agencies: Parks and Parkways and the New Orleans Recreational Development Commission. The consulting team prepared maintenance budgets and protocols and facilitated management strategies of the Greenway between these two entities. Although it is estimated to cost \$35 million to construct the Greenway as fully realized, the City has only \$6.5 million dollars available for construction. In this in this climate of severe fiscal austerity, the consulting team was also called upon to develop partnership programs in which various civic groups could develop and fund portions of the project.

DISCUSSION

The application of this holistic approach to the Lafitte Greenway faced many challenges; foremost was the availability of baseline data. In most cases, the consultants were responsible for generating baseline data, a task not covered by the consulting fee. Crime statistics, for instance, were available for only half of the corridor from the local police department. As a result, it will be difficult to assess the impact of improved recreational and open space opportunities on the safety of the Greenway and Corridor. Current wildlife census data was unavailable, and collaboration with ornithologists at the University of New Orleans provided a baseline bird count for the Greenway. An independent research effort by the Tulane University Department of Public Health measured existing levels of physical activity by residents of the corridor, supplementing the design team's efforts. These independent resources provide valuable baseline data against which to measure the performance of the design over time in their respective areas. They also point to the importance of establishing research priorities early in the design process, as research initiatives of academic institutions are often set well in advance and often are structured to meet academic rather than pragmatic agendas.

Where national standards were available as a benchmark for project performance, site constraints or operational characteristics work against achieving desired performance. For example, a comparison of recreational opportunities within the Lafitte Corridor suggests an area dramatically underserved by park and recreational facilities. However, despite the large size of the Lafitte Greenway, the new park is not sufficiently large to make up the identified shortfall. The development of recreational facilities on existing school grounds or the use of the large medians (or neutral grounds) will be needed to make up the shortfall. While there is great emphasis in the United States on the creation of safe routes to school (and in turn reducing childhood obesity through exercise), such approaches are difficult to employ in New Orleans where students are allowed to attend any school in the city. This emphasis on school choice and absence of neighborhood schools increases educational opportunity for students, particular in lower income neighborhoods that have chronically poor schools, but works against the desire to strengthen the social structure of neighborhoods and to promote physical activity.

The application of metrics to landscape design is also hindered by the lack of knowledge and understanding in certain areas of practice. For example, plant selection for the Greenway is intended to dramatically increase bird habitat. However little is known regarding the minimum patch size of native plant material needed to be effective and a means of predicting the outcome of such strategies. Similarly, an initial instinct to increase habitat for squirrels and other mammals was abandoned when it was realized that the populations of squirrels, opossums, and raccoons in the city already exceeded those in the wild. The subject of urban wildlife management is but one example in which the application of research methods by private practice can create topics for future academic research.

Critics of the DW Legacy Design approach to sustainable design question the application of metrics to issues of art. In this context the word aesthetics may more appropriately be applied. There are numerous studies which have examined the ability of the public to assess scenic quality (Carlson, 'Environmental aesthetics'). While methodologies developed by the United States Forest Service and Bureau of Land Management are often applied to land management issues on the country's public lands, techniques such as visual preference studies are often applied to urban landscapes as well (Daniel and Buster, 'Measuring Landscape Aesthetics'). The Lafitte Greenway design process addressed this issue by asking the public to rate the current visual quality of the site, and then to rate the projected visual quality of the Greenway once master plan is implemented utilizing sketches and computer simulations. With this baseline data in hand, user surveys can be utilized to gauge the public's assessment of the visual quality of the completed project.

One of the biggest issues regarding a holistic approach to sustainability is the issue of competing objectives. For example, principles of Crime Prevention Through Environmental Design (CPTED) suggest the importance of visibility from surrounding streets in order to facilitate surveillance of the open space by the police and local residents, but shrubs and low branching trees can impede visibility. Optimum habitat design would suggest a diverse matrix of plant material with a wide variety of branching patterns. While safety can be maintained and habitat value enhanced, it is difficult or impossible to optimize for all factors.

There is an increasing desire in New Orleans to implement green stormwater strategies. Despite the importance of managing stormwater in a city largely built below sea level (Figure 7), budget limitations prohibit the implementation of grading strategies needed to optimize the stormwater solution. In a similar way, concerns about maintenance

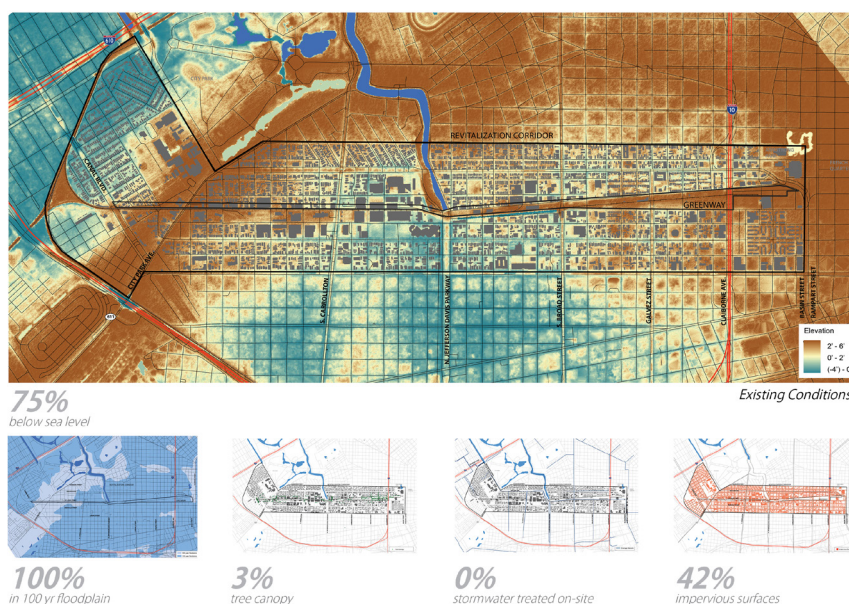


Figure 7: The hydrological goals for the Lafitte Greenway and Corridor focused on playing a role in the overall storm water management of the study area. The existing conditions metrics were used to understand the study area at multiple scales and revealed that the Greenway actually contributed to localized flooding of adjacent neighborhoods.

costs may limit the use of native plants and the construction of rain gardens needed to improve water quality. Government entities have fiscal limitations, particularly in the current economic climate, that require tradeoffs.

Another major issue of this holistic approach to sustainability is the need to understand the impact of design interventions on social factors. For example, baseline data now exists to understand changes over time in the economic, education, public health, and safety conditions of corridor residents. It is plausible that the creation of a major park within the corridor will provide recreational opportunities and alternatives to crime, as well as opportunities for improved public health (Figure 8). Time will tell if such conditions improve. However, demonstrating that such improvements are a direct result of the creation of the Lafitte Greenway will be more difficult.

Figure 8: Portions of the historic canal are re-envisioned as recreational urban spaces along the Greenway and provide interpretive opportunities to display ecological, artistic and historic processes. By capitalizing on the existing infrastructures, the design achieves multiple goals of mitigating storm water management and increasing quality of life.



The Lafitte Greenway example also demonstrates the complexity of achieving successful design interventions in a shrinking city. The Lafitte Corridor lost up to 30 percent of its population following Hurricane Katrina, placing stress on the community's economic health and social fabric. While the cleanup of the old rail corridor and its replacement with a major new open space will undoubtedly make the corridor a more desirable place to live, only time will tell if it is sufficient to reverse the decline in population.

Clearly the achievement of high performance landscapes becomes more complex when the additional dimensions of economics, community, and art are added to measures of success. The challenge also grows beyond the evaluation of a specific site to consideration of an entire district such as the Lafitte Corridor, or, by extension, to the entire city of New Orleans.



Figure 9: The barren brownfield site now known as the Lafitte Greenway currently bisects nine historic New Orleans' neighborhoods. While the Greenway currently acts as a divider of these neighborhoods, the design and revitalization strategy aims to unite these communities on a common ground.

CONCLUSION

The plans developed for the Lafitte Greenway and revitalization of the Lafitte Corridor respond to both the needs of adjacent communities and to the rich layers of the site's history, revitalizing the barren stretch of land into an active, lush, and sustainable green corridor (Figure 9). The plans seek to capitalize on under-utilized public open spaces, bringing residents of nine New Orleans neighborhoods together on a common ground. Taking a comprehensive approach to analysis and implementing a robust planning process, Design Workshop's plans for the Greenway and Corridor considers all voices and breathes new life into a linear green space for the rejuvenated Crescent City. The design team's intent was to create a holistic, sustainable solution for the Greenway and the revitalization of the surrounding Corridor. The success of the Greenway and Corridor Revitalization Plan in achieving stated objectives, however, can only be determined over time. Because the fundamental groundwork has been established through articulations of baseline conditions, the development of benchmarks of standards and best management practices of similar projects, and the establishment of measurable objectives, a post-occupancy evaluation of the Lafitte Greenway can be critiqued in a rigorous fashion against a broad spectrum of factors. In this way, a holistic approach to sustainability can move beyond the theoretically to become reality.

REFERENCES

- CARLSON, Allen (1998, 2011). Environmental aesthetics. In E. Craig (Ed.), *Routledge Encyclopedia of Philosophy*. London: Routledge.
- CHONG, Gordon, et al. (2010) *Design Informed*. New York: Wiley.
- CROWE, Timothy (2012) *Crime Prevention Through Environmental*

- Design. 2nd ed. Louisville: National Crime Prevention Institute.
- DANIEL, Terry and BUSTER, Ron (1976) Measuring Landscape Aesthetics: The Scenic Beauty Estimation Method. RM - 187.
- DEMING, Elen and SWAFFIELD, Simon (2011) Landscape Architectural Research. New York: Wiley.
- DESIGN Workshop (2012) The Lafitte Greenway Master Plan. Austin: Design Workshop.
- DESIGN Workshop (2012) The Lafitte Greenway Revitalization Plan. Austin: Design Workshop.
- FRANK, Lawrence et al. (2003) Health and Community Design. Washington: Island Press.
- FRIENDS of CORRIDOR, Lafitte and BROWN and LANDDESIGN, Danos (2007) Lafitte Greenway Master Plan. New Orleans: Friends of Lafitte Corridor.
- GEDDES, Patrick (1915) Cities in Evolution. London: Williams and Norgate.
- GREENPLAY (2012) The Lafitte Greenway Operations and Management Plan. Denver: Greenplay.
- HOUGH, Michael (1995) Cities and Nature Process. London: Routledge.
- JOST, Dan (2012) The Measured Response. Landscape Architecture Magazine, 102 (3).
- MCHARG Ian (1967) Design With Nature.
- PALAZZO, Danilo and STEINER, Frederick (2011) Urban Ecological Design. Washington: Island Press.
- SPIRN, Anne (1985) The Granite Garden. New York: Basic Books.
- WAGGONNER and BALL ARCHITECTS (2010) Lafitte Greenway: Sustainable Water Design. New Orleans: Waggonner + Ball Architects.
- WALDHEIM, Charles (2006) The Landscape Urbanism Reader. New York: Princeton Architectural Press.
- WORLD Commission on Environment and Development (1987) Our Common Future. Oxford: Oxford University Press.