

### 3. Recommendations

The preceding sections of this BGSi Concept Plan were developed to identify BGSi practices and strategies that will help manage stormwater and enhance climate resiliency by providing water quality benefits, freshwater lens recharge, and reduced localized flooding. The City has elected to achieve these goals by integrating BGSi into innovative urban designs that enhance the landscape, provide sustainability co-benefits, honor the local culture and aesthetic, add economic value, and enhance the quality of life for residents.

To achieve significant, widespread benefits, BGSi will need to be implemented throughout Miami Beach and the following recommendations aim to support the successful launch and scale-up of BGSi across the City.

- **Formalize BGSi requirements into existing policy, planning, and management systems.** For BGSi to achieve the requisite implementation scale and deliver the desired outcomes, specific requirements need to be integrated into the following:
  - **BGSi Policy.** Develop a policy that formally states the objectives of BGSi, including specific requirements to which the City will hold itself accountable, such as how BGSi will be incorporated into both public infrastructure and private development projects as well as retrofits of existing facilities. Existing governance processes (for example, audits and management reviews) should be updated to include confirming compliance with this policy.
  - **Codes, Ordinances, Zoning, and Permitting.** Current City codes, ordinances, and permits that affect stormwater management need to be reviewed and updated as needed to ensure they reflect a priority on BGSi solutions pursuant to the BGSi Policy that is developed. Existing relevant training and guidance for City staff and contractors should be updated to reflect the addition of BGSi priorities.



Highest and best use analyses of the public golf courses will inform potential BGSi implementation

- **Design standards.** Develop a design manual that updates or supplements the City's current design details, typical road sections, and specifications to include BGSi practices.

- **Master Planning and Land Use Planning.** All relevant existing and/or in-progress master plans (water, wastewater, stormwater, transportation, urban forest, etc.) should be reviewed and updated as needed to include BGSi practices and strategies. BGSi-specific master planning should be done at the neighborhood level and support DCP development. In addition, highest and best use analyses should be conducted for the two publicly owned golf courses to inform planning discussions regarding the degree to which BGSi should be implemented at these locations.
- **Capital Improvement Plans.** The current portfolio of capital improvement projects should be reviewed and opportunities to integrate BGSi should be identified. These already planned and funded projects represent a significant opportunity to achieve a robust start to BGSi implementation. Some projects may be good candidates for pilot projects that could demonstrate the benefits of BGSi (see Appendix E).
- **Align City Departments on BGSi Policy and Include BGSi in Cross-Departmental Management.** The range of BGSi implementation scenarios (for example, transportation, parks, private property, etc.) span the range of City departments, indicating the need for alignment across all Miami Beach departments on BGSi policy, planning, and implementation.



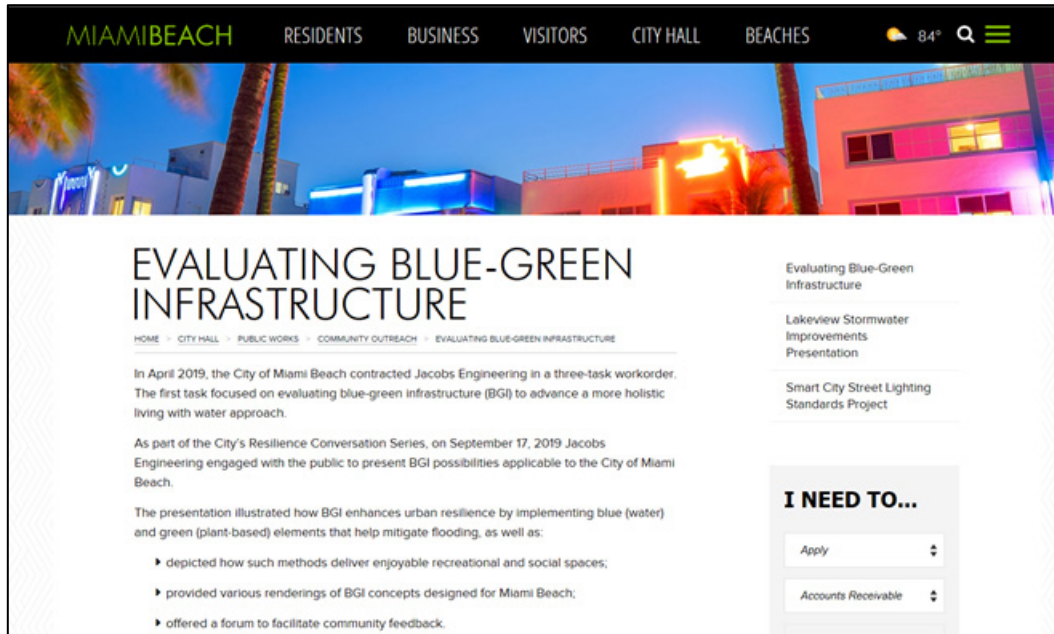
Parks like Maurice Gibbs often an excellent opportunity to demonstrate BGSi

- **Ensure long-term funding for BGSi implementation and maintenance, including incentives.** The successful scale-up of BGSi across the City depends on adequate funding for construction and long-term maintenance; the City should ensure adequate budgets are established each year. Additionally, to achieve the requisite level of BGSi implementation, practices will need to be implemented on both public and private property. The City should consider funding models that provide flexibility to contribute public funds to solutions implemented on private property because in some locations adequate public land may not be available and/or private land may provide a higher performance-to-cost return on investment. The City should also consider formalizing incentives (grants/rebates and stormwater fee credits) for the private implementation of BGSi. Any increase in the City's stormwater fee should be accompanied with a credit program that not only provides a return on investment for private implementation of BGSi, but also includes a formal mechanism for the City to require maintenance of private BGSi facilities and/or encourage private maintenance of public BGSi systems in the adjacent public right of way.
- **Implement a portfolio of demonstration projects across the range of recommended BGSi strategies.** Demonstration projects are needed to provide residents, developers, regulators, contractors, and City personnel with a deeper understanding of the best ways to plan and implement BGSi. Ideally, these demonstration projects would be supported by grants such that the City can contribute to advancing the science of implementing BGSi solutions in the context of climate

adaptation. These demonstration projects could be designed considering specific innovations and in partnership with regulatory agencies, academia, and the community, so that results would build support for BGSi solutions. Capturing lessons learned and integrating these into subsequent BGSi planning and design standards will be critical to success.

- **Develop BGSi innovation priorities.** The City should identify specific innovation priorities intended to support the scale-up of high-impact BGSi practices within the unique local context, geared to overcome a variety of factors (for example, land availability, policy, technology, financial) that could impact progress. Innovation could focus on:
  - **Technology.** This innovation area could focus on how best to leverage smart technologies, the internet-of-things, and digital solutions to monitor performance and drive greater efficiency and effectiveness of BGSi solutions. Digital solutions could also provide efficient ways to share results with the community and interested stakeholders that increasingly receive information real-time in digital format.
  - **One Water or Water Neutrality.** This innovation area could focus on integration of grey, blue, and green infrastructure solutions to maximize performance and lower overall lifecycle costs. Water neutrality may offer an opportunity to incentivize the strategic and financial participation of the private sector in scaling BGSi across the City by creating methodologies and programs that enable business to offset their consumptive water use through BGSi solutions that manage/ /infiltrate equivalent volumes of water and deliver co-benefits; this could include a recognition program for businesses that achieve neutrality in support of the City's sustainability efforts.
  - **BGSi Design.** This could focus on evaluating new and innovative BGSi technologies/techniques and combinations of these that are most effective in Miami Beach and could involve engaging with companies developing cutting-edge products to address local objectives, such as removal of specific pollutants of concern (for example, nitrogen, phosphorus, pathogens, and arsenic), and overcome implementation challenges, such as high groundwater, saline soils, and mosquitoes.
  - **BGSi Maintenance.** This innovation area could focus on meeting long-term maintenance needs of BGSi while also contributing to the development of a green economy workforce. Innovations in BGSi maintenance could be supported by the technology innovations (for example, smart sensors, mobile phone apps) discussed above.
  - **Alternative Delivery.** This innovation could focus on innovative financing and project delivery options. Innovative finance could include engaging the growing socially responsible investor community that are willing to provide lower-cost financing for solutions that deliver social and environmental benefits (for example, through environmental impact bonds). Innovative project delivery could include the purchase of BGSi performance from private enterprises that deliver BGSi solutions on private land.
- **Develop BGSi partnerships.** Full-scale implementation of BGSi will greatly benefit from leveraging a range of partnerships between government, business, academia, and civil society. Each potential partner has a different value proposition, so a formal strategy is recommended to guide partnership development and management. Potential partners types include:
  - **Conservation Organizations and Academia** – These partners can conduct research, augment technical understanding of risks and issues as well as recommend innovative solutions; they can also add credibility to, and voice their support for, plans and actions that support mutually beneficial goals.
  - **Regulatory Agencies** – These partners can help anticipate regulatory obstacles to innovative solutions and provide guidance on how they can be overcome. For example, one partnership could be with the Miami-Dade Regulatory and Economic Resources with a focus on how to resolve permitting issues related to BGSi.
  - **Technology Providers** – These partners can provide the range of measurement, data management, analytics, and visualization technologies that can support performance management/ optimization, real-time control, management decisions, and transparency regarding BGSi practices and their performance.

- **Private Sector Enterprises** – There is a broad range of potential partners from the private sector. These could include companies developing cutting-edge BGSi products, industry and commercial enterprises incentivized to support BGSi implementation, and socially responsible private equity firms providing low-cost financing for BGSi.
- **Miami-Dade County and Florida Department of Transportation.** Partnership with these agencies is recommended, given the scale of opportunity for implementing BGSi solutions on county and state roads.
- **Advance the Science.** An integrated understanding of the hydrologic, hydrogeologic, sea level rise projections, increasing rainfall intensities, and storm surge estimates is needed to provide perspective regarding how these different factors combine to influence the feasibility and performance of BGSi practices. Developing this integrated understanding may require additional hydrologic and hydrogeologic integrated modeling.



Miami Beach recently developed a website dedicated to providing information on BGSi

Source: [www.miamibeachfl.gov/city-hall/public-works/community-outreach/evaluating-blue-green-infrastructure](http://www.miamibeachfl.gov/city-hall/public-works/community-outreach/evaluating-blue-green-infrastructure)

- **Invigorate community engagement.** Miami Beach should continue community outreach on BGSi as its support will be critical to the successful scale-up of BGSi practices across the City. This could include programs that support or incentivize implementation of BGSi practices on residential property (for example, rain barrel and tree planting programs as well as assistance for rain gardens, permeable pavers, and other practices). A formal, long-term plan for continued community engagement should be developed and shared with the community so that it is aware of the process and can plan for participation. The engagement plan should consider ways to solicit meaningful input from millennials and other groups that may be less likely to attend in-person public meetings.