The Environmental Protection and Coastal Islands Chapter

Sarasota City Plan

and

Support Document

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The Environmental Protection and Coastal Islands Plan

INTENT AND PURPOSE

The City of Sarasota has an abundance of natural resources, including Sarasota Bay and a diversity of associated habitats and species. In response to national and local interests to preserve and protect the environment, the intents of this chapter are:

- to maintain and enhance the environment in the City of Sarasota,
- to seek a balance between man-made and natural systems,
- to provide adequate measures to protect life and property from natural disasters, and

to pursue actions that further Sarasota's Strategic Plan vision for "an attractive, environmentally-friendly community."

Sarasota's Strategic Plan Goal

In 2016, the City Commission adopted "the City of Sarasota's Strategic Plan", which provides that our Vision is to be a world-class community and treasured destination, with enduring natural beauty, charm, and diversity. The City's motto is "Where Urban Amenities Meet Small-Town Living." The Environmental Preservation and Sustainability Priority has the following goal which is of particular relevance to this Chapter:

"Recognize the vital role Sarasota's natural resources play in a healthy community and economy, and implement projects and policies that sustain them."

The natural environment is one of the City's greatest assets, and its protection is vitally important. While short-term concerns about hurricane vulnerability and disaster have more tangible relevance to City residents' safety, all of the issues of this Chapter may be the most important to ensure our long-term safety and survival. As such, The Environmental Protection and Coastal Islands Plan is organized as follows:

Goal 1: It shall be the goal of the City of Sarasota to protect, maintain, enhance, and, where appropriate, restore its natural environment.

Objective 1. Compliance with Existing Regulations;

Objective 2. Historic and Archeological Resources in the Coastal Area;

Objective 3. Land Uses Compatible with Coastal Resources;

Goal 2: It shall be the goal of the City of Sarasota to protect life and property in the coastal area from destruction by natural disasters.

Objective 4. Reduction of Exposure to Natural Disasters;

Objective 5. Safe Evacuation and Adequate Shelter during Natural Disasters;

Goal 3: It shall be the goal of the City of Sarasota to reduce greenhouse gas emissions both community-wide and within city operations, by implementing more sustainable practices, including green building technologies as well as sustainable low-technology strategies that take advantage of existing natural systems such as tree preservation, building orientation and the inclusion of operable windows.

Objective 6. Sustainability.

Goal 4: It shall be the goal of the City of Sarasota to adopt, implement and encourage strategies which increase community resiliency and protect human life, natural systems, cultural resources, and public and private property from the impacts of climate change.

Objective 7. Reduction of vulnerabilities.

Legal Requirements

Since the coastal and inland environmental systems are closely related, the City has combined the Coastal Management Chapter and Conservation Chapter, both required by the Local Government Comprehensive Planning and Land Development Regulation Act, into this Chapter. This Chapter addresses those State planning requirements and, also focuses on specific issues relative to the City's coastal islands.

The Environmental Protection and Coastal Islands Plan is one of the eleven plans which collectively represent the Sarasota City Plan. This Plan can neither stand-alone nor be interpreted independent of the others.

GOALS, OBJECTIVES AND ACTION STRATEGIES

Goal 1

It shall be the goal of the City of Sarasota to protect, maintain, enhance, and, where appropriate, restore its natural environment.

Objective 1 - Compliance with Existing Regulations

In addition to continuing the administration, enforcement, and compliance with existing regulations and policies, the City should pursue the following Action Strategies to achieve this goal. When applicable, the City shall coordinate its activities with other relevant public agencies to protect, enhance, and restore natural resources.

Action Strategies

1.1 **Requests for Development Approval:** During the review of requests for both public and private development approval, the City shall ensure that applications are consistent both with the relevant environmental components of this comprehensive plan and the most recently adopted and applicable local, regional, state, and federal plans and regulations. In addition to the City's Land Development Regulations, such as the Engineering Design Criteria Manual (henceforth EDCM), tree protection, and species-specific protection programs, other plans and regulations should be considered, such as those produced by the Southwest Florida Water Management District (henceforth SFWMD) and Sarasota Bay Estuary Program.

Each request for development approval (for rezonings, conditional uses, site plans, and subdivision plats) is unique in terms of location, use, intensity, and potential impact upon natural resources. Since approval of some required permits occurs at various stages, a finding of consistency with some regulations may occur after site and/or subdivision planning is complete. However, in no instance shall a certificate of occupancy permit be issued until all relevant environmental permits and approvals have been granted.

1.2 **Specific Natural Resource Protection Initiatives - Water:**

In addition to regulations listed in this action strategy, the City will continue to support and comply with all applicable city, county, state and federal laws to protect water.

Wellfield Protection: All development shall demonstrate that it will not pose a pollution hazard to potable water wellfields pursuant to any applicable federal, state, county or city regulations.

Potable Water Protection: The City shall coordinate with Sarasota and Manatee Counties and the Florida Department of Environmental Protection to ensure protection of the City's potable water sources and groundwater recharge areas.[1] The referenced regulations established wellhead protection areas to restrict activities within the wellhead protection areas which could contaminate the wellfields.

Bay Restoration: The City shall continue to conserve and protect the quality of water resources including the restoration of Sarasota Bay and its tributaries to comply with applicable state and federal water quality standards. This will be accomplished through the application and enforcement of the local, state and federal plans and regulations listed in Action Strategy 1.1 of this Chapter and compliance with U.S. Environmental Protection Agency, National Pollutant Discharge Elimination System Permit No. FLS000004. The provisions of this permit address but are not limited to the following:

- litter control and disposal;
- street sweeping;
- construction, operations and maintenance of storm water facilities
- operations and maintenance of solid waste transfer facilities;
- employee training and licensing programs related to herbicides, pesticides and fertilizers;
- inspections for illegal dumping;
- programs related to oil recycling and the proper disposal of hazardous waste; and
- public education.

Wastewater Discharge: The City shall operate the City Wastewater Treatment Plant in accordance with any permits required for its operation to reduce pollution from wastewater and minimize thermal and nutrient discharges. Additionally, the City will encourage wastewater reuse in order to reduce demand for potable water.[2]

[1] Pursuant to the Sarasota County Wellhead Protection Ordinance, or Manatee County Zoning Ordinance Section 704 (Groundwater/ Wellhead Protection), and the Florida Department of Environmental Protection Rule 62-521, Wellhead Protection that became effective in July of 1995.

[2] LEED GIB 14.

Stormwater Runoff: The quality and quantity of stormwater runoff shall continue *to be regulated in accordance with the EDCM t*o protect the quality of receiving water bodies by emulating natural hydrologic conditions.[3]

Water Conservation: The City shall cooperate with the Southwest Florida Water Management District in water conservation programs developed through the water use permit process.

Water Shortage Plan: In the event a water shortage is declared, the City shall support the Southwest Florida Water Management District's Water Shortage Plan.[4]

Water Planning Alliance: The City will coordinate its water supply planning efforts with this Alliance, which has been formed in the four-county area of the Peace River/Manasota Regional Water Supply Authority.

Sarasota County Manatee Protection Plan: The City shall enforce the provisions of the Sarasota County Manatee Protection Plan that are applicable within the City in order to protect water resources.

Continuing Support and Participation: The following are existing initiatives in which the City shall continue to participate. The City shall continue to:

- protect quality of water resources in accordance with the Sarasota City Code.
- participate in the Sarasota County Stormwater and Environmental Utility.
- support the Sarasota Bay Estuary Program and the implementation of the Sarasota Bay Comprehensive Conservation and Management Plan.
- pursue urban and agricultural reuse of reclaimed domestic wastewater as the City's primary method of wastewater disposal to reduce wastewater generation and potable water demand while allowing local aquifer recharge to occur.[5]
- conserve and protect the quality of water resources, including the restoration of Sarasota Bay and its tributaries to comply with applicable state and federal water quality standards. Provisions should maintain water quality such as through controlling potential waste sources, protect wildlife habitat, and preserve hydrologic functions such as flood protection.[6] Such provisions could also limit impervious development in proximity to bodies of water that connect to the Bay[7] and can involve public education.
- support the Charlotte Harbor National Estuary Program and the Charlotte Harbor Comprehensive Conservation and Management Plan.
- support and comply with applicable regulations which protect wetlands.[8]

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[3] GIB 8.
[4] Pursuant to Chapter 40D-21, Florida Administrative Code (F.A.C.), as may be amended.
[5] LEED WE 2
[6] LEED SLL 7
[7] LEED SLL P-3
[8] The applicable regulations shall include, but not be limited to, the most recently adopted and applicable documents, as may be amended, listed in Action Strategy 1.1 of this Environmental Protection Plan; Chapter 373, Florida Statutes; and Chapters 62-4, 62-40, 62-302, 62-340, and 62-342, Florida Administrative Code.

1.3 Specific Natural Resource Protection Initiatives - Vegetation:

Tree Protection: Trees, including mangrove stands, shall be protected with the exception of certain exotic pest species while conserving existing natural areas.[9]

Nuisance Trees and Vegetation: The City will continue to identify nuisance trees and vegetation and will describe criteria and measures for their removal. The City will pursue a program of removing nuisance trees and vegetation from City-owned public lands and encourages their removal from other public and private property.

Tree Protection Ordinance: The City shall periodically review the Tree Protection ordinance and make necessary revisions to insure it is achieving the intended purpose. Reviews shall consider best management practices for tree protection.

Urban Forestry Program: To support the "Urban Forestry Infrastructure" as a means of urban beautification, traffic calming, urban heat island mitigation, and air quality improvement,[10] the City shall:

- Inventory the urban trees and palms;
- Prepare a guide for selection, planting installation, and proactive maintenance care for public urban trees and palms; and,
- Allow for the private contribution of funds into a program that increases the number of trees in public spaces.

The City shall work toward achieving and maintaining Sarasota County's tree canopy coverage goal of 40% through application of the tree protection ordinance and preservation and management of a canopy with City rights-of-way and properties.

Florida Native Landscapes: The City shall use predominantly Florida native landscape techniques and plants for city-owned property and public right-of-ways in accordance to the Natural Transect and regulations in the Form-Based Code. Native drought-resistant and pest-resistant vegetation reduces the need for irrigation and fertilization outside of establishment and disease treatment.[11]

Fertilizer Ordinance: In accordance with Ordinance No. 07-4768, the City shall comply with the application of fertilizer consistent with Sarasota County Ordinance No. 2007-053.

Mangrove Protection: The protection of mangroves shall comply with the Mangrove Trimming and Preservation Act, Sections 403.9321 through 403.93333, Florida Statutes.

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[9] LEED SS 5.1. Species identified pursuant to the Tree Protection regulations contained within Article VII, Division 3.1 of the Zoning Code.
[10] LEED NPD 14
[11] LEED WE 1

Native Habitat Restoration and Management: The City will explore the creation of a native habitat restoration and management strategy. This strategy may include coordination with Sarasota County's Environmentally Sensitive Lands Protection Program, development of a habitat and natural resources inventory, and acquisition of property through various methods, including the use of Florida Forever funds, to restore damaged environmental systems, manage and protect natural resources, and to increase public access to natural resources.

1.4 **Specific Natural Resource Protection Initiatives - Wetlands:** The City will continue to support and comply with applicable regulations which protect wetlands. The applicable regulations shall include, but not be limited to, the most recently adopted and applicable documents, as may be amended, listed in Action Strategy 1.1 of this Environmental Protection Plan; Chapter 373, Florida Statutes; and Chapters 62-4, 62-40, 62-302, 62-340, and 62-342, Florida Administrative Code.

1.5 **Specific Natural Resource Protection Initiatives - Wildlife/Wildlife Habitats:** The City will continue to support and comply with applicable regulations which protect fisheries, wildlife and wildlife habitats.

1.6 **Sea Turtle Protection:** The City shall continue to coordinate with Sarasota County in regards to enforcement of the "Sarasota County Sea Turtle Protection Ordinance" within the City limits.

1.7 **Specific Natural Resource Protection Initiatives - Hazardous Wastes:**

Hazardous Wastes: The City will continue to support and comply with regulations applicable to the collection and disposal of hazardous waste.

Hazardous Wastes: The City will cooperate with Sarasota County in the Amnesty Days program to collect and safely dispose of hazardous wastes.

Underground Storage Tanks: The City will cooperate with Sarasota County in the Underground Storage Tank Program, which provides for annual inspections of regulated storage tanks and provides technical and fiscal oversight of site assessment and cleanup.

1.8 **Specific Natural Resource Protection Initiatives - Air:** Activities which generate air contaminants shall be regulated pursuant to the Sarasota City Code. The City shall continue to support and comply with all applicable county, state and federal laws to protect air quality. This City will also support Sarasota County's efforts to monitor ambient air quality.

1.9 **Specific Natural Resource Protection Initiatives - Aircraft Noise:** The City shall continue to coordinate with and monitor the Sarasota-Bradenton Airport Noise Compatibility Program and its recommended land use strategies. The City will support the establishment of a new noise monitoring station in Newtown if, in the

future, the Newtown community becomes included in the airport's 65+ DNL noise contour. In that event, the City and Airport Authority will jointly develop a noise mitigation strategy.

1.10 **Specific Natural Resource Protection Initiatives - Dredging:**

Dredge Spoil Sites within the City: The City will allow the disposal of dredge material within the City limits for the renourishment of Lido Beach, subject to approval by the City.

Dredge Spoil Sites Outside the City: The City shall coordinate with appropriate state and federal agencies, nearby local governments and counties, and the public in identifying dredge spoil disposal sites.

Whitaker Bayou Dredging: To mitigate potential environmental impacts and prevent the dispersion of existing sediments and any possible deposits of heavy metals in Whitaker Bayou, the City or other applying agency will secure all required permits prior to any potential dredging for navigation or flood control purposes.

1.11 **Specific Natural Resource Protection Initiatives – Manatees:**

Manatee Protection Plan: The City hereby adopts the **Sarasota County Manatee Protection Plan** as a component of the *Sarasota City Plan* in order to reduce human-related threats to manatees and their habitat. The City shall follow and implement the resource protection strategies in the **Sarasota County Manatee Protection Plan** aimed at protecting manatees. The City shall amend its land development regulations to include a requirement that development proposals be consistent with and further the **Sarasota County Manatee Protection Plan**.

Boat Facility Siting Plan: The development of new and/or expansion of existing boat facilities of five or more wet or dry marine slips shall be consistent with the Boat Facility Siting Plan component of the **Sarasota County Manatee Protection Plan**. The City shall amend its land development regulations to include a requirement that the location of all boat facility development proposals be consistent with the Boat Facility Siting Plan.

The **Sarasota County Manatee Protection Plan** shall not be interpreted or applied within the City exclusive of other provisions of the *Sarasota City Plan* and the City Land Development Regulations which identify and determine allowable land uses.

1.12 **Specific Natural Resource Protection Initiatives – Bayfront Mooring Field:** A bayfront mooring field shall be developed and maintained in the vicinity of Bayfront Park in an environmentally responsible manner in accordance with permits issued by the State of Florida and Federal agencies.

1.13 **City Coordination with County Environmental Programs:** The City shall review and coordinate with Sarasota County regarding programs and policies that protect the environment, and will consider adopting County environmental protection ordinances on a case-by-case basis.

Objective 2 - Historical and Archeological Resources in the Coastal Area

By reducing long-term resource consumption, historical preservation acts as a sustainable practice. As such, the City's Historic Preservation program shall continue to identify historic and archeological resources that represent significant contributions to our cultural landscape through embodied energy and cultural value in the coastal area.[12] The program shall also continue to promote, protect, enhance, and perpetuate structures, sites, and districts of historical, architectural, and archaeological merit. Please refer to the Historic Preservation Chapter and Zoning Code for further information.

Objective 3 - Land Uses Compatible with Coastal Resources

The City shall continue to provide for land uses that are compatible with coastal resources.

Action Strategies

3.1 **Water-Dependent Land Uses:** Water-dependent land uses which are consistent with the Future Land Use Map shall be given priority in the development/redevelopment of land adjacent to the coastline. Maintaining existing waterfront land for water-dependent land uses shall be a priority for the City.

3.2 **Shorelines:** The City shall coordinate with the appropriate federal, state, and county agencies to retain primary authority over private docks, seawalls, and shoreline alteration.[13]

3.3 **Shoreline Land Use:** Recognizing that the City of Sarasota is a nearly built-out city and that it is not a port city, the Future Land Use Map, related Future Land Use Plan action strategies, and other relevant action strategies contained in this *Sarasota*

[12] LEED GIB 6

[13] pursuant to the Land Development Regulations. Appropriate members of City staff will communicate as necessary with officials from federal, state, and local agencies as needed to determine whether Land Development Regulations should be revised in order to retain the primary authority.

City Plan will guide shoreline land use decisions. Such decisions should consider, for instance, the potential effects of the built environment on erosion, habitat preservation for native species, and integration with existing plans by departments such as the Sarasota Bay Estuary Program.

3.4 **Pedestrian Access Along Shoreline:** In the event that shore hardening is permitted and constructed along the shore, the City encourages property owners to provide for public, pedestrian access parallel to the shore (through easements and appropriate walkway structures). In the event that public access is not provided, the City may consider acquisition of property(s) or easement(s) in order to provide access.

3.5 **Beach Protection:** The City shall continue to protect beaches, dunes, and coastal vegetation from vehicular traffic, and dunes and coastal vegetation from pedestrian traffic. The City shall continue to prohibit the operation and parking of motor vehicles upon public beaches except in locations specifically designated for such driving and by government employees on official business. Dune walkover structures shall be required at all beaches to prevent impacts to native vegetation and dune systems.

3.6 **Impervious Surface Area:** The City shall continue to explore reducing the amount of existing impervious surface in the Sarasota Bay watershed and seek alternatives for reducing impervious surface area in future development.

3.7 **Coastal Islands Maximum Impervious Surface Overlay Map:** The maximum impervious surface coverage for parcels located on the coastal islands is displayed on Illustration EP-16, Coastal Islands Maximum Impervious Surface Overlay Map.

3.8 **Impervious Surfaces on Coastal Islands:** The City shall further evaluate the reduction of impervious surfaces for sites located on the coastal islands. Impervious surfaces shall be minimized to the maximum extent feasible, especially for parking surfaces.

3.9 **Additional Resource Preservation:** In addition to beaches and dunes, the City will also continue to preserve and protect other naturally occurring habitats, such as seagrass beds and coastal vegetation.

3.10 **Traffic Calming:** The City will develop and maintain a traffic calming program for the coastal islands as well as other areas of the City. Traffic calming initiatives in the city should make decisions that will reduce vehicle speeds; increase driver awareness of their surroundings; improve safety for pedestrians, cyclists, and drivers alike; and enhance the quality of life for residents, encouraging livability through security, quality of greenspace, and maintaining a predominantly residential atmosphere. Such a program should take into account that engineered design speeds are a major contributor to driver behavior, and should not expect that posting speed limits below the design speed will be sufficient to slow traffic.

3.11 **No Expansion of Resort Residential Classification:** In order to promote neighborhood compatibility for new development, the Resort Residential Future Land Use Map classification shall not be expanded on Lido Key.

3.12 **Coastal Islands Maximum Building Height Overlay Map:** The maximum building height for parcels located on the coastal islands are displayed on Illustration EP-15, Coastal Islands Maximum Building Height Overlay Map.

3.13 **Variances:** Due to the dynamic and fragile environment of coastal islands, variances from minimum zoning lot size requirements and from maximum building coverage limitations shall be prohibited on coastal islands.

3.14 **Locations where a Marina or Mooring Field shall be Excluded:** No marina or boat mooring field shall be developed in the waters in the vicinity of southern Lido Key, Otter Key, or St. Armands Key.

3.15 **Prohibition of Shoreline Hardening:** Except in the case of emergency as provided in Chapter 161, Florida Statutes, the construction of new artificial shoreline hardening structures shall be prohibited. This action strategy does not preclude the maintenance or replacement of existing shoreline hardening structures.

Goal 2

It shall be the goal of the City of Sarasota to protect life and property in the coastal area from destruction by natural disasters.

Objective 4 - Reduction of Exposure to Natural Disasters

The City, working in cooperation with the Sarasota County Department of Emergency Management, shall continue to reduce the exposure of life and property to natural disasters and discourage population concentrations in the coastal high hazard area.

Action Strategies

4.1 **Development and Evacuation:** The City shall ensure that future development within the Coastal High Hazard Area does not occur in amounts, types, or locations that would cause total evacuation time to exceed those established by the City's Emergency Operations Plan; that is, they shall not exceed more than 16 hours.

4.2 **Storm Damage Minimization:** The potential for storm damage shall be minimized through compliance with applicable Land Development Regulations[14]. In general, these regulations should ensure that proposed changes will not endanger the stability of the beach-dune system; will not accelerate erosion; and will be consistent with the Florida Department of Environmental Protection regulations.

4.3 **Federal Emergency Management Act (FEMA):** The City will continue to participate in the Federal Emergency Management Act Community Rating Systems (CRS) Program, which involves meeting higher than minimum FEMA standards. The CRS program includes but is not limited to: the City's adopted flood plain management program which deals with strategies to lessen flooding and respond to emergencies; and annual reports to the CRS Program on the City's progress and effects of any storms.

4.4 **Neighborhood and Development Services Department Procedures:** The City shall consider procedures recommended by the Insurance Service Organization, which reviews and rates Neighborhood and Development Services Department procedures. If recommendations are found to be feasible, the Neighborhood and Development Services Department will develop strategies for implementation.

4.5 **Emergency Operations Plan:** The City shall employ the hazard mitigation annex of the Emergency Operations Plan, for the purpose of coordinating all preparedness, response, recovery and mitigation activities which includes, but is not limited to:

- assigning responsibilities and establishing procedures for governmental agencies, volunteer agencies, and individuals, in preparing for and executing disaster related operations[15] of designated areas of Sarasota;
- relocation of coastal residents, residents of mobile home parks, and residents of low-lying areas subject to flooding; and
- providing maximum warning time possible to residents of those areas which are deemed to be in danger.

4.6 **Coastal Property Acquisition:** The City will consider measures, including the acquisition of coastal property subject to frequent damage during natural disasters, to reduce the exposure of life and property to future disasters.

4.7 **Post-Disaster Redevelopment Plan:** Immediately following each major disaster, the City shall evaluate the Damage Assessment Team(s) reports and develop a

[14] Florida Building Code (2014); Coastal Construction Code; Sarasota Zoning Code & Form-Based Code, which regulates construction in the high wind areas and areas of special flood hazard and uses conservation districts as overlay zones to protect land uses in certain environmentally sensitive areas including coastal areas, beaches, dunes and marshes; the EDCM, which mandates stormwater attenuation and requires that external drainage systems shall be built to the 25-year/24-hour storm event; and operational provisions to recover from damage caused to the sanitary sewer system caused by severe storms.

[15] Disaster related operations include evacuations, re-entry, search & rescue, distribution sites, damage assessment, road clearing, debris removal, and other associated functions.

specific post-disaster redevelopment plan in coordination with Sarasota County. The intent of the post-disaster redevelopment plan will be to repair damaged infrastructure needed for health and safety; to coordinate long term recovery operations to City infrastructure and public structures; and aid the City's economy to return to pre-disaster competitive status. The plan will include funding and staffing estimates, set priorities for post-disaster efforts, and develop criteria for deciding the order of importance in which the elements of the City's economy are to be aided.

4.8 **Public Fund Expenditures in Coastal High Hazard Area:** Prior to locating new public facilities or public infrastructure in the coastal high hazard area (CHHA), alternative locations outside of the CHHA shall be explored and evaluated. The expenditure of public funds on infrastructure in the CHHA shall be limited to:

- New public facilities and public infrastructure which cannot feasibly be located outside of the CHHA;
- Restoration, maintenance, enhancement, relocation, mitigation, or replacement of Natural resources; Passive recreation facilities; Facilities and uses which further the land uses on the Future Land Use Map; and Facilities necessary to ensure the health, safety, and welfare of the public or sustain the financial integrity of the City, such as: Police stations, fire stations, medical facilities, bridges, roads, public rest rooms, performing arts centers, and auditoriums.

4.9 **Limitations on Rebuilding:** The City will define in the Land Development Regulations provisions that limit and/or prohibit the reconstruction of certain non-conforming structures or nonconforming portions of structures in the event that they are destroyed to an extent of more than seventy-five percent of their replacement value at the time of destruction.

4.10 **Minimizing the Risks of Natural Disasters:** The City will coordinate with Sarasota County utilizing the Local Mitigation Strategy (LMS) Plan for the purpose of minimizing the risks of natural disasters. The LMS Plan includes an assessment of vulnerabilities to natural disasters and mitigation initiatives to minimize risks. Mitigation initiatives include:

- Acquisition of hazard prone/repetitive loss property and conversion to open space;
- Retrofitting existing buildings and facilities,
- Elevation of flood prone/repetitive loss structures,
- Vegetative management and soil stabilization,
- Infrastructure protection measures,
- Stormwater management,
- Minor structural flood control projects,
- Post-disaster code enforcement activities,

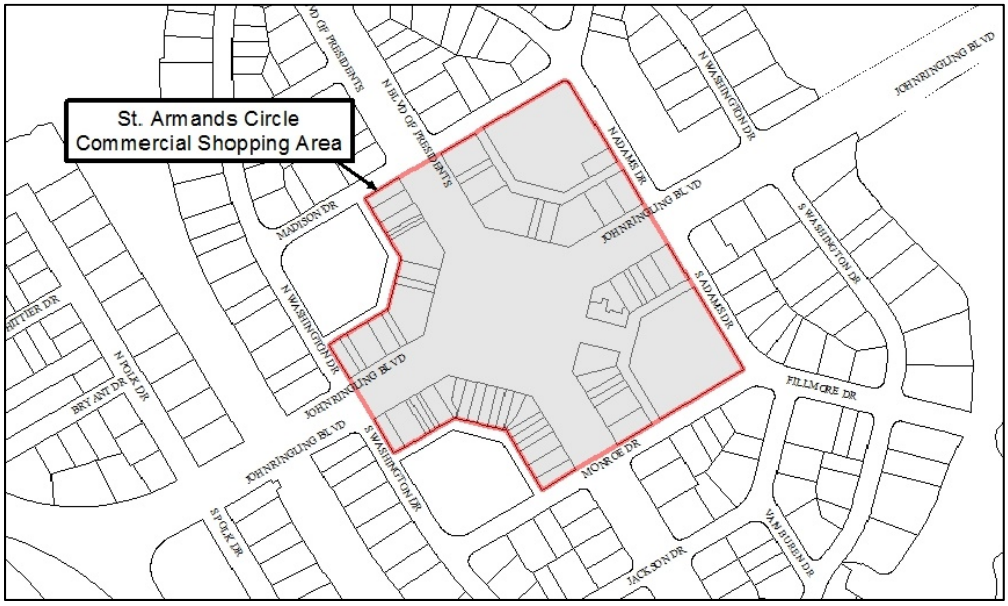
- Education, and
- Dissemination of grant opportunities.

4.11 **Renourishment of the City's Beaches:** The City shall continue its program of periodic beach renourishment in order to protect upland property and to support the economic benefits of tourism. The City shall pursue grants and other funding sources to assist in the renourishment of the City's beaches for the protection of public and private property.

4.12 **Passive Recreation:** The City encourages that recreational activities on and adjacent to beaches minimize impacts to natural resources and the environment.

4.13 **Coastal Construction Control Line:** The City shall not issue permits for structures seaward of the Coastal Construction Control Line (CCCL) that do not have the appropriate permit(s) issued by the Florida Department of Environmental Protection unless the structure is exempt from requirements of Chapter 62B-33, Florida Administrative Code. Construction activities seaward of the CCCL shall be consistent with Chapter 161, Florida Statutes.

4.14 **No Increase in Future Land Use Map or Zoning Density:** The City shall not approve amendments to the Future Land Use Map (LU-6), Zoning Atlas, or zoning text that increase residential density on the coastal islands as identified on Illustration EP-14. However, as an exception to this action strategy, the City may allow for an increase in residential density within within the St. Armands Circle commercial shopping area for the purpose of creating residential liner buildings that screen non-residential uses from residential uses as determined through a master planning process. The Commercial Shopping Area is delineated in the illustration below.



4.15 **Flood Resistant Construction:** To assure appropriate and safe development in coastal areas, the City shall enforce the most recent adopted standards of the Florida Building Code, including flood- and wind-resistant construction requirements, and applicable flood plain management regulations set forth in 44 C.F.R. part 60.

4.16 **Placement of Future Infrastructure or Buildings:** The City shall consider sea level rise and storm surge data and modeling projections when evaluating locations and planning the future placement of public infrastructure and buildings. When infrastructure or buildings are placed in a potentially vulnerable location, such infrastructure or buildings shall incorporate a design that is resilient to potential flood or storm surge events.

4.17 **Evaluation of Infrastructure and Structures:** The City shall evaluate public infrastructure and structures that are at high risk to potential sea level rise and frequent storm surge and flood events. Adaptation strategies for at-risk infrastructure and structures may include:

- Protection through engineered mitigation techniques designed to decrease vulnerability of facilities;
- Accommodation by altering the design of facilities through measures such as elevation or stormwater improvements to allow facilities to stay intact;
- Managed relocation of existing facilities to lower risk locations; or
- Avoidance of future development in high risk areas unless the location is necessary to provide for the health, safety, and welfare of the general public.

Upon completion of this evaluation, the city shall update the comprehensive plan to include site specific strategies that address needs for vulnerable infrastructure and structures.

4.18 **Adaptation Planning Horizons:** The city shall utilize two planning horizons for flood zone adaptation planning including the Evaluation and Appraisal Report timeframes and a 30 year timeline for flood zone adaptation planning and infrastructure investment or retrofitting.

4.19 **Enhanced Stormwater Facilities:** The City shall work with Sarasota County to identify improvements that will enhance the stormwater management system in flood prone areas.

4.20 **Gulf of Mexico Waterfront Setbacks:** Where property is located adjacent to the Gulf of Mexico and lying between New Pass and Big Pass, the gulf-front setback shall be 150 feet from the mean high-water line; provided that gulf-front setbacks on zoning lots with a depth less than 250 feet shall be reduced in order that the building area, including the front yard, shall be 100 feet in depth.

4.21 **Construction in Special Flood Hazard Areas:** Within Special Flood Hazard Areas, new construction and construction that is deemed a substantial improvement shall meet or exceed the requirements under the Florida Building Code that is in effect at the time of building permit application. Requirements in the Florida Building Code vary by location and type of structure. Examples of these requirements include, but are not limited to, elevation of the lowest habitable floor of structures and mechanical, electrical, and plumbing equipment to or above base flood elevation; floodproofing of non-residential structures; or construction of structures on pilings or columns with break-away walls and stairs.

4.22 **Best Management Practices in Flood Prone Areas:** The City shall allow for best management practices to manage stormwater in flood prone areas by including design strategies in the Engineering and Design Criteria Manual and Zoning Code such as: shared parking, the use of pervious surface materials, bio swales and other Light Imprint Design techniques.

4.23 **Living Shorelines:** The City of Sarasota shall encourage shoreline softening through vegetative projects, habitat restoration planting, and Living Shorelines. Living Shorelines are defined as projects built with various structural and organic material, such as plants, submerged aquatic vegetation, oyster shells and stone. Natural and Living Shorelines shall be considered preferable to hardened shorelines. The City shall work with the Sarasota Bay Estuary program and regional partners to explore the feasibility of replacing hardened shorelines with natural shoreline stabilization methods.

The City shall monitor data and national best practices related to Living Shoreline design and the emerging technology of seawall habitat modules for potential integration into local zoning codes.

4.24 **Criteria to Assess Development in Flood Zones:** The City's land development regulations shall include criteria to assess how proposed development and redevelopment project features including location, site design, land use types, density and intensity of uses, landscaping, and building design, will help to mitigate flood zone impacts or that may exacerbate flood zone related hazards.

4.25 **Transportation Adaptation and Mitigation Strategies:** The City shall identify vulnerable roadways coordinate with transportation agencies that are developing transportation plans within the City to take into consideration adaptation and mitigation strategies through project review, design, and funding for future transportation projects. Transportation agencies should consider extending their planning horizons appropriately to address sea level rise.

Objective 5 - Safe Evacuation and Adequate Shelter during Natural Disasters

The City shall continue to provide for safe evacuation and shall coordinate with Sarasota County to assure adequate shelter during natural disasters.

Action Strategies

5.1 **Evacuation:** The City shall coordinate with Sarasota County through the Emergency Operations Plan to:

- ensure orderly evacuation of the designated coastal high hazard areas, flood prone areas, and mobile homes in the event of a natural disaster consistent with evacuation orders issued by the County;
- reduce evacuation times in conjunction with the Sarasota County comprehensive plan; and
- increase the amount of shelter space available;
- annually review the Emergency Operations Plan.

5.2 **Law Enforcement After Storm Events:** After passage of a storm event, the City's Police Department shall coordinate law enforcement operations to safeguard property in evacuated locations.

Goal 3

It shall be the goal of the City of Sarasota to reduce greenhouse gas emissions both community-wide and within city operations, by implementing more sustainable practices, including green building as well as sustainable low-technology strategies that take advantage of existing natural systems such as tree preservation, building orientation and the inclusion of operable windows.

Objective 6 - Sustainability

The City shall implement policies and programs that further sustainable development practices.

Action Strategies

6.1 **Reduction of Community-Wide Greenhouse Gas Emissions:** The City will work toward enacting programs and policies aimed to reduce greenhouse gas emissions community-wide 35% by 2025 from 2003 levels. Actions pursued by the city shall include, but not be limited to, anti-sprawl land-use policies, preferential treatment of active or non-fossil-fuel-based transportation in roadway design, urban forest restoration projects, public information campaigns, encouraging energy efficient building designs, recycling programs, implementation of green infrastructure that takes advantage of existing natural processes, and energy reduction efforts for commercial and residential sectors. The City will build upon previous greenhouse gas inventories performed for 2003 and 2007 and measure emissions every 3 years to analyze trends and opportunities for action.

Reduction of Greenhouse Gas Emissions from City Operations: The City will work towards implementing programs and policies aimed to reduce greenhouse gas emissions from city operations 35% by 2025 from 2003 levels. Actions shall include, but not be limited to, energy efficiency for city facilities, employee information campaigns, fleet fuel reductions, environmentally preferable purchasing policies, and renewable energy projects.

Create a climate action plan to relay results of greenhouse gas inventories, identify and prioritize actions to reduce emissions.

6.2 **Florida Green Local Government:** The City will pursue steps toward becoming a Florida Green Local Government using the Green Local Government Standard developed by the Florida Green Building Coalition, Inc.

6.3 **Sustainability in New Buildings and Development:** To achieve more sustainable building practices, the City shall use sustainable building measures for new buildings and major renovation projects for City facilities as outlined in a LEED Certification or Alternative Compliance Pathway for Incentives. For urban expansion and infill development, the City shall use measures as outlined in "LEED for Neighborhood Development" or Alternative Compliance Pathway for Incentives to help create more sustainable and well-connected neighborhoods.

6.4 **Greenhouse Gas Legislation:** The City encourages the State and Federal Government to pass bipartisan greenhouse gas reduction legislation, such as establishing a national emission trading system to reduce emissions and achieve national and state targets. The City shall take an active role in supporting state and federal legislation along these lines through working through local representatives.

6.5 **Certifiable Development[16]:** To encourage reduction of greenhouse gas emissions and the construction of more efficient buildings, the City shall develop and implement incentives for certifiable development proposals. Such incentives may include a formal expedited review process or a fee reduction schedule.

6.6 **Coordination with Sarasota County:** The City shall coordinate with the Sarasota County Sustainability Office to better realize and implement efficiencies and coordination in environmental legislation throughout Sarasota County.

6.7 **Water Conservation and Energy Efficient Appliances:** The City encourages the use of water-conserving appliances and cisterns in order to reduce the per capita consumption of potable water and the increased use of energy efficient appliances. Together, these measures will reduce energy consumption and greenhouse gas emission of the city and the burden on municipal water supply and treatment systems.

6.8 **Renewable Energy:** The City shall actively pursue opportunities to install renewable energy systems to provide electricity for city facilities and operations.

6.9 **Electric Vehicles:** The City shall actively support electric vehicle adoption as a clean transportation alternative through the installation of charging infrastructure, public education, and coordination with regional efforts.

6.10 **Improving Air Quality with Urban Forest:** The City will actively support programs and regulations that promote the benefits of canopy trees to improve air quality among other benefits, which include but are not limited to:

- Reducing particulate matter

[16] A certifiable building is designed with a consensus-based rating system for earning credits in fields such as sustainable site development, water savings, energy efficiency, materials and resources selection, and indoor environmental quality. Certifiable documentation includes providing the modeling, commissioning, and specifications for these fields. Examples of green building certification programs includes LEED, Green Globes, Living Buildings Challenge, and the Florida Green Building Coalition.

- Absorbing gaseous pollutants
- Reducing effects of greenhouse gases, such as carbon dioxide (CO2), methane (CH4) or nitrous oxide (N2O)
- Increasing oxygen levels
- Reducing heat island effect which occurs with buildings, hardscape and most impervious surfaces.

Goal 4

It shall be the goal of the City of Sarasota to adopt, implement and encourage strategies which increase community resiliency and protect human life, natural systems, cultural resources, and public and private property from the impacts of climate change.

Objective 7 - Reduction of vulnerabilities

The City will plan for and work toward reducing the negative impacts of climate change on resources and infrastructure.

Action Strategies

7.1 **Analyze/Identify Vulnerabilities:** In an effort to ensure its long-term viability and sustainability, the City shall analyze and identify public investments and infrastructure at risk from sea level rise, storm surge, increased flooding, and extreme heat by December 31, 2017. Specifically, the City shall analyze the vulnerabilities to facilities and services, including but not limited to: buildings; water and wastewater infrastructure and long-term supplies; stormwater systems; natural systems; roads, rail, bridges and other transportation infrastructure; airports, libraries, emergency and other facilities. The data and findings in this vulnerability assessment will be evaluated and updated at least every 5 years.

7.2 **Consider Sea Level Rise in City Projects:** The most current and credible sea level rise data shall be taken into consideration in future decisions regarding the design, location and development of infrastructure, public facilities and capital improvements in the City, as well as in departmental master plans and strategic business plans. Extended planning horizons may be necessary, depending on the expected life of the asset or timeline of that location choice. Reliable data shall be informed by the local St. Petersburg tidal gauge and apply nationally-accepted scientific projections. Sea level rise information shall derive from the National Climate Assessment or be informed from entities such as the National Oceanic and Atmospheric Administration, US Army Corps of Engineers, Federal Emergency

Management Agency, National Academy of Sciences, or National Aeronautics and Space Administration.

7.3 **Monitor Data:** The City shall monitor reliable sea level rise data and impacts on the coastal system and built environment. Strategies and policies will continue to be refined and updated as necessary based on the data and analysis.

7.4 **Improve analysis/capacity:** The City shall continue to improve analysis and mapping capabilities for identifying areas of the City vulnerable to sea level rise, tidal flooding and other future impacts. The City shall coordinate with other agencies to ensure reliable data.

7.5 **Coordination:** The City shall foster effective collaborations, partnerships and coordination with the county government, other municipalities, regional entities and state agencies, as well as private businesses and community stakeholders, in its efforts to identify risks and vulnerabilities and to identify responsible strategies for addressing coastal hazards and the impacts from sea level rise. The City will align, to the extent possible, relevant and current national, state, and regional adaptation strategy documents, disaster mitigation plans, water management plans, transportation / transit plans, and other pertinent information.

7.6 **Education:** The City shall work to encourage dialogue between residents, businesses, insurance companies and other stakeholders through public education campaigns and workshops, in order to increase understanding regarding the potential impacts of climate change on our coastal community and evaluate the shared costs of action or inaction in human, ecological, and financial terms.

7.7 **Adaptation Action Areas:** The City shall consider the use of Adaptation Action Areas (AAAs) as provided by section 163.3177(6)(g)(10), Florida Statutes, as a tool to identify areas vulnerable to coastal storm surge, sea level rise, and other climate change impacts, for the purpose of developing policies for adaptation and enhancing funding potential of infrastructure adaptation projects. AAAs may include but not be limited to: protection, accommodation, managed retreat, and avoidance strategies.

7.8 **Transportation/Roads:** The City shall work with local, regional, and state agencies to ensure that sea level rise and other vulnerabilities are taken into consideration through project review, design and funding of transportation projects. The City and transportation agencies shall collaboratively assess transportation adaptation strategies, such as increasing road surface elevation standards, subsurface stabilization, stormwater management and adjustment of bridge heights to allow for navigation.

7.9 **Private Sector Analysis:** Private sector builders and developers are encouraged to design structures to minimize damage from coastal erosion, 100-year flood events, tidal surges from hurricanes and coastal storms and projected sea level rise. An analysis is encouraged for development projects located on a shoreline in order to demonstrate that the development will remain fully functional for its intended use based on the most current and credible sea level rise projections and expected lifespan of the project. Businesses are encouraged to take sea level rise into consideration in their investment decisions and to take mitigation steps to future vulnerabilities.

7.10 **Public Health:** The City shall consider the public health consequences of climate change, such as extreme temperatures and vector-borne diseases, and take steps to build capacity to respond to or prevent those consequences in the long-term.

7.11 **Social Equity:** The City shall consider the consequences of climate change to vulnerable populations and historically under-represented groups, and take steps to build capacity and receive meaningful input within the adaptation and mitigation planning process.

7.12 **Community Resiliency Study:** Upon completion of the infrastructure vulnerability study (Action Strategy 7.1) the City shall conduct a comprehensive community resiliency study and create a plan to address vulnerable areas of the city where private investment exists or is likely to exist.

ATTACHMENT 1

Environmental Protection and Coastal Islands Illustrations

The following Environmental Protection and Coastal Islands Illustrations, which may be consolidated or reformatted by resolution of the City Commission, are part of the Future Land Use Map Series:

EP-2 Major Wetlands Map;

EP-3 Soil Map;

EP-4 Floodplains Map;

EP-5 Natural Habitats and Systems Map;

EP-6 Threatened and Endangered Species (table);

EP-7 Important Seagrasses, Green Algae and Endangered Plants (table);

EP-10 Shoreline Conditions;

EP-11 Hurricane Storm Categories;

EP-14 Coastal Islands Map;

EP-15 Coastal Islands Maximum Building Height Overlay Map; and

EP-16 Coastal Islands Maximum Impervious Surface Overlay Map.

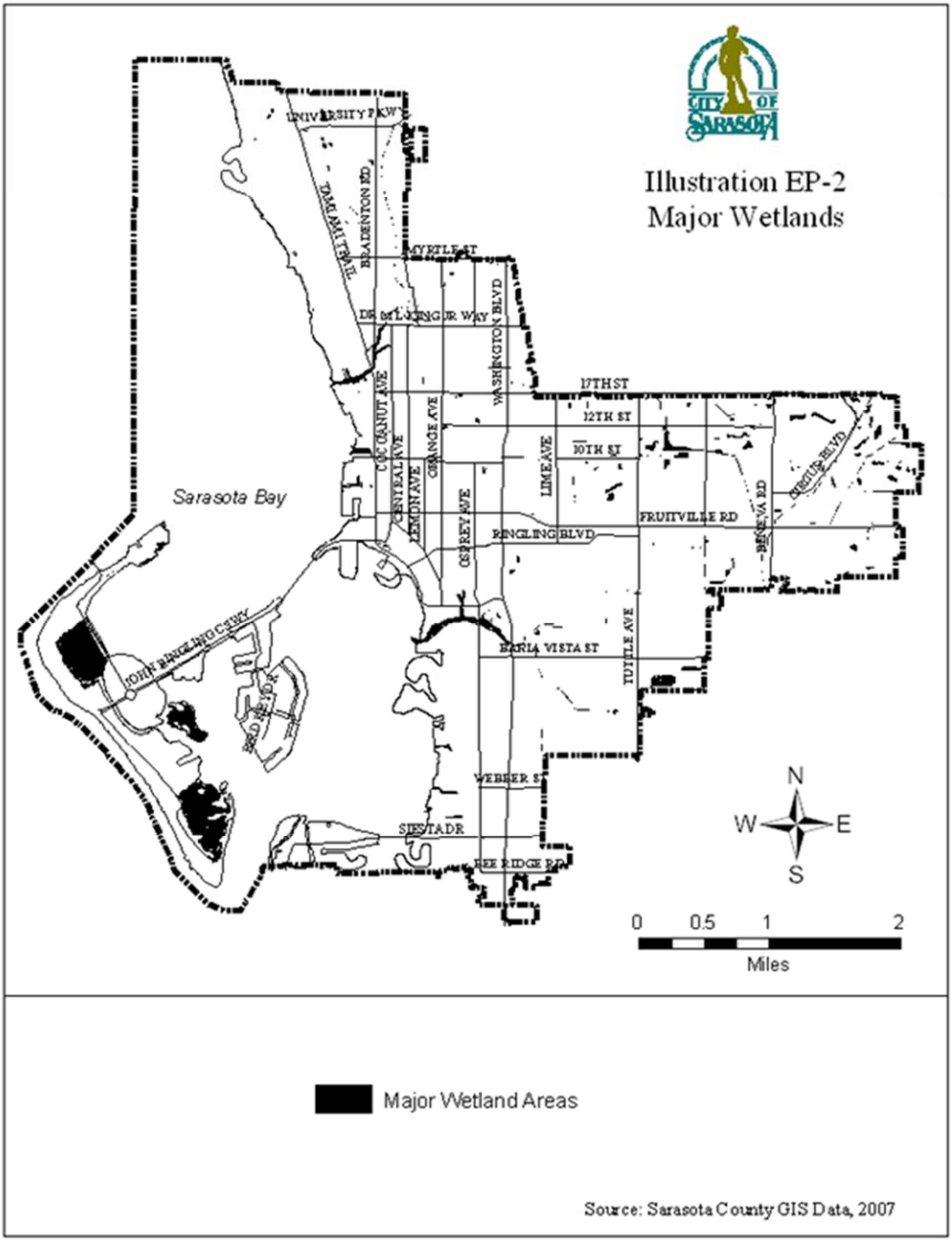


Illustration EP-2
Major Wetlands
CITY OF SARASOTA
Sarasota Bay
UNIVERSITY PKWY
TAMIAMI TRAIL
BRADENTON RD
MYRTLE ST
DR M L KING JR WAY
17TH ST
12TH ST
10TH ST
COCOANUT AVE
CENTRAL AVE
LEMON AVE
ORANGE AVE
OSPREY AVE
WASHINGTON BLVD
LIME AVE
FRUITVILLE RD
RINGLING BLVD
BENEVA RD
JOHN RINGLING CSWY
BIRD KEY DR
BAHIA VISTA ST
TUTTLE AVE
WEBBER ST
SIESTA DR
BEE RIDGE RD
N
W
E
S
0
0.5
1
2
Miles
Major Wetland Areas
Source: Sarasota County GIS Data, 2007

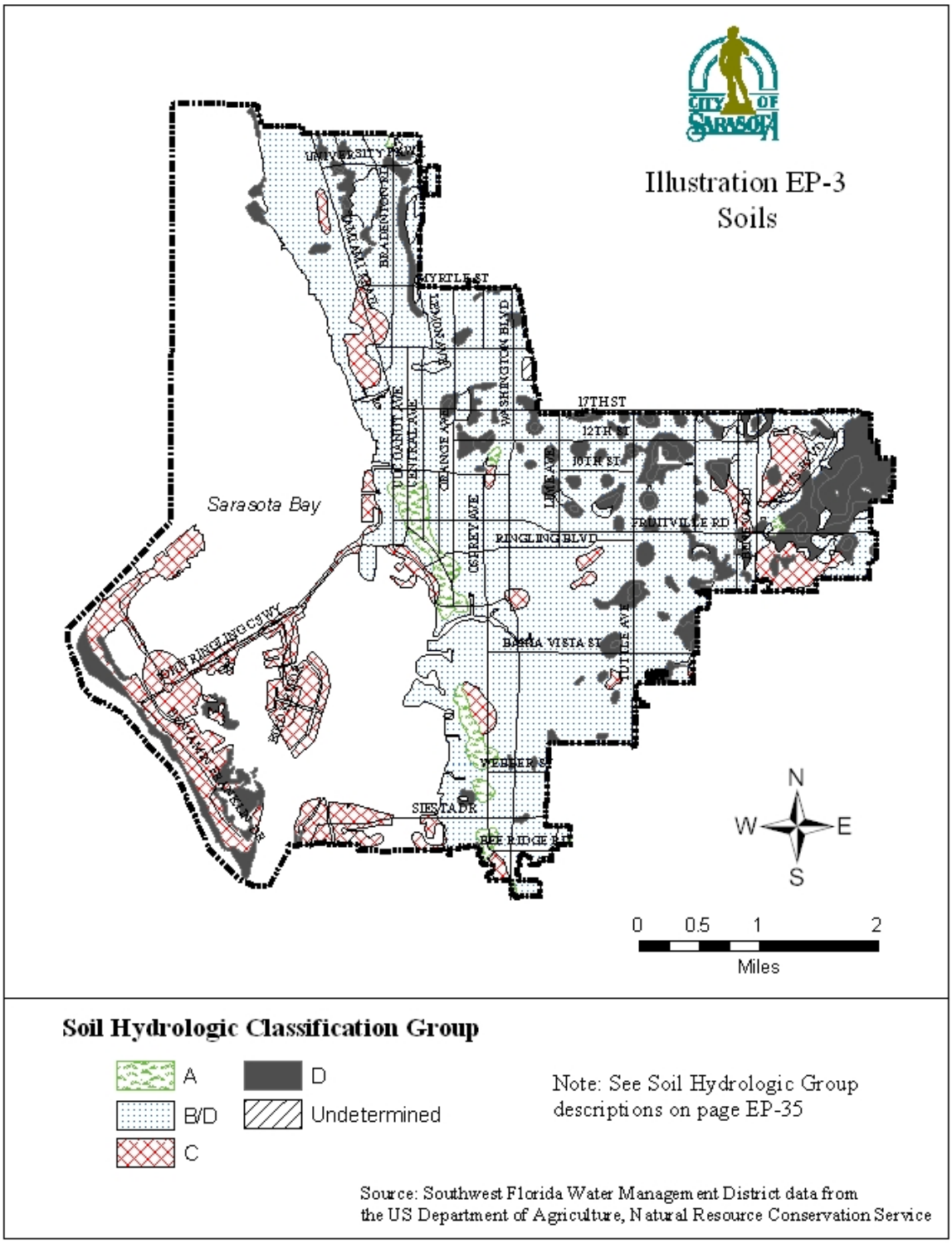


Illustration EP-3
Soils
Sarasota Bay
MYRTLE ST
17TH ST
12TH ST
10TH ST
RINGLING BLVD
FRUITVILLE RD
BAHIA VISTA ST
SIESTA DR
N
W
E
S
0
0.5
1
2
Miles
Soil Hydrologic Classification Group
A
B/D
C
D
Undetermined
Note: See Soil Hydrologic Group descriptions on page EP-35
Source: Southwest Florida Water Management District data from the US Department of Agriculture, Natural Resource Conservation Service

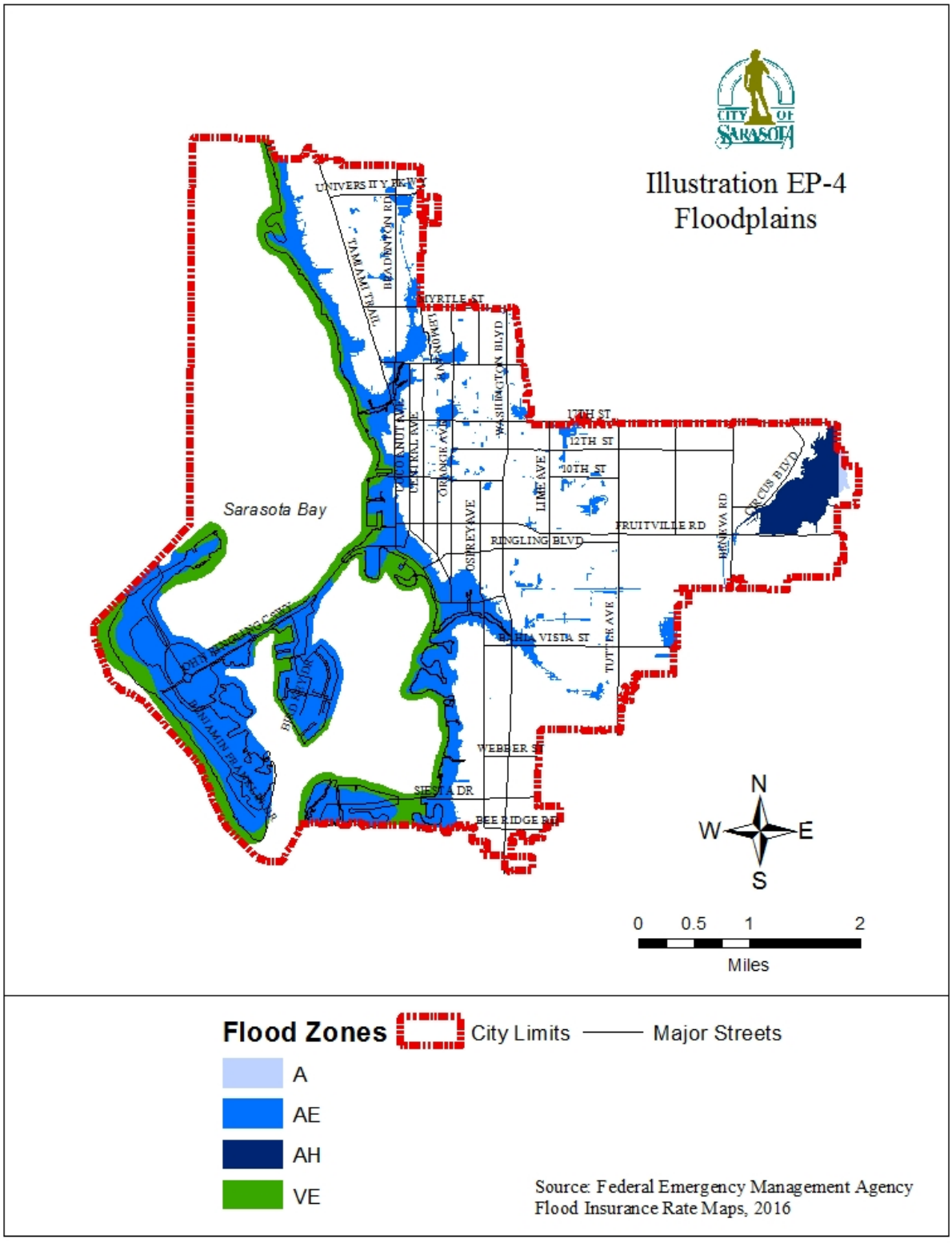


Illustration EP-4
Floodplains
Sarasota Bay
UNIVERSITY PKWY
MYRTLE ST
12TH ST
10TH ST
RINGLING BLVD
FRUITVILLE RD
BAHIA VISTA ST
WEBBER ST
SIESTA DR
BEE RIDGE RD
CIRCUS BLVD
LIME AVE
OSPREY AVE
TUTTLE AVE
BENJAMIN FRANKLIN DR
N
W
E
S
0
0.5
1
2
Miles
Flood Zones
City Limits
Major Streets
A
AE
AH
VE
Source: Federal Emergency Management Agency
Flood Insurance Rate Maps, 2016

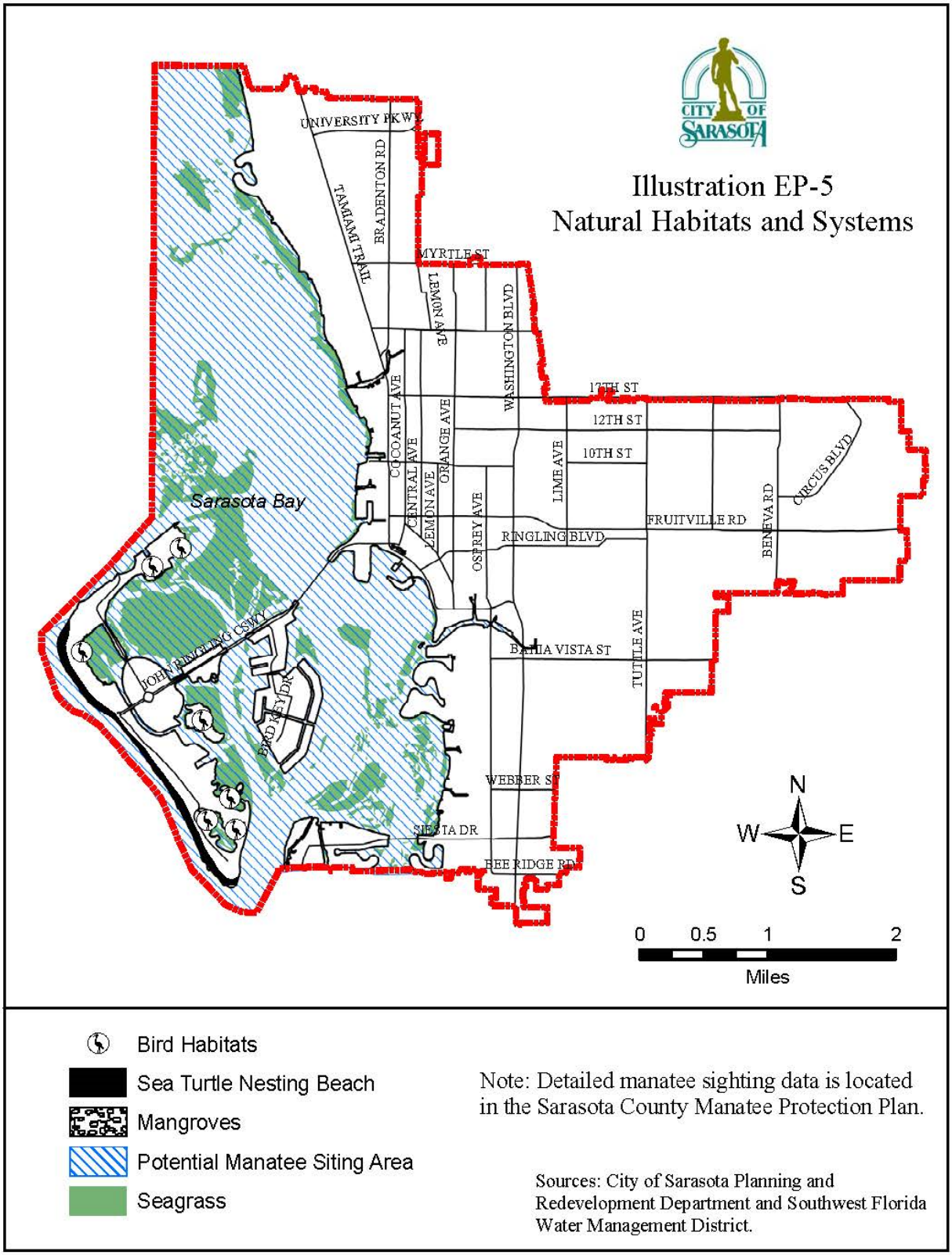


Illustration EP-5
Natural Habitats and Systems
UNIVERSITY PKWY
BRADENTON RD
TAMIAMI TRAIL
MYRTLE ST
LEMON AVE
WASHINGTON BLVD
17TH ST
12TH ST
10TH ST
COCOANUT AVE
CENTRAL AVE
LEMON AVE
ORANGE AVE
OSPREY AVE
LIME AVE
FRUITVILLE RD
RINGLING BLVD
BAHIA VISTA ST
TUTTLE AVE
BENEVA RD
CIRCUS BLVD
Sarasota Bay
JOHN RINGLING CSWY
BAY SHORE DR
WEBBER ST
SIESTA DR
BEE RIDGE RD
N
W
E
S
0
0.5
1
2
Miles
Bird Habitats
Sea Turtle Nesting Beach
Mangroves
Potential Manatee Siting Area
Seagrass
Note: Detailed manatee sighting data is located in the Sarasota County Manatee Protection Plan.
Sources: City of Sarasota Planning and Redevelopment Department and Southwest Florida Water Management District.

Illustration EP-6. Threatened and Endangered Species

Common Name	Scientific Name	USFWS Status	FGFWFC Status
West Indian manatee	Trichechus manatus	E	E
Arctic peregrine falcon	Falco peregrinus tundrius		E
Wood stork	Mycteria americana	E	E
American alligator	Alligator mississippiensis	TSA	SSC
Atlantic Loggerhead turtle	Caretta caretta	T	T
Eastern indigo snake	Drymarchon corais couperi	T	T
Piping plover	Charadrius melodus	T	T
Bachman's warbler	Vermivora bachmanii	E	E
Bald eagle	Haliaeetus leucocephalus	T	T
Florida scrub jay	Aphelocoma coerulescens coerulescens	T	T
Green turtle	Chelonia mydas mydas	E	E
Atlantic ridley turtle	Lepidochelys kempi	E	E
Gopher Tortoise	Gopherus polyphemus		SSC

Notes:

USFWS = United States Fish and Wildlife Service
FGFWFC = Florida Game and Fresh Water Fish Commission
E = endangered
T = Threatened
TSA = Threatened due to similarity in appearance
SSC = Species of special concern

Source: Florida's Endangered Species, Threatened Species and Species of Special Concern, Official Lists. Published by the Bureau of Nongame Wildlife, Division of Wildlife, Florida Game and Fresh Water Fish Commission. April 1996.

Illustration EP-7. Important Seagrasses, Green Algae, and Endangered Plants

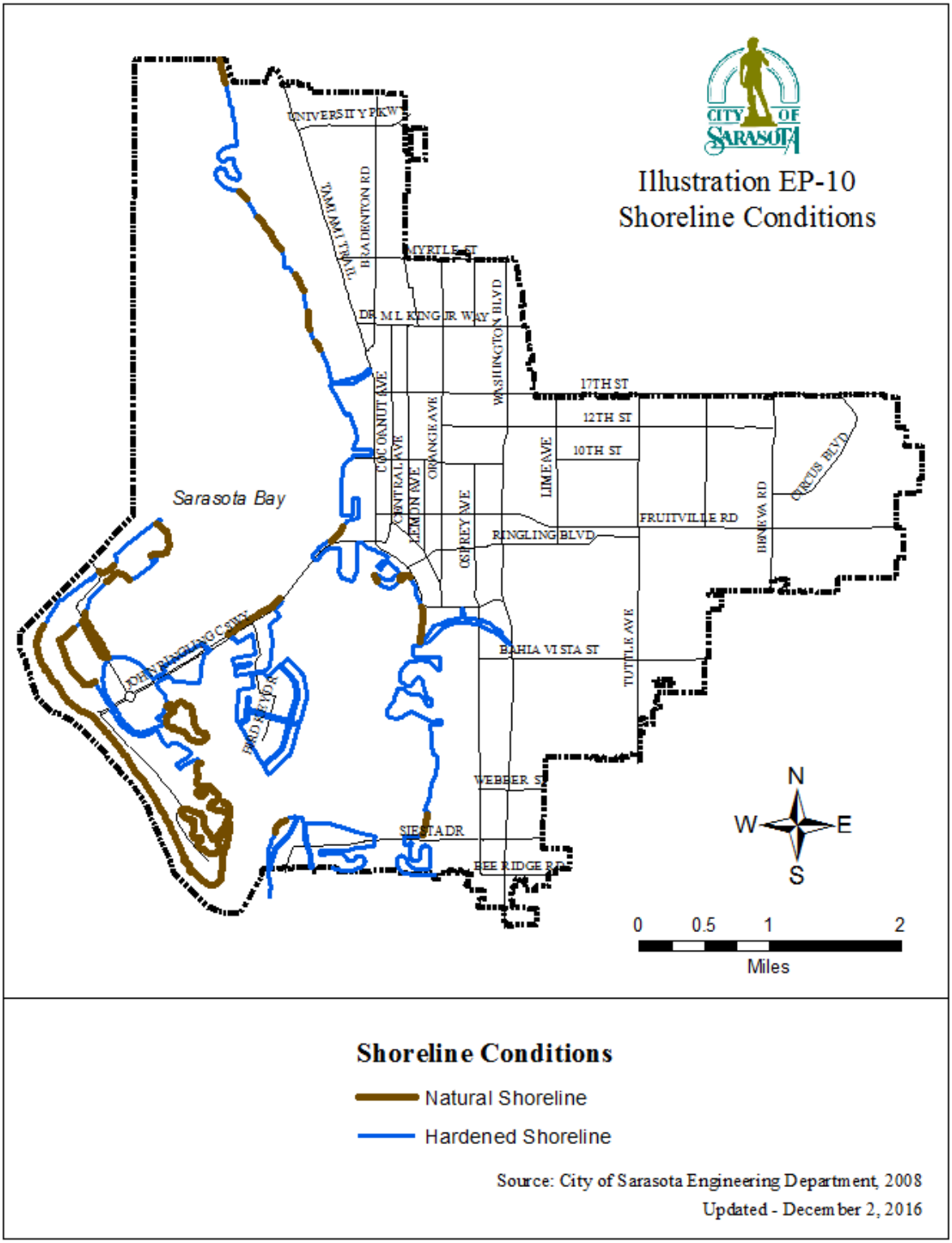
	Scientific Name	Common Name
Seagrasses:	Thalassia testudinum	turtle-grass
	Syringodium filiforme	manatee-grass
	Ruppia maritima	widgeon-grass
	Halophila engelmannii	star-grass
	Halophila decipiens	paddle-grass
	Halophila wrightii	shoal-grass
Green Algae:	Caulerpa prolifera	
	Caulerpa ashmeadii	
	Caulerpa mexicana	
	Caulerpa recemofa	
	Caulerpa cupressoides	
	Halimeda opuntia	
Endangered Plants:	Suriana maritima	bay cedar, thatch leaf; a beach shrub
	Ernodea littoralis	beachcreeper, common ernodea
	Opuntia stricta	shell mound prickly-pear, common prickly-pear
	Scaevola plumieri	inkberry

Source: Mote Marine Laboratory, 1997, which also referenced the following publications:

Rare and Endangered Biota of Florida, multiple volumes published by the University Press of Florida.

Florida's Endangered Species, Threatened Species and Species of Special Concern, Bureau of Nongame Wildlife, Division of Wildlife, Florida Game and Fresh Water Fish Commission (FGFWFC).

Notes on Florida's Endangered and Threatened Plants, Bureau of Entomology, Nematology and Plant Pathology-Botany Section, Contribution No. 39. Florida Department of Agriculture and Consumer Services.


CITY OF SARASOTA
Illustration EP-10
Shoreline Conditions
UNIVERSITY PKWY
TAMIAMI TRAIL
BEAUDENTON RD
MYRTLE ST
DR M L KING JR WAY
WASHINGTON BLVD
17TH ST
12TH ST
10TH ST
COCOANUT AVE
CENTRAL AVE
LEMON AVE
ORANGE AVE
OSPREY AVE
LIME AVE
CIRCUS BLVD
IRENE VA RD
FRUITVILLE RD
RINGLING BLVD
Sarasota Bay
JOHN RINGLING CSWY
BAHIA VISTA ST
TUTTLE AVE
WEBBER ST
SIESTA DR
BEE RIDGE RD
N
W
E
S
0
0.5
1
2
Miles
Shoreline Conditions
Natural Shoreline
Hardened Shoreline
Source: City of Sarasota Engineering Department, 2008
Updated - December 2, 2016

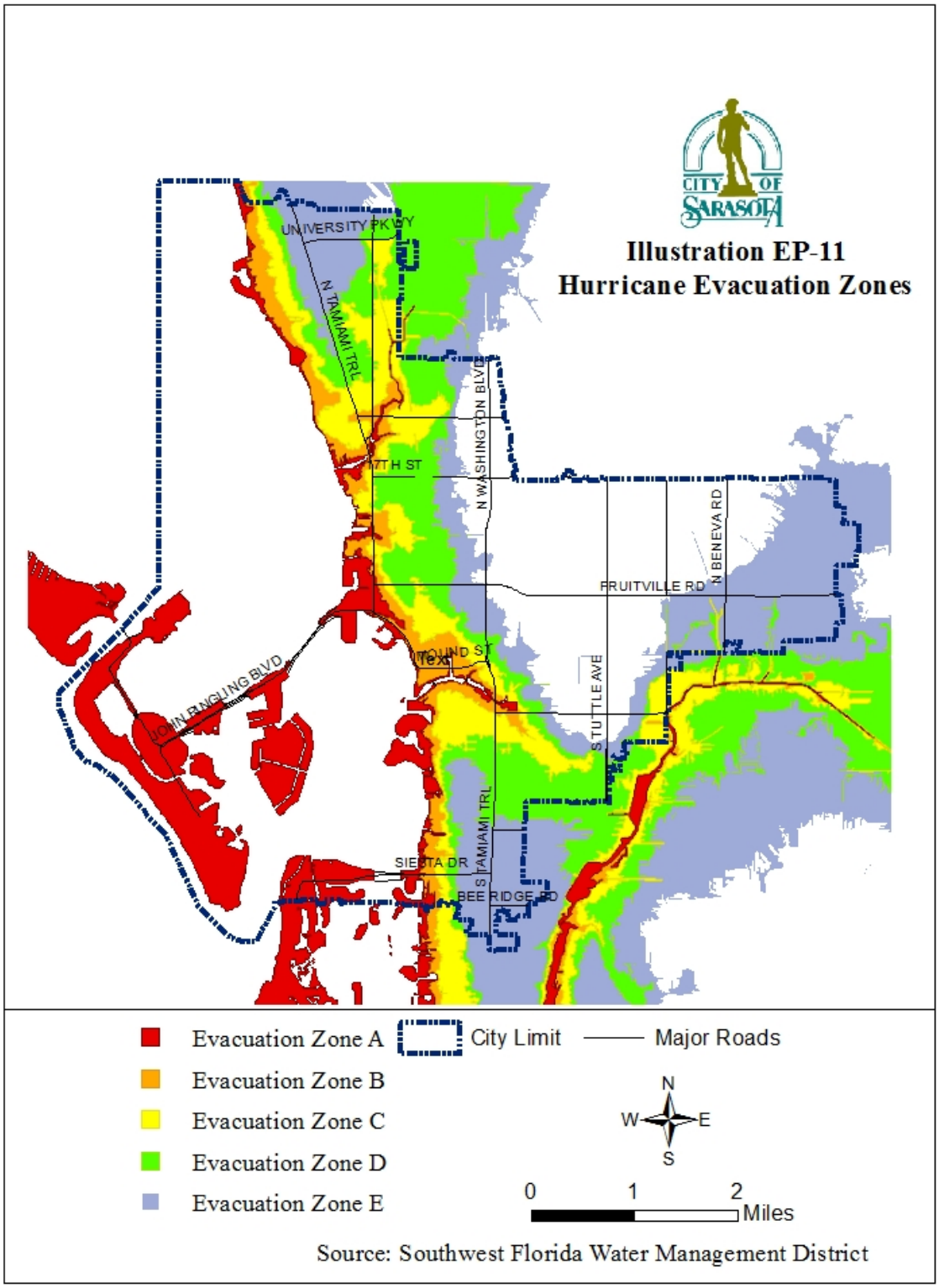
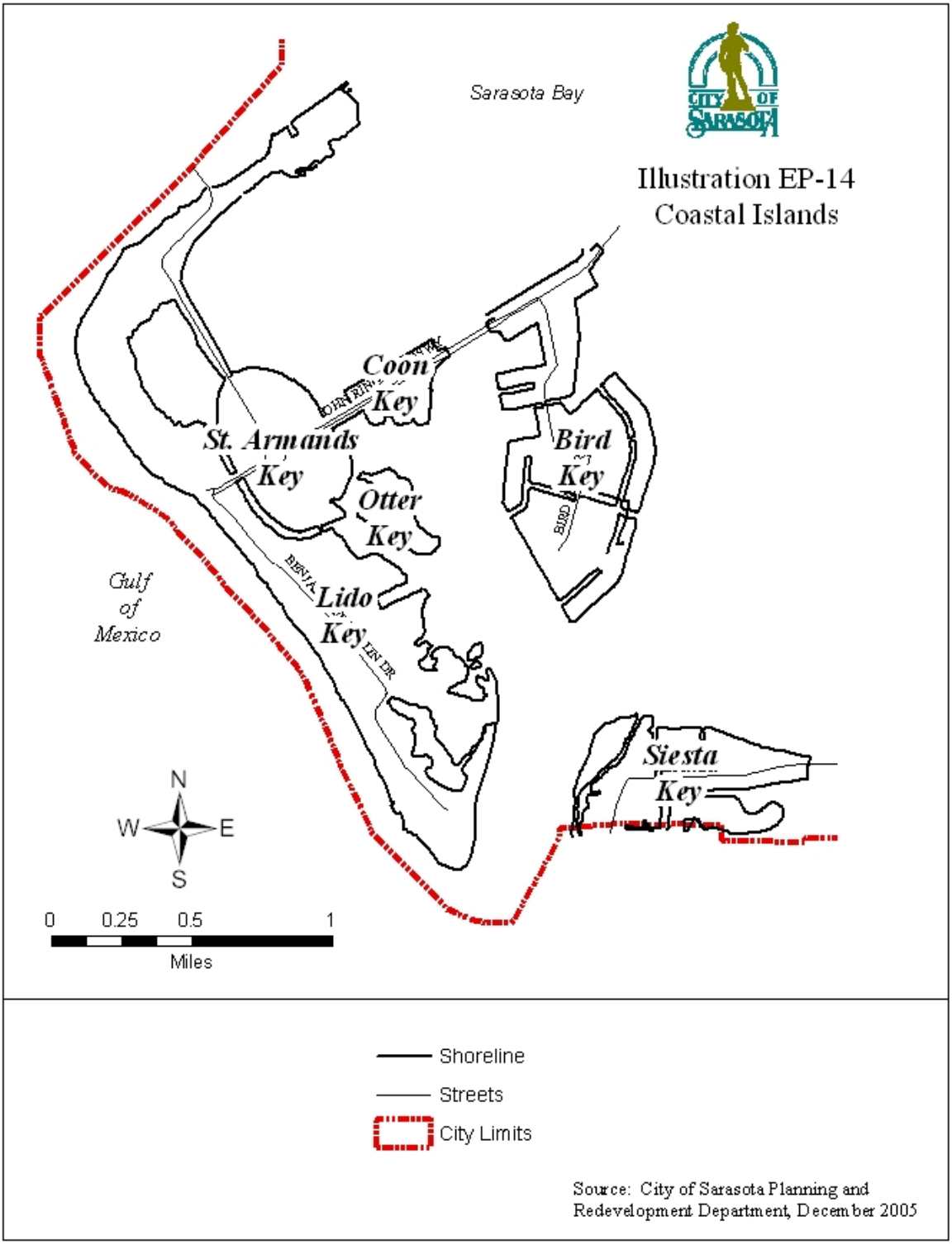


Illustration EP-11
Hurricane Evacuation Zones
UNIVERSITY PKWY
N TAMIAMI TRL
17TH ST
N WASHINGTON BLVD
N BENEVA RD
FRUITVILLE RD
JOHN RINGLING BLVD
STUTTLE AVE
S TAMIAMI TRL
SIESTA DR
BEE RIDGE RD
Evacuation Zone A
Evacuation Zone B
Evacuation Zone C
Evacuation Zone D
Evacuation Zone E
City Limit
Major Roads
N
W
E
S
0
1
2
Miles
Source: Southwest Florida Water Management District


Sarasota Bay
Illustration EP-14
Coastal Islands
Coon Key
St. Armands Key
Otter Key
Bird Key
Lido Key
Siesta Key
Gulf of Mexico
N
W
E
S
0
0.25
0.5
1
Miles
Shoreline
Streets
City Limits
Source: City of Sarasota Planning and Redevelopment Department, December 2005

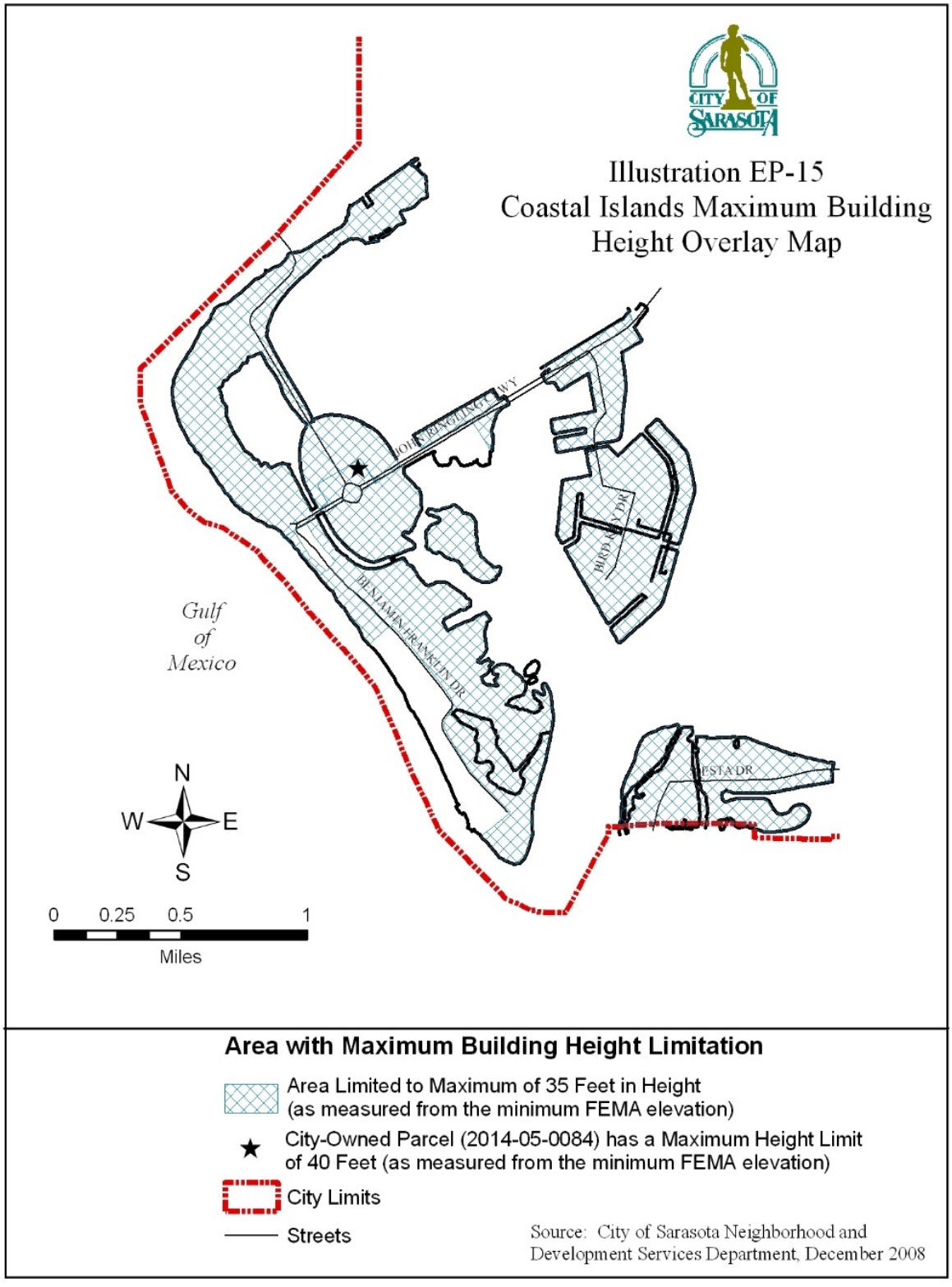


Illustration EP-15
Coastal Islands Maximum Building Height Overlay Map
JOHN RINGLING CSWY
BENJAMIN FRANKLIN DR
SIESTA DR
Gulf of Mexico
N
W
E
S
0 0.25 0.5 1
Miles
Area with Maximum Building Height Limitation
Area Limited to Maximum of 35 Feet in Height (as measured from the minimum FEMA elevation)
City-Owned Parcel (2014-05-0084) has a Maximum Height Limit of 40 Feet (as measured from the minimum FEMA elevation)
City Limits
Streets
Source: City of Sarasota Neighborhood and Development Services Department, December 2008

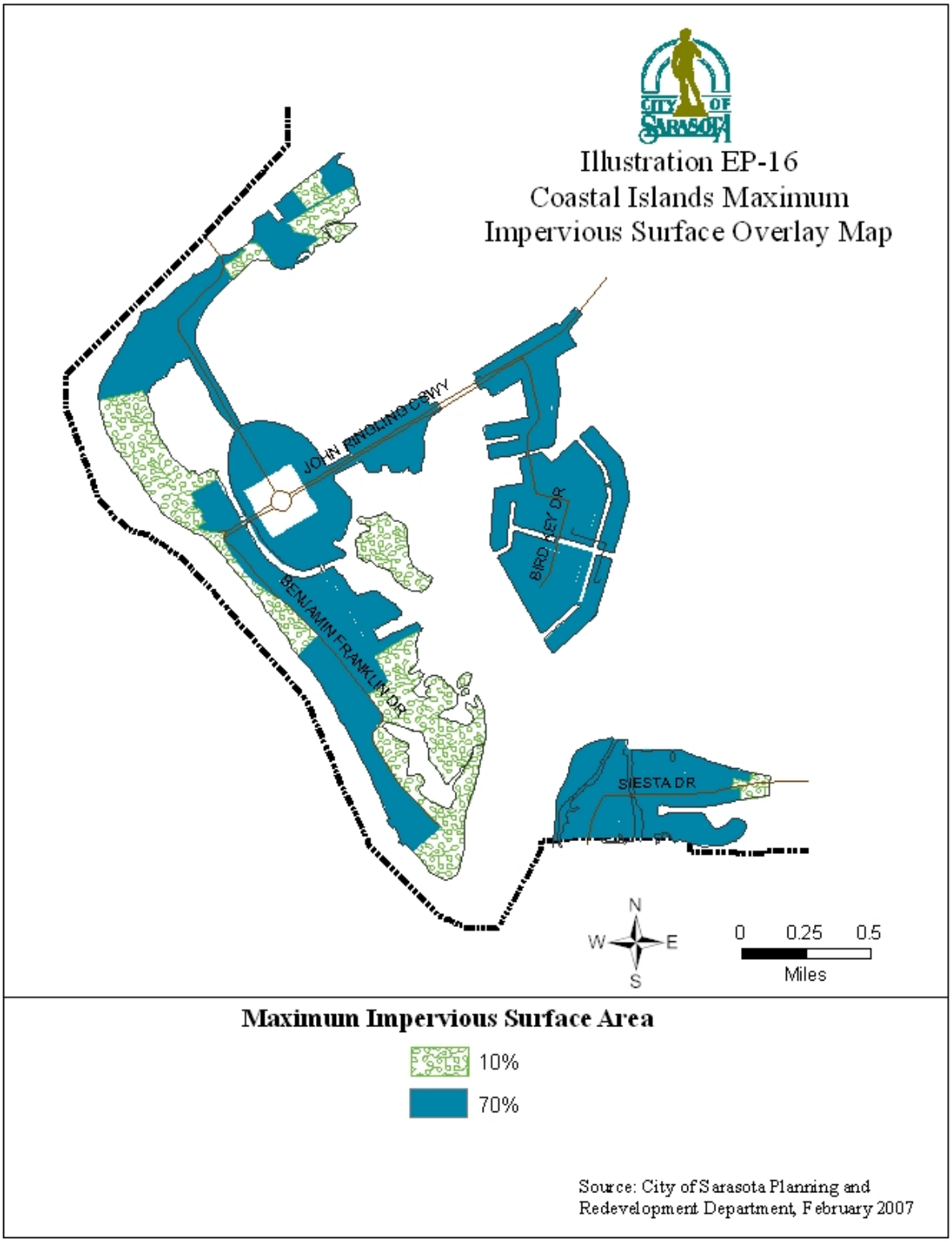


Illustration EP-16
Coastal Islands Maximum
Impervious Surface Overlay Map
JOHN RINGLING CSWY
BENJAMIN FRANKLIN DR
BIRD KEY DR
SIESTA DR
N
W
E
S
0
0.25
0.5
Miles
Maximum Impervious Surface Area
10%
70%
Source: City of Sarasota Planning and
Redevelopment Department, February 2007

The Environmental Protection and Coastal Islands Support Document

The inventory and analysis in the Support Document provide the foundation for the Plan portion of this Chapter.

The Support Document is not adopted.

INVENTORY AND ANALYSIS

BACKGROUND

The City of Sarasota is committed to protecting and maintaining the natural environment and protecting life and property from natural disasters. City actions pursuant to this commitment include:

- Pursuing urban and agricultural reuse of reclaimed domestic water as the City's primary method of wastewater disposal;
- Renourishing Lido Beach;
- Supporting the Sarasota Bay Estuary Program and implementation of the Comprehensive Conservation and Management Plan for Sarasota Bay;
- Protecting trees, including mangrove stands;
- Maintaining a Conservation overlay zone district which includes all environmentally sensitive lands;
- Maintaining a Marine Park zone district to protect and preserve water areas within the City;
- Participating in the Sarasota County Stormwater and Environmental Utility;
- Cooperating with Sarasota County in the Amnesty Days program to collect and safely dispose of hazardous waste;
- Supporting Sarasota County in their effort to monitor ambient air quality;
- Coordination with Sarasota County in implementation of the Local Mitigation Strategy;
- Cooperating with Sarasota County through the Peacetime Emergency Plan to:

    ◊ Ensure orderly evacuation in the event of a natural disaster;
    ◊ Reduce evacuation times in conjunction with the Sarasota County Comprehensive Plan; and,
    ◊ Increase the amount of shelter space available.

The actions above, as well as others, are discussed in this Chapter.

The information used to prepare this Chapter comes from many sources which are listed on the illustrations. In addition to experts from appropriate City of Sarasota departments, this Chapter has received review and input from experts in their respective fields at other agencies. These experts include the staff of:

- Mote Marine Laboratory
- Sarasota Bay Estuary Program
- Sarasota Soil and Water Conservation District
- Sarasota County Planning Department
- Sarasota County Pollution Control Division
- Southwest Florida Regional Planning Council

Readers wanting further information on the issues discussed in this Chapter may wish to consult the agencies listed above.

The City also provides financial support which is matched by other non-federal grants to the Sarasota Bay Estuary Program (SBEP). Federal grants are also sought. The City endorses the policies and programs of the SBEP. In addition, administrative support (i.e. legal, human resources, finance department, etc.) is provided by the City.

NATURAL RESOURCES INVENTORY

The City of Sarasota has an abundance of natural resources including Sarasota Bay and a diversity of associated habitats and species. These resources contribute greatly to the character of the City and attract many visitors. The Bay and adjacent areas support many recreational activities attributable to climate, water quality, and the white sandy beaches of the barrier islands. Boating, commercial and recreational fishing, sailing, and nature study are a few of the activities found in and around the Bay. Sarasota Bay is relatively shallow and the increasing demands on this ecosystem from development and recreation activities need to be carefully monitored to ensure that the Bay and its dependent species are preserved.

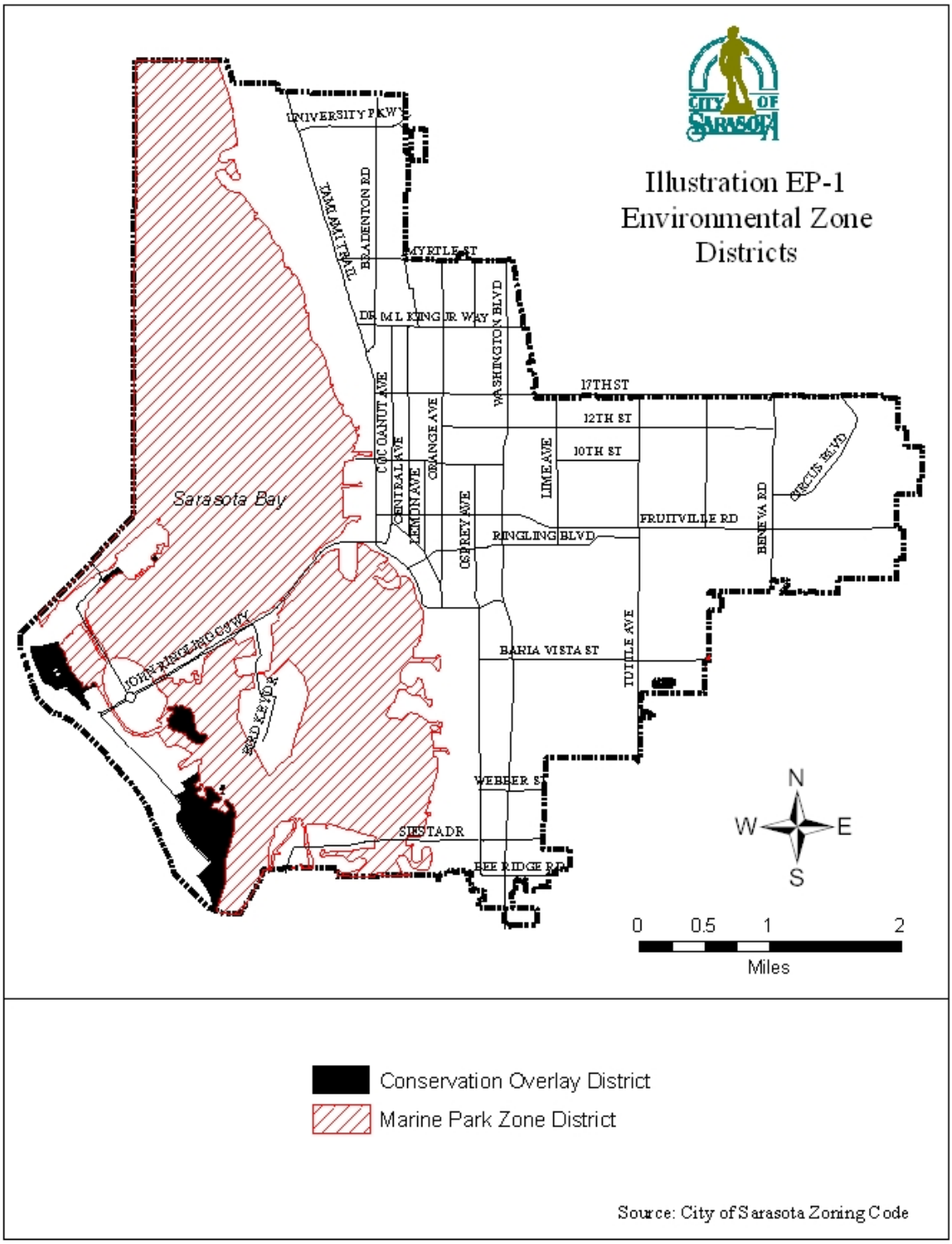
The City's coastal resources are among its most valuable. Historically, the City developed around the Bay area. Because of the Bay's intrinsic value, many uses compete for development along its shores. Most of the City's land adjacent to the coastline is developed with active uses or conserved in its natural state as passive recreation and conservation areas. The barrier islands of Lido and Siesta Keys are considered fully developed and have predominately residential, resort, and open space, recreation, and conservation land uses.

Due to their location, the coastal islands and the mainland coastal areas are the most vulnerable to flooding and hurricane damage. The density of development in these areas make disaster preparedness and evacuation planning a more difficult task. Therefore, the residential density for development on the coastal islands should not be increased greater than that allowed on the currently adopted Future Land Use Map or Zoning Atlas. Further, the City should not adopt zoning text changes that would result in greater residential densities on the coastal islands.

A Conservation (C) overlay zone district was adopted in 1989. The overlay district designated generally undeveloped coastal, environmentally sensitive areas which include beaches, dunes, coastal hammocks, mangrove swamps, tidal islands, tidal marshes and other marine and estuarine habitats as conservation areas. In 1995, all environmentally sensitive lands were included in the Conservation overlay district. Development is limited to uses that provide for the enhancement of wildlife, vegetation, and other natural resources. Examples include public and private aquatic preserves, public parks and noncommercial recreational uses such as boating, fishing, diving, water-skiing, and surf boarding.

Construction review criteria in the Conservation district section of the Zoning Code of the City of Sarasota states, “All development shall be designed so as to minimize the impact of human activities on natural systems, and not adversely affect the natural character of the area.” Another criteria states “All development permits shall be conditioned upon proof that any state or federal permit regarding

threatened or endangered species has been obtained." Illustration EP-1 shows the Conservation Overlay Zone District.



A Marine Park (MP) zone district was adopted to protect and preserve water areas within the city. All publicly and privately owned submerged lands extending from high tide or bulkhead line are included in this district. Permitted principal uses in the Marine Park district include noncommercial water oriented uses such as boating, surfboarding, and wading. Any use of the water shall protect the right of the public to use and enjoy submerged lands; preserve grass flats and flats for breeding and spawning grounds for fish; not cause or contribute to siltation or erosion; not create alteration of water flow; accumulation of debris or reaction of water pockets for incubation of "red tides"; demonstrate that precautions are taken to prevent saltwater intrusions into surface water tables; and displays that provisions are made for protection of access to existing or proposed navigable channels or basins.

Wetlands

A wetland is defined in Section 373.019(25), Florida Statutes, as "those areas that are inundated or saturated by surface water or groundwater at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce, or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto."

Unlike Sarasota County and some other areas of the state, the City is essentially urbanized and developed. Therefore, wetlands are not as abundant in the City. However, it is important that the City protect wetlands and the natural function of wetlands through coordination with the private sector, other units of government, and the Sarasota Bay Estuary Program. Illustration EP-2 identifies the major wetlands in the City.

Air Resources

Air quality is monitored within the City by the Sarasota County Natural Resources Department, Pollution Control Division. The County's Natural Resources Department currently has a Specific Operating Agreement with the Florida Department of Environmental Protection (FDEP) for activities including but not limited to the monitoring of ambient air quality. The continuous monitoring network within the City includes ozone, carbon monoxide, sulfur dioxide and PM_{10} (particulate matter having an aerodynamic diameter of 10 microns or less). There is also a manual PM_{10} site which operates for 24 hours, once every 6 days, following the schedule established by the United States Environmental Protection Agency. Additionally, the County will be adding a NOx (oxides of nitrogen) monitor to its network in 1997. Sarasota County is classified as an attainment area by the U.S. Environmental Protection Agency, indicating that the monitored pollutants have not exceeded Federal standards. Since there are no mountains to inhibit winds, air stagnation is not as likely to occur in the City of Sarasota.

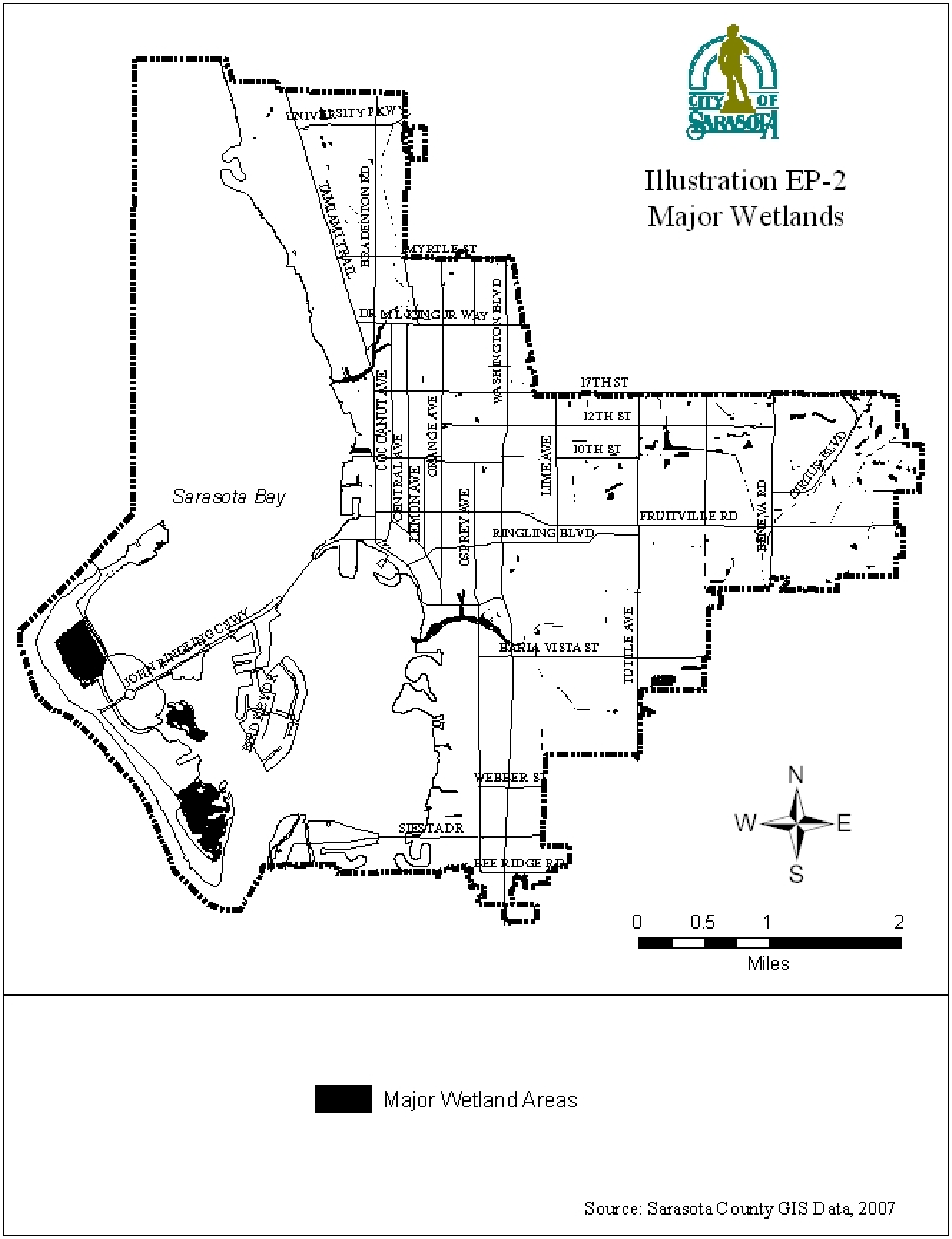


Illustration EP-2
Major Wetlands
Sarasota Bay
UNIVERSITY PKWY
TAMIAMI TRAIL
BRADENTON RD
MYRTLE ST
DR M L KING JR WAY
WASHINGTON BLVD
17TH ST
12TH ST
10TH ST
COCOANUT AVE
CENTRAL AVE
LEMON AVE
ORANGE AVE
OSPREY AVE
LIME AVE
FRUITVILLE RD
RINGLING BLVD
BENEVA RD
JOHN RINGLING CSWY
BAHIA VISTA ST
TUTTLE AVE
WEBBER ST
SIESTA DR
BEE RIDGE RD
N
S
E
W
0
0.5
1
2
Miles
Major Wetland Areas
Source: Sarasota County GIS Data, 2007

Soils

Soil characteristics are determined by climate, composition of parent materials, topography, biological activity, and the duration of soil development. The City lies in the coastal lowlands and is characterized by level to nearly level plains. Many of the soils of the area have the general characteristics of poor drainage and high stormwater runoff associated with coastal lowlands. Illustration EP-3 details the general soils as defined by hydrologic classification. Generalized soils information is useful in determining an area's suitability for detailed soils surveys used in site planning. The soil associations mapped are characterized by hydrologic classification as follows:

- Group A – High infiltration rate; soils consist of Orsino Fine Sand and Tavares Fine Sand.

- Group B/D – Moderate to slow infiltration rate; soils consist of Eaugallie Fine Sand, Myakka Fine Sand, Ona Fine Sand, Bradenton Fine Sand, Smyrna Fine Sand, Pineda Fine Sand, Floridana Mucky Fine Sand, Malabar Fine Sand, Felda and Pompano Fine Sands/frequently flooded, and Boca and Hallandale Soils.

- Group C – Slow infiltration rate; soils consist of Pomello Fine Sand, St. Augustine Fine Sand, Canaveral Fine Sand/0 to 5 percent slopes, and Cassia Fine Sand.

- Group D – very slow infiltration rate; soils consist of Beaches, Holopaw Fine Sand/depressional, Manatee Loamy Fine Sand/depressional, Delray Fine Sand/depressional, Felda Fine Sand/depressional, Floridana and Gator Soils/depressional, Kesson and Wulfert Mucks/frequently flooded, and Ft. Green Fine Sand.

Classifying soils for a specific location requires highly specialized knowledge. Even within short distances, great differences in soil properties can occur. The soil properties determine what uses the soil can accommodate. It is for these reasons that readers wanting more information on soil should contact the Sarasota Soil and Water Conservation District.

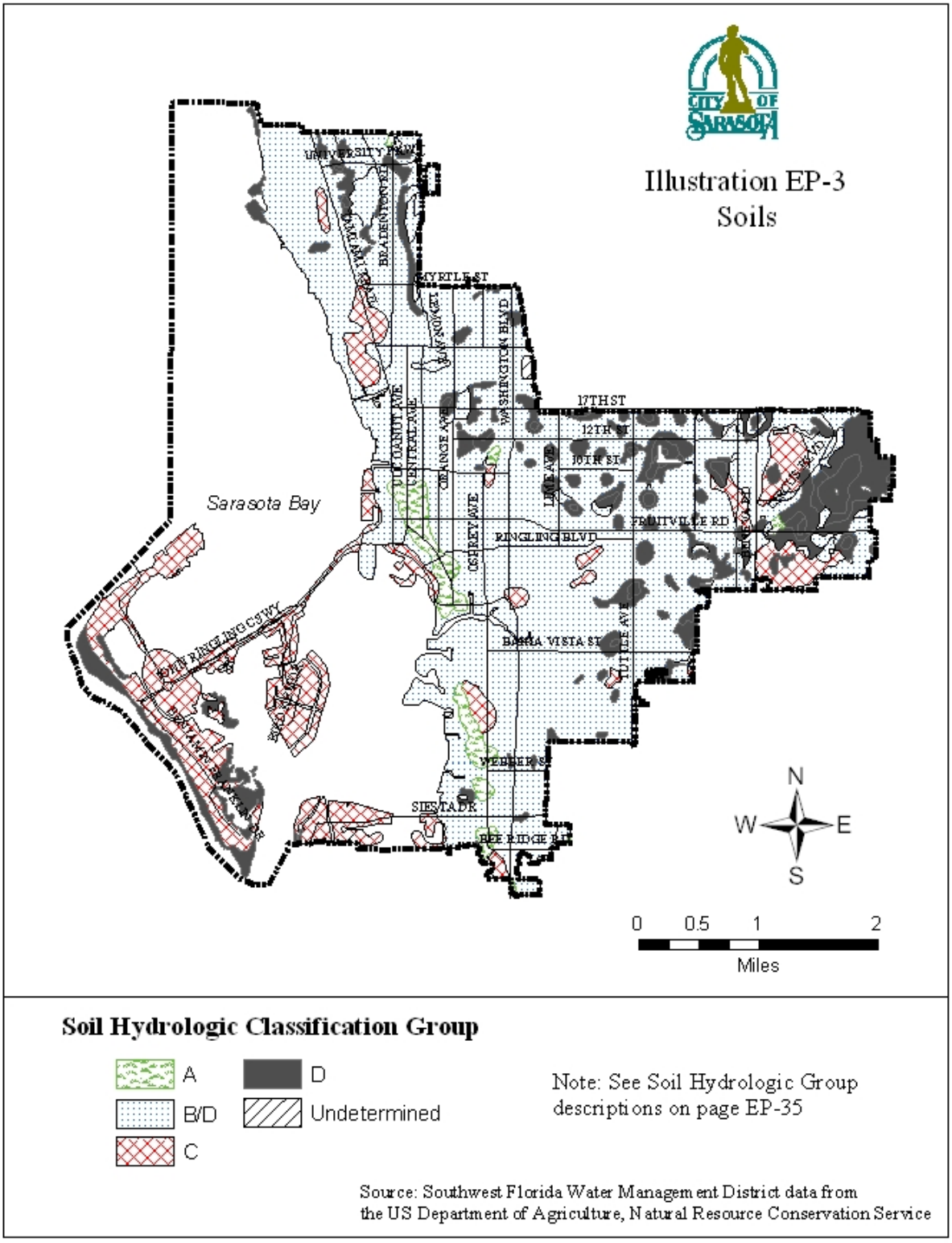


Illustration EP-3
Soils
Sarasota Bay
MYETLE ST
17TH ST
12TH ST
10TH ST
RINGLING BLVD
FRUITVILLE RD
BAHIA VISTA ST
WEBBER ST
SIESTA DR
N
W
E
S
0
0.5
1
2
Miles
Soil Hydrologic Classification Group
A
B/D
C
D
Undetermined
Note: See Soil Hydrologic Group descriptions on page EP-35
Source: Southwest Florida Water Management District data from the US Department of Agriculture, Natural Resource Conservation Service

Groundwater Resources

The water systems of the City are among its most important resources. Groundwater systems provide potable water supplies and the Sarasota Bay system provides a habitat for a variety of plant and animal species as well as recreational opportunities that are a large part of the City's economic base. Both the groundwater and surface water systems are vital to the City and its residents and require protection and conservation.

The City's groundwater resources are located within the surficial, intermediate, and Floridan aquifer systems. Wells are regulated by the Southwest Florida Water Management District and the Florida Department of Environmental Protection. City wells located within the City limits and in Sarasota County provide potable water for all City residents. The City's water treatment plant, located on 12th Street, provides potable water for the majority of the City. The City plans to continue utilizing the existing wells and water treatment plant in the foreseeable future. The Southwest Florida Water Management District has issued an approximate 12 MGD in water use permits for the treatment plant. In 2006, potable water demand was 7.5 MGD. The potable water system and supply is projected to meet the City's needs through the planning period, however, water conservation and well field protection programs will ensure potable water supplies for long-range needs. Consistent with SWFWMD's Regional Water Supply Plan (RWSP), the City will be exploring ways to expand the use of reclaimed water so that potable water usage is offset with reclaimed water. The one project suggested for the City of Sarasota within the RWSP indicates that the reclaimed water system may be expanded by up to 3.37 million gallons per day during the period between 2011 and 2025. By expanding the use of reclaimed water, the City would be able to prolong the use of its existing potable water supplies and facilities without needing to seek an increase water withdrawals and treatment capacity from the Water Management District. Further discussion on this topic may be found in the Utilities Chapter.

The City coordinates with Sarasota and Manatee Counties, the Southwest Florida Water Management District, and the Florida Department of Environmental Protection to ensure the protection of wellfields. The wellfields are protected by Sarasota County Initial Wellhead Water Resource Protection Ordinance #92-079 or Manatee County Zoning Ordinance Section 738, in addition to Florida Department of Environmental Protection Rule 62-521, July 1995.

The Southwest Florida Water Management District regulates the withdrawal of groundwater through the issuance of water use permits which specify maximum withdrawal rates and limit the elevation change in water tables. In addition, conservation measures that include reductions in water consumption and water reuse have been established by SWFWMD in coordination with the water use permit process. A more detailed discussion of potable water systems, including projected sources and demands, is found in the Utilities Chapter.

Surface Water Resources

The City lies in the coastal lowlands and the general topography is characterized by level to nearly level plains where hardly any stream desertion has taken place. The land rises gradually from near sea level at the shore of Sarasota Bay to a crest approximately 40 feet in the center portion of the City and then decreases slowly to approximately 15 feet at the eastern corporate limits adjacent to Phillippi Creek.

The major surface water system in the City is Sarasota Bay. The Bay is roughly oval-shaped, with a length of about 16 miles and a width of three to four miles at its center. The bay is a shallow barrier island lagoon with a maximum depth of about 11 feet. No major rivers discharge into the Bay; only a small amount of fresh water enters through Bowlees Creek, Whitaker Bayou, Cedar Hammock, Hudson Bayou, Hog Creek, and Phillippi Creek. Different portions of Sarasota Bay are classified as Class II or Class III surface waters. Class II waters are capable of supporting recreational or commercial shellfish propagation and harvesting. Class III waters are used for recreation and the propagation and management of fish and wildlife.

FDEP has designated Sarasota Bay as an Outstanding Florida Water, and is therefore afforded the highest degree of protection by the State. The designation provides additional protection to special waters recognized for their ecological and recreational significance. In addition, the Bay has been recognized as meriting special attention under the Estuary Management Provision of the 1987 amendment to the Clean Water Act (Section 320). On June 26, 1989, the Sarasota Bay National Estuary Program (SBNEP) Management Conference was convened. During 1990 - 1992, the SBNEP completed the most comprehensive technical assessment conducted on any estuarine system in the state of Florida. Information from the characterization of Sarasota Bay was presented in the "Framework for Action" (FFA) report in March 1993.

The Comprehensive Conservation and Management Plan for Sarasota Bay (CCMP) was released in November 1995 by the Sarasota Bay National Estuary Program. The plan includes six Action Plans focusing on wastewater treatment and reclamation, stormwater treatment and prevention, freshwater and saltwater wetlands, fisheries and other living resources, recreational use, and governance to oversee implementation. The CCMP also recommends additional monitoring, resource assessment, and citizen education and involvement strategies.

The FFA and CCMP published by the Sarasota Bay Estuary Program thoroughly investigated estuarine pollution conditions and actions needed to maintain estuaries. Inventory and analysis was conducted in the following areas:

- general estuarine conditions and identification of known existing point and non-point source pollution problems;
- impact of the development and redevelopment proposed in the future land use Chapter including general sanitary sewer, drainage, potable water, and natural groundwater aquifer recharge Chapters upon water quality, circulation patterns, and accumulation of contaminants in sediments;
- identification of actions needed to remedy existing pollution problems; and,
- identification of existing state, regional and local regulatory programs which will be used to maintain or improve estuarine environmental quality.

In conjunction with the SBNEP, the City and other local, state and federal government agencies have participated or is participating in four restoration/enhancement projects as follows:

- The Sarasota BayWalk located on City Island was opened in April 1992. This site was formerly a wetland used as a spoil deposition site during the 1960's when the Intracoastal Waterway (ICW) was dredged. It is now a 4.5 acre wetland, with six tidal lagoons and 25,000 native plants. Sarasota BayWalk is a juvenile fish nursery helping to repopulate the Bay. It also serves as an outdoor classroom with boardwalk and interpretive signs.
- Opened in April 1996, the Bayfront BayWalk (Sixth Street Canal) that was formerly a boat ramp was transformed into an intertidal wetland, complete with interpretive signs and a foot bridge connecting Selby Library and Van Wezel Hall for the Performing Arts. The site's high accessibility and central location make it an excellent outdoor ecological classroom.
- The Hog Creek project incorporates the creation of a 0.5 acre of intertidal wetland, including removal of exotic vegetation (primarily Australian Pine and Brazilian Pepper), with modifications to an existing stormwater detention system. Hog Creek is located immediately north of Centennial Park, connecting a portion of the 12th Street and Orange Avenue upstream drainage system with the Bay. One land parcel has been purchased and the other is pending funding from the Florida Communities Trust. These two parcels will greatly enhance the urban park-like setting of this project. It will be connected to the Bayfront Baywalk via previously installed walkways.
- The City Island revetment, bordering New Pass Channel, was restructured to absorb (instead of reflect) the wave energy from passing boats. Artificial reef material was placed adjacent to the wall. One benefit is a reduction in the turbulence in the sea grass bed immediately north of the New Pass Channel.

The major pollution problems associated with Sarasota Bay are discussed below under point and non-point pollution sources.

The Charlotte Harbor Basin, located in Charlotte and Lee Counties, is approximately 50 miles south of the City of Sarasota. Because of drainage patterns in the City, there is virtually no impact from the City on this basin. However, the City recognizes the importance of Charlotte Harbor and its tributaries and supports the development of the Charlotte Harbor Comprehensive Conservation and Management Plan which was published in March of 2000.

Floodplains

The City's floodplains are identified on Illustration EP-4 and are defined by the A, AE, AH, and VE zones of the flood insurance rate maps of the Federal Emergency Management Agency. A, AE, and AH zones are high risk areas with a 1% chance of annual flooding and VE zones are high risk coastal areas with a 1% or greater chance of flooding and an additional hazard associated with wave action. The areas identified are largely developed and include residential, commercial, recreational and community uses. Development and redevelopment in flood prone areas is not prohibited. However, the floodplains are subject to regulations that require more stringent construction standards, controls alteration of floodplains and stream channels, and controls dredging and filling activities. Stormwater management is another factor associated with runoff and flood hazard mitigation in floodplains and is discussed further below under non-point sources and in the Utility Chapter.

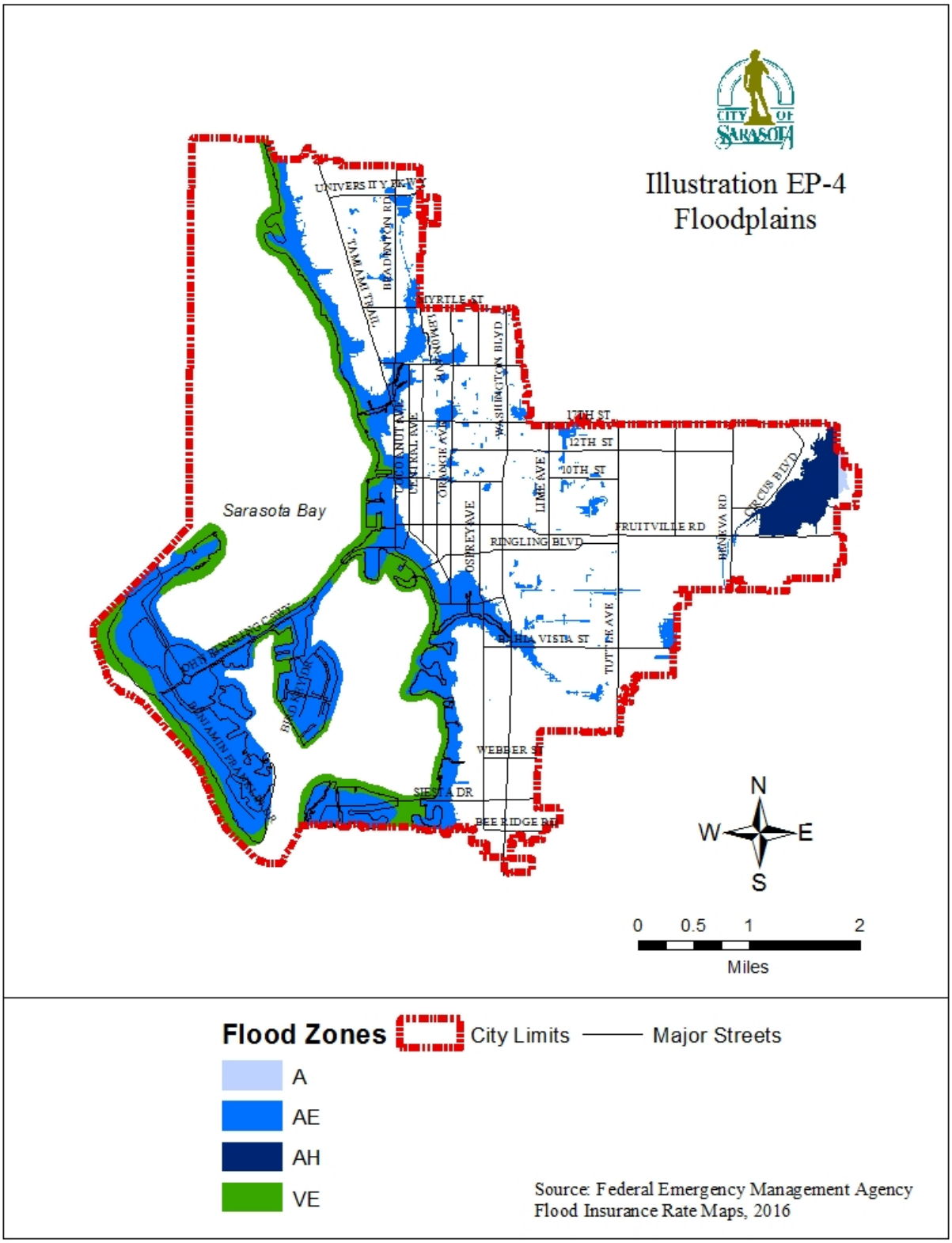


Illustration EP-4
Floodplains
Sarasota Bay
UNIVERSITY PKWY
MYRTLE ST
17TH ST
12TH ST
10TH ST
FRUITVILLE RD
RINGLING BLVD
BAHIA VISTA ST
WEBBER ST
SIESTA DR
BEE RIDGE RD
LIME AVE
OSPREY AVE
TUTTLE AVE
HONEVA RD
CIRCUS BLVD
N
W
E
S
0 0.5 1 2
Miles
Flood Zones
City Limits
Major Streets
A
AE
AH
VE
Source: Federal Emergency Management Agency
Flood Insurance Rate Maps, 2016

Natural Habitats

Although Sarasota is a highly urbanized area, it encompasses an abundance of natural resources including Sarasota Bay, along with a diversity of habitats and associated species. These resources contribute greatly to the character of the City and attract many visitors yearly. The City provides protection to these natural systems through its designation of the Marine Park (MP) and Conservation Overlay (COD) zone districts discussed earlier.

Each species within a habitat contributes to the stability of the system. For example, the seagrass beds provide shelter for small invertebrate animals such as shrimp larvae. The larvae, in turn, provide a service to the sea grasses by cleaning away detrital materials that block sunlight from plants.

An ecosystem is a collection of habitats and their inhabitants. The stability of an ecosystem depends on complex interrelationships between plant and animal species and diversity. For example, in a marine ecosystem which includes bottom habitats, mud flats, and open water habitats such as the Gulf, shrimp rely on the sheltered areas of coastal estuaries for maturation and on the open water areas for reproduction. There are two primary ecosystems types in the City of Sarasota: marine and upland. Illustration EP-5 delineates the major habitat types located within the City.

Marine Ecosystem

The marine ecosystem in the City of Sarasota consists primarily of seagrass beds, sandy bay bottom, intertidal marshes, and fringing mangroves in addition to open waters. This ecosystem encompasses the entire underwater portion of the City including Sarasota Bay, Hudson and Whitaker Bayous, portions of the Gulf of Mexico, and numerous small inlets along the shoreline. The various habitats that comprise the marine ecosystem are discussed below.

Seagrass Beds

Seagrass Beds occur in the shallow sheltered areas of Sarasota Bay. The seagrasses which comprise the beds have an extensive system of roots and rhizomes rooted in soft, sandy or muddy bottoms, which give rise to erect stems bearing foliage leaves. Seagrass meadows trap sediment, absorb nutrients, and provide both habitat and food for marine species ranging from microscopic bacteria and plankton to juvenile fish and larval forms of invertebrates. Still other fauna, including crabs, fish, turtles and manatees, are transient visitors to the grass beds.

There are extensive grass beds remaining in Sarasota Bay; however, the impacts of development and associated human activities pose a serious threat to their continued existence. Reduced light levels due to water turbidity caused by suspended solids and blooms of phytoplankton usually result in decreased density and coverage of seagrasses. Physical disturbance of grass beds from boat traffic producing propeller cuts is often extensive and long lasting. Dredge and fill activities uproot and smother seagrasses in addition to changing the physical, chemical, and biological aspects of the sediments to which the grasses are adapted for growth.

Termination of the continuous discharge of secondarily treated domestic wastewater has improved the water quality at the mouth of Whitaker Bayou and in the historically impacted area of Sarasota

Bay. According to staff at the Sarasota Bay Estuary Program, seagrass coverage has increased in recent years, providing enhanced habitat for juvenile fish, shrimp, crabs, and other marine species.

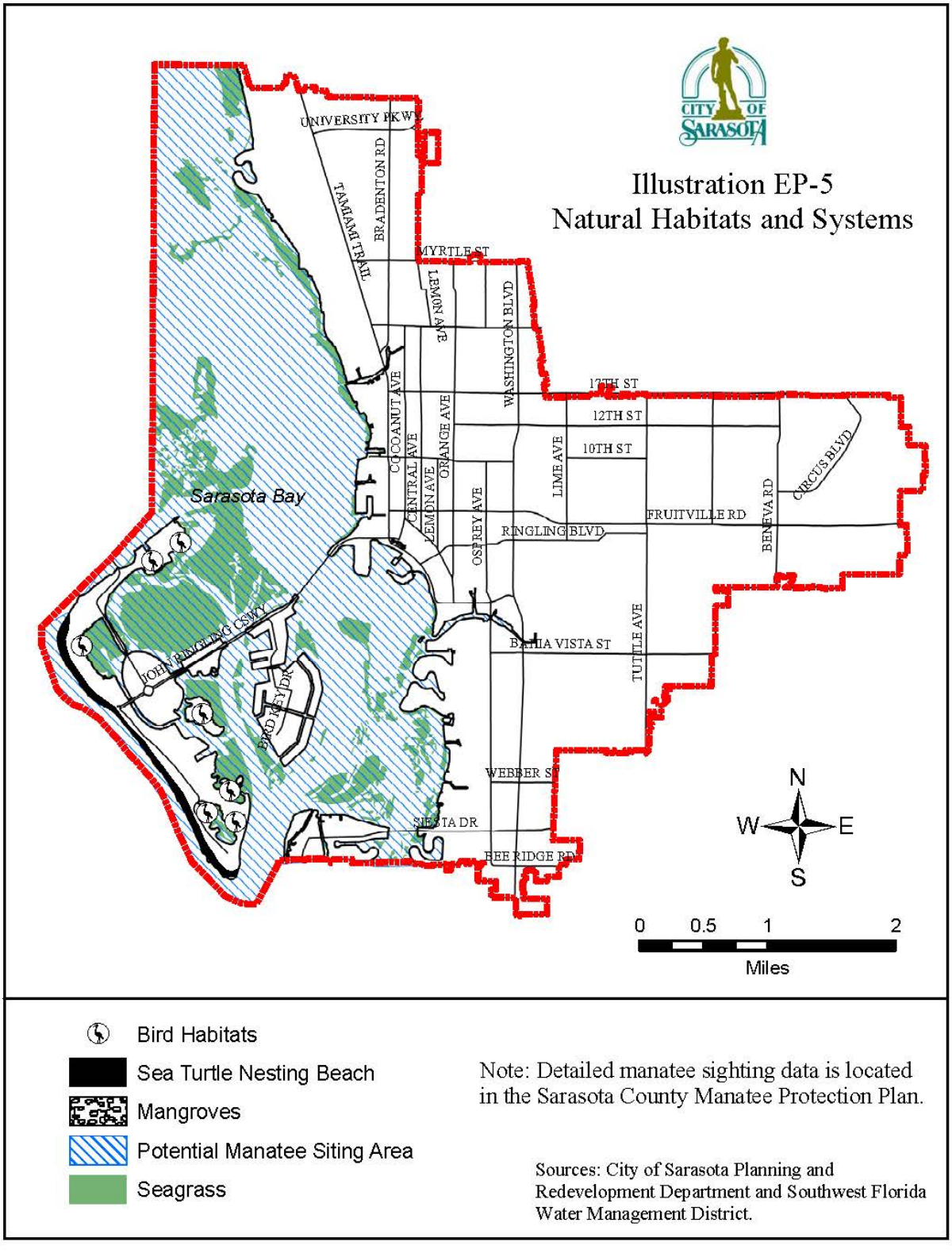


Illustration EP-5
Natural Habitats and Systems
UNIVERSITY PKWY
TAMIAMI TRAIL
BRADENTON RD
MYRTLE ST
LEMON AVE
WASHINGTON BLVD
17TH ST
12TH ST
10TH ST
COCOANUT AVE
CENTRAL AVE
LEMON AVE
ORANGE AVE
OSPREY AVE
LIME AVE
FRUITVILLE RD
RINGLING BLVD
BENEVA RD
CIRCUS BLVD
Sarasota Bay
JOHN RINGLING CSWY
BIRD KEY DR
BAHIA VISTA ST
TUTTLE AVE
WEBBER ST
SIESTA DR
BEE RIDGE RD
N
W
E
S
0
0.5
1
2
Miles
Bird Habitats
Sea Turtle Nesting Beach
Mangroves
Potential Manatee Siting Area
Seagrass
Note: Detailed manatee sighting data is located in the Sarasota County Manatee Protection Plan.
Sources: City of Sarasota Planning and Redevelopment Department and Southwest Florida Water Management District.

Mangroves

Mangroves occur along extensive portions of the shoreline of Sarasota Bay. Two species with specialized root systems grow in the intertidal environment, and two more species grow near the shore at higher elevations. Well-established mangrove forests can protect shorelines from occasional episodes of erosion, and buffer uplands from storm surges. They filter upland pollutants, and in so doing serve as valuable nutrient stores and sources. Terrestrial wildlife take advantage of mangroves as a travel corridor and refuge, while birds utilize the forests for roosting and feeding.

The major threat to mangroves in Sarasota Bay is posed by development, when the mangrove forest is physically altered and/or eliminated. Mangroves are also threatened by exotic pest plants such as Australian pine and Brazilian pepper. These plant species are not indigenous to the area and therefore have no natural predators. The climate also provides these exotic species with ideal growing conditions. The Australian pine root system is not capable of holding sand during storm events and contributes to erosion during periods of high storm surge. Both species can quickly overtake the native vegetation that provide shoreline stabilization as well as habitat areas for dependent wildlife.

In 1989, the City adopted a Tree Protection Ordinance providing protection for trees and, in 2002, the City strengthened the tree protection ordinance, which is contained in the Zoning Code. The purpose of the ordinance is to protect the City's tree canopy. A permit is required for the removal of trees. Removal is allowed only when a tree creates a safety hazard, utility problem, prevents reasonable access, is dead or diseased, or prevents the reasonable development of property. In addition, the regulations provide protection for trees during construction. In 2002, the City provided special protection to "Grand Trees", which are Live Oak trees whose single or combined trunk DBH size is 24 inches or greater. The removal of a "Grand Tree" is prohibited, however an exemption may be granted in accordance with criterion defined in the Zoning Code. Permits for trimming or removing mangroves are issued by the Florida Department of Environmental Protection.

Fisheries

Fisheries are dependent on the Bay's marine ecosystem for production and Sarasota Bay provides a critical habitat for a variety of commercial and recreational fisheries including mullet, red drum, snook, and spotted seatrout. The Bay serves as a nursery area for juvenile spotted seatrout, mullet and snook. All of these resources have declined in numbers since the 1950s, in part due to the decline in seagrass beds in the Bay. Blue crab and bait shrimp have also declined since the 1950s, probably due to the loss of seagrass beds and overfishing. Declining seagrasses, losses of marshes and mangroves, and changes in salinity continue to threaten the suitability of the Bay as a fishery nursery. However, in recent years seagrass coverage has increased, as discussed under the heading "Seagrass Beds."

Sea Turtles, Manatees and Dolphins

Vertebrates dependent on Sarasota Bay's ecosystem include Atlantic Loggerhead turtles, the bottlenose dolphin, and West Indian manatees. Sea turtles use barrier island beaches for nesting and their success depends in part on beach management practices. Dolphins probably use the Bay as a breeding ground and are stable in number. The West Indian manatee, however, are an endangered species that use the Bay's ecosystem for feeding and reproduction. The manatee is most threatened by high speed recreational boat traffic.

In order to protect the West Indian manatee, Mote Marine Laboratory in conjunction with government agencies prepared a manatee protection plan for Sarasota County and the municipalities located within the county. The **Sarasota County Manatee Protection Plan** is designed to reduce human-related threats to manatees and their habitats. In this regard, it addresses the protection of manatees, wetlands, and seagrasses. Additionally, the **Sarasota County Manatee Protection Plan** includes a Boat Facility Siting Plan that addresses the siting location of boat facilities and regulates those facilities with five or more boats slips. The Plan does not regulate the siting of single-family boat docks or facilities with less than five wet boat slips. The City has adopted by reference the complete **Sarasota County Manatee Protection Plan** into the *Sarasota City Plan* (see Action Strategy 1.12).

Threatened and Endangered Species

Illustration EP-6 lists threatened and endangered animal species likely to occur in the area. There are three basic reasons for the decline of wildlife populations in Florida. Habitat destruction, such as bird and animal feeding and nesting sites, is cited by the U.S. Fish and Wildlife Service as the foremost cause. The other two are direct exploitation (e.g hunting the gopher tortoise for food) and human disturbance (e.g. reduction of the water table and boating) which affect wildlife and their habitat. For more detailed information on important sea grasses, green algae and endangered plants, readers should consult the sources listed at the bottom of Illustration EP-6.

The species of seagrasses and algae in Illustration EP-7 are not threatened or endangered, but should be considered important because of their habitat value and the limited distribution in Sarasota County. They are also protected under Florida law. One species of seagrass is considered endangered, *Halophila johnsonii*, but it is not believed to be present in Sarasota Bay. There are numerous threatened and endangered plant species listed for Florida and Sarasota County, but many are located inland. The species listed in Illustration EP-7 are known to occur in the beach areas within Sarasota County, and possibly within the City. For more detailed information on endangered species, threatened species, and species of special concern, readers should consult the sources listed at the bottom of Illustration EP-7.

Illustration EP-6. Threatened and Endangered Species

Common Name	Scientific Name	USFWS Status	FGFWFC Status
West Indian manatee	Trichechus manatus	E	E
Arctic peregrine falcon	Falco peregrinus tundrius		E
Wood stork	Mycteria americana	E	E
American alligator	Alligator mississippiensis	TSA	SSC
Atlantic Loggerhead turtle	Caretta caretta	T	T
Eastern indigo snake	Drymarchon corais couperi	T	T
Piping plover	Charadrius melodus	T	T
Bachman's warbler	Vermivora bachmanii	E	E
Bald eagle	Haliaeetus leucocephalus	T	T
Florida scrub jay	Aphelocoma coerulescens coerulescens	T	T
Green turtle	Chelonia mydas mydas	E	E
Atlantic ridley turtle	Lepidochelys kempi	E	E
Gopher Tortoise	Gopherus polyphemus		SSC

Notes:

USFWS = United States Fish and Wildlife Service
FGFWFC = Florida Game and Fresh Water Fish Commission
E = Endangered
T = Threatened
TSA = Threatened due to similarity in appearance
SSC = Species of special concern

Source: Florida's Endangered Species, Threatened Species and Species of Special Concern, Official Lists. Published by the Bureau of Nongame Wildlife, Division of Wildlife, Florida Game and Fresh Water Fish Commission, April 1996.

Illustration EP-7. Important Seagrasses, Green Algae, and Endangered Plants

	Scientific Name	Common Name
Seagrasses:	Thalassia testudinum	turtle-grass
	Syringodium filiforme	manatee-grass
	Ruppia maritima	widgeon-grass
	Halophila engelmannii	star-grass
	Halophila decipiens	paddle-grass
	Halophila wrightii	shoal-grass
Green Algae:	Caulerpa prolifera	
	Caulerpa ashmeadii	
	Caulerpa mexicana	
	Caulerpa recemofa	
	Caulerpa cupressoides	
	Halimeda opuntia	
Endangered Plants:	Suriana maritima	bay cedar, thatch leaf; a beach shrub
	Ernodea littoralis	beachcreeper, common ernodea
	Opuntia stricta	shell mound prickly-pear, common prickly-pear
	Scaevola plumieri	inkberry

Source: Mote Marine Laboratory, 1997, which also referenced the following publications:

Rare and Endangered Biota of Florida, multiple volumes published by the University Press of Florida.

Florida's Endangered Species, Threatened Species and Species of Special Concern, Bureau of Nongame Wildlife, Division of Wildlife, Florida Game and Fresh Water Fish Commission (FGFWFC).

Notes on Florida's Endangered and Threatened Plants, Bureau of Entomology, Nematology and Plant Pathology-Botany Section, Contribution No. 39. Florida Department of Agriculture and Consumer Services.

COASTAL SYSTEMS AND LAND USE

The coastal area as defined in the Florida Statutes, includes the entire City. Generalized existing land uses are inventoried in the Future Land Use Chapter, however, land uses on the coastal islands are discussed in this section in detail. The issues addressed in this Chapter are related to management of coastal and shoreline land uses. The City has a variety of land uses that compete for the limited land areas adjacent to Sarasota Bay and the Gulf of Mexico. Most of the coastline is developed; however, the City and Sarasota County provide for public access to the coastline through publicly owned recreation and open space sites.

Coastal Islands Existing Land Uses

The City's coastal islands are comprised of six main islands, which are Lido Key, St. Armands Key, Bird Key, Coon Key, Otter Key, and a portion of Siesta Key. The following is a description of each.

Lido Key is comprised of several neighborhoods which are:

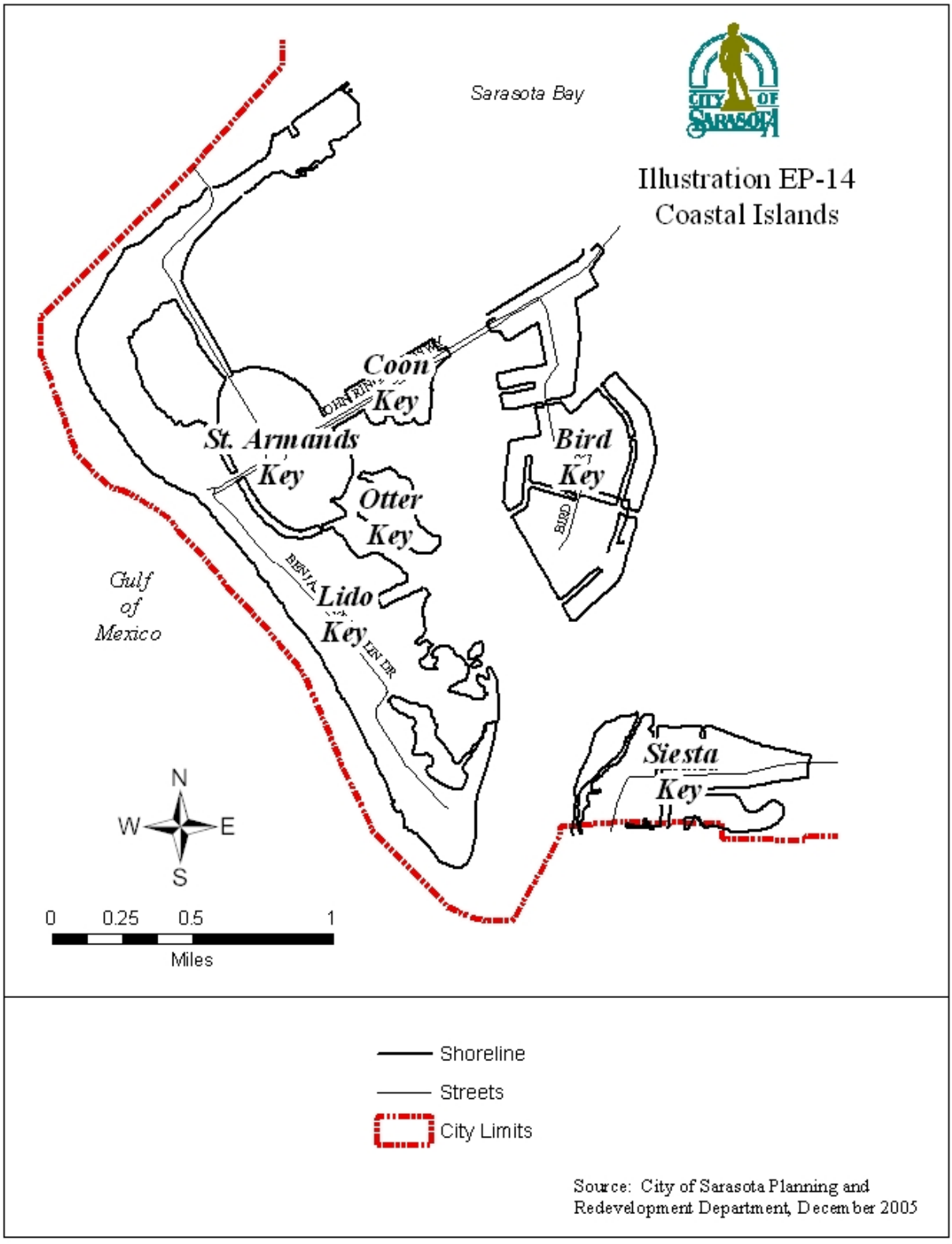
- Lido Shores – A residential subdivision located on the northwest area of the island. This area is developed exclusively with single-family homes and recreation/conservation lands.
- Lido Key – This area consists of a number of different land uses including single-family and multiple-family residential structures, hotels and resorts, and public parks, beaches, and conservation lands. Approximately 236 of the 307 acres in this neighborhood are publicly owned recreation and conservation lands.
- City Island – This area is owned by the City of Sarasota and is located on the northeast portion of the island. The City leases much of the land to businesses and non-profit organizations. Ken Thompson Park and boat ramps provide public recreational opportunities.

St. Armands Key – This area consists of the commercial tourist destination of St. Armands Circle, which is surrounded by single-family homes. Over 130 stores ranging from restaurants to personal services to retail shops are located around the circle. Land uses on the periphery of the circle include a bank, condominium, a county fire station, and two city-owned parking lots. The balance of the land on St. Armands Key consists primary of single-family structures.

Bird Key – This island is developed primarily with single-family homes. The Bird Key Yacht Club is also located on this island.

Coon Key – This 37± acre island is located in Sarasota Bay between Bird Key and St. Armands Key. Developed land uses are multiple-family residential (Sarasota Harbor East, Sarasota Harbor West, and Plymouth Harbor) and office/personal service (Sarasota Yacht Club).

Otter Key – This undeveloped 29.6± acre island is owned by Sarasota County. Public ownership provides that this island will remain as open space/conservation land.


Sarasota Bay
Illustration EP-14
Coastal Islands
Coon Key
St. Armands Key
Otter Key
Bird Key
Lido Key
Siesta Key
Gulf of Mexico
N
W
E
S
0
0.25
0.5
1
Miles
Shoreline
Streets
City Limits
Source: City of Sarasota Planning and Redevelopment Department, December 2005

Siesta Key – The northern 254± acres of Siesta Key are located within the City limits. This portion of Siesta Key is developed primarily with single-family homes, although there are a number of existing duplex/multiple-family structures.

According to the US Census, the permanent population of the coastal islands within the City was 3,603 persons in 2000. In 2000, the number of dwelling units was 2,942 on the islands. Of these dwelling units, 1,956 were occupied (66%) and 986 were vacant (34%). During the winter months, the City estimates that the vacant units are occupied, which increases the seasonal population to approximately 5,300 to 5,600 persons.

Water-Dependent and Water-Related Uses

Water-dependent uses are those activities which require direct shoreline access. They include marinas, boat ramps, bay access sites such as parks and beaches, and fishing piers.

Water-related uses are those which do not require direct shoreline access, but which provide goods and services that are associated with water-dependent uses. They include facilities related to shoreline access including parking areas, as well as facilities which serve waterborne and shoreline activities such as concessionaires and resorts.

Illustration EP-8 presents an inventory of existing water-dependent and water-related uses. Illustration EP-9 identifies the location of these facilities.

Illustration EP-8. Water-Dependent and Water-Related Uses

Activity Type	Current Facilities
Marina / Dry Storage / Boat Yards / Yacht Clubs	6
Public Boat Ramps	10
Bay Access	11
Beaches	3
Piers	3

Source: City of Sarasota Neighborhood and Development Services Department and Parks + Connectivity Master Plan, 2002.

The City's shoreline is a finite resource and there are many uses which compete for development along the length of it. The Plan section of this Chapter encourages water-dependent and water-related uses along the shoreline when redevelopment occurs. The City also encourages existing water dependent and related uses. Further, the City has adopted the **Sarasota County Manatee Protection Plan**, which includes a Boat Facility Siting Plan that is used in the regulation of water-dependent and water-related uses within the municipal limits.

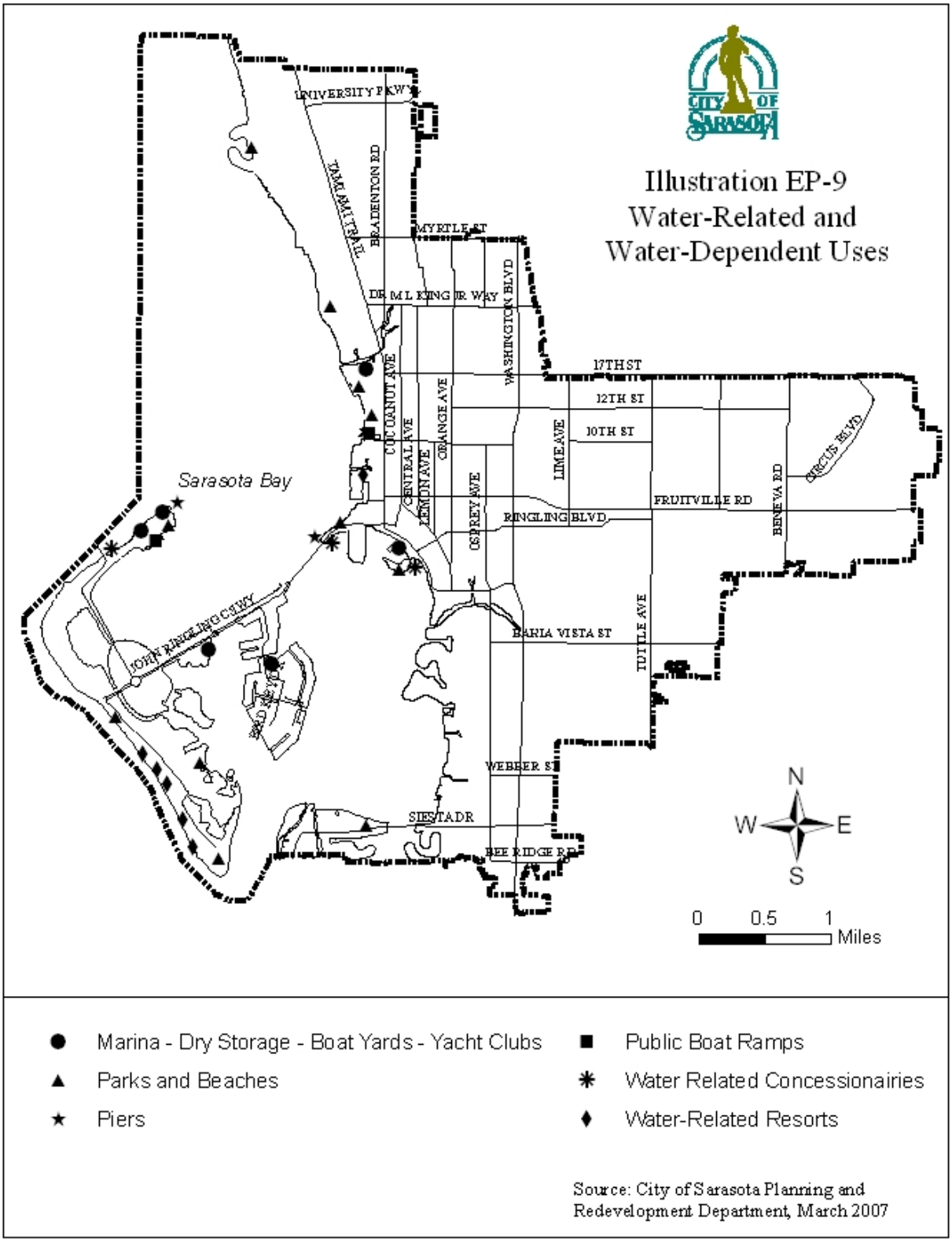


Illustration EP-9
Water-Related and
Water-Dependent Uses
UNIVERSITY PKWY
TAMIAMI TRAIL
BRADENTON RD
MYRTLE ST
DR M L KING JR WAY
WASHINGTON BLVD
17TH ST
12TH ST
10TH ST
COCOANUT AVE
CENTRAL AVE
LEMON AVE
ORANGE AVE
GREY AVE
LIME AVE
CIRCUS BLVD
FRUITVILLE RD
GENEVA RD
RINGLING BLVD
BAHIA VISTA ST
TUTTLE AVE
JOHN RINGLING CSWY
Sarasota Bay
WEBBER ST
SIESTA DR
BEE RIDGE RD
N
W
E
S
0
0.5
1
Miles
Marina - Dry Storage - Boat Yards - Yacht Clubs
Parks and Beaches
Piers
Public Boat Ramps
Water Related Concessionairies
Water-Related Resorts
Source: City of Sarasota Planning and
Redevelopment Department, March 2007

Shoreline Conflicts

Conflicts along the shoreline involve a variety of issues discussed below. The City's policies in regard to these conflicts are identified.

Public Access vs. Private Ownership

The property rights of private ownership restrict public access to the shoreline and water resources. Access in residentially developed areas is generally more restrictive than in commercially developed areas. The City's policy is to reserve public access sites through acquisition, development, and maintenance of parks, and to not vacate street rights-of-ways that may or do provide access. The Plan section of this Chapter encourages the provision of public access along the City's shorelines.

Recreation vs. Conservation Uses

Recreational uses often conflict with conservation uses. However, both use types must be accommodated within a limited geographic area. The City participated, along with other local governments and the scientific community, in preparing The Comprehensive Conservation and Management Plan for Sarasota Bay. One of the Action Plan Goals of that plan is to "Restore and sustain fish and other living resources in Sarasota Bay." Another Action Plan Goal is to "Provide increased levels of managed access to Sarasota Bay and its resources." The purpose of these goals is to minimize impacts to wildlife and their habitats.

Development vs. Storm Hazards

Shoreline property is prized for development, especially for resort and residential uses, because of the value of water and shoreline amenities. These properties are also the most vulnerable to storm hazards. The City has policies that restrict development in areas subject to storm hazard and also has adopted the Sarasota County Local Mitigation Strategy. The City also coordinates with State agencies and programs to minimize the risk to life and property. (See Hurricane Vulnerability and Disaster Preparedness.)

Development vs. Historic Coastal Resources

The City's historic resources are identified in the Historic Preservation Chapter. The City's Historic Preservation program, established in 1986, provides for the identification and protection of archeological and architectural resources found throughout the City. The program is of particular importance for the protection of indian mounds and middens found near the coasts.

Coastal Economy

The City's economy is closely linked to its coastal resources. Tourism, resorts, boating, sport and commercial fishing, and related sales are coastal industries which contribute to the economic base of the City. The City of Sarasota and surrounding area includes a large retirement community that, in turn, creates the demand for support from the service industries. The action strategies of the Environmental Protection and Coastal Islands Chapter of this plan ensure that the City's coastal resources are protected and conserved so that the economic viability of industries dependent on coastal resources may also be ensured.

Tourist attractions, resorts, and shopping areas that accommodate tourists and residents are the economic catalysts for the coastal islands. The major tourist attractions are Mote Marine Laboratory and Sarasota Bay Explorers (providing eco-tours of Sarasota Bay), both of which are located on City Island. Another major tourist attraction is St. Armands Circle. There are also charter boats that operate from the New Pass Grill and Bait Shop which attract tourists to the islands. Additionally, the City's public beaches and parks are destinations for many visitors and residents. Another major retailer on the coastal islands is MarineMax, which is a commercial marina that leases land from the City.

Lido Key is home to many waterfront resorts that provide temporary lodging for visitors and homes for permanent residents. Some of the resorts that provide lodging for visitors include the Helmsley Sandcastle Hotel, Lido Beach Resort, and Coquina on the Beach. These resorts and others are supported by numerous restaurants and retail stores that are located on the coastal islands and mainland.

St. Armands Circle is the primary shopping destination on the coastal islands for tourists and local residents. It is located on St. Armands Key and includes over 130 stores, restaurants, and other businesses. Businesses include national and regional chains such as Ben and Jerry's, Tommy Bahamas, and the Columbia Restaurant to locally owned and operated stores.

Land Use Conflicts

There are locations on the coastal islands where land use conflicts exist due in part to the mix of land uses found on the islands. The greatest potential for conflict and incompatability exists between single-family homes and (1) taller multiple family and resort structures and (2) the commercial area of St. Armands Circle.

The development of tall condominiums and hotels can adversely impact lower scale single-family homes that are located nearby. The area of greatest conflict for these uses is southern Lido Key where tall structures have been built along the Gulf of Mexico west of Benjamin Franklin Drive. This area is designated as Resort Residential on the Future Land Use Map, and one of the implementing zoning districts for this classification, WFR, allows for structures up to 135 feet in height (including two levels of parking underneath habitable floor area). Another implementing district, RMF-4, allows for structures up to 95 feet in height with parking underneath habitable floor area. The land uses east of Benjamin Franklin Drive include low-scale single-family and multiple-family structures and hotels.

The current zoning districts for these low-scale sites east of Benjamin Franklin Drive are RMF-2 and RMF-3, which limit building height to a maximum of 35 feet above the minimum FEMA elevations.

There were two sites east of Benjamin Franklin Drive that was classified as Resort Residential on the 1998 Future Land Use Map. These were the Holiday Inn, located at 233 Benjamin Franklin Drive, and the block located between Roosevelt Drive and Taft Drive. The Resort Residential classification accurately reflects the existing Holiday Inn and taller multiple family uses located north of the hotel. This designation should remain for the Holiday Inn site. However, the designation at the other location between Roosevelt Drive and Taft Drive is incompatible with the low-scale residential land uses located to the northwest. Therefore, the Future Land Use Map classification for this site has been revised in this version of the comprehensive plan to improve compatibility of land uses.

The maximum height allowed by the Resort Residential implementing zoning districts is incompatible with the 35 foot height limit in the RMF-2 and RMF-3 districts. Therefore, the Resort Residential land use classification should not be allowed to expand on the remainder of Lido Key.

Another potential point of conflict that existed on the Future Land Use Map that was adopted in 1998 has been resolved in this edition of the *Sarasota City Plan*. Previously, there were two distinct Multiple Family Future Land Use Map classifications located in the area between Benjamin Franklin Drive and S. Boulevard of the Presidents. The implementing zoning districts for the Multiple Family – Moderate Density classification allowed for a maximum building height of 35 feet; however, the Multiple Family – Medium Density classification's implementing zoning districts allowed for a potential maximum building height of 115 feet. Rezoning of land to the RMF-4 and RMF-5 districts as allowed by the Multiple Family – Medium Density classification would have contributed to height compatibility issues. This problem was also applicable to the entire city and not exclusive to the coastal islands. In resolving this issue, the Future Land Use Map has been amended in this edition of the comprehensive plan to a revised Multiple Family – Moderate Density classification, thereby eliminating the height compatibility issue.

This version of the comprehensive plan also includes an adopted Coastal Islands Maximum Building Height Overlay Map that further restricts height to those limits that provide for greater compatibility by ensuring lower scale building heights in specific locations on the coastal islands.

Another point of potential conflict exists between the low density single-family residential area that surrounds the commercial tourist shopping area of St. Armands Circle. The primary areas of concern are building height and land use for the four corners on the outside of the circle that face residential houses. The west corner is currently developed with a two-story bank in the CG zone district, which allows for maximum building height of 45 feet above FEMA elevation. The south corner is currently developed with the two-story Kingston Arms multiple family development in the RMF-5 zone district, which allows for maximum building height of 115 feet. The north and east lots are currently developed with city-owned surface parking lots and a one-story county fire station. These sites are zoned G, which limits maximum building height to that of the most restrictive adjacent zoning district (RSF-2 with a maximum building height of 35 livable feet above FEMA elevation). Non-residential buildings on the inner part of the circle are up to 2 stories in height in the CT zone district (maximum of 35 feet above FEMA elevation). Any future redevelopment on these sites needs to be compatible with the existing land uses so that those surrounding uses are not negatively impacted. Further, if redevelopment were to occur on the two city-owned parking lots, there should be no net loss of

parking spaces because these parking areas are vitally important to the businesses located at St. Armands Circle.

Compatibility can be achieved in a number of ways including:

- Establishing a maximum building height that reflects surrounding heights through creation of a height overlay district that reflect the unique needs of different types of land uses;
- Providing for land uses that are compatible with single-family residential homes and commercial retail shops. These land uses would serve as a buffer between the existing houses and commercial shops. Such uses may include single- or multiple-family residential, bed and breakfast, small offices, and live-work units. In addition, the county fire station should remain.
- If the two surface parking lots are to remain, the landscaping and buffering could be improved so that the sites are more aesthetically pleasing.

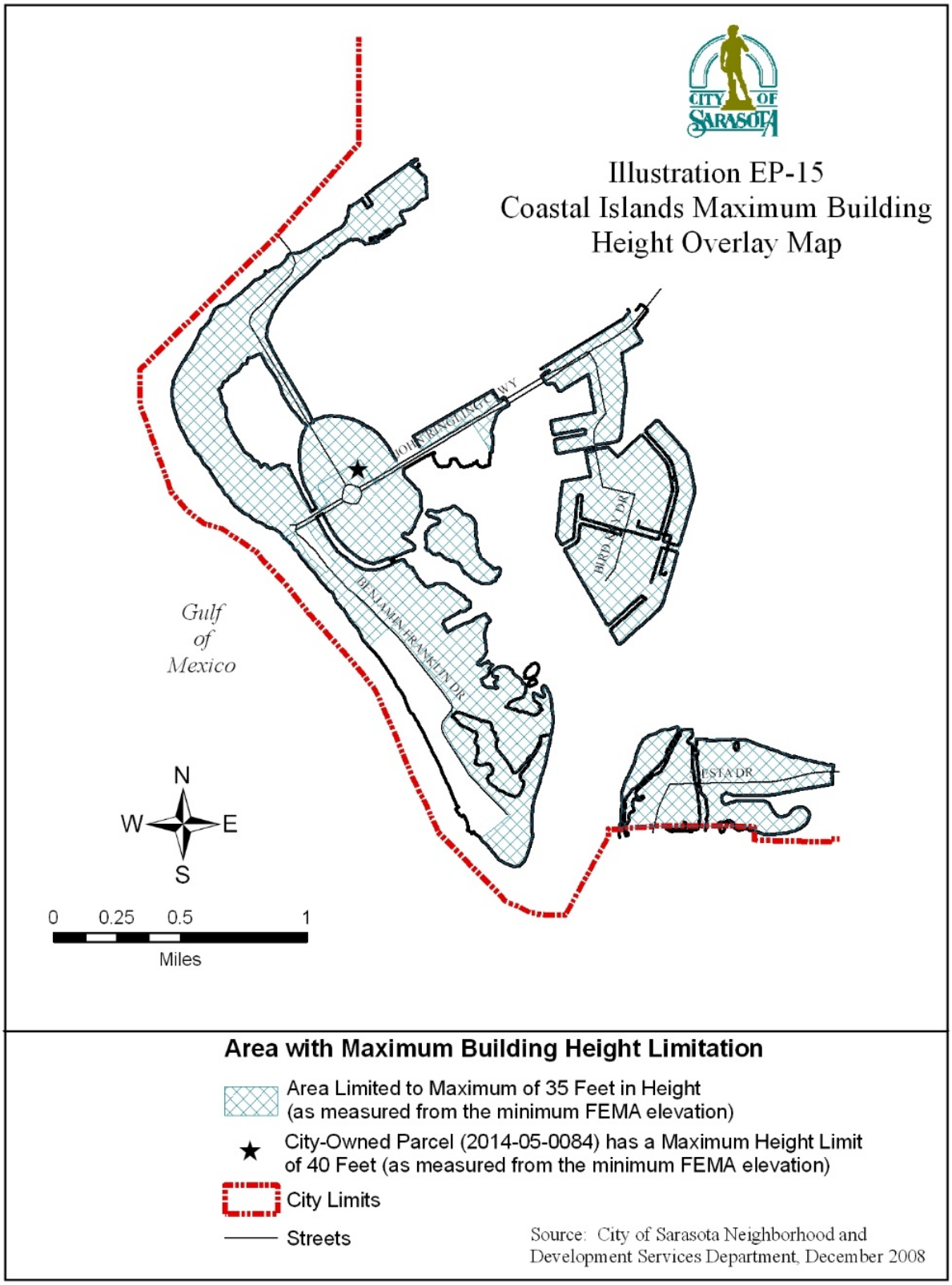


Illustration EP-15
Coastal Islands Maximum Building Height Overlay Map
JOHN RINGLING CSWY
BIRD KEY DR
BENJAMIN FRANKLIN DR
FESTA DR
Gulf of Mexico
N
W
E
S
0
0.25
0.5
1
Miles
Area with Maximum Building Height Limitation
Area Limited to Maximum of 35 Feet in Height (as measured from the minimum FEMA elevation)
City-Owned Parcel (2014-05-0084) has a Maximum Height Limit of 40 Feet (as measured from the minimum FEMA elevation)
City Limits
Streets
Source: City of Sarasota Neighborhood and Development Services Department, December 2008

ESTUARINE ANALYSIS

Sarasota Bay water quality is considered "good" according to a Florida Department of Environmental Protection study using water quality indices. In addition, FDEP has designated Sarasota Bay as an Outstanding Florida Water. This designation provides special protection to the Bay and provides strict regulatory limits on water quality degradation.

Although the general condition of Sarasota Bay is considered good, there are a number of problems that can be attributed to pollution, the foremost being the deterioration of water quality associated with point and non-point discharges.

Point Source Pollution

Historically, domestic wastewater from the City Wastewater Treatment Plant has been discharged to the tidal reaches of Whitaker Bayou. Whitaker Bayou is a Class III surface water which enters Sarasota Bay in the northern portion of the City's service area. The bayou experiences water quality problems; violations of the State's dissolved oxygen standard have been noted and there has been a reduction in coverage by submerged macrophytes (seagrasses) occurring through the bayou. Additionally, high chlorophyll A concentrations have been recorded.

Sarasota Bay is affected by the outflow from Whitaker Bayou in an area along the eastern shore. It is estimated that the influence of the bayou extends about one tidal excursion (2,550) meters to the north and northwest. Higher velocities and mixing towards the south and west of the bayou lead to a higher rate of dilution and nutrient transport in these areas.

The zone of influence to the north and northwest of Whitaker Bayou is characterized by higher levels of total suspended solids and nutrients than exist in mid-bay or in the passes to the Gulf of Mexico. The water quality of mid-bay and the passes is typical of unpolluted conditions, based on available data. Violations of Florida's water quality standard for transparency have also occurred in this zone of influence. In this area, the transparency is at least 20 percent less than found in either the passes or mid-bay. Florida's water quality standards prohibit a reduction of transparency by more than ten percent below background level.

Through a series of Federal and State grants, matched by local revenues, the Utilities Division of the Department of Public Works created a waste water reuse system that exceeds the current demand on the Advanced Wastewater Treatment plant. The U.S. Environmental Protection Agency (EPA) provided $10 million, Florida Department of Environmental Protection provided $7 million, and the Southwest Florida Water Management District contributed $1.1 million to the project. Since 1990, the City’s wastewater has received Advanced Wastewater Treatment (AWT), formerly known as tertiary treatment. AWT removes solids, reduces oxygen demand and reduces nutrients (nitrogen and phosphorus). The treated water is distributed as “reuse” water for irrigation to agricultural and recreational customers, such as the Bobby Jones Golf Course. The urban delivery system is under development with some large users such as the Ed Smith Stadium Complex being served.

The City has embarked on a program to reuse all of its domestic wastewater at urban (golf courses, parks, commercial, residential, and recreational areas) and agricultural (pasture, and citrus) sites for irrigation. The program was implemented in two phases. The first phase addressed the City's current domestic wastewater flows. This phase included wastewater storage in a 100-acre pond located approximately 17 miles from the City.

The second phase consisted of upgrading the wastewater treatment system to advanced waste treatment (AWT) for the intermittent discharge of excess reclaimed water during periods of wet weather or low irrigation demand. The level of treatment is such that the City exceeds the requirements of the Florida water quality standards for the discharge to Whitaker Bayou. Termination of the continuous discharge of secondarily treated domestic wastewater has measurably improved the water quality at the mouth of Whitaker Bayou and in the historically impacted area of Sarasota Bay. According to the Sarasota Bay Estuary Program seagrass coverage has increased seven percent, providing enhanced habitat for juvenile fish, shrimp, crabs, and other marine species.

Although the City has committed considerable resources to the reclaimed water reuse system, its dependence on irrigation demand for that reuse continues to result in extended periods of discharge to Whitaker Bayou during wet weather or periods of low irrigation demand. The City is working with other reclaimed water producers in the area and the Southwest Florida Water Management District to develop regional solutions for reclaimed water wet weather storage and dry weather retrieval to improve the reuse efficiency and thereby further reduce or eliminate discharge to Whitaker Bayou. The program is further discussed in the Utilities Chapter.

Non-Point Source Pollution

Stormwater runoff is the major non-point source of water pollution in Sarasota Bay. Stormwater runoff carries sediments, pesticides, and other pollutants into receiving water bodies. In addition, large influxes of freshwater into estuarine systems affect the salinity and may adversely impact plant and animal species dependent on the system.

In 1989, the City joined with Sarasota County, through an interlocal agreement, to form the Sarasota County Stormwater Environmental Utility which has engaged in a basin master planning process. Stormwater improvements have been constructed including retention ponds developed as part of the Bayfront improvements. These ponds greatly assist with retention of runoff from the developed urban areas of Downtown. The Bayfront improvements required coordination with the Florida Department of Transportation.

On July 23, 1993, in compliance with the Clean Water Act of the Water Quality Act of 1987, the City joined Sarasota County and the other municipalities of the county in submitting an application for a National Pollutant Discharge Elimination System Permit (NPDES). Annually, each permittee must submit a management plan. The permit, No. FLS000004, one of the first in the state of Florida, became effective January 1, 1995.

The City reduces non-point discharges of total suspended particulate by regulations requiring attenuation of rainfall on-site for all new construction projects. Correction of problems posed by existing stormwater runoff will be addressed by the City's implementation of the National Pollution

Discharge Elimination System (NPDES) permit. Controlling non-point discharges and restoring the quality of Sarasota Bay will result from implementing the action plans found in The Comprehensive Conservation and Management Plan for Sarasota Bay published in November 1995 by the Sarasota Bay National Estuary Program (SBNEP).

The City, under an interagency agreement with Sarasota County, is implementing a city-wide stormwater management program. Sarasota County, the Cities of Sarasota, Venice, North Port and the Town of Longboat Key were the first jurisdictions to receive NPDES stormwater permits in the southeast United States. Master Plans for stormwater treatment improvements are being completed for two major basins—Hudson Bayou and Whitaker Bayou. The Whitaker Bayou flood control planning from which a basin master plan will be developed, is being developed with the U.S. Army Corps of Engineers. Subsequent to completion of the master plans, capital improvements will be initiated. The Phillippi Creek master plan has been completed and capital improvements are being implemented.

One of the actions taken to restore Sarasota Bay is the Florida Yards and Neighborhoods Program, now called the Florida Friendly Landscape Program. This program is designed to reduce the quantity and improve the quality of stormwater runoff from residential properties. The Florida Yards and Neighborhoods Program is described in The Comprehensive Conservation and Management Plan for Sarasota Bay. It states:

"The Florida Friendly Landscapes Program, a community education and action program seeks to:

- Improve home and yard design and maintenance to improve and protect the Bay's water quality and increase native wildlife habitat;
- Reduce water usage throughout the region; and
- Provide a way for each resident of the community to play a substantial, active role in water-resource protection."

In 1993, the Sarasota Bay Program and Cooperative Extension Service launched the Florida Yards and Neighborhoods Program (i.e., Florida Friendly Landscapes Program) to provide information and advice on landscape design and maintenance to homeowners in Manatee and Sarasota counties. Twelve model Florida Yards located at public facilities have been installed, providing education opportunities for residents. A model Florida Yard at City Hall and other city-owned properties were developed "A Guide to Florida-Friendly Landscaping" for homeowners, explains how to design an environmentally friendly landscape featuring carefully selected plants suited to the climate, natural conditions and wildlife of southwest Florida. Tips on cost-saving landscape maintenance also are included to help residents reduce water, fertilizer and pesticide use; a helpful section for waterfront homeowners addresses shoreline management. A recognition program for Florida Yard homeowners, the Florida Yardstick, also was developed in 1994."

For further information on point and non-point pollution sources see The Comprehensive Conservation and Management Plan for Sarasota Bay which was published in 1995 by the Sarasota Bay National Estuary Program. The Utilities Chapter of the *Sarasota City Plan* details the City's programs for reducing stormwater impacts to the Bay.

Future Land Use Impacts

Development and redevelopment within the City is regulated, in part, through the Future Land Use Map and the Land Development Regulations. All land use changes will be required to meet stormwater design and attenuation criteria as outlined in the Utilities Chapter. In addition, the City's Coastal Construction Code further regulates development in the coastal area.

In order to minimize the impact of development to coastal waters, future residential densities on the coastal islands should not be increased on the Future Land Use Map. Higher residential densities would increase the potential for pollution to enter the waters, especially non-point source pollution.

Impervious Surfaces

Soils on undeveloped land are generally permeable in southwest Florida, which allows for the penetration of water into the ground. However, developed surfaces are generally impervious, which means that water cannot infiltrate the soil. Developed surfaces such as rooftops, swimming pools, sidewalks, driveways, roads, and parking lots increase the volume and speed of stormwater runoff. The amount of impervious surfaces on the coastal islands is a contributing factor to the non-point source of water pollution for Sarasota Bay as discussed in a previous section. The City requires that all new development treat stormwater and that stormwater runoff not exceed the predevelopment rate of runoff.

The Zoning Code has established a maximum impervious surface coverage for the Residential Single Family zone districts, which ranges from 60% to 75%. The Zoning Code also establishes maximum building coverage for this and other zone districts. The existing Zoning Code maximum impervious surface requirements are applicable to the majority of the coastal islands with the exception of St. Armands Circle, an area of southern Lido Key, and most of Coon Key. A maximum impervious surface coverage applicable to the coastal islands, exclusive of St. Armands Circle, would be beneficial to the long-term environmental health of Sarasota Bay as well as the upland areas of the islands. Therefore, the City has adopted a Coastal Islands Maximum Impervious Surface Overlay Map (see Illustration EP-16) that limits the maximum impervious coverage from 10% to 70% of an individual development site on the coastal islands.

Infrastructure Impacts

Potable water, sanitary sewer, solid waste, drainage, and transportation systems all have the potential to adversely impact the water quality of groundwater and surface water resources. Potable water systems may affect ground water supplies from over-pumping and solid waste disposal facilities may pollute groundwater supplies. Sanitary sewer systems and drainage systems may pollute receiving water bodies with sewer effluent or the sediments and pollution associated with stormwater runoff. The Utilities Chapter provides further discussion of the impacts of infrastructure on natural resources. Transportation and traffic circulation facilities can impact ground and surface water resources from stormwater runoff carrying pollutants found on roadways. The impacts of proposed transportation facilities on the environment must be analyzed and minimized prior to construction. Regular

sweeping of streets and roadways once they are constructed can help to reduce pollutants which can be carried by stormwater. The Transportation Chapter provides further discussion of the impacts of transportation infrastructure on natural resources.

Traffic Calming

Due to the geographic narrowness of the City's coastal islands, the islands are principally served by only a few major roadways. For Siesta Key, Siesta Drive is classified as a collector. For the remainder of the islands, John Ringling Causeway is a minor arterial and Benjamin Franklin Drive is a collector. Therefore, most drivers on the islands navigate on these roads. However, at times of congestion or construction, drivers will utilize the local residential streets more often as they bypass congested spots. This results in additional vehicles, many of which may be exceeding the speed limit, using the residential streets. In order to discourage such traffic from negatively impacting residential streets, the City will be evaluating the island transportation network for traffic calming measures. Once appropriate locations are determined, the City will install and maintain the traffic calming devices.

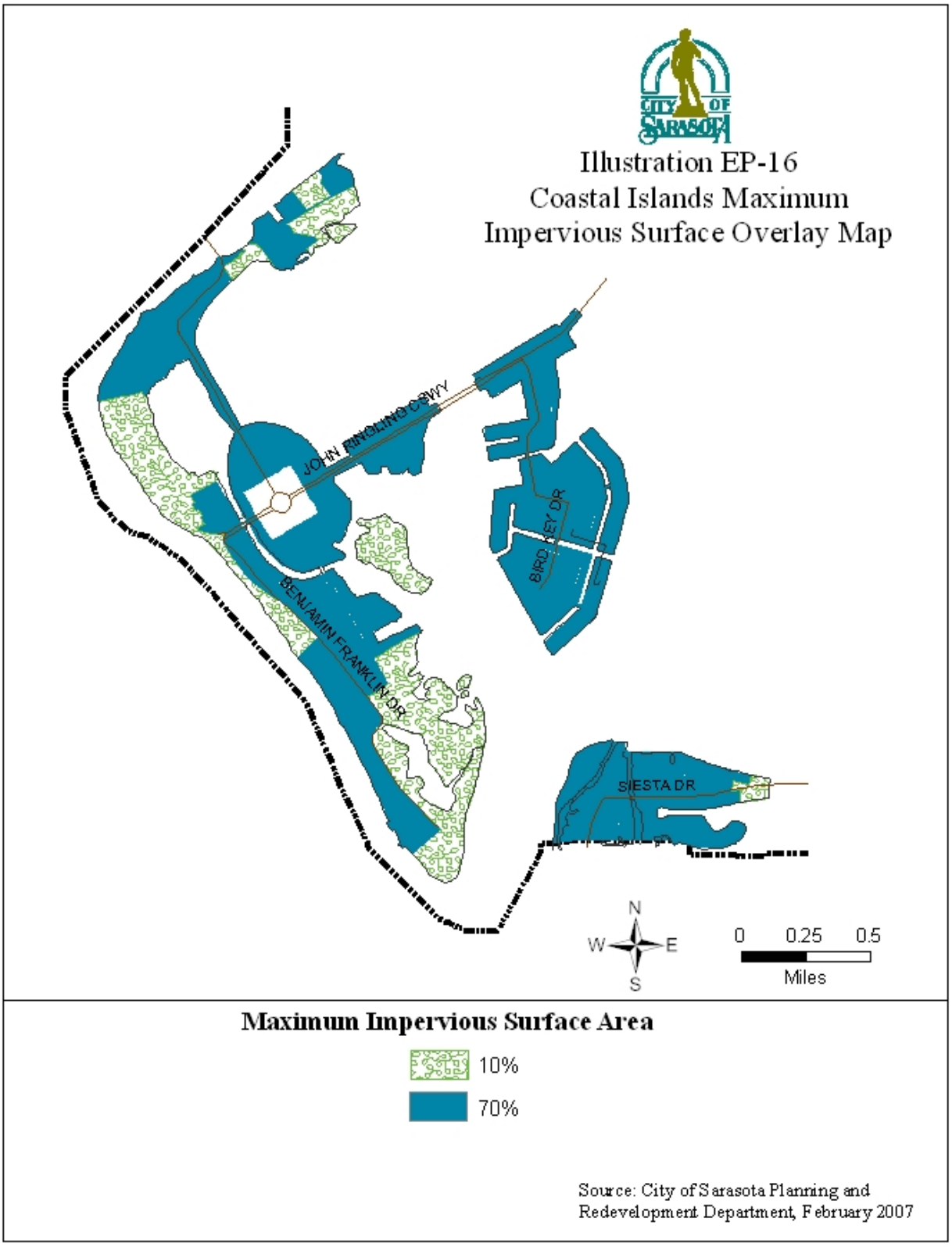


Illustration EP-16
Coastal Islands Maximum
Impervious Surface Overlay Map
JOHN RINGLING CSWY
BIRD KEY DR
BENJAMIN FRANKLIN DR
SIESTA DR
N
W
E
S
0
0.25
0.5
Miles
Maximum Impervious Surface Area
10%
70%
Source: City of Sarasota Planning and
Redevelopment Department, February 2007

BEACH AND DUNE SYSTEMS

The City's beaches protect upland infrastructure and buildings. The beaches are also an important natural resource and recreational facility for residents and tourists, which is essential to the area's economy. The beach is also a vital natural resource. The beach and dune system run the length of Lido Key. There are over 500 parking spaces within walking distance of Lido Beach. A need for additional parking has not been identified.

Beaches are dynamic systems that constantly shift in response to wave action, tides, and winds. Dune systems buffer upland property and also provide support to numerous plant and animal species. Development along beach systems and inlets interrupt the natural movement of the sand. Shoreline hardening structures may protect the beach areas on which they were built, but beach areas near these structures generally experience scouring of beach fronts. For this reason, shoreline hardening is regulated by the City and the State.

Lido Key is the only active beach/dune system within the City limits. According to the Southwest Florida Ecological Characterization Atlas, U.S. Department of the Interior, the northern half of Lido Key experiences erosion at the rate of one foot per year and is known to be unstable. The southern half of Lido Key experiences build-up. This data is based on the regression of the mean high water line expressed in feet/year and was calculated by periodically reviewing shorelines using aerial photography or U.S. Army Corps of Engineers high-water-shoreline-change charts. The measurements are of limited use, however, because they can indicate considerable regression while no net sand loss occurred.

In January 1990, the City Commission authorized the preparation of the Lido Beach Long-Range Beach Management and Erosion Control Plan. As part of that plan, an analysis was made of the littoral processes affecting the key. This included researching and summarizing the range of wind and wave conditions and the effects of the seven major extratropical storms which have affected the area since the 1920's. A sediment budget (inventory of sand gains and losses) was developed to examine sources of sand, and transport rates and directions. Littoral drift rates (the rate at which sand moves along the coast) along Lido Key have been estimated by studying the rates that sand builds up at Sarasota County inlets and passes. Net rates of 28,000 to 50,000 cubic yards per year have been inferred by various authors based on shoaling/dredging records at the passes. This data was used to calibrate a computer model for calculation of sediment transport which was then used in subsequent analyses. The effects of wave transformation by the ebb shoals of the passes were also considered and the model results were compared with historical shoreline changes identified from previous surveys. The final sediment budget confirms the existence of a "nodal point" in the area of the public beach in the center of Lido Key. The significance of this is that sand transport patterns indicate erosional losses in both directions (north and south) from the public beach.

The Lido Beach Long-Range Beach Management and Erosion Control Plan, completed in January of 1991, recommended an initial beach renourishment of 350,000 cubic yards with subsequent renourishments of 200,000 cubic yards approximately every four years, all placed along approximately one mile of publicly accessible beach on central Lido Key. The initial beach fill width of approximately 155 feet (with a gradual taper extending over the southern 1400 feet) will result in a 75-foot design beach width to be maintained for a 50 year period. This work is to be in addition to and alternating with the fill placed by the U.S. Army Corps of Engineers via their channel

maintenance project every four years. This alternating and periodic renourishment process is necessary because of the designed, sacrificial loss of sand, due to natural effects. The Plan was approved, after several public hearings and great support from the citizens, by the City Commission. The multitude of necessary studies for the design of the initial project was authorized by the City Commission in August of 1991. The City will continue to fund renourishment projects each year in its annual budget and 10-year Capital Improvements Program. As of December 2005, the City has allocated $16,581,000 to this project in the Capital Improvements Program. Funding sources for this program include a 1-cent and 2-cent tourist taxes and State and Federal grants.

The City applied for a State grant for construction of the Long-Range Plan's initial fill through the Florida Beach Erosion Control Program for fiscal year 1997-98. The 1997 State Legislature recommended funding of the project to the Governor in the amount of 25 percent. The project was constructed in April 1998.

New Pass at the north end of Lido Key was dredged in 1982 and 1990-91 and the spoil used in a beach renourishment project along Lido Key and Longboat Key. New Pass was dredged in the summer of 1997 by the Army Corps of Engineers and approximately 160,000 cubic yards of spoil was deposited on Lido Key along the beach from John Ringling Blvd. southward. Another 160,000 cubic yards of spoil was placed on Longboat Key. Dredge disposal sites are discussed below.

To protect the shoreline and back dunes on Lido Beach, Sarasota County has constructed wooden dune cross overs to the beaches to allow the back dunes a chance to develop a vegetative cover. A dune cross over is essentially a footbridge so pedestrians will not walk on and damage dune vegetation. Several dune cross overs have been destroyed by natural forces within the last two years. They will be replaced with "at-grade" access points and the new dune will be revegetated.

In 1989, the Florida Department of Environmental Protection relocated the Coastal Construction Control Line (CCCL) further inland in Sarasota County in response to general erosion trends. Development seaward of the CCCL is required to meet more stringent construction standards to help protect development in highly dynamic areas. The CCCL is discussed in further detail under the heading "Regulation of Land Use in the Coastal Area" which is discussed later in this Chapter.

Dredge Disposal Sites

There are no dredge spoil disposal sites within the City. Section 6-23 (d) of the City Zoning Code affirms that there shall be no filling of submerged and waterfront lands beyond the established bulkhead line. The permitting process is described in detail under Part 2 of the Engineering Design Criteria Manual; authority is granted by Section 29.5 of the City Code.

Normally, the contractor performing the dredge work is responsible for finding a dredge disposal site. This is the most efficient method for the City because the contractors already have permanent sites available and permitted. However, to assure that there are adequate future sites, this Plan contains an action strategy which addresses coordination and dispute resolution with:

- nearby jurisdictions;
- the Soil and Water Conservation District, which monitors erosion; and,
- West Coast Inland Navigation District, which monitors shoreline alteration.

Shoreline Protection Structures

There are approximately 40 miles of coastal shorelines within the corporate boundaries of the City of Sarasota. Of these 40 miles, approximately 8 miles are in a natural state and 32 miles have been altered by some type of man-made structure.

Illustration EP-10 delineates shoreline conditions.

Shoreline alterations include the construction of seawalls and revetments. Both of these structures are intended to stabilize the shoreline, generally for private benefit. As previously noted, the structures may cause adverse impacts to adjacent beach areas. In addition, these structures may not withstand storm events and may fail in a coastal storm event due to the intensity of wave impact that may undermine the foundation of the structure. If properly designed and maintained, the adverse effects and potential failure can be mitigated.

Alteration of natural shorelines occurs due to currents and wave action, especially when currents and wave action are intensified by storm activity. Groins have been built along some of the sandy shorelines in the City in an attempt to interrupt the movement of sand. This tactic is not generally successful due to the resulting water current which generates a scouring action on adjacent beaches. The City regulates shoreline hardening through the Zoning Code and requires permits and review from the Department of Environmental Protection prior to the issuance of building permits.

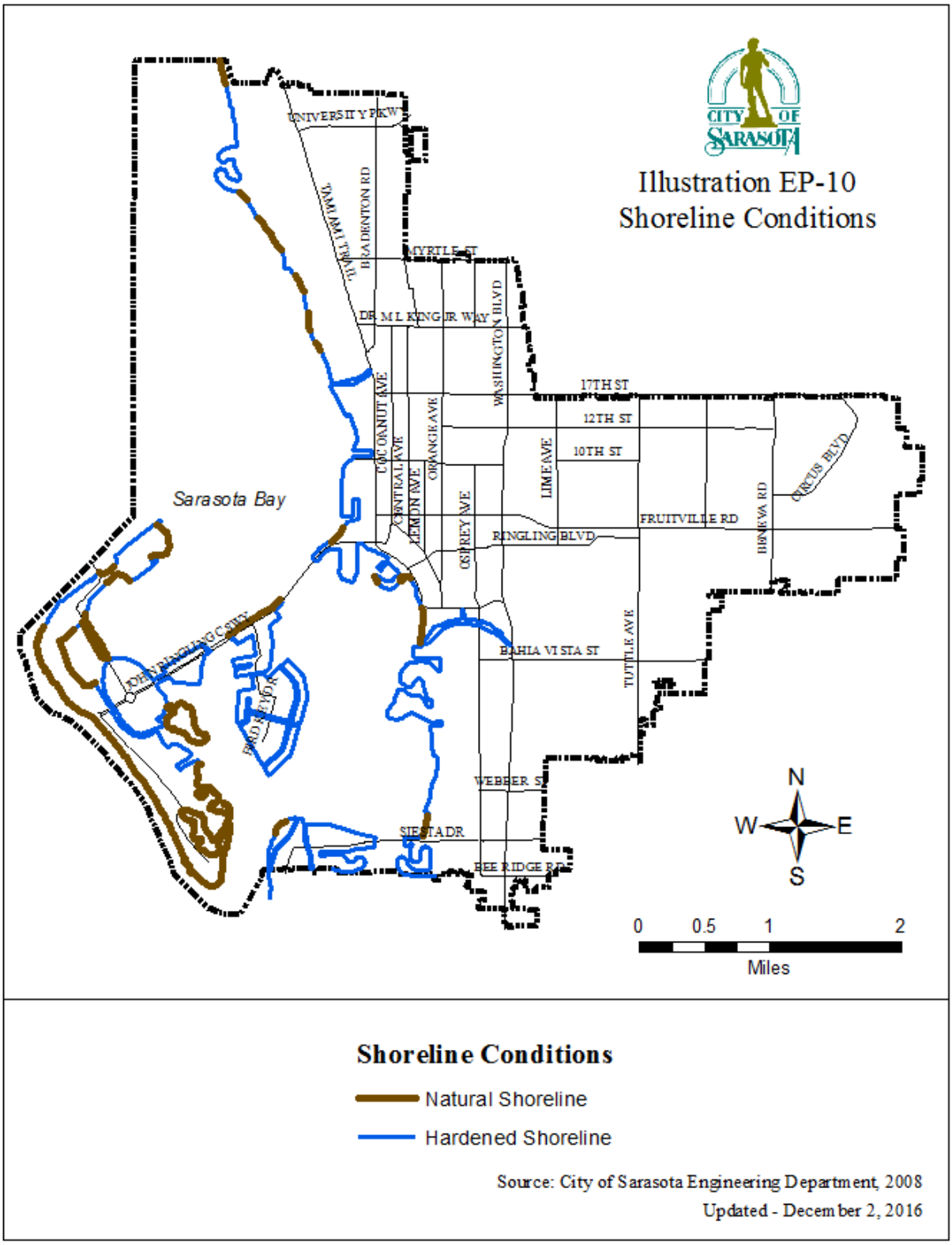


Illustration EP-10
Shoreline Conditions
Sarasota Bay
UNIVERSITY PKWY
TAMIAMI TRAIL
BRADENTON RD
MYRTLE ST
DR. M.L. KING JR WAY
WASHINGTON BLVD
17TH ST
12TH ST
10TH ST
COCONUT AVE
CENTRAL AVE
ORANGE AVE
LIME AVE
OSPREY AVE
FRUITVILLE RD
RINGLING BLVD
BENEVA RD
CIRCUS BLVD
JOHN RINGLING CSWY
BAYFRONT DR
BAHIA VISTA ST
TUTTLE AVE
WEBBER ST
SIESTA DR
BEE RIDGE RD
N
W
E
S
0
0.5
1
2
Miles
Shoreline Conditions
Natural Shoreline
Hardened Shoreline
Source: City of Sarasota Engineering Department, 2008
Updated - December 2, 2016

HURRICANE VULNERABILITY AND DISASTER PREPAREDNESS

Hurricane vulnerability is a fact of life for local governments in coastal locations in Florida. Therefore, hurricane evacuation planning is both a necessity and a major concern. Much of the City lies within the established evacuation zone levels during storm events. The ability to safely evacuate during a natural disaster depends on strong disaster preparedness planning and requires the cooperation of all affected citizens. The City of Sarasota's Emergency Manager, an employee of the Police Department, is responsible for developing and administering hurricane preparedness planning for the City and coordinating activities with Sarasota County and the surrounding jurisdictions. The Sarasota County Department of Emergency Management is responsible for developing and administering hurricane preparedness planning for the Sarasota County area through the Sarasota County Comprehensive Emergency Management Plan. This plan establishes uniform policy and procedures for effective coordination of action among the local governments I n the event of a natural disaster.

The City-wide Emergency Operations Plan was revised in 2014. A review by all City departments is conducted periodically to evaluate the readiness and availability of resources in the event of a hurricane or other major incident/event. The City of Sarasota Police Department sponsors such reviews through the department's Emergency Manager. The results of this review will be forwarded to and discussed with representatives of Sarasota County Emergency Management.

Prior to the arrival of a storm, the City's Emergency Manager and the Sarasota County Department of Emergency Management are charged with the notification and coordination of an orderly evacuation of citizens in the designated zones and the establishment and monitoring of clearly marked evacuation routes.

In addition to the normal response activities conducted by the Public Works, Utilities and Police Departments, the City of Sarasota currently maintains three Tactical First-In Team task forces for initial road clearing, infrastructure inspection, and search & rescue. These teams is assemble in advance of a storm (before wind speed reaches 45 mph), and deploy along their designated routes after the storm has passed. These teams conduct an annual drill with the County and other municipalities. The City also maintains several Damage Assessment Teams and one Neighborhood Points of Distribution team. These teams coordinate and cooperate with Sarasota County and the surrounding jurisdiction for training and activation operations within the City and County.

A Local Mitigation Strategy (LMS) is a plan that is developed by a jurisdiction or multiple jurisdictions to reduce and or eliminate the risks associated with natural and man-made hazards. These plans are written in accordance with the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 is a mechanism for collaboration between state and local entities that encourage pre-disaster planning, recognizes need for mitigation, and designates funding for projects through Federal grant opportunities. Development of the Sarasota County Local Mitigation Strategy is coordinated by the Sarasota County Office of Emergency Management and it includes each of the municipalities and various other jurisdictions within the county. The LMS Working Group ranks projects from all of the participating jurisdictions for the Federal Emergency Management Agency flood prevention and hazard program. The ranking identifies the impact a project or facility would have on a community if it were rendered unusable due to a natural disaster, terrorism, or other

unforeseeable destruction. In addition, if a project or facility has been assigned a score it is eligible for grants that are available after a federally declared disaster.
The LMS prioritizes and ranks mitigation projects in the following categories:

- Stormwater related projects
- Shelter Retrofit Program
- Retrofits to emergency support facilities
- Infrastructure
- Public Information, planning and miscellaneous
- Fire mitigation
- Continuity of government

The State's goals for Local Mitigation Strategies are to

- Implement an effective comprehensive statewide hazard mitigation plan.
- Support local and regional mitigation strategies.
- Increase public and private sector awarenesss and support for hazard mitigation in Florida.
- Support mitigation initiatives and policies that protect the state's cultural, economic, and natural resources.

Hurricane Vulnerability Zone

A hurricane vulnerability zone is based on storm intensity. Generally, storm intensities are generally more severe immediately adjacent to large water bodies such as the Gulf of Mexico and Sarasota Bay. The hurricane vulnerability zone is defined as those areas requiring evacuation in the event of a Category 3 storm event.

Storm events are classified by storm categories, Category 1 storms having the least potential for destruction and Category 5 storms having the greatest potential for destruction. The following are brief definitions of the five storm categories provided by the National Hurricane Center's Saffir-Simpson Hurricane Wind Scale.

Storm Category 1 is defined by winds of 74-95 miles per hour.

Storm Category 2 is defined by winds of 96-110 miles per hour.

Storm Category 3 is defined by winds of 111-129 miles per hour.

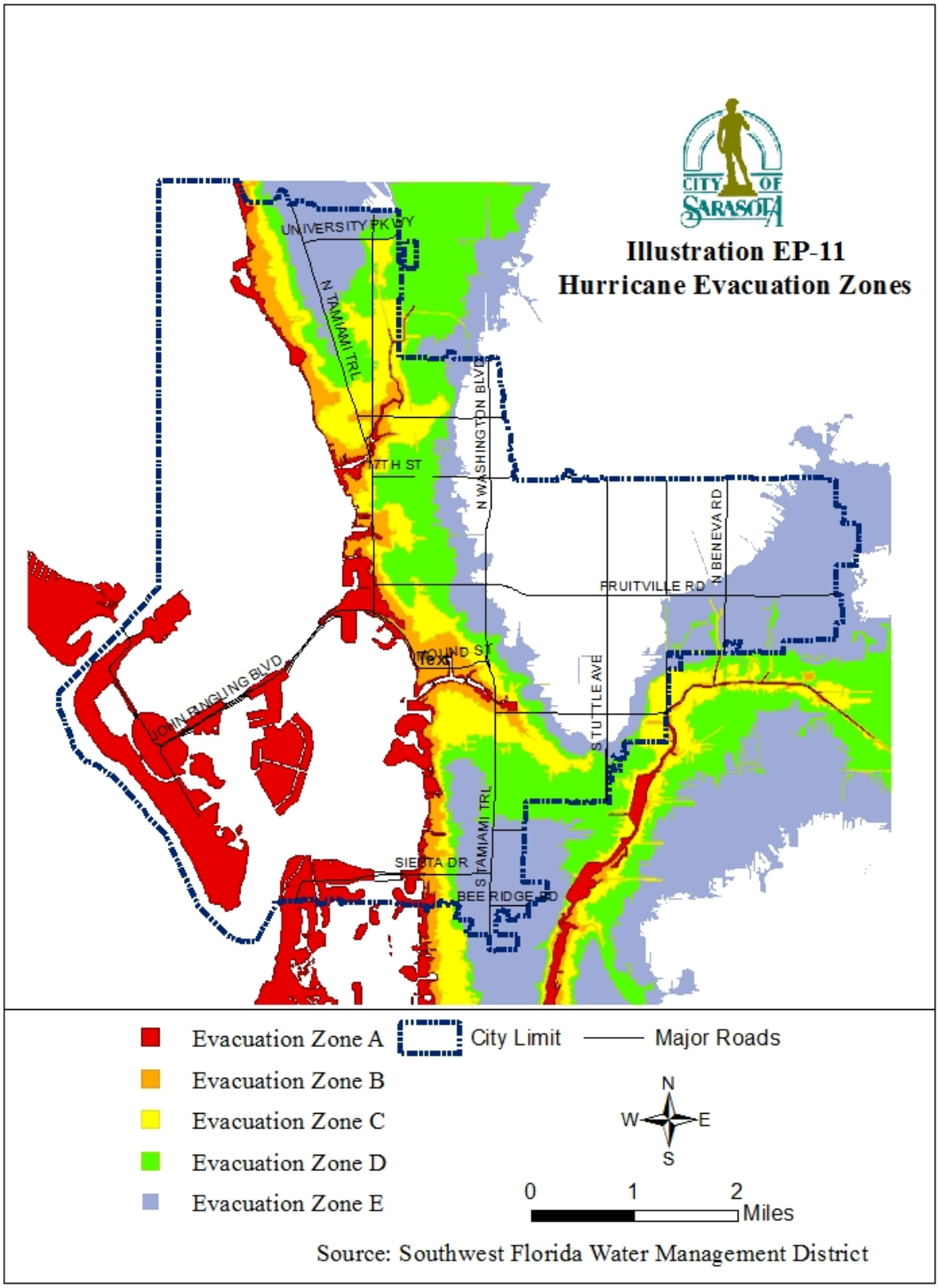
Storm Category 4 is defined by winds of 130-156 miles per hour.

Storm Category 5 is defined by winds greater than 157 miles per hour.

Along the coast, storm surge is often the greatest threat to life and property from a hurricane. Storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tides. Storm surge is produced by water being pushed toward the shore by the force of the winds moving cyclonically around the storm. The maximum potential storm surge for a particular location depends on a number of different factors. Storm surge is a very complex phenomenon because it is sensitive to the slightest changes in storm intensity, forward speed, size, angle of approach to the coast, central pressure, and the shape and characteristics of coastal features such as bays and estuaries. Other factors which can impact storm surge are the width and shape of the continental shelf. A shallow slope will potentially produce a greater storm surge than a steep shelf.

The principle tool used to determine storm surge is the Sea, Lake and Overland Surges from Hurricanes (SLOSH) model developed by the National Weather Service to estimate storm surge heights. The Southwest Florida Regional Planning Council's Hurricane Evacuation Study Update (2010) employs the SLOSH model based on the worst-case scenarios to develop the evacuation zones for Sarasota County. The table below identifies the evacuation zones based upon the SLOSH models that were developed for Sarasota County. Illustration EP-11 displays the evacuation zones.

Sarasota County Potential Storm Surge Height	
Evacuation Zone	Surge Height (ft)
A	Up to 6.9
B	Up to 15.4
C	Up to 26
D	Up to 33.2
E	Up to 35.4


CITY OF SARASOTA
Illustration EP-11
Hurricane Evacuation Zones
UNIVERSITY PKWY
N TAMIAMI TRL
N WASHINGTON BLVD
17TH ST
FRUITVILLE RD
N BENEVA RD
ROUND ST
S TUTTLE AVE
JOHN RINGLING BLVD
S TAMIAMI TRL
SIESTA DR
BEE RIDGE RD
Evacuation Zone A
Evacuation Zone B
Evacuation Zone C
Evacuation Zone D
Evacuation Zone E
City Limit
Major Roads
N
W
E
S
0
1
2
Miles
Source: Southwest Florida Water Management District

Evacuation and Shelter Analysis

Residents who reside in areas that are predicted to experience damage and destruction during an impending coastal storm event are encouraged to leave their homes when storm events threaten. This process is known as evacuation and is the focus of hurricane preparedness planning. Evacuation involves many variables addressed briefly below. Data involving hurricane vulnerability are not available solely for the land areas within the corporate limits; however, they are available on a county-wide basis from the Hurricane Evacuation Study Update of the Southwest Florida Regional Planning Council and from the Sarasota County Department of Emergency Management. Because hurricane evacuation is a regional effort, the information presented in Illustration EP-12 for evacuation analysis is county-wide data.

The Southwest Florida Regional Planning Council's Hurricane Evacuation Study Update (2010) employs the Sea, Lake, and Overland Surge from Hurricanes (SLOSH) model to estimate evacuation needs for Sarasota County. Illustration EP-12 presents the estimates of this model for the number of persons requiring evacuation and the percent of shelter needs met by public shelters (including secondary shelters), and hotel/motels.

Illustration EP-12. Hurricane Evacuation Shelter Capacity and Demand, Sarasota County[1]

Storm Evacuation Zone	Persons Required to Evacuate (1,2)	% Need Met by Public Shelters (3)	% Need Met by Hotel/Motel (3,4)	Total % Met
A	57,964	109	11	120
B	113,204	58	4	62
C	227,922	19	2	21
D	296,709	8	1	9
E	335,960	2	0.7	2.7

Notes:

1. Includes mobile homes and RV's
2. Totals are cumulative and include lower zones.
3. Number of available public shelters and hotel/motel facilities decrease as evacuation zones increase.
4. Based upon room occupancy of 2 per room.

In the 2010 evacuation study, the surveys indicate that about 38% of evacuees would go to friends/family. What it doesn't say, is if they know if their family/friend live in an evacuation zone.

The City's Emergency Manager manages hurricane preparedness, response, recovery, and mitigation operations for the city. In times of emergency, the City Emergency Manager coordinates with Sarasota County and neighboring jurisdictions on needed actions. During times storm emergencies, citizens have three options to follow:

- Option 1 – Stay at home, especially if the home is not within an evacuation zone and is built to withstand the expected winds.
- Option 2 – Stay with a relative or friend or rent a hotel room outside the evacuation zone. If possible, consideration should be given to relocating to an area where the storm is not expected to hit.
- Option 3 – Relocate to a public shelter. This should be the last option for citizens and followed only if a person has no other safe place to stay. Emergency Management will utilize the local media to announce shelter openings.

Prior to the annual hurricane season, landowners and residents should prepare their homes. This preparation should include preparing for the shuttering of homes and businesses and the purchase of a disaster survival kit. Each person should have a 72-hour disaster survival kit with supplies sufficient to last a minimum of 3 days. Hurricane supplies should include canned or non-perishable food, 1 gallon of drinking water per person per day, baby needs, personal medications, first aid kit, battery operated television or radio, flashlight, extra batteries, blankets and pillows, sanitary supplies, and pet food, if applicable.

Citizens should also become knowledgeable about neighborhood points of distribution (NPOD) and re-entry control points if they become operational within the city. NPODs are locations where emergency supplies will be distributed if major damage occurred as a result of the storm event. Re-entry control points are locations established to credential residents to return to impacted areas. Both types of operations will be determined by the severity of the disaster and the impact to the citizens.

In 2016, the Sarasota County Department of Emergency Management designated 21 shelters within Sarasota County. The shelters are classified into one of four tiers, with shelters opening by tier number (i.e., Tier 1 open first, followed by Tiers 2, 3, and 4, respectively). Of the 21 shelters, seven are located within the City or are located nearby as displayed on Illustration EP-13. The table below identifies all of the shelters within Sarasota County for 2016.

Illustration EP-17. Sarasota County Hurricane Shelters, 2016

Tier No.	Shelter Name	Address	Pet Friendly
1	Brookside Middle	3636 S. Shade Ave.	Yes
1	Woodlands Middle	2700 Panacea Blvd.	Yes
1	Booker High	3201 N. Orange Ave.	No
1	Atwater Elementary	4701 Huntsville Ave.	No
2	Phillippi Shores Elementary	4747 S. Tamiami Trl.	No
2	Heron Creek Middle	6501 W. Price Blvd.	Yes
2	Southside Elementary	1901 Webber St.	No
2	North Port High	6400 W. Price Blvd.	Yes
3	Brentwood Elementary	2500 Vinson Ave.	No
3	Riverview High	One Ram Way	Yes
3	Tuttle Elementary School	925 N. Brinks Ave.	No
3	Bishop Nevins	4380 Fruitville Rd.	No
3	Booker Middle	2250 Myrtle St.	No
3	Sarasota High	1000 S. School Ave.	No
3	Gulf Gate Elementary	6500 Lockwood Ridge Rd.	No
4	Glenallen Elementary	7050 Glenallen Blvd.	No
4	Toledo Blade Elementary	1201 Geranium Ave.	No
4	Taylor Ranch Element School	2500 Taylor Ranch Rd.	No
4	Ashton Elementary School	5101 Ashton Rd.	No
4	Venice Community Center	326 Nokomis Ave. S.	No
4	Pineview School	501 Old Venice Rds	Yes

Source: Sarasota County Department of Emergency Management, 2016.

Not included in the shelter capacity calculations are the shelter capacity available for those persons having special needs during hurricane evacuations such as those requiring transportation and attention for medical needs. The Sarasota County Department of Emergency Management maintains a Special Needs Registry for those persons who may require evacuation assistance and would like to register and currently maintains three shelters specially equipped and staffed to handle the needs of those registered for the program.

Each of the City's coastal islands is located within the Coastal High Hazard Area (CHHA), which is defined as the evacuation zone.

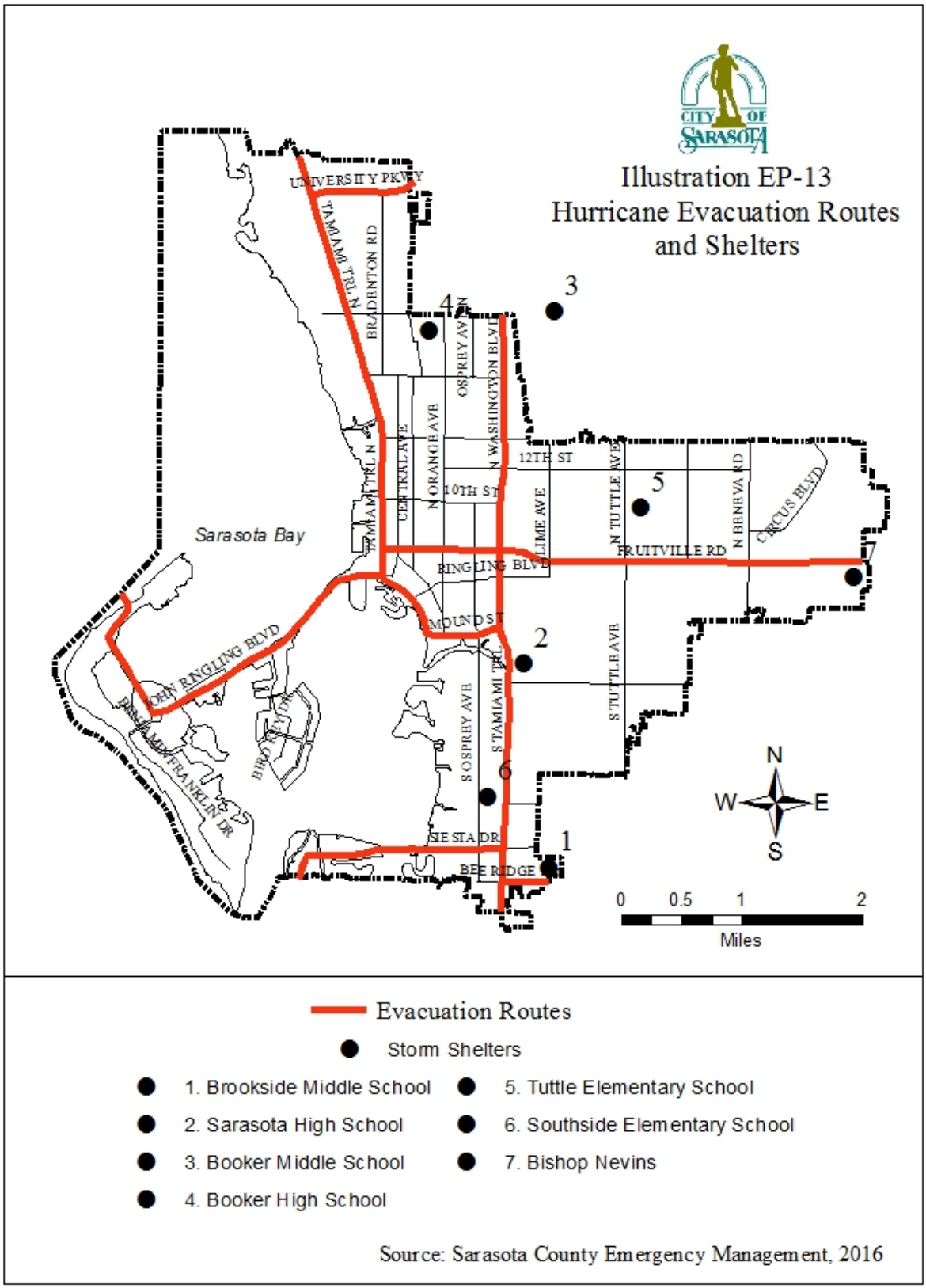


Illustration EP-13
Hurricane Evacuation Routes
and Shelters
UNIVERSITY PKWY
TAMIAMI TRL N
BRADENTON RD
OSPREY AVE
N WASHINGTON BLVD
CENTRAL AVE
N ORANGE AVE
12TH ST
10TH ST
LIME AVE
N TUTTLE AVE
N BENEVA RD
CIRCUS BLVD
FRUITVILLE RD
RINGLING BLVD
MOUND ST
S TUTTLE AVE
S TAMIAMI TRL
S OSPREY AVE
JOHN RINGLING BLVD
BIRD KEY DR
BENJAMIN FRANKLIN DR
SIESTA DR
BEE RIDGE
Sarasota Bay
1
2
3
4
5
6
7
N
W
E
S
0
0.5
1
2
Miles
Evacuation Routes
Storm Shelters
1. Brookside Middle School
2. Sarasota High School
3. Booker Middle School
4. Booker High School
5. Tuttle Elementary School
6. Southside Elementary School
7. Bishop Nevins
Source: Sarasota County Emergency Management, 2016

Transportation Factors and Evacuation Time

Transportation is a critical factor in the evacuation process. Problems include road capacity and hazardous road conditions. Road capacities that are designed to handle daily traffic loads can easily become overloaded in an evacuation situation unless adequate time is allowed. Storm conditions that create hazardous driving situations, such as rain and wind, are often present prior to the evacuation order. An additional threat in low lying areas is flooding from rainfall which may render some roads impassable well in advance of the hurricane landfall. Roadways directly adjacent to large water bodies are especially vulnerable to flooding as well as to weakening due to wave impact and associated undermining of road foundations at hurricane onslaught. Traffic control plans currently exist that can be implemented in the event of anticipated high water and high wind conditions expected throughout the City. The City of Sarasota Incident Command Staff will coordinate with adjoining jurisdictions to implement traffic control plans in order to facilitate an orderly evacuation. Illustration EP-13 identifies evacuation routes designated in the Emergency Operations Plan.

The 2010 Hurricane Evacuation Study Update models evacuation times in Sarasota County under two scenarios: base scenarios developed to estimate a series of worst case scenarios identical throughout the state and operational scenarios developed at the local level with both utilizing time categories of clearance time to shelter, in-county clearance time, and out-of-county clearance time. The scenarios refer to the response of evacuees and the amount of lane reversal once evacuation orders have been issued. Each scenario is based on an analysis of road hazards, number of vehicles estimated, road capacity, and ultimate constricting roadway points, as well as on evacuee behavioral data. The total clearance times range from 15.5 hours for an A Zone evacuation to shelter and 94.5 hours for an E Zone evacuation out-of-county using seasonal population estimates for Fall/Spring. Transportation factors and evacuation times are also discussed in the Transportation Chapter.

The evacuation of the coastal islands is required for all hurricane categories. During a storm event, the evacuation routes from the coastal islands will feed large numbers of automobiles to the mainland arterials resulting in constricted routes at these points. For the mainland area of the City, US 41 is the most constricted route.

Certain measures have been identified that could reduce the time required for evacuation of residents during coastal storm events. A quick response by residents when an evacuation order is issued could decrease the total time (i.e. from the time the evacuation order is issued) required to evacuate in any given storm event. In addition, roadway improvements within the City, such as the proposed roundabout at US 41 and Gulf Stream Avenue, will provide additional route capacity overall and help alleviate problems at potential constricting points. Improvements to evacuation routes are discussed in the Transportation Chapter. The City will continue to coordinate with Sarasota County to reduce projected evacuation times and to improve additional shelter space.

Following a storm, and while relief and clean-up efforts are being organized, the City of Sarasota Police Department has the responsibility of protecting the lives and property of its citizens. Security and access control will be initiated in those areas made most vulnerable by a natural disaster in order to protect people from potential danger in damaged areas, as well as prevent illegal activities such as looting.

Coastal High Hazard Area

The Florida Division of Emergency Management and the Federal Emergency Management Agency defines the Coastal High Hazard Area (CHHA) as an area of special flood hazard extending from offshore to the limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. This area includes Evacuation Zone A, as established in the Southwest Florida Regional Evacuation Study. Illustration EP-11 delineates the coastal high hazard hurricane evacuation zones of the City.

Land use in the CHHA is predominately single-family residential with the exception of southern Lido Key and Coon Key, where land uses are multi-family residential. In addition, City and Sarasota County-owned parks and open space areas are located in the CHHA on the north and extreme south ends of Lido Key and Ken Thompson Park. Objectives and action strategies of this Chapter are intended to limit land use intensity and population in the CHHA. In addition to the objective and action strategy, the fact that hurricane and tourist seasons are not coincident reduces the at-risk population. Other contributing factors include the cost of building space and constructing above the regulatory flood elevation, and the amount of land devoted to tourist attraction destinations. Also, many coastal island residents spend much of the hurricane season off the islands. Any proposal to expend public funds in the CHHA will have to be done in compliance with action strategies in the Environmental Protection and Coastal Islands Plan.

Infrastructure within the CHHA includes roads, and related facilities for the provision of water and wastewater services. The City has no major plant or equipment located within the CHHA; the infrastructure located within the CHHA provides existing land uses with essential services provision. An action strategy of this Chapter limits public expenditures in the CHHA.

Regulation of Land Use in the Coastal Area

Development in the coastal area is generally subject to more stringent regulation than other areas in order to minimize the risk to life and property if a disaster were to occur. The City is bound by regulation at the federal, state and local levels that provide mitigation measures for coastal development.

The National Flood Insurance Program of the Federal Emergency Management Agency (FEMA) establishes flood insurance policies for coastal areas using flood zones defined by 100-year and 500-year flood areas and by 100-year flood areas also subject to wave action.

The State of Florida addresses coastal development in Chapter 161.053, Florida Statutes, which is administered by the Florida Department of Environmental Protection (FDEP), Rule 62B-33, Florida Administration Code. The statute establishes a Coastal Construction Control Line (CCCL) wherein development seaward of the line is subject to FDEP review to ensure that coastal construction minimizes the adverse impacts to beach-dune systems and adjacent property and is designed to meet hurricane resistance building standards.

Chapter 62B-33, Florida Administrative Code, states that the "*coastal construction control line (CCCL) is intended to define that portion of the beach and dune system which is subject to severe*

fluctuations caused by a 100-year storm surge, storm waves, or other forces such as wind, wave, or water level changes. These fluctuations are a necessary part of the natural functioning of the coastal system and are essential to post-storm recovery, long term stability, and the preservation of the beach and dune system. However, imprudent human activities can adversely interfere with these natural processes and alter the integrity and functioning of the beach and dune system. The control line and 50-foot setback call attention to the special hazards and impacts associated with the use of such property, but do not preclude all development or alteration of coastal property seaward of such lines." The chapter further defines a "Fifty (50)-foot Setback" or "Setback Line" which is "the line of jurisdiction established pursuant to the provisions of Section 161.052, F.S., in which construction is prohibited within 50 feet of the line of mean high water at any riparian coastal location fronting the Gulf of Mexico or the Atlantic coast shoreline."

Chapter 161.053, F.S., also establishes the 30-year erosion projection line which is the projected location of the seasonal high water line on subject property 30 years following submittal of an application for a permit. No major structures are eligible to receive a permit seaward of the 30-year erosion projection line except single-family dwellings meeting specific site requirements.

The City's Coastal Construction Code regulates development in the coastal area and the Zoning Code, Article VII, Division 4 addresses flood hazard concerns for areas of the City in order to minimize public and private losses due to flood conditions. Sections of Article VII, Division 4 establish areas of special flood hazard and provide standards for the development of land within these areas. The areas are defined on flood insurance rate maps of the Federal Emergency Management Agency, dated February 15, 1984, and include all V and Z zones of these maps.

Post-Disaster Redevelopment

The City of Sarasota's policy with regard to post-disaster redevelopment is to allow redevelopment to take place at the same density that existed prior to the storm event and encourage relocation on the site to the maximum upland possible provided all other federal, state, and local regulations are satisfied. The City of Sarasota has an Emergency Operations Plan that was updated in January 2014. The purpose of the plan is to provide for a comprehensive emergency management program that seeks to mitigate the effects of a hazard, to prepare for measures to be taken which will preserve life and minimize damage, to respond during emergencies and provide necessary assistance, and to establish a recovery system in order to return the community to its normal state of affairs.

Sea Level Rise in the City of Sarasota

Sea level rise is caused by thermal expansion of ocean water due to increased water temperatures and the melting of land-based ice, such as glaciers and polar ice caps. Per the National Climate Assessment and the National Oceanic and Atmospheric Association (NOAA), global sea level has risen by 8 inches since reliable record keeping began in 1880, with rates increasing in recent decades. It is projected to rise another 1 to 4 feet by 2100.

In September 2016, the City of Sarasota began a Climate Change Vulnerability Assessment and Adaptation Planning process. The purpose of this plan is to: improve the City's understanding of

climate-related risks to public infrastructure, identify adaptation strategies to address critical infrastructure and natural systems, improve staff comfort with integrating climate data into city decision-making, and to inform the public about vulnerabilities and opportunities to adapt to climate change. The plan is expected to be completed in September 2017. Through this process, city staff is analyzing the ways that sea level rise and increased storm surge, flooding, and extreme heat days will affect potable water, waste water, stormwater, transportation, shorelines, critical buildings and park infrastructure.

Specific sites may experience more or less sea level change than the global average due to local factors such as subsidence and variations in land height. Tide stations around the world relay what is happening at a local level. The City of Sarasota has followed the methodology recommendations of the Climate Science Advisory Panel of the Tampa Bay Region and is currently using a rate of sea level rise from an official NOAA tidal gauge in St. Petersburg and using regional corrections to better predict local changes. Using the St. Petersburg tidal gauge rate of change, local sea levels are expected to rise an additional 3.6 inches to 1.3 feet in 2050 when compared to 2016 levels.

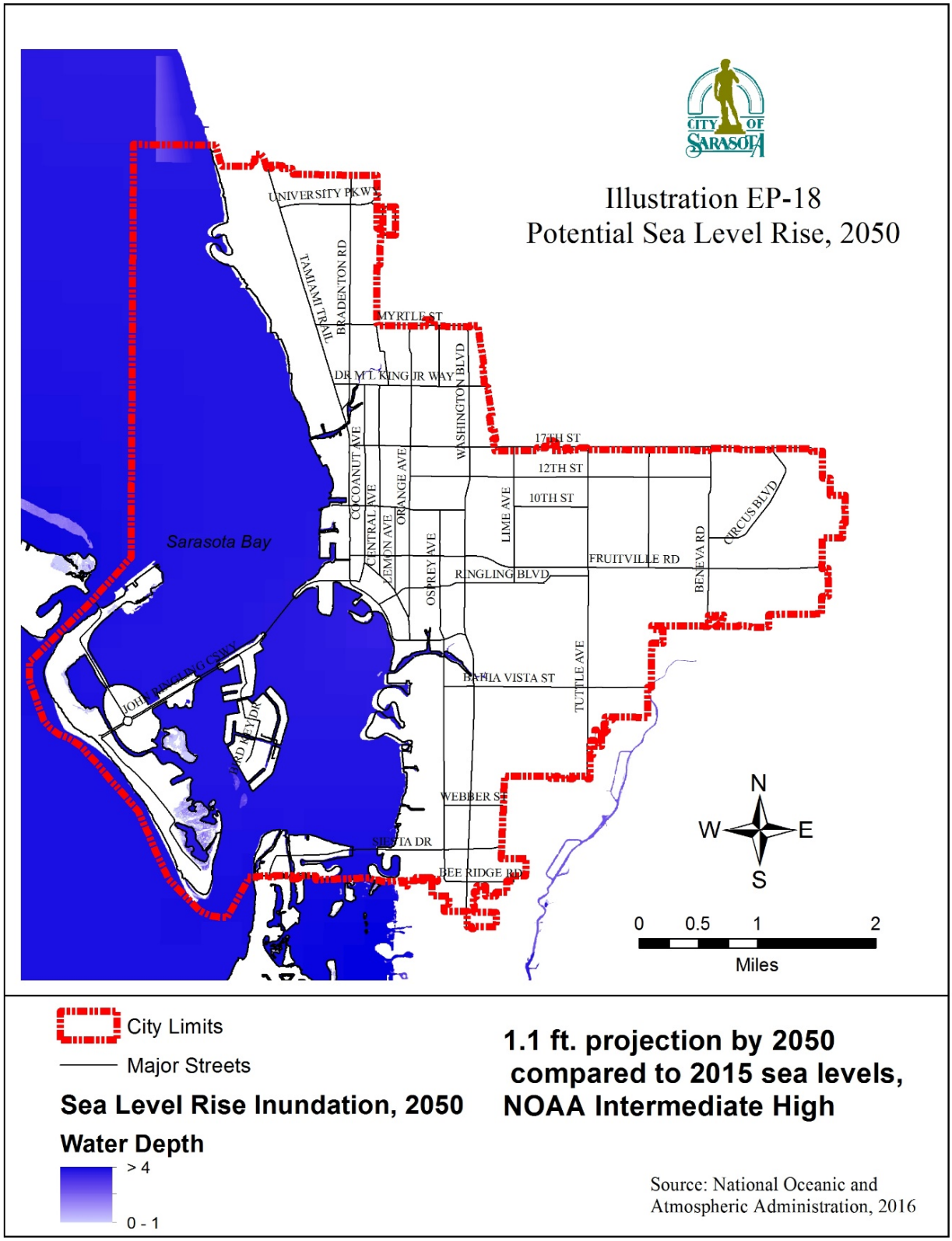


Illustration EP-18
Potential Sea Level Rise, 2050
CITY OF SARASOTA
UNIVERSITY PKWY
TAMIAMI TRAIL
BRADENTON RD
MYRTLE ST
DR MTL KING JR WAY
WASHINGTON BLVD
17TH ST
12TH ST
10TH ST
LIME AVE
COCOANUT AVE
CENTRAL AVE
LEMON AVE
ORANGE AVE
OSPREY AVE
RINGLING BLVD
FRUITVILLE RD
BENEVA RD
CIRCUS BLVD
TUTTLE AVE
BAHIA VISTA ST
WEBBER ST
SIESTA DR
BEE RIDGE RD
Sarasota Bay
JOHN RINGLING CSWY
N
W
E
S
0
0.5
1
2
Miles
City Limits
Major Streets
Sea Level Rise Inundation, 2050
Water Depth
> 4
0 - 1
1.1 ft. projection by 2050
compared to 2015 sea levels,
NOAA Intermediate High
Source: National Oceanic and
Atmospheric Administration, 2016

OTHER ENVIRONMENTAL CONCERNS

Hazardous Waste Disposal

The proper disposal of hazardous waste is important for the protection of natural resources as well as the health and safety of City residents. Sarasota County conducts an annual Amnesty Days program. This program encourages residents to safely store any potentially hazardous materials such as petroleum products, paint related products, pesticides, and to periodically take them to designated pick-up sites where they can be properly identified, transported, and disposed. The City will cooperate with Sarasota County to continue to develop programs that address hazardous waste concerns. Disposal of hazardous and solid wastes is discussed in the Utilities Chapter.

Aircraft Noise

Noise from aircraft taking off and landing at the Sarasota-Bradenton International Airport (SBIA) is an environmental issue. At such time that the Newtown area becomes part of the 65 Day-Night Noise Level (DNL), this plan recommends that the SBIA establish a noise monitoring station within the City limits in Newtown. Aircraft noise is discussed in further detail in the Transportation and Future Land Use Chapters.

APPENDIX 1

Sarasota's Strategic Plan Goal

In 2016, the City Commission adopted the "City of Sarasota Strategic Plan".

Our Vision

A world-class community and treasured destination, with enduring natural beauty, charm, and diversity.

Mission

High-quality services to our residents, businesses, and visitors, while safeguarding our natural resources and building a prosperous community.

Environmental Preservation and Sustainability Goal

Recognize the vital role Sarasota's natural resources plan in a healthy community and economy, and implement projects and policies that sustain them.

APPENDIX 2

Glossary

Coastal Area

"Coastal area" means the 35 coastal counties and all coastal municipalities within their boundaries. [From 163.3164, Community Planning Act; definitions (8)].

Coastal High Hazard Area - (CHHA)

An area of special flood hazard extending from offshore to the limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. This area includes Evacuation Zone A, as established in the Southwest Florida Regional Evacuation Study.

Water-dependent Uses

Activities which can be carried out only on, in or adjacent to water areas because the use requires access to the water body for: waterborne transportation including ports or marinas; recreation; electrical generating facilities; or water supply.

Water-related Uses

Activities which are not directly dependent upon access to a water body, but which provide goods and services that are directly associated with water-dependent or waterway uses.

Wetlands

[From 373.019 (27), Florida Statutes] Areas that are inundated or saturated by surface water or groundwater at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce, or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto. Upon legislative ratification of the methodology adopted pursuant to s. 373.421(1), as amended, the limitation contained herein regarding the purpose of this definition shall cease to be effective.