



Lake Park Town Commission, Florida Regular Commission Meeting

Commission Chamber, Town Hall, 535 Park Avenue, Lake Park, FL 33403
Wednesday July 16, 2025 6:30 P.M.

Roger Michaud	—	Mayor
Michael Hensley	—	Vice Mayor
John Linden	—	Commissioner
Michael O'Rourke	—	Commissioner
Judith Thomas	—	Commissioner
Richard J. Reade	—	Town Manager
Thomas J. Baird	—	Town Attorney
Vivian Mendez, MMC	—	Town Clerk

PLEASE TAKE NOTICE AND BE ADVISED, that if any interested person desires to appeal any decision of the Town Commission, with respect to any matter considered at this meeting, such interested person will need a record of the proceedings, and for such purpose, may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based. Persons with disabilities requiring accommodations in order to participate in the meeting should contract the Town Clerk's office by calling 881-3311 at least 48 hours in advance to request accommodations.

CIVILITY AND DECORUM

The Town of Lake Park is committed to civility and decorum to be applied and observed by its elected officials, advisory board members, employees and members of the public who attend Town meetings. The following rules are hereby established to govern the decorum to be observed by all persons attending public meetings of the Commission and its advisory boards:

- Those persons addressing the Commission or its advisory boards who wish to speak shall first be recognized by the presiding officer. No person shall interrupt a speaker once the speaker has been recognized by the presiding officer. Those persons addressing the Commission or its advisory boards shall be respectful and shall obey all directions from the presiding officer.
- Public comment shall be addressed to the Commission or its advisory board and not to the audience or to any individual member on the dais.
- Displays of disorderly conduct or personal derogatory or slanderous attacks of anyone in the assembly is discouraged. Any individual who does so may be removed from the meeting.
- Unauthorized remarks from the audience, stomping of feet, clapping, whistles, yells or any other type of demonstrations are discouraged.
- A member of the public who engages in debate with an individual member of the Commission or an advisory board is discouraged. Those individuals who do so may be removed from the meeting.
- All cell phones and/or other electronic devices shall be turned off or silenced prior to the start of the public meeting. An individual who fails to do so may be removed from the meeting.

CALL TO ORDER/ROLL CALL

PLEDGE OF ALLEGIANCE

APPROVAL OF AGENDA:

SPECIAL PRESENTATION/REPORT:

- [1.](#) Marina P3 Quarterly Update Presentation - Forest Development.

PUBLIC COMMENT:

This time is provided for addressing items that do not appear on the Agenda. Please complete a comment card and provide it to the Town Clerk so speakers may be announced. Please remember comments are limited to a TOTAL of three minutes.

CONSENT AGENDA:

All matters listed under this item are considered routine and action will be taken by one motion. There will be no separate discussion of these items unless a Commissioner or person so requests, in which event the item will be removed from the general order of business and considered in its normal sequence on the agenda. Any person wishing to speak on an agenda item is asked to complete a public comment card located on either side of the Chambers and given to the Town Clerk. Cards must be submitted before the item is discussed.

- [2.](#) Town Commission Regular Meeting Minutes - July 2, 2025.
- [3.](#) Resolution 38-07-25 – Scope of Services Agreement - Stormwater Infrastructure Design and Grant Support - Water Resource Management Associates, Inc. (WRMA) – \$134,012.40.
- [4.](#) Resolution 39-07-25 - Interlocal Agreement - Information Technology Network Services (Fiber) - Palm Beach County.
- [5.](#) Resolution 40-07-25 – Solid Waste Rates – Fiscal Year 2026 – 2028.
- [6.](#) Resolution 41-07-25 – Stormwater Rates – Fiscal Year 2026 – 2028.
- [7.](#) Resolution 42-07-25 - Support 2021 Lake Worth Lagoon Management Plan - Lake Worth Lagoon Initiative Grant Program - \$1,000,000 (Septic-to-Sewer Project).

PUBLIC HEARING(S) - ORDINANCE ON FIRST READING: NONE

PUBLIC HEARING(S) - ORDINANCE ON SECOND READING:

8. Ordinance 03-2025 - Creating Chapter 65 Entitled Workforce Housing.

AN ORDINANCE OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AMENDING THE CODE OF ORDINANCES OF THE TOWN OF LAKE PARK, FLORIDA BY CREATING CHAPTER 65 TO BE ENTITLED “WORKFORCE HOUSING”; PROVIDING FOR CODIFICATION; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

NEW BUSINESS:

9. Setting the Current Year Proposed Millage Rate, and Restating the Date, Time and Location for the First Public Budget Hearing.

10. Town Commission Priorities - Fiscal Year 2026 Budget.

TOWN ATTORNEY, TOWN MANAGER, COMMISSIONER COMMENTS:

REQUEST FOR FUTURE AGENDA ITEMS:

ADJOURNMENT:

FUTURE MEETING DATE: Next Scheduled Regular Commission Meeting will be held on August 6, 2025.



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025

Originating Department: Town Manager /Community Development

Agenda Title: Marina P3 Quarterly Update Presentation - Forest Development

Agenda Category (i.e., Consent, New Business, etc.): **Consent**

Approved by Town Manager: _____ **Date:** _____

Cost of Item: N/A **Funding Source:** N/A

Account Number: N/A **Finance Signature:** _____

Advertised:

Date: N/A **Newspaper:** _____

Attachments: Forest Development P3 Quarterly Update Presentation (includes updated Critical Path)

Original Critical Path (pursuant to the Comprehensive Agreement Approved on August 2, 2023)

Please initial one:

_____ Yes I have notified everyone

ND _____ Not applicable in this case

Summary Explanation/Background:

The Town of Lake Park entered into a Marina P3 Comprehensive Agreement (in accordance with state law) with Forest Development on August 2, 2023 to provide/construct various improvements within Town-owned property to promote economic development opportunities within our community. This agreement provides many of the requirements/details regarding the proposed project, including a quarterly update to the Town Commission on the status of the project by our partner, Forest Development.

As a result, Forest Development will be providing their P3 Quarterly Update to the Town Commission (most recent update provided on December 18, 2024).

Town Staff has been meeting with Forest Development weekly throughout the month of June 2025. The meetings have been very productive in discussing a number of issues associated with the Lake Park Harbor Marina P3 initiative. The discussions have been geared on moving the process forward to, first and foremost, ensure that the request to the Governor and Cabinet to consider the deed restriction modifications for the proposed restaurant and the boat storage facility (i.e. 1st Appraisal only - \$600,000) be considered during their meeting in September 2025.

Forest Development has requested to utilize a consultant to assist with this request, which the Town staff does not have a concern with, as well as to determine if the State of Florida would provide Forest Development (i.e., sales barge) and both membership boat clubs (Freedom Boat Club and JetRide) with an opportunity to remain within the deed restricted areas until September 30, 2025.

Note: Previous to the determination of utilizing a consultant (as provided above), Forest Development has committed to either removing the barge from the Marina or to move it to an area within the Marina that does not maintain deed restrictions by August 1st. This new location is still under review by the Marina Director and Town Attorney.

In addition, and in an effort to address the updated timeline for the overall initiative, Forest Development will present an update to the Critical Path (project timeline/schedule), which was developed based on the date (September 16, 2025) that the developer expects the Governor and Cabinet to approve the amendments to the Deed Restrictions (as requested by the developer). The original Critical Path that was included with the August 2, 2023 approval of the Comprehensive Agreement is also enclosed.

Further, the project's PUD Master Plan and the individual site plan applications have been resubmitted by Forest Development at the end of June 2025 and are currently in review by Town staff. Each of the redevelopment proposals, due to the complexity of these proposed projects, are expected to require extensive review, along with potential land development regulation and comprehensive plan amendments to adequately accommodate the proposed uses within the Marina area, while maintaining necessary public amenities and open spaces.

Additionally, these reviews will assist in determining any needed amendments to the Comprehensive Agreement, which the Town and Forest Development will continue to work together on. All proposed amendments, once finalized, will be brought forward to the Planning & Zoning Board and the Town Commission at a later date for discussion and consideration.

Recommended Motion:

N/A.

Lake Park Harbor Marina Quarterly Update July 16, 2025

Overview

- Hotel, Boat Storage, Restaurant and Marina Pod leases approved.
- PUD and site plans re-submitted June 2025.
- State of Florida Reverter appraisal received. We will be proceeding to Governor and Cabinet for approval at their September 16th Meeting.
- Lake Park – Forest Development joint planning meetings ongoing.
- Revised project timeline submitted.

P3 Redevelopment Project Critical Path

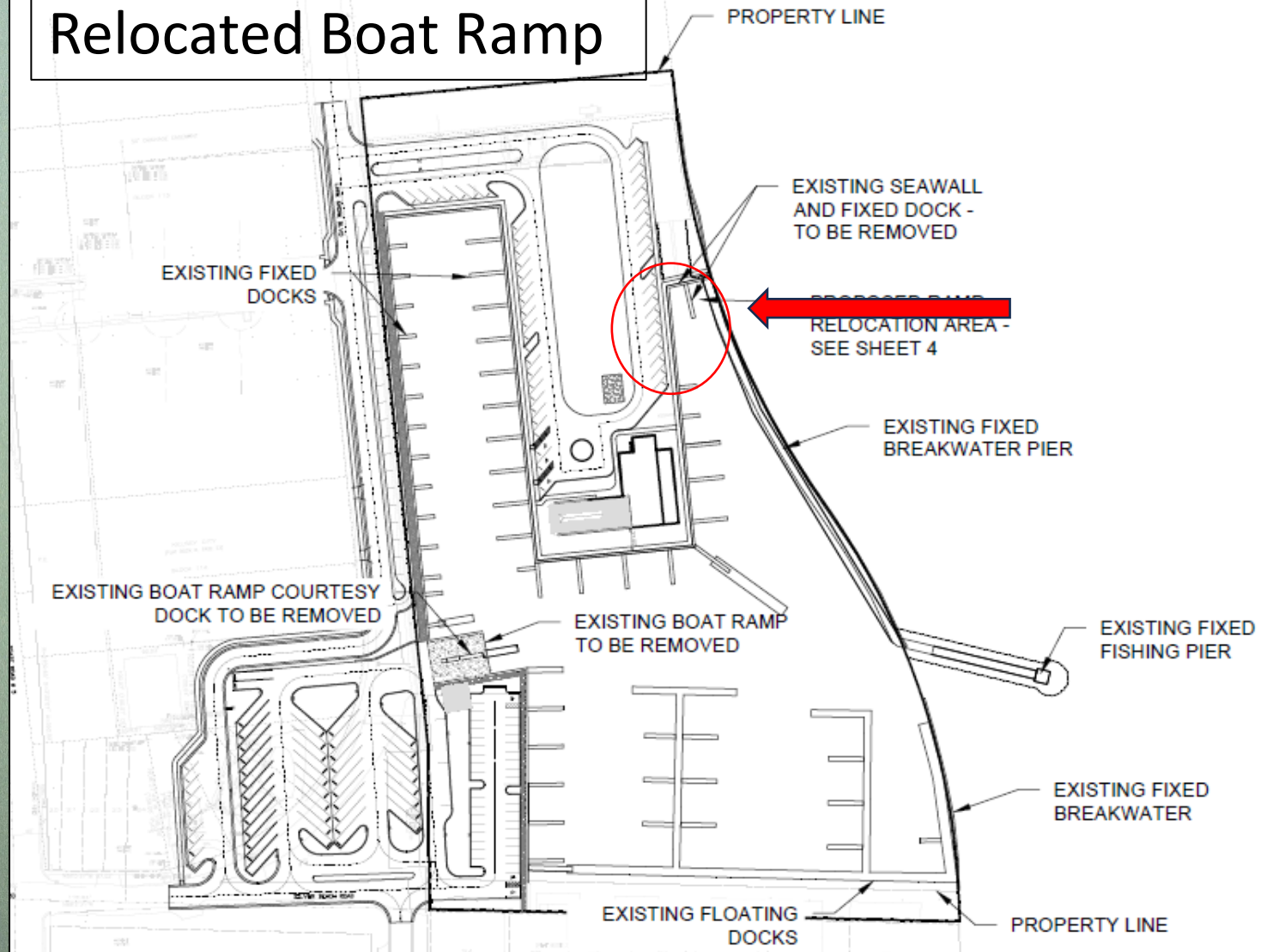
- Deed Restrictions and Reverter Clauses.
 - Full compliance for marina underway.
 - Boat clubs notified and evaluating options.
 - Forest Development barge to be moved to unaffected marina area.
 - Expect to be before Governor and Cabinet September 16, 2025 for approval of additional marina uses defined in Comprehensive Agreement.

Marina and Boat Storage Pod's Redevelopment Project Critical Path

- Marina and Boat Storage Component Partner Selected - City Harbor, LLC, whose Principal is Raymond Graziotto.
- Marina Component → First DEP/USACOE permits applied for ramp relocation to original location at northeast corner of marina as well as provide the dry stack boat storage entitlement.
 - › All permits submitted with Lake Park as Permittee.
 - › Response to comments submitted to DEP and USACOE.
 - › Relocation facilitates the operation of the dry boat storage and improves trailer access.
 - › Additional comments related to reverters being addressed.

Relocated Boat Ramp

Item 1.



FOREST
DEVELOPMENT



Hotel Pod Redevelopment Project Critical Path

- Hotel Component.
 - Resubmittal for PUD and site plan review included.
Architectural Elevations & Floor Plans.
 - Hotel Management Agreement currently in negotiations with Marriot Hotels & Resorts.
 - › Premium product → Autograph or Tribute level.

Start: 7/1/2022
Finish: 7/21/2028

Lake Park P3 : Master Critical Path 7.7.2025
Outline Gantt View: Default Outline Gantt View Table

Item 1.

	Activity Name	Org Duration	Early St.	Early Fin.	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	<input checked="" type="checkbox"/> Master Critical Path 7.7.2025	2212	7/1/2022	7/20/2028									
2	Complete Comprehensive Agreement	371	7/1/2022	7/6/2023									
3	Public input and workshop	0	7/6/2023	7/6/2023									
4	Town Commission Review/Workshop	28	7/7/2023	8/3/2023									
5	Approval of Comprehensive Agreement	0	8/3/2023	8/3/2023									
6	Ground Lease (4) Submissions	153	8/4/2023	1/3/2024									
7	Ground Lease Approvals	134	1/4/2024	5/16/2024									
8	Marina Permit Preparation	180	4/18/2024	10/14/2024									
9	Resolution of Reverters	489	5/16/2024	9/16/2025									
10	Marina Permit Submission	0	10/14/2024	10/14/2024									
11	Marina Permit Review and Site Plan	442	10/15/2024	12/30/2025									
12	Boat Storage Site Plan Approval	180	7/1/2025	12/27/2025									
13	Site Plan Development & Finalization	288	9/17/2025	7/1/2026									
14	Design and Permitting of Approved Plan	180	12/28/2025	6/25/2026									
15	Marina Upgrades Phase I Boat Ramp	300	12/28/2025	10/23/2026									
16	Marina Permit Approval	0	12/30/2025	12/30/2025									
17	Marina Upgrade Phase II Initial Expansion	365	12/31/2025	12/30/2026									
18	Marina Expansion P3 Negotiations Begin	380	1/8/2026	1/22/2027									
19	Construction of Boat Storage	365	6/26/2026	6/25/2027									
20	Marina Restaurant Site Plan Approval	150	6/29/2026	11/25/2026									
21	Uplands Hotel Site Plan Submission	0	7/1/2026	7/1/2026									
22	Hotel Site Plan Approval	210	7/2/2026	1/27/2027									
23	Construction of Marina Restaurant	270	11/26/2026	8/22/2027									
24	Marina Upgrade Phase III Full Expansion	240	12/31/2026	8/27/2027									
25	Construction of Hotel	540	1/28/2027	7/20/2028									

This schedule is based on 9/16/25 approval by the Governor and Cabinet for modification to the deed reverter.
The provisions of this Schedule/Exhibit are subject to the terms of Section 8.2 of the Comprehensive Agreement.

Activity	Name	Resource Names & %Alloc	Event	Name	Hammock	Early Start	Early Finish
Subproject		Early Finish	Interface Event	Early Start	Summary	Early Start	Early Finish

Zabik & Associates, Inc.



Questions and Answers

Start: 7/1/2022
Finish: 9/5/2027

Lake Park P3 : Master Critical Path 6.12.2023
Outline Gantt View: Default Outline Gantt View Table

Activity Name	Org Duration	Early St.	Early Fin.	2023	2024	2025	2026	2027	2028	2029	2030
1 Master Critical Path 6.12.2023	1892	7/1/2022	9/4/2027								
2 Complete Comprehensive Agreement	356	7/1/2022	6/21/2023								
3 Site Plan Development & Finalization	210	5/24/2023	12/19/2023								
4 Public Input and workshop	0	6/21/2023	6/21/2023								
5 Town Commission Review/Workshop	28	6/22/2023	7/19/2023								
6 Marina Permit Preparation	180	7/13/2023	1/8/2024								
7 Approval of Comprehensive Agreement	0	7/19/2023	7/19/2023								
8 Ground Lease (4) Submissions	90	7/20/2023	10/17/2023								
9 Uplands Hotel Site Plan Submission	0	12/19/2023	12/19/2023								
10 Hotel Site Plan Approval	210	12/20/2023	7/16/2024								
11 Boat Storage Site Plan Approval	180	12/21/2023	6/17/2024								
12 Marina Permit Submission	0	1/8/2024	1/8/2024								
13 Marina Permit Review and Site Plan	730	1/9/2024	1/7/2026								
14 Marina Restaurant Site Plan Approval	150	3/29/2024	8/25/2024								
15 Marina Expansion P3 Negotiations Begin	380	4/30/2024	5/14/2025								
16 Design and Permitting of Approved Plan	180	6/18/2024	12/14/2024								
17 Marina Upgrades Phase I Boat Ramp	300	6/18/2024	4/13/2025								
18 Construction of Hotel	540	7/17/2024	1/7/2026								
19 Construction of Boat Storage	365	12/15/2024	12/14/2025								
20 Construction of Marina Restaurant	270	6/24/2025	3/20/2026								
21 Marina Permit Approval	0	1/7/2026	1/7/2026								
22 Marina Resiliency Improvements	420	1/8/2026	3/3/2027								
23 Marina Upgrade Phase II Initial Expansion	365	1/8/2026	1/7/2027								
24 Marina Upgrade Phase III Full Expansion	240	1/8/2027	9/4/2027								

For Reference Only

Activity Subproject Cum. Original Profile

Resource Names & %Alloc Early Finish Cum. Act.+Rem. Profile

Event Interface Event

Early Start Non-Cum. Original Profile

Hammock Summary Early Start Non-Cum. Actual Profile

Early Finish Early Finish

Zabik & Associates, Inc.



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025 Regular Commission Meeting

Originating Department: Town Clerk

Agenda Title: Town Commission Regular Meeting Minutes - July 2, 2025

Approved by Town Manager: _____ **Date:** _____

Cost of Item: NA **Funding Source:** _____

Account Number: NA **Finance Signature:** _____

Advertised: _____

Date: NA **Newspaper:** _____

Attachments: Minutes, Exhibits, Comment Cards

Please initial one:

_____Yes I have notified everyone

VM _____Not applicable in this case

Summary Explanation/Background:

NA

Recommended Motion:

I move to approve the Town Commission Regular Meeting Minutes from July 2, 2025.



Lake Park Town Commission, Florida

Regular Commission Meeting Minutes

Commission Chamber, Town Hall, 535 Park Avenue, Lake Park, FL 33403

July 02, 2025 6:30 pm

Roger Michaud	—	Mayor
Michael Hensley	—	Vice Mayor
John Linden	—	Commissioner
Michael O'Rourke	—	Commissioner
Judith Thomas	—	Commissioner
Richard J. Reade	—	Town Manager
Thomas J. Baird	—	Town Attorney
Vivian Mendez, MMC	—	Town Clerk

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CALL TO ORDER/ROLL CALL

6:35P.M.

PRESENT

Vice Mayor Michael Hensley

Commissioner Judith Thomas

Commissioner John Linden

Commissioner Michael O'Rourke

ABSENT

Mayor Roger Michaud

PLEDGE OF ALLEGIANCE

The Pledge was led by Vice Mayor Hensley.

APPROVAL OF AGENDA:

Vice Mayor Hensley requested that item 7 - Town Commission Priorities - FY 2026 Budget be moved to the July 16th agenda.

Motion made to approve the amended agenda by Commissioner O'Rourke, Seconded by Commissioner Linden.

Voting Yea: Vice Mayor Hensley, Commissioner Thomas, Commissioner Linden, Commissioner O'Rourke.

SPECIAL PRESENTATION/REPORT:

1. 2025 State of Florida Legislative Update - State Senator Mack Bernard, State Representative Jervonte Edmonds & Ms. Ellyn Bogdanoff - Becker & Poliakoff.

State Representative Jevonte Edmonds provided the Commission with a presentation (Exhibit A). Commissioner O'Rourke thanked Representative Edmonds and staff for their efforts. Commissioner Thomas asked about funds of \$900,000,000.00 that have been repealed and where does that money now go. Representative Edmonds stated that this would be revenue that the State would lose and would not affect Counties or Local Government. Commissioner Thomas had additional questions that could not be immediately answered and was directed to review the statutes for details.

State Senator Mack Bernard gave a verbal update regarding the Legislative session.

Ms. Ellyn Bogdanoff of Becker & Poliakoff gave an update regarding the Legislative session. Commissioner Thomas raised her disappointment and concerns regarding how Lake Park has been treated over the last two years.

Town Manager Reade thanked Ms. Bogdanoff for all her efforts. He thanked the Senator and State Representatives and appreciated their efforts. Vice Mayor Hensley thanked everyone for attending.

2. Presentation - Palm Beach North Chamber of Commerce

Mr. Noel Martinez, Ms. Caitlyn Bergman, and Ms. Jacqueline Ramirez presented to the Commission. (Exhibit B) regarding an initiative with Florida Atlantic University (FAU).

Commissioner Thomas thanked them for the presentation. Mr. Martinez offered to conduct a community session in Town for residents and small businesses. He reiterated that you do not have to be a Chamber member to benefit from these services. Commissioner Linden asked if

the services were available to those small businesses that were less under 3-years in operation. Ms. Ramirez stated that as long as the business meets the “small business” criteria, then the services were available regardless of how long they have operated. Commissioner O’Rourke thanked them for the presentation. He agreed regarding the suggestion that the Community Redevelopment Agency (CRA) Administrator meet with them to assist small businesses in the CRA. Ms. Bergman explained that on August 5th they will be hosting their first event, with a focus on starting up your business. Vice Mayor Hensley thanked everyone for attending and their presentation.

3. Proclamation - National Parks and Recreation Month - July 2025

Vice Mayor Hensley presented staff with the proclamation. Special Event Director Riunite Franks and Recreation Supervisor Michael Sloan accepted the proclamation.

Special Events Director Franks thanked the Commission, her staff, and the Public Works Facility and Maintenance staff for all they do. Commissioner O’Rourke thanked Ms. Franks for all that she does and considers her an asset to the Town.

PUBLIC COMMENT:

This time is provided for addressing items that do not appear on the Agenda. Please complete a comment card and provide it to the Town Clerk so speakers may be announced. Please remember comments are limited to a TOTAL of three minutes.

Captain Steen Eriksson, Palm Beach County Fire Rescue, provided the 2024 Annual Report. He announced that they have an Honor Guard, Pipes, and Drums. He explained what the Honor Guard, Pipes and Drums do for communities. He welcomed the opportunity to schedule their services for any Town events.

CONSENT AGENDA:

All matters listed under this item are considered routine and action will be taken by one motion. There will be no separate discussion of these items unless a Commissioner or person so requests, in which event the item will be removed from the general order of business and considered in its normal sequence on the agenda. Any person wishing to speak on an agenda item is asked to complete a public comment card located on either side of the Chambers and given to the Town Clerk. Cards must be submitted before the item is discussed.

Motion to approve the Consent Agenda made by Commissioner O'Rourke, Seconded by Commissioner Linden.

Voting Yea: Vice Mayor Hensley, Commissioner Thomas, Commissioner Linden, Commissioner O'Rourke

4. Minutes - Regular Commission Meeting - June 18, 2025
5. Proclamation - 14th Annual KidsFit Jamathon Day - July 16, 2025

PUBLIC HEARING(S) - ORDINANCE ON FIRST READING: NONE

PUBLIC HEARING(S) - ORDINANCE ON SECOND READING: NONE

NEW BUSINESS:

6. Town of Lake Park Strategic Plan - Scope of Work & Funding (Commission Contingency - Budget Adjustment No. 2025-4).

Assistant Town Manager/Human Resources Director Bambi Turner gave a verbal presentation to the Commission. Commissioner O'Rourke felt this item should be part of the 2026 budget and priorities process. Commissioner Thomas outlined her understanding of the item and requested that the Commission discuss the item so that they could provide direction to staff. Town Manager Reade explained staff's need in attempting to discuss this item. He clarified that the \$20,000 cost to complete this process was because he knew a professional, who worked for a university, who was willing to do it for this price. Town Manager Reade explained the expectation of the strategic plan and his contract. The annual performance evaluation was conducted on the anniversary of his employment. The Commission discussed the Request for Qualifications process. Town Manager Reade assured the Commission that a contract to hire someone to conduct the strategic plan would come before them before a strategic plan session takes place. Commissioner Linden asked if the scope of work could come back at a future meeting, but lock in the \$20,000 during this fiscal year. Town Manager Reade stated that staff would bring back the scope of work for Commission approval. He explained that the Commission could move forward with the budget adjustment, which was separate from the scope of work.

Motion to use the contingency funds for funding the Strategic Plan made by Commissioner O'Rourke, Seconded by Commissioner Linden.

Commissioner Thomas clarified that the motion was to move funds from one account to another for a strategic plan. A future agenda item will come back to the Commission for the Scope of Work. The Commission all agreed. Assistant Town Manager/ Human Resources Director Turner read back her understanding of the Commission's desire.

Voting Yea: Vice Mayor Hensley, Commissioner Thomas, Commissioner Linden, Commissioner O'Rourke

7. Town Commission Priorities - FY 2026 Budget

This item was moved to the July 16, 2025 agenda.

8. Discussion Item — 10-Year Roadway Improvement Plan and Pavement Preservation Program

Public Comment:

Mary Beth Taylor comments presented as an exhibit (Exhibit C).

Public Works Director Jaime Morales presented to the Commission (Exhibit D).

Commissioner Linden asked if the road study conducted several years ago was used in developing the 10-year roadway plan. Public Works Director Morales stated that the study drove the development of this plan. Commissioner Linden wanted to avoid the Town residents paying for this work. Commissioner O'Rourke asked if the plan could be modified to include specific roads that have been identified as those with the most issues, such as 2nd Street or Park Avenue. Public Works Director Morales explained that the Town was pursuing grant funding for stormwater services. He further explained that as they conduct the stormwater improvements then it would allow to improve the roadway. It was for these reasons that the projects along 2nd Street were moved a few years out, allowing for those funds to be used on other roadways. Commissioner Thomas felt this plan was in line with the Capital Improvement Plan (CIP). She thanked Public Works Director Morales for driving her around Town and explaining on-going projects. She tied this plan with the strategic plan for the Town. Vice Mayor Hensley commended staff for putting a plan together and funding it without using ad valorem taxes. Commissioner O'Rourke asked what different surface types and treatments were for the roadways. Public Works Director Morales explained the difference between cape seal and mill and overlay. Commissioner Thomas expressed traffic concerns regarding the intersection of Palmetto Drive, Flagler Blvd and Second Street. Community Development

Director Nadia DiTommaso explained that she was made aware, at the end of the day, about the FPL issue at that intersection. Town Manager Reade recapped that the staff goal was to bring back, each year, as part of the CIP and budget, how much it would cost to do roadwork.

9. Discussion - Proposed Amendments to Town Code - Sections 72-2 and 72-3 (Public Infrastructure Maintenance Responsibilities).

Public Works Director Morales explained the item. Commissioner Thomas expressed concerns with proper tree maintenance on private property and their impact on the sidewalks. Commissioner O'Rourke supported the draft Ordinance language. Vice Mayor Hensley asked for a program for residents to follow. The draft Ordinance would clarify the responsibilities of the residents versus Town.

10. Florida League of Cities Voting Delegate - Annual Conference - August 14 - 16, 2025.

Motion to select Mayor Michaud as the Town's voting delegate made by Commissioner O'Rourke, Seconded by Commissioner Thomas.

Voting Yea: Vice Mayor Hensley, Commissioner Thomas, Commissioner Linden, Commissioner O'Rourke

TOWN ATTORNEY, TOWN MANAGER, COMMISSIONER COMMENTS:

Town Attorney - none

Town Manager Read explained the upcoming (July 16) agenda items. Staff would reach out to coordinate a date to conduct a Special Called Park Avenue Downtown District Workshop. He announced that the Library would reopen on Monday. He recognized the Special Events staff for a great Sunset Celebration. He request to close Town Offices on July 3rd at noon. The Commission agreed. He wished everyone a Happy 4th of July.

Commissioner O'Rourke recognized the Special Events staff for a great Sunset Celebration.

Commissioner Thomas suggested starting an education committee. She suggested a reading club sponsored through the Library. She explained that she was an alternate member of the Treasure Coast Regional Planning Council. She would like to resign from the Council and requested that the Town Manager send a letter notifying them of her resignation and asked that Commissioner Linden take her place. Commissioner Linden agreed, however, he explained that the League appoints its members.

Motion to appoint Commissioner Linden as the Town's representative to the Treasure Coast Regional Planning Council made by Commissioner O'Rourke; Seconded by Commissioner Thomas. Voting Aye: All

Commissioner Thomas thanked staff for the wonderful Red, White and Blue Sunset Celebration. Commissioner Linden thanked staff for the Sunset Celebration. He asked what was happening to the grass at Bert Bostrom Park. Public Works Director Morales explained that the field was going through weed treatment. Once this process was complete, they would put down the new turf.

Vice Mayor Hensley thanked the Special Events staff for the Sunset Celebration. He thanked Captain Steven Thibodeau for coming back with his family to attend the Sunset Celebration. He stated that Richard Radcliff of the Palm Beach County League of Cities would be retiring. He asked that a surprise proclamation be presented to him at an upcoming meeting.

REQUEST FOR FUTURE AGENDA ITEMS: NONE

ADJOURNMENT:

9:55 p.m.

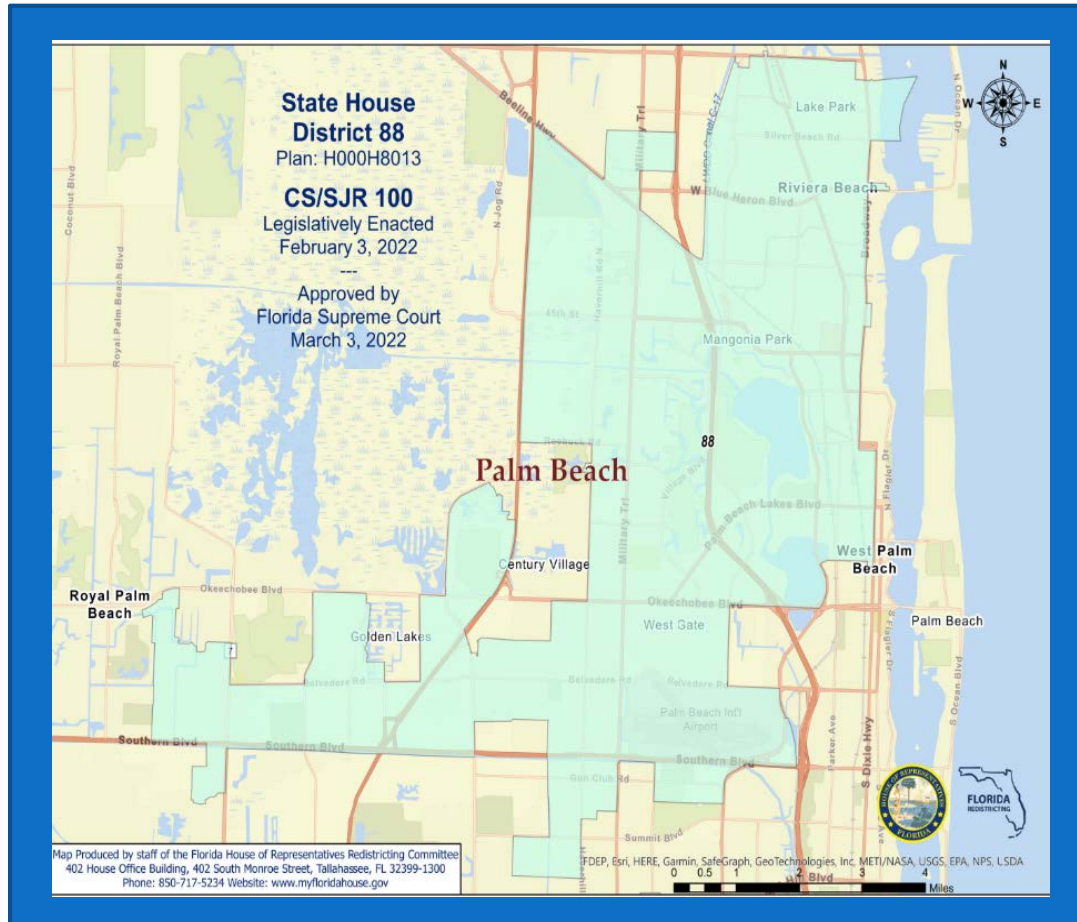
FUTURE MEETING DATE: Next Scheduled Regular Commission Meeting will be held on July 16, 2025.



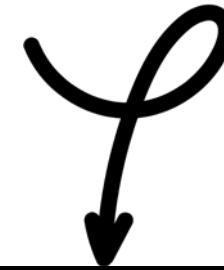
Item 2.

Florida Legislative Session Recap 2025

District 88



Find Your State Representative
& State Senator



Legislative Session

- 60 days, March – May.
- Extended to June 30
- 2000+ Bills Filled, 195 Passed
- 2000+ Appropriation projects



Item 2.



Rep. Edmonds Committee Assignments

Health Professions & Programs Subcommittee - Ranking Member

Education & Employment Committee

Economic Infrastructure Subcommittee

PreK-12 Budget Subcommittee

State Administration Budget Subcommittee

Select Committee on Property Relief



Legislation

HB 17 Florida Bright Futures Scholarship Program
HB 43 Reusable Tenant Screening Reports
HB 45 Resident Status for Tuition Purposes
HB 119 Universal Free School Breakfast and Lunch Program
HB 137 Homeowners' Association Ombudsman
HB 191 Instructional Hours for the VPK Education Program
HB 635 Candidate Filing Fees
HB 104 Education



Representative Edmonds Appropriations

- Digital Twin for Public Safety - \$467,000
- Lake Park Traffic Safety Upgrade - \$400,000
- Mangonia Park Street Repavement- \$450,000
- Palm Beach State College - Vocational Village - \$500,000
- Palm Beach County Australian Avenue Drainage Improvements - \$742,614
- Riviera Beach Law Enforcement Training Facility - \$1,000,000
- Riviera Beach Utility Special District New Water Plant - \$750,000
- South Florida AgriCenter & Emergency Shelter - \$350,000

Budget and Taxes



Delayed Session	Lawmakers extended the session to <i>June 18</i> to complete the budget and related tax bills Without an approved budget by July 1, a partial shutdown is possible.
Top-Level Spending	The budget is around \$50 billion , with both chambers working through differences in major tax provisions.
Tax Cuts	Deal includes a \$900 M business lease tax repeal , \$350 M in sales tax relief , \$250 M debt reduction , and \$750 M annual rainy-day fund deposits until caps are met.
Education Funding	Senate wants a \$6 M boost for Schools of Hope charter initiative
Recovered Funds	Lawmakers propose reclaiming \$400 M allocated last year for a contested reservoir project and returning it to general revenues.
New Spending Controls	The plan includes tighter financial oversight, with increased reporting requirements for agencies.
Next Steps	A final budget is expected soon. It will include the tax package, then head to Gov. DeSantis by late June for approval and possible line-item vetoes.

Housing & Insurance



Insurance

Florida leaders are also investigating insurance companies' finances to make sure they're not crying poor unjustly.

My Safe Florida Home

\$481,308,000M added to this program for the next fiscal year.

Affordable Housing

HB913 - Affordable housing through revisions to the Live Local Act, address the condo crisis by updating structural repair requirements and reducing the cost burden on condo resident

Programs

Home Town Heroes, Florida Association for Community Action (FACA), State Housing Initiatives Partnership

Renters

HB948 - If a landlord fails to disclose flood information truthfully, the tenant may terminate the rental agreement within a certain timeframe and the landlord must refund the tenant all amounts paid in advance by the tenant.

Property Tax



- ▶ Taxes help pay for:
 - ▶ Schools
 - ▶ Police
 - ▶ Firefighters
 - ▶ Parks
 - ▶ Roads
 - ▶ Community Initiatives

- ▶ The Elimination of Property Tax would require voter approval and aims to provide long-term tax relief to Florida residents.
 - ▶ 1. Vote to End Property Taxes on Homes
 - ▶ 2. Bigger Homestead Exemption Idea: Instead of \$50,000 off your home's taxes, you could get \$500,000 off. Seniors and longtime owners could get \$1 million off!
 - ▶ 3. Let Lawmakers Change Tax Discounts
 - ▶ 4. Freeze How Fast Your Taxes Go Up
 - ▶ 5. No Losing Your Home for Not Paying

Education



HB681 Sets new uniform standards for apprenticeships and pre-apprenticeships, ensuring schools and training providers partner correctly

HB1105 Authorizes a municipality to convert a traditional charter school into a 'job-engine' charter school and removes the teacher vote from the conversion process, leaving the vote solely to parents of enrolled students.

Cell Phones School boards are now be required to prohibit the use of digital devices by elementary and middle school students during the school day and high school students during instructional time

Exams Type 1 Diabetes, A new Spectrum Alert system for missing individuals on the autism spectrum, youth athletic coaches providing coaching services for an independent sanctioning authority to undergo Level 2 background screening, Cardiac Emergencies

SB296 You might have heard that back in 2023, a law was passed requiring middle schools to start no earlier than 8:00 AM and high schools no earlier than 8:30 AM by 2026.

Business



HB 827

The bill requires the Bureau of Workforce Statistics and Economic Research (WSER) at the Department of Commerce to study the economic impact of automation, artificial intelligence (AI), and robotics on employment in Florida, focusing on job losses and gains due to AI and automation.

HB 999

The bill lets certain gold and silver coins be used as legal money in Florida starting July 1, 2026. It removes sales tax on them, allows (but doesn't require) governments to accept them, and says no one can be forced to use them. It also sets rules for safely handling and storing the coins, and requires state leaders to create and submit guidelines by November 1, 2025.

Permits

SB 1080 to revise timeframes for counties and municipalities to expeditiously process applications for development permits and development orders, and to require local governments to issue application fee refunds if the approval timeframes in the bill are not met.

Energy



Utility Workers

SB1386 The bill aims to enhance protections for utility workers by increasing penalties for individuals who knowingly commit assault or battery against them while they are performing their duties on critical infrastructure

SB 818 Relocation

To alleviate the financial burden on communications service providers, particularly in rural areas, by providing a structured reimbursement mechanism for utility relocations necessitated by public infrastructure projects.

SB 202

Aims to promote equity by preventing municipalities from charging higher rates to neighboring communities that host their utility facilities

HB 1137

This legislation ensures that consumers retain the freedom to choose their preferred energy sources and appliances without local governmental restrictions.

SB 700

Provisions collectively aim to enhance Florida's energy infrastructure, promote the adoption of electric vehicles, ensure the safety of energy-related products, and maintain fuel availability during emergencies.



Health Care and More

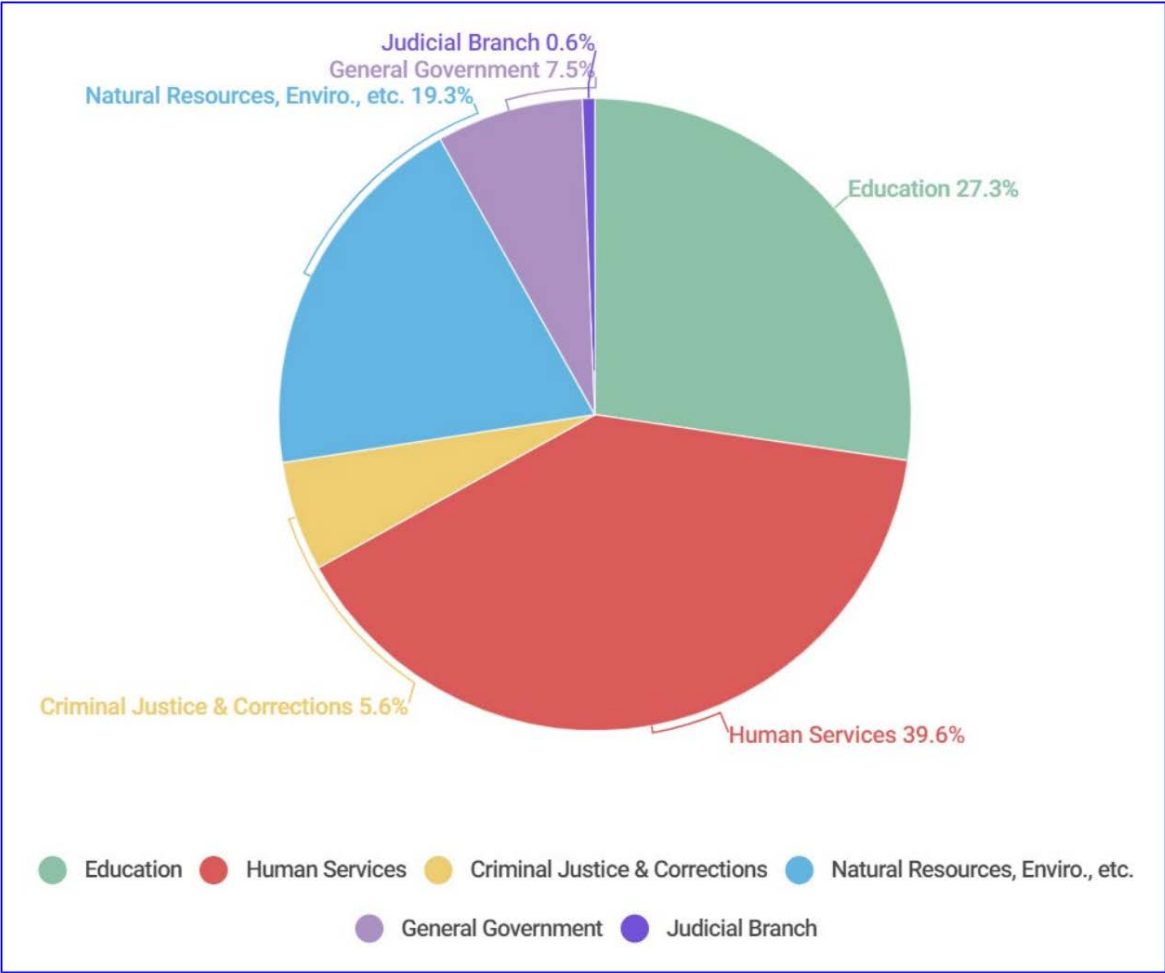
SB1808

Requiring health care facility licensees to refund to the patient any overpayment within a specified timeframe; specifying that health care facility licensees who violate certain provisions are subject to administrative fines; requiring health care practitioners to refund to the patient any overpayment within a specified timeframe; revising the list of acts that constitute grounds for disciplinary actions for health care practitioners, etc.

SB 80

The bill creates the State Park Preservation Act, which requires state parks to be managed for conservation-based recreational uses and in a manner that provides the greatest combination of benefits to the public and the land's natural resources. The bill prohibits the Division of Recreation and Parks (DRP) within the Department of Environmental Protection (DEP) from constructing sporting facilities within state parks

Budget



Contact Us

▶ Capitol Office

- ▶ 1101 The Capitol
402 South Monroe Street
Tallahassee, FL 32399-1300
- ▶ (850) 717-5088

▶ District Office

- ▶ Suite 206
5725 Corporate Way
West Palm Beach, FL 33407-2035
- ▶ (561) 242-5530



Small Business Resources

Palm Beach North Chamber of Commerce
and

Small Business Development Center at Florida Atlantic University



at





Noel Martinez
President & CEO
Palm Beach North Chamber
of Commerce



Chamber Mission & Values

“Foster a partnership of private, public, education, and civic organizations working together to ensure Palm Beach North is Florida’s Prosperity Coast®”



Prosperous
Economy



High Quality
of Life



Regional
Leadership



Resilient &
Connected Region



**LOCAL BUSINESS
RESOURCE CENTER**
*Powered by the Palm Beach North
Chamber of Commerce*



at



FLORIDA ATLANTIC UNIVERSITY
Division of Research



Caitlyn Bergman
Director of Strategic Initiatives
Palm Beach North Chamber
of Commerce



Local Business Resource Center

www.PBNBiz.com

Serves as a centralized hub, providing invaluable support and guidance to entrepreneurs and local businesses.

One-Stop Hub for:

Step-by-Step Business Startup Guide

Licensing & Zoning Guides

Registration Support

Networking, Mentorship, and Local Programming



**LOCAL BUSINESS
RESOURCE CENTER**

Powered by the **Palm Beach North
Chamber of Commerce**

Local Business Resource Center

www.PBNBiz.com

Resources & Information

Business Plan Guidance

Legal Entity Setup

Municipal Business Support Programs

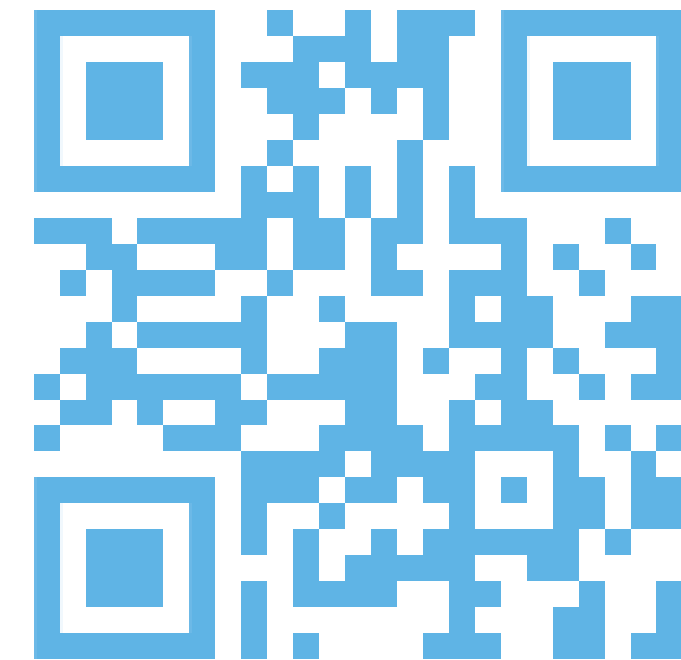
Tax & Licensing Assistance

Funding Navigation (Loans, Grants, etc.)

Insurance & Risk Management

Cybersecurity & Infrastructure Security

Scan here for more:



**LOCAL BUSINESS
RESOURCE CENTER**

Powered by the **Palm Beach North
Chamber of Commerce**



Sandra D. Marin Ruiz, Ed.D.
Regional Director
Small Business Development Center at
Florida Atlantic University



Palm Beach North Small Business Development Satellite Center

Item 2.

Empowering Entrepreneurs and Strengthening the Business Community in Palm Beach North

Palm Beach North businesses can request the following consulting services:

- ✓ Expert & Tailored Business Guidance
- ✓ Targeted Support for Aspiring and Established Small Businesses
- ✓ Mentorship from Seasoned Business Professionals
- ✓ Access to Capital & Financial Resources
- ✓ Networking & Community Connections
- ✓ Resources from Startup to Expansion



at



**LOCAL BUSINESS
RESOURCE CENTER**
*Powered by the **Palm Beach North
Chamber of Commerce***

SBDC at FAU

The Florida SBDC at FAU is a program of the Small Business Administration and hosted by Florida Atlantic University

Our consultants offer no-cost, one-on-one consultations.

All businesses are welcome: whether you have more than three years with more than five employees or are a pre-venture individual exploring business feasibility, SBDC can help.

AMERICA'S
SBDC
FLORIDA

FLORIDA SBDC NETWORK | 2024

Our Impact

\$313.9M in Sales

generated by Florida SBDC at FAU

\$36.9M Capital

accessed by Florida SBDC at FAU

1,824 Jobs

impacted by Florida SBDC at FAU

90 New Businesses

created with assistance from Florida SBDC at FAU

\$38.9M Taxes

generated by Florida SBDC at FAU

\$61.6M Gov't Contracts

acquired by Florida SBDC at FAU

Select A Region
FAU

Bob Glidewell's help on my SBIR grant proposal was very important. Not only does he give you advice on the technical aspects and procedures, but he also cares about your project and success, and this makes you feel like he is part of the team."

- Rodrigo Griesi, Founder of NEPTUNYA Ocean Power

Our Clients

1,509
Existing & Aspiring Business Owners
Consulted

13,345
Consulting Hours Delivered

\$86.6M
Revenue Increase

6,598
Employees Supported

AVERAGE U.S. BUSINESS
JOB GROWTH → 3.4%

AVERAGE SBDC CLIENT
JOB GROWTH → 14%

The Florida SBDC at FAU serves the following counties:
Palm Beach and Broward counties.

AMERICA'S
SBDC
FLORIDA

46

Specialized Services

- Government Contracting
- Capital Access
- International Trade
- Export Marketing
- Disaster Recovery Plans
- Small Business Innovation Center (SBIC) & Small Business Technology Transfer Commercialization (STTR)
- Organization Development (DiSC) Assessment
- Business Tools for Research and Industry Reports

Network of Partners

- U.S. Small Business Administration
- U.S. Department of Defense
- Florida Department of Commerce
- Florida Division of Corporations

Register Today!

To access our special, no-cost, one-on-one confidential consulting services, sign up with the Florida SBDC hosted by FAU

sbdc.fau.edu



Thank You & Questions

Contacts & Information

PBN Chamber & Local
Business Resource
Center

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Small Business
Development Center at FAU

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**LOCAL BUSINESS
RESOURCE CENTER**

Powered by the *Palm Beach North
Chamber of Commerce*



Helping Businesses Grow & Succeed

at



FLORIDA ATLANTIC UNIVERSITY

Division of Research

Town of Lake Park Lake Park Commission Meeting

July 2, 2025

GOOD EVENING,

Comments by Mary Taylor

THE MAIN RESPONSIBILITIES OF LOCAL GOVERNMENT TO ITS CITIZENS
To provide Overall Quality of Life within the Community

1.) PROVIDE ESSENTIAL MUNICIPAL SERVICES

- GENERAL PUBLIC SAFETY -police, fire, emergency services
- INFRASTRUCTURE: Maintaining local roads, public mobility systems, managing waste and utilities (water sewage, garbage collection)
- Education Overseeing and often funding local schools through school districts
- Recreation and Parks Maintaining public parks, playgrounds, recreation programs, libraries

2.) MAINTAIN ORDER AND SECURITY

- Enforcing Local Laws/Ordinances -zoning, building codes, public health standard
- Maintaining a Justice System

3.) PLANNING AND DEVELOPMENT

- Zoning and Land Use
- Community Development, fostering economic development, support local employment

4.)PUBLIC HEALTH AND ENVIRONMENTAL MANAGEMENT

5.) UPHOLDING CITIZENS RIGHTS AND PROMOTING DEMOCRACY

- Promoting Civil Liberties
- Transparency and Accountability: Providing public access to information about local government and holding officials accountable for their actions
- Facilitating Citizen Participation: Offering opportunities for citizens to engage in decision making processes through public meetings, advisory boards and other forms of community engagement

Local governments act as the primary providers of the services and regulations that shape the daily lives of residents, impacting everything from safety and education to infrastructure and the environment.

I can speak for many people in town when I request prioritizing the budget list with number one, all about maintaining town streets, traffic safety control, and planning for substantial increased demands, due to our imminent population explosion. In the past three years Lake Park has promoted and paid hundreds of thousands of dollars for a mobility study and a Park Avenue Road Diet study, and held numerous public workshops. Where do these projects stand tonight? Have grants been pursued, will the projects be funded in the new budget? In light of citizen's nascent interest in the future of their home town, I am requesting Saturday Workshops to answer these questions and discuss the wide ranging important issues, of PROVIDING ESSENTIAL MUNICIPAL SERVICES and facilitating citizen participation by conducting surveys of resident interest/opinions before initiating big ticket projects in the future.

Effectiveness relies on close interaction with the community and responsiveness to local needs.

WE CAN'T KEEP STARTING OVER, FOLKS!



Department of Public Works

10-Year Roadway Improvement Plan July 16, 2025



Presentation Agenda

1. Background & Purpose
2. Strategic Approach
3. Program Cost & Phasing
4. Public Benefits
5. Commission Input & Discussion



Background & Purpose

- Town roadway network deteriorated by ~15% since the 2022 PCI survey
- Estimated cost to restore network: ~\$7.27M (with striping & contingency)
- Historically constrained capital budgets
- Need structured, phased, best-practice strategy
- Purpose of tonight's discussion: Present Draft Plan for Commission feedback



Strategic Approach

Industry Best Practice:

- *Preservation First: Treat Good/Fair segments early*
- *Targeted Rehab: Address Poor/Very Poor segments where needed*
- *Based on FHWA and AASHTO guidance*
- *Recommended treatments:*
 - *Cape Seal*
 - *Microsurfacing*
 - *Mill & Overlay / Full Depth Rehab (as needed)*



Program Cost & Phasing

- Updated Total Program Cost: ~\$7.27M
- Target Funding: ~\$1M/year
- Phased delivery over ~7–8 years
- Phasing Plan:
 - Early (Years 1–3): Critical Rehabilitation
 - Mid (Years 4–6): Preservation & balance
 - Late (Years 7–10): Maintenance & PCI sustainment



Public Benefits

- Extends pavement life 6-10 years
- Reduces long-term reconstruction costs
- Improves visible roadway conditions for residents
- Enhances safety and mobility
- Supports fiscally responsible asset management



Commission Input Sought

- Does the overall strategy align with the Commission's vision?
- Is a \$1M/year target supportable?
- Are there priority corridors or neighborhoods to consider?
- Are there any adjustments to treatments or priorities?
- Upon direction, staff will refine the plan and return with the final Resolution for



ANY
QUESTIONS?



Town of Lake Park
PUBLIC COMMENT CARD

Item 2.

CIVILITY AND DECORUM

The Town of Lake Park is committed to civility and decorum to be applied and observed by its elected officials, advisory board members, employees and members of the public who attend Town meetings. The following rules are hereby established to govern the decorum to be observed by all persons attending public meetings of the Commission and its advisory boards:

- Those persons addressing the Commission or its advisory boards who wish to speak shall first be recognized by the presiding officer. No person shall interrupt a speaker once the speaker has been recognized by the presiding officer. Those persons addressing the Commission or its advisory boards shall be respectful and shall obey all directions from the presiding officer.
- Public comment shall be addressed to the Commission or its advisory board and not to the audience or to any individual member on the dais.
- Displays of disorderly conduct or personal derogatory or slanderous attacks of anyone in the assembly is discouraged. Any individual who does so may be removed from the meeting.
- Unauthorized remarks from the audience, stomping of feet, clapping, whistles, yells or any other type of demonstrations are discouraged.
- A member of the public who engages in debate with an individual member of the Commission or an advisory board is discouraged. Those individuals who do so may be removed from the meeting.
- All cell phones and/or other electronic devices shall be turned off or silenced prior to the start of the public meeting. An individual who fails to do so may be removed from the meeting.

Meeting Date 7-2-25

Cards must be submitted before the item is discussed!!

***Three (3) minute limitation on all comments

Name: STEEN ERIKSSON
Address: 9330 ELM AVE PBG

If you are interested in receiving Town information through Email, please provide your E-mail address: _____

I would like to make comments on the following Agenda Item:

I would like to make comments on the following Non-Agenda Item(s):

PBC FIRE RESCUE / TOWN GUARD

Instructions: Please complete this card, including your name and address; once the card has been completed, give it to the Town Clerk. The Mayor will call your name when it is time for you to speak. Comments are limited to three (3) minutes per individual.



Town of Lake Park
PUBLIC COMMENT CARD

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Meeting Date 7/2/2025

Cards must be submitted before the item is discussed!!

***Three (3) minute limitation on all comments

Name: Mary Taylor

Address: 209 Park Ave

If you are interested in receiving Town information through Email, please provide your E-mail address: _____

I would like to make comments on the following Agenda Item:

Roads

I would like to make comments on the following Non-Agenda Item(s):

Instructions: Please complete this card, including your name and address; once the card has been completed, give it to the Town Clerk. The Mayor will call your name when it is time for you to speak. Comments are limited to three (3) minutes per individual.



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025
Originating Department: Public Works
Agenda Title: Resolution 38-07-25 – Scope of Services Agreement - Stormwater Infrastructure Design and Grant Support - Water Resource Management Associates, Inc. (WRMA) – \$134,012.40

Approved by Town Manager: _____ **Date:** _____

Cost of Item: \$134,012.40 **Funding Source:** Stormwater Assessments
Account Number: 402-363.120 **Finance Signature:** Barbara A Gould

Advertised:
Date: N/a **Newspaper:** N/a

Attachments: 1) Resolution 38-07-25
2) WRMA Proposal – Professional Engineering Services

Please initial one:
 _____ Yes, I have notified everyone
 X _____ Not applicable in this case

Summary Explanation/Background:

The Town of Lake Park, Florida, completed a comprehensive Stormwater Master Plan (SWMP) in 2019, that confirmed the existing Town stormwater network lacks sufficient capacity to manage runoff from dense, impervious areas during significant storm events. The approved study identified at least twenty-three (23) localized flooding locations throughout the Town, including:

- 2nd Street and 3rd Street (Date Palm Drive to Evergreen Drive)
- Second Street (north of Park Avenue to Kalmia Drive)
- Ilex Court (near Ilex Park)

In 2023, the Town successfully implemented a Green Infrastructure (GI) project with roadside bioswales to address flooding at two (2) intersections along 2nd Street. To continue advancing the Town's stormwater mitigation strategy, the Public Works Department is proposing to enter into a Professional Engineering Services Agreement with one of the Town's Continuing Engineering Services Contracts (CSC), Water Resource Management Associates, Inc. (WRMA), to complete design and engineering services to support the development of critical stormwater infrastructure projects identified within the Town's SWMP.

The proposed Scope of Work Agreement, if approved, would include design and engineering for the following three (3) priority project areas:

1. Lake Park Elementary Roadway Drainage Improvements
2. Second Street (north of Park Avenue to Kalmia Drive)
3. Ilex Court Green Infrastructure and Stormwater Improvements

Funding to support these projects (not to exceed \$134,012.40) is available with the FY 2025 Budget.

If approved, the Town Commission would accept WRMA's approved pricing, including all terms, conditions and pricing therein. The Town will not expend more than the amount within the approved budget as it may be adopted/amended each year for these goods and services over the term of this contract.

The proposed Scope of Services Agreement was prepared by WRMA and reviewed by the Public Works Director, the Finance Director and the Town Attorney.

WRMA has completed design and engineering services for various Town projects and has provided good customer service and a quality product. Further, the firm maintains and understanding of Lake Park's stormwater infrastructure. Additionally, WRMA has assisted with securing various stormwater related grant funding previously and is expected to assist in securing funding to complete the construction of the three (3) proposed projects.

Recommended Motion:

I move to adopt Resolution 38-07-25 – Scope of Services Agreement for Stormwater Infrastructure Design and Grant Support with Water Resource Management Associates, Inc. (WRMA) in the amount of \$134,012.40; and authorized the Mayor to execute the proposed Scope of Services Agreement with WRMA.

RESOLUTION 38-07-25

A RESOLUTION OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA AUTHORIZING AND DIRECTING THE MAYOR TO EXECUTE A PROFESSIONAL SERVICES AGREEMENT WITH WATER RESOURCE MANAGEMENT ASSOCIATES, INC. (WRMA), FOR THE PROVISION OF STORMWATER INFRASTRUCTURE DESIGN AND GRANT SUPPORT SERVICES; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town of Lake Park, Florida (“Town”) is a municipal corporation of the State of Florida with such powers and authority as have been conferred upon it by the Florida Constitution and Chapter 166, Florida Statutes; and

WHEREAS, the Town is empowered to enter into agreements with private corporations for professional services; and

WHEREAS, the Town has adopted a Stormwater Master Plan (SWMP) identifying critical deficiencies in its stormwater system and numerous areas of localized flooding; and

WHEREAS, the Town is committed to advancing stormwater infrastructure improvements to enhance flood resilience and protect property and public safety; and

WHEREAS, Water Resource Management Associates, Inc. (WRMA), an engineering firm under contract with the Town pursuant to the Consultants’ Competitive Negotiation Act (CCNA), has submitted a proposal to provide professional engineering services to support the design and grant funding pursuit of three key stormwater projects in accordance with the SWMP; and

WHEREAS, the Town determined that the proposal scope of work and proposal pricing provided value and benefit to the Town in their commitment to improve the Town’s stormwater infrastructure system, and

WHEREAS, the Town Manager recommends entering into an agreement with WRMA for the proposed services as the scope and pricing were found to provide value and support the Town’s strategic objectives for stormwater infrastructure development.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AS FOLLOWS:

Section 1. The foregoing recitals are incorporated herein by this reference.

Section 2. The Mayor is hereby authorized and directed to execute the Professional Services Agreement with Water Resource Management Associates, Inc., a copy of which is attached hereto and incorporated herein as Exhibit A.

Section 3. This Resolution shall take effect immediately upon its execution.



**PROPOSED SCOPE OF SERVICES FOR
TOWN OF LAKE PARK
STORMWATER & WATER QUALITY IMPROVEMENT
MULTI-PROJECT DEVELOPMENT AND GRANT SOURCING**

PART 1.0 BACKGROUND

The three following projects have been identified for further project development, based on the Town of Lake Park Stormwater Masterplan and pre-existing grant funding opportunities from the State of Florida. These projects focus on improving stormwater management at the existing sites in the Town with the aim of:

- Reduction of nuisance flooding,
- Improvements to the ingress and egress from the existing sites,
- Enhancement of Accessibility and Public Safety per the American Disabilities Act and existing Town Regulations and Standards,
- Provide Recreational Enhancements for Residents,
- Apply a sustainable stormwater management & water quality improvement approach to maximize grant funding eligibility through the State of Florida, for between 75% to 100% reimbursement.

Site Location A – Lake Park Elementary Roadway Drainage Improvements

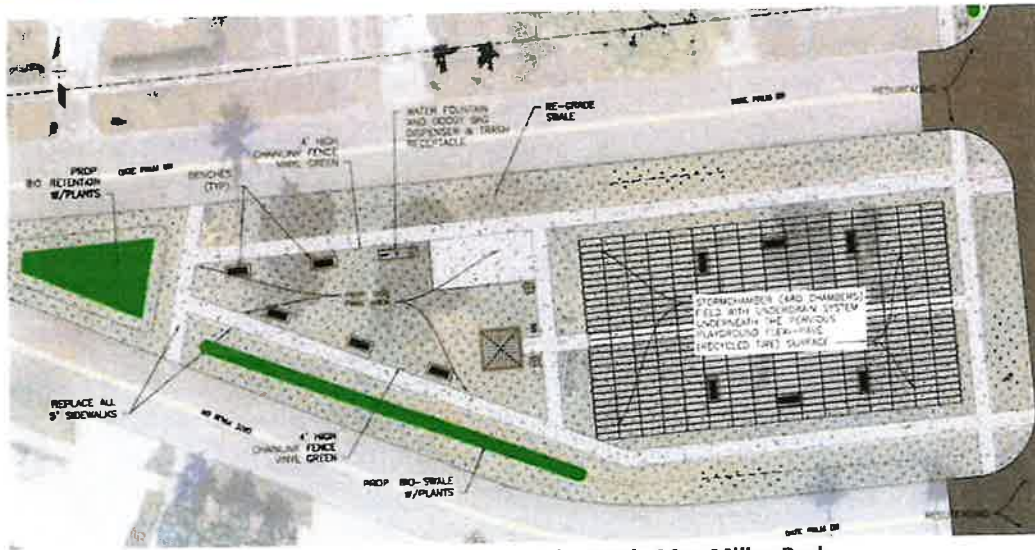




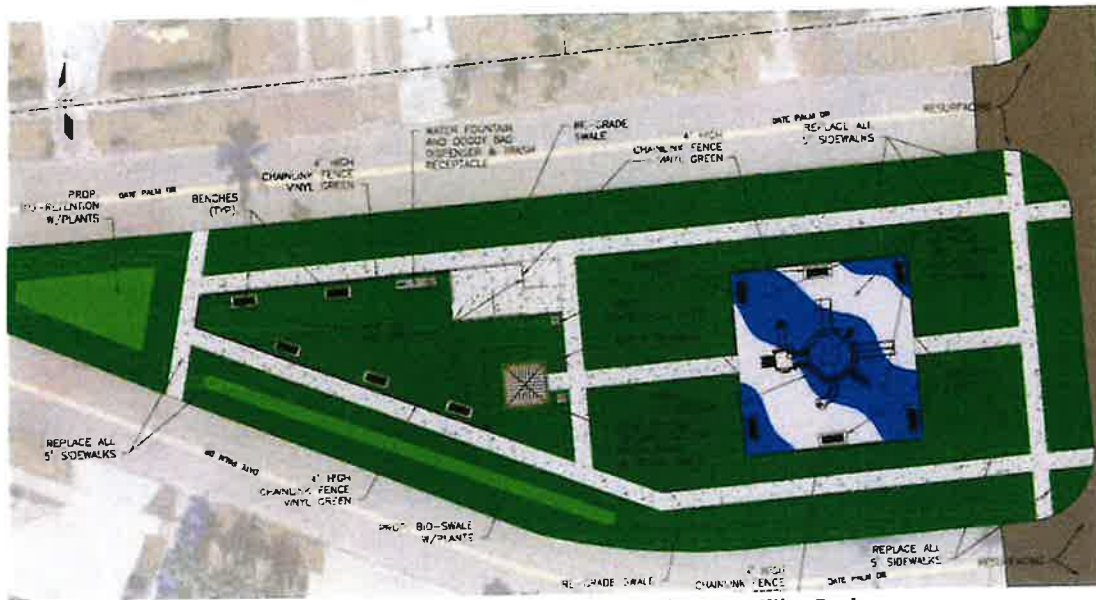
The Right of Ways surrounding Lake Park Elementary lack existing drainage infrastructure which has been reported to cause nuisance flooding issues on the north, south and east sides of the school. Visual inspection of these areas indicates a lack of existing drainage inlets and indications of prior flooding. The roadway pavement on the south side of the school on Date Palm Dr near the school's drop-off lane indicates signs of wear from prolonged exposure to ponding runoff. Furthermore, the topography of the school site is on a downslope from 2nd Street, with the school area being on the low end of the downslope which further exacerbates the existing lack of inlets along Evergreen Dr, Date Palm Dr and 3rd Street as surficial runoff from the blocks to the east appear to indicate a flow direction towards the school.

Project Development at Site Location A would include the following:

- Drainage analysis and layout of drainage inlets on Date Palm Dr, Evergreen Dr and 3rd Street, affronting the school parcel, in an effort to eliminate nuisance flooding around the school
- The drainage inlets will collect surficial runoff which would then be piped to a storage facility to be sited under Lottie May Miller Park which is approximately 425 feet from the intersection at Date Palm and 3rd Street.
- Since the installation of a sub-surficial storage facility underneath the grassed area will require excavation and restoration of the park, this then also presents an opportunity for the Town of Lake Park to improve the park with additional enhancements including bio-swales similar to what was installed at Second Street as well as recreation site amenities, as follows.
- Additional general resurfacing, paving and grading improvements
- ADA enhancements for Proposed Site Features and Walkways
- A Prefabricated Playground with Permeable Recycled Tire Play Surface with Perimeter Fencing
- A fenced dog park with trash receptacles and dual-use water fountains
- Complete replacement of the existing irrigation system



Sub-Surficial Storage Concept for Lottie May Miller Park



Previously Developed Concept for Lottie May Miller Park

Site Location B – Second Street North of Park Avenue to Kalmia Dr

Based on information provided in the Stormwater Masterplan, and prior discussions with Town staff, the existing drainage on Second Street North of Park Avenue is reported to have nuisance flooding issues during intense microburst rainfall events. As is detailed in the Stormwater Masterplan, this is primarily because there are currently no existing drainage facilities on Second Street north of Park Avenue, excepting a few older exfiltration boxes which are located at the intersections along Second Street, and which are not connected to any sub-surface piping, nor do they provide any storage for runoff collected. This has led in the past to the ponding of stormwater in the roadway during typical minor rainfall events.

Continuous ponding of stormwater can lead to accelerated degradation of older asphalt and can also create access issues if the depth of ponding exceeds two inches or more. It is recommended that a new drainage system consisting of swale and sub-surficial storage be implemented to resolve this issue through improved roadway drainage, increased storage capacity, and exfiltration methods like what was constructed on Second Street south of Park Avenue. Notably however, the Right of Way on Second Street North of Park Avenue does not have the same width of Right of Way as areas to the South of Park Avenue, so the methods for storage may differ in certain areas, based on the width of Right of Way and the width of existing pervious areas on both sides of the roadway. It is likely that a combination of traditional swales, coupled with sub-surficial storage methods, will be required to provide sufficient drainage for Second Street. Currently the swales on Second Street north of Park Avenue are occupied by various forms of native and non-native vegetation which while contributing to aesthetics, occupy space that would normally be used for roadway drainage. However native trees and vegetation can also be useful tools in managing stormwater when deployed effectively.



Second Street R/W North of Park Avenue – Isolated Exfiltration Boxes



Second Street R/W North of Park Avenue – Large Trees in Swales



Project Development at Site Location B would include the following:

- Drainage analysis and layout of drainage inlets at all intersections along Second Street
- The drainage inlets will collect surficial runoff which would then be piped to sub-surficial storage systems sited underneath the roadway and at Blakeley Park
- Since the installation of a sub-surficial storage facility underneath the grassed area at Blakeley Park will require excavation and restoration of the park, this then also presents an opportunity for the Town of Lake Park to improve the park with additional enhancements including bio-swales like what was installed at Second Street as well as recreation site amenities, as follows.
- Additional general resurfacing, paving and grading improvements
- ADA enhancements for Proposed Site Features and Walkways
- A new Park Concept to be developed in concert with the PWD and other Town Departments
- Complete replacement of the existing irrigation system



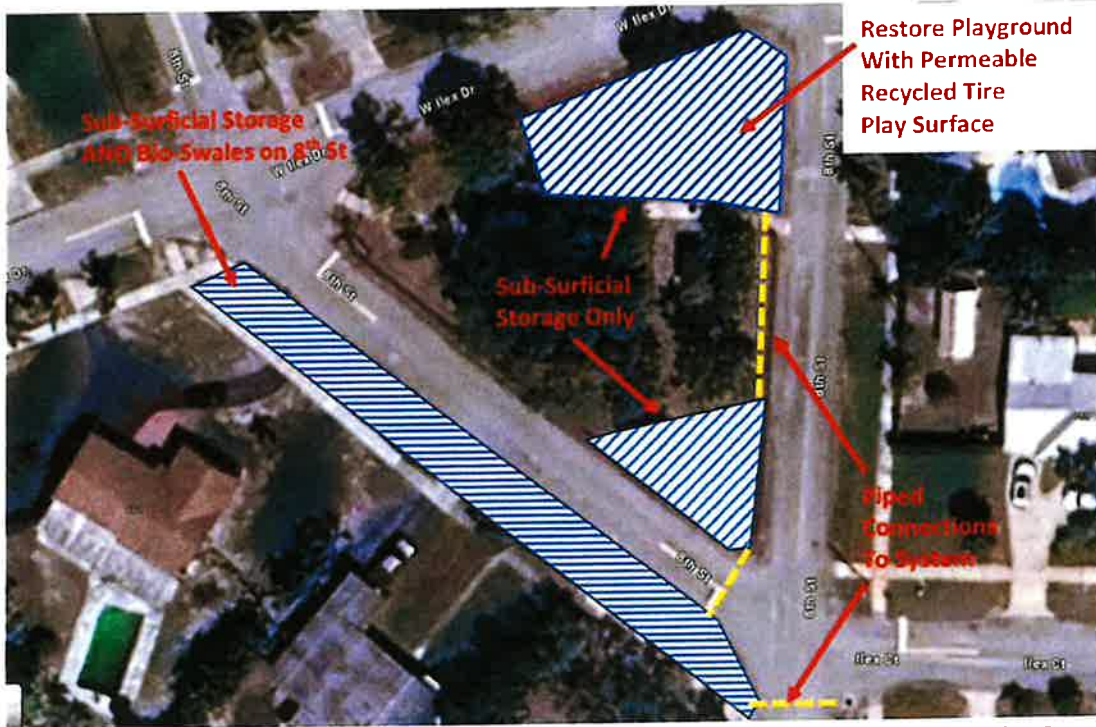
Second Street R/W North of Park Avenue – Sub-Surficial Storage Site at Blakeley Park

Site Location C – Ilex Ct GI and Stormwater Improvements

Based on information provided in the Stormwater Masterplan, and prior discussions with Town staff, the existing drainage on Ilex Ct was previously identified as a candidate site for drainage improvements. The stormwater masterplan identified this location based on hydraulic modeling which indicated surcharging due to existing pipe capacity constraints. The drainage issue has also been observable during severe wet weather. The objective of the project at Ilex Ct would be to provide additional storage capacity to relieve pressure on the existing pipe system while also making some site and roadway improvements that would be necessitated by the installation of sub-surficial storage.



Existing Playground Site at Ilex Park



Conceptual Alternative for Hybrid Sub-Surficial Storage and Bio-Swale Improvements at Ilex Ct





Project Development at Site Location C would include the following:

- Development and layout of potential bio-swale sites, restore all driveway aprons where needed
- General resurfacing, paving and grading improvements on Ilex Ct, 8th St and W Ilex Dr
- ADA enhancements for Proposed Site Features and Walkways
- Planting concept for bioswales to be sited on west side of 8th Street ROW
- Install Permeable Recycled Tire Play Surface above Sub-Surficial chamber field, then Re-Install Existing Playground Structure and Swing set
- New Piped Connections to Stormwater Sewers on Ilex Ct to provide pressure relief



PART 2.0 PROJECT DEVELOPMENT & FUNDING APPROACH

Project 1: "Second Street Neighborhood Stormwater & Water Quality Improvements Project"

Given that the Town of Lake Park has already made improvements to Second Street during the previous "Second Street Green Infrastructure Project", which was completed in early 2024, and which was fully funded by FDEP, and given that two of the projects proposed for development in site locations A and B are directly connected to or are in fact located on Second Street, there would be some efficiency in pursuing project funding for a project that would encompass all remaining portions of Second Street that have not yet been improved.

A combined project would include not only the section of Second Street North of Park Avenue, but also the remaining portion of Second Street South of Cypress Dr south of the limits of the previous project. In this sense, the combination of Site Locations A and B into one comprehensive project will allow for the Town to develop one grant application for design funding (and later construction) to be prepared for an improvement project which might be titled as the "Second Street Neighborhood Stormwater & Water Quality Improvements Project". This project would in effect complete all remaining runs of Second Street improving drainage, providing asphalt and sidewalk improvements, and making substantial improvements to two of the Town's historic pocket parks.

This approach provides value to the Town, because it will focus the existing funding and future funding on one design and construction effort for all of Second Street and would also represent a meaningful investment by the Town, but also the state, who is already familiar with the success of the previous Second Street project and would likely be willing to fund the project in light of a similar project approach with an even greater impact.

Project 2: "Ilex Court Stormwater and Water Quality Improvements Projects"

As it relates to site location C, this Ilex Court site location project development is focused on improving a site which was previously identified in the stormwater masterplan as a known location for nuisance or moderate flooding to in extreme cases, severe flooding. Given the issues at hand which are detailed at length in the stormwater masterplan, it is recommended that this project be approached on an individual basis, via its own grant application for design (and later construction) funding.

Further Funding Needs for Detailed Design and Construction to be Acquired

Following completion of the preliminary design phase scope of services, and successful award of grant funding for detailed design, WRMA / Coteleur & Hearing, shall prepare an additional scope of services for detailed design and grant application preparation for construction funding, which would include the preparation of 90% and 100% plans, cost estimates, and grant applications. The grant applications to secure funds for the detailed design may require up to a 50% match from the town. For the construction phase, the Town would seek 100% construction funding with no matching funds (if possible).



Total funding required for the design and construction of *Projects 1 and 2* is roughly estimated to be \$3.63 Million, including \$434,000 for design and \$3,200,000 for construction. See breakdown:

Total Funding Requirements for Project 1	2ND STREET NEIGHBORHOOD improvements (SCHOOL / Lott: May Park / 2ND St. N.)
Total Project 1 Design Funding Required:	\$350,000 (Grant Application 1)
50% Matching Fund Contribution from Town:	\$175,000 (50% of \$350,000)
Initial Seed Funding for Preliminary Design for Project 1:	\$100,000 (counts as matching funds)
Remaining Matching Funds Contribution for Project 1:	\$75,000 (contributed by Town later)
Total Project 1 Construction Funding Required:	\$2,400,000 (no matching funds)

Total Funding Requirements for Project 2	ILEX COURT improvements
Total Project 2 Design Funding Required:	\$84,000 (Grant Application 2)
50% Matching Fund Contribution from Town:	\$42,000 (50% of \$84,000)
Initial Seed Funding for Preliminary Design for Project 2:	\$34,000 (counts as matching funds)
Remaining Matching Funds to be Contributed for Project 2:	\$8,000 (contributed by Town later)
Total Project 2 Construction Funding Required:	\$800,000 (no matching funds)

PART 3.0 SCOPE OF SERVICES

TASK 1.0 CONCEPTUAL GREEN INFRASTRUCTURE BMP PROJECT DEVELOPMENT SERVICES

1.1 Meet with Town Staff Onsite at All Three Sites

At project initiation, WRMA will attend onsite meetings at all three sites to discuss conceptual ideas for the project development and alternative options for site features and proposed improvements.

1.2 Meetings and Outreach Meeting Attendance

WRMA will attend meetings and coordinate with the Town Public Works and Planning Department on the conceptual designs until the conceptual layouts are complete and the grant packages are ready for transmittal. WRMA shall also attend any up to 4 outreach meetings with Town staff if required.

1.3 Develop Stormwater and Water Quality Conceptual Designs for All Three Sites

WRMA will prepare project plan sheets to a 60% level for each of the three proposed sites as described herein for the purpose of developing cost of construction takeoffs and to provide the basis for conceptual site exhibits to support the grant applications. This task shall include preliminary hydraulic modeling to provide calculations for the drainage improvements to provide data for future SFMWD permitting.



1.4 Develop Park Improvement and Conceptual Planting Plans with Visual 3D Rendering Exhibits in Plan/Section

WRMA shall work with Cotleur and Hearing, Professional Landscape Architects and Planners to develop conceptual site plans of the proposed bio-swales, site amenity improvements, and proposed irrigation plans based on the proposed BMP's and planting plans. Furthermore, Cotleur and Hearing shall prepare 3D photo-realistic renderings of the site improvements in both plan and cross section of the proposed bio-swales for each of the three project sites to support the grant applications and communicate the projects to the Commission, Town Management, State Agencies and all public stakeholders.

1.5 Prepare Grant Applications for Design Funding & Documentation for All Three Sites

WRMA shall prepare grant applications (min. of 2) for the two proposed projects 1 and 2, which shall be supported with the 60% plans, cost estimates for construction, and 3D photo-realistic conceptual renderings (as provided by Subtask 1.4). The grant applications shall be prepared for the purpose of securing funding for the detailed design phase, and then later, construction funding.

Task 1 Deliverables

- Regular Email Coordination, Virtual Meetings, In Person Meetings, Public Meetings
- Monthly Progress Reports
- 60% Plans for all three sites
- Conceptual Renderings for each of the three sites
- Grant Applications to Support Project Funding Requirements (min 2)

END OF SCOPE OF SERVICES

FEES

The Not-to-Exceed fee for this project is **\$134,012.40**

This fee includes all time and materials, and lump sum subconsultant fees as follows:

Direct Labor	\$89,382.40
Cotleur & Hearing, Landscape Architecture	<u>\$44,630.00 (no markup)</u>

Total Fee **\$134,012.40**

Note that monthly progress billings are not tied to deliverables. Some tasks will require multiple billing periods prior to provision of 100% complete deliverables. Progress billings will be allowed prior to submission of completed deliverables.

A task-by-task breakdown of fees is provided for services.

TOWN OF LAKE PARK
WATER QUALITY MULTI-PROJECT DEVELOPMENT AND GRANT SOURCING
BREAKDOWN OF RATES AND MANHOURS

FEBRUARY 2025

TASK ITEM AND DESCRIPTION		Senior Project Manager	Professional Engineer	Total Hours (hrs)	Subconsultant Lump Sum (Contractor & Hearing no markup)	Direct Labor Hourly NTE	Sub-Task Total	Task Total
1.0 CONCEPTUAL STORMWATER & WATER QUALITY PROJECT DEVELOPMENT SERVICES								
1.1	Initial Meeting with Town Staff Onsite At All Three Sites	4	4	8	\$ -	\$ 1,310.72	\$ 1,310.72	\$ 134,012.40
1.2	Meetings and Public/Outreach Meeting Attendance (4 In Person Meetings)	12	12	24	\$ -	\$ 3,932.16	\$ 3,932.16	
1.3	Develop Stormwater and Water Quality Conceptual Designs for All Three Sites	24	424	448	\$ -	\$ 72,376.32	\$ 72,376.32	
1.4	Develop Park Improvement and Conceptual Planting Plans with 3D Visual Exhibits	1	2	3	\$ 44,630.00	\$ 488.96	\$ 45,118.96	
1.5	Prepare Grant Applications for Design Funding & Documentation for All Three Sites	60	8	68	\$ -	\$ 11,274.24	\$ 11,274.24	
Subtotal Lump Sum					\$ 44,630.00			
Subtotal Hourly Not to Exceed						\$ 89,382.40		
GRAND TOTAL FEE NOT TO EXCEED								\$ 134,012.40

Professional Engineering Services Proposal for Stormwater Multi-Project Development and Grant Sourcing Work for \$134,012.40.

TOWN OF LAKE PARK

ATTEST:

By: _____
Vivian Mendez, Town Clerk


Date: _____

By: _____
Roger Michaud, Mayor

Date: _____

WATER RESOURCES MANAGEMENT ASSOICATES, INC.

250 Tequesta Drive
Suite #302
Tequesta, Florida 33469

By: 
Raul Mercado, WRMA

Its: President
Title

Raul M. Mercado, P.E.
Written Name

Date: 6/30/2025



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025
Originating Department: Information Technology
Resolution 39-07-25 - Interlocal Agreement - Information Technology
Agenda Title: Network Services (Fiber) - Palm Beach County

Approved by Town Manager: _____ **Date:** _____

Cost of Item: \$17,400 **Funding Source:** General Fund
Account Number: 110-34000 **Finance Signature:** Barbara A. Gould

Advertised:
Date: N/A **Newspaper:** _____

Attachments: 1. Interlocal Agreement
2. Resolution 39-07-25

Please initial one:

_____ Yes, I have notified everyone
 _____ PM Not applicable in this case

Summary Explanation/Background:

The Town's Chief Information Technology Officer has identified a need to enter into an Interlocal Agreement with Palm Beach County for the continued provision of network services (fiber) to support the Town's internet needs.

If approved, the Town Commission would accept the County's approved pricing (No Rate Change), including all terms, conditions and pricing therein. The proposed, new Interlocal Agreement would be for one (1) year with four (4) automatic one-year renewals. The Town will not expend more than the amount within the approved budget as it may be adopted/amended each year for these goods and services over the term of this contract.

Funding to support this service is available within the current FY 2025 Budget and will be presented for consideration within the proposed FY 2026 Budget. The total annual cost is proposed to be \$17,400 per

year.

Note: The Town's Purchasing Code – Section 2-244. Exemptions states:

This division shall not apply to:

2. Agreements between the Town and other government or nonprofit organizations that provide for the transfer, sale, or exchange of goods and services.
14. Proprietary software applications

The proposed Interlocal Agreement was prepared by Palm Beach County and reviewed by the Town's Chief Information Technology Officer and the Finance Director.

The Town has worked with the County's Information Systems Services (ISS) Department in providing network services since 2018 and they have provided a quality product and good customer service.

Recommended Motion:

I move to approve Resolution 39-07-25 - Interlocal Agreement for Information Technology Network Services (Fiber) with Palm Beach County; and authorize the Mayor to execute the proposed Interlocal Agreement in the amount of \$17,400 per year (5-Year Agreement).

RESOLUTION 39-07-25**A RESOLUTION AUTHORIZING AND DIRECTING THE MAYOR TO EXECUTE AN INTERLOCAL AGREEMENT WITH PALM BEACH COUNTY, FLORIDA, FOR INFORMATION TECHNOLOGY NETWORK SERVICES.**

WHEREAS, the Town of Lake Park, Florida (“Town”) is a municipal corporation of the State of Florida with such power and authority as has been conferred upon it by the Florida Constitution and Chapter 166, Florida Statutes; and

WHEREAS, Section 163.01, Florida Statutes (Florida Interlocal Cooperation Act of 1969) as amended, authorizes local governmental units to make the most efficient use of their powers by enabling them to cooperate with each other on a basis of mutual advantage and thereby to provide services and facilities that will harmonize geographic, economic, population and other factors influencing the needs and development of local communities; and

WHEREAS, Part I of Chapter 163, Florida Statute permits public agencies as defined herein to enter into agreements with each other to jointly exercise any power, privilege or authorization which such agencies share in common and which each might exercise separately; and

WHEREAS, the Town and Palm Beach County (“County”) have recognized the need for the Town to obtain information technology network services (“IT”) from the County; and

WHEREAS, the Town seeks access to the County’s IT resources because it would realize a cost savings due to the ability of the County to leverage its resources for the greater good of citizens of Palm Beach County, the State of Florida, and other public entities; and

WHEREAS, the Town has requested that the County provide information technology network services to the Town; and

WHEREAS, the Town and the County have agreed to enter into an Interlocal Agreement to provide for the joint use of IT assets and to establish policies for the use of these assets by the Town and County.

WHEREAS, the Town and the County have agreed to enter into an Interlocal Agreement, a copy of which is attached hereto and incorporated herein by reference as Exhibit “A”, and

WHEREAS, UPON THE County and Town’s execution of the Interlocal Agreement, the County will continue providing IT network services to serve the Town’s Town Hall, Library, Public Works, Marina, CRA building, PBSO station, and Lake Shore Park; and

WHEREAS, the cost the Town would pay the County for the IT Services would be \$17,400.00 annually; and

WHEREAS, the Town Manager has recommended that the Town Commission enter into this Interlocal Agreement with the County for Information Technology Network Services.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AS FOLLOWS:

Section 1. The foregoing recitals are incorporated herein.

Section 2. The mayor is hereby authorized and directed to execute an Interlocal Agreement with the County, copy of which is attached hereto and incorporated herein by reference.

Section 3. This resolution shall take effect immediately upon its execution.

#6647539 v1 26508-00001

Interlocal Agreement

This Interlocal Agreement (“Agreement”) for information technology (“IT”) services is entered into this ____ day of _____, 2025, by and between Town of Lake Park (“LOCAL GOVERNMENT”) and Palm Beach County (“COUNTY”) a political subdivision of the State of Florida. This Agreement rescinds existing Agreement for IT Services R2020-0282, dated March 10, 2020.

WHEREAS, Section 163.01, Florida Statutes, known as the “Florida Interlocal Cooperation Act of 1969,” authorizes local governments to make the most efficient use of their powers by enabling them to cooperate with other localities on a basis of mutual advantage and thereby to provide services and facilities that will harmonize geographic, economic, population and other factors influencing the needs and development of local communities; and

WHEREAS, Part I of Chapter 163, Florida Statutes, permits public agencies to enter into Agreements with each other to jointly exercise any power, privilege, or authority which such agencies share in common and which each might exercise separately; and

WHEREAS, the LOCAL GOVERNMENT and the COUNTY have recognized the need for the LOCAL GOVERNMENT to obtain IT services (“IT”) for the purpose of gaining access to IT resources at a cost savings due to the ability of COUNTY to leverage its resources for the greater good of citizens of COUNTY, the State of Florida, and any public sector organization that can benefit from these services; and

WHEREAS, in recognizing these facts, the LOCAL GOVERNMENT and the COUNTY desire to enter into such an agreement which provides for the joint use of such IT assets and establishes policies for its use by each organization.

NOW, THEREFORE, in consideration of the mutual covenants herein contained and for other good and valuable consideration, the parties do mutually agree as follows:

Section 1 Purpose

The purpose of this Agreement is to provide IT services to the LOCAL GOVERNMENT for the purposes described in the attached Exhibit A.

*Agreement with Palm Beach County and Town of Lake Park
Re: Palm Beach County ISS Services*

Item 4.

Section 2 Approval

The COUNTY approves of the LOCAL GOVERNMENT's participation in the use of the COUNTY's IT resources and any other services as specified in the attached Exhibit A.

Section 3 Exhibits

The attached Exhibit A made a part hereof, delineates the services to be provided to the LOCAL GOVERNMENT by the COUNTY through its Information Systems Services (ISS) Department, identifies the roles and responsibilities of the COUNTY and the LOCAL GOVERNMENT in this regard, and sets forth an issue, communication, escalation and resolution process, as well as methodologies for billing and paying the quarterly service charges for IT services.

Section 4 Term

The term of this Agreement including Exhibit A, unless terminated as provided in Section 6 herein, is for a period of one (1) year with four (4) automatic one year renewals. The effective date is the date of approval by the Board of County Commissioners.

Section 5 Resale of IT Services

The LOCAL GOVERNMENT shall not share or resell any portion of the COUNTY's IT Infrastructure or Services in any manner not approved of in this Agreement or without explicit written consent from Palm Beach County, which consent shall not be unreasonably withheld.

Section 6 Termination

COUNTY reserves the right to terminate this Agreement, at any time, for lack of funding, cause or convenience upon thirty (30) days' notice to LOCAL GOVERNMENT. LOCAL GOVERNMENT may terminate this Agreement for lack of funding, cause or convenience upon thirty (30) days' notice to COUNTY. The parties acknowledge that LOCAL GOVERNMENT shall sustain no damages, of any kind or character, as a result of the termination of this Agreement.

Section 7 Indemnification and Hold Harmless

The LOCAL GOVERNMENT shall indemnify, defend and hold harmless COUNTY, its agents, employees and elected officers against all claims, liability, expense, loss, cost, damages or causes of action of every kind or character, whether at trial or appellate levels or otherwise, arising out of the acts or omissions of the LOCAL GOVERNMENT. Such liability is subject to the provisions of law, including the limits included in Section 768.28, Florida Statutes, which sets forth the partial waiver of sovereign immunity to which governmental entities are subject. It is expressly understood that this provision shall not be construed as a waiver of any right or defense that the parties have under Section 768.28 or any other statute.

The parties to this Agreement acknowledge the potential of unlawful hacking to gain surreptitious access into confidential systems. The COUNTY has deployed reasonable steps and safeguards as part of a Network security program, but these systems may not be able to defeat every attempt to gain unlawful access to applications or data. Each party is responsible for protecting its own applications, databases, and servers. Each party, however, shall review each other's security procedures and notify each other with reasonable promptness of concerns or issues regarding the same.

Section 8 Damage Caused by Disasters

Should the COUNTY's IT infrastructure be damaged or destroyed by a natural or man-made event to the extent that the cost to repair or replace these services becomes economically unfeasible, this Agreement is automatically terminated at the sole discretion of the COUNTY, unless the governing bodies of both the LOCAL GOVERNMENT and COUNTY authorize its continuation and associated funding to repair or restore the affected area(s).

Section 9 Notice

Any notice, request, instruction, demand, consent, or other communication required or permitted to be given under this Agreement shall be in writing and shall be delivered either by hand or by certified mail, postage prepaid, and certified return receipt requested to the following addresses or such other addresses as the parties may provide to each other in writing:

***Agreement with Palm Beach County and Town of Lake Park
Re: Palm Beach County ISS Services***

Item 4.

To: Town of Lake Park
Richard Reade, Town Manager
535 Park Avenue
Lake Park, FL 33403
(Telephone: 561-881-3304)

With a copy to: Thomas J. Baird, Town Attorney
4741 Military Trail, Suite 200
Jupiter, FL 33458
(Telephone: 561-650-8233)

To: **COUNTY:** County Administrator
c/o Archie Satchell, Information Systems Services CIO
Palm Beach County Board of County Commissioners
301 N. Olive Avenue, 8th floor
West Palm Beach, FL 33401
(Telephone: 561-355-2823)

With a copy to: County Attorney's Office
Palm Beach County Board of County Commissioners
301 N. Olive Avenue, Suite 601
West Palm Beach, FL 33401
(Telephone: 561-355-2225)

Section 10 Entire Agreement

This Agreement sets forth the entire agreement between the parties. There are no promises or understandings other than those stated herein.

Section 11 Choice of Law and Venue

This Agreement shall be governed by the laws of the State of Florida. Unless otherwise agreed to in writing by the parties, any and all legal action necessary to enforce the Agreement shall be held in a court of competent jurisdiction located in Palm Beach County, Florida.

Section 12 Binding Agreement

This Agreement is binding upon the parties hereto, their heirs, successors, and assigns.

*Agreement with Palm Beach County and Town of Lake Park
Re: Palm Beach County ISS Services*

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Section 13 Subject to Funding

Each party's performance and obligations for subsequent fiscal years are contingent upon annual appropriations for its purpose.

Section 14 Nondiscrimination

Both parties warrant and represent that all of its employees are treated equally during employment without regard to race, color, religion, disability, sex, age, national origin, ancestry, marital status, familial status, sexual orientation, gender identity and expression, or genetic information. The parties further warrant and agree that no person shall be excluded from the benefits of or be subjected to any form of discrimination under any activity carried out in the performance of this Agreement.

Section 15 Public Records

Notwithstanding anything contained herein, as provided under Section 119.0701, F.S., the LOCAL GOVERNMENT shall comply with the requirements of Section 119.0701, Florida Statutes, as it may be amended from time to time. The LOCAL GOVERNMENT is specifically required to:

- A. Keep and maintain public records required by the COUNTY to perform services as provided under this Agreement.
- B. Upon request from the COUNTY's Custodian of Public Records, provide the COUNTY with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119 or as otherwise provided by law. The LOCAL GOVERNMENT further agrees that all fees, charges and expenses shall be determined in accordance with Palm Beach County PPM CW-F-002, Fees Associated with Public Records Requests, as it may be amended or replaced from time to time.
- C. Ensure that public records that are exempt, or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the agreement term and following completion of the Agreement, if

*Agreement with Palm Beach County and Town of Lake Park
Re: Palm Beach County ISS Services*

Item 4.

the LOCAL GOVERNMENT does not transfer the records to the public agency.

- D. Upon completion of the Agreement, the LOCAL GOVERNMENT shall transfer, at no cost to the COUNTY, all public records in possession of the LOCAL GOVERNMENT unless notified by COUNTY's representative/liaison, on behalf of the COUNTY's Custodian of Public Records, to keep and maintain public records required by the COUNTY to perform the service. If the LOCAL GOVERNMENT transfers all public records to the COUNTY upon completion of the Agreement, the LOCAL GOVERNMENT shall destroy any duplicate public records that are exempt, or confidential and exempt from public records disclosure requirements. If the LOCAL GOVERNMENT keeps and maintains public records upon completion of the Agreement, the LOCAL GOVERNMENT shall meet all applicable requirements for retaining public records. All records stored electronically by the LOCAL GOVERNMENT must be provided to COUNTY, upon request of the COUNTY's Custodian of Public Records, in a format that is compatible with the information technology systems of COUNTY, at no cost to COUNTY.

Failure of the LOCAL GOVERNMENT to comply with the requirements of this article shall be a material breach of this Agreement. COUNTY shall have the right to exercise any and all remedies available to it, including but not limited to, the right to terminate for cause. LOCAL GOVERNMENT acknowledges that it has familiarized itself with the requirements of Chapter 119, F.S., and other requirements of state law applicable to public records not specifically set forth herein.

IF THE LOCAL GOVERNMENT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE LOCAL GOVERNMENT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, PLEASE CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT RECORDS REQUEST, PALM BEACH COUNTY PUBLIC AFFAIRS DEPARTMENT, 301 N. OLIVE AVENUE, WEST PALM BEACH, FL 33401, BY E-MAIL AT RECORDSREQUEST@PBC.GOV OR BY TELEPHONE AT 561-355-6680.

*Agreement with Palm Beach County and Town of Lake Park
Re: Palm Beach County ISS Services*

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Section 16 Access and Audits

The LOCAL GOVERNMENT shall maintain records relating to this Agreement for at least five (5) years after completion or termination of this Agreement. The COUNTY shall have access to such books, records, and documents as required in this section for the purpose of inspection or audit during normal business hours, at any of the LOCAL GOVERNMENT'S places of business.

Section 17 Inspector General

Palm Beach County has established the Office of the Inspector General in Palm Beach County Code, Section 2-421 – 2-440, as may be amended. The Inspector General's authority includes but is not limited to the power to review past, present and proposed COUNTY contracts/agreements, transactions, accounts and records, to require the production of such records, and to audit, investigate, monitor, and inspect the activities of the LOCAL GOVERNMENT, its officers, agents, employees, and lobbyists in order to ensure compliance with contract/agreement requirements and detect corruption and fraud.

Failure to cooperate with the Inspector General or interference or impeding any investigation shall be in violation of Palm Beach County Code, Section 2-421 – 2-440, and punished pursuant to Section 125.69, Florida Statutes, in the same manner as a second degree misdemeanor.

Section 18 Regulations, Licensing Requirements

The LOCAL GOVERNMENT shall comply with all laws, ordinances and regulations applicable to the services contemplated herein, to include those applicable to conflict of interest and collusion. The LOCAL GOVERNMENT is presumed to be familiar with all federal, state and local laws, ordinances, codes and regulations that may in any way affect the services offered.

Section 19 No Third Party Beneficiary

No provision of this Agreement is intended to, or shall be construed to create any third party beneficiary or to provide any rights to any person or entity not a party to this Agreement, including but not limited to any citizen or recipient, or official, employee, or volunteer of either party.

*Agreement with Palm Beach County and Town of Lake Park
Re: Palm Beach County ISS Services*

Item 4.

Section 20 No Agency

Nothing contained herein is intended to nor shall create an agency relationship between the COUNTY and LOCAL GOVERNMENT.

Section 21 No Assignability

Neither this Agreement nor any obligation hereunder shall be assigned, subcontracted, transferred or otherwise encumbered by LOCAL GOVERNMENT, without the prior written consent of the COUNTY.

Section 22 Amendments

None of the provisions, terms and conditions contained in this Agreement may be added to, modified, superseded or otherwise altered, except by written instrument executed by the parties hereto.

Section 23 Waiver

If the COUNTY shall waive any provisions of the Agreement or fail to enforce any of the conditions or provisions of this Agreement, such waiver shall not be deemed a continuing waiver and shall never be construed as such; and the COUNTY shall thereafter have the right to insist upon the enforcement of such conditions or provisions.

Section 24 Continuing Obligations

Duties or obligations that are of a continuing nature extending beyond the Agreement's expiration or termination, including but not limited to those set forth in Section 7, shall survive the Agreement's termination or expiration.

Section 25 Joint Preparation

The preparation of this Agreement has been a joint effort of the parties, and the resulting document shall not be construed more severely against one of the parties than the other.

Section 26 Severability

If any term or provision of this Agreement, or the application thereof to any person or circumstances shall, to any extent, be held invalid or unenforceable, the remainder of this Agreement, or the application of such terms or provision, to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected, and every other term and provision of this Agreement shall be deemed valid and enforceable to the extent permitted by law.

Section 27 Scrutinized Companies

As provided in F.S. 287.135(2)(a), by entering into this Agreement, LOCAL GOVERNMENT certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform or benefit hereunder, have not been placed on the Scrutinized Companies that boycott Israel List, or is engaged in a boycott of Israel, pursuant to F.S. 215.4725.

When agreement value is greater than \$1 million: As provided in F.S. 287.135, by entering into this Agreement or performing any work in furtherance hereof, the LOCAL GOVERNMENT certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform hereunder, have not been placed on the Scrutinized Companies With Activities in Sudan List or Scrutinized Companies With Activities in The Iran Petroleum Energy Sector List created pursuant to F.S. 215.473 or is engaged in business operations in Cuba or Syria.

If the COUNTY determines, using credible information available to the public, that a false certification has been submitted by LOCAL GOVERNMENT, this Agreement may be terminated and a civil penalty equal to the greater of \$2 million or twice the amount of this Agreement shall be imposed, pursuant to F.S. 287.135. Said certification must also be submitted at the time of Agreement renewal, if applicable.

Section 28 Public Entity Crimes

As provided in F.S. 287.132-133, by entering into this agreement or performing any work in furtherance hereof, the LOCAL GOVERNMENT certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform hereunder, have not been placed on the convicted

Agreement with Palm Beach County and Town of Lake Park
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vendor list maintained by the State of Florida Department of Management Services within the 36 months immediately preceding the date hereof. This notice is required by F.S. 287.133(3)(a).

Section 29 Counterparts

This Agreement, including the exhibits referenced herein, may be executed in one or more counterparts, all of which shall constitute collectively but one and the same Agreement. The COUNTY may execute the Agreement through electronic or manual means. LOCAL GOVERNMENT shall execute by manual means only, unless the COUNTY provides otherwise.

Section 30 E-Verify – Employment Eligibility

LOCAL GOVERNMENT warrants and represents that it is in compliance with section 448.095, Florida Statutes, as may be amended. No later than January 1, 2021, LOCAL GOVERNMENT shall register with and use the E-Verify System (E-Verify.gov), to electronically verify the employment eligibility of all newly hired workers. COUNTY shall terminate this Contract if it has a good faith belief that LOCAL GOVERNMENT has knowingly violated Section 448.09(1), Florida Statutes, as may be amended.

----- Balance of page left intentionally blank -----

***Agreement with Palm Beach County and Town of Lake Park
Re: Palm Beach County ISS Services***

Item 4.

IN WITNESS WHEREOF, the COUNTY and LOCAL GOVERNMENT have each caused this Agreement to be executed by its duly authorized official as of the date first set forth above.

ATTEST:

PALM BEACH COUNTY

Joseph Abruzzo, Clerk & Comptroller

**Palm Beach County, By Its
Board of County Commissioners**

By: _____
Deputy Clerk

By: _____
Maria G. Marino, Mayor

(SEAL)

**APPROVED AS TO LEGAL
SUFFICIENCY**

**APPROVED AS TO TERMS AND
CONDITIONS**

By: _____
County Attorney

By: _____
Archie Satchell, CIO, ISS

TOWN OF LAKE PARK

By: _____
Vivian Mendez, Town Clerk

By: _____
Roger Michaud, Mayor

**APPROVED AS TO LEGAL
SUFFICIENCY**

By: _____
Thomas J. Baird, Town Attorney

EXHIBIT A

The purpose of this Exhibit is to delineate the network services to be provided to the LOCAL GOVERNMENT by the COUNTY to identify the roles and responsibilities of the COUNTY and the LOCAL GOVERNMENT in this regard, to establish a problem resolution and issue escalation procedure, and to specify associated costs and payment requirements.

These network services originally commenced on March 1, 2019.

Section A: General Requirements for Network Services

Network services must be approved by both the COUNTY and the LOCAL GOVERNMENT if said connection affects the entire network. However, all network services must meet the agreed-upon technical specifications.

The COUNTY shall provide the LOCAL GOVERNMENT with access to the COUNTY's network on a best-effort basis and as otherwise provided for herein.

Section B: Responsibilities for Network Management

The COUNTY shall be responsible for the routine, day-to-day management of the COUNTY network. Each party shall be responsible for day-to-day administration of the network routers which they individually own.

The COUNTY shall be responsible for maintaining the primary network and all auxiliary components of the network which exclusively serve COUNTY facilities. The COUNTY shall also maintain auxiliary portions of the network which service both COUNTY and LOCAL GOVERNMENT owned facilities. The LOCAL GOVERNMENT shall maintain that portion of its own network which exclusively serves its facilities.

The COUNTY shall monitor bandwidth utilization on any network link between the COUNTY and the LOCAL GOVERNMENT.

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Should the COUNTY perform repair and maintenance functions on behalf of the LOCAL GOVERNMENT, it is with the understanding that the COUNTY's responsibility extends only to the LOCAL GOVERNMENT "demarcation point." The demarcation point is the location which defines where issues of maintenance responsibilities begin and end, considered to be COUNTY-owned network equipment inside each of the LOCAL GOVERNMENT's buildings or facilities connected to the COUNTY network. The COUNTY will be responsible for maintaining all network infrastructures to the point of the network equipment connection to the LOCAL GOVERNMENT demarcation point(s). Entrance facilities at LOCAL GOVERNMENT owned locations from the road to demarcation point belong to the LOCAL GOVERNMENT, whereas the fiber within may belong to the COUNTY.

Maintenance and restoration work provided by the COUNTY shall be limited to the fiber optic cable and service drops, the individual fibers within the cable and service drops, all 802.16 radio equipment, and the COUNTY routers installed at the LOCAL GOVERNMENT. The COUNTY shall have no obligation or right to perform maintenance or restoration on any electronics or other equipment owned by the LOCAL GOVERNMENT or any third party. Notwithstanding the foregoing, should the need arise for maintenance or restoration, the parties hereto may agree to an amendment to this Agreement permitting the COUNTY to perform maintenance or restoration on LOCAL GOVERNMENT owned electronics or other equipment.

The COUNTY shall provide maintenance to COUNTY owned and operated equipment on a 7-day/24-hour basis and may contract for repair services when deemed necessary. The COUNTY shall abide by agreed upon security requirements of the LOCAL GOVERNMENT. In the event that an outside contractor is needed, the COUNTY shall select, supervise, and coordinate with the contractor to complete the repair.

Section C: Network Equipment Ownership

The COUNTY, as represented by the COUNTY, shall own all of its network equipment and assets. The LOCAL GOVERNMENT shall continue to maintain ownership of its current network assets. Only the COUNTY is permitted to connect, expand, or otherwise routinely modify its network components. Furthermore, any and all technological changes relative to the network will be implemented at the discretion of the COUNTY. Notwithstanding the foregoing, the COUNTY agrees to use its best efforts to keep pace with technological changes.

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Should the LOCAL GOVERNMENT receive grant funds to assist with the construction or maintenance of the network, any provisions, limitations, or restrictions associated with the grant(s) shall not affect or apply to the COUNTY.

Section D: Network Connection

The LOCAL GOVERNMENT will be provided with a connection to the COUNTY fiber network to meet the network service requirements as specified in this Exhibit. The LOCAL GOVERNMENT shall pay the installation charges and monthly charges as set forth in this Exhibit.

Section E: Modifications to Network

If the LOCAL GOVERNMENT proposes a modification or connection of a new building to the network, it shall notify and submit any applicable construction documents to the COUNTY at least thirty (30) calendar days prior to the date construction activities are expected to commence. Should the planned activities of the LOCAL GOVERNMENT require the network to be upgraded, the LOCAL GOVERNMENT shall be solely responsible for payment of all costs associated with such modifications, unless there is prior agreement with the COUNTY to participate in a cost-sharing arrangement for the modification.

The COUNTY shall review the modification proposals as soon as practicable and will render recommendations with regard to the proposed modification. Any modifications or connections to the network that may cause disruption or interference of service to any network users shall be coordinated with the appropriate technical staff of both the LOCAL GOVERNMENT and the COUNTY. The COUNTY agrees to perform such work at a time and in a manner to minimize disruption and interference to the network users.

When either the LOCAL GOVERNMENT or the COUNTY enters into a contract with an outside contractor for network-related services which benefit only that party, the contracting party shall be individually responsible for remitting payment to the contractor performing work on the network, and the non-contracting party shall not be responsible or held liable for such payment. However, proposed changes to the network must be communicated in writing to the COUNTY for review and approval. The parties however agree to comply with network security provisions.

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Section F: Network Interferences

The COUNTY shall have no requirement to purchase, install, operate, or maintain any equipment on the premises of the LOCAL GOVERNMENT. However, should any equipment owned by the LOCAL GOVERNMENT render any harmful interference to the COUNTY's network equipment, the COUNTY may disconnect any or all LOCAL GOVERNMENT owned network connections after informing the LOCAL GOVERNMENT's designated technical Point of Contact (POC) of the underlying reasons for the planned action to disconnect network facilities. Immediate efforts will focus on attempting to resolve or remove the threat conditions. The COUNTY shall be the sole party to determine if harmful interference has impacted the COUNTY network. The COUNTY will utilize its best efforts to prevent any unanticipated network outages should interferences be noted.

Section G: Damage Caused by Disasters

Should the network sustain damage to an Auxiliary Route used only by either the LOCAL GOVERNMENT or the COUNTY, the owning party shall determine if the cable will be repaired or replaced.

Section H: Network Security

The parties to this Exhibit acknowledge the potential of unlawful hacking to gain surreptitious access into confidential systems. The COUNTY has implemented reasonable steps and safeguards as part of a network security program, but these systems may not be able to defeat every attempt to gain unlawful access to applications or data. Each party is responsible for protecting its own applications, databases, and servers. Each party, however, shall review each other's security procedures and notify each other with reasonable promptness of concerns or issues regarding the same.

Section I: Description of Services

A. Baseline services from the COUNTY through the COUNTY will include:

1. ongoing maintenance of connectivity to the demarcation point(s);
2. central network security at the COUNTY router port that feeds the LOCAL GOVERNMENT network router connection;

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If necessary, security may shut down the LOCAL GOVERNMENT's entire building feed to protect the networked systems from computer worms and viruses.

3. network design;
4. acquisition and management of network assets;
5. installation or relocation of network connections, wiring upgrades, installation of bandwidth upgrades, or other specialized services;
6. network equipment installation and maintenance;
7. network security on COUNTY side of the demarcation point;
8. monitoring of network performance;
9. trouble reporting and tracking;
10. maintenance of the environmental factors in the COUNTY's facilities and closets housing equipment crucial to the health and stability of the Network, including air conditioning, power conditioning, and UPS equipment; and
11. disaster recovery protection, system reliability, and stability during power outages.

B. LOCAL GOVERNMENT Responsibilities will include:

1. all intra-building Network maintenance and security ;
2. ensuring that back-door connectivity behind the building router is prohibited;
3. provisioning of its Dynamic Host Configuration Protocol (DHCP) services;
4. building infrastructure connectivity;
5. all grid (jack), wiring identification, and tracking for LOCAL GOVERNMENT owned facilities;
6. providing, where possible, network engineers or technicians to assist with all portions of network equipment attachments, from provisioning to troubleshooting;

Initial diagnostic actions will ideally be performed by the LOCAL GOVERNMENT technical staff to evaluate whether the cause of any system problem is associated with factors under the control of the LOCAL GOVERNMENT.
7. ensuring that network security hardware and software is installed in order to minimize the risk of a virus and surreptitious or otherwise inappropriate network entry;

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The LOCAL GOVERNMENT will ensure that security procedures, hardware, and software are in place to prevent unauthorized access to the COUNTY network from LOCAL GOVERNMENT owned network property.

8. requesting changes in network equipment attachments services;

Requests for changes shall be submitted to ISS CIO, or designee, for action. The LOCAL GOVERNMENT shall be advised of the disposition of the request within thirty (30) calendar days of submission. Such request shall include extension of network services to additional sites identified by the LOCAL GOVERNMENT. The LOCAL GOVERNMENT shall be responsible for all reasonable costs associated with requested changes to network services approved by the COUNTY, which approval shall not be unreasonably withheld.
9. providing, at its expense, the following equipment and facilities at each LOCAL GOVERNMENT owned building (if required):
 - B an environmentally stable and secure area large enough to accommodate a 19"-wide rack with a height up to 7 feet; and

This area shall contain two (2) dedicated electrical circuits for providing power to the switching equipment.
 - B air conditioning units which deliver a capacity of BTUs to the equipment room as specified by the manufacturer of equipment installed at the LOCAL GOVERNMENT's site.

The LOCAL GOVERNMENT shall periodically monitor the air conditioning units to ensure temperatures are within acceptable limits.
10. adhering to a documented plan of security strategies deployed to prevent unauthorized access into the physical location(s) where network access could be gained, and ensuring that it has robust and efficient security software and procedures in place to prevent unauthorized access to the network; and
11. promptly paying for the COUNTY's charges, such charges being set out in Section N of this Exhibit, which charges will be invoiced quarterly.

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Section J: Availability of COUNTY Network Services

The COUNTY will provide the LOCAL GOVERNMENT with access to the COUNTY network on a best-effort basis. The COUNTY's goal will be to provide 99.9% availability. The COUNTY reserves the right to prioritize its maintenance and recovery efforts, while at the same time providing availability to the LOCAL GOVERNMENT.

In the event that Network availability is documented by the COUNTY and declared by the LOCAL GOVERNMENT to be less than 99.9% for two (2) consecutive months, the LOCAL GOVERNMENT shall not be liable for service charges beyond the date of said declaration of non-performance until service is satisfactorily restored. The reduction of previously paid or dismissal of unpaid service fees will be calculated on a pro-rata basis.

Section K: Protocol for Reporting Network Service Problems

All service issues should first be reported to the LOCAL GOVERNMENT's IT support staff. If the LOCAL GOVERNMENT's initial diagnosis of the reported problem indicates that it is related to network connectivity (e.g., connection lost, slow response time) rather than a problem at the application, server, or desktop computer level, the IT technician should immediately report the service problem to the County Network Operations Center at 561-355-HELP (4357). All service problems reported by the LOCAL GOVERNMENT will be recorded and tracked in the COUNTY's Automated Help Desk System until problem resolution and service restoration. Response time service levels are established at the time the call is reported based on the severity of the issue. The service level target for problem diagnosis and response to the LOCAL GOVERNMENT is within one (1) hour of the reported problem. The COUNTY also employs an escalation process for problems which are not resolved according to the established standards.

Section L: Access for Network Service and Maintenance

The COUNTY shall coordinate with and obtain prior written approval from the LOCAL GOVERNMENT designee as to the time of any planned maintenance, repair, or installation work. However, the LOCAL GOVERNMENT shall provide the COUNTY with access to its equipment on a 24-hour/7-day per week basis. During normal business hours, the COUNTY shall ensure that all the COUNTY personnel or contractors representing the COUNTY sign in prior to commencing any work, and sign out prior to leaving the facility. On weekends, holidays, or after normal

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business hours, the COUNTY's representative shall call the LOCAL GOVERNMENT to report any emergency that requires access to any LOCAL GOVERNMENT owned facility. The LOCAL GOVERNMENT shall make reasonable efforts to arrange for access of the COUNTY's personnel as quickly as possible. The COUNTY shall supply the LOCAL GOVERNMENT with a list of authorized COUNTY employees who will carry in their possession badges for identification purposes.

The COUNTY represents that it has verified that neither the COUNTY nor the COUNTY's contractors, nor any of their respective employees, agents, or representatives who have been convicted or who are currently under investigation for a crime delineated in Florida Statutes §435.04 shall have access to LOCAL GOVERNMENT owned buildings under the Agreement.

Section M: Issue Escalation Contacts

Palm Beach County ISS

Palm Beach County 24x7 Network Services Help Desk: 561-355-HELP (4357)

April Warren, Senior Manager
561-355-6777 (office)
561-358-5783 (cell)
amwarren@pbc.gov

Michael Butler, Director of ISS Network Services
561-355-4601 (office)
561-722-0850 (cell)
mbutler@pbc.gov

Archie Satchell, Chief Information Officer of ISS
561-355-3275 (office)
561-310-8273 (cell)
asatchell@pbc.gov

LOCAL GOVERNMENT Information Services

Paul McGuinness, CGCIO, M.S., Chief Information Technology Officer
561-881-3303 (office)
pmcguinness@lakeparkflorida.gov

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Section N: Fees and Charges for Network Connectivity and Related Services

The COUNTY will serve as project manager and incur all costs associated with the installation and connection of the network and network equipment at the LOCAL GOVERNMENT's building. The LOCAL GOVERNMENT will be responsible for reimbursement to the COUNTY of said costs, as listed and described in the Table below under "Installation Charges".

Service charges, as listed and described in the Table below, will be assessed on a monthly basis, and the COUNTY will invoice the LOCAL GOVERNMENT quarterly.

LOCAL GOVERNMENT Network Service and Billing Matrix						
Location	Service Start Date	Band-width	Installation Charges	Monthly County Charges	Monthly FL LambdaRail Charges	Annual Charges (excl. Install)
Town Hall 535 Park Avenue Lake Park, FL 33403	3/1/2019	250 MB	\$0	\$500	\$50	\$6,600
Public Works 650 Old Dixie Hwy. Lake Park, FL 33403	3/1/2019	50 MB	\$0	\$150	\$0	\$1,800
Public Library 529 Park Avenue Lake Park, FL 33403	3/1/2019	50 MB	\$0	\$150	\$0	\$1,800
Art on the Park 800 Park Avenue Lake Park, FL 33403	3/1/2019	50 MB	\$0	\$150	\$0	\$1,800
PBSO 6 th Street Lake Park, FL 33403	3/1/2019	50 MB	\$0	\$150	\$0	\$1,800
Lake Shore Park 600 Lake Shore Drive Lake Park, FL 33403	4/1/2020	50 MB	\$0	\$150	\$0	\$1,800
Marina 105 Lake Shore Drive Lake Park, FL 33403	4/1/2020	50 MB	\$0	\$150	\$0	\$1,800
TOTALS			\$0	\$1,400	\$50	\$17,400
<u>Explanation of Charges:</u> <u>Installation Charges</u> – This is an estimated cost. The actual final cost for this installation will be billed to the LOCAL GOVERNMENT as a one-time invoice based on (1) the billing statement from the						

Re: Palm Beach County Network Services

vendor for this work and (2) the actual cost to COUNTY of the equipment installed and labor.

Monthly County Charges – The monthly charge paid by the LOCAL GOVERNMENT based on the COUNTY Rate Sheet for Network Services.

Monthly Florida LambdaRail (FLR) Charges – FLR charges the COUNTY this fee to connect the LOCAL GOVERNMENT to the FLR via PBCnet. This fee is set by the agreement between the COUNTY and the FLR and is subject to change. This fee is a direct pass through cost to the LOCAL GOVERNMENT (see **Sub-section N1. - Cost Components** below).

Annual Charges – The total annual recurring charges, excluding installation charges, paid by the LOCAL GOVERNMENT.

The COUNTY has received approvals from the FLR for the LOCAL GOVERNMENT to be connected to the COUNTY fiber network and gain access to the FLR for either internet or transport purposes.

N1. Cost Components

The monthly FLR fee identified above includes direct costs incurred by the COUNTY to connect to the FLR. In the event the Board of Directors of the FLR implement a pricing change and the County receives notice of that change, the COUNTY agrees to review the financial impact and make appropriate rate adjustments.

N2. Billing and Payment

The COUNTY shall submit quarterly invoices to the LOCAL GOVERNMENT which shall include a reference to this Agreement and identify the amount due and payable to the COUNTY.

Section O: Annual Review of Fees and Charges

The COUNTY reserves the right to review the fees and charges included in this Exhibit on a yearly basis and make appropriate rate adjustments. Should an adjustment be warranted, sixty (60) days notice will be provided.

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Section P: Additional IT Services

Upon request for assistance, the ISS CIO may, at the CIO's discretion, permit staff resources to assist the LOCAL GOVERNMENT in the execution of certain information technology responsibilities. These additional services can be requested by submitting a Task Order (Appendix 1). These services will be charged at the rate of \$125/hour with a not-to-exceed cost of \$50,000 per Task Order. These services may also require the purchase of additional resources, including but not limited to hardware and software. The LOCAL GOVERNMENT is responsible for all associated costs for these additional resources. An estimate for each Task Order will be available upon request by the LOCAL GOVERNMENT. The LOCAL GOVERNMENT agrees to fully reimburse the COUNTY for all costs associated with the rendering of the COUNTY staff assistance and/or information technology resources. If the cost of services exceeds \$50,000, the Task Order shall be approved by the Board of County Commissioners.



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025
Originating Department: Public Works
Agenda Title: Resolution 40-07-25 – Solid Waste Rates – Fiscal Year 2026 – 2028

Approved by Town Manager: _____ **Date:** _____

Cost of Item: \$0.00 **Funding Source:** n/a
Account Number: _____ **Finance Signature:** Barbara A. Gould

Advertised:
Date: _____ **Newspaper:** _____

Attachments: Resolution – Solid Waste Rate Increases
Solid Waste Rate Study (Raftelis, June 2023)

Please initial one:
 _____ Yes I have notified everyone
 _____ Not applicable in this case

Summary Explanation/Background:

In June 2023, the Town of Lake Park completed a comprehensive Solid Waste Rate Study (by Raftelis Financial Consultants, Inc.) to evaluate the sufficiency of the Town's existing rate structure and to provide recommendations on proposed rates over the next five (5) year period to ensure proper solid waste collections, including personnel expenditures, operating and maintenance costs, capital improvements (i.e., equipment, vehicles, dumpsters, residential trash carts, etc.) and replenish reserves.

The Town Commission previously approved the rates for FY 2024 and FY 2025 during the budget process. The proposed Resolution, if approved, would implement the remaining rate increases as outlined/recommended within the 2023 Solid Waste Rate Study for Fiscal Years 2026 through 2028.

If approved, the proposed annual non ad-valorem solid waste charges for FY 2026 will be included on each residential property's annual tax bill. The charges for all commercial customers will be invoiced monthly (based on the sized of the container and the number of pick-ups per week). Special Assessments or Special Pick-Ups will be charged to each property on an as needed basis.

Note: In the event of an emergency or other unforeseen circumstance, the Town Commission retains discretion to modify the scheduled rates; however, such action would not ensure the revenue necessary/needed to complete the projects that were included within the 2023 Solid Waste Rate Study.

RECOMMENDATION:

I move to adopt Resolution 40-07-25 – Solid Waste Rates for Fiscal Year 2026 – 2028.

RESOLUTION 40-07-25

A RESOLUTION OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, APPROVING THE REMAINING YEARS OF RATE INCREASES AS RECOMMENDED IN THE SOLID WASTE UTILITY RATE STUDY CONDUCTED BY RAFTELIS FINANCIAL CONSULTANTS, INC.; AUTHORIZING THE IMPLEMENTATION OF THE ANNUAL NON-AD VALOREM ASSESSMENTS FOR FISCAL YEARS 2026 THROUGH 2028; AND PROVIDING FOR MODIFICATIONS IN THE EVENT OF EMERGENCIES OR UNFORESEEN CIRCUMSTANCES; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town of Lake Park, Florida ("Town") is a municipal corporation of the State of Florida with such power and authority as has been conferred upon it by the Florida Constitution and Chapter 166, Florida Statutes; and

WHEREAS, the Town operates the Solid Waste utility system as a self-supporting enterprise fund; and

WHEREAS, the Town retained Raftelis Financial Consultants, Inc. ("Raftelis") to perform a comprehensive rate study to assess the financial condition of the Solid Waste utility system and to make rate recommendations for Fiscal Years 2024 through 2028; and

WHEREAS, the Solid Waste Rate Study Final Report dated June 2023 concluded that without scheduled rate increases the utility would face operational deficits and would be unable to fund essential capital improvements or meet reserve requirements; and

WHEREAS, based on this study, the Town Commission previously adopted the Fiscal Year 2024 and 2025 rates and now desires to approve the remaining years of the recommended rate adjustments for Fiscal Years 2026 through 2028 to ensure the continued financial sustainability of these critical public services; and

WHEREAS, the proposed Solid Waste utility rates are as follows: Fiscal Year 2026: \$405.68 per cart/year Fiscal Year 2027: \$417.85 per cart/year Fiscal Year 2028: \$430.38 per cart/year

WHEREAS, the Town Commission acknowledges that the scheduled rates may be modified only in the event of an emergency or unforeseen circumstance that necessitates reprioritization of funds and program delivery, and such modification shall be brought before the Town Commission for consideration and approval; and

WHEREAS, the Town Commission understands that any interruption, delay, or reduction in rate collections or implementation of the proposed schedule may jeopardize the timely completion of capital projects and operating performance targets supported by the rates.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AS FOLLOWS:

Section 1. The foregoing recitals are true and correct and are incorporated herein by reference.

Section 2. The Town Commission hereby approves the implementation of the Solid Waste utility rate increases as recommended by Raftelis for Fiscal Years 2026, 2027, and 2028.

Section 3. The approved rates shall be collected through the Town's annual non-ad valorem special assessments for residential customers and through the monthly utility billing process for commercial accounts.

Section 4. In the event of a declared emergency, or unforeseen circumstance that may take precedence over the authorized rate implementation, the Town Manager shall present to the Town Commission a recommendation for temporary modification. Such a recommendation must also clearly articulate the anticipated impact on any project or program previously supported by the authorized rate.

Section 5. This Resolution shall take effect immediately upon its adoption.



TOWN OF LAKE PARK

Solid Waste Rate Study

FINAL REPORT / JUNE 2023

June 12, 2023

Mr. Roberto F. Travieso, MPA
Director, Public Works Department
Town of Lake Park
640 Old Dixie Highway
Lake Park, FL 33403

Subject: **Solid Waste Rate Study**

Dear Mr. Travieso:

Raftelis Financial Consultant's, Inc. (Raftelis) has completed its study to evaluate the adequacy of the solid waste management system's (System) utility rates for the Town of Lake Park, Florida (Town), and has summarized the results in this report for your consideration. The solid waste utility rates are collected annually through a non-ad valorem special assessment for residential customers and through the Town's monthly utility billing process for nonresidential customers. This report summarizes the financial forecast and proposed annual assessments for the six- (6) year period ending September 30, 2028 (Study Period).

To develop the financial forecast and proposed solid waste rates, we have relied upon certain information and data collected from the Town including the Town's annual financial reports; the adopted Fiscal Year 2023 operating budget; estimated capital expenditures and vehicle replacement plan; customer statistics; periodic reports; records of operation; and other information and data provided by the Town. To the extent we have performed our analyses using certain data and information obtained from the Town and others in the preparation of this report, we have relied upon such information to be accurate, and no assurances are intended, and no representation or warranties are made with respect thereto or the use made herein.

Introduction

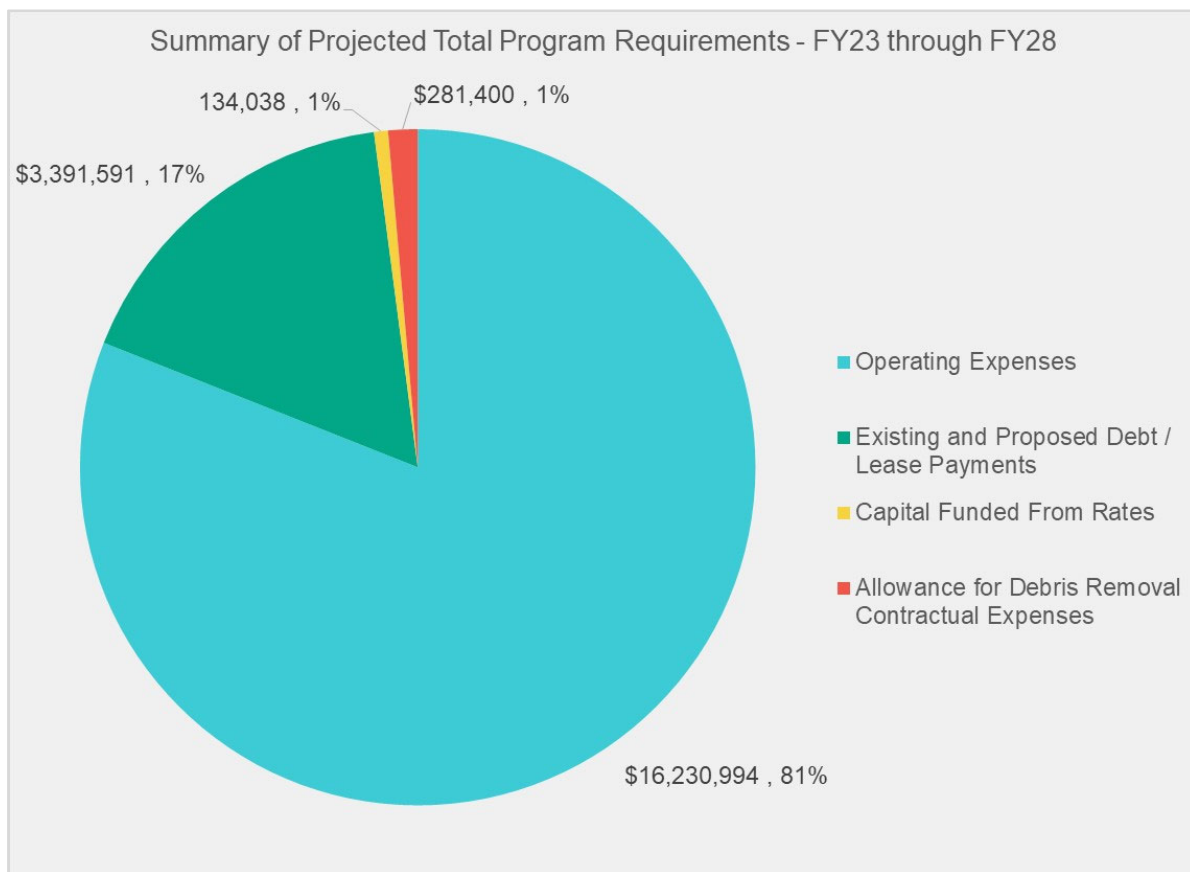
The Town's solid waste utility collects solid waste and recycling from residential and commercial properties, providing cart and dumpster service of varying sizes and frequencies on a weekly basis. Roll-off disposal services are provided as well through franchise agreements with three haulers. The utility's services assist in the protection of the environment and serve as the first line of defense for the health of the community. During fiscal years 2021 and 2022 the Town collected approximately 30.6 million pounds of garbage, 8.9 million bounds of bulk trash and vegetation debris, and 2.3 million pounds of recyclable materials. The waste that is collected is transported to the Palm Beach County Solid Waste Authority's (SWA) North county Transfer Station. Solid waste is then incinerated to generate electricity while recyclable materials are sorted, packaged and commercialized. The utility has nine fulltime employees and a fleet of 10 collection trucks that provide service to the Town's residential and commercial customers. In addition to its collection services, the utility also provides a variety of education opportunities during regular public outreach events. The Town also partners with national, regional, and local public/private organizations for continuous process improvement.

The Town's solid waste system is established as a self-supporting enterprise fund with separate accounting from other departments and resources. The Town has historically used operating reserves to cover actual expenses that exceeded the budgeted amounts while phasing in rate adjustments over time as follows:

Historical Sanitation Annual Assessment - Residential

Assessment Year	Single-Family and Multi-family <5	Multi-Family >4
2018-2019	\$215.49	\$145.93
2019-2020	\$234.88	\$159.06
2020-2021	\$234.88	\$159.06
2021-2022	\$246.62	\$167.01
2022-2023	\$258.37	\$174.97

Based on information provided by Town staff, the total projected program requirements during the Study Period exceeds \$20.0 million as summarized below:



As shown above, the program requirements include operating expenses, capital lease payments to replace existing solid waste trucks, purchases for minor equipment, and allowances to establish and create cash reserve

funds to address unforeseen contingencies and natural disasters. There are several primary cost drivers that have had a significant impact on System costs:

- Current operating deficiency
 - FY23 operating expenses exceed current revenues by approximately \$250,000 (12% of existing rates)
- High costs, frequency, and severity of mechanical repairs
 - Replacement of major components due to aging fleet
 - Emergency contract operations / limited providers and high cost during service interruptions
 - Urgent and specialized repair needs have sole source providers with little competition
- Compensation and Recruitment:
 - Highly competitive labor market
 - Sanitation Truck Operator positions vacant 12+ months
 - Recommended changes to operating salaries and associated benefits
- Competition: long lead times for materials, supplies, equipment, and vehicles
 - Inflationary increases on all business expenditures

The solid waste utility has nearly exhausted its reserve funds, and therefore cannot continue to operate without a balanced budget that meets the annual expenditure requirements. On January 18, 2023, the Town Commission engaged Raftelis to prepare a solid waste utility rate analysis. The goal of this study is to assist the Town in establishing solid waste rates that are sufficient to recover the cost of operating, maintaining, repairing, and financing the System. In order to achieve this goal, certain criteria were established in conjunction with the Town staff that served as guidelines for developing the proposed solid waste rates. The criteria established included: i) proposed rates should fund operations, maintenance, and vehicle replacement needs; ii) rate increases should be phased-in over time to the extent possible; and iii) the Town Commission should consider adopting a reserve policy for the System to provide adequate working capital reserves equal to not less than 90 days of annual expenditures as well as funding an emergency debris removal fund.

As outlined in this report, solid waste rates are proposed to be adjusted so that the revenues derived from such rates will support the revenue requirements of the System on a stand-alone basis without any contributions from the Town's General Fund. The proposed rate adjustment is higher in the first year than the subsequent years due to the current year's operating deficiency, projected increasing operating costs, increasing lease payments, and the need for additional working capital. The solid waste rate revenues have been specifically pledged to pay operating costs, existing lease payments, and to provide a source of funding for current and future vehicle replacements. Based on the projected financial results summarized herein, the study shows that by implementing a series of annual rate increases over the next five years, the Town can stabilize its operating budget while providing a source of additional funding to make significant capital improvements to the System.

The recommendations of this study are based on a financial forecast developed for the System. The financial forecast starts with a projection of customers and revenues, proceeds next with identification of utility operating

and capital/vehicle replacement needs, evaluates the availability and proposed use of existing operating reserves, and, finally, establishes the timing of rate adjustments. The basis for the study's recommendations is a financial forecast developed for Fiscal Years 2023 through 2028 (previously defined as the Study Period).

Projected Revenues

During Fiscal Year 2023, it is estimated that the Town serves an average of approximately 2,100 solid waste accounts representing approximately 2,700 carts and dumpsters. The Town collects the solid waste utility rates and charges through an annual non-ad valorem special assessment for residential customers and through monthly charges for commercial dumpster customers. The current revenues are approximately \$2.1 million per year after considering that most residential property owners take advantage of the 4.0% early payment discount. In January 2023 the Town Commission adopted an ordinance that moves multi-family dumpster accounts to the standard dumpster rates. The projected revenues were prepared based on the adopted service classifications.

Town staff has identified several construction projects within the community that will place additional demands on the solid waste utility system. The Town's Community Development Department provided a preliminary list of property developments occurring over the Study Period. As shown in Table 1 on Page 14 of the Report, the Town anticipates residential growth to continue at approximately 1% per year while commercial units are estimated to increase by approximately 1.6% per year during the Study Period. The overall impacts to projected rate revenues are about a 3% increase in revenues at existing rates per year. Specific construction projects include, but are not limited to, Congress Warehouse, Nautilus 220, and Silver Beach Industrial Park.

(Remainder of page intentionally left blank)

Based on the projected units anticipated to be served over the Study Period, Table 2 on Page 21 of the Report provides an estimate of projected revenues based on the current solid waste rates. The following chart summarizes the projected revenues for the Study Period:



Projected Solid Waste Program Revenue Requirements

The various components of cost associated with operating and maintaining a municipally owned solid waste utility system, as well as the cost of funding the renewal and replacement of associated facilities and capital improvements for additions and upgrades, are generally referred to as the utility cash revenue requirements. The sum of these cost components, after adjusting for other income and other operating revenues available to the utility, represents the net revenue requirements of the utility system. The revenue requirements for the Study Period were based on an estimate of solid waste utility costs for the current budget year, plus the five- (5) fiscal year period ending September 30, 2028. The projected revenue requirements include the various generalized cost components described below:

- **Operating Expenses:** These expenses include the cost of labor and personnel related costs, disposal costs, vehicle maintenance and repairs, utilities, operating supplies, fuel, container replacements, and other items necessary for the operation and maintenance of the System.

- **Other Revenue Requirements:** This component of cost includes, in general, any recurring capital improvements to be funded from revenues such as vehicle lease payments, minor equipment replacement, and funding of contingency reserves for emergency debris removal.

Principal Assumptions and Considerations

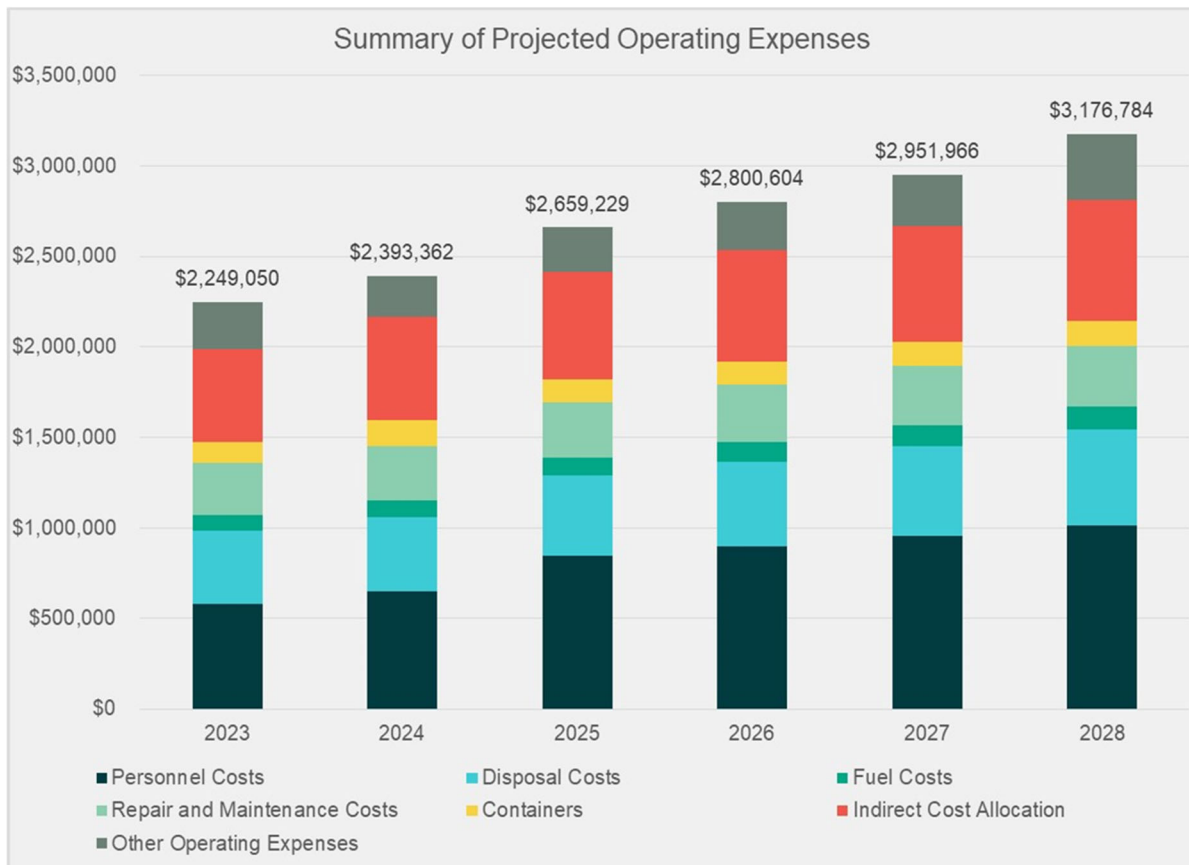
The projected cash revenue requirements, as summarized at the end of this section, reflect certain assumptions, considerations, and analyses. The principal assumptions, considerations, and analyses that are included in the development of the projected System revenue requirements for the Study Period are as follows:

1. The adopted Fiscal Year 2023 budget associated with the operations of the System was used as the basis for the expenditure projections set forth herein. Unless otherwise noted, the underlying assumptions and expenditure amounts included therein are assumed to be reasonable and reflect anticipated operations. Such budgetary amounts are incorporated into the revenue requirement component of the study, except for adjustments and assumptions as noted hereunder.
2. Projected revenues from current solid waste rates are based on the schedule of rates currently in effect as of the date of this report, which became effective on October 1, 2022. Such rates were applied to the customer and units forecast previously discussed in this report and shown in Table 1 on Page 14 of the Report. Table 2 on Page 21 of the Report also summarizes the projected rate revenue under existing rates for the Study Period. Annual rate revenues under existing rates are projected to be approximately \$2.1 million increasing to \$2.5 million by 2028 as customer growth comes online.
3. The operations and maintenance expenses of the System budgeted for Fiscal Years 2023 are summarized in Table 3 on Page 22 of the Report. The amounts for Fiscal Year 2023 are then projected for the remaining five (5) years of the Study Period (i.e., through Fiscal Year 2028) as shown in Table 4 on Page 24 of the Report. The projected operating costs are based on certain inflation assumptions and other adjustments provided by Town staff for the Study Period. The adjustment factors and disposal expense allowances are identified in Tables 5 and 6 on Pages 27 through 28 of the Report, respectively, which were used to estimate the annual expenses summarized in Table 4 on Page 24 of the Report. The projected operating expenses were developed for the Study Period as follows:
 - a. An adjustment was made to budgeted disposal costs based on an estimated increase in tonnage for 2023 of approximately \$92,000.
 - b. An adjustment for operating and revenue contingencies was also made for approximately \$27,000 in 2023.
 - c. To improve solid waste collection service and increase code enforcement/compliance, Town staff proposes to hire one (1) additional Sanitation Truck Operator II during Fiscal Year 2025 at an estimated annual cost of approximately \$70,000 per year and one (1) new Solid Waste Code Officer during Fiscal Year 2025 at \$87,000 per year.

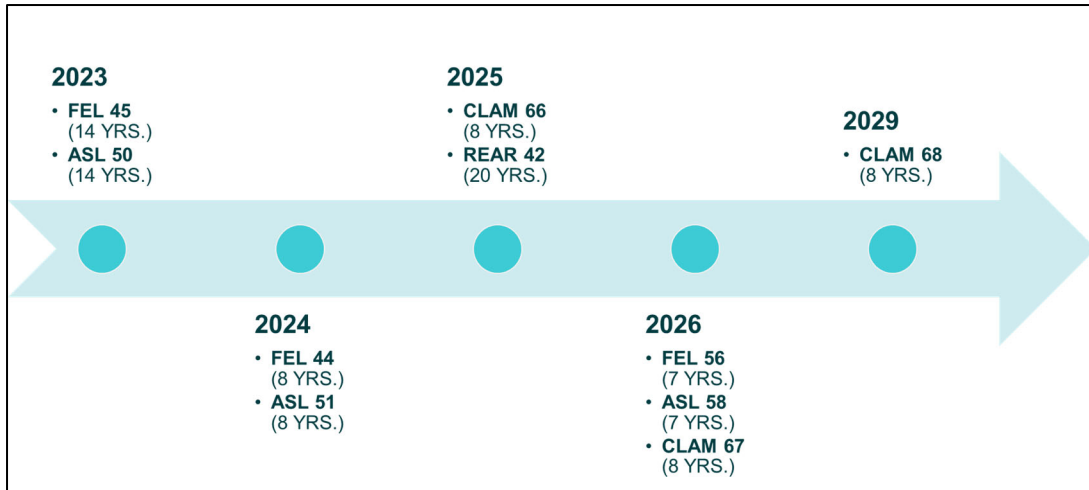
d. Expenses beyond Fiscal Year 2023 were increased based on estimated inflationary adjustments as follows:

- Labor: 11% (Fiscal Year 24); then 4% per year
- Health and Liability Insurance: 15% per year
- Fuel and Utilities: 5% per year
- General Inflation: 3% per year

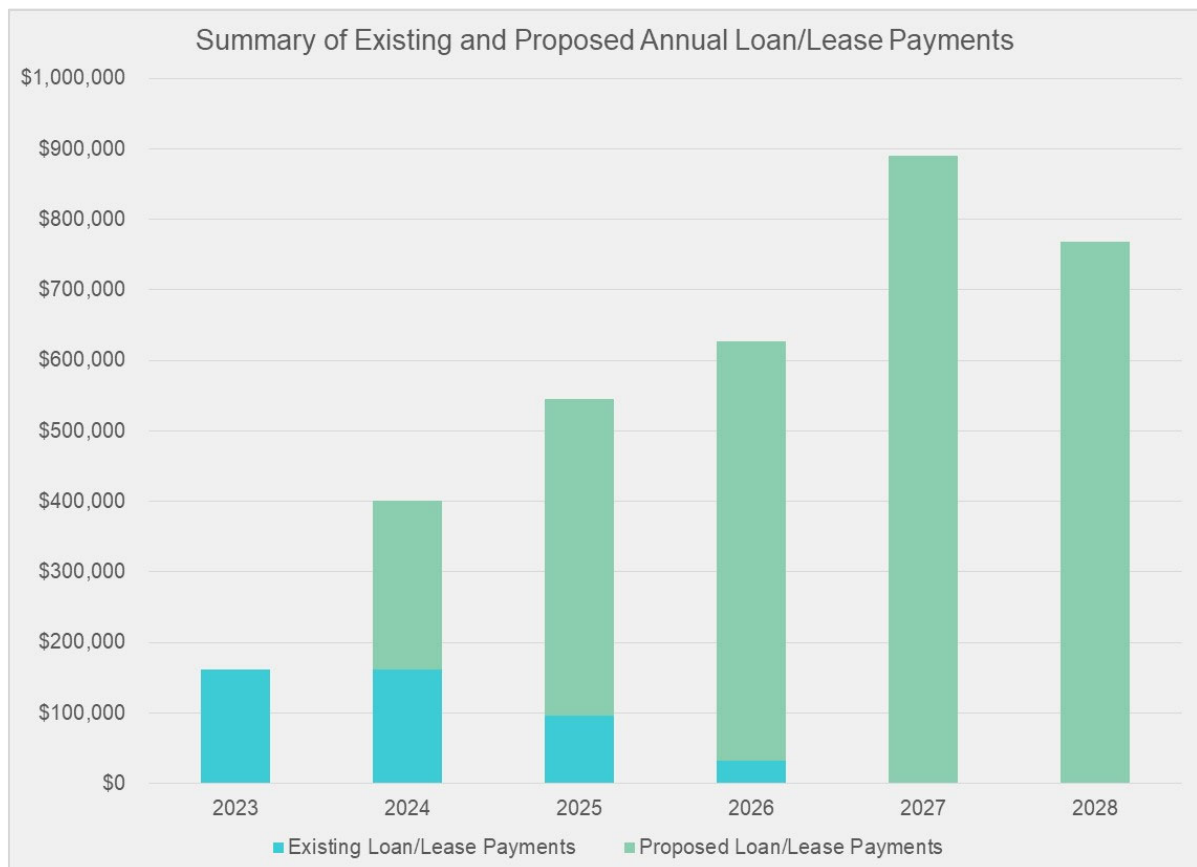
The following chart summarizes the projected operating expenses as follows:



4. The Town has decided to prioritize its vehicle replacement program in order to provide a more reliable service and reduce its repair and maintenance related operating costs. The total vehicle replacement / capital program is projected to be approximately \$4.0 million over the Study Period as shown on Table 7 on Page 29 of the Report. This program includes \$3.9 million for the replacement of 10 trucks including 3 front end loaders, 3 side loaders, 3 grapple trucks, and 1 rear loader truck. Other capital outlay for minor equipment and machinery is also included at \$0.1 million. The vehicle replacement schedule and ages of the vehicles being replaced is shown below.

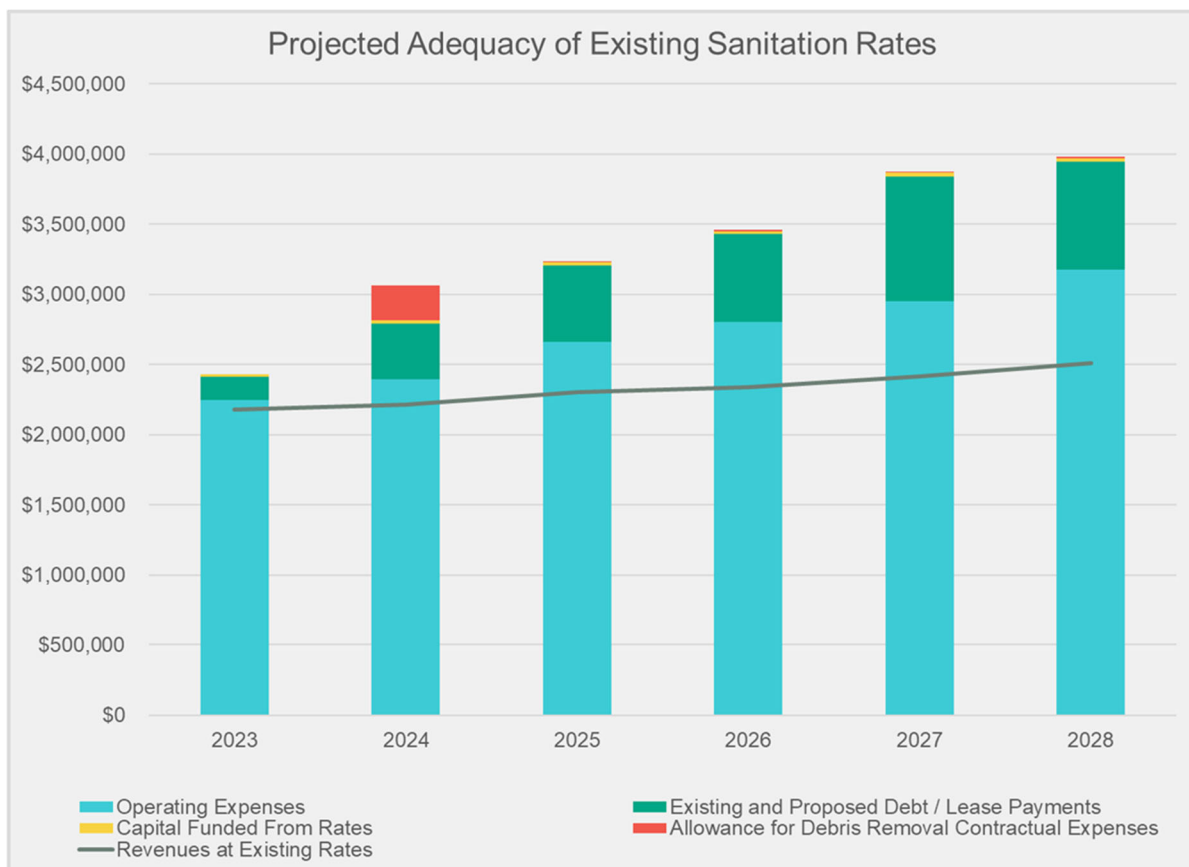


5. As of the date of this report, the System has two existing capital leases and one loan payable to the general fund outstanding. The annual payments are approximately \$161,000 per year, which end in Fiscal Year 2026. Additionally, the Town anticipates additional lease payments associated with the funding of the vehicle replacement program. Payments on these proposed leases are anticipated to begin at approximately \$239,000 in 2024 and increase to \$768,000 in 2028. The proposed leases are assumed to all have 4-year payback terms with interest rates between 5.99% - 6.75% per year. A projection of the total annual lease payments is shown below and also on Table 8 on Page 31 of the Report.



6. Based on discussions with Town Staff an allowance account for emergency contractual debris removal services associated with storm events is to be established. A transfer of \$250,000 in 2024 is the initial deposit with subsequent annual deposits of about \$8,000 per year to keep pace with inflation.
7. A minimum balance in unrestricted operating reserves of 60 days of annual expenditures is the proposed target balance for 2024. Additional deposits to the operating fund are anticipated over the Study Period to increase the balance to at least 90 days of reserves. A projection of ending reserve balances can be found of Table 9 on Page 32 of the Report.

Table 10 on Page 33 of the Report provides a summary of the projected net cash flows of the System for the Study Period. Based upon the assumptions used to prepare the System’s financial forecast regarding operating expenses and capital requirements, the projected net revenue requirements of the System when compared to revenues under existing rates are summarized as follows:



As can be seen in the above summary, and in Table 10 on Page 33 of the Report, the projected revenue deficiency is estimated to be approximately \$250,000 in Fiscal Year 2024, which may increase to \$1.6 million by Fiscal Year 2028.

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Existing and Proposed Rates

The Town currently charges \$258.37 per month per residential cart account and \$11.31 per cubic yard (per pickup per week) of solid waste volume for all properties utilizing dumpsters. To meet the solid waste utility program requirements identified for the Study Period, the following assessments and monthly rates are proposed:

Proposed Solid Waste Rates

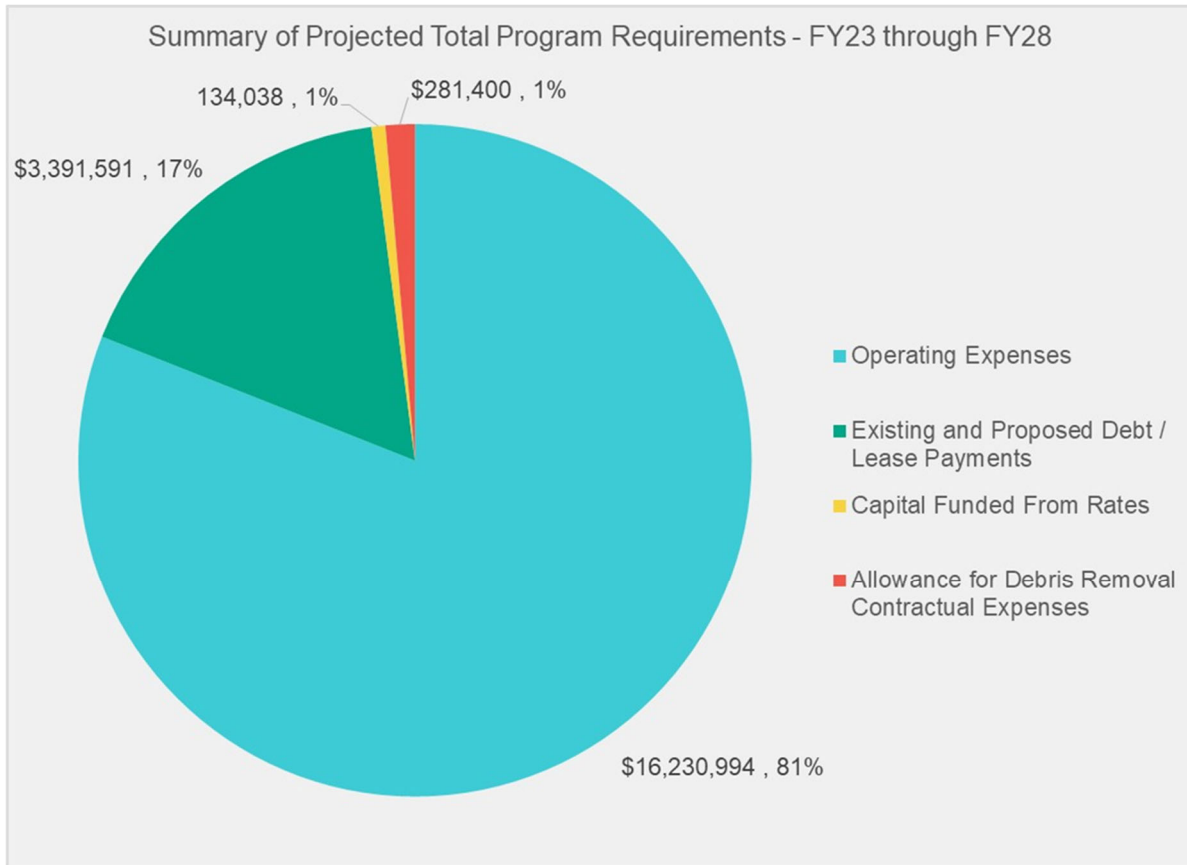
Description	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Funds Total Program					
Percent Rate Increase	48%	3%	3%	3%	3%
Proposed Annual Charge per Cart (Current Fee: \$258.37)	<u>\$382.39</u>	<u>\$393.86</u>	<u>\$405.68</u>	<u>\$417.85</u>	<u>\$430.38</u>
Proposed charge per Cubic Yard per pickup/week (Current Fee: \$11.31)	<u>\$16.74</u>	<u>\$17.24</u>	<u>\$17.76</u>	<u>\$18.29</u>	<u>\$18.84</u>

As shown above, this study recommends that a series of adjustments be made to the annual assessment and monthly rates. A full detailed listing of the Town's existing and proposed rates can be found on Table 11 on Page 34 of the Report. Key benefits of the proposed rate plan include the following:

- Utility becomes self-sufficient through Fiscal Year 2028
- Utility can fund the prioritized vehicle replacement program
- Builds reserves over time (operating and debris removal funds)

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If the proposed assessments and monthly rates are approved and implemented over the Study Period, by Fiscal Year 2028, the proposed fees are estimated to fund the following expenditures:



Conclusions and Recommendations

Based on our studies, assumptions, considerations, and analyses as summarized herein, we are of the opinion that:

1. The solid waste utility should operate as a self-supporting enterprise fund with separate accounting from other Town departments.
 - a. The Town has consistently used operating reserves to cover actual expenses, but those reserves have been nearly exhausted.
2. The existing rates are not adequate to cover the current operations.
 - a. Additional adjustments are also needed to adequately fund the projected operating expenditures and planned vehicle replacement program.
3. The Town Commission should consider adopting a reserve policy for the solid waste utility to provide working capital and to help address unforeseen contingencies.

- a. Adopting a reserve policy of 90 days of annual expenditures for the solid waste utility to be achieved by fiscal year 2026 is recommended.
 - b. A separate contingency fund of \$250,000 for emergency debris removal should also be established.
4. On or about January 18, 2023, the Town Commission adopted an ordinance that moves the multi-family dumpster accounts to the standard dumpster rates.
 - a. The projected financial results were prepared based on the adopted service classifications.
 - b. The Town Commission should consider adopting the proposed non-ad valorem assessment and monthly utility billing schedule for Fiscal Years 2024 through 2028 as outlined in this study.
5. This study should be updated within five (5) years.

We appreciate the opportunity to be of service to the Town and would like to thank the Town's staff for their assistance and cooperation during the course of this study.

Respectfully submitted,

RAFTELIS FINANCIAL CONSULTANTS, INC.



Murray M. Hamilton, Jr.
Vice President



Shawn A. Ocasio
Manager

SAO/dlc
Attachments

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Table 1
Town of Lake Park
Solid Waste Rate Study

Detailed Service Requirements and Development of Rate Revenues

Line No.	Description	Projected Fiscal Year Ending September 30,					
		2023	2024	2025	2026	2027	2028
<u>Cart Service</u>							
<u>Residential</u>							
1	Annual Growth	N/A	18	19	19	19	19
2	Annual Units	1,843	1,861	1,880	1,899	1,918	1,937
3	Estimated Maximum Trips	191,672	193,544	195,520	197,496	199,472	201,448
4	Estimated Maximum Cubic Yardage	95,836	96,772	97,760	98,748	99,736	100,724
5	Annual Charge per Unit	\$258.37	\$258.37	\$258.37	\$258.37	\$258.37	\$258.37
6	Annual Revenues	\$476,176	\$480,827	\$485,736	\$490,645	\$495,554	\$500,463
<u>Multifamily (Less than 4 Units)</u>							
7	Annual Growth	N/A	4	5	5	5	5
8	Annual Units	449	453	458	463	468	473
9	Estimated Maximum Trips	46,696	47,112	47,632	48,152	48,672	49,192
10	Estimated Maximum Cubic Yardage	23,348	23,556	23,816	24,076	24,336	24,596
11	Annual Charge per Unit	\$258.37	\$258.37	\$258.37	\$258.37	\$258.37	\$258.37
12	Annual Revenues	\$116,008	\$117,042	\$118,333	\$119,625	\$120,917	\$122,209
13	Total Cart Service	\$592,184	\$597,868	\$604,069	\$610,270	\$616,471	\$622,672
<u>Multifamily (Greater than 5 Units) Dumpster Service</u>							
<u>2 Cubic Yard Container - 2 Pick Ups</u>							
14	Annual Growth	N/A	0	0	0	0	0
15	Annual Units	2	2	2	2	2	2
16	Estimated Maximum Trips	208	208	208	208	208	208
17	Estimated Maximum Cubic Yardage	416	416	416	416	416	416
18	Monthly Charge per Unit	\$196.04	\$196.04	\$196.04	\$196.04	\$196.04	\$196.04
19	Annual Revenues	\$4,705	\$4,705	\$4,705	\$4,705	\$4,705	\$4,705
<u>2 Cubic Yard Container - 3 Pick Ups</u>							
20	Annual Growth	N/A	0	0	0	0	0
21	Annual Units	13	13	13	13	13	13
22	Estimated Maximum Trips	2,028	2,028	2,028	2,028	2,028	2,028
23	Estimated Maximum Cubic Yardage	4,056	4,056	4,056	4,056	4,056	4,056
24	Monthly Charge per Unit	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06
25	Annual Revenues	\$45,873	\$45,873	\$45,873	\$45,873	\$45,873	\$45,873
<u>3 Cubic Yard Container - 2 Pick Ups</u>							
26	Annual Growth	N/A	0	0	0	0	0
27	Annual Units	9	9	9	9	9	9
28	Estimated Maximum Trips	936	936	936	936	936	936
29	Estimated Maximum Cubic Yardage	2,808	2,808	2,808	2,808	2,808	2,808
30	Monthly Charge per Unit	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06
31	Annual Revenues	\$31,758	\$31,758	\$31,758	\$31,758	\$31,758	\$31,758
<u>3 Cubic Yard Container - 3 Pick Ups</u>							
32	Annual Growth	N/A	0	0	0	0	0
33	Annual Units	12	12	12	12	12	12
34	Estimated Maximum Trips	1,872	1,872	1,872	1,872	1,872	1,872
35	Estimated Maximum Cubic Yardage	5,616	5,616	5,616	5,616	5,616	5,616
36	Monthly Charge per Unit	\$441.09	\$441.09	\$441.09	\$441.09	\$441.09	\$441.09
37	Annual Revenues	\$63,517	\$63,517	\$63,517	\$63,517	\$63,517	\$63,517

Table 1
Town of Lake Park
Solid Waste Rate Study

Detailed Service Requirements and Development of Rate Revenues

		Projected Fiscal Year Ending September 30,					
Line No.	Description	2023	2024	2025	2026	2027	2028
<u>4 Cubic Yard Container - 1 Pick Ups</u>							
38	Annual Growth	N/A	0	0	0	0	0
39	Annual Units	2	2	2	2	2	2
40	Estimated Maximum Trips	104	104	104	104	104	104
41	Estimated Maximum Cubic Yardage	416	416	416	416	416	416
42	Monthly Charge per Unit	\$196.04	\$196.04	\$196.04	\$196.04	\$196.04	\$196.04
43	Annual Revenues	\$4,705	\$4,705	\$4,705	\$4,705	\$4,705	\$4,705
<u>4 Cubic Yard Container - 2 Pick Ups</u>							
44	Annual Growth	N/A	0	0	0	0	0
45	Annual Units	7	7	7	7	7	7
46	Estimated Maximum Trips	728	728	728	728	728	728
47	Estimated Maximum Cubic Yardage	2,912	2,912	2,912	2,912	2,912	2,912
48	Monthly Charge per Unit	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08
49	Annual Revenues	\$32,935	\$32,935	\$32,935	\$32,935	\$32,935	\$32,935
<u>4 Cubic Yard Container - 3 Pick Ups</u>							
50	Annual Growth	N/A	0	0	0	0	0
51	Annual Units	22	22	22	22	22	22
52	Estimated Maximum Trips	3,432	3,432	3,432	3,432	3,432	3,432
53	Estimated Maximum Cubic Yardage	13,728	13,728	13,728	13,728	13,728	13,728
54	Monthly Charge per Unit	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12
55	Annual Revenues	\$155,264	\$155,264	\$155,264	\$155,264	\$155,264	\$155,264
<u>6 Cubic Yard Container - 2 Pick Ups</u>							
56	Annual Growth	N/A	0	0	0	0	0
57	Annual Units	1	1	1	1	1	1
58	Estimated Maximum Trips	104	104	104	104	104	104
59	Estimated Maximum Cubic Yardage	624	624	624	624	624	624
60	Monthly Charge per Unit	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12
61	Annual Revenues	\$7,057	\$7,057	\$7,057	\$7,057	\$7,057	\$7,057
<u>6 Cubic Yard Container - 3 Pick Ups</u>							
62	Annual Growth	N/A	0	0	0	0	0
63	Annual Units	5	5	5	5	5	5
64	Estimated Maximum Trips	780	780	780	780	780	780
65	Estimated Maximum Cubic Yardage	4,680	4,680	4,680	4,680	4,680	4,680
66	Monthly Charge per Unit	\$882.18	\$882.18	\$882.18	\$882.18	\$882.18	\$882.18
67	Annual Revenues	\$52,931	\$52,931	\$52,931	\$52,931	\$52,931	\$52,931
<u>8 Cubic Yard Container - 1 Pick Ups</u>							
68	Annual Growth	N/A	0	0	0	0	0
69	Annual Units	1	1	1	1	1	1
70	Estimated Maximum Trips	52	52	52	52	52	52
71	Estimated Maximum Cubic Yardage	416	416	416	416	416	416
72	Monthly Charge per Unit	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08
73	Annual Revenues	\$4,705	\$4,705	\$4,705	\$4,705	\$4,705	\$4,705
<u>8 Cubic Yard Container - 2 Pick Ups</u>							
74	Annual Growth	N/A	0	0	0	0	0
75	Annual Units	3	3	3	3	3	3
76	Estimated Maximum Trips	312	312	312	312	312	312
77	Estimated Maximum Cubic Yardage	2,496	2,496	2,496	2,496	2,496	2,496
78	Monthly Charge per Unit	\$784.16	\$784.16	\$784.16	\$784.16	\$784.16	\$784.16
79	Annual Revenues	\$28,230	\$28,230	\$28,230	\$28,230	\$28,230	\$28,230

Table 1
Town of Lake Park
Solid Waste Rate Study

Item 5.

Detailed Service Requirements and Development of Rate Revenues

Line No.	Description	Projected Fiscal Year Ending September 30,					
		2023	2024	2025	2026	2027	2028
<u>8 Cubic Yard Container - 3 Pick Ups</u>							
80	Annual Growth	N/A	0	0	0	0	0
81	Annual Units	1	1	1	1	1	1
82	Estimated Maximum Trips	156	156	156	156	156	156
83	Estimated Maximum Cubic Yardage	1,248	1,248	1,248	1,248	1,248	1,248
84	Monthly Charge per Unit	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24
85	Annual Revenues	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115
86	Total Multifamily Dumpster Service	\$445,795	\$445,795	\$445,795	\$445,795	\$445,795	\$445,795
<u>Commercial Dumpster Service</u>							
<u>0.5 Cubic Yard Container - 2 Pick Ups</u>							
87	Annual Growth	N/A	0	0	0	0	0
88	Annual Units	64	64	64	64	64	64
89	Estimated Maximum Trips	6,656	6,656	6,656	6,656	6,656	6,656
90	Estimated Maximum Cubic Yardage	3,328	3,328	3,328	3,328	3,328	3,328
91	Monthly Charge per Unit	\$49.01	\$49.01	\$49.01	\$49.01	\$49.01	\$49.01
92	Annual Revenues	\$37,640	\$37,640	\$37,640	\$37,640	\$37,640	\$37,640
<u>2 Cubic Yard Container - 1 Pick Ups</u>							
93	Annual Growth	N/A	1	0	0	0	0
94	Annual Units	70	71	71	71	71	71
95	Estimated Maximum Trips	3,640	3,692	3,692	3,692	3,692	3,692
96	Estimated Maximum Cubic Yardage	7,280	7,384	7,384	7,384	7,384	7,384
97	Monthly Charge per Unit	\$98.02	\$98.02	\$98.02	\$98.02	\$98.02	\$98.02
98	Annual Revenues	\$82,337	\$83,513	\$83,513	\$83,513	\$83,513	\$83,513
<u>2 Cubic Yard Container - 2 Pick Ups</u>							
99	Annual Growth	N/A	0	0	0	0	0
100	Annual Units	10	10	10	10	10	10
101	Estimated Maximum Trips	1,040	1,040	1,040	1,040	1,040	1,040
102	Estimated Maximum Cubic Yardage	2,080	2,080	2,080	2,080	2,080	2,080
103	Monthly Charge per Unit	\$196.04	\$196.04	\$196.04	\$196.04	\$196.04	\$196.04
104	Annual Revenues	\$23,525	\$23,525	\$23,525	\$23,525	\$23,525	\$23,525
<u>2 Cubic Yard Container - 3 Pick Ups</u>							
105	Annual Growth	N/A	0	0	0	0	0
106	Annual Units	1	1	1	1	1	1
107	Estimated Maximum Trips	156	156	156	156	156	156
108	Estimated Maximum Cubic Yardage	312	312	312	312	312	312
109	Monthly Charge per Unit	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06
110	Annual Revenues	\$3,529	\$3,529	\$3,529	\$3,529	\$3,529	\$3,529
<u>2 Cubic Yard Container - 4 Pick Ups</u>							
111	Annual Growth	N/A	0	0	0	0	0
112	Annual Units	0	0	0	0	0	0
113	Estimated Maximum Trips	0	0	0	0	0	0
114	Estimated Maximum Cubic Yardage	0	0	0	0	0	0
115	Monthly Charge per Unit	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08
116	Annual Revenues	\$0	\$0	\$0	\$0	\$0	\$0

Table 1
Town of Lake Park
Solid Waste Rate Study

Item 5.

Detailed Service Requirements and Development of Rate Revenues

		Projected Fiscal Year Ending September 30,					
Line No.	Description	2023	2024	2025	2026	2027	2028
<u>2 Cubic Yard Container - 5 Pick Ups</u>							
117	Annual Growth	N/A	0	0	0	0	0
118	Annual Units	0	0	0	0	0	0
119	Estimated Maximum Trips	0	0	0	0	0	0
120	Estimated Maximum Cubic Yardage	0	0	0	0	0	0
121	Monthly Charge per Unit	\$490.10	\$490.10	\$490.10	\$490.10	\$490.10	\$490.10
122	Annual Revenues	\$0	\$0	\$0	\$0	\$0	\$0
<u>3 Cubic Yard Container - 1 Pick Ups</u>							
123	Annual Growth	N/A	0	0	0	0	0
124	Annual Units	26	26	26	26	26	26
125	Estimated Maximum Trips	1,352	1,352	1,352	1,352	1,352	1,352
126	Estimated Maximum Cubic Yardage	4,056	4,056	4,056	4,056	4,056	4,056
127	Monthly Charge per Unit	\$147.03	\$147.03	\$147.03	\$147.03	\$147.03	\$147.03
128	Annual Revenues	\$45,873	\$45,873	\$45,873	\$45,873	\$45,873	\$45,873
<u>3 Cubic Yard Container - 2 Pick Ups</u>							
129	Annual Growth	N/A	0	0	0	0	0
130	Annual Units	7	7	7	7	7	7
131	Estimated Maximum Trips	728	728	728	728	728	728
132	Estimated Maximum Cubic Yardage	2,184	2,184	2,184	2,184	2,184	2,184
133	Monthly Charge per Unit	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06
134	Annual Revenues	\$24,701	\$24,701	\$24,701	\$24,701	\$24,701	\$24,701
<u>3 Cubic Yard Container - 3 Pick Ups</u>							
135	Annual Growth	N/A	0	0	0	0	0
136	Annual Units	2	2	2	2	2	2
137	Estimated Maximum Trips	312	312	312	312	312	312
138	Estimated Maximum Cubic Yardage	936	936	936	936	936	936
139	Monthly Charge per Unit	\$441.09	\$441.09	\$441.09	\$441.09	\$441.09	\$441.09
140	Annual Revenues	\$10,586	\$10,586	\$10,586	\$10,586	\$10,586	\$10,586
<u>3 Cubic Yard Container - 4 Pick Ups</u>							
141	Annual Growth	N/A	0	0	0	0	0
142	Annual Units	0	0	0	0	0	0
143	Estimated Maximum Trips	0	0	0	0	0	0
144	Estimated Maximum Cubic Yardage	0	0	0	0	0	0
145	Monthly Charge per Unit	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12
146	Annual Revenues	\$0	\$0	\$0	\$0	\$0	\$0
<u>3 Cubic Yard Container - 5 Pick Ups</u>							
147	Annual Growth	N/A	0	0	0	0	0
148	Annual Units	1	1	1	1	1	1
149	Estimated Maximum Trips	260	260	260	260	260	260
150	Estimated Maximum Cubic Yardage	780	780	780	780	780	780
151	Monthly Charge per Unit	\$735.15	\$735.15	\$735.15	\$735.15	\$735.15	\$735.15
152	Annual Revenues	\$8,822	\$8,822	\$8,822	\$8,822	\$8,822	\$8,822
<u>4 Cubic Yard Container - 1 Pick Ups</u>							
153	Annual Growth	N/A	0	0	0	0	0
154	Annual Units	41	41	41	41	41	41
155	Estimated Maximum Trips	2,132	2,132	2,132	2,132	2,132	2,132
156	Estimated Maximum Cubic Yardage	8,528	8,528	8,528	8,528	8,528	8,528
157	Monthly Charge per Unit	\$196.04	\$196.04	\$196.04	\$196.04	\$196.04	\$196.04
158	Annual Revenues	\$96,452	\$96,452	\$96,452	\$96,452	\$96,452	\$96,452

Table 1
Town of Lake Park
Solid Waste Rate Study

Detailed Service Requirements and Development of Rate Revenues

Line No.	Description	Projected Fiscal Year Ending September 30,					
		2023	2024	2025	2026	2027	2028
	<u>4 Cubic Yard Container - 2 Pick Ups</u>						
159	Annual Growth	N/A	0	0	0	0	0
160	Annual Units	9	9	9	9	9	9
161	Estimated Maximum Trips	936	936	936	936	936	936
162	Estimated Maximum Cubic Yardage	3,744	3,744	3,744	3,744	3,744	3,744
163	Monthly Charge per Unit	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08
164	Annual Revenues	\$42,345	\$42,345	\$42,345	\$42,345	\$42,345	\$42,345
	<u>4 Cubic Yard Container - 3 Pick Ups</u>						
165	Annual Growth	N/A	0	10	0	10	9
166	Annual Units	2	2	12	12	22	31
167	Estimated Maximum Trips	312	312	1,872	1,872	3,432	4,836
168	Estimated Maximum Cubic Yardage	1,248	1,248	7,488	7,488	13,728	19,344
169	Monthly Charge per Unit	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12
170	Annual Revenues	\$14,115	\$14,115	\$84,689	\$84,689	\$155,264	\$218,781
	<u>4 Cubic Yard Container - 4 Pick Ups</u>						
171	Annual Growth	N/A	0	0	0	0	0
172	Annual Units	1	1	1	1	1	1
173	Estimated Maximum Trips	208	208	208	208	208	208
174	Estimated Maximum Cubic Yardage	832	832	832	832	832	832
175	Monthly Charge per Unit	\$784.16	\$784.16	\$784.16	\$784.16	\$784.16	\$784.16
176	Annual Revenues	\$9,410	\$9,410	\$9,410	\$9,410	\$9,410	\$9,410
	<u>4 Cubic Yard Container - 5 Pick Ups</u>						
177	Annual Growth	N/A	0	0	0	0	0
178	Annual Units	1	1	1	1	1	1
179	Estimated Maximum Trips	260	260	260	260	260	260
180	Estimated Maximum Cubic Yardage	1,040	1,040	1,040	1,040	1,040	1,040
181	Monthly Charge per Unit	\$980.20	\$980.20	\$980.20	\$980.20	\$980.20	\$980.20
182	Annual Revenues	\$11,762	\$11,762	\$11,762	\$11,762	\$11,762	\$11,762
	<u>6 Cubic Yard Container - 1 Pick Ups</u>						
183	Annual Growth	N/A	0	0	0	0	0
184	Annual Units	23	23	23	23	23	23
185	Estimated Maximum Trips	1,196	1,196	1,196	1,196	1,196	1,196
186	Estimated Maximum Cubic Yardage	7,176	7,176	7,176	7,176	7,176	7,176
187	Monthly Charge per Unit	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06	\$294.06
188	Annual Revenues	\$81,161	\$81,161	\$81,161	\$81,161	\$81,161	\$81,161
	<u>6 Cubic Yard Container - 2 Pick Ups</u>						
189	Annual Growth	N/A	0	0	0	0	0
190	Annual Units	19	19	19	19	19	19
191	Estimated Maximum Trips	1,976	1,976	1,976	1,976	1,976	1,976
192	Estimated Maximum Cubic Yardage	11,856	11,856	11,856	11,856	11,856	11,856
193	Monthly Charge per Unit	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12	\$588.12
194	Annual Revenues	\$134,091	\$134,091	\$134,091	\$134,091	\$134,091	\$134,091
	<u>6 Cubic Yard Container - 3 Pick Ups</u>						
195	Annual Growth	N/A	0	0	0	0	2
196	Annual Units	5	5	5	5	5	7
197	Estimated Maximum Trips	780	780	780	780	780	1,092
198	Estimated Maximum Cubic Yardage	4,680	4,680	4,680	4,680	4,680	6,552
199	Monthly Charge per Unit	\$882.18	\$882.18	\$882.18	\$882.18	\$882.18	\$882.18
200	Annual Revenues	\$52,931	\$52,931	\$52,931	\$52,931	\$52,931	\$74,103

Table 1
Town of Lake Park
Solid Waste Rate Study

Detailed Service Requirements and Development of Rate Revenues

		Projected Fiscal Year Ending September 30,					
Line No.	Description	2023	2024	2025	2026	2027	2028
<u>6 Cubic Yard Container - 4 Pick Ups</u>							
201	Annual Growth	N/A	0	0	0	0	0
202	Annual Units	0	0	0	0	0	0
203	Estimated Maximum Trips	0	0	0	0	0	0
204	Estimated Maximum Cubic Yardage	0	0	0	0	0	0
205	Monthly Charge per Unit	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24
206	Annual Revenues	\$0	\$0	\$0	\$0	\$0	\$0
<u>6 Cubic Yard Container - 5 Pick Ups</u>							
207	Annual Growth	N/A	0	0	0	0	0
208	Annual Units	1	1	1	1	1	1
209	Estimated Maximum Trips	260	260	260	260	260	260
210	Estimated Maximum Cubic Yardage	1,560	1,560	1,560	1,560	1,560	1,560
211	Monthly Charge per Unit	\$1,470.30	\$1,470.30	\$1,470.30	\$1,470.30	\$1,470.30	\$1,470.30
212	Annual Revenues	\$17,644	\$17,644	\$17,644	\$17,644	\$17,644	\$17,644
<u>8 Cubic Yard Container - 1 Pick Ups</u>							
213	Annual Growth	N/A	0	0	0	0	0
214	Annual Units	11	11	11	11	11	11
215	Estimated Maximum Trips	572	572	572	572	572	572
216	Estimated Maximum Cubic Yardage	4,576	4,576	4,576	4,576	4,576	4,576
217	Monthly Charge per Unit	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08	\$392.08
218	Annual Revenues	\$51,755	\$51,755	\$51,755	\$51,755	\$51,755	\$51,755
<u>8 Cubic Yard Container - 2 Pick Ups</u>							
219	Annual Growth	N/A	0	0	0	0	0
220	Annual Units	28	28	28	28	28	28
221	Estimated Maximum Trips	2,912	2,912	2,912	2,912	2,912	2,912
222	Estimated Maximum Cubic Yardage	23,296	23,296	23,296	23,296	23,296	23,296
223	Monthly Charge per Unit	\$784.16	\$784.16	\$784.16	\$784.16	\$784.16	\$784.16
224	Annual Revenues	\$263,478	\$263,478	\$263,478	\$263,478	\$263,478	\$263,478
<u>8 Cubic Yard Container - 3 Pick Ups</u>							
225	Annual Growth	N/A	0	0	0	0	0
226	Annual Units	4	4	4	4	4	4
227	Estimated Maximum Trips	624	624	624	624	624	624
228	Estimated Maximum Cubic Yardage	4,992	4,992	4,992	4,992	4,992	4,992
229	Monthly Charge per Unit	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24	\$1,176.24
230	Annual Revenues	\$56,460	\$56,460	\$56,460	\$56,460	\$56,460	\$56,460
<u>8 Cubic Yard Container - 4 Pick Ups</u>							
231	Annual Growth	N/A	0	0	0	0	0
232	Annual Units	1	1	1	1	1	1
233	Estimated Maximum Trips	208	208	208	208	208	208
234	Estimated Maximum Cubic Yardage	1,664	1,664	1,664	1,664	1,664	1,664
235	Monthly Charge per Unit	\$1,568.32	\$1,568.32	\$1,568.32	\$1,568.32	\$1,568.32	\$1,568.32
236	Annual Revenues	\$18,820	\$18,820	\$18,820	\$18,820	\$18,820	\$18,820
<u>8 Cubic Yard Container - 5 Pick Ups</u>							
237	Annual Growth	N/A	1	0	1	0	0
238	Annual Units	2	3	3	4	4	4
239	Estimated Maximum Trips	520	780	780	1,040	1,040	1,040
240	Estimated Maximum Cubic Yardage	4,160	6,240	6,240	8,320	8,320	8,320
241	Monthly Charge per Unit	\$1,960.40	\$1,960.40	\$1,960.40	\$1,960.40	\$1,960.40	\$1,960.40
242	Annual Revenues	\$47,050	\$70,574	\$70,574	\$94,099	\$94,099	\$94,099

Table 1
Town of Lake Park
Solid Waste Rate Study

Detailed Service Requirements and Development of Rate Revenues

Line No.	Description	Projected Fiscal Year Ending September 30,					
		2023	2024	2025	2026	2027	2028
243	Total Commercial Dumpster Service	\$1,134,483	\$1,159,185	\$1,229,759	\$1,253,284	\$1,323,858	\$1,408,547
244	4.0 % Discount for Residential Prepayments	(\$23,687)	(\$23,915)	(\$24,163)	(\$24,411)	(\$24,659)	(\$24,907)
245	Total Revenues	<u>\$2,148,775</u>	<u>\$2,178,933</u>	<u>\$2,255,460</u>	<u>\$2,284,938</u>	<u>\$2,361,465</u>	<u>\$2,452,107</u>

Table 2
Town of Lake Park
Solid Waste Rate Study

Projected Operating and Miscellaneous Revenue at Existing Rates

Line No.	Description	General Ledger Account Number	Historical Fiscal Year Ended September 30,			Budgeted 2023 [1]	Adjustments	Adjusted 2023	Escalation Reference [2]	Projected Fiscal Year Ending September 30,				
			2020	2021	2022					2024	2025	2026	2027	2028
SYSTEM REVENUES														
Charges for Service														
1	Commercial Assessment - SWA	404-343.410	\$84,263	\$89,628	\$89,251	\$0	\$0	\$0	Eliminate	\$0	\$0	\$0	\$0	\$0
2	Commercial User Fees - TLP	404-343.420	840,264	932,889	934,716	1,117,400	17,083	1,134,483	Calculated	1,604,979	1,675,554	1,699,079	1,769,653	1,854,342
3	Residential Assessments - SWA	404-343.500	798,898	848,818	845,787	990,000	(39,600)	950,400	Calculated	573,953	579,906	585,859	591,812	597,765
4	Residential User Fees - TLP	404-343.510	4,632	10,996	(861)	5,000	0	5,000	Constant	5,000	5,000	5,000	5,000	5,000
5	Recycling Income	404-343.610	127	0	4,662	2,000	0	2,000	Constant	2,000	2,000	2,000	2,000	2,000
6	Total Charges for Service		\$1,728,183	\$1,882,331	\$1,873,555	\$2,114,400	(\$22,517)	\$2,091,883		\$2,185,933	\$2,262,460	\$2,291,938	\$2,368,465	\$2,459,107
Other Revenues														
7	Delinquent Refuse Assessments	404-311.120	\$671	\$124	\$0	\$0	\$0	\$0	Constant	\$0	\$0	\$0	\$0	\$0
8	FEMA/State Hurricane Relief	404-331.500	3,461	0	0	0	0	0	Eliminate	0	0	0	0	0
9	Cares Act Covid Relief	404-331.560	34,935	0	0	0	0	0	Eliminate	0	0	0	0	0
10	Service Charge - Dishonored Checks	404-349.100	0	0	0	0	81	81	Eliminate	0	0	0	0	0
11	Penalties	404-354.100	8,910	21,390	17,175	14,000	0	14,000	Constant	14,000	14,000	14,000	14,000	14,000
12	Interest Earnings [3]	404-361.100	3,973	504	2,690	0	0	0	Constant	0	0	0	0	0
13	Interest Tax Collector [3]	404-361.110	175	57	0	0	0	0	Constant	0	0	0	0	0
14	Sale of Surplus Property	404-364.100	35,735	0	6,477	0	56,543	56,543	Eliminate	0	0	0	0	0
15	Miscellaneous Revenue	404-369.100	1,287	698	79	0	3,616	3,616	Eliminate	0	0	0	0	0
16	Container Proceeds	404-369.200	0	0	1,471	0	0	0	Constant	0	0	0	0	0
17	Locking Device Proceeds	404-369.300	715	455	195	500	0	500	Constant	500	500	500	500	500
18	Service Reinstatement Fees	404-369.400	0	0	100	0	100	100	Eliminate	0	0	0	0	0
19	Transfer from General Fund	404-399.100	0	108,000	0	0	0	0	Eliminate	0	0	0	0	0
20	Balance Brought Forward [4]	404-399.999	0	0	0	317,993	(317,993)	0	Eliminate	0	0	0	0	0
21	Total Other Sources		\$89,863	\$131,227	\$28,187	\$332,493	(\$257,653)	\$74,840		\$14,500	\$14,500	\$14,500	\$14,500	\$14,500
22	TOTAL SYSTEM REVENUES		\$1,818,047	\$2,013,558	\$1,901,742	\$2,446,893	(\$280,169)	\$2,166,724		\$2,200,433	\$2,276,960	\$2,306,438	\$2,382,965	\$2,473,607

Footnotes:

- [1] Based on budgeted figures for the Fiscal Year 2023 revised Budget. FY23 amounts exclude any rate increase or index that was assumed in the budget.
- [2] Escalation factors and attributes derived from Table 5.
- [3] Interest earnings, if any, was removed from this schedule which is then calculated in Table 9 based on the annual average balance of each fund.
- [4] Transfers from Retained Earnings reflect the amount of annual expenditures in excess of revenues for each Fiscal Year. Such amounts, if any, are calculated in Table 10.

Table 3
Town of Lake Park
Solid Waste Rate Study

Fiscal Year 2023 Sanitation Operating Budget

Line No.	Description	General Ledger Account Number	Budget [1] 2023	Adjustments	Adjusted 2023
<u>Personal Services</u>					
1	Regular Salaries	404-53-534-404-12000	\$347,047	\$0	\$347,047
2	Overtime Salaries	404-53-534-404-14000	18,000	0	18,000
3	Special Pay	404-53-534-404-15000	3,000	0	3,000
4	FICA	404-53-534-404-21000	31,739	0	31,739
5	Retirement	404-53-534-404-22000	25,877	0	25,877
6	Town Retirement Matching	404-53-534-404-22100	9,172	0	9,172
7	Health Insurance	404-53-534-404-23100	114,211	0	114,211
8	Insurance - Dental	404-53-534-404-23200	3,654	0	3,654
9	Insurance - Life	404-53-534-404-23300	1,041	0	1,041
10	Insurance - Vision	404-53-534-404-23400	495	0	495
11	Disability	404-53-534-404-23500	3,778	0	3,778
12	Worker's Compensation Insurance	404-53-534-404-24000	21,129	0	21,129
13	Total Personal Services		\$579,143	\$0	\$579,143
<u>Operating Expenses</u>					
14	Professional Services	404-53-534-404-31000	\$60,734	\$0	\$60,734
15	Contractual Services	404-53-534-404-34000	44,902	0	44,902
16	Disposal Fees - Garbage	404-53-534-404-34310	315,000	92,400	407,400
17	Travel & Training	404-53-534-404-40000	1,000	0	1,000
18	Telephone	404-53-534-404-41100	2,280	0	2,280
19	Postage & Shipping	404-53-534-404-41200	1,600	0	1,600
20	Rentals	404-53-534-404-44100	20,000	0	20,000
21	Capital Leases	404-53-534-404-44200	6,000	0	6,000
22	Insurance	404-53-534-404-45000	51,447	0	51,447
23	Repair & Maintenance	404-53-534-404-46000	160,137	0	160,137
24	Vehicle Parts & Supplies	404-53-534-404-46300	127,379	0	127,379
25	Printing	404-53-534-404-47000	2,500	0	2,500
26	Advertising	404-53-534-404-48100	9,000	0	9,000
27	Uniforms & Clothing	404-53-534-404-49400	10,800	0	10,800
28	Office Supplies	404-53-534-404-51000	1,000	0	1,000
29	Operating Supplies	404-53-534-404-52000	20,403	0	20,403
30	Gasoline & Diesel Fuel	404-53-534-404-52100	83,300	0	83,300
31	Small Tools & Others	404-53-534-404-52200	500	0	500
32	Containers	404-53-534-404-52400	120,000	0	120,000
33	Memberships, Dues & Subscriptions	404-53-534-404-54200	500	0	500
34	Total Operating Expenses		\$1,038,482	\$92,400	\$1,130,882
35	Total Depreciation	404-53-534-404-59000	\$0	\$0	\$0
<u>Capital Outlay [2]</u>					
36	Improvements-Dumpster Enclosure	404-53-534-404-63101	\$5,000	(\$5,000)	\$0
37	Machinery & Equipment	404-53-534-404-64100	153,000	(153,000)	0
38	Total Capital Outlay		\$158,000	(\$158,000)	\$0

Table 3
Town of Lake Park
Solid Waste Rate Study

Fiscal Year 2023 Sanitation Operating Budget

Line No.	Description	General Ledger Account Number	Budget [1] 2023	Adjustments	Adjusted 2023
	<u>Debt Service [3]</u>				
39	Principal	404-53-534-404-71000	\$122,987	(\$122,987)	\$0
40	Interest	404-53-534-404-72000	5,256	(5,256)	0
41	Total Debt Service		<u>\$128,243</u>	<u>(\$128,243)</u>	<u>\$0</u>
42	Total Grants & Aids	Grants and Aid	\$0	\$0	\$0
	<u>Other</u>				
43	Transfer to General Fund [3]	404-53-534-404-99110	\$31,435	(\$31,435)	\$0
44	Indirect Cost Allocation	404-53-534-404-99404	511,527	0	511,527
45	Total Other		<u>\$542,962</u>	<u>(\$31,435)</u>	<u>\$511,527</u>
	<u>Adjustments</u>				
46	Other Adjustments	Adjustments	\$0	\$0	\$0
47	Total Adjustments		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
	<u>Additional Charges</u>				
48	Additional Personnel Costs	AddPer	\$0	\$0	\$0
49	Additional Operating Costs	AddOps	0	0	0
50	Additional Maintenance Costs	AddMaint	0	0	0
51	Bad Debt Expense - 0.25% [4]	BadDebt	0	5,230	5,230
52	Operating Contingency - 1.00% [5]	Contingency	0	22,268	22,268
53	Total Additional Charges		<u>\$0</u>	<u>\$27,498</u>	<u>\$27,498</u>
54	Total Sanitation Expenses		<u><u>\$2,446,830</u></u>	<u><u>(\$197,780)</u></u>	<u><u>\$2,249,050</u></u>

Footnotes:

- [1] Amounts reflect the expenditures for Fiscal Year 2023 as provided by City staff.
[2] Amount removed from operating expenses and shown separately as part of the capital plan.
[3] Amount removed from operating expenses and shown separately as part of the projection of annual loan and lease payments shown on Table 8.
[4] An allowance for uncollectible accounts was assumed at 0.25% of revenues per year for conservatism.
[5] An allowance for operating cost contingencies was assumed at 1.00% of expenses per year for conservatism.

Table 4
Town of Lake Park
Solid Waste Rate Study

Projection of Operating Expenses - Fiscal Years 2023 - 2028

Line No.	Description	Adjusted [1] 2023	Escalation Reference [2]	Projected Fiscal Year Ending September 30,				
				2024	2025	2026	2027	2028
<u>Personal Services</u>								
1	Regular Salaries	\$347,047	Labor	\$386,402	\$401,858	\$417,933	\$434,650	\$452,036
2	Overtime Salaries	18,000	Labor	20,041	20,843	21,677	22,544	23,445
3	Special Pay	3,000	Labor	3,340	3,474	3,613	3,757	3,908
4	FICA	31,739	Labor	35,338	36,752	38,222	39,751	41,341
5	Retirement	25,877	Labor	28,811	29,964	31,162	32,409	33,705
6	Town Retirement Matching	9,172	Labor	10,212	10,621	11,045	11,487	11,947
7	Health Insurance	114,211	Ins-Health	131,343	151,044	173,701	199,756	229,719
8	Insurance - Dental	3,654	Ins-Health	4,202	4,832	5,557	6,391	7,349
9	Insurance - Life	1,041	Ins-Health	1,197	1,377	1,583	1,821	2,094
10	Insurance - Vision	495	Ins-Health	569	655	753	866	996
11	Disability	3,778	Ins-Health	4,345	4,996	5,746	6,608	7,599
12	Worker's Compensation Insurance	21,129	Worker Comp	22,608	23,512	24,453	25,431	26,448
13	Total Personal Services	\$579,143		\$648,409	\$689,928	\$735,444	\$785,469	\$840,587
<u>Operating Expenses</u>								
14	Professional Services	\$60,734	Contract	\$10,163	\$10,570	\$10,993	\$11,432	\$73,890
15	Contractual Services	44,902	Contract	46,698	48,566	50,509	52,529	54,630
16	Disposal Fees - Garbage [3]	407,400	Calculated	414,067	442,434	469,941	498,733	528,851
17	Travel & Training	1,000	Inflation	1,030	1,061	1,093	1,126	1,159
18	Telephone	2,280	Inflation	2,348	2,419	2,491	2,566	2,643
19	Postage & Shipping	1,600	Accounts/Inf	1,666	1,735	1,807	1,882	1,960
20	Rentals	20,000	Inflation	20,600	21,218	21,855	22,510	23,185
21	Capital Leases	6,000	VehLease	9,245	9,708	10,193	10,703	11,238
22	Insurance	51,447	Insurance	59,164	68,039	78,244	89,981	103,478
23	Repair & Maintenance	160,137	Repair	164,941	169,889	174,986	180,236	185,643
24	Vehicle Parts & Supplies	127,379	Repair	131,200	135,136	139,190	143,366	147,667
25	Printing	2,500	Accounts/Inf	2,604	2,711	2,824	2,941	3,063
26	Advertising	9,000	Accounts/Inf	9,373	9,760	10,167	10,589	11,027
27	Uniforms & Clothing	10,800	Inflation	11,124	11,458	11,801	12,155	12,520
28	Office Supplies	1,000	Inflation	1,030	1,061	1,093	1,126	1,159
29	Operating Supplies	20,403	Inflation	21,015	21,646	22,295	22,964	23,653
30	Gasoline & Diesel Fuel	83,300	Hauling	90,735	98,833	107,011	115,765	125,131
31	Small Tools & Others	500	Inflation	515	530	546	563	580

Table 4
Town of Lake Park
Solid Waste Rate Study

Projection of Operating Expenses - Fiscal Years 2023 - 2028

Line No.	Description	Adjusted [1]	Escalation	Projected Fiscal Year Ending September 30,				
		2023	Reference [2]	2024	2025	2026	2027	2028
32	Containers	120,000	Repair	145,600	127,968	131,807	135,761	139,834
33	Memberships, Dues & Subscriptions	500	Inflation	515	530	546	563	580
34	Total Operating Expenses	<u>\$1,130,882</u>		<u>\$1,143,634</u>	<u>\$1,185,272</u>	<u>\$1,249,393</u>	<u>\$1,317,491</u>	<u>\$1,451,892</u>
35	Total Depreciation	\$0	Eliminate	\$0	\$0	\$0	\$0	\$0
	<u>Capital Outlay [4]</u>							
36	Improvements-Dumpster Enclosure	\$0	Eliminate	\$0	\$0	\$0	\$0	\$0
37	Machinery & Equipment	0	Eliminate	0	0	0	0	0
38	Total Capital Outlay	<u>\$0</u>		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
	<u>Debt Service [5]</u>							
39	Principal	\$0	Eliminate	\$0	\$0	\$0	\$0	\$0
40	Interest	0	Eliminate	0	0	0	0	0
41	Total Debt Service	<u>\$0</u>		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
42	Total Grants & Aids	\$0	Inflation	\$0	\$0	\$0	\$0	\$0
	<u>Other</u>							
43	Transfer to General Fund [5]	\$0	Eliminate	\$0	\$0	\$0	\$0	\$0
44	Indirect Cost Allocation	511,527	Labor	569,534	592,316	616,008	640,648	666,274
45	Total Other	<u>\$511,527</u>		<u>\$569,534</u>	<u>\$592,316</u>	<u>\$616,008</u>	<u>\$640,648</u>	<u>\$666,274</u>
	<u>Adjustments</u>							
46	Other Adjustments	\$0	Inflation	\$0	\$0	\$0	\$0	\$0
47	Total Adjustments	<u>\$0</u>		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>

Table 4
Town of Lake Park
Solid Waste Rate Study

Projection of Operating Expenses - Fiscal Years 2023 - 2028

Line No.	Description	Adjusted [1] 2023	Escalation Reference [2]	Projected Fiscal Year Ending September 30,				
				2024	2025	2026	2027	2028
	Additional Charges							
48	Additional Personnel Costs [6]	\$0	Labor	\$0	\$156,762	\$163,033	\$169,554	\$176,336
49	Additional Operating Costs	0	Inflation	0	0	0	0	0
50	Additional Maintenance Costs	0	Inflation	0	0	0	0	0
51	Bad Debt Expense - 0.25% [7]	5,230	Calculated	8,088	8,622	8,997	9,576	10,241
52	Operating Contingency - 1.00% [8]	22,268	Calculated	23,697	26,329	27,729	29,227	31,453
53	Total Additional Charges	\$27,498		\$31,785	\$191,713	\$199,758	\$208,357	\$218,030
54	TOTAL OPERATING EXPENSES	\$2,249,050		\$2,393,362	\$2,659,229	\$2,800,604	\$2,951,966	\$3,176,784
55	Annual Rate of Change	N/A		6.42%	11.11%	5.32%	5.40%	7.62%

Footnotes:

- [1] Adjusted Budget Fiscal Year 2023 amounts shown derived from Table 3.
[2] Escalation references derived from Table 5.
[3] Disposal costs shown based on tonnage projections as developed on Table 6.
[4] Amounts removed from operating expenses and shown separately as part of the capital plan on Table 7.
[5] Amounts removed from operating expenses and shown separately as part of the projection of annual loan and lease payments shown on Table 8.
[6] Amounts shown reflect one additional Sanitation Truck Operator II and one additional Solid Waste Code Officer being added in 2025.
[7] An allowance for uncollectible accounts was assumed at 0.25% of revenues per year for conservatism.
[8] An allowance for operating cost contingencies was assumed at 1.00% of expenses per year for conservatism.

Table 5
Town of Lake Park
Solid Waste Rate Study

Summary of Operating Expense Escalation Factors

Line No.	Description	Escalation Reference	Projected Fiscal Year Ending September 30,				
			2024	2025	2026	2027	2028
1	Constant	Constant	1.0000	1.0000	1.0000	1.0000	1.0000
2	Eliminate	Eliminate	0.0000	0.0000	0.0000	0.0000	0.0000
3	General Inflation (CPI)	Inflation	1.0300	1.0300	1.0300	1.0300	1.0300
4	Labor Escalator	Labor	1.1134	1.0400	1.0400	1.0400	1.0400
5	Contract Labor	Contract	1.0400	1.0400	1.0400	1.0400	1.0400
6	Life/Health/Disability Insurance Escalator	Ins-Health	1.1500	1.1500	1.1500	1.1500	1.1500
7	Workers Compensation	Worker Comp	1.0700	1.0400	1.0400	1.0400	1.0400
8	General Insurance Factor	Insurance	1.1500	1.1500	1.1500	1.1500	1.1500
9	Repair and Maintenance	Repair	1.0300	1.0300	1.0300	1.0300	1.0300
10	Fuel	Fuel	1.0500	1.0500	1.0500	1.0500	1.0500
11	Utility Expenses	Utility	1.1151	1.0500	1.0500	1.0500	1.0500
12	Growth in Disposal + Fuel	Hauling	1.0893	1.0893	1.0827	1.0818	1.0809
13	Marginal Adjustment Factor	Marginal	1.0100	1.0100	1.0100	1.0100	1.0100
14	Operating Leases - Vehicles	VehLease	1.5409	1.0500	1.0500	1.0500	1.0500
15	Customer Accounts	Accounts	1.0111	1.0110	1.0113	1.0112	1.0111
16	Customer Units	Units	1.0089	1.0125	1.0091	1.0122	1.0124
17	Customer Accounts + Inflation	Accounts/Inf	1.0414	1.0413	1.0417	1.0415	1.0414
18	Customer Units + Inflation	Units/Inf	1.0392	1.0429	1.0393	1.0426	1.0428
19	Maximum Trips	Trips	1.0094	1.0146	1.0097	1.0142	1.0145
20	Maximum Cubic Yards	Yards	1.0129	1.0286	1.0123	1.0274	1.0311
21	Estimate Tonnage	Tons	1.0164	1.0374	1.0312	1.0303	1.0294

Table 6
Town of Lake Park
Solid Waste Rate Study

Projection of Annual Disposal Fees

Line No.	Description	Projected Fiscal Year Ending September 30, [1] [2]					
		2023	2024	2025	2026	2027	2028
	<u>Residential - All Classes</u>						
1	Growth in Weight	N/A	1.0%	1.0%	1.0%	1.0%	1.0%
2	Chargeable Weight - Base (Tons)	2,300	2,323	2,346	2,370	2,393	2,417
3	Chargeable Weight - Yard Waste Base (Tons)	342	345	349	352	356	359
4	Chargeable Weight - Bulk Waste (Tons)	373	377	380	384	388	392
5	Chargeable Weight (Tons)	3,015	3,045	3,075	3,106	3,137	3,169
6	Rate per Ton	\$42.00	\$42.00	\$43.26	\$44.56	\$45.90	\$47.28
7	Annual Charges	\$126,624	\$127,891	\$133,045	\$138,413	\$144,001	\$149,814
	<u>Commercial - All Classes</u>						
8	Growth in Weight	N/A	2.2%	6.2%	4.9%	4.7%	4.5%
9	Chargeable Weight - Base (Tons)	5,100	5,213	5,535	5,807	6,079	6,351
10	Chargeable Weight - Yard Waste Base (Tons)	758	766	773	781	789	797
11	Chargeable Weight - Bulk Waste (Tons)	827	835	844	852	861	869
12	Chargeable Weight (Tons)	6,685	6,814	7,152	7,440	7,728	8,017
13	Rate per Ton	\$42.00	\$42.00	\$43.26	\$44.56	\$45.90	\$47.28
14	Annual Charges	\$280,776	\$286,176	\$309,389	\$331,528	\$354,732	\$379,037
	<u>Total Department</u>						
15	Growth in Weight	N/A	1.6%	3.7%	3.1%	3.0%	2.9%
16	Chargeable Weight (Tons)	9,700	9,859	10,227	10,546	10,866	11,186
17	Average Cost per Ton	\$42.00	\$42.00	\$43.26	\$44.56	\$45.90	\$47.28
18	Annual Charges	\$407,400	\$414,067	\$442,434	\$469,941	\$498,733	\$528,851
19	Rate of Change	N/A	1.64%	6.85%	6.22%	6.13%	6.04%

Footnotes:

- [1] Amounts based on historical disposal trends as provided by the Town and adjusted for new development.
- [2] Existing disposal levels assumed to increase annually by 1% per year for all classes except Commercial Base tonnages which are projected based on development information provided by the Town.

Table 7
Town of Lake Park
Solid Waste Rate Study

Capital Funding Program

Line No.	Description	Funding Reference	Projected Fiscal Year Ending September 30, - Future Dollars [1]					6 Year Totals	
			2023	2024	2025	2026	2027	2028	
	CUMULATIVE INFLATIONARY ADJUSTMENT FACTOR		1.000	1.050	1.103	1.158	1.216	1.276	
	<u>Replacement of Vehicles</u>								
1	Autocar/Heil FEL - #45	Lease1	\$329,999	\$0	\$0	\$0	\$0	\$0	\$329,999
2	Mack/McNeilus FEL - #44	Lease4	0	346,499	0	0	0	0	346,499
3	Mack/Heil TE64 FEL - #56	Lease8	0	0	0	382,015	0	0	382,015
4	Autocar/Heil ASL - #50	Lease2	357,549	0	0	0	0	0	357,549
5	Mack/McNeilus ASL - #51	Lease5	0	375,426	0	0	0	0	375,426
6	Mack/Heil LR64R ASL - #58	Lease9	0	0	0	413,908	0	0	413,908
7	Peterson TL3 Grapple/International - #66	Lease6	0	0	195,143	0	0	0	195,143
8	Peterson TL3 Grapple/International - #67	Lease10	0	0	0	204,900	0	0	204,900
9	Peterson TL3 Grapple/Mack - #68	REV	0	0	0	0	0	0	0
10	2005 IHC/Heil Rearloader - #42	Lease7	0	0	308,700	0	0	0	308,700
11	Mack MD6 Container Handler - #59	REV	0	0	0	0	0	0	0
12	Chevy Silverado 1500 - #360	REV	0	0	0	0	0	0	0
13	Dodge Ram 1500 - #New	REV	0	0	0	0	0	0	0
14	Total Vehicle Replacements		\$687,548	\$721,925	\$503,843	\$1,000,822	\$0	\$0	\$2,914,138
	<u>Other Capital Requirements</u>								
15	Capital Outlay - Dumpster Enclosures	REV	\$5,000	\$0	\$0	\$0	\$0	\$0	\$5,000
16	A-Frame Gantry Crane - New	REV	13,000	0	0	0	0	0	13,000
17	Truck for Dumpsters - New	Lease3	140,000	0	0	0	0	0	140,000
18	Other Capital Outlay	REV	0	21,000	22,050	23,153	24,310	25,526	116,038
19	Other Capital Outlay - Additional Truck	Lease11	0	0	0	0	401,116	0	401,116
20	Other Capital Outlay - Additional Truck	Lease12	0	0	0	0	0	456,333	456,333
21	Other 3	REV	0	0	0	0	0	0	0
22	Total Capital Projects		\$158,000	\$21,000	\$22,050	\$23,153	\$425,426	\$481,859	\$1,131,487
23	TOTAL CAPITAL PLAN		\$845,548	\$742,925	\$525,893	\$1,023,975	\$425,426	\$481,859	\$4,045,626

Table 7
Town of Lake Park
Solid Waste Rate Study

Capital Funding Program

Line No.	Description	Funding Reference	Projected Fiscal Year Ending September 30, - Future Dollars [1]					6 Year Totals	
			2023	2024	2025	2026	2027	2028	
FUNDING SOURCES									
24	Operating Reserves	OR	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Operating Revenues	REV	18,000	21,000	22,050	23,153	24,310	25,526	134,038
26	Vehicle Replacement Fund	VRF	0	0	0	0	0	0	0
27	Other	OTHER	0	0	0	0	0	0	0
28	Additional Vehicle Lease 1	Lease1	329,999	0	0	0	0	0	329,999
29	Additional Vehicle Lease 2	Lease2	357,549	0	0	0	0	0	357,549
30	Additional Vehicle Lease 3	Lease3	140,000	0	0	0	0	0	140,000
31	Additional Vehicle Lease 4	Lease4	0	346,499	0	0	0	0	346,499
32	Additional Vehicle Lease 5	Lease5	0	375,426	0	0	0	0	375,426
33	Additional Vehicle Lease 6	Lease6	0	0	195,143	0	0	0	195,143
34	Additional Vehicle Lease 7	Lease7	0	0	308,700	0	0	0	308,700
35	Additional Vehicle Lease 8	Lease8	0	0	0	382,015	0	0	382,015
36	Additional Vehicle Lease 9	Lease9	0	0	0	413,908	0	0	413,908
37	Additional Vehicle Lease 10	Lease10	0	0	0	204,900	0	0	204,900
38	Additional Vehicle Lease 11	Lease11	0	0	0	0	401,116	0	401,116
39	Additional Vehicle Lease 12	Lease12	0	0	0	0	0	456,333	456,333
40	TOTAL FUNDING SOURCES		\$845,548	\$742,925	\$525,893	\$1,023,975	\$425,426	\$481,859	\$4,045,626

Footnotes:

[1] Amounts as provided by the City and include an escalation for inflation at 5% per year.

Table 8
Town of Lake Park
Solid Waste Rate Study

Summary of Debt Service Payments

Line No.	Description	Fiscal Year Ending September 30th,					
		2023	2024	2025	2026	2027	2028
	<u>Existing Loan / Lease Payments [1]</u>						
1	Side Loader Lease Payments	\$64,943	\$64,943	\$0	\$0	\$0	\$0
2	Mack MD7 Grapple Truck Payments	64,680	64,680	64,680	0	0	0
3	General Fund Loan	31,435	31,435	31,435	31,435	0	0
4	Total Existing Loan / Lease Payments	<u>\$161,058</u>	<u>\$161,058</u>	<u>\$96,115</u>	<u>\$31,435</u>	<u>\$0</u>	<u>\$0</u>
	<u>Proposed Loan/Lease Payments [2]</u>						
5	Additional Vehicle Lease 1	\$0	\$95,502	\$95,502	\$95,502	\$95,502	\$0
6	Additional Vehicle Lease 2	0	103,292	103,292	103,292	103,292	0
7	Additional Vehicle Lease 3	0	40,691	40,691	40,691	40,691	0
8	Additional Vehicle Lease 4	0	0	101,007	101,007	101,007	101,007
9	Additional Vehicle Lease 5	0	0	108,510	108,510	108,510	108,510
10	Additional Vehicle Lease 6	0	0	0	56,888	56,888	56,888
11	Additional Vehicle Lease 7	0	0	0	89,976	89,976	89,976
12	Additional Vehicle Lease 8	0	0	0	0	112,383	112,383
13	Additional Vehicle Lease 9	0	0	0	0	121,140	121,140
14	Additional Vehicle Lease 10	0	0	0	0	60,132	60,132
15	Additional Vehicle Lease 11	0	0	0	0	0	118,013
16	Additional Vehicle Lease 12	0	0	0	0	0	0
17	Total Proposed Loan/Lease Payments	<u>\$0</u>	<u>\$239,485</u>	<u>\$449,003</u>	<u>\$595,867</u>	<u>\$889,521</u>	<u>\$768,048</u>
18	Total Existing and Proposed Loan/Lease Payments	<u>\$161,058</u>	<u>\$400,543</u>	<u>\$545,118</u>	<u>\$627,302</u>	<u>\$889,521</u>	<u>\$768,048</u>

Footnotes:

- [1] Existign loan and lease amounts shown based on adjustments from Table 3 and include adjustments for an additional \$1,380 in annual interest costs.
- [2] Projected lease payment amounts shown based on funding of capital program as shown on Table 7. Loans assume a payment term of 4 years and interest rates between 5.99% and 6.75%.

Table 9
Town of Lake Park
Solid Waste Rate Study

Projected Fund Balances and Interest Earnings

Line No.	Description	Reference	Projected Fiscal Year Ending September 30, [1]					
			2023	2024	2025	2026	2027	2028
	UNRESTRICTED OPERATING FUND							
1	Beginning Balance [2]		\$514,286	\$264,903	\$464,678	\$720,175	\$906,562	\$912,632
2	Transfers In - Revenues		2,091,883	3,235,181	3,448,894	3,598,645	3,830,367	4,096,265
3	Transfers Out - Net Revenue Requirements		2,341,267	3,035,406	3,193,397	3,412,258	3,824,297	3,926,058
4	Transfers Out - CIP		0	0	0	0	0	0
5	Transfers Out (In) - Outside Sources		0	0	0	0	0	0
6	End of Year Transfer In / (Out)		0	0	0	0	0	0
7	Interest Rate	Short Term	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
8	Interest Income		12,000	11,000	18,000	24,000	27,000	30,000
	Transfer of Interest Income							
9	to Revenue Fund		12,000	11,000	18,000	24,000	27,000	30,000
10	Ending Balance		\$264,903	\$464,678	\$720,175	\$906,562	\$912,632	\$1,082,840
	CONTINGENCY FUND - DEBRIS REMOVAL CONTRACT EXPENSES							
11	Beginning Balance [2]		\$0	\$0	\$250,000	\$257,500	\$265,200	\$273,200
12	Transfers In		0	250,000	7,500	7,700	8,000	8,200
13	Transfers Out		0	0	0	0	0	0
14	Interest Rate	Medium Term	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
15	Interest Income		0	4,000	8,000	8,000	8,000	8,000
	Transfer of Interest Income							
16	to Revenue Fund		0	4,000	8,000	8,000	8,000	8,000
17	Ending Balance		\$0	\$250,000	\$257,500	\$265,200	\$273,200	\$281,400
	CUSTOMER DEPOSITS							
18	Beginning Balance [2]		\$0	\$0	\$0	\$0	\$0	\$0
19	Transfers In		0	0	0	0	0	0
20	Transfers Out		0	0	0	0	0	0
21	Interest Rate	None	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
22	Interest Income		0	0	0	0	0	0
	Transfer of Interest Income							
23	to Revenue Fund		0	0	0	0	0	0
24	Ending Balance		\$0	\$0	\$0	\$0	\$0	\$0
56	TOTAL INTEREST INCOME		\$12,000	\$15,000	\$26,000	\$32,000	\$35,000	\$38,000

Footnotes:

- [1] Cash balances dependent upon the adoption of proposed rate increases shown in Table 10, if any.
 [2] The beginning balance was derived from the City's unaudited trial balances as of September 30, 2022.

Table 10
Town of Lake Park
Solid Waste Rate Study

Projected Sanitation Revenue Requirements

Line No.	Description	Projected Fiscal Year Ending September 30,					
		2023	2024	2025	2026	2027	2028
1	Total Operating Expenses [1]	\$2,249,050	\$2,393,362	\$2,659,229	\$2,800,604	\$2,951,966	\$3,176,784
	<u>Debt Service</u>						
2	Existing Debt Service	\$161,058	\$161,058	\$96,115	\$31,435	\$0	\$0
3	Proposed Debt Service	0	239,485	449,003	595,867	889,521	768,048
4	Annual Debt Service Payments [2]	\$161,058	\$400,543	\$545,118	\$627,302	\$889,521	\$768,048
	<u>Other Revenue Requirements</u>						
5	Allowance for Debris Removal Contractual Expenses	\$0	\$250,000	\$7,500	\$7,700	\$8,000	\$8,200
6	Other Capital Funded from Rates [3]	18,000	21,000	22,050	23,153	24,310	25,526
7	Intragovernmental Transfers - Franchise Fees	0	0	0	0	0	0
8	Operating Reserves - Deposits to/(Uses of)	0	0	0	0	0	0
9	Total Other Revenue Requirements	\$18,000	\$271,000	\$29,550	\$30,853	\$32,310	\$33,726
10	Gross Revenue Requirements	\$2,428,108	\$3,064,906	\$3,233,897	\$3,458,758	\$3,873,797	\$3,978,558
	<u>Less Income and Funds from Other Sources</u>						
11	Other Operating Revenue [4]	\$74,840	\$14,500	\$14,500	\$14,500	\$14,500	\$14,500
12	Interest Income	12,000	15,000	26,000	32,000	35,000	38,000
13	Net Revenue Requirements	\$2,341,267	\$3,035,406	\$3,193,397	\$3,412,258	\$3,824,297	\$3,926,058
	<u>Revenue from Operations</u>						
14	Existing Operating Revenue [4]	\$2,091,883	\$2,185,933	\$2,262,460	\$2,291,938	\$2,368,465	\$2,459,107
15	Prior Year Rate Adjustments	0	0	1,085,981	1,201,892	1,350,338	1,517,849
16	Total Rate Revenue Before Current Year Adjustment	2,091,883	2,185,933	3,348,441	3,493,830	3,718,803	3,976,957
17	<u>Current Year Rate Adjustments</u>						
18	Current Year Rate Adjustment	0.00%	48.00%	3.00%	3.00%	3.00%	3.00%
19	Effective Month	Oct.	Oct.	Oct.	Oct.	Oct.	Oct.
20	% of Current Year Effective	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
21	Total Revenue from Current Year Adjustments	\$0	\$1,049,248	\$100,453	\$104,815	\$111,564	\$119,309
22	Total Revenue	\$2,091,883	\$3,235,181	\$3,448,894	\$3,598,645	\$3,830,367	\$4,096,265
23	Revenue Surplus/(Deficiency) - Transfer to Reserves	(\$249,384)	\$199,775	\$255,498	\$186,387	\$6,070	\$170,208
24	Percent of Rate Revenues	-11.92%	6.18%	7.41%	5.18%	0.16%	4.16%
25							
26	Residential Cart Per Unit Rates						
27	Single Family Per Unit Rate	\$258.37	\$382.39	\$393.86	\$405.68	\$417.85	\$430.39
28	Mobile Home	258.37	382.39	393.86	405.68	417.85	430.39
29	Multi-Family Cart Service	258.37	382.39	393.86	405.68	417.85	430.39
30							
31							
32	Summary of Cash Balances (Year-End)						
33	Unrestricted Operating Fund	\$264,903	\$464,678	\$720,175	\$906,562	\$912,632	\$1,082,840
34	Contingency Fund - Debris Removal Contract Expenses	0	250,000	257,500	265,200	273,200	281,400
35	Total Cash Balances (Year-End)	\$264,903	\$714,678	\$977,675	\$1,171,762	\$1,185,832	\$1,364,240
36	Operating Fund - Days of Annual Expenditures - Minimum	90	90	90	90	90	90
37	Operating Fund - Days of Annual Expenditures - Calculated	41	61	83	97	87	101

Footnotes:

- [1] Amounts derived from Table 4.
[2] Amounts derived from Table 8.
[3] Amounts derived from Table 7.
[4] Amounts derived from Table 2.

Table 11
Town of Lake Park
Solid Waste Rate Study

Summary of Existing and Proposed Rates

Line No.	Description	Existing Charges	Proposed Rates				
			2024	2025	2026	2027	2028
<u>Single-family Cart Service</u>							
1	Annual Charge per Unit	\$258.37	\$382.39	\$393.86	\$405.68	\$417.85	\$430.38
<u>Multifamily Cart Service</u>							
2	Annual Charge per Unit	\$258.37	\$382.39	\$393.86	\$405.68	\$417.85	\$430.38
<u>Multifamily Dumpster Service</u>							
		<u>Per Unit</u>	<u>Per Dumpster</u>	<u>Per Dumpster</u>	<u>Per Dumpster</u>	<u>Per Dumpster</u>	<u>Per Dumpster</u>
3	<u>2 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$196.04	\$290.16	\$298.83	\$307.84	\$317.03	\$326.56
4	<u>2 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$294.06	\$435.24	\$448.24	\$461.76	\$475.54	\$489.84
5	<u>3 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$294.06	\$435.24	\$448.24	\$461.76	\$475.54	\$489.84
6	<u>3 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$441.09	\$652.86	\$672.36	\$692.64	\$713.31	\$734.76
7	<u>4 Cubic Yard Container - 1 Pick Ups</u> Monthly Charge per Unit	\$196.04	\$290.16	\$298.83	\$307.84	\$317.03	\$326.56
8	<u>4 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$392.08	\$580.32	\$597.65	\$615.68	\$634.05	\$653.12
9	<u>4 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$588.12	\$870.48	\$896.48	\$923.52	\$951.08	\$979.68
10	<u>6 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$588.12	\$870.48	\$896.48	\$923.52	\$951.08	\$979.68
11	<u>6 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$882.18	\$1,305.72	\$1,344.72	\$1,385.28	\$1,426.62	\$1,469.52
12	<u>8 Cubic Yard Container - 1 Pick Ups</u> Monthly Charge per Unit	\$392.08	\$580.32	\$597.65	\$615.68	\$634.05	\$653.12
13	<u>8 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$784.16	\$1,160.64	\$1,195.31	\$1,231.36	\$1,268.11	\$1,306.24
14	<u>8 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$1,176.24	\$1,740.96	\$1,792.96	\$1,847.04	\$1,902.16	\$1,959.36
<u>Commercial Dumpster Service</u>							
15	<u>0.5 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$49.01	\$72.54	\$74.71	\$76.96	\$79.26	\$81.64
16	<u>2 Cubic Yard Container - 1 Pick Ups</u> Monthly Charge per Unit	\$98.02	\$145.08	\$149.41	\$153.92	\$158.51	\$163.28
17	<u>2 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$196.04	\$290.16	\$298.83	\$307.84	\$317.03	\$326.56
18	<u>2 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$294.06	\$435.24	\$448.24	\$461.76	\$475.54	\$489.84

Table 11
Town of Lake Park
Solid Waste Rate Study

Summary of Existing and Proposed Rates

Line No.	Description	Existing Charges	Proposed Rates				
			2024	2025	2026	2027	2028
19	<u>2 Cubic Yard Container - 4 Pick Ups</u> Monthly Charge per Unit	\$392.08	\$580.32	\$597.65	\$615.68	\$634.05	\$653.12
20	<u>2 Cubic Yard Container - 5 Pick Ups</u> Monthly Charge per Unit	\$490.10	\$725.40	\$747.07	\$769.60	\$792.57	\$816.40
21	<u>3 Cubic Yard Container - 1 Pick Ups</u> Monthly Charge per Unit	\$147.03	\$217.62	\$224.12	\$230.88	\$237.77	\$244.92
22	<u>3 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$294.06	\$435.24	\$448.24	\$461.76	\$475.54	\$489.84
23	<u>3 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$441.09	\$652.86	\$672.36	\$692.64	\$713.31	\$734.76
24	<u>3 Cubic Yard Container - 4 Pick Ups</u> Monthly Charge per Unit	\$588.12	\$870.48	\$896.48	\$923.52	\$951.08	\$979.68
25	<u>3 Cubic Yard Container - 5 Pick Ups</u> Monthly Charge per Unit	\$735.15	\$1,088.10	\$1,120.60	\$1,154.40	\$1,188.85	\$1,224.60
26	<u>4 Cubic Yard Container - 1 Pick Ups</u> Monthly Charge per Unit	\$196.04	\$290.16	\$298.83	\$307.84	\$317.03	\$326.56
27	<u>4 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$392.08	\$580.32	\$597.65	\$615.68	\$634.05	\$653.12
28	<u>4 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$588.12	\$870.48	\$896.48	\$923.52	\$951.08	\$979.68
29	<u>4 Cubic Yard Container - 4 Pick Ups</u> Monthly Charge per Unit	\$784.16	\$1,160.64	\$1,195.31	\$1,231.36	\$1,268.11	\$1,306.24
30	<u>4 Cubic Yard Container - 5 Pick Ups</u> Monthly Charge per Unit	\$980.20	\$1,450.80	\$1,494.13	\$1,539.20	\$1,585.13	\$1,632.80
31	<u>6 Cubic Yard Container - 1 Pick Ups</u> Monthly Charge per Unit	\$294.06	\$435.24	\$448.24	\$461.76	\$475.54	\$489.84
32	<u>6 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$588.12	\$870.48	\$896.48	\$923.52	\$951.08	\$979.68
33	<u>6 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$882.18	\$1,305.72	\$1,344.72	\$1,385.28	\$1,426.62	\$1,469.52
34	<u>6 Cubic Yard Container - 4 Pick Ups</u> Monthly Charge per Unit	\$1,176.24	\$1,740.96	\$1,792.96	\$1,847.04	\$1,902.16	\$1,959.36
35	<u>6 Cubic Yard Container - 5 Pick Ups</u> Monthly Charge per Unit	\$1,470.30	\$2,176.20	\$2,241.20	\$2,308.80	\$2,377.70	\$2,449.20
36	<u>8 Cubic Yard Container - 1 Pick Ups</u> Monthly Charge per Unit	\$392.08	\$580.32	\$597.65	\$615.68	\$634.05	\$653.12
37	<u>8 Cubic Yard Container - 2 Pick Ups</u> Monthly Charge per Unit	\$784.16	\$1,160.64	\$1,195.31	\$1,231.36	\$1,268.11	\$1,306.24
38	<u>8 Cubic Yard Container - 3 Pick Ups</u> Monthly Charge per Unit	\$1,176.24	\$1,740.96	\$1,792.96	\$1,847.04	\$1,902.16	\$1,959.36

Table 11
Town of Lake Park
Solid Waste Rate Study

Summary of Existing and Proposed Rates

Line No.	Description	Existing Charges	Proposed Rates				
			2024	2025	2026	2027	2028
39	<u>8 Cubic Yard Container - 4 Pick Ups</u> Monthly Charge per Unit	\$1,568.32	\$2,321.28	\$2,390.61	\$2,462.72	\$2,536.21	\$2,612.48
40	<u>8 Cubic Yard Container - 5 Pick Ups</u> Monthly Charge per Unit	\$1,960.40	\$2,901.60	\$2,988.27	\$3,078.40	\$3,170.27	\$3,265.60



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025

Originating Department: Public Works

Agenda Title: Resolution 41-07-25 – Stormwater Rates – Fiscal Year 2026 – 2028

Approved by Town Manager: _____ **Date:** _____

Cost of Item: \$0.00 **Funding Source:** n/a

Account Number: _____ **Finance Signature:** Barbara A. Gould

Advertised:

Date: _____ **Newspaper:** _____

Attachments: Resolution – Stormwater Utility Rate Increases

Stormwater Rate Study (Raftelis, May 2023)

Please initial one:

_____ Yes I have notified everyone

_____ Not applicable in this case

Summary Explanation/Background:

In May 2023, the Town of Lake Park completed a comprehensive Stormwater Rate Study (by Raftelis Financial Consultants, Inc.) to evaluate the sufficiency of the Town's existing rate structure and to provide recommendations on proposed rates over the next five (5) year period to ensure proper support for the Town's stormwater utility's growing infrastructure needs, including pipe rehabilitation, vehicle replacement, compliance requirements and funding reserves.

The Town Commission previously approved the rates for FY 2024 and FY 2025 during the budget process. The proposed Resolution, if approved, would implement the remaining rate increases as outlined/recommended within the 2023 Stormwater Rate Study for Fiscal Years 2026 through 2028.

If approved, the proposed annual non ad-valorem stormwater utility charges for FY 2026 will be included on each residential and non-residential (i.e., commercial/industrial) property's annual tax bill. The charges for all customers are determined based on an equivalent stormwater unit (ESU), which includes all (developed) real property throughout the stormwater utility system's service area.

The Town measures a property's demand on the stormwater system based on each property's impervious area. For residential properties, the average impervious area is 5,202 square feet per dwelling unit or 1.0 ESU. For non-residential properties, the ESUs property are calculated by dividing the total impervious area by 5,202 square feet.

Note: In the event of an emergency or other unforeseen circumstance, the Town Commission retains discretion to modify the scheduled rates; however, such action would not ensure the revenue necessary/needed to complete the projects that were included within the 2023 Stormwater Rate Study.

The approved rates schedule aligns with the Stormwater Master Plan improvements adopted by the Town Commission and reflects a phased-in structure to support necessary capital improvements and stormwater resiliency as well as long-term financial sustainability.

RECOMMENDATION:

I move to adopt Resolution 41-07-25 approving the Stormwater Rates for FY 2026 - FY 2028.

RESOLUTION 41-07-25

A RESOLUTION OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, APPROVING THE REMAINING YEARS OF RATE INCREASES AS RECOMMENDED IN THE STORMWATER UTILITY RATE STUDY CONDUCTED BY RAFTELIS FINANCIAL CONSULTANTS, INC.; AUTHORIZING THE IMPLEMENTATION OF THE ANNUAL NON-AD VALOREM ASSESSMENTS FOR FISCAL YEARS 2026 THROUGH 2028; AND PROVIDING FOR MODIFICATIONS IN THE EVENT OF EMERGENCIES OR UNFORESEEN CIRCUMSTANCES; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town of Lake Park, Florida (“Town”) is a municipal corporation of the State of Florida with such power and authority as has been conferred upon it by the Florida Constitution and Chapter 166, Florida Statutes; and

WHEREAS, the Town operates the Stormwater utility system as a self-supporting enterprise fund; and

WHEREAS, the Town retained Raftelis Financial Consultants, Inc. (“Raftelis”) to perform a comprehensive rate study to assess the financial condition of the Stormwater utility system and to make rate recommendations for Fiscal Years 2024 through 2028; and

WHEREAS, the Stormwater Rate Study Final Report dated May 2023 concluded that without scheduled rate increases, the utility would face operational deficits and be unable to fund infrastructure improvements or meet working capital reserve goals; and

WHEREAS, the Town Commission previously adopted the Fiscal Year 2024 and 2025 rates and now desires to approve the remaining years of the recommended rate adjustments for Fiscal Years 2026 through 2028 to ensure long-term financial sustainability and system resiliency; and

WHEREAS, the proposed Stormwater utility rates are as follows:

- **Fiscal Year 2026:** \$40.52/month per ESU (\$486.24/year)
- **Fiscal Year 2027:** \$45.79/month per ESU (\$549.48/year)
- **Fiscal Year 2028:** \$49.91/month per ESU (\$598.92/year)

WHEREAS, the Town Commission acknowledges that these rates may be modified only in the event of an emergency or unforeseen circumstance that requires reallocation of funding or deferment of utility operations and/or capital projects, and any such modification shall be brought before the Town Commission for review and action; and

WHEREAS, the Town Commission understands that any disruption in the implementation of the proposed rate schedule may hinder the delivery of planned stormwater capital improvements and limit the utility’s capacity to address flood resiliency and compliance requirements.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AS FOLLOWS:

Section 1. The foregoing recitals are true and correct and are incorporated herein by reference.

Section 2. The Town Commission hereby approves the implementation of the Stormwater utility rate increases as recommended by Raftelis for Fiscal Years 2026, 2027, and 2028.

Section 3. The approved rates shall be collected through the Town's annual non-ad valorem special assessment process and shall apply to all developed properties based on their respective Equivalent Stormwater Unit (ESU) designation.

Section 4. In the event of an emergency or unforeseen circumstance, the Town Manager shall present a recommendation to the Town Commission for any temporary rate modifications. Such a recommendation shall include an explanation of the circumstances and a description of any anticipated impacts on stormwater infrastructure investments or operational performance.

Section 5. This Resolution shall take effect immediately upon its adoption.



TOWN OF LAKE PARK

Stormwater Rate Study

FINAL REPORT / MAY 2023

May 30, 2023

Mr. Roberto F. Travieso, MPA
Director, Public Works Department
Town of Lake Park
640 Old Dixie Highway
Lake Park, FL 33403

Subject: **Stormwater Rate Study**

Dear Mr. Travieso:

Raftelis Financial Consultant's, Inc. (Raftelis) has completed its study to evaluate the adequacy of the stormwater management system's (System) utility rates for the Town of Lake Park, Florida (Town), and has summarized the results in this report for your consideration. The stormwater utility rates are collected annually through a non-ad valorem special assessment. This report summarizes the financial forecast and proposed annual assessments for the five- (5) year period ending September 30, 2028 (Study Period).

To develop the financial forecast and proposed stormwater rates, we have relied upon certain information and data collected from the Town including the Town's annual financial reports; the adopted Fiscal Year 2023 operating budget; the 20-year Needs Assessment; estimated capital expenditures; customer statistics; periodic reports; records of operation; and other information and data provided by the Town. To the extent we have performed our analyses using certain data and information obtained from the Town and others in the preparation of this report, we have relied upon such information to be accurate, and no assurances are intended, and no representation or warranties are made with respect thereto or the use made herein.

Introduction

The Town is required to manage stormwater runoff to i) improve the quality of stormwater discharges by removing pollutants; ii) to protect life, the environment and wildlife habitat; and iii) to protect public / private property from flood damage. The drainage system consists mostly of grassed swales for conveyance of runoff to catch basins and underground pipes / structures. The stormwater system discharges through 15 major outfalls to the Lake Worth Lagoon and the C-17 Canal.

The utility is permitted and regulated by the Florida Department of Environmental Protection (FDEP). Routine testing and maintenance are required to provide daily and monthly reports to ensure that the system infrastructure operates appropriately. In 2022, the Town was required by Florida Law to prepare a 20-year Needs Assessment. The study was prepared by the Town's stormwater engineer who concluded that the aging drainage infrastructure is failing at a faster rate. An estimated 20% of the 10.6 miles of pipe infrastructure should be replaced immediately. The Town's stormwater engineer estimates that the remaining pipe will need to be replaced over the next 20 years. Climate change and environmental stressors also pose a challenge to the Town's

drainage system's capacity to handle storm events of both small and large magnitudes. The National Oceanic and Atmospheric Administration (NOAA) estimates that land and ocean temperatures have increased an average of 0.14 degrees (Fahrenheit) per decade since 1880 and predicts a 20% to 30% increase in extreme precipitation by 2050.

The 20-year Needs Assessment recommendations to address the Town's concerns of failing infrastructure, climate change, and sea level rise were summarized in a master plan report that was adopted by the Town Commission on July 21, 2021. Pursuant to Resolution No. 40-07-21, the Town Commission found that the proposed master plan improvements were consistent with "the Town's commitment to preserve life and property, and to mitigate the magnitude, impact, and severity of severe flooding in the Town."

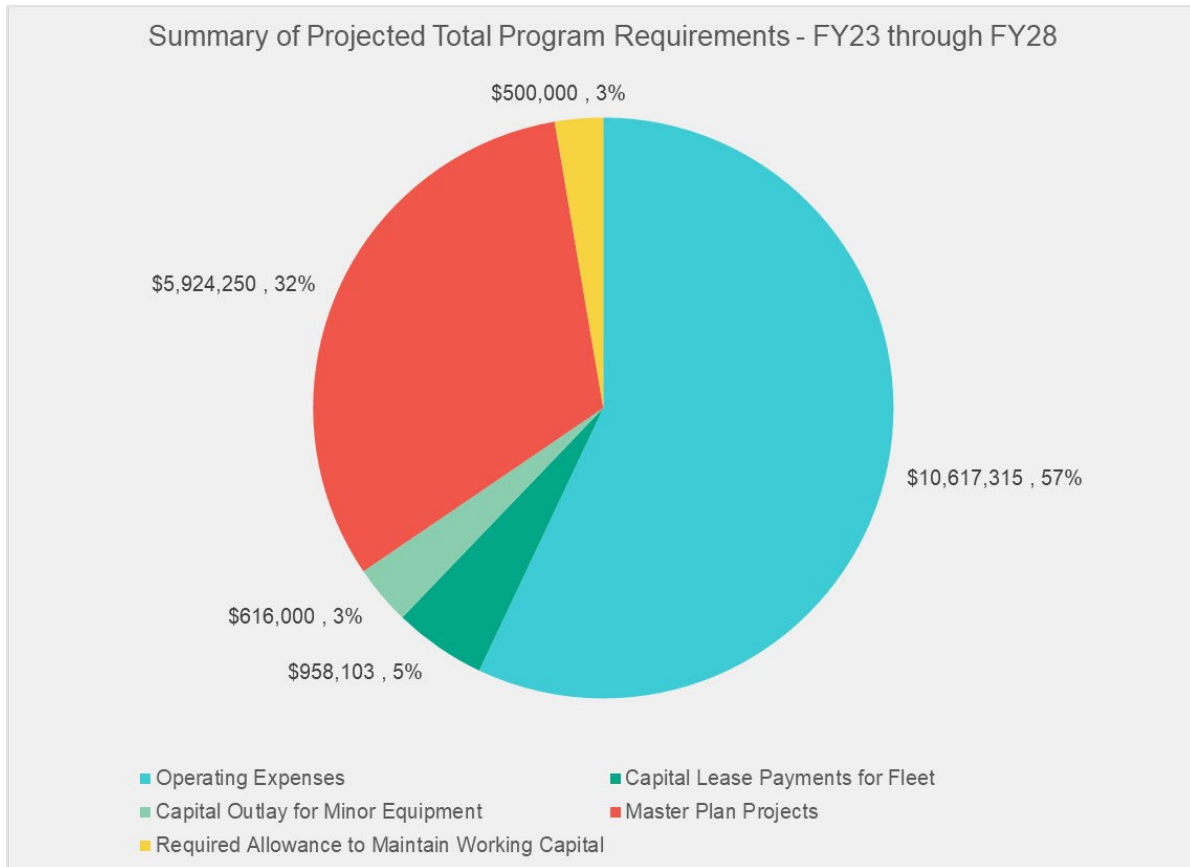
The Town's stormwater system is established as a self-supporting enterprise fund with separate accounting from other departments and resources. The Town has historically used operating reserves to cover actual expenses that exceeded the budgeted amounts while phasing in rate adjustments over time as follows:

Historical Monthly Rates per Equivalent Stormwater Unit (ESU)

Assessment Year	Monthly	Annual
2018-2019	\$11.00	\$132.00
2019-2020	\$12.00	\$144.00
2020-2021	\$12.00	\$144.00
2021-2022	\$12.50	\$150.00
2022-2023	\$13.50	\$162.00

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Based on information provided by Town staff, the total projected program requirements during the Study Period exceeds \$18.6 million as summarized below:



As shown above, the program requirements include operating expenses, capital lease payments to replace existing stormwater trucks, purchases for minor equipment, funding for the rehabilitation and replacement of existing stormwater infrastructure, and allowances to establish and create cash reserve funds to address unforeseen contingencies and natural disasters. There are several primary cost drivers that have had a significant impact on System costs:

- Current operating deficiency
 - FY23 operating expenses exceed current revenues by approximately \$250,000 (24% of existing rates)
- High costs, frequency, and severity of mechanical repairs
 - Replacement of major components due to aging fleet
- Compensation and Recruitment:
 - Highly competitive labor market
 - Stormwater Technician II positions vacant 18+ months
 - Recommended changes to operating salaries and associated benefits

- Competition: long lead times for materials, supplies, equipment, and vehicles
 - Inflationary increases on all business expenditures
- Increased infrastructure repairs and maintenance costs
 - Cure-in-place pipe / pipe replacements
- Newly identified master plan improvement projects
 - Result of 20-year Needs Assessment, as required by State Law

The stormwater utility has exhausted its reserve funds, and therefore cannot continue to operate without a balanced budget that meets the annual expenditure requirements. On January 18, 2023, the Town Commission engaged Raftelis to prepare a stormwater utility rate analysis. The goal of this study is to assist the Town in establishing stormwater rates that are sufficient to recover the cost of operating, maintaining, repairing, and financing the System. In order to achieve this goal, certain criteria were established in conjunction with the Town staff that served as guidelines for developing the proposed stormwater rates. The criteria established included: i) proposed rates should address System-wide drainage improvements within the community where a public benefit is served; ii) the Town Commission should consider borrowing a portion of the capital improvement costs early in the Study Period as the master plan recommendations are implemented but becoming self-sufficient over time (by Fiscal Year 2028); iii) rate increases should be phased-in over time to the extent possible; and iv) the Town Commission should consider adopting a reserve policy for the System to provide adequate working capital reserves equal to not less than 90 days of annual expenditures.

As outlined in this report, stormwater rates are proposed to be adjusted so that the revenues derived from such rates will support the revenue requirements of the System on a stand-alone basis without any contributions from the Town's General Fund. The level of proposed annual rate increases is phased-in over time. The stormwater rate revenues have been specifically pledged to pay operating costs, and to provide a source of funding for certain capital drainage projects where a public benefit is served. Based on the projected financial results summarized herein, the study shows that by implementing a series of annual rate increases over the next five years, that the Town can stabilize its operating budget while providing a source of additional funding to make significant capital improvements to the System.

The recommendations of this study are based on a financial forecast developed for the System. The financial forecast starts with a projection of customers and revenues, proceeds next with identification of utility operating and capital needs, evaluates the availability and proposed use of existing operating reserves, and, finally, establishes the timing of rate adjustments. The basis for the study's recommendations is a financial forecast developed for Fiscal Years 2023 through 2028 (previously defined as the Study Period).

Projected Revenues

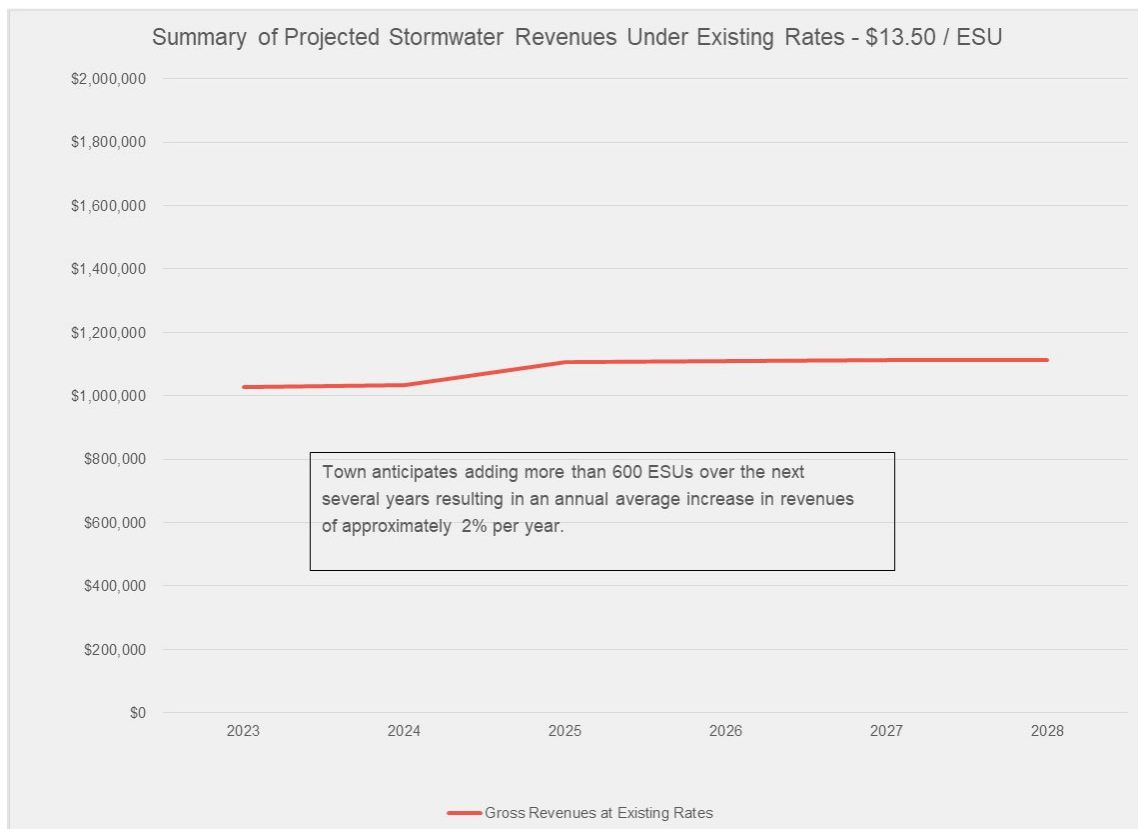
During Fiscal Year 2023, it is estimated that the Town serves an average of 3,000 stormwater accounts representing approximately 6,600 equivalent stormwater units (ESUs). This includes all (developed) real property throughout the stormwater utility system's service area. The Town measures a property's demand on the stormwater system based on each property's impervious area. For residential properties, the average impervious area is 5,202 square feet per dwelling unit or 1.0 ESU. For non-residential properties, the ESUs per

property are calculated by dividing the total impervious area by 5,202 square feet. The Town collects the stormwater utility rates and charges through an annual non-ad valorem special assessment. The current revenues are approximately \$1.1 million per year after considering that most property owners take advantage of the 4.0% early payment discount.

In recent years, due to changes in land use, the Town's overall ESU count has decreased. However, Town staff have identified several significant construction projects within the community that will place additional demands on the stormwater utility system. The Town's Community Development Department provided a preliminary list of property developments occurring over the Study Period. As shown in Table 1 on Page 16 of the Report, the Town anticipates adding more than 600 new ESUs during the Study Period. Specific construction projects include, but are not limited to, Congress Business Park, Nautilus 220, and Silver Beach Industrial Park.

The Town does offer stormwater mitigation credits to non-residential property owners who make infrastructure improvements on their property that may store and/or treat stormwater runoff which reduces the burden on the existing system. The Town also offers stormwater credits to both residential and non-residential properties who may implement "green infrastructure," such as, rain gardens, rain barrels, permeable pavers, and other improvements consistent with the applicable Town Ordinance.

Based on the projected ESUs anticipated to be served over the Study Period, Table 2 on Page 17 of the Report provides an estimate of projected revenues based on the current (monthly) stormwater rate of \$13.50 per ESU. The following chart summarizes the projected revenues for the Study Period:



Projected Stormwater Program Requirements

The various components of cost associated with operating and maintaining a municipally owned stormwater utility system, as well as the cost of funding the renewal and replacement of facilities and capital improvements for additions and upgrades, are generally referred to as the utility cash revenue requirements. The sum of these cost components, after adjusting for other income and other operating revenues available to the utility, represents the net revenue requirements of the utility system. The revenue requirements for the Study Period were based on an estimate of stormwater costs for the current budget year, plus the five- (5) fiscal year period ending September 30, 2028. The projected revenue requirements include the various generalized cost components described below:

- Operating Expenses: These expenses include the cost of labor and personnel related costs, vehicle maintenance, stormwater collection system repairs, utilities, operating supplies, equipment repairs and maintenance, and other items necessary for the operation and maintenance of the System.
- Other Revenue Requirements: This component of cost includes, in general, any recurring capital improvements to be funded from revenues such as vehicle lease payments, minor equipment replacement, and System-wide drainage improvements that serve a public benefit.

Principal Assumptions and Considerations

The projected cash revenue requirements, as summarized at the end of this section, reflect certain assumptions, considerations, and analyses. The principal assumptions, considerations, and analyses that are included in the development of the projected System revenue requirements for the Study Period are as follows:

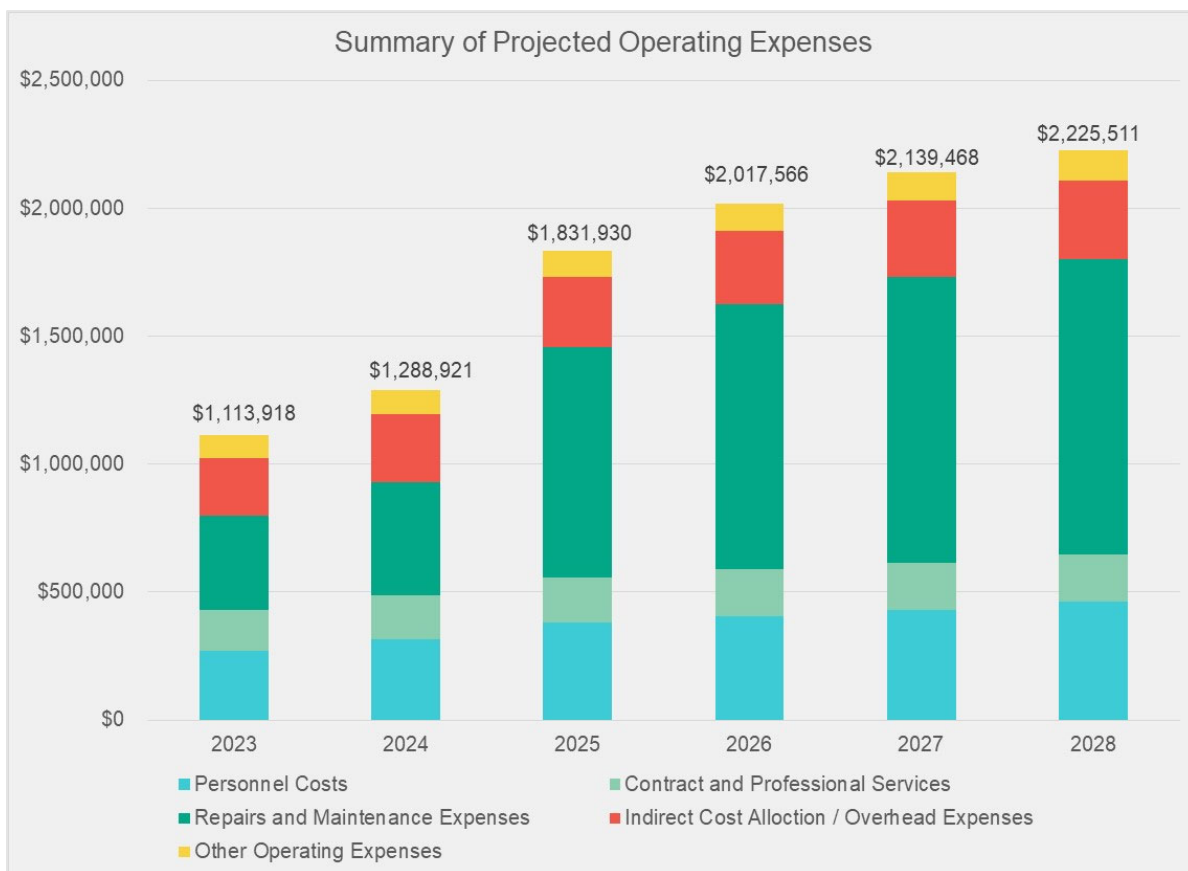
1. The adopted Fiscal Year 2023 budget associated with the operations of the System was used as the basis for the expenditure projections set forth herein. Unless otherwise noted, the underlying assumptions and expenditure amounts included therein are assumed to be reasonable and reflect anticipated operations. Such budgetary amounts are incorporated into the revenue requirement component of the study, except for adjustments and assumptions as noted hereunder.
2. Projected revenues from current stormwater rates are based on the schedule of rates currently in effect as of the date of this report, which became effective on October 1, 2022. Such rates were applied to the customer and ESU forecast previously discussed in this report and shown in Table 1 on Page 16 of the Report. Table 2 on Page 17 of the Report also summarizes the projected rate revenue under existing rates for the Study Period. Annual rate revenues under existing rates are projected to be approximately \$1.1 million per year.
3. The operations and maintenance expenses of the System budgeted for Fiscal Years 2023 are summarized in Table 3 on Page 18 of the Report. The amounts for Fiscal Year 2023 are then projected for the remaining five (5) years of the Study Period (i.e., through Fiscal Year 2028) as shown in Table 4 on Page 21 of the Report. The projected operating costs are based on certain inflation assumptions and other adjustments provided by Town staff for the Study Period. The adjustment factors and expense allowances are identified in Tables 5 through 8 on Pages 24 through 30 of the Report, which were used

to estimate the annual expenses summarized in Table 4 on Page 21 of the Report. The projected operating expenses were developed for the Study Period as follows:

- a. To maintain additional stormwater infrastructure that will be added to the System from new development, Town staff proposes to hire one (1) additional Stormwater Technician II during Fiscal Year 2025 at an estimated annual cost of approximately \$47,000 per year.
- b. Town staff provided a detailed plan to conduct operating repairs and maintenance over the Study Period. Due to increasingly deteriorating infrastructure, annual expenses associated with cure-in-place pipe / pipe replacements are estimated to increase over time from approximately \$0.4 million per year in Fiscal Year 2023 to approximately \$1.2 million per year by Fiscal Year 2028.
- c. The Town also plans to enter into an agreement to provide remote (SCADA) monitoring services for Lake Shore Drive Pump Station. Annual expenses for such monitoring services are estimated to be well below \$10,000 per year.
- d. Expenses beyond Fiscal Year 2023 were increased based on estimated inflationary adjustments as follows:
 - Labor: 15% (Fiscal Year 24); then 4% per year
 - Health and Liability Insurance: 15% per year
 - Fuel and Utilities: 5.0% per year
 - General Inflation: 3% per year

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The following chart summarizes the projected operating expenses as follows:



4. As of the date of this report, the System has one capital lease outstanding for the existing street sweeper. The annual payment is \$55,000 per year, which ends in Fiscal Year 2024. Town staff has provided a list of proposed vehicles replacements with the following estimated payments:

Proposed Vehicle Replacements

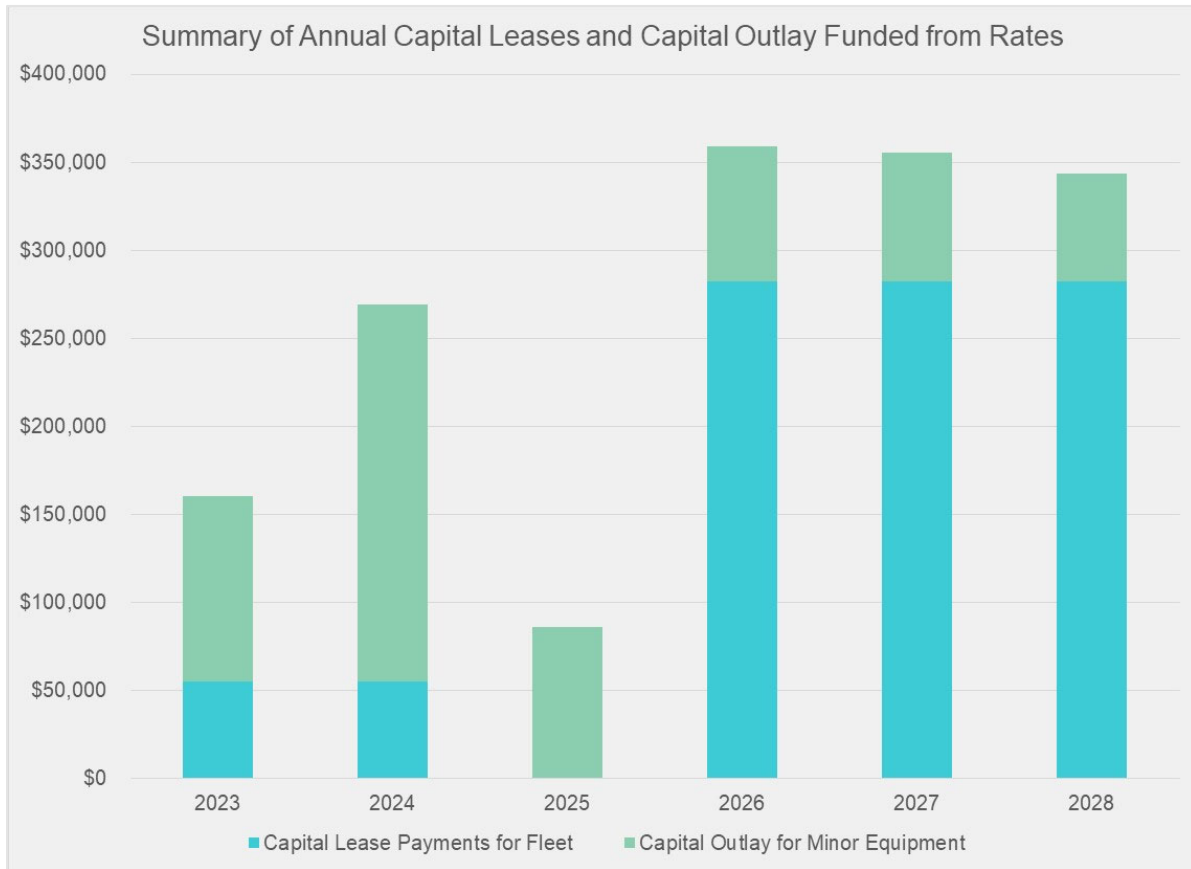
Vehicle Name	Year Acquired	Replacement Year	Lead Time	Lease Payment [1]
New Holland Skid Steer / Loader	2006	2024	2025	\$75,000 [2]
Vac-Con Vacuum Truck	2009	2024	2026	\$190,000
Tymco Street Sweeper	2020	2026	2026	\$92,000

[1] Lease term assumed to be four (4) years at a 5.27% annual interest rate.

[2] One-time payment of approximately \$75,000.00.

Town staff also provided a detailed list of minor capital outlay and equipment needs for the Study Period. The annual average expenditure requirements are less than \$100,000 per year. Tables 9 and 10 on Pages 31 through 35 of the Report provide a detailed listing of capital outlay, vehicle needs, and

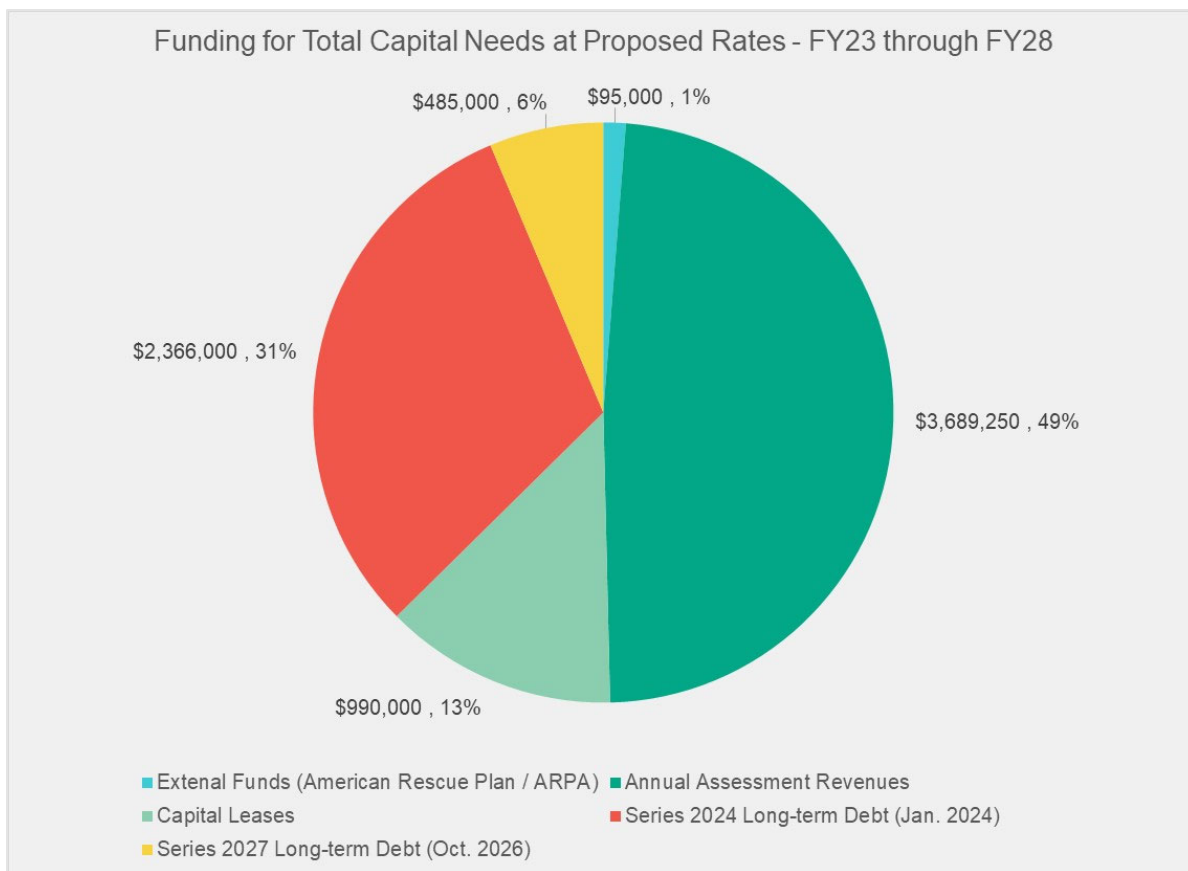
lease payment assumptions. The following chart summarizes the estimated annual costs to be funded from stormwater utility rates:



- The Town prepared a master plan to address the System's deficiencies that were identified in the 20-year Needs Assessment. The Needs Assessment was prepared as required by State Law. The project improvements necessary to address system rehabilitation and resiliency total more than \$20 million. After providing an allowance for future inflation, we included an annual allowance for capital improvements of approximately \$1.2 million per year (Fiscal Years 2024 through 2028).

Based on discussions with Town staff, no grant revenues to help fund a portion of the master plan improvements have been assumed since future grant awards, if any, i) are project-specific for improvements that have already been designed; and ii) may require "matching" funds from the stormwater utility system that are not currently available. The Town has a fulltime grant writer on staff who will assist the utility with applying for future grants. In addition, the proposed rates outlined in this study, if adopted, may generate cash reserves over time that could be used to match grant proceeds.

Our funding strategy to address the master plan funding requirements is based on borrowing a portion of the project costs early in the Study Period to allow the Town Commission to phase-in rate adjustments over time, while achieving self-sufficient and self-sustaining operations by Fiscal Year 2028. The following chart summarizes the recommended funding sources to meet the total System capital requirements needs under the proposed rates:

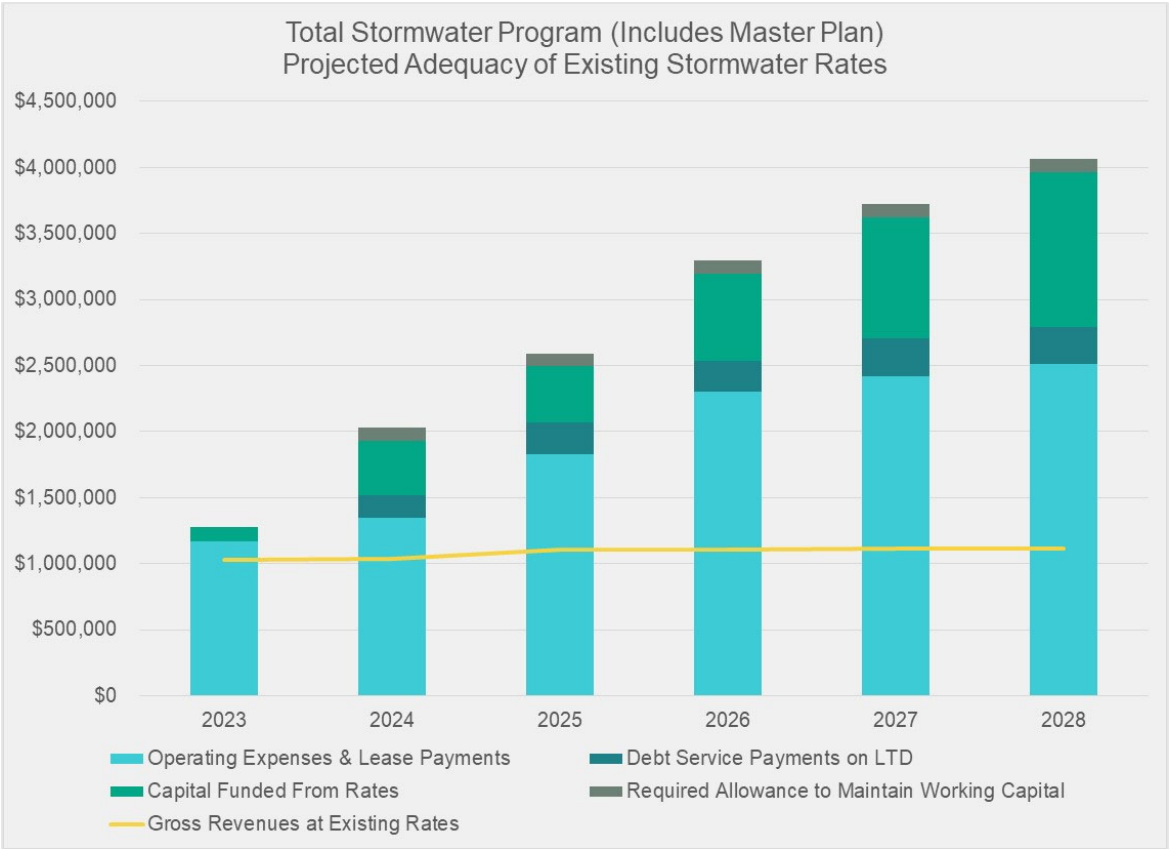


6. As shown above, we have made allowances for issuing long-term debt to fund a portion of the project costs. Table 11 on Page 36 of the Report summarizes the borrowing assumptions and estimated debt service payments over the Study Period. While actual borrowing terms will be determined at a future date, our major assumptions include the following:

- 15 years at 5% annual interest cost
 - Included a 3% allowance for financing costs
- Series 2024 Long-term Debt assumed issued Jan. 2024
 - \$2.4 million loan / \$235,000 annual payment
- Series 2027 Long-term Debt assumed issued Oct. 2026
 - \$0.5 million loan / \$50,000 annual payment

Projected Adequacy of Existing Stormwater Rates

Table 12 on Page 38 of the Report provides a summary of the projected net cash flows of the System for the Study Period. Based upon the assumptions used to prepare the System's financial forecast regarding operating expenses and capital requirements, the projected net revenue requirements of the System when compared to revenues under existing rates are summarized as follows:



As can be seen in the above summary, and in Table 12 on Page 38 of the Report, the projected revenue deficiency is estimated to be approximately \$1.0 million in Fiscal Year 2024, which may increase to \$2.2 million by Fiscal Year 2026, and \$3.0 million by Fiscal Year 2028. By Fiscal Year 2028, operating expenses and capital lease payments comprise approximately half (50%) of the projected revenue deficiency, while the remaining capital improvement costs and annual debt service payments make up the remaining shortfall.

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Existing and Proposed Rates

The Town currently charges \$13.50 per month per equivalent stormwater unit (ESU) for all developed properties, which results in an annual non-ad valorem assessment of \$162 per ESU. To meet the stormwater utility program requirements identified for the Study Period, the following assessments are proposed:

Proposed Stormwater Rates

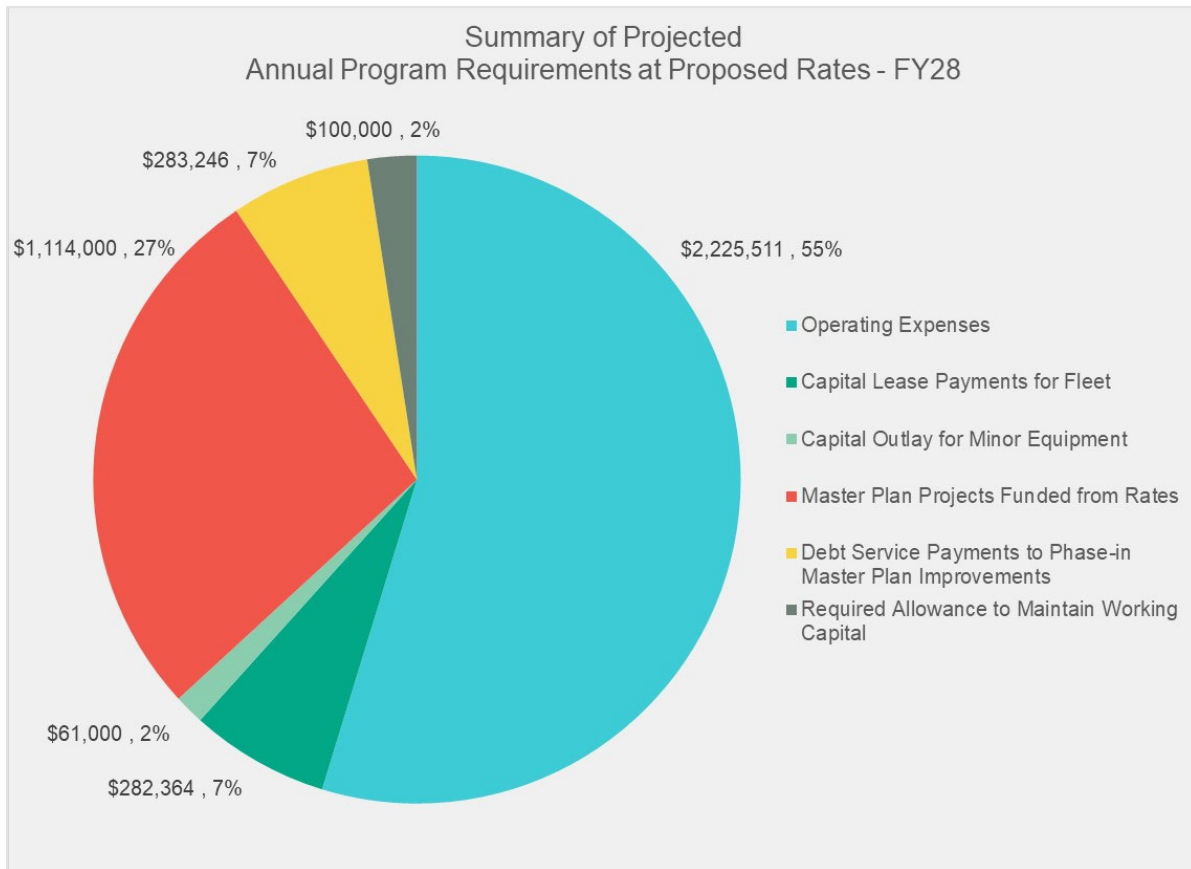
Description	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Funds Total Program (Including Master Plan Improvements)					
Percent Rate Increase	89%	26%	26%	13%	9%
Proposed Monthly Charge per ESU (Current Fee: \$13.50)	<u>\$25.52</u>	<u>\$32.16</u>	<u>\$40.52</u>	<u>\$45.79</u>	<u>\$49.91</u>
Proposed Annual Assessment per ESU (Current Fee: \$162.00)	\$306.24	\$385.92	\$486.24	\$549.48	\$598.92

As shown above, this study recommends that a series of adjustments be made to the annual assessment. Key benefits of the proposed rate plan include the following:

- Phased-in approach
- Utility becomes self-sufficient after Fiscal Year 2028
- Builds reserves over time
- Under certain conditions, rate may be adjusted by grant revenues

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If the proposed assessments are approved and implemented over the Study Period, by Fiscal Year 2028, the proposed monthly assessment of \$49.91 per ESU (\$598.92 per year) is estimated to fund the following expenditures:



Conclusions and Recommendations

Based on our studies, assumptions, considerations, and analyses as summarized herein, we are of the opinion that:

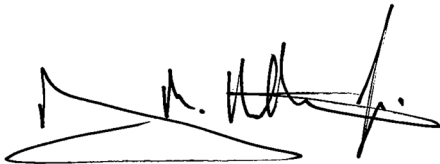
1. The stormwater utility should operate as a self-supporting enterprise fund with separate accounting from other Town departments.
 - a. The Town has consistently used operating reserves to cover actual expenses, but those reserves have been depleted.
2. The Town Commission should consider adopting a reserve policy for the stormwater utility to provide working capital and to help address unforeseen contingencies.
 - a. Town Commission should consider adopting a reserve policy for the stormwater utility to provide working capital and to help address unforeseen contingencies.

3. The existing rates are not adequate to cover the current operations.
 - a. Additional adjustments are also needed to adequately fund the Town's master plan improvement projects.
4. The Town Commission should consider borrowing a portion of the capital improvements in order to phase in the proposed assessments over time.
 - a. The Town Commission should consider adopting the proposed non-ad valorem assessment schedule for Fiscal Years 2024 through 2028 as outlined in this study.
5. This study should be updated within five (5) years.

We appreciate the opportunity to be of service to the Town and would like to thank the Town's staff for their assistance and cooperation during the course of this study.

Respectfully submitted,

RAFTELIS FINANCIAL CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read 'M. Hamilton, Jr.', with a large, sweeping flourish underneath.

Murray M. Hamilton, Jr.

Vice President

MMH/dlc
Attachments

List of Tables

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Table 1
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Summary of Historical and Projected Accounts, ERUs, and Stormwater Revenue

Line No.	Description	Actual [1] 2022	Projected Fiscal Year Ending September 30, [2]					
		2023	2024	2025	2026	2027	2028	
	Stormwater Properties							
1	Annual Average Accounts	2,976	2,986	2,987	2,994	3,001	3,009	3,016
2	Annual Average ESU's (Estimated)	6,604	6,613	6,642	7,110	7,128	7,146	7,163
3	Existing Rate Per ESU	\$12.50	\$13.50	\$13.50	\$13.50	\$13.50	\$13.50	\$13.50
4	Annual Revenue Under Existing Rates	\$990,528	\$1,071,306	\$1,076,004	\$1,151,820	\$1,154,700	\$1,157,579	\$1,160,459
5	Total Annual Average Accounts	2,976	2,986	2,987	2,994	3,001	3,009	3,016
6	Total Annual Average ESU's	6,604	6,613	6,642	7,110	7,128	7,146	7,163
7	Total Annual Revenue Under Existing Rates	\$990,528	\$1,071,306	\$1,076,004	\$1,151,820	\$1,154,700	\$1,157,579	\$1,160,459

Footnotes:

[1] Amounts provided by Town staff.

[2] Projected amounts based information provided by the Town's Stormwater Engineer.

Table 2
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Summary of Gross Revenues Under Existing Rates

Line No.	Description	Amended 2022	Adjustments	Adjusted 2022	Budgeted 2023	Adjustments	Adjusted 2023	Escalation Reference	Projected Fiscal Year Ending September 30,				
									2024	2025	2026	2027	2028
Stormwater Operating & Non-operating Revenues													
Operating Revenues [1]													
1	Stormwater Revenue (Levied)	\$990,529	\$0	990,529	\$1,071,306	\$0	1,071,306	Link	\$1,076,004	\$1,151,820	\$1,154,700	\$1,157,579	\$1,160,459
2	Early Payment Discount (4%)	(39,621)	0	(39,621)	0	(42,852)	(42,852)	Calculated	(43,040)	(46,073)	(46,188)	(46,303)	(46,418)
3	Total Operating Revenues	\$950,907	\$0	\$950,907	\$1,071,306	(\$42,852)	\$1,028,454		\$1,032,964	\$1,105,747	\$1,108,512	\$1,111,276	\$1,114,040
Non-operating Revenues													
4	Interest Income [2]	\$61	\$0	\$61	\$0	\$0	\$0	Constant	\$0	\$0	\$0	\$0	\$0
5	Miscellaneous Revenues	548	0	548	0	0	0	Constant	0	0	0	0	0
6	Sale of Surplus Property	13,213	0	13,213	0	0	0	Constant	0	0	0	0	0
7	Grants, ARPA & Donations	1,453,356	(1,453,356)	0	95,000	(95,000)	0	Constant	0	0	0	0	0
8	Use of Fund Balance	0	0	0	201,072	(201,072)	0	Constant	0	0	0	0	0
9	Total Non-operating Revenues	\$1,467,178	(\$1,453,356)	\$13,822	\$296,072	(\$296,072)	\$0		\$0	\$0	\$0	\$0	\$0
10	Total Stormwater Operating & Non-operating Revenues	\$2,418,085	(\$1,453,356)	\$964,729	\$1,367,378	(\$338,924)	\$1,028,454		\$1,032,964	\$1,105,747	\$1,108,512	\$1,111,276	\$1,114,040

Amounts derived from Table 1.

[2] Amount calculated separately on Table 9.

Table 3
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Allocation of Operating Expenses to the Stormwater Utility Function

		Fiscal Year Ending September 30,					
Line No.	Description	Budget 2023	Adjustments	Adjusted 2023	Allocation Basis	Stormwater Allocation	Total Allocated to Stormwater
Budgeted Stormwater Expenses [1]							
<u>Personnel Services:</u>							
1	Payroll	\$173,844	\$0	\$173,844	Direct Assignment	100%	\$173,844
2	Overtime	2,500	0	2,500	Direct Assignment	100%	2,500
3	Other Benefits	0	0	0	Direct Assignment	100%	0
4	Social Security	13,490	0	13,490	Direct Assignment	100%	13,490
5	Pension Expense	13,591	0	13,591	Direct Assignment	100%	13,591
6	Employee Insurance	62,304	0	62,304	Direct Assignment	100%	62,304
7	Workers' Compensation Insurance	4,750	0	4,750	Direct Assignment	100%	4,750
8	Additional Personnel	0	0	0	Direct Assignment	100%	0
9	Total Personnel Services	\$270,479	\$0	\$270,479	Allocated Result	100%	\$270,479
<u>Operating Expenses:</u>							
10	Other Contractual Services	\$65,072	\$0	\$65,072	Direct Assignment	100%	\$65,072
11	Other Contractual Services - Incremental	0	0	0	Direct Assignment	100%	0
12	Professional Services	95,350	0	95,350	Direct Assignment	100%	95,350
13	Permit Fees	4,250	0	4,250	Direct Assignment	100%	4,250
14	Travel & Training	1,800	0	1,800	Direct Assignment	100%	1,800
15	Repairs & Maintenance	367,000	0	367,000	Direct Assignment	100%	367,000
16	Repairs & Maintenance - Projected by City Staff	0	0	0	Direct Assignment	100%	0
17	Telephone	1,230	0	1,230	Direct Assignment	100%	1,230
18	Postage	500	0	500	Direct Assignment	100%	500
19	Utilities	12,600	1,260	13,860	Direct Assignment	100%	13,860
20	Rental Agreement Equipment	1,500	0	1,500	Direct Assignment	100%	1,500
21	Operating Leases	6,000	786	6,786	Direct Assignment	100%	6,786
22	Insurance	8,626	0	8,626	Direct Assignment	100%	8,626
23	Maintenance of Motor Equipment	5,000	0	5,000	Direct Assignment	100%	5,000
24	Office Supplies	1,000	0	1,000	Direct Assignment	100%	1,000
25	Fuel	8,400	0	8,400	Direct Assignment	100%	8,400
26	Other Supplies	22,320	0	22,320	Direct Assignment	100%	22,320
27	Uniforms and Clothing	2,400	0	2,400	Direct Assignment	100%	2,400
28	Tools	500	0	500	Direct Assignment	100%	500

Table 3
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Allocation of Operating Expenses to the Stormwater Utility Function

Line No.	Description	Fiscal Year Ending September 30,			Allocation Basis	Stormwater Allocation	Total Allocated to Stormwater
		Budget 2023	Adjustments	Adjusted 2023			
29	Subscriptions and Memberships	10,500	0	10,500	Direct Assignment	100%	10,500
30	Total Operating Expenses	<u>\$614,048</u>	<u>\$2,046</u>	<u>\$616,094</u>	Allocated Result	100%	<u>\$616,094</u>
	<u>Capital Outlay:</u>						
31	Drainage Projects	\$75,000	(\$75,000) [3]	\$0	Direct Assignment	100%	\$0
32	CCTV Rover Camera System	95,000	(95,000) [3]	0	Direct Assignment	100%	0
33	Jet Cleaning Heads	10,000	(10,000) [3]	0	Direct Assignment	100%	0
34	Holland Farm Tractor	20,000	(20,000) [3]	0	Direct Assignment	100%	0
35	Other Capital Equipment	0	0 [3]	0	Direct Assignment	100%	0
36	Total Capital Outlay	<u>\$200,000</u>	<u>(\$200,000)</u>	<u>\$0</u>	Allocated Result	0%	<u>\$0</u>
	<u>Debt Service (Capital Lease):</u>						
37	Street Sweeper - Principal	\$51,916	\$0 [4]	\$51,916	Direct Assignment	100%	\$51,916
38	Street Sweeper - Interest	\$3,590	\$0 [4]	\$3,590	Direct Assignment	100%	\$3,590
39	Total Debt Service	<u>\$55,506</u>	<u>\$0</u>	<u>\$55,506</u>	Allocated Result	100%	<u>\$55,506</u>
	<u>Other Uses:</u>						
40	Carryforward Fund Balance	\$0	\$0 [5]	\$0	Direct Assignment	100%	\$0
41	Indirect Cost Allocation	227,345	0	227,345	Direct Assignment	100%	227,345
42	Total Other Uses	<u>\$227,345</u>	<u>\$0</u>	<u>\$227,345</u>	Allocated Result	100%	<u>\$227,345</u>

Table 3
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Allocation of Operating Expenses to the Stormwater Utility Function

Line No.	Description	Fiscal Year Ending September 30,					Total Allocated to Stormwater
		Budget 2023	Adjustments	Adjusted 2023	Allocation Basis	Stormwater Allocation	
	<u>Contingency:</u>						
43	Contingency (0.00%)	\$0	\$0	\$0 [6]	Direct Assignment	100%	\$0
44	Total Contingency	\$0	\$0	\$0	Allocated Result	0%	\$0
45	Total Stormwater Expenses	<u>\$1,367,378</u>	<u>(\$197,954)</u>	<u>\$1,169,424</u>	<u>Allocated Result</u>	<u>100%</u>	<u>\$1,169,424</u>

Footnotes:

- [1] Amounts reflect the expenditures for Fiscal Year 2023 as provided by Town staff.
- [2] Amount increased due to the replacement of an (operating) leased vehicle.
- [3] Amount removed from operating expenses and shown separately as part of the capital plan.
- [4] Typically debt service payments are excluded from operating expenses; however, the expenses associated with a capital lease have been included, if any.
- [5] Amount reflects transfers to operating reserves, which such amounts, if any, are calculated on Table 12.
- [6] Amount estimated by Town staff, if any.

Table 4
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Projected Operating Expenses and Capital Leases

Line No.	Description	Amended [1] 2023	Escalation Reference [2]	Projected Fiscal Year Ending September 30,				
				2024	2025	2026	2027	2028
Stormwater Operating Expenses								
Personnel Services:								
1	Payroll	\$173,844	Labor	\$202,928	\$211,045	\$219,487	\$228,267	\$237,397
2	Overtime	2,500	Labor	2,918	3,035	3,156	3,283	3,414
3	Other Benefits	0	Labor	0	0	0	0	0
4	Social Security	13,490	Labor	15,747	16,377	17,032	17,713	18,422
5	Pension Expense	13,591	Labor	15,865	16,499	17,159	17,846	18,560
6	Employee Insurance	62,304	EmpIns	71,650	82,397	94,757	108,970	125,316
7	Workers' Compensation Insurance	4,750	WorkersComp	5,083	5,286	5,497	5,717	5,946
8	Additional Personnel [3]	0	Link	0	46,823	48,696	50,644	52,669
9	Total Personnel Services	\$270,479		\$314,190	\$381,462	\$405,784	\$432,439	\$461,723
Operating Expenses:								
10	Other Contractual Services	\$65,072	Inflation	\$67,024	\$69,035	\$71,106	\$73,239	\$75,436
11	Other Contractual Services - Incremental [4]	0	Link	7,001	7,211	7,427	1,097	1,130
12	Professional Services	95,350	Inflation	98,211	101,157	104,192	107,317	110,537
13	Permit Fees	4,250	Inflation	4,378	4,509	4,644	4,783	4,927
14	Travel & Training	1,800	Inflation	1,854	1,910	1,967	2,026	2,087
15	Repairs & Maintenance	367,000	Eliminate	0	0	0	0	0
16	Repairs & Maintenance - Projected by City Staff [5]	0	Link	442,150	897,415	1,037,326	1,116,730	1,150,232
17	Telephone	1,230	Inflation	1,267	1,305	1,344	1,384	1,426
18	Postage	500	Inflation	515	530	546	563	580
19	Utilities	13,860	Utility	14,553	15,281	16,045	16,847	17,689
20	Rental Agreement Equipment	1,500	Inflation	1,545	1,591	1,639	1,688	1,739
21	Operating Leases [6]	6,786	Fleet	9,143	9,600	10,080	10,584	11,113
22	Insurance	8,626	Insurance	9,920	11,408	13,119	15,087	17,350
23	Maintenance of Motor Equipment	5,000	Repair	5,150	5,305	5,464	5,628	5,796
24	Office Supplies	1,000	Inflation	1,030	1,061	1,093	1,126	1,159
25	Fuel	8,400	Fuel	8,820	9,261	9,724	10,210	10,721
26	Other Supplies	22,320	Inflation	22,990	23,679	24,390	25,121	25,875
27	Uniforms and Clothing	2,400	Inflation	2,472	2,546	2,623	2,701	2,782
28	Tools	500	Inflation	515	530	546	563	580
29	Subscriptions and Memberships	10,500	Inflation	10,815	11,139	11,474	11,818	12,172
30	Total Operating Expenses	\$616,094		\$709,351	\$1,174,474	\$1,324,747	\$1,408,513	\$1,453,311

Table 4
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Projected Operating Expenses and Capital Leases

Line No.	Description	Amended [1] 2023	Escalation Reference [2]	Projected Fiscal Year Ending September 30,				
				2024	2025	2026	2027	2028
	<u>Capital Outlay: [7]</u>							
31	Drainage Projects	\$0	Eliminate	\$0	\$0	\$0	\$0	\$0
32	CCTV Rover Camera System	0	Eliminate	0	0	0	0	0
33	Jet Cleaning Heads	0	Eliminate	0	0	0	0	0
34	Holland Farm Tractor	0	Eliminate	0	0	0	0	0
35	Other Capital Equipment	0	Eliminate	0	0	0	0	0
36	Total Capital Outlay	\$0		\$0	\$0	\$0	\$0	\$0
	<u>Debt Service (Capital Lease): [8]</u>							
37	Existing Debt Service - Street Sweeper	\$55,506	Input	\$55,506	\$0	\$0	\$0	\$0
38	Vac-Con Vacuum Truck	0	Lease1	0	0	0	0	0
39	New Holland Skid Steer	0	Lease2	0	0	190,134	190,134	190,134
40	Tymco Street Sweeper	0	Lease3	0	0	92,229	92,229	92,229
41	Total Debt Service	\$55,506		\$55,506	\$0	\$282,364	\$282,364	\$282,364
	<u>Other Uses:</u>							
42	Carryforward Fund Balance	\$0	Eliminate	\$0	\$0	\$0	\$0	\$0
43	Indirect Cost Allocation	227,345	Labor	265,380	275,995	287,035	298,516	310,457
44	Total Other Uses	\$227,345		\$265,380	\$275,995	\$287,035	\$298,516	\$310,457

Table 4
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Projected Operating Expenses and Capital Leases

Line No.	Description	Amended [1] 2023	Escalation Reference [2]	Projected Fiscal Year Ending September 30,				
				2024	2025	2026	2027	2028
	<u>Contingency:</u>							
45	Contingency (0.00%) [9]	\$0	Calculated	\$0	\$0	\$0	\$0	\$0
46	Total Contingency	<u>\$0</u>		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
47	Total Stormwater Expenses	<u><u>\$1,169,424</u></u>		<u><u>\$1,344,427</u></u>	<u><u>\$1,831,930</u></u>	<u><u>\$2,299,930</u></u>	<u><u>\$2,421,831</u></u>	<u><u>\$2,507,875</u></u>

Footnotes:

- [1] Amounts derived from Table 3.
- [2] Escalation references derived from Table 5.
- [3] Additional personnel positions derived from Table 6.
- [4] Additional contract service costss derived from Table 7.
- [5] City staf provided a projection of repairs and maintenance costs derived from Table 8.
- [6] Amount increased due to the replacement of an (operating) leased vehicle plus several new leases as provided by Town staff.
- [7] All capital related costs are summarized and funded separately on Table 9. Please refer to Table 11 for summary of annual system costs.
- [8] As shown, the existing capital lease payments end in FY24. Proposed lease payment assumptions derived from Tables 9 and 10.
- [9] Amount estimated by Town staff, if any.

Table 5
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Summary of Escalation References

Line No.	Description	Reference	Projected Fiscal Year Ending September 30,				
			2024	2025	2026	2027	2028
1	Constant Factor	Constant	1.0000	1.0000	1.0000	1.0000	1.0000
2	Inflation - CPI	Inflation	1.0300	1.0300	1.0300	1.0300	1.0300
3	Labor	Labor	1.1673	1.0400	1.0400	1.0400	1.0400
4	Life, Health, Disability Insurance	EmpIns	1.1500	1.1500	1.1500	1.1500	1.1500
5	Workers' Compensation Insurance	WorkersComp	1.0700	1.0400	1.0400	1.0400	1.0400
6	Property/General Insurance Liability	Insurance	1.1500	1.1500	1.1500	1.1500	1.1500
7	Repair and Maintenance	Repair	1.0300	1.0300	1.0300	1.0300	1.0300
8	Fuel Expenses	Fuel	1.0500	1.0500	1.0500	1.0500	1.0500
9	Utility Expenses	Utility	1.0500	1.0500	1.0500	1.0500	1.0500
10	Fleet Replacement	Fleet	1.0500	1.0500	1.0500	1.0500	1.0500
11	Disposal (CPI)	Disposal	1.0300	1.0300	1.0300	1.0300	1.0300
12	Inflation/Customer Growth	Inf/Cust	1.0303	1.0324	1.0326	1.0326	1.0326
13	Inflation/EDU Growth	Inf/EDU	1.0345	1.1026	1.0326	1.0326	1.0326
14	Rate Revenue	Revenue	1.8983	1.3488	1.2632	1.1328	1.0927
15	Elimination Factor	Eliminate	0.0000	0.0000	0.0000	0.0000	0.0000
16	Other	Other	1.0000	1.0000	1.0000	1.0000	1.0000

Table 6
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Development of Additional Personnel Services Costs

Line No.	Description	Allocation Percent	Projected Fiscal Year Ending September 30, [1]					
			2023	2024	2025	2026	2027	2028
1	Labor Salary and Benefits Inflation Rate Assumed			16.73%	4.00%	4.00%	4.00%	4.00%
	Additional Personnel Requests							
	<u>Stormwater Technician II</u>							
2	Number of Positions		0.00	0.00	1.00	0.00	0.00	0.00
3	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
4	Average Annual Salary and Benefits		\$37,869	\$45,022	\$46,823	\$48,696	\$50,644	\$52,669
5	Incremental Additional Salary and Benefits		\$0	\$0	\$46,823	\$0	\$0	\$0
	<u>Additional Personnel</u>							
6	Number of Positions		0.00	0.00	0.00	0.00	0.00	0.00
7	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
8	Average Annual Salary and Benefits		\$0	\$0	\$0	\$0	\$0	\$0
9	Incremental Additional Salary and Benefits		\$0	\$0	\$0	\$0	\$0	\$0
	<u>Additional Personnel</u>							
10	Number of Positions		0.00	0.00	0.00	0.00	0.00	0.00
11	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
12	Average Annual Salary and Benefits		\$0	\$0	\$0	\$0	\$0	\$0
13	Incremental Additional Salary and Benefits		\$0	\$0	\$0	\$0	\$0	\$0
14	Cumulative Additional Salary and Benefits		\$0	\$0	\$46,823	\$48,696	\$50,644	\$52,669
15	Stormwater Water Allocation	100.00%	0	0	46,823	48,696	50,644	52,669
16	Other City Department / Fund Allocation	0.00%	0	0	0	0	0	0
17	TOTAL BUDGETED POSITIONS ADDED		0.0	0.0	1.0	0.0	0.0	0.0
18	Stormwater Water Allocation		\$0	\$0	\$46,823	\$48,696	\$50,644	\$52,669
19	Other City Department / Fund Allocation		\$0	\$0	\$0	\$0	\$0	\$0
20	TOTAL BUDGETED EXPENSE ADDED		\$0	\$0	\$46,823	\$48,696	\$50,644	\$52,669

Table 6
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Development of Additional Personnel Services Costs

Line	Allocation	Projected Fiscal Year Ending September 30, [1]						
No.	Description	Percent	2023	2024	2025	2026	2027	2028
Footnotes:								
[1]	Amounts as provided by Town staff.							

Table 7
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Development of Additional Contract Services (Remote Monitoring)

Line No.	Description	Allocation Percent	Projected Fiscal Year Ending September 30, [1]					
			2023	2024	2025	2026	2027	2028
1	R&M Inflation Rate Assumed			3.00%	3.00%	3.00%	3.00%	3.00%
	Additional Contract Services							
	<u>FY24-26</u>							
2	Inclusion (1 = Start Year)		0.00	1.00	0.00	0.00	(1.00)	0.00
3	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
4	Average Costs		\$6,797	\$7,001	\$7,211	\$7,427	\$7,650	\$7,880
5	Incremental Additional Costs		\$0	\$7,001	\$0	\$0	(\$7,650)	\$0
	<u>FY27-28</u>							
6	Inclusion (1 = Start Year)		0.00	0.00	0.00	0.00	1.00	0.00
7	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
8	Average Costs		\$975	\$1,004	\$1,034	\$1,065	\$1,097	\$1,130
9	Incremental Additional Costs		\$0	\$0	\$0	\$0	\$1,097	\$0
	<u>Other</u>							
10	Inclusion (1 = Start Year)		0.00	0.00	0.00	0.00	0.00	0.00
11	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
12	Average Costs		\$0	\$0	\$0	\$0	\$0	\$0
13	Incremental Additional Costs		\$0	\$0	\$0	\$0	\$0	\$0
	<u>Other</u>							
14	Inclusion (1 = Start Year)		0.00	0.00	0.00	0.00	0.00	0.00
15	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
16	Average Costs		\$0	\$0	\$0	\$0	\$0	\$0
17	Incremental Additional Costs		\$0	\$0	\$0	\$0	\$0	\$0
	<u>Other</u>							
18	Inclusion (1 = Start Year)		0.00	0.00	0.00	0.00	0.00	0.00
19	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
20	Average Costs		\$0	\$0	\$0	\$0	\$0	\$0
21	Incremental Additional Costs		\$0	\$0	\$0	\$0	\$0	\$0

Table 7
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Development of Additional Contract Services (Remote Monitoring)

Line No.	Description	Allocation Percent	Projected Fiscal Year Ending September 30, [1]					
			2023	2024	2025	2026	2027	2028
22	Cumulative Additional Salary and Benefits		\$0	\$7,001	\$7,211	\$7,427	\$1,097	\$1,130
23	Stormwater Water Allocation	100.00%	0	7,001	7,211	7,427	1,097	1,130
24	Other City Department / Fund Allocation	0.00%	0	0	0	0	0	0
25	Stormwater Water Allocation		\$0	\$7,001	\$7,211	\$7,427	\$1,097	\$1,130
26	Other City Department / Fund Allocation		\$0	\$0	\$0	\$0	\$0	\$0
27	TOTAL BUDGETED EXPENSE ADDED		\$0	\$7,001	\$7,211	\$7,427	\$1,097	\$1,130

Footnotes:

[1] Amounts as provided by Town staff.

Table 8
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Development of Projected Repairs & Maintenance Costs

Line No.	Description	Allocation Percent	Projected Fiscal Year Ending September 30, [1]					
			2023	2024	2025	2026	2027	2028
1	R&M Inflation Rate Assumed			13.30%	3.00%	3.00%	3.00%	3.00%
	Additional Repairs & Maintenance							
	<u>FY24</u>							
2	Inclusion (1 = Start Year)		0.00	1.00	(1.00)	0.00	0.00	0.00
3	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
4	Average Costs		\$390,247	\$442,150	\$455,414	\$469,076	\$483,149	\$497,643
5	Incremental Additional Costs		\$0	\$442,150	(\$455,414)	\$0	\$0	\$0
	<u>FY25</u>							
6	Inclusion (1 = Start Year)		0.00	0.00	1.00	(1.00)	0.00	0.00
7	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
8	Average Costs		\$769,000	\$871,277	\$897,415	\$924,338	\$952,068	\$980,630
9	Incremental Additional Costs		\$0	\$0	\$897,415	(\$924,338)	\$0	\$0
	<u>FY26</u>							
10	Inclusion (1 = Start Year)		0.00	0.00	0.00	1.00	(1.00)	0.00
11	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
12	Average Costs		\$863,000	\$977,779	\$1,007,112	\$1,037,326	\$1,068,446	\$1,100,499
13	Incremental Additional Costs		\$0	\$0	\$0	\$1,037,326	(\$1,068,446)	\$0
	<u>FY27</u>							
14	Inclusion (1 = Start Year)		0.00	0.00	0.00	0.00	1.00	(1.00)
15	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
16	Average Costs		\$902,000	\$1,021,966	\$1,052,625	\$1,084,204	\$1,116,730	\$1,150,232
17	Incremental Additional Costs		\$0	\$0	\$0	\$0	\$1,116,730	(\$1,150,232)
	<u>FY28</u>							
18	Inclusion (1 = Start Year)		0.00	0.00	0.00	0.00	0.00	1.00
19	Fraction of FY Remaining		1.00	1.00	1.00	1.00	1.00	1.00
20	Average Costs		\$484,000	\$548,372	\$564,823	\$581,768	\$599,221	\$617,198
21	Incremental Additional Costs		\$0	\$0	\$0	\$0	\$0	\$617,198

Table 8
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Development of Projected Repairs & Maintenance Costs

Line No.	Description	Allocation Percent	Projected Fiscal Year Ending September 30, [1]					
			2023	2024	2025	2026	2027	2028
22	Cumulative Additional Salary and Benefits		\$0	\$442,150	\$897,415	\$1,037,326	\$1,116,730	\$617,198
23	Stormwater Water Allocation	100.00%	0	442,150	897,415	1,037,326	1,116,730	617,198
24	Other City Department / Fund Allocation	0.00%	0	0	0	0	0	0
25	Stormwater Water Allocation		\$0	\$442,150	\$897,415	\$1,037,326	\$1,116,730	\$617,198
26	Other City Department / Fund Allocation		\$0	\$0	\$0	\$0	\$0	\$0
27	Allowance for Unbudgeted Repairs and Maintenance		\$0	\$0	\$0	\$0	\$0	\$533,034
28	TOTAL BUDGETED EXPENSE ADDED		<u>\$0</u>	<u>\$442,150</u>	<u>\$897,415</u>	<u>\$1,037,326</u>	<u>\$1,116,730</u>	<u>\$1,150,232</u>

Footnotes:

[1] Amounts as provided by Town staff.

Table 9
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Escalated Capital Improvement Program

Line No.	Description	Funding Source	Budgeted 2023	Adjustments for Carryovers	Adjusted 2023	Projected Fiscal Year Ending September 30,					Totals
						2024	2025	2026	2027	2028	
	Cumulative Inflation Factor - Capital Outlay [1]		1.000			1.030	1.061	1.093	1.126	1.159	
	Cumulative Inflation Factor - Capital Leases [1]		1.000			1.050	1.103	1.158	1.216	1.276	
	Cumulative Inflation Factor - Master Plan Projects [1]		1.000			1.100	1.133	1.167	1.202	1.238	
	Capital Expenditures										
	<u>Stormwater Capital Outlay</u>										
1	Drainage Projects	Rates	\$75,000	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$75,000
2	CCTV Rover Camera System	ARPA	95,000	0	95,000	0	0	0	0	0	95,000
3	Jet Cleaning Heads	Rates	10,000	0	10,000	0	0	0	0	0	10,000
4	Holland Farm Tractor	Rates	20,000	0	20,000	0	0	0	0	0	20,000
5	Stormwater Maintenance	Rates	0	0	0	7,000	21,000	24,000	25,000	26,000	103,000
6	Equipment Maintenance	Rates	0	0	0	0	0	1,000	1,000	7,000	9,000
7	Asset Maintenance	Rates	0	0	0	45,000	32,000	5,000	30,000	14,000	126,000
8	Stormwater Equipment	Rates	0	0	0	0	0	5,000	6,000	6,000	17,000
9	Pump Station Monitoring	Rates	0	0	0	8,000	0	0	0	0	8,000
10	Pump Station Maintenance	Rates	0	0	0	0	6,000	7,000	11,000	8,000	32,000
11	Quick View Camera	Rates	0	0	0	0	27,000	0	0	0	27,000
12	Replacement Generator	Rates	0	0	0	0	0	2,000	0	0	2,000
13	Stormwater Heavy Equipment Transport	Rates	0	0	0	0	0	33,000	0	0	33,000
14	Stormwater & Grounds Maintenance	Rates	0	0	0	77,000	0	0	0	0	77,000
15	New Holland Skid Steer	Rates	0	0	0	77,000	0	0	0	0	77,000
16	Total Stormwater		\$200,000	\$0	\$200,000	\$214,000	\$86,000	\$77,000	\$73,000	\$61,000	\$711,000
	<u>Capital Leases</u>										
17	Vac-Con Vacuum Truck	Lease2	\$0	\$0	\$0	\$668,000	\$0	\$0	\$0	\$0	\$668,000
18	New Holland Skid Steer	Rates	0	0	0	0	0	0	0	0	0
19	Tymco Street Sweeper	Lease3	0	0	0	0	0	322,000	0	0	322,000
20	Total Other Departments		\$0	\$0	\$0	\$668,000	\$0	\$322,000	\$0	\$0	\$990,000
	<u>Other Major Capital Improvements:</u>										
21	8th Street Stormsewer Extension Project - Design (NTE)	Rates	\$0	\$0	\$0	\$85,250	\$0	\$0	\$0	\$0	\$85,250
22	(Placeholder)	Rates	0	0	0	0	0	0	0	0	0
23	Allowance for Master Plan Projects - Town	Rates	0	0	0	110,000	340,000	583,000	841,000	1,114,000	2,988,000
24	Allowance for Master Plan Projects - Town	Loan1	0	0	0	990,000	793,000	583,000	0	0	2,366,000
25	Allowance for Master Plan Projects - Town	Loan2	0	0	0	0	0	0	361,000	124,000	485,000
26	Allowance for Master Plan Projects - Grants	Grants	0	0	0	0	0	0	0	0	0
27	Total Capital Improvements		\$0	\$0	\$0	\$1,185,250	\$1,133,000	\$1,166,000	\$1,202,000	\$1,238,000	\$5,924,250
28	Total Capital Expenditures		\$200,000	\$0	\$200,000	\$2,067,250	\$1,219,000	\$1,565,000	\$1,275,000	\$1,299,000	\$7,625,250

Table 9
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Escalated Capital Improvement Program

Line No.	Description	Funding Source	Budgeted 2023	Adjustments for Carryovers	Adjusted 2023	Projected Fiscal Year Ending September 30,					
						2024	2025	2026	2027	2028	Totals
<u>Funding Sources:</u>											
29	Rate Revenues	Rates	\$105,000	\$0	\$105,000	\$409,250	\$426,000	\$660,000	\$914,000	\$1,175,000	\$3,689,250
30	Operating Reserves	Reserves	0	0	0	0	0	0	0	0	0
31	Renewal and Replacement Fund	RR	0	0	0	0	0	0	0	0	0
32	Other Interfund Transfers	Other	0	0	0	0	0	0	0	0	0
33	ARPA Funds	ARPA	95,000	0	95,000	0	0	0	0	0	95,000
34	Grants / Other Contributions	Grants	0	0	0	0	0	0	0	0	0
35	New Lease 1	Lease1	0	0	0	0	0	0	0	0	0
36	New Lease 2	Lease2	0	0	0	668,000	0	0	0	0	668,000
37	New Lease 3	Lease3	0	0	0	0	0	322,000	0	0	322,000
38	New Lease 4	Lease4	0	0	0	0	0	0	0	0	0
39	New Loan 1 - Jan. 2024	Loan1	0	0	0	990,000	793,000	583,000	0	0	2,366,000
40	New Loan 2 - Oct. 2026	Loan2	0	0	0	0	0	0	361,000	124,000	485,000
41	New Loan 3	Loan3	0	0	0	0	0	0	0	0	0
42	New Loan 4	Loan4	0	0	0	0	0	0	0	0	0
43	Unfunded	Unfunded	0	0	0	0	0	0	0	0	0
44	Total Funding Sources		\$200,000	\$0	\$200,000	\$2,067,250	\$1,219,000	\$1,565,000	\$1,275,000	\$1,299,000	\$7,625,250

Footnotes:

[1] Project costs were provided by Town staff, which were increased by an annual inflation allowances as shown above for FY24-28.

Table 10
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Calculation of Estimated Lease Payments

No.	Description	Percent	Amount	Amortization						
New Lease 1				Year	Start Bal	Principal	Interest	Cap Int	Payment	End Bal
	Projects									
1	Stormwater	0.0%	\$0							
2	Other	0.0%	0							
3	Other	0.0%	0							
4	Other	0.0%	0							
5	Other	0.0%	0							
6	Other	0.0%	0							
7	Total Project Cost		\$0							
Issuance and Surety Costs										
8	Issuance Costs (%)	0.00%	\$0							
9	Bond Insurance	0.00%	0							
10	Surety Costs (%)	0.00%	0							
11	Underwriters Discount	0.00%	0							
12	Total Issuance Costs	0.00%	\$0							
Capitalized Interest - CP Used										
13	Capitalized Interest	0	0 yr							
14	Debt Service Reserve Requirement	0%	-							
15	Principal Amount of Bonds (Rounded)		\$0							
16	Assumed Issue Date		October 1, 2024							
Level Debt Service Payment										
17	Term-Years		4							
18	Interest Rate		5.27%							
19	First Year of Bond Term (Fiscal Year)		2025							
20	First Year of Amortization (Fiscal Year)		2030							
21	Interest Only Periods		-							
22	Issue Month (Jan=1)		10							
23	Principal Payment Month (Jan=1)		10							
24	Annual Payment		\$0							

Do Not Delete Lines - For Amortization Purposes

		2029	2030	2031	2032	2033
25	Commercial Paper Capitalized Interest Calculation					
26	Beginning Balance	\$0	\$0	\$0	\$0	\$0
27	Construction Fund Draw-down (Cannot Exceed 5 Fiscal Years)	0	0	0	0	0
28	Interest Cost	0	0	0	0	0
29	Unadjusted Ending Balance	\$0	\$0	\$0	\$0	\$0
30	Conversion to Conventional Financing	0	0	0	0	0
31	Ending Balance for Interest Calculation	\$0	\$0	\$0	\$0	\$0

Table 10
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Calculation of Estimated Lease Payments

No.	Description	Percent	Amount							
New Lease 2				Amortization						
Projects				Year	Start Bal	Principal	Interest	Cap Int	Payment	End Bal
32	Stormwater	100.0%	\$668,000	2026	670,000	154,825	35,309	0	190,134	515,175
33	Other	0.0%	0	2027	515,175	162,985	27,150	0	190,134	352,190
34	Other	0.0%	0	2028	352,190	171,574	18,560	0	190,134	180,616
35	Other	0.0%	0	2029	180,616	180,616	9,518	0	190,134	0
36	Other	0.0%	0							
37	Other	0.0%	0							
38	Total Projects		\$668,000							
Issuance and Surety Costs										
39	Issuance Costs (%)	0.00%	\$0							
40	Bond Insurance	0.00%	0							
41	Surety Costs (%)	0.00%	0							
42	Underwriters Discount	0.00%	0							
43	Total Issuance Costs	0.00%	\$0							
Capitalized Interest - CP Used				No						
44	Capitalized Interest	0	0 yr	\$0						
45	Debt Service Reserve Requirement	0%	-							
46	Principal Amount of Bonds (Rounded)		\$670,000							
47	Assumed Issue Date		October 1, 2025							
Level Debt Service Payment										
48	Term-Years		4							
49	Interest Rate		5.27%							
50	First Year of Bond Term (Fiscal Year)		2026							
51	First Year of Amortization (Fiscal Year)		2026							
52	Interest Only Periods		-							
53	Issue Month		10							
54	Principal Payment Month		10							
55	Annual Payment		\$190,134							

Do Not Delete Lines - For Amortization Purposes

56	Commercial Paper Capitalized Interest Calculation			2024	2025	2026	2027	2028
57	Beginning Balance			\$0	\$0	\$0	\$0	\$0
58	Construction Fund Draw-down (Cannot Exceed 5 Fiscal Years)			0	0	0	0	0
59	Interest Cost	5.27%		0	0	0	0	0
60	Unadjusted Ending Balance			\$0	\$0	\$0	\$0	\$0
61	Conversion to Conventional Financing	2023		0	0	0	0	0
62	Ending Balance for Interest Calculation			\$0	\$0	\$0	\$0	\$0

Table 10
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Calculation of Estimated Lease Payments

No.	Description	Percent	Amount							
New Lease 3				Amortization						
Projects				Year	Start Bal	Principal	Interest	Cap Int	Payment	End Bal
63	Stormwater	100.0%	\$322,000	2026	325,000	75,102	17,128	0	92,229	249,898
64	Other	0.0%	0	2027	249,898	79,060	13,170	0	92,229	170,838
65	Other	0.0%	0	2028	170,838	83,226	9,003	0	92,229	87,612
66	Other	0.0%	0	2029	87,612	87,612	4,617	0	92,229	0
67	Other	0.0%	0							
68	Other	0.0%	0							
69	Total Projects		\$322,000							
Issuance and Surety Costs										
70	Issuance Costs (%)	0.00%	\$0							
71	Bond Insurance	0.00%	0							
72	Surety Costs (%)	0.00%	0							
73	Underwriters Discount	0.00%	0							
74	Total Issuance Costs	0.00%	\$0							
Capitalized Interest - CP Used										
75	Capitalized Interest	0	0 yr							
76	Debt Service Reserve Requirement	0%	-							
77	Principal Amount of Bonds (Rounded)		\$325,000							
78	Assumed Issue Date		October 1, 2025							
Level Debt Service Payment										
79	Term-Years		4							
80	Interest Rate		5.27%							
81	First Year of Bond Term (Fiscal Year)		2026							
82	First Year of Amortization (Fiscal Year)		2026							
83	Interest Only Periods		-							
84	Issue Month		10							
85	Principal Payment Month		10							
86	Annual Payment		\$92,229							

Do Not Delete Lines - For Amortization Purposes

87	Commercial Paper Capitalized Interest Calculation			2026	2027	2028	2029	2030
88	Beginning Balance			\$0	\$0	\$0	\$0	\$0
89	Construction Fund Draw-down (Cannot Exceed 5 Fiscal Years)			0	0	0	0	0
90	Interest Cost	5.27%		0	0	0	0	0
91	Unadjusted Ending Balance			\$0	\$0	\$0	\$0	\$0
92	Conversion to Conventional Financing	2025		0	0	0	0	0
93	Ending Balance for Interest Calculation			\$0	\$0	\$0	\$0	\$0

Table 11
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Calculation of Estimated Loan Payments

No.	Description	Percent	Amount	Amortization						
New Loan 1 - Jan. 2024				Year	Start Bal	Principal	Interest	Cap Int	Payment	End Bal
1	Stormwater	100.0%	\$2,366,000	2024	2,440,000	84,806	91,500	0	176,306	2,355,194
2	Other	0.0%	0	2025	2,355,194	117,316	117,760	0	235,075	2,237,878
3	Other	0.0%	0	2026	2,237,878	123,181	111,894	0	235,075	2,114,697
4	Other	0.0%	0	2027	2,114,697	129,340	105,735	0	235,075	1,985,356
5	Other	0.0%	0	2028	1,985,356	135,807	99,268	0	235,075	1,849,549
6	Other	0.0%	0	2029	1,849,549	142,598	92,477	0	235,075	1,706,951
7	Total Project Cost		\$2,366,000	2030	1,706,951	149,728	85,348	0	235,075	1,557,224
8	Issuance and Surety Costs			2031	1,557,224	157,214	77,861	0	235,075	1,400,010
9	Issuance Costs (%)	3.00%	\$73,200	2032	1,400,010	165,075	70,000	0	235,075	1,234,935
10	Bond Insurance	0.00%	0	2033	1,234,935	173,328	61,747	0	235,075	1,061,607
11	Surety Costs (%)	0.00%	0	2034	1,061,607	181,995	53,080	0	235,075	879,612
12	Underwriters Discount	0.00%	0	2035	879,612	191,095	43,981	0	235,075	688,517
13	Total Issuance Costs	3.00%	\$73,200	2036	688,517	200,649	34,426	0	235,075	487,868
14	Capitalized Interest - CP Used	No		2037	487,868	210,682	24,393	0	235,075	277,186
15	Capitalized Interest	0 0 yr	\$0	2038	277,186	221,216	13,859	0	235,075	55,970
16	Debt Service Reserve Requirement	0%	-	2039	55,970	55,970	2,799	0	58,769	0
17	Principal Amount of Bonds (Rounded)		\$2,440,000							
18	Assumed Issue Date		January 1, 2024							
	Level Debt Service Payment									
19	Term-Years		15							
20	Interest Rate		5.00%							
21	First Year of Bond Term (Fiscal Year)		2024							
22	First Year of Amortization (Fiscal Year)		2024							
23	Interest Only Periods		-							
24	Issue Month (Jan=1)		1							
25	Principal Payment Month (Jan=1)		10							
26	Annual Payment		\$235,075							

Do Not Delete Lines - For Amortization Purposes

		2024	2025	2026	2027	2028
27	Commercial Paper Capitalized Interest Calculation					
28	Beginning Balance	\$0	\$0	\$0	\$0	\$0
29	Construction Fund Draw-down (Cannot Exceed 5 Fiscal Years)	0	0	0	0	0
30	Interest Cost	0	0	0	0	0
31	Unadjusted Ending Balance	\$0	\$0	\$0	\$0	\$0
32	Conversion to Conventional Financing	0	0	0	0	0
33	Ending Balance for Interest Calculation	\$0	\$0	\$0	\$0	\$0

Table 11
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Calculation of Estimated Loan Payments

No.	Description	Percent	Amount							
New Loan 2 - Oct. 2026				Amortization						
	Projects			Year	Start Bal	Principal	Interest	Cap Int	Payment	End Bal
34	Stormwater	100.0%	\$485,000	2027	500,000	23,171	25,000	0	48,171	476,829
35	Other	0.0%	0	2028	476,829	24,330	23,841	0	48,171	452,499
36	Other	0.0%	0	2029	452,499	25,546	22,625	0	48,171	426,953
37	Other	0.0%	0	2030	426,953	26,823	21,348	0	48,171	400,129
38	Other	0.0%	0	2031	400,129	28,165	20,006	0	48,171	371,965
39	Other	0.0%	0	2032	371,965	29,573	18,598	0	48,171	342,392
40	Total Projects		\$485,000	2033	342,392	31,052	17,120	0	48,171	311,340
41	Issuance and Surety Costs			2034	311,340	32,604	15,567	0	48,171	278,736
42	Issuance Costs (%)	3.00%	\$15,000	2035	278,736	34,234	13,937	0	48,171	244,502
43	Bond Insurance	0.00%	0	2036	244,502	35,946	12,225	0	48,171	208,556
44	Surety Costs (%)	0.00%	0	2037	208,556	37,743	10,428	0	48,171	170,812
45	Underwriters Discount	0.00%	0	2038	170,812	39,631	8,541	0	48,171	131,182
46	Total Issuance Costs	3.00%	\$15,000	2039	131,182	41,612	6,559	0	48,171	89,570
47	Capitalized Interest - CP Used	No		2040	89,570	43,693	4,478	0	48,171	45,877
48	Capitalized Interest	0	0 yr	2041	45,877	45,877	2,294	0	48,171	0
49	Debt Service Reserve Requirement	0%	-							
50	Principal Amount of Bonds (Rounded)		\$500,000							
51	Assumed Issue Date		October 1, 2026							
	Level Debt Service Payment									
52	Term-Years		15							
53	Interest Rate		5.00%							
54	First Year of Bond Term (Fiscal Year)		2027							
55	First Year of Amortization (Fiscal Year)		2027							
56	Interest Only Periods		-							
57	Issue Month		10							
58	Principal Payment Month		10							
59	Annual Payment		\$48,171							

Do Not Delete Lines - For Amortization Purposes

60	Commercial Paper Capitalized Interest Calculation			2027	2028	2029	2030	2031
61	Beginning Balance			\$0	\$0	\$0	\$0	\$0
62	Construction Fund Draw-down (Cannot Exceed 5 Fiscal Years)			0	0	0	0	0
63	Interest Cost	5.00%		0	0	0	0	0
64	Unadjusted Ending Balance			\$0	\$0	\$0	\$0	\$0
65	Conversion to Conventional Financing	2026		0	0	0	0	0
66	Ending Balance for Interest Calculation			\$0	\$0	\$0	\$0	\$0

Table 12
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Development of Projected Net Revenue Requirements and Proposed Rates

Line No.	Description	Projected Fiscal Year Ending September 30,					
		2023	2024	2025	2026	2027	2028
	<u>Projected Operating Expenses & Capital Leases:</u>						
1	Stormwater Expenses	\$1,169,424	\$1,344,427	\$1,831,930	\$2,299,930	\$2,421,831	\$2,507,875
2	Total Operating Expenses & Capital Leases	\$1,169,424	\$1,344,427	\$1,831,930	\$2,299,930	\$2,421,831	\$2,507,875
	<u>Other Revenue Requirements:</u>						
	Debt Service on Bonds						
3	Existing	\$0	\$0	\$0	\$0	\$0	\$0
4	Proposed	0	176,306	235,075	235,075	283,246	283,246
5	Total Debt Service	\$0	\$176,306	\$235,075	\$235,075	\$283,246	\$283,246
6	Capital Funded From Rates	\$105,000	\$409,250	\$426,000	\$660,000	\$914,000	\$1,175,000
7	Transfer to Capital Fund	0	0	0	0	0	0
8	Allowance for Working Capital	0	100,000	100,000	100,000	100,000	100,000
9	Total Other Revenue Requirements	\$105,000	\$685,556	\$761,075	\$995,075	\$1,297,246	\$1,558,246
10	Gross Revenue Requirements	\$1,274,424	\$2,029,983	\$2,593,006	\$3,295,005	\$3,719,078	\$4,066,121
	<u>Less Income and Funds from Other Sources:</u>						
11	Other Operating Revenues	\$0	\$0	\$0	\$0	\$0	\$0
12	Unrestricted Interest Income	0	0	0	0	0	0
13	Net Revenue Requirements	\$1,274,424	\$2,029,983	\$2,593,006	\$3,295,005	\$3,719,078	\$4,066,121
	<u>Projected Revenues:</u>						
14	Revenues at Existing Rates	\$1,028,454	\$1,032,964	\$1,105,747	\$1,108,512	\$1,111,276	\$1,114,040
15	Prior Year Rate Adjustment	0	0	984,115	1,531,298	2,223,179	2,663,266
16	Total Applicable Rate Revenue	\$1,028,454	\$1,032,964	\$2,089,862	\$2,639,810	\$3,334,455	\$3,777,306
	<u>Current Year Rate Adjustments:</u>						
17	Current Year Rate Adjustment	8% Implemented					
	Effective Month	0.0%	89.0%	26.0%	26.0%	13.0%	9.0%
18	% of Current Year Effective	October	October	October	October	October	October
19	Total Revenue from Current Year Adjustments	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		\$0	\$919,338	\$543,364	\$686,350	\$433,479	\$339,958
20	Total Revenue from Rates	\$1,028,454	\$1,952,302	\$2,633,226	\$3,326,160	\$3,767,934	\$4,117,264
21	Revenue Surplus/(Deficiency)	(\$245,970)	(\$77,682)	\$40,221	\$31,155	\$48,856	\$51,143
22	Surplus/(Deficiency) - Percent of Rate Revenues	(23.9%)	(4.0%)	1.5%	0.9%	1.3%	1.2%
	<u>Available Cash Balances - Year End Balance</u>						
23	Operating Fund	\$91,327	\$113,645	\$253,866	\$385,021	\$533,877	\$685,020
24	Renewal & Replacement Fund	0	0	0	0	0	0
25	Total Available Cash Balances	\$91,327	\$113,645	\$253,866	\$385,021	\$533,877	\$685,020
	<u>Unrestricted Operating Fund</u>						
26	Days of Gross Expenditures - Calculated	26	20	36	43	52	61
27	Days of Gross Expenditures - Minimum (25% or 90 days)	90	90	90	90	90	90
28	Days of Gross Expenditures - Minimum Percentage	25%	25%	25%	25%	25%	25%
29	<u>Compliance Analysis</u>						
30	Gross Revenues	\$1,028,454	\$1,952,302	\$2,633,226	\$3,326,160	\$3,767,934	\$4,117,264
31	Operating Expenses (including lease payments)	1,169,424	1,344,427	1,831,930	2,299,930	2,421,831	2,507,875
32	Net Revenues	(\$140,970)	\$607,875	\$801,296	\$1,026,230	\$1,346,103	\$1,609,389
33	Loan Payments	\$0	\$176,306	\$235,075	\$235,075	\$283,246	\$283,246
34	Calculated Debt Service Coverage	N/A	345%	341%	437%	475%	568%
	Debt Service Coverage Minimum	N/A					
	<u>Existing and Proposed Fees</u>						
35							
36			\$12.02	\$6.64	\$8.36	\$5.27	\$4.12
37	Total Charge per ESU	\$13.50	\$25.52	\$32.16	\$40.52	\$45.79	\$49.91
			\$306.24	\$385.92	\$486.24	\$549.48	\$598.02

Table 13
Town of Lake Park, Florida
Stormwater Rate Study - Total Program Requirements

Projected Fund Balances & Interest Income

Line No.	Description	Projected Fiscal Year Ending September 30,					
		2023	2024	2025	2026	2027	2028
	<u>Operating Fund</u>						
1	Beginning Balance [1]	\$337,297	\$91,327	\$113,645	\$253,866	\$385,021	\$533,877
2	Sale of Assets	0	0	0	0	0	0
3	Add Back Unspent R&M Contingency	0	0	0	0	0	0
4	Transfers In - Revenues	1,028,454	1,952,302	2,633,226	3,326,160	3,767,934	4,117,264
5	Transfers Out - Net Revenue Requirements	1,274,424	2,029,983	2,593,006	3,295,005	3,719,078	4,066,121
6	Transfers Out - CIP	0	0	0	0	0	0
7	End of Year Transfer In/ (Out)	0	100,000	100,000	100,000	100,000	100,000
8	Interest Rate (Short Term)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
9	Interest Income	0	0	0	0	0	0
10	Recognition Of Interest in Revenue Requirements	0	0	0	0	0	0
11	Ending Balance	\$91,327	\$113,645	\$253,866	\$385,021	\$533,877	\$685,020
12	TOTAL INTEREST INCOME	\$0	\$0	\$0	\$0	\$0	\$0

Footnotes:

[1] The beginning balance as provided by City staff, less prior obligated funds, if any.



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025

Originating Department: Communications and Grants
Resolution 42-07-25 - Support 2021 Lake Worth Lagoon Management Plan - Lake Worth Lagoon Initiative Grant Program - \$1,000,000

Agenda Title: (Septic-to-Sewer Project)

Approved by Town Manager: _____ **Date:** _____

Cost of Item: \$0.00 **Funding Source:** _____

Account Number: _____ **Finance Signature:** _____

Advertised: _____

Date: _____ **Newspaper:** _____

Attachments: Lake Worth Lagoon Management Plan 2021

Please initial one:

_____ Yes I have notified everyone

MA _____ Not applicable in this case

Summary Explanation/Background:

As part of the Town's application for grant funding under the Lake Worth Lagoon Initiative Grant Program the Town is required to provide support of the 2021 Lake Worth Lagoon Management Plan.

The Town is currently pursuing grant funding in the amount of \$1 Million under this grant program to support the construction of the Town's Septic-To-Sewer Project.

Note: If awarded, this funding would be combined with the \$1 Million received from the Florida Department of Environmental Protection (FDEP) and \$1 Million from the Lake Park CRA. Additionally, \$4 Million in federal funding is being requested, on behalf of the Town, by Congresswoman Sheila Cherfilus-McCormick.

The grant application's submittal deadline is Thursday, July 31, 2025 and, if awarded, funding would be

available on July 1, 2026.

As part of the grant application process, the Town is requested to provide formal support of the Lake Worth Lagoon Management Plan, which represents the third update since the original plan's adoption in 1998; previous revisions were published in 2008 and 2013. The 2013 version was supported by the Lake Park Town Commission via Resolution 61-08-17.

As information, the 2021 Lake Worth Lagoon Management Plan strategically embraces watershed management as a central theme, acknowledging that the health of the Lagoon is inextricably connected to the activities and inputs occurring across a voluminous watershed that is 42 times the size of the Lagoon itself. Thus, the Town's Final Septic-To-Sewer Project, when completed, is expected to contribute to improving the water quality of the Lake Worth Lagoon.

Various amendments have been incorporated into the Lake Worth Lagoon Management Plan, including:

- Incorporates a watershed-focused management approach.
- Designed exclusively on a digital platform.
- New and existing action plans were updated and reorganized with three new categories added: Fish and
- Wildlife Monitoring and Protection, Climate Change and Sea Level Rise, and Public Uses of the Lagoon.
- Several actions from the 2013 Plan were consolidated, renamed or moved to different Action Plans to more accurately reflect updated implementation strategies.
- Thirteen new actions have been added
- New or revised Goals and Priorities were adopted to address each major Action Plan focus: Water and Sediment Quality; Habitat Enhancement and Protection; Fish and Wildlife Monitoring and Protection, Public Uses of the Lagoon, Public Outreach and Engagement; and Climate Change and Sea Level Rise.
- Cost estimates are provided

Recommended Motion:

I move to approve Resolution 42-07-25 - Support 2021 Lake Worth Lagoon Management Plan as part of the Lake Worth Lagoon Initiative Grant Program – Town is requesting \$1,000,000 to support the Septic-to-Sewer Project.

Resolution in Support of LWLI Legislative Funding Request

RESOLUTION 42-07-25

**A RESOLUTION OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK,
FLORIDA IN SUPPORT OF THE 2021 LAKE WORTH LAGOON MANGEMENT
PLAN**

WHEREAS, the Lake Worth Lagoon (LWL) restoration efforts have been underway since 1998 and the State of Florida designated the lagoon a priority water body in the 2004 in section 373.453, Florida Statutes; and

WHEREAS, in 2008, the Lake Worth Lagoon Initiative (LWLI) was established to provide interagency coordination with the purpose of seeking awareness, support and legislative funding assistance for projects that will improve and protect the natural resources within the watershed; and

WHEREAS, the LWLI provides partnerships between government agencies and stakeholders that incorporate and combine funding acquisition support, outreach and technical expertise, increase stakeholder and public awareness; and

WHEREAS, the 2021 Lake Worth Lagoon Management Plan Update (LWLMP) is a revision to the 1998, 2008 and 2013 LWL Management Plans, which outline actions and projects to restore the ecological health of the water body; and

WHEREAS, the Town of Lake Park desires to support the 2021 LWLMP, which provides for the following elements:

- Continue construction of priority environmental enhancement and restoration projects
- Increase stakeholder participation
- Increase partnering efforts for funding support and acquisition
- Complete action plans
- Increase public awareness and outreach efforts
- Prioritize and combine data collection efforts to assess project successes and guide future management decisions; and

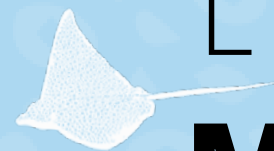
NOW THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA:

Section 1: The foregoing recitals are incorporated herein.

Section 2: This Resolution shall take effect immediately upon adoption.



lake worth
LAGOON



LAKE WORTH LAGOON **MANAGEMENT PLAN**

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Green sea turtle swimming in Lake Worth Lagoon (Photo credit: PBC-ERM)

INTRODUCTION

The Lake Worth Lagoon is an estuary of multiple identities. It's the backyard of the glittering oceanfront mansions and luxury resorts of Palm Beach; an aquatic playground for anglers, divers and tourists from all over the world; a bustling nautical highway for boaters cruising the Intracoastal Waterway; and home to the Port of Palm Beach, the fourth-busiest container port in Florida and a regional economic powerhouse.

Even within its narrow, 20-mile length, the Lagoon displays distinctly different personalities. The waters of the northern Lagoon are the clearest, aided by cleansing tidal flows from the Lake Worth Inlet, the largest of the two manmade inlets that connect the Lagoon to the Atlantic Ocean. Water quality declines through the Lagoon's central and southern segments, which are characterized by limited flushing compounded by ongoing contributions of nutrient-laden discharges from major drainage canals carrying both agricultural and urban runoff from the expansive watershed.

Against this backdrop, management of the Lagoon requires a thoughtful and strategic approach that recognizes the unique history and challenges facing this urban estuary, its importance to Palm Beach County's economy and to its citizens' quality of life.

The mission of the Lake Worth Lagoon Management Plan is to sustain and build upon the progress already made in protecting and restoring it. The Plan presents achievable goals and actions for improving water quality, enhancing habitat, protecting fish and wildlife,

preparing for a changing climate, and fostering public awareness and responsible enjoyment of the Lagoon over the next decade.

ACKNOWLEDGMENTS

Funding for the 2021 Lake Worth Lagoon Management Plan was provided by the Palm Beach County Board of County Commissioners.

Mayra Ashton of Palm Beach County's Environmental Resources Management Department served as **Project Coordinator** for the 2021 Plan Update.

Writing and design of the Plan was provided by the team of O'Hara Communications and Bazany Design.

Partners in the Lake Worth Lagoon Initiative contributed advice, valuable perspectives, and feedback during Plan development.



American Oystercatchers at Tarpon Cove
(Photo credit: PBC-ERM)

LAKE WORTH LAGOON INITIATIVE STEERING COMMITTEE (2020)



Commissioner Gregg K. Weiss
District 2
Palm Beach County



Vice Mayor Mark Mullinix
Village of North Palm Beach
Palm Beach County League of Cities



Commissioner Charles Isiminger, Palm Beach County Representative
Florida Inland Navigation District



Jay Steinle
Governing Board Member
South Florida Water Management District



Jason Andreotta
District Director
Florida Department of Environmental Protection

CONTACT

Palm Beach County Department of Environmental Resources Management
2300 North Jog Road
West Palm Beach, FL 33411
Email: ERM-LWLI@pbcgov.org

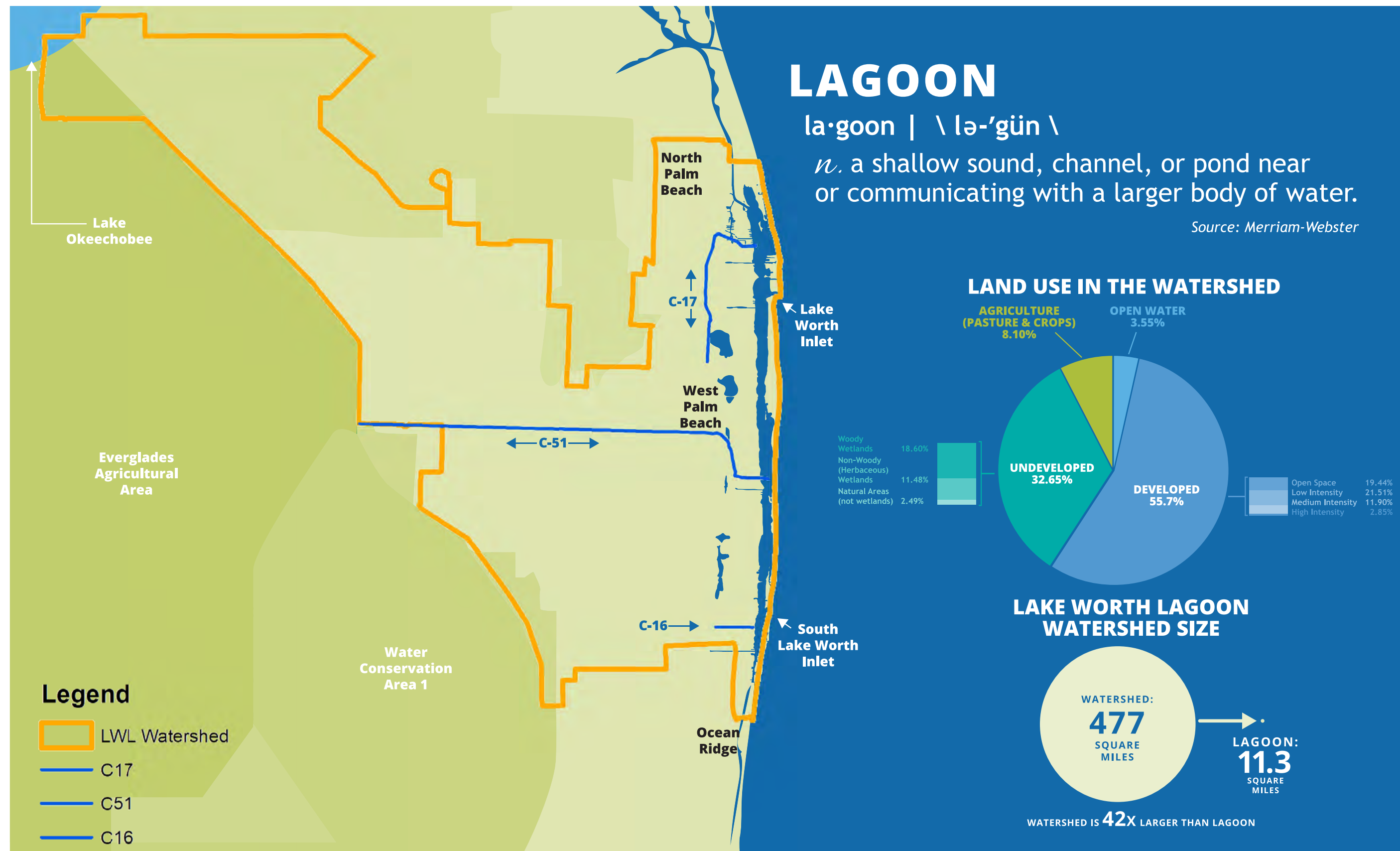


Snorkeler looking at starfish (Photo Credit: Discover The Palm Beaches)



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LAGOON

LAKE WORTH LAGOON WATERSHED MAP



Click to toggle between Lake Worth Lagoon watershed map and LWL hydrology map.

MILESTONES IN LAGOON MANAGEMENT

1877

Pioneer Augustus Lang creates the first inlet to the sea in Lake Worth

1915

Lake Worth Inlet is excavated; dredge material used to create Peanut Island

1925

West Palm Beach Canal is dredged; freshwater from Lake Okeechobee sent to Lake Worth

1990

LWL Natural Resources Inventory and Resource Enhancement Study completed

1998

First Lake Worth Lagoon Management Plan approved

2013

LWL Management Plan updated, First Lake Worth Lagoon Science Symposium held

1912

Construction of Intracoastal Waterway in Palm Beach County is completed

1917

South Lake Worth Inlet (Boynton Inlet) is created, completing Lake Worth's transition from a freshwater lake to the Lake Worth Lagoon estuary

1972

With population surging to 400,000 Palm Beach County adopts its first Land Use Plan

1992

Florida Estuarine Natural Resources Inventory and Resource Enhancement Study completed

2008

LWL Management Plan Updated; Lake Worth Lagoon Initiative established to coordinate management

2021

LWL Management Plan updated



Palm Beach Shores in Northern Lagoon, 1945

Photos courtesy of Historical Society of Palm Beach County



Peanut Island and Lake Worth Inlet ca. 1947



Dredging the Lake Worth Inlet ca. 1918



Cocoanut Grove House front dock ca. 1880-1893



Lake Worth Inlet, Peanut Island and Port of Palm Beach ca. 1918



lake worth
LAGOON

ABOUT THIS PLAN

This is the third update of the Lake Worth Lagoon Management Plan since the original Plan adoption in 1998. Previous revisions were published in 2008 and 2013.

Palm Beach County's Environmental Resources Management (ERM) staff coordinated development of the Plan and subsequent updates.

WHAT'S NEW IN THIS UPDATE

- This is the first Lagoon Plan that incorporates a watershed-focused management approach.
- This Plan is designed exclusively on a digital platform.
- New and existing action plans were updated and reorganized with three new categories added: Fish and Wildlife Monitoring and Protection, Climate Change and Sea Level Rise, and Public Uses of the Lagoon.
- The Public Outreach Section has been renamed Public Outreach and Engagement.
- Several actions from the 2013 Plan were consolidated, renamed or moved to different Action Plans to more accurately reflect updated implementation strategies.
- Thirteen new actions have been added: WQ-2, WQ-3, WQ-4, WQ-5, WQ-6, SW-1, HE-1, FW-5, CC-1, CC-2, PO-1, PO-2, and PU-1.
- New or revised Goals and Priorities were adopted to address each major Action Plan focus: Water

and Sediment Quality; Habitat Enhancement and Protection; Fish and Wildlife Monitoring and Protection, Public Uses of the Lagoon, Public Outreach and Engagement; and Climate Change and Sea Level Rise.

- Cost estimates are provided as a range following this key:

\$	\$0-\$25,000
\$\$	\$25,000-\$100,000
\$\$\$	\$100,000-\$500,000
\$\$\$\$	\$500,000-\$1,000,000
\$\$\$\$\$	More than \$1,000,000

CITIZEN AND PARTNER INPUT

Community input into the development of the 2021 Plan was solicited as follows:

- Members of the Lake Worth Lagoon Initiative (LWLI) Habitat and Water and Sediment Quality Working Groups participated in a facilitated brainstorming session to review progress and identify Plan priorities and goals in 2020.
- LWLI Working Groups for Habitat and Water and Sediment Quality also provided input during targeted working group meetings and provided feedback by participating in two electronic surveys to identify

new action plans and rank specific management priorities for the next 10 years.

- ERM staff, partners and citizens participated in an online survey to identify and rank important issues for Plan inclusion.
- In recognition of the watershed-based approach for this Plan update, representatives from the 30 municipalities in the watershed were contacted to share information about ongoing and future plans, including implementation of septic-to-sewer conversion projects, stormwater retrofits and specific policies and ordinances that directly impact water quality in the Lagoon's extensive watershed.
- External reviewers from state and local agencies, educational institutions and non-profit groups with expertise in issues specific to each action were enlisted to provide comments and guidance.
- Actions were developed with assistance and oversight from ERM personnel and numerous partners.
- Members of the LWLI Steering Committee provided feedback, guidance and comments during the development of the update.



Mangrove trees at a restoration site (Photo credit: PBC-ERM)

EXECUTIVE SUMMARY

For the first time, the 2021 Lake Worth Lagoon Management Plan strategically embraces watershed management as a central theme, acknowledging that the health of the Lagoon is inextricably connected to the activities and inputs occurring across a voluminous watershed that is 42 times the size of the Lagoon itself.

This approach elevates the importance of expanded monitoring to better understand and respond to the myriad factors that influence Lagoon health. The County and LWLI partners have initiated long-term biological monitoring for oysters, seagrass, fisheries, birds and turtles, all linked to assessing the health and productivity of the Lagoon. Additional monitoring includes water quality parameters (nutrients and salinity) as well as success of intertidal vegetation (mangroves/cordgrass) at restoration projects and throughout the Lagoon. Where possible, future monitoring should be consistent with existing regional or statewide monitoring protocols so that meaningful comparisons can be made, and data on the Lagoon can contribute to statewide knowledge of estuarine systems.

Despite unexpected challenges from the Covid-19 pandemic, Palm Beach County's Environmental Resources Management (ERM) staff adjusted monitoring, management and outreach activities to sustain progress. Contracted monitoring programs experienced minor interruptions. The long-term economic reverberations

from the Covid-19 crisis may result in diminished funding in the near term for many government services, including environmental initiatives. However, funding already is secured for the Tarpon Cove Phase II, Bonefish Cove, and Monceaux Park Living Shoreline restoration projects, supported by state, federal and local matching funds.

Overall, significant progress has been made in improving scientific understanding and management of the Lagoon. Following are key accomplishments in Lagoon research, restoration and public outreach since 2013:

WATER AND SEDIMENT QUALITY

- Two high-frequency salinity sondes were deployed and maintained in partnership with the South Florida Water Management District (SFWMD) in November 2019 to augment monitoring and document salinity in the Central Lagoon. The stations are located to the north and south of the C-51 canal. The County maintains its own salinity probes at John's Island Natural Area across from the C-51 canal, and at Munyon Cove.

- A nutrient autosampler installed in 2019 at the S-155 structure enables analysis for total nitrogen and phosphorus discharged from the C-51 canal into the Lagoon and calculations of nutrient loading into the Lagoon. Water quality analysis is completed by the SFWMD in addition to maintaining and servicing the equipment.
- An assessment of the sediment trap excavated on C-51 to prevent sediments from entering the Lagoon indicates the trap's efficiency decreases as flow increases, particularly for flows higher than 850 cfs at S-155. The range of sediment



The spotted eagle ray is an iconic symbol of the Lake Worth Lagoon. (Photo Credit: PBC-ERM)



A hermit crab peers out from the safety of his shell sanctuary (Photo credit: PBC-ERM)

exported out of the trap was between 3 to 42% of total trap capacity or 0.38 to 10.36 tons/day.

Dredging of the accumulated sediment in the trap on an established schedule to maintain its efficiency as a sink and not as a sediment source, is paramount to ensure it can act to trap sediments, otherwise it will continue to contribute to the sediment load being exported downstream into the Lagoon.

Future evaluations also will examine potential modifications and maintenance to improve efficiency, reduce sediment loads and determine whether additional sediment traps would be beneficial in minimizing sediment transport.

- The Florida Legislature in 2017 awarded \$1 million, matched by \$1 million in local funds, to convert 246 homes in Lost Tree Village from septic systems to central sewer. In 2018, the Legislature awarded \$750,000 to Riviera Beach, matched by \$750,000 in local funds, for the Singer Island South stormwater retrofit project. Both of these projects were funding requests advanced by the Lake Worth Lagoon Initiative.
- Initial mapping of areas with high density septic systems throughout the County was conducted in 2019.
- 21 projects that incorporate elements of Green Infrastructure/Low Impact techniques were completed or underway throughout the County as of 2020.
- Development of a hydrodynamic model for the Lagoon was elevated in priority, with identification of steps and components needed for the model to adequately address the effects of freshwater delivered to the Lagoon via the C-17, C-51 and C-16 water conveyance canals. This effort moved closer to reality with the pending update of the Lake Okeechobee Standard Operating Manual (LOSOM) by the U.S. Army Corps of Engineers. The County requested in late 2020 that salinity standards, or Performance Measures, be established for discharges from Lake Okeechobee to the Lagoon - likely leading to deployment of a model that could

serve as a pilot for Lagoon-wide adaptation.

- More than 159 acres of muck and deep dredge holes throughout the Lagoon were capped using 1.9 million cubic yards of material to create essential habitats for fish, invertebrates and waterbirds at six restoration sites: Snook Islands, South Cove, Ibis Isle, Grassy Flats, Bryant Islands, and Tarpon Cove Phase I.

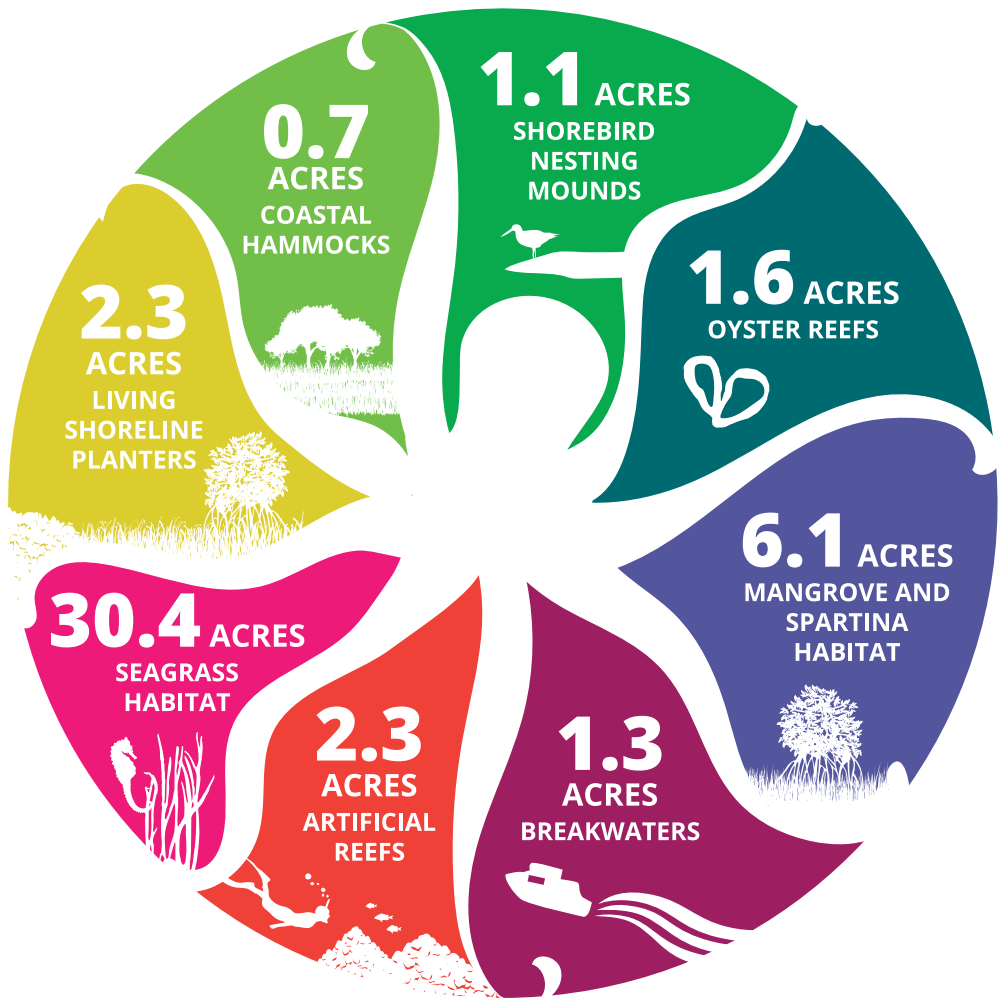
HABITAT ENHANCEMENT AND PROTECTION

- More than 43 acres of habitat was restored or enhanced from 2013-2020, encompassing 18 individual projects, at a total cost of \$11.9 million.
- Seagrass declined by 30 acres overall from 2013-2018. Despite an increase of 94 acres of seagrass mapped in the Northern Lagoon during this period, a significant portion of the seagrass beds that were mapped as moderate to high density seagrass habitat in 2013 were mapped as low density to patchy seagrass habitat in 2018, reflecting an overall decrease in seagrass coverage.
- More than 400,000 cubic yards of beneficial re-use Lagoon sediments from private and public sector dredging projects is being used to fill dredge holes and create intertidal island habitat at the Tarpon Cove Restoration Project, which started in 2018.
- More than 8,500 tons of limestone rock, concrete or other materials were used to enlarge existing reefs or create new reefs at Peanut Island Reef Complex, the Phil Foster Park Snorkel Trail, the Southern Boulevard Bridge Reef, and the Sugar Sands Reef.
- Monitoring of natural oyster reefs was expanded in 2015 to include three reefs constructed as part of habitat restoration projects. Overall oyster recruitment in the Lagoon is among the highest recorded in southeast Florida.
- A shoreline characterization study conducted in 2020 documented the percentage of armored versus natural shoreline in the lagoon, an important prelude to identifying future restoration priorities.

FISH AND WILDLIFE MONITORING AND PROTECTION

- A longstanding alliance of law enforcement agencies provided a total of 11,250 hours of on-water enforcement of seasonal manatee protection zones in the Lagoon from 2013-2020.
- Ongoing research has established the Northern Lagoon as a regionally important nursery for juvenile green sea turtles.

LIVING SHORELINE AND HABITAT RESTORATION PROJECTS FROM 2014-2019



+6 ADDITIONAL RESTORATION PROJECTS planned or underway in the next 3 years





Aerial photo of Lagoon near Blue Heron Bridge (Photo credit: Scott Eddy)

- Fisheries monitoring initiated in 2014 in the Central Lagoon documented a variety of commercially important fish utilizing waters adjacent to restored habitats. Fisheries sampling was expanded in 2016 to the Northern Lagoon, to track utilization of important seagrass areas. Monitoring will be expanded to the Tarpon Cove Restoration Project in 2021.
- Regular monitoring of shorebirds at Lagoon restoration sites began in 2015. The surveys are showing that Least Terns, Black Skimmers and American Oystercatchers - all imperiled species - use restored areas for both nesting and foraging. Since 2013, American Oystercatchers have successfully nested and fledged chicks at the Grassy Flats Natural Area, Bryant Park Islands, Snook Islands Natural Area and Tarpon Cove Restoration Project. Black Skimmers successfully nested at Tarpon Cove.

CLIMATE CHANGE

- A Coastal Resilience Partnership formed in 2019 by Palm Beach County's Office of Resilience and seven municipalities will complete an assessment in early 2021 of risks to critical

community assets, including natural resources and water infrastructure, from climate change and rising seas.

- Living Shorelines that incorporate native plants and natural materials to buffer storms, shield coastal infrastructure and provide habitat have been installed at five locations since 2013: Bryant Park, Currie Park, Osprey Park, Jewell Cove and Lyman Kayak Park.

PUBLIC OUTREACH AND INVOLVEMENT

- LagoonFest, an annual community celebration of the Lagoon's diversity and recreational value, attracted 5,000 attendees and 80 exhibitors in 2019. The event has grown in popularity and reach since the first event held in 2014 with 27 exhibitors.
- More than 120 anglers caught more than 1,000 fish of 60 species in the Third Annual Lake Worth Lagoon Fishing Challenge held in 2019 to help document the Lagoon's value for sportfishing.
- ANGARI Foundation recruited more than 1,260 citizen-scientists to decorate, deploy and recover small wooden cards set adrift in the Lagoon from 2017-2019 to improve understanding of how surface currents disperse marine pollution.
- A Covid-19 inspired experiment in Spring 2020 [to provide virtual field trips](#) to students was expanded from 45 students to over 70 students in Fall 2020.
- More than 10,500 pounds of trash was removed from nine restoration sites from 2014-2020 by LagoonKeepers, through a contract with Palm Beach County.
- The [Lake Worth Lagoon Initiative website](#) was revamped in 2019 and received 8,500 visits from April 2019-Nov. 2020.

TARPON COVE RESTORATION PROJECT:
A BENEFICIAL RE-USE SUCCESS STORY

TARPON COVE IS A CHAIN OF INTERTIDAL ISLANDS ONE-HALF MILE IN LENGTH CREATED BY FILLING A DEEP DREDGE HOLE.

WHAT'S INVOLVED:
400,000 cubic yards of lagoon-compatible sand (enough to fill 130 Olympic-sized swimming pools)...

...from:

- Maintenance Dredging of Intracoastal Waterway (FIND)
- Dredging of navigation channel in Town of Palm Beach
- Two marina expansions
- 16,000 tons of rock

...to create 40 acres of habitat including:

- 2.7 acres mangroves
- 35 acres seagrass habitat
- 0.3-acre shorebird nesting mounds
- 2.1 acres oyster reef and breakwater
- Paddling and recreational opportunities

START DATE: 2018 → COMPLETION: 2022

COST: \$5.5 million in local, state and federal funds
Use of beneficial reuse material provides cost-savings of \$10.8 million to date

A collage of five small images showing different aspects of the restoration project: a dredger at work, a view of the lagoon, a close-up of seagrass, a person planting a mangrove sapling, and a view of the restored islands.

CLICK IMAGE TO ZOOM IN. CLICK AGAIN TO ZOOM OUT.

GOALS AND PRIORITIES



A Great Egret at Ibis Isle (Photo credit: PBC-ERM)

WATER AND SEDIMENT QUALITY

GOALS:

- Continue and expand the water quality monitoring program in the Lagoon. Update water quality assessment every 3-5 years.
- Standardize monitoring programs for consistency with statewide or regional monitoring protocols for water quality, fisheries and seagrass.
- Develop and utilize a predictive watershed and/or hydrodynamic model for the Lagoon to determine nutrient loading rates, sedimentation rates, resulting salinities and other variables under different water management scenarios.
- Manage the timing, quantity and quality of freshwater inflows from Lake Okeechobee and the Lagoon watershed to support the optimal salinity ranges of two cornerstone species: Oysters and Seagrass.
- Reduce bacterial contamination and Harmful Algal Blooms to maintain recreational uses and ecological health.
- Reduce pollution from microplastics and emerging contaminants of concern.
- Reduce nutrient loadings from land-based sources to meet water quality targets and support living resources.
- Modify or maintain the C-51 sediment trap to reduce the volume and timing of sediment discharges to the Lagoon.

RELATED ACTIONS:

- Actions to improve water quality:**
- WQ-1 Expand Water Quality Monitoring
 - WQ-2 Develop a Watershed-Based Modeling Program
 - WQ-3 Implement Best Management Practices for Drainage Canals
 - WQ-4 Monitor and Assess Ways to Reduce Bacterial Contamination and Harmful Algal Blooms
 - WQ-5 Identify and Assess the Impacts of Emerging Contaminants
 - WQ-6 Manage Freshwater Inflows to Optimize Environmental Benefits
- Actions to reduce pollution from wastewater:**
- WW-1 Assess and Reduce Occurrence of Sewer Overflows
 - WW-2 Identify Priority Areas for Conversion of Septic Systems to Central Sewer
- Actions to reduce pollution from stormwater:**
- SW-1 Reduce Stormwater Runoff from Urban Landscapes
 - SW-2 Expand Use of Green Infrastructure and Low Impact Development Practices
- Actions to reduce sediment loadings to the Lagoon:**
- SE-1 Assess and Manage Sediment Loading



GOALS AND PRIORITIES (CONT'D)



Volunteers get ready to plant salt marsh grass at the Tarpon Cove restoration site (Photo credit: PBC-ERM)

HABITAT ENHANCEMENT AND PROTECTION

GOALS:

- Inventory, monitor and protect natural hardbottom areas in the Lake Worth Lagoon.
- Continue to create new artificial reefs and enhance existing artificial reefs
- Adapt or modify current oyster enhancement and monitoring efforts to guide future restoration efforts.
- Develop quantifiable criteria to determine long-term success of intertidal habitat restoration.
- Continue seagrass monitoring and expand water quality monitoring to evaluate and address factors influencing seagrass abundance and composition.
- Continue to utilize lagoon-compatible dredge material in habitat restoration projects.
- Purchase available submerged lands near Singer Island and other areas as appropriate to protect seagrass and other intertidal habitats.

RELATED ACTIONS:

- Actions to expand and restore a diversity of Lagoon habitats:**
- HE-1 Create, Protect and Monitor Hardbottom Habitats
 - HE-2 Restore, Create and Protect Intertidal Habitats
 - HE-3 Maintain and Expand Seagrass Habitats
 - HE-4 Acquire Ecologically Significant Submerged and Intertidal Lands

FISH AND WILDLIFE MONITORING

GOALS:

- Continue fisheries monitoring at established and new restoration sites and expand monitoring to include sites throughout the Lagoon.
- Continue and expand collaborative law enforcement partnership to enforce boating speed zones to protect manatees.
- Continue and expand sea turtle monitoring to explore relationships between water quality, seagrass abundance and turtle health.
- Continue to provide and actively manage island habitats for nesting and foraging shorebirds.
- Install an acoustic telemetry network in the Lagoon to document habitat utilization by targeted species.

RELATED ACTIONS:

- Actions to protect and enhance Lagoon fish and wildlife:**
- FW-1 Continue Implementing Palm Beach County’s Manatee Protection Plan
 - FW-2 Continue Sea Turtle Monitoring
 - FW-3 Continue Fisheries Monitoring
 - FW-4 Manage and Monitor Shorebird Habitat
 - FW-5 Implement Remote Tracking Technologies for Fish and Wildlife Monitoring



GOALS AND PRIORITIES (CONT'D)



A youngster examines Lagoon invertebrates during a “Growing Up Wild” outdoor program (Photo credit: PBC-ERM)

CLIMATE CHANGE AND SEA LEVEL RISE

GOALS:

- Identify and implement management strategies to improve the resilience of coastal habitats and infrastructure most vulnerable to climate change.
- Expand use of Living Shorelines to mitigate flood and storm impacts and provide habitat.
- Enhance community understanding of the far-ranging impacts of climate change.

RELATED ACTIONS:

- Actions to adapt to and mitigate the effects of climate change and sea level rise:
- CC-1 Conduct a Vulnerability Analysis of Resources at Risk from Climate Change
 - CC-2 Improve Resiliency of Critical Habitats to Climate Change and Sea Level Rise

PUBLIC OUTREACH AND ENGAGEMENT

GOALS:

- Increase multicultural outreach and education about the Lagoon.
- Continue and expand hands-on and virtual opportunities to learn about and contribute to Lagoon improvement for residents of all ages, incomes and abilities.
- Expand science-based education for youth, especially in underserved communities.
- Incorporate enhanced use of digital communication tools in outreach programs.

RELATED ACTIONS:

- Actions to increase public education and involvement:
- PO-1 Foster Public Awareness and Engagement
 - PO-2 Promote Youth Education and Engagement

PUBLIC USES OF THE LAGOON

GOALS:

- Continue to provide recreational opportunities for residents and tourists of all ages and abilities.
- Pursue partnerships with Lagoon-dependent businesses and a certification program for ecotour providers to foster community commitment to ethical enjoyment of the Lagoon.
- Reduce environmental impacts of boating through designation of additional Clean Boating facilities, and appropriate siting of mooring fields.

RELATED ACTIONS:

- Actions to provide for responsible public use of the Lagoon:
- PU-1 Ensure Adequate and Appropriate Public Access to the Lagoon



GOALS AND PRIORITIES (CONT'D)



An intern in the Green Futures program assists with monitoring a restoration site
(Photo credit: PBC-ERM)

FINANCING AND IMPLEMENTATION

GOALS:

- Secure annual funding from the Legislature for Lake Worth Lagoon Initiative priority projects.
- Increase local funding sources to support monitoring and management of Lagoon resources.
- Sustain existing partnerships and forge new alliances with governmental and nongovernmental organizations to advance Management Plan goals.
- Pursue public-private partnerships to facilitate restoration, research and education.
- Aggressively seek state and federal grants for lagoon improvement.
- Strategically expand use of online meetings and forums such as the Lake Worth Lagoon Initiative’s Working Groups and Lake Worth Lagoon Symposium to increase stakeholder engagement in Lagoon management.

RELATED ACTIONS:

See [Financing and Implementation chapter](#)



STATE OF THE LAGOON

Highly urbanized and altered flood control and development adjectives that best describe words like “forgotten,” “mis also noted the Lagoon is “stu

Originally a freshwater lake, early p colonists transformed Lake Worth in from the Atlantic Ocean enters thro South Lake Worth Inlets. Freshwater from three major drainage canals (C which together collect runoff from i land. The C-51 canal alone delivers freshwater flows.² In addition, the A Waterway carves a nautical highway of the Lagoon as it traverses the East

These features have in effect create highest ecological diversity and mos usage occurs in the Northern Lagoor Worth Inlet brings salty and cleansir large seagrass beds. The Southern L from proximity to the ocean, albeit more constricted inlet. Markedly dir biodiversity and recreational activit Central Lagoon, located farthest aw on the receiving end of most canal f

The sprawling watershed - 42 times itself, with a 2020 population estim million - has an enormous impact or complicates efforts to manage it ho of 30 local municipalities, a large ur multiple federal, state and local wa all contributing runoff to the Lagoor challenges confronting Lagoon mana

LAKE WORTH LAGOON BY THE NUMBERS



INTRODUCTION

Just 20 miles long, the Lagoon punches above its weight in ecological and economic value. A 2019 Economic Valuation study estimated the value of recreational uses and business activities related to the Lagoon at \$813.9 million per year. The total value of tangible and intangible benefits associated with the Lagoon is estimated at \$5.37 billion.¹

The Lagoon is an aquatic playground for fishing, diving, paddle sports and birdwatching enthusiasts, with a world-renowned SCUBA destination, the Phil Foster Park Snorkel Trail, just steps from shore. It is a nursery and foraging area for threatened and endangered fish and wildlife as diverse as sea turtles, goliath groupers, American oystercatchers and manatees. And it is home to the bustling Port of Palm Beach, ranked among the state's top five ports in cargo value. The successful co-existence of these distinctly differing personalities in a compact estuary of just 11.3 square miles is a testament to the Lagoon's resilience.

others. The huge influx of freshwater also delivers significant volumes of suspended sediments including silt and organic materials, or muck, especially to the Central segment. These sediments accumulate in oxygen-deficient layers on the bottom, constantly resuspend in the water column, and provide a poor substrate for seagrass that is the foundation of a healthy estuary. Impacts have been magnified in recent years, with widespread water quality impairments, and thinning or loss of seagrass.

The creation of the Lake Worth Lagoon Initiative in 2008 has provided a forum for agencies and communities with responsibility for the Lagoon to proactively and cooperatively work on policies and projects to improve it.

The 2021 Update of the Lake Worth Lagoon Management Plan supports those efforts, while striving to attain a sustainable balance between the human and ecological needs of the Lagoon.

Ongoing monitoring is conducted in the Lagoon for water quality, seagrasses, sea turtles, oysters, and fisheries. This chapter summarizes the status and trends of these key indicators of Lagoon health. It also highlights the need for development of models and other decision-support tools that are a critical step in the process of achieving data-driven, evidence-based management of the Lagoon and its natural resources. Modeling is an integral tool for forecasting both long- and short-term estuarine conditions to support operation of water control infrastructure throughout the Lagoon’s watershed, and direct ecosystem restoration and water management initiatives to maximize ecological benefits.

Water quality monitoring conducted in the Lagoon since 2007 provides a vital framework for understanding factors influencing the Lagoon’s health.

WATER QUALITY

STATUS:

A longstanding cooperative agreement between Palm Beach County (PBC) and the South Florida Water Management District (SFWMD) facilitates ongoing monitoring of nutrients and additional water quality parameters (see Figure 1.2).

Salinity is a priority concern for the Lagoon because of the volume and timing of freshwater runoff it receives from the watershed. SFWMD deployed two high-frequency water quality sondes in November 2019 to document salinity fluctuations in the Central Lagoon. The sondes provide near real-time measurements of several physical water quality parameters, with salinity a primary driver, in addition to nutrients and sediments, for monitoring the effects of freshwater releases from the watershed. They are located approximately 2 miles to the north and south of the C-51 canal, which contributes more than half of the freshwater inflow to the Lagoon.

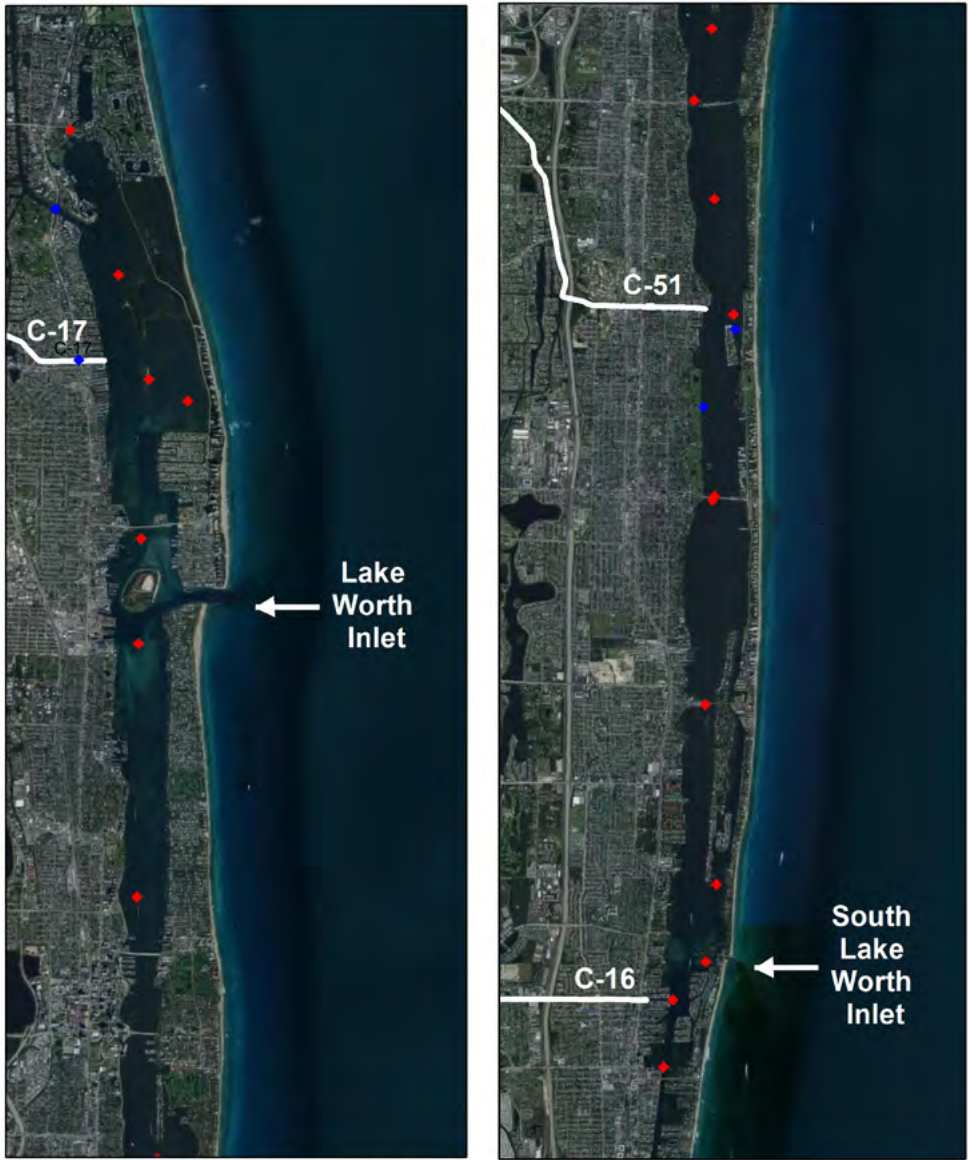
The County maintains its own high frequency salinity sonde at John’s Island Natural Area across from the C-51 canal, and another sonde at Munyon Cove. These two sondes collect salinity and temperature data hourly.

A sediment trap excavated on the C-51 to serve as a “sump” to capture and prevent sediments from entering the Lagoon, was assessed in 2020 by SFWMD.

Results indicate the trap’s efficiency decreases as flow increases, particularly for flows higher than 850 cfs at S-155. The range of sediment exported out of the trap was between 3% to 42% of total trap capacity or 0.38 to 10.36 tons/day.

Dredging of the accumulated sediment in the trap on an established schedule to maintain its efficiency as a sink and not as a sediment source, is paramount to ensure it can trap sediments, otherwise it will continue to contribute to the

FIGURE 1.2 LAKE WORTH LAGOON WATER QUALITY MONITORING STATIONS



Water Quality Stations

- ◆ LWL WQ
- ◆ NPDES - Tidal

SOURCE: PBC-ERM





Resource managers and citizens who took a 2020 online survey about Lagoon perceptions and management priorities were asked to list adjectives that best describe the Lagoon. This Word Cloud shows the words they submitted, in the form of a spotted eagle ray—the mascot of the Lake Worth Lagoon Initiative.

sediment load being exported downstream into the Lagoon.

SFWMD also installed a nutrient autosampler in 2019 at the S-155 structure on the C-51 canal. This station allows for a weekly composited sample that is analyzed for total nitrogen and phosphorus discharged from the C-51 canal into the Lagoon.

Surveillance monitoring for blue-green algae (BGA) and red tide is coordinated with the Florida Department of Environmental Protection (FDEP) and the Florida Fish and Wildlife Conservation Commission, respectively. Weekly bacterial monitoring by the Florida Department of Health (FDOH) occurs at Phil Foster Park, as well as several oceanside beaches.

The Northern and Central segments of the Lagoon have been designated by FDEP as impaired for nutrients, chlorophyll, copper or other parameters. Development of Total Maximum Daily Loads (TMDLs) is required to establish numerical limits on quantities of these pollutants the Lagoon could receive and still meet water quality standards for fishable, swimmable waters under the state’s Class III waters designation.

TRENDS:

An analysis of 13 years of water quality data (January 2007-June 2020) reveals some important trends, particularly with regard to relationships between freshwater inflows, salinities, microscopic algae (expressed as chlorophyll a), and nutrient loading:²

- While water quality in the North and South segments benefit from proximity to the inlets, discharge from the C-51 accounted for nearly 59% of the total inflow to the Lagoon and greatly influenced the Central segment. The C-16 contributed more than 30% of flows over that period, while the C-17 delivered more than 11%.
- Five variables - Chlorophyll (CHL), Total Nitrogen (TN),

Total Phosphorus (TP), Total Suspended Solids (TSS), and Turbidity - have increased in the Central Lagoon since 2007. TN and TP increased in the Northern Lagoon. (see Figure 1.3)

- Three variables - CHL, TN, and TP - were positively correlated to inflow and to each other in all three segments.
- The variability, lack of seasonality, and lack of correlation between TSS and turbidity with other variables suggest that the input, transport, and resuspension of sediments should be examined in greater detail.

While important reductions in pollutant loading estimates have occurred, significant concentrations of nutrients continue to enter the Lagoon from the watershed. TP concentrations at the C-51 discharge were higher than the state-established Numeric Nutrient Criteria (NNC) of 0.049 mg L⁻¹ for the Central Lagoon from 2009-2019. TN concentrations at this station were also higher than the NNC of 0.66 mg L⁻¹ for this pollutant in the Central Lagoon.³

Water quality monitoring is most useful in tandem with monitoring of biological resources. Changes in water quality directly impact the health of the five biological indicators that are also part of the Lagoon’s foundational monitoring: Seagrass, Sea Turtles, Fisheries, Oysters and Shorebirds.

The potentially outsized role of freshwater discharge in Lagoon hydrodynamics warrants further investigation to determine appropriate strategies to manage volumes, timing and constituents of the freshwater discharges, most importantly nutrients and sediments.

NEEDS:

Development of a robust hydrodynamic model that integrates additional environmental parameters to foster watershed-level analysis and enables predictive forecasts of outcomes under various water management scenarios.

Completion of a comprehensive evaluation of the effectiveness of the sediment trap installed at the C-51 canal in 2007, including analysis of potential modifications to the existing trap and efficacy of additional traps.

An assessment of salinity gradients along the entire length of the Lagoon with varying flows from the watershed to determine impacts to resulting water quality and effects on valued ecosystem components (such as seagrass and oysters).

A detailed study of the content and magnitude of sediment loads to and sediment transport within the Lagoon and effects on water quality and valued ecosystem components. The assessment should focus on both the source and fate of materials derived from the Lagoon’s watershed via C-51, C-17 and C-16 and include tracking of copper and other heavy metals.

Overall, expanded and targeted research and monitoring protocols are needed to proactively address a host of management needs in the Lagoon, including:

- Identification of land-based sources of pollution and relative contributions to FDEP-designated impairments.

FIGURE 1.3 TREND ANALYSIS FOR MAJOR WATER QUALITY VARIABLES BY LAGOON SEGMENT 2007-2020

	S	CHL	TN	TP	TSS	TURB	Q
North			+	+			
Central		+	+	+	+	+	
South							

SOURCE: Coastal Ecosystems, LLC

- More robust sampling for turbidity and total suspended solids in the Central Lagoon to fully understand water quality impacts associated with freshwater discharges.
- Identification of hot spots, sources and pathways for Harmful Algal Blooms, bacterial contamination and emerging contaminants such as microplastics.
- Source tracking to identify nutrient pollution associated with leaching from septic systems or municipal wastewater overflows.

SEAGRASSES

STATUS:

Seagrass is an essential building block of a healthy estuary, a vital habitat for a host of marine life large and small. The diversity found within seagrass beds also supports important recreational and ecotourism activities like fishing and snorkeling. Sustaining seagrass is critical to the Lagoon environment and economy.

All seven seagrass species found in Florida occur in the Lake Worth Lagoon, including the imperiled Johnson’s Seagrass (*Halophila johnsonii*) (see Action HE-3). This seagrass is the only marine plant designated as a federally threatened species. Two of the 10 state-designated critical habitat areas for Johnson’s seagrass are within the Lagoon.⁴

In 2018, a total of 1,552 acres of seagrass was observed in the Lagoon, with 1,301 acres (83.8%) in the Northern Lagoon, 249 acres in the Southern Lagoon (16%) and 1 acre (.06%) in the Central Lagoon. This is a decrease of 30 acres from the previous Lagoon-wide mapping effort in 2013.) Seagrass cover increased by 94 acres in the north segment between 2013 and 2018.⁵

Habitat restoration contributed an additional 30 acres of potential seagrass habitat in 2018 through construction of four projects: Grassy Flats and Bryant Park Islands, Jewell

Overall, seagrasses declined from 1,582 acres in 2013 to 1,552 acres in 2018.

Cove Living Shoreline, Snook Island Modifications, and Tarpon Cove Islands Phase I.

Any positive gains in seagrass have been overshadowed by significant and troubling shifts in composition and density of seagrasses, including dramatic thinning from dense coverage to patchy coverage or loss of seagrass in some areas.

Lagoon seagrasses are monitored using two primary methods: “Groundtruth” Mapping and Fixed Transect Surveys (see Figure 1.4) Additional patch monitoring is conducted by Palm Beach County and Palm Beach Atlantic University. Together, these programs provide critical information about spatial and temporal changes in seagrass cover.

Seagrass Mapping

Lagoon-wide mapping to document watershed-scale trends in seagrass occurs every five years; the last large-scale mapping effort was completed in 2018. The 2013 and 2018 seagrass maps are based on diver verification of previously mapped habitats with additional ground-truthing (900 points) outside previously mapped habitats.

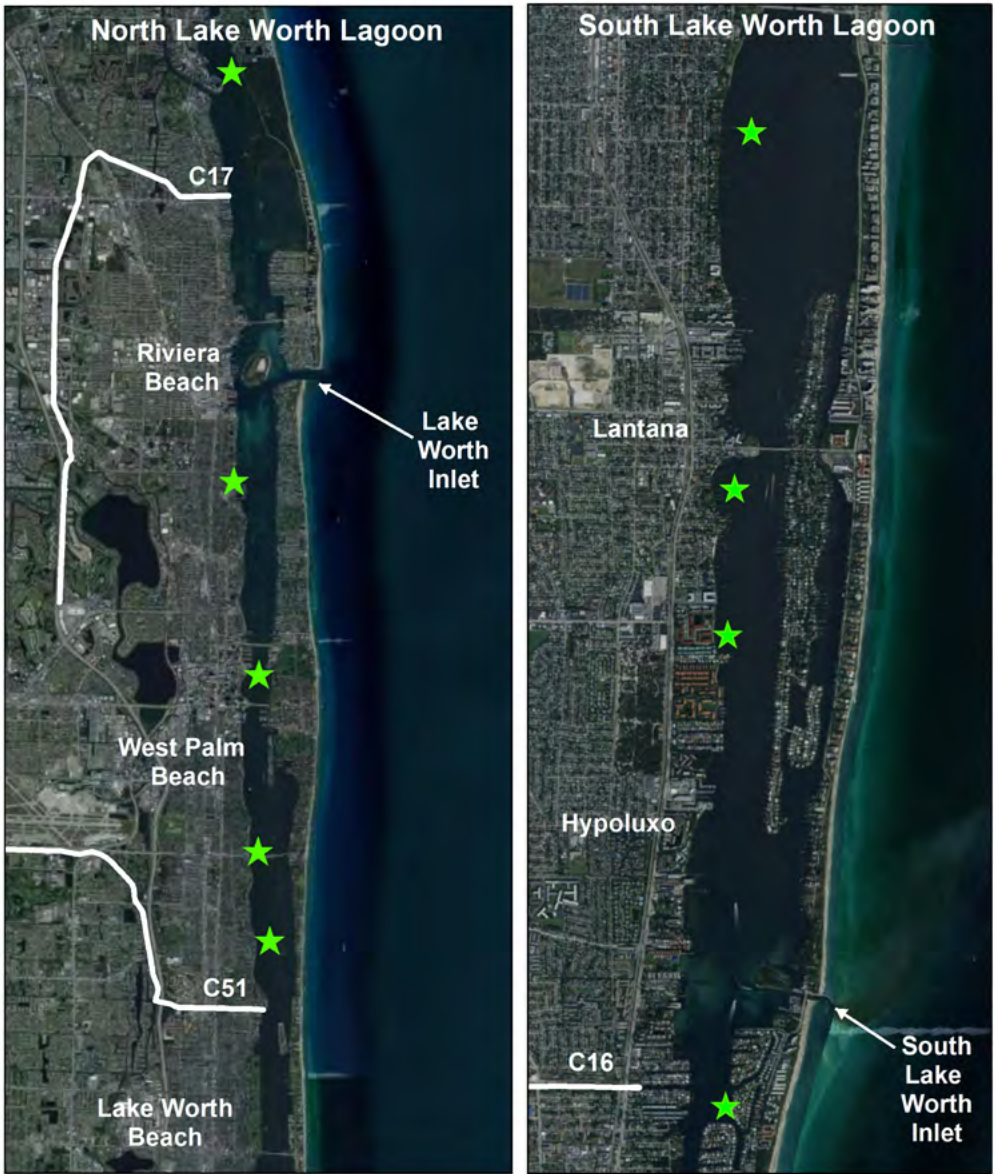
The 2018 mapping and ground truthing effort sought to capture significant changes in bed composition/density, outer bed boundaries, and spatial extent of seagrasses within the three lagoon segments (Northern, Central and Southern) in comparison to the 2013 map.

The next Lagoon-wide mapping effort is planned for 2023.

Fixed Transect Sampling

As shown in Figure 1.4, ten permanent transects are monitored annually to assess fine-scale changes in seagrass presence,

FIGURE 1.4 LWL SEAGRASS MONITORING SITES



Legend

★ Fixed Seagrass Transects

SOURCE: PBC-ERM

composition, and abundance (generally categorized as dense, moderate, and patchy). With more robust, targeted water quality and seagrass monitoring, this data could be integrated with environmental parameters such as salinity, temperature, turbidity, rainfall, and freshwater inflows to document changes



to seagrass density and species composition over time.

Transect monitoring is especially useful in areas like the Lake Worth Lagoon, with poor visibility throughout the water column, or where low-profile, diminutive species such as paddle grass and Johnson’s seagrass are dominant and could be overlooked by aerial mapping efforts.

Other Monitoring Efforts

Palm Beach County monitors four seagrass beds adjacent to major drainage canals, utilizing permanently established polygons of 1.5 to 2.5 acres on a bi-annual basis. Two of the polygons are in the Northern Lagoon near the C-17 canal, and two are on either side of the C-51 canal in the Central Lagoon. This monitoring documents the presence/absence of seagrasses, and the relative proportion of component species within randomly selected quadrats. Canopy height and species also are documented.

Palm Beach Atlantic University monitors seagrass biannually in Lake Worth Cove at John D. MacArthur Beach State Park. This 10-year dataset documented a high of 40% seagrass coverage in the Cove in 2010-2011 and a decline to 10% coverage in 2019.

TRENDS:

Overall, seagrasses declined from 1,582 acres in 2013 to 1,552 acres in 2018. The number of sites with less than 5% cover of seagrass increased, while the number of sites with more than 5% seagrass cover declined lagoon-wide.⁶

The Northern Lagoon, with its generally higher salinities and clear waters strongly influenced by tidal flushing, remains a stronghold for seagrasses in the Lagoon. Seagrass coverage here expanded into new areas by 94 acres from 2013 to 2018. Near record high coverage was observed in all northern transects for 2019, but those gains disappeared during the

2020 monitoring. Moreover, thinning of seagrasses has been dramatic, with a decline from 588 acres in moderate and high-density seagrasses in 2013 to 256 acres in 2018. The amount of low-density, patchy seagrasses increased from 528 to 881 acres in the same period.

As of May 2020, seagrass was not present in sampled transects within the Central Lagoon; the predominantly patchy seagrasses of the Southern Lagoon had declined by 54.5%; and the high-value, high-density seagrasses of the Northern Lagoon had contracted by more than 56%.

No single cause has been identified as the culprit in the seagrass shifts. Multiple factors may be at play. Freshwater inflows can lower salinities below optimal ranges for many seagrass species and contribute nutrients, suspended sediments, and contaminants. Wind- and boat-induced wave

action causes turbidity, magnified by hardened shorelines, that also may play an important role. Several of these factors can significantly decrease water clarity in the Lagoon and impact the availability of light essential for seagrasses to thrive.

NEEDS:

Develop hydrologic and/or hydrodynamic models for the Lagoon to simulate historical salinities, integrate current inflow and flushing rates, estimate nutrient loading and sedimentation rates, and predict outcomes under various water management scenarios (see Actions WQ-1 and WQ-2).

Develop seagrass restoration targets for each Lagoon segment based on an understanding of various factors currently affecting SAV recruitment and growth, specifically:



Paddle grass in the Lagoon (Photo credit: PBC-ERM)

- Determine species-specific responses to light, temperature, salinity and sediment characteristics such as grain size and organic content.
- Better understand the drivers of change for these parameters in the LWL.
- Develop management strategies to mitigate fluctuations in these parameters.

Implement appropriate management strategies, including water quality improvements and habitat restoration, to recover, sustain and expand seagrasses in the Lagoon.

Permanently protect seagrass beds adjacent to John D. MacArthur Beach State Park through acquisition or donation from willing sellers within park boundaries.

SEA TURTLES

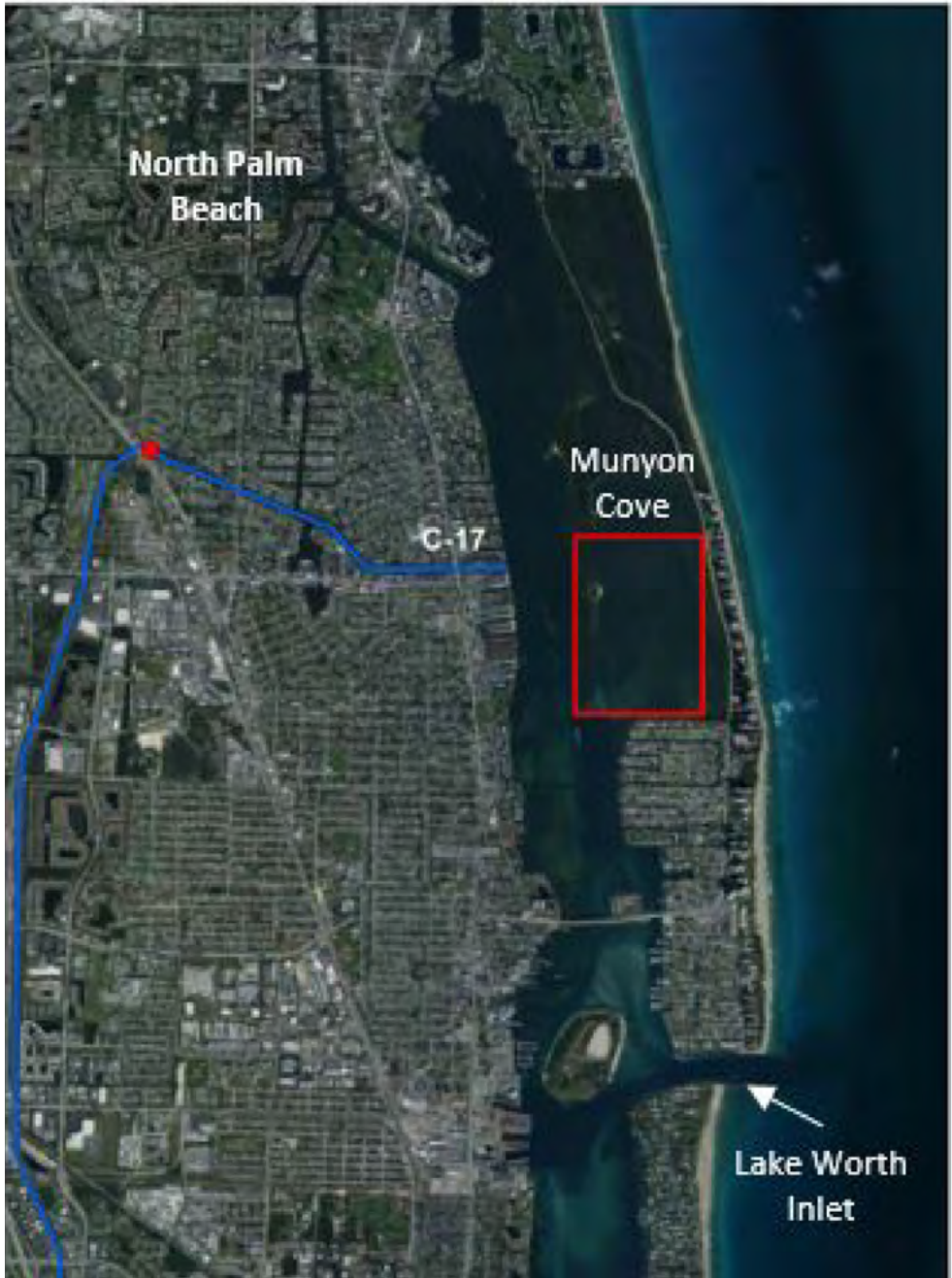
STATUS:

The Northern Lagoon is a regionally important nursery area for juvenile Green Sea Turtles, with an average density of 37.4 turtles/km2. This is a markedly greater abundance than the Indian River Lagoon, Florida Keys, or nearshore reefs in Palm Beach County.⁷ Sampling has been conducted quarterly since 2005, using a combination of visual observations and net captures (see Figure 1.5).

The primary objectives of this long-term effort are to:

- Obtain data on species abundance, size, and sex ratios.
- Determine the Catch per Unit Effort (CPUE) at specific sites.
- Document the prevalence of Fibropapilloma virus (FP).
- Collect esophageal and anterior stomach contents to evaluate preferred foods (seagrass vs. algae)
- Obtain blood samples for genetic, sex ratio and disease analysis.
- Determine preferred habitats by collecting GPS

FIGURE 1.5 TURTLE SAMPLING LOCATION MAP



SOURCE: PBC-ERM

waypoints to mark sighting, capture and recapture locations, or through use of acoustic tags to document site fidelity within an acoustic array network proposed in the Lagoon.

From March 2005 to February 2018, researchers observed 920 sea turtles through visual transects and captured 178 green turtles and 2 loggerhead turtles (including 22 recaptures). The vast majority of sightings were in the Northern Lagoon, east of Little Munyon Island. Sightings and captures are more prevalent during spring and summer months than winter and fall.

In 2019, sampling crews began collecting blood samples from individual turtles for analysis by partners at Harbor Branch Oceanographic Institute, to evaluate relationships between turtle health and disease status, food sources and biotoxins associated with Harmful Algal Blooms.

TRENDS:

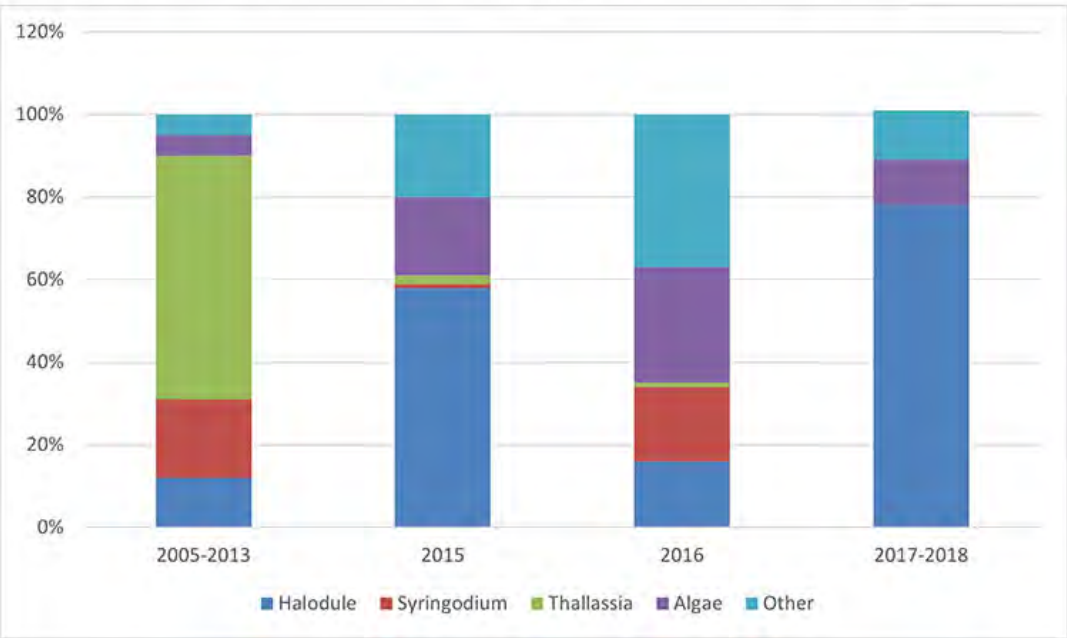
In 2018-2019, green turtle abundance at the Little Munyon Island site was 1.54 turtles per kilometer. This closely mirrors the average abundance of 1.47 turtles per kilometer from surveys conducted there since 2013, and an average abundance of 1.23 turtles per kilometer there from 2005-2011. These surveys indicate the population in the area has remained relatively stable over the years.⁸

The dietary preferences of turtles near Little Munyon Island have significantly changed. Prior to 2014, the turtles mostly consumed seagrasses, including turtle grass (*Thalassia testudinum*) and manatee grass (*Syringodium filiforme*), with little to no algae.

From 2014-2018, their diets shifted largely to shoal grass (*Halodule wrightii*), with *Thalassia* almost absent from the samples.⁹ Additionally, analysis showed a significant increase in consumption of algal species (see Figure 1.6). These dietary shifts correspond with dramatic declines in seagrass abundance

The Northern Lagoon is a regionally important nursery area for juvenile Green Sea Turtles.

FIGURE 1.6 DIETARY COMPOSITION OF LWL SEA TURTLES 2005-2018



SOURCE: Inwater Research Group

and species composition over roughly the same period.

Nearly half (48.3%) of the 179 turtles captured (or recaptured) exhibited the presence of benign tumors associated with fibropapillomatosis (FP), a viral infection occurring mainly in green turtles. This rate has remained relatively stable throughout the study period, except for spikes to nearly 80% in 2006, 2012 and 2013. Overall, fewer Lagoon turtles exhibit FP tumors than turtles in the Indian River Lagoon. However, all of the estuarine locations sampled in Southeast Florida show a significantly larger percentage of turtles with FP tumors than offshore waters.

NEEDS:

Implement acoustic or GPS tracking of turtles to document habitat utilization and spatial distribution of sea turtles in the Lagoon.

Determine if sea turtle dietary changes correlate to shifts in seagrass abundance and resulting impacts, if any, on the

overall health and fitness of Lagoon turtles.

Monitor and assess potential links between water quality, seagrass declines and presence or severity of FP in Lagoon turtles.

Oyster recruitment in the Lagoon is among the highest recorded in Southeast Florida.

OYSTERS

STATUS:

Three natural oyster reefs in the Lagoon have been monitored since 2005. Surveys were expanded in 2015 to include three reefs constructed as part of habitat restoration projects in the Central Lagoon. Palm Beach County has funding in place to monitor all six reefs through 2023 (see Figure 1.7).

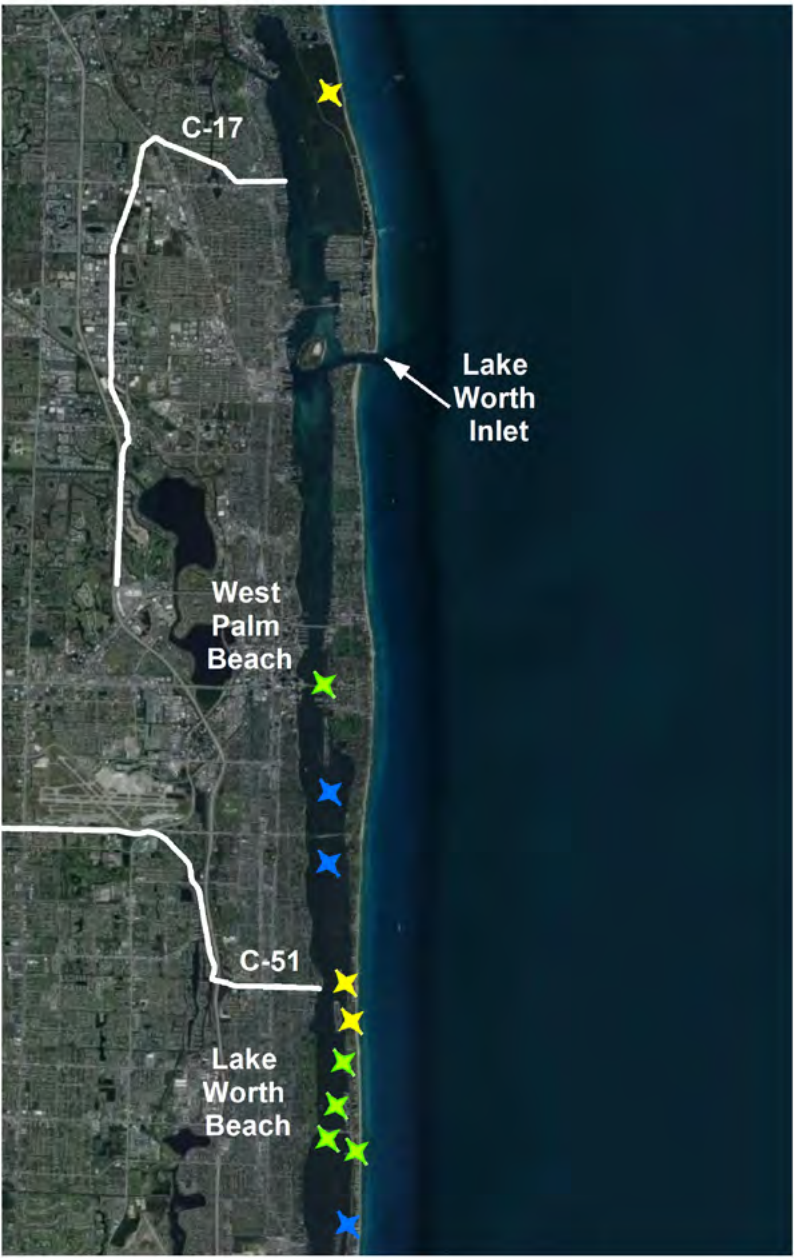
Oysters are valuable indicators of ecosystem health. Oyster monitoring in the Lagoon seeks to document the responses of oyster populations to changes in water quality arising from water management activities and natural events. It includes spring and fall surveys of oyster density and shell height (a measure of growth rates), and monthly collection of live oysters to assess reproductive development, and presence of dermo disease, a parasitic infection that causes mass oyster mortality. Additionally, spat monitoring arrays are deployed and retrieved monthly to assess oyster recruitment throughout the year.

Most of the monitored stations contained healthy live oysters. Live Oyster Density from 2014-2019 ranged from 200 to 500 oysters per square meter. Juvenile oyster spat were settling monthly at most monitored stations from 2014 to 2019 except in January 2017. Peak annual recruitment rates ranged from 2 to 20 spat per shell from 2014-2020.

Salinity is a driving force behind oyster population density and health. Oysters tolerate a wide range of salinities but generally prefer a range of approximately 12-20 parts per

FIGURE 1.7 MAP OF OYSTER REEF LOCATIONS

★ =Natural ★ =Restored ★ =Natural and Restored



SOURCE: PBC-ERM

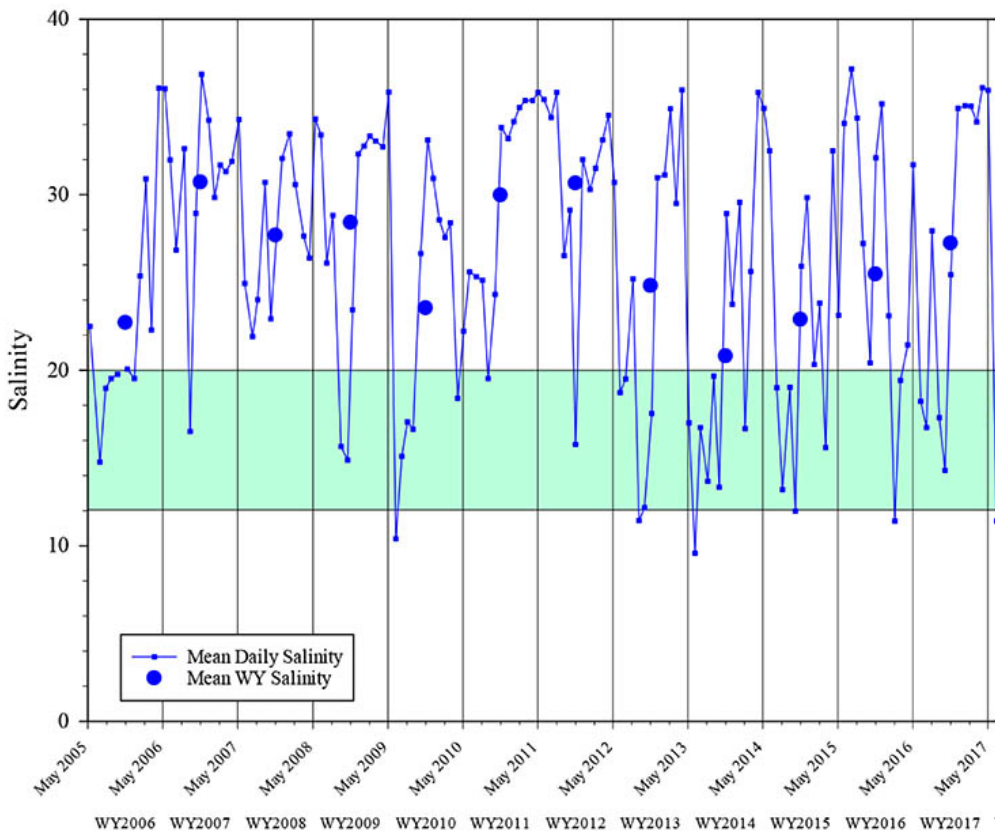
thousand (ppt). Prolonged periods of high salinity can lead to increased dermo infection rates and predation. Even with high oyster recruitment numbers the newly settled recruits often do not survive due to elevated predation and disease rates

common during the dry season as a consequence of elevated salinity in the Central Lagoon.

TRENDS:

The Lagoon’s oyster population is currently stable.¹⁰ Abundance, health, and population ecology are generally within normal ranges for South Florida oyster populations. The County constructed an additional 1.6 acres of oyster reefs between 2014-2019. Constructed reefs are functioning as well as natural reefs in the Lagoon to support additional oyster

FIGURE 1.8 SALINITIES AT LAKE WORTH LAGOON OYSTER MONITORING STATIONS 2006-2019



The shaded area shows the 12-20 ppt preferred optimal salinity range for oysters in the Central Lagoon.

SOURCE: Florida Fish and Wildlife Conservation Commission

populations and provide habitat for species in the Lagoon.

Salinities in the Lagoon are highly variable according to proximity to inlets contributing salty ocean waters or drainage canals contributing large volumes of freshwater. Researchers believe the freshwater releases generally were more beneficial than harmful to oysters, keeping salinities closer to the optimal range during the summer months (July-Sept.). Likewise, reduced freshwater flows during the dry season (Oct.-June) caused salinity spikes, a likely factor in the high incidence of dermo infections.

Salinities for the LWL from 2006 to April 2019 exceeded the optimal range 70% of the sampled months and were in the optimal range only 26% of the time sampled (see Figure 1.8).

Dermo was present in Lagoon oysters at all sites in all months at rates ranging from 20% to 100%, although few oysters exhibited infection rates considered fatal.

NEEDS:

Improve management of freshwater flows and rates, and the quality of water being discharged, to maintain lower salinities within the optimal range for oysters throughout the year.

Continue to provide substrates suitable for oyster recruitment and refuge from predation as part of habitat restoration efforts, such as Living Shorelines and oyster reefs.

Fisheries monitoring is reinforcing the importance of restored habitats in the Central Lagoon and natural seagrass habitats in the Northern Lagoon to commercially and recreationally valuable species throughout their life cycles.

FISHERIES

STATUS:

Central Lagoon

Fisheries monitoring is conducted monthly in the Central and Northern Lagoon, using different methods in each segment (see Figure 1.9). In the Central Lagoon, monitoring focuses on fisheries utilization of waters adjacent to restored habitats. Sampling in the Northern Lagoon adheres to statewide standardized protocols for stratified-random sampling to estimate fish abundance and population trends in estuarine areas.

From 2014-2020, sampling in the Central Lagoon provided a basis for comparing differences in fisheries use of a mature restoration site (Snook Islands Natural Area), a new restoration site (Grassy Flats) and an unimproved control site. Sampling crews have consistently found juveniles of commercially important species, including shrimp (*Farfantepenaeus* spp.), Spot (*Leiostomus xanthurus*), and Striped Mullet (*Mugil cephalus*) - evidence that the restored habitats are serving as a nursery area. The presence of both juvenile and adult Common Snook (*Centropomus undecimalis*) and Sheepshead (*Archosargus probatocephalus*) suggests that the sites host resident species throughout their life cycles.

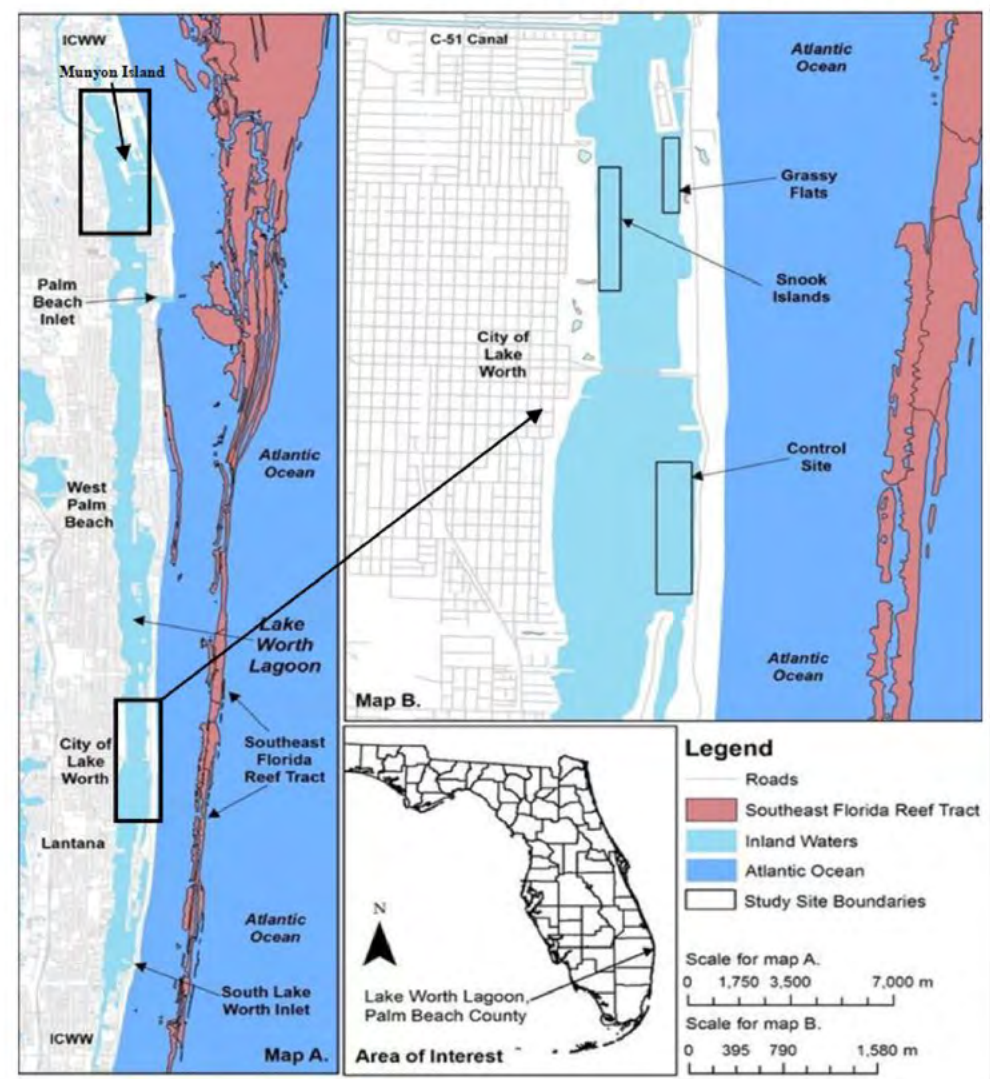
Northern Lagoon

Sampling here has chronicled a more diverse fish community than in the Central Lagoon, likely due to extensive seagrass beds valuable to fisheries. This segment also is influenced by ocean waters and tidal flushing via the Lake Worth Inlet. Many juvenile reef species (e.g., snappers and grunts) are collected in the sampling trawls, along with barracuda, permit and green sea turtles.

The stratified-random sampling design used here is consistent



FIGURE 1.9 MAP OF FISH SAMPLING LOCATIONS



CLICK IMAGE TO ZOOM IN. CLICK AGAIN TO ZOOM OUT. SOURCE: Florida Fish and Wildlife Conservation Commission

determining trends for specific fish stocks, identifying essential habitat, and managing recreational or commercial harvests. The sampling also provides an important window into the ecological contributions of the seagrasses of the Northern Lagoon.

Sampling for Toxins

Mercury samples were collected from economically important species such as juvenile Snook and Sheepshead; laboratory analysis did not find concentrations above acceptable limits.

TRENDS:

In the absence of significant disruptions like red tides or oil spills, discerning trends in fish populations is often a long-term prospect. Sampling has only been conducted in the Central Lagoon since 2014, in association with habitat restoration projects, and in the Northern Lagoon since 2016.

Sampling in the Northern Lagoon reveals more recreational and offshore/reef-associated species than in the Central Lagoon, where filter feeders and detritivores are more prevalent.

The monitoring is laying the groundwork for predicting and protecting future fisheries in the Lagoon, while validating the investments made by Palm Beach County in restoring and enhancing intertidal habitats in the Central Lagoon and reinforcing the value of the extensive seagrass beds of the Northern Lagoon.

NEEDS:

Expand fisheries sampling to the Southern Lagoon.

Utilize random-stratified sampling throughout the Lagoon to ensure uniformity and comparability with sampling in other estuaries.

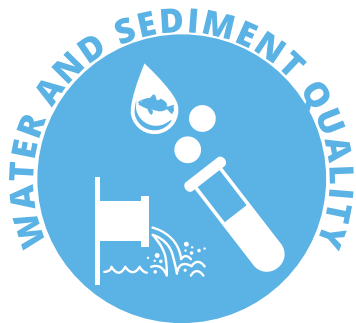
Implement an acoustic tracking network within the Lagoon to collect more comprehensive and timely information about fish movements and distribution in the Lagoon.

1 Economic Valuation of Lake Worth Lagoon, Palm Beach County, FL. PFM Group Consulting LLC. 2019.
2 Assessment of Freshwater Inflow and Water Quality in Lake Worth Lagoon from 2007-2020. Report for the Palm Beach County Department of Environmental Resources Management. Prepared by Coastal Ecosystems LLC. 2021.
3 Water Quality Trends in the West Palm Beach C-51 Canal Impacting Lake Worth Lagoon. Daroub et al. Everglades Research and Education Center, Institute of Food and Agricultural Sciences, University of Florida. 2020.
4 Final Rule Designating Critical Habitat for Johnson’s Seagrass. Document FR 65 17786. National Oceanic and Atmospheric Administration, 2000.
5 2018 Lake Worth Lagoon Seagrass Status and Annual Transect Monitoring Report. Prepared for Palm Beach County by Coastal Eco-Group Inc., 2018.
6 Same as above
7 Assessment of Marine Turtles in the Lake Worth Lagoon 2017-2018. Inwater Research Group, 2018.
8 Same as above
9 Same as above
10 Oyster Monitoring in the Lake Worth Lagoon. Final Report, April 2019-June 2020. Florida Fish and Wildlife Conservation Commission. 2020.



FWC crews using seine nets to sample fish at the Grassy Flats restoration site (Photo credit: Florida Fish and Wildlife Conservation Commission)

INDEX OF ACTIONS AND ACTION PLANS



WATER AND SEDIMENT QUALITY

WATER QUALITY

WQ-1 Expand Water Quality Monitoring **Renamed from 2013 Plan*

WQ-2 Develop a Watershed-Based Modeling Program **NEW*

WQ-3 Implement Best Management Practices for Drainage Canals **NEW*

WQ-4 Monitor and Assess Ways to Reduce Bacterial Contamination and Harmful Algal Blooms **NEW*

WQ-5 Identify and Assess the Impacts of Emerging Contaminants **NEW*

WQ-6 Manage Freshwater Inflows to Optimize Environmental Benefits **NEW*

WASTEWATER

WW-1 Assess and Reduce Occurrence of Sewer Overflows **Renamed from 2013 Plan*

WW-2 Identify Priority Areas for Conversion of Septic Systems to Central Sewer **Renamed from 2013 Plan*

STORMWATER

SW-1 Reduce Stormwater Runoff from Urban Landscapes **NEW*

SW-2 Expand Use of Green Infrastructure and Low Impact Development Practices **Renamed from 2013 Plan*

SEDIMENT MANAGEMENT

SE-1 Assess and Manage Sediment Loading **Renamed from 2013 Plan*



HABITAT ENHANCEMENT AND PROTECTION

HE-1 Create, Protect and Monitor Hardbottom Habitats **NEW*

HE-2 Restore, Create and Protect Intertidal Habitats **Renamed from 2013 Plan*

HE-3 Maintain and Expand Seagrass Habitats **Renamed from 2013 Plan*

HE-4 Acquire Ecologically Significant Submerged and Intertidal Lands **Renamed from 2013 Plan*



FISH AND WILDLIFE MONITORING AND PROTECTION

FW-1 Continue Implementing Palm Beach County's Manatee Protection Plan **Renamed from 2013 Plan*

FW-2 Continue Sea Turtle Monitoring **Renamed from 2013 Plan*

FW-3 Continue Fisheries Monitoring **Renamed from 2013 Plan*

FW-4 Manage and Monitor Shorebird Habitat **Renamed from 2013 Plan*

FW-5 Implement Remote Tracking Technologies for Fish and Wildlife Monitoring **NEW*



CLIMATE CHANGE AND SEA LEVEL RISE

CC-1 Conduct a Vulnerability Analysis of Resources at Risk from Climate Change **NEW*

CC-2 Improve Resiliency of Critical Habitats to Climate Change and SLR **NEW*



PUBLIC OUTREACH AND ENGAGEMENT

PO-1 Foster Public Awareness and Engagement **NEW*

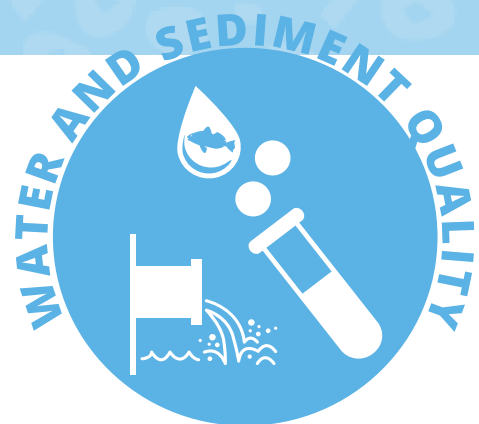
PO-2 Promote Youth Education and Engagement **NEW*



PUBLIC USES OF THE LAGOON

PU-1 Ensure Adequate and Appropriate Public Access to the Lagoon **NEW*





WATER AND SEDIMENT QUALITY ACCOMPLISHMENTS AT A GLANCE



Two sampling units were installed in 2019 in the Central Lagoon near the C-51 Canal to transmit near-continuous data about salinity and other water quality parameters.

**SEE ACTION
WQ-1**



A nutrient autosampler installed in 2019 at the S-155 structure will facilitate calculations of nutrient loading from the C-51 canal into the Lagoon.

**SEE ACTION
WQ-1**



Health advisories due to bacterial contamination were posted at Phil Foster Park 16 times from 2016-2020—9.9% of the time that samples were taken.

**SEE ACTION
WQ-4**



A 2020 study by a Palm Beach Atlantic University student on the abundance and variation of microplastics in surface waters of the Lagoon found an average of 8.6 microplastic pieces per liter.

**SEE ACTION
WQ-5**



Initial mapping of areas with high density septic systems throughout the County was conducted in 2019.

**SEE ACTION
WW-2**



21 projects incorporating Green Infrastructure design elements were completed or underway in Palm Beach County as of 2020.

**SEE ACTION
SW-2**



WQ-1 EXPAND WATER QUALITY MONITORING

ACTION: Expand monitoring programs to address land-based sources of pollution that influence water quality as well as public

FIGURE 1.1 WATER QUALITY MONITORING STATIONS

IMPORTANCE:

Water quality monitoring conducted in the Lagoon since 2007 provides an important foundation for understanding trends and factors influencing the Lagoon's health. Regular, comprehensive and standardized monitoring is essential for forming appropriate management recommendations to maintain or improve water quality.

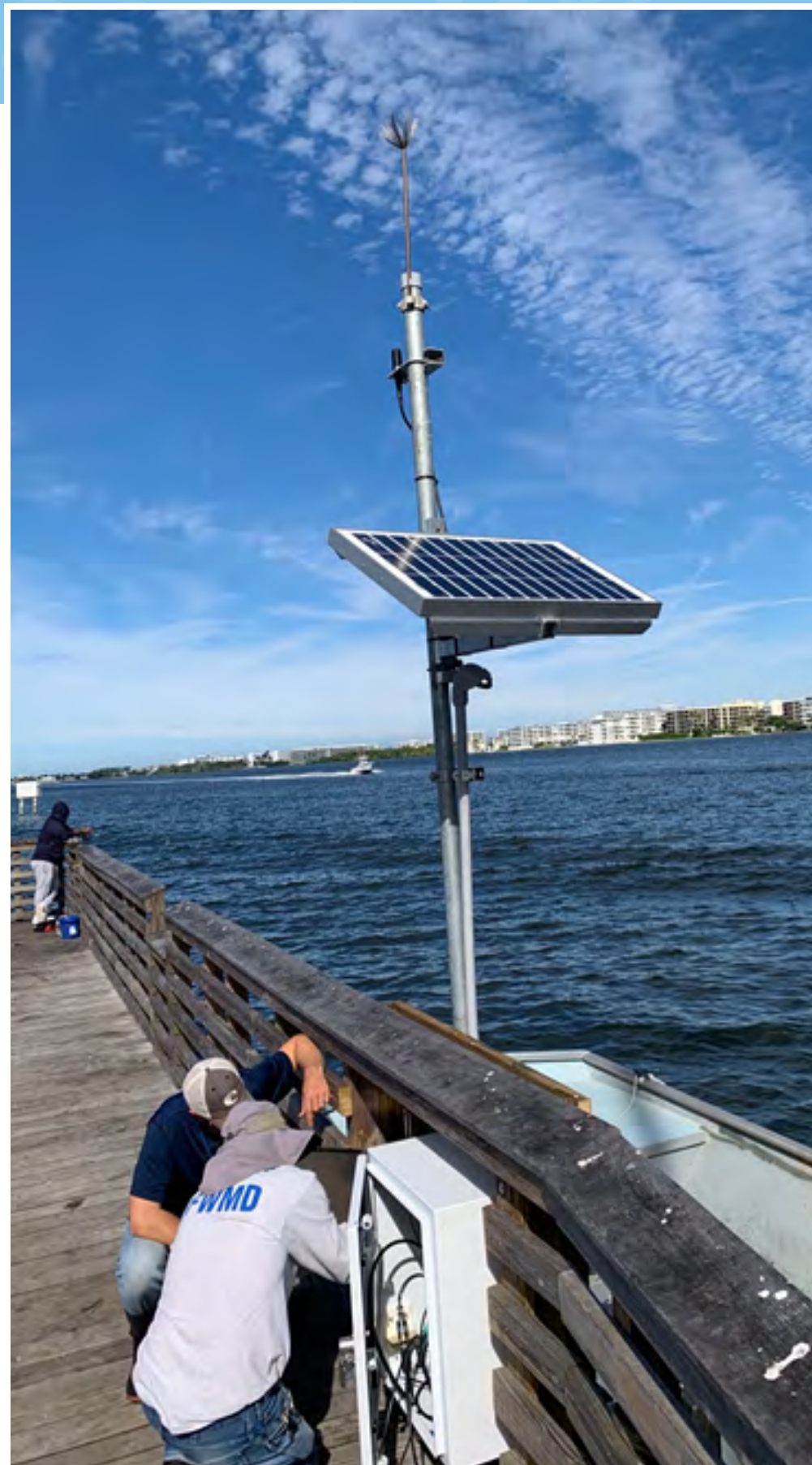
RELATED ACTIONS:

WQ-2, WQ-4, WQ-5, WQ-6, SE-1, WW-2

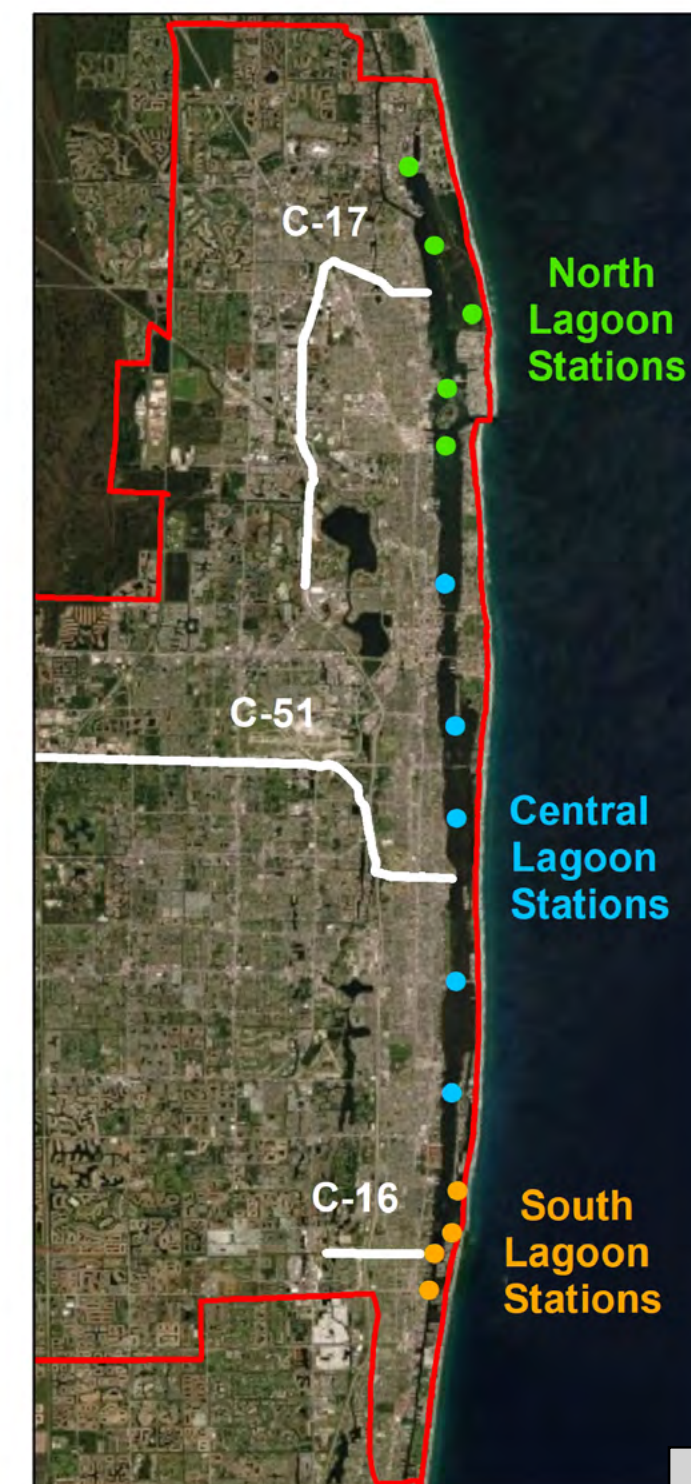
BACKGROUND:

A cooperative agreement between Palm Beach County (PBC) and the Florida Water Management District (FWMD) facilitates water quality monitoring in the Lagoon. Samples are collected monthly at 14 sites by Environmental Resources Management (ERM) staff and analyzed for a variety of physical and chemical properties at the FWMD laboratory (see Figure 1.1).

Data are stored in DBHYDRO, a searchable FWMD environmental database of hydrologic, meteorological, hydrogeologic and water quality data.



Scientists check one of the solar-powered, real-time water quality monitoring stations in the Lagoon (Photo credit: PBC-ERM)



C-51 canal, and at Munyon Cove. These sondes collect salinity data hourly.

SFWMD also installed a nutrient autosampler in 2019 at the S-155 structure on the C-51 canal. This upstream station allows for a weekly composited sample that is analyzed for total nitrogen and phosphorus discharged from the C-51 canal into the Lagoon.

A sediment trap installed in 2007 on the C-51, intended to serve as a “sump” to capture and prevent sediments from entering the Lagoon, is still being assessed (*see Action SE-1*).

Surveillance monitoring for blue-green algae (BGA) and red tide is coordinated with the Florida Department of Environmental Protection (FDEP) and the Florida Fish and Wildlife Conservation Commission, respectively.

Several areas within the Lagoon have been designated by FDEP as impaired for nutrients, chlorophyll, copper or other parameters (*see Table 1.1*). Development of Total Maximum Daily Loads (TMDLs) is required to establish numerical limits on how much of these pollutants the Lagoon could receive and still meet state water quality standards.

Additionally, two freshwater lakes within the Lagoon’s watershed - Pine Lake and Lake Osborne - currently have TMDLs under development. Both are designated as impaired for nutrients, based either on Chlorophyll and/or Phosphorus, and will require improvements in stormwater management for their respective basins, with benefits for the Lagoon. An analysis of Lagoon water quality data from 2007-2020 reveals some important trends, particularly with regard to relationships between freshwater inflows, salinities, microscopic algae (expressed as chlorophyll α), and nutrient loading.¹ For this analysis the Lagoon was divided into 3 segments (north, central and south) to assess spatial and temporal patterns of inflow and water quality.

TABLE 1.1 IMPAIRED WATERS IN THE LAKE WORTH LAGOON

	Parameters Assessed Using the Impaired Surface Waters Rule (IWR)	Criterion Concentration or Threshold Not Met	Summary Assessment Status	Verified Period Assessment Data 5	Comments
Lake Worth Lagoon (Northern Segment)	Nutrients (Chlorophyll-a)	$\leq 3.7 \mu\text{g/L}$	Impaired	13/35	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the 303(d) List.
Lake Worth Lagoon (Northern Segment)	Copper	ENRR1: AGM $\leq 2.9 \mu\text{g/L}$	Impaired	ENRR1: AGM 2008 (2.1 $\mu\text{g/L}$) 2009 (1.6 $\mu\text{g/L}$) 2010 (2.0 $\mu\text{g/L}$) 2011 (1.7 $\mu\text{g/L}$) 2012 (2.8 $\mu\text{g/L}$) 2013 (3.1 $\mu\text{g/L}$) 2014 (3.2 $\mu\text{g/L}$) 2015 (1.9 $\mu\text{g/L}$)	This waterbody is impaired for this parameter because the annual geometric means exceeded the criterion more than once in a three year period. This parameter is being added to the 303(d) List.
Lake Worth Lagoon (Central Segment)	Nutrients (Chlorophyll-a)	$\leq 3.7 \mu\text{g/L}$	Impaired	6/22	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the 303(d) List.
Lake Worth Lagoon (Central Segment)	Copper	ENRR2: PCT $\leq 10.2 \mu\text{g/L}$	Impaired	ENRR2 (PCT) 68/412	This waterbody is impaired for this parameter based on the number of exceedances for the sample size. This parameter is being added to the 303(d) List.
Lake Worth Lagoon (Central Segment)	Nutrients (Chlorophyll-a)	ENRR2: AGM $\leq 0.049 \text{ mg/L}$	Impaired	ENRR2: AGM 2008 (0.023 mg/L) 2009 (0.035 mg/L) 2010 (0.033 mg/L) 2011 (0.026 mg/L) 2012 (0.028 mg/L) 2013 (0.032 mg/L) 2014 (0.056 mg/L) 2015 (0.052 mg/L)	This waterbody is impaired for this parameter because the annual geometric means exceeded the criterion more than once in a three year period. This parameter is being added to the 303(d) List.

SOURCE: Florida Department of Environmental Protection



- Water quality in the north and south segments benefit from proximity to the inlets, while discharge from C-51 on average accounted for 59% of the total inflow to LWL and greatly influenced water quality in the central segment.
- CHL, TN, TP, TSS and turbidity increased in the Central Lagoon over the 13-year period analyzed (see Table 1.2).
- Three variables, CHL, TN and TP, were positively correlated to inflow and to each other in all three Lagoon segments (north, central and south).
- Flushing time for the entire volume of the Lagoon ranged from 3 to 14 days, depending upon inflow conditions and salinity of the coastal ocean.
- Turbidity increased with C-51 discharge while TSS was often inversely related to inflow.

These results revealed the considerable uncertainty associated with TSS and turbidity processes and patterns throughout the LWL. While it is likely that the C-51 is a source of silt and organic materials, monthly data may not have the resolution to detect significant changes. The input, transport and resuspension of sediments in the Lagoon should be examined in greater detail particularly since wind-driven tidal mixing and resuspension affects sediment transport on the time scales of hours to days.

A previous analysis of water quality data from 2007 to 2015 also found that chlorophyll α , TN and TP were all greater in the wet season and positively correlated to discharge in the Lagoon.²

Nutrient loading for the Lake Worth Lagoon has not been calculated, despite its importance to water quality status and trends. Installation of the nutrient analyzer at the S-155 structure on the C-51 (C51S155) in late 2019 would assist in these calculations.

A report detailing water quality trends in the C-51 canal and corresponding impacts to the Lagoon reported that

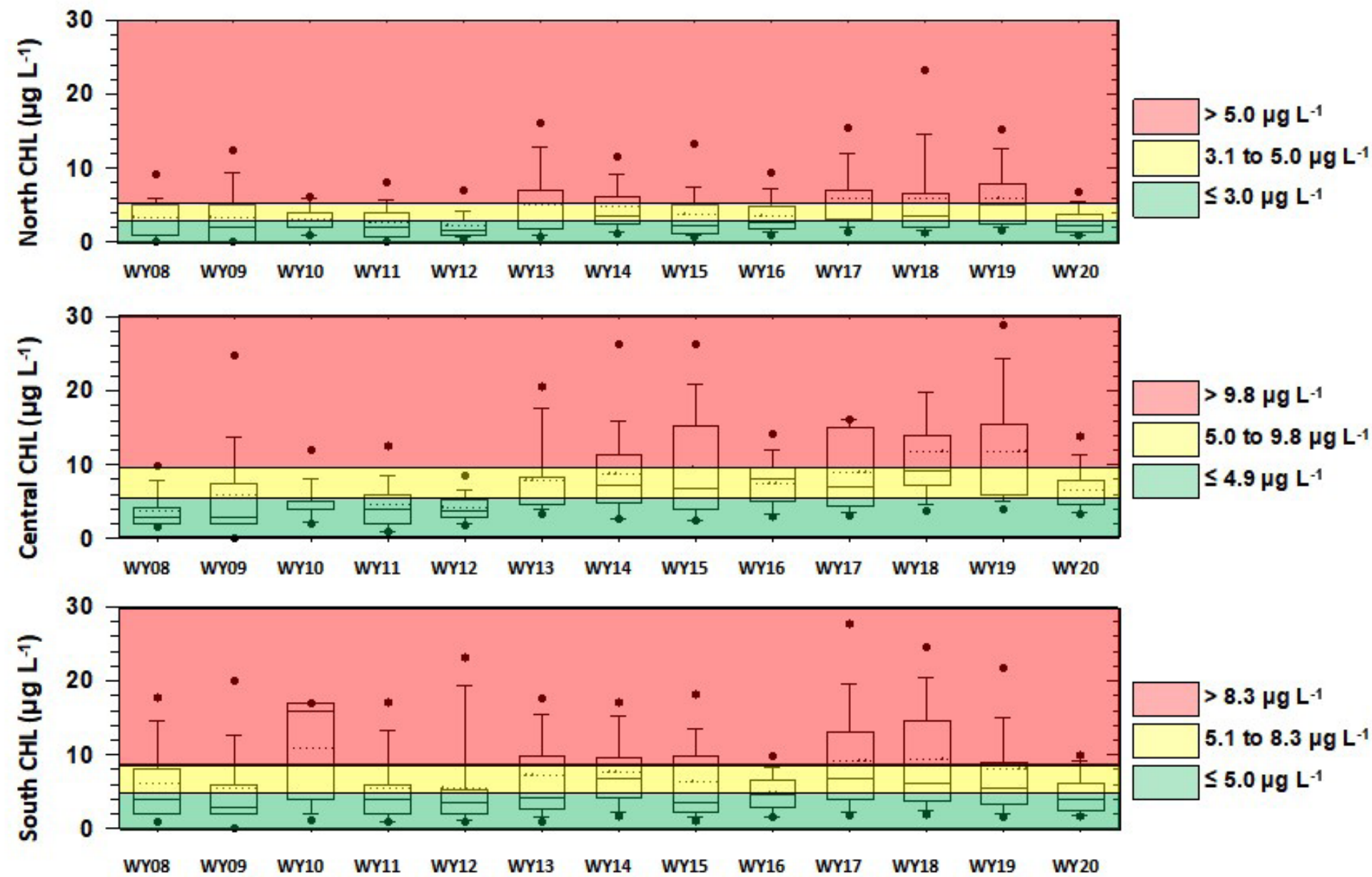


Figure 12 Stoplight representation of variations in chlorophyll a (CHL; $\mu\text{g L}^{-1}$) determined in the (A) North, (B) Central, and (C) South Segments of Lake Worth Lagoon from Water Year 2008 to 2020. Points outside of error bars were greater than the 95th percentile. The classes were less than the median value (green), between the median and the 75th percentile (yellow), and greater than the 75th percentile (red).

SOURCE: Coastal Ecosystems LLC

TP concentrations (52 to 87 ug per L) observed at station C51S155, where the canal discharges into the Lagoon, are higher than the allowable annual geometric mean of 49 ug per L under FDEP’s estuarine Numeric Nutrient Criteria (NNC) for the central segment of the Lagoon. Similarly, TN concentrations (0.86 to 1.41 mg per L) at the same station were higher than the annual geometric mean NNC of 0.66 mg per L for the central segment of the Lagoon.³ Regular flushing of the Lagoon likely insulates it from severe water quality issues. However, steady increases in CHL, correlated with freshwater inflows, indicate the potential for algae to accumulate. This prospect is greatest in the Central Lagoon because it is farther away from ocean inlets that facilitate rapid flushing.

Water quality monitoring is most useful in tandem with monitoring of biological resources. Changes in water quality directly impact the health of the four indicator species that are also part of the Lagoon’s foundational monitoring: Seagrass, Sea Turtles, Fisheries, and Oysters.

The potentially outsized role of freshwater discharges in Lagoon hydrodynamics warrants further investigation to determine appropriate strategies to manage volumes, timing and constituents of the freshwater discharges.

Expanded monitoring in the Lagoon will support new regulatory requirements expected in coming years as a result of the passage in 2020 of Senate Bill 712, the Clean Waterways Act. This significant and far-reaching legislation carries a wide range of water quality protection provisions aimed at minimizing the impact of nutrient pollution from urban stormwater and wastewater systems, septic systems and agricultural runoff. The Florida Department of Environmental Protection (FDEP) is the lead state agency charged with implementing the Act.

In a related initiative, FDEP is developing allowable load

WATER QUALITY PARAMETERS MONITORED IN THE LAKE WORTH LAGOON:		
Dissolved Oxygen (DO)	Ammonia nitrogen (NH4)	Total Suspended Solids (TSS)
pH	Nitrite-nitrate nitrogen (NOx)	Turbidity
Salinity	Total Phosphorus (TP)	Chlorophyll (CHL)
Total Nitrogen (TN)	Orthophosphorus (OP04)	

reductions from both structural and non-structural stormwater projects, based on loading data submitted by stakeholders and nutrient removal efficiencies established by FDEP. Reductions from wastewater projects and agricultural BMPS in the watersheds also will be determined. Monitoring by Palm Beach County and other Lagoon stakeholders will be important for demonstrating that the reductions are being achieved.

APPROACH:

- STEP 1 Continue water quality monitoring and trend analysis every 3-5 years.
- STEP 2 Increase frequency of current monitoring or add parameters necessary to pinpoint impairments or specific issues of concern related to water quality.
- STEP 3 Develop a monitoring plan to proactively address a host of management needs in the Lagoon, including:
 - Identification of land-based sources and relative contributions to FDEP-designated impairments for nutrients, TSS and copper.
 - More robust sampling for turbidity/TSS in the Central Lagoon to fully understand water quality impacts associated with freshwater discharges, including nutrient and sediment loads from drainage canals and municipal structures (see

- Action SE-1).
- Identification of hot spots, sources and pathways for Harmful Algal Blooms, bacterial contamination and emerging contaminants such as Microplastics (see Action WQ-4).
- Source tracking to identify nutrient pollution associated with leaching from septic systems (see Action WW-1).
- Light attenuation requirements for seagrass to flourish at different depths in the Lagoon (see Action HE-3).
- Source tracking to identify hot spots for sewer overflows and prioritize infrastructure repairs and upgrades (see Action WW-1)

TIMEFRAME:

- STEP 1 Ongoing
- STEP 2 can begin in 2022 if funds can be secured
- STEP 3 Plan Development can be initiated in 2022

COST ESTIMATE:

Step 1 \$\$

Step 2 \$\$\$
Step 3 \$\$-\$\$\$

EVALUATING PROGRESS:
Increase in monitoring programs and schedules

REGULATORY NEEDS:
None

FUNDING:
County budget allocations or special appropriations; state or federal grant assistance could serve as seed money for monitoring pilot projects to establish protocols

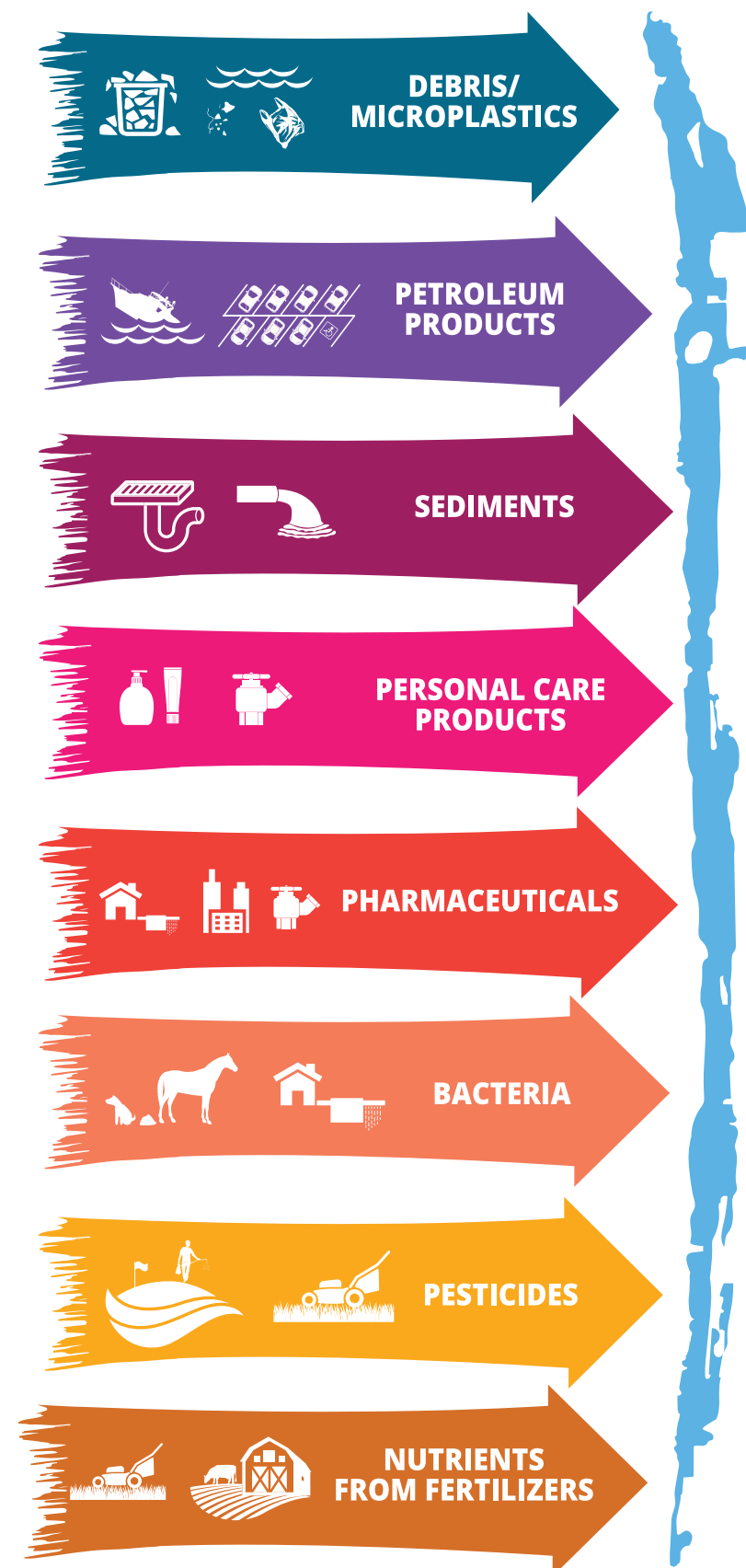
POTENTIAL PARTNERS:*
PBC-ERM, SFWMD, FDEP

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*

¹ Assessment of Freshwater Discharge and Water Quality in Lake Worth Lagoon from 2007-2020. Coastal Ecosystems LLC. 2021.
² Assessment of Freshwater Inflow and Water Quality for an Urbanized, Subtropical Estuary (Lake Worth Lagoon, Florida, USA). Buzzelli, C. et al. Marine Technology Society Journal. 2018.
³ Water Quality Trends in the West Palm Beach C51 Canal Impacting Lake Worth Lagoon, Final Report. Daroub, S.H. et al. 2020.



LAND-BASED SOURCES OF POLLUTION TO THE LAKE WORTH LAGOON



SOURCE: PBC-ERM



WATER AND SEDIMENT QUALITY

WQ-2 DEVELOP A WATERSHED-BASED MODELING PROGRAM

ACTION: Develop a watershed modeling strategy and deploy an appropriate suite of modeling tools to inform management actions that consider the needs of all the Lake Worth Lagoon Estuary's living resources.

IMPORTANCE:

Modeling that takes into account the full range of parameters that contribute to ecosystem health will enable watershed-scale management strategies that benefit and support the Lagoon's varied living resources.

RELATED ACTIONS:

WQ-1, WQ-6, SE-1, HE-3

BACKGROUND:

Palm Beach County is committed to a watershed management approach that considers the varied and sometimes contradictory needs of the living resources of the Lake Worth Lagoon. Oysters in the Central Lagoon, for example, benefit from a reliable infusion of freshwater, while turtle grass in the Northern Lagoon requires consistently salty water to flourish.

Development of a comprehensive suite of modeling tools is a critical step in building the robust scientific foundation needed to determine optimal conditions for diverse species, and to implement

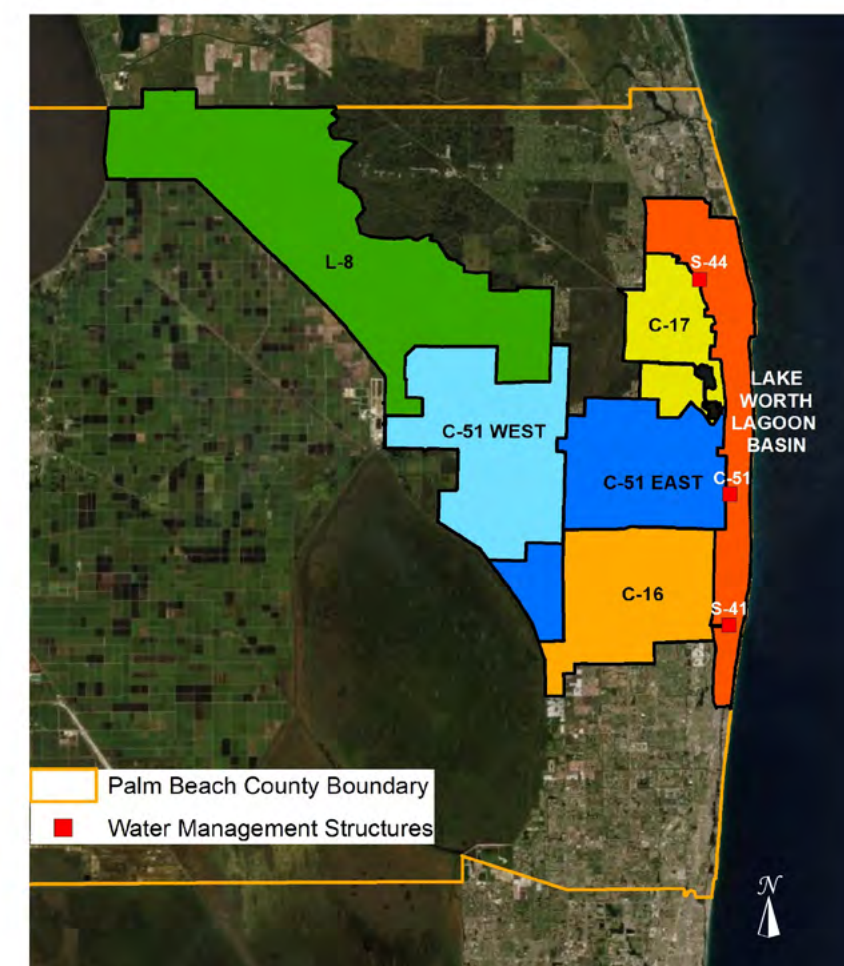
watershed-scale management strategies to support them (see Figure 1.1).

This Action Plan proposes a watershed-based modeling program for the Lagoon that employs at least two different modeling approaches:

- A pollutant loading model that simulates freshwater, sediments, nutrients and other inputs to the Lagoon from the watershed. This tool can assist in better understanding water management operations and system dynamics, identifying problems and evaluating potential solutions.
- In addition to estimating current pollutant loads, this model would predict changes resulting from implementation of Best Management Practices (BMPs) or other nutrient reduction measures. A robust non-point source monitoring network that

measures pollutant concentrations and water flows from multiple areas in the watershed would facilitate accurate nutrient loading calculations.

FIGURE 1.1 LAKE WORTH LAGOON WATERSHED CONSISTS OF 6 MAJOR DRAINAGE BASINS



- A hydrodynamic model of the Lake Worth Lagoon itself can assess the physical and meteorological factors that influence the Lagoon's ecological resources and help evaluate concepts to improve conditions.

Various historical modeling efforts have addressed some of these elements in a piecemeal fashion.

Modeling of estimated pollutant loads is required for all entities (including cities and counties) holding NPDES permits for point-source discharges, defined under the Clean Water Act as "any discernible, confined and discrete conveyance, such as a pipe, ditch, channel, tunnel, conduit, discrete fissure, or container."

Additionally, the Federal Emergency Management Agency (FEMA) utilizes modeling to update local flood maps and set flood insurance rates.

Hydrodynamic modeling of the Lagoon was first conducted by the South Florida Water Management District (SFWMD) in 1996. The model was also calibrated and applied for flow scenario evaluations in the Lagoon in 2002.

At the County's request in 2019, SFWMD provided recommendations for improvements to the original hydrodynamic model to support detailed salinity assessments under a variety of scenarios. Specifically, the following data needs were identified to establish accurate boundary conditions for the model:

- *Tidal information at the offshore boundary*

Confirmation is needed to ensure that the East Coast tidal database utilized in the 2002 model has been updated. An alternative would be to use tidal data collected at the Lake Worth Pier, when available, supplemented by the East Coast database as needed.

- *Freshwater inflow*

Gaged flows at structures S155, S44, and S41 should be used. In addition, contribution of the LWL watershed also should be included. Previously, the District's Regional Hydrological Model information.

- *Meteorological forcing*

Wind, rainfall, and evaporation nearby weather stations and

- *Salinity data*

Salinity data collected in the with the model results as a f

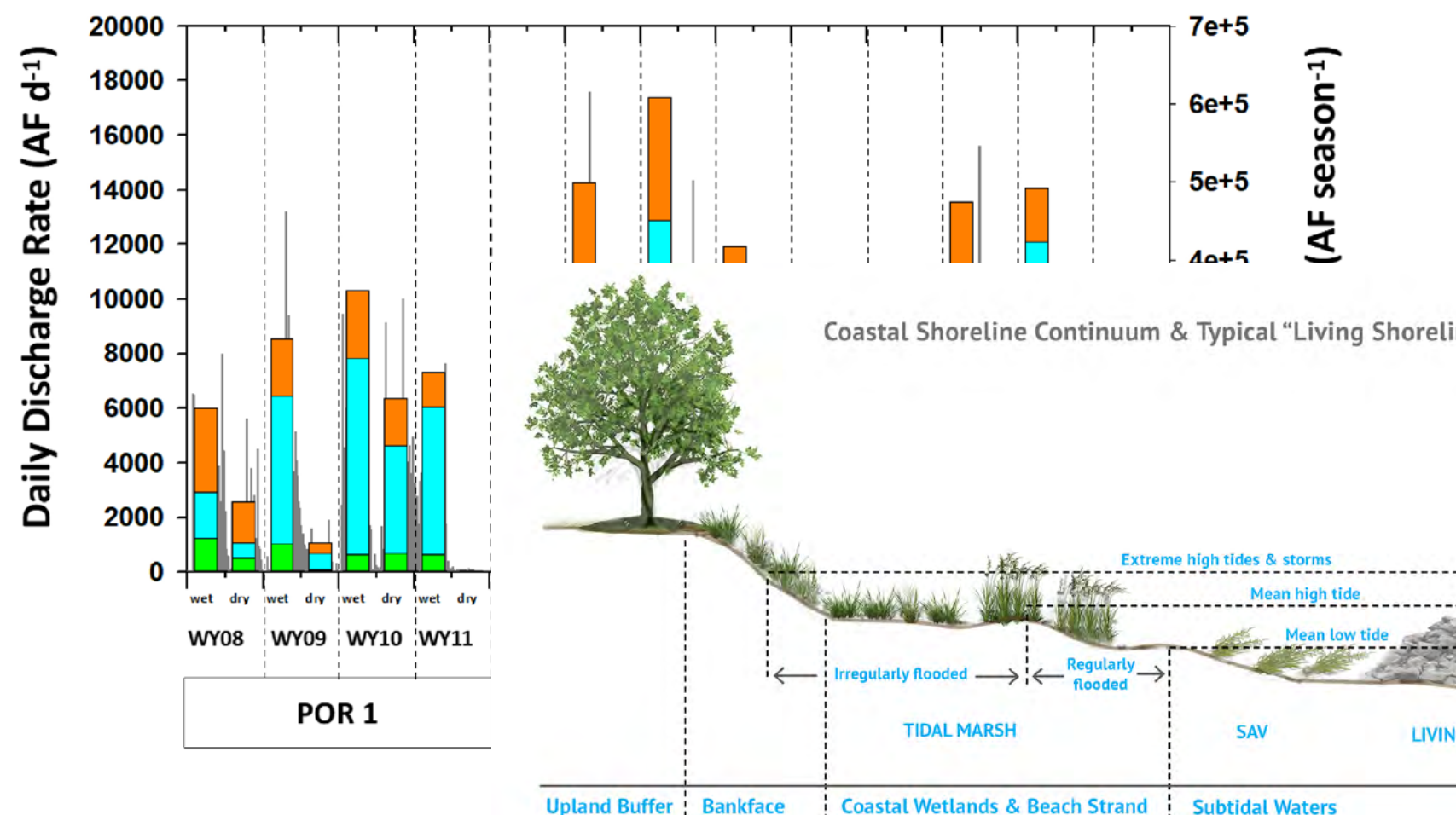
Once the model is successfully assess a range of physical and influence the Lagoon's ecological following priority concerns:

- The ecological impacts of wastewater discharges (see Figure 1.2).
- Precise flushing rates for the different segments of the Lagoon relationship between freshwater rates.
- Sea level rise based on NOAA projections, with associated
- Sedimentation rates at specific comparing historic versus current

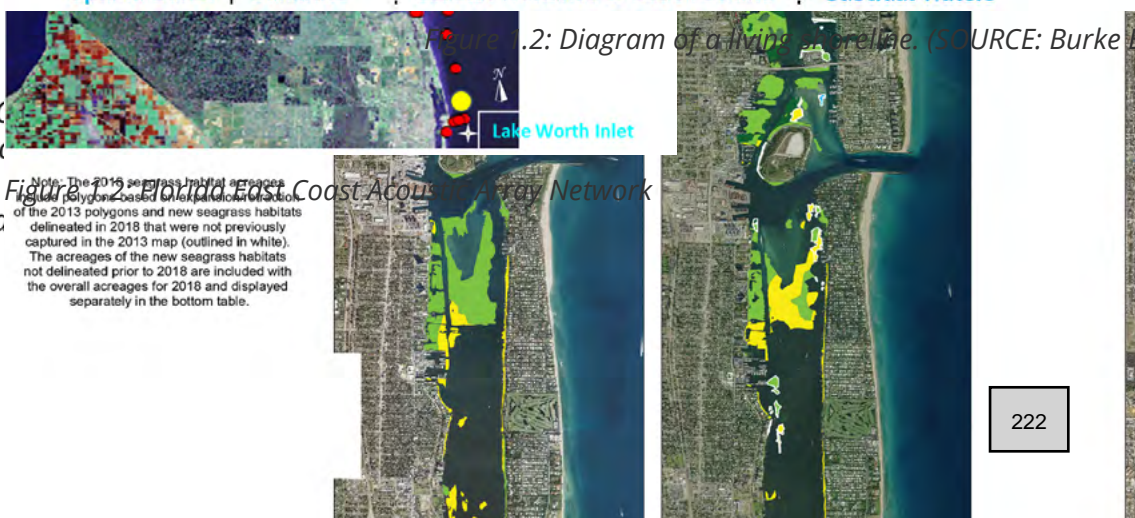
In late 2020, the County submitted Lake Worth Lagoon Estuary Freshwater U.S. Army Corps of Engineers. They requested that the Corps establish for freshwater flows to the Lagoon

part of upcoming revisions to the Lake Okeechobee System Operating Manual (LOSOM). The Performance Measure will require use of a predictive model. While limited to evaluations of discharges from Lake Okeechobee - which constitute a small fraction of the total freshwater funneled to the Lagoon - the

FIGURE 1.2 DAILY INFLOW TO LAGOON



Time of series of daily discharge rate (stacked bars for seasonal average discharge rate) (Nov-Apr) seasons was the sum of C17 Figure 1.2: Florida East Coast Acoustic Array Network



APPROACH:

STEP 1 Develop a Scope of Work to determine data needs and develop two predictive watershed models:

- A model for estimating current pollutant loading from the watershed and potential reductions from implementation of BMPs and other water quality improvements.
- A hydrodynamic estuary model assessing physical and meteorological influences on Lagoon ecology, incorporating the existing data sets and boundary information recommended by SFWMD.

Explore partnerships to finance model development, including grant funding and in-kind support from SFWMD for the models and regional research consortiums or area universities to gather and analyze datasets.

STEP 2 Utilize the models to determine the optimal water quality conditions and salinities to support the full range of the Lagoon's ecological resources, by simulating various water management scenarios.

STEP 3 Develop additional modeling tools as needed to address specific management needs.

TIMEFRAME:

STEPS 1 and 2 can be initiated in 2022 if funding is secured.

STEP 3 to occur as additional models are needed to understand and address specific aspects of watershed management.

COST ESTIMATE:

Step 1 \$

Step 2 \$-\$\$

Step 3 \$-\$\$\$

EVALUATING PROGRESS:

Design and implementation of hydrodynamic model

REGULATORY NEEDS:

None

FUNDING:

County budget appropriation, state or federal grants, direct or in-kind support from regional research consortiums or area universities

POTENTIAL PARTNERS:*

PBC, SFWMD, FDEP, NOAA, FAU or other research institutions



Interns in the Green Futures program assist county staff with monitoring water quality (Photo credit: PBC-ERM)

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*

¹ Northern Estuaries Performance Measure Salinity Envelopes. CERP System Wide Performance Measure Documentation Sheet. 2007 and 2020.



Canal maintenance includes sediment removal to improve flows and functioning of water conveyance canals (Photo credit: Lake Worth Drainage District)



WATER AND SEDIMENT QUALITY

WQ-3 IMPLEMENTATION PRACTICES FOR L

ACTION: Encourage implementation of loading from drainage canals to the La

IMPORTANCE:

Widespread use of BMPs within and adjacent to drainage canals is a cost-effective strategy for preventing conveyance of excessive nutrients and pollutants from the vast network of drainage canals within the Lagoon’s watershed, contributing to water quality impairments.

RELATED ACTIONS:

WQ-2, SE-1

BACKGROUND:

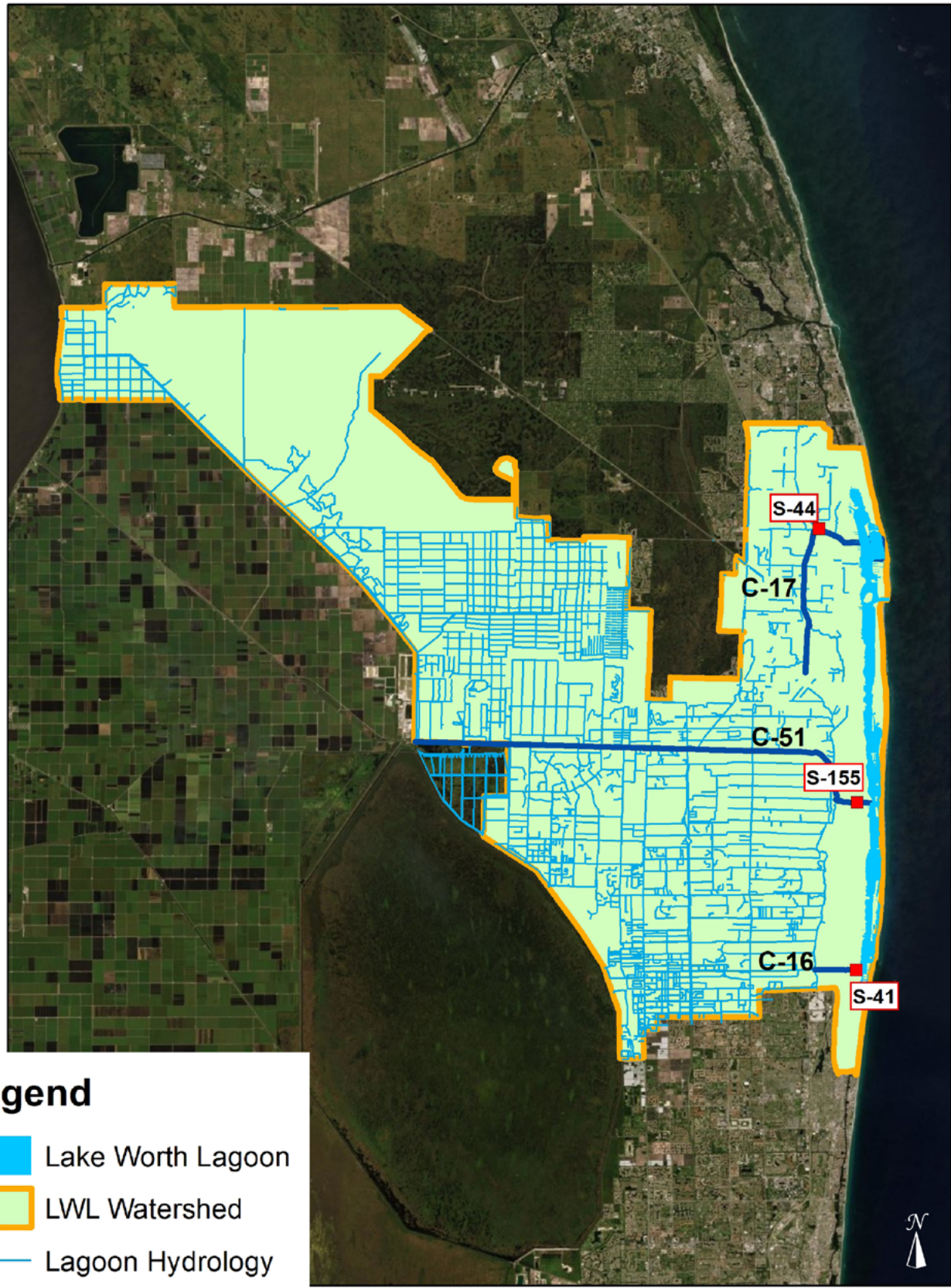
More than 850 miles of drainage canals bisect the Lake Worth Lagoon watershed (see Figure 1.1). They are part of a complex, far-reaching water management system in South Florida that conveys large volumes of runoff across long distances, spanning watersheds, coursing through inlets and eventually reaching the coastal waters of the Atlantic. The canals are designed to move high flows at relatively high

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FIGURE 1.1
MAP OF DRAINAGE CANALS IN LWL WATERSHED



Legend

- Lake Worth Lagoon
- LWL Watershed
- Lagoon Hydrology
- SFWMD Structures

SOURCE-PBC-ERM



emergencies or peak flows.

BMPs are structural or non-structural activities intended to treat, prevent or reduce water pollution. Structural BMPs include constructed features or installed devices; non-structural BMPs include maintenance procedures, prohibitions of activities, and modified practices or processes. Use of BMPs upstream in drainage canals is a cost-effective way to reduce pollutants that impair water quality downstream in the Lagoon.

Non-structural canal maintenance BMPs rely on modified maintenance and operational protocols intended to reduce water pollution impacts to canals and downstream water bodies. Examples include:

- Reducing or eliminating mowing of banks to slow runoff and reduce erosion. Replacing grass with native plant communities also may provide habitat for pollinators.
- Eliminating or reducing use of herbicides to control weeds or invasive plants, a BMP facilitated by use of native bank vegetation.
- Mechanical harvesting of invasive or nuisance aquatic plants that obstruct flows.
- Skimming devices that remove trash, weeds, and debris to facilitate water flow.
- Removing dead, dying, leaning, unhealthy, or invasive/exotic trees to ensure proper water conveyance.



Applying herbicides to aquatic weeds (Photo credit: Lake Worth Drainage District)

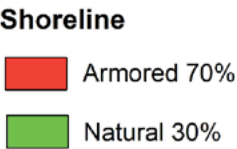
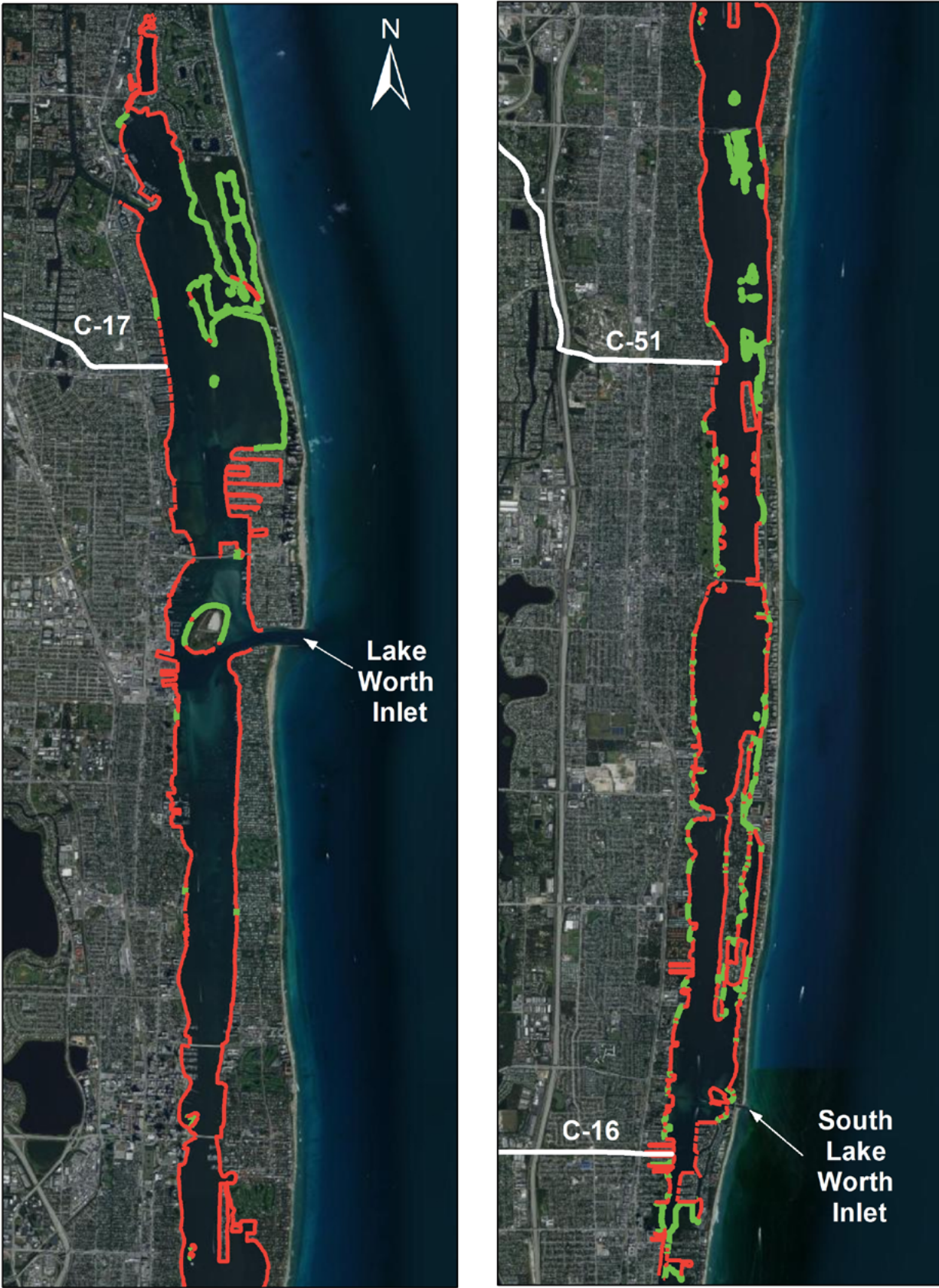
- Removing shoals created when sediments within the canal and reduces the ability of water flows.
- Non-structural BMPs can be used in conjunction with structural BMPs such as grading of berms and installation of culverts to prevent bank erosion. It may be the only viable maintenance option in urban areas.

In addition to the South Florida Water Management District, there are eight independent drainage districts within the Lagoon's watershed (see Figure 1.2.) These districts also have drainage responsibilities in the Lagoon. The action plan recommends convening a working group of representatives from local governments and the Lagoon to develop standardized guidelines for the use of BMPs in drainage canals within their jurisdictions. Consistent use of BMPs over time will provide a model for measuring results and comparing cost savings to more traditional canal maintenance methods. Implementation also provides a model for education of residents who live adjacent to the Lagoon to understand how their landscape practice choices, fertilizer and pesticide applications, and other factors affect local canal and ultimately the Lagoon (see Appendix A).

APPROACH:

- STEP 1 Form a working group of stakeholders including representatives from municipalities and drainage districts to establish canal management responsibilities and standardized guidelines for non-structural BMPs.
- STEP 2 Encourage adoption of BMPs by residents, businesses, and organizations.
- STEP 3 Evaluate reductions in nutrients and sediment over time. Evaluate cost savings from BMPs.

FIGURE 1.2 2020 LAKE WORTH LAGOON SHORELINE CHARACTERIZATION



Item 7.

DRAINAGE
VER

ANCEMENT
AND
LISHING

landscaping
and biofilter
at benefits

CE-PBC-

225

TIMEFRAME:

STEP 1 can be initiated in FY 2021 or FY 2022

STEP 2 can occur pending agreement on BMP guidelines

STEP 3 can be initiated in 2022 or whenever BMPs are adopted

COST ESTIMATE:

STEPS 1 and 2 = \$

STEP 3 = \$\$ as part of overall water quality monitoring program

EVALUATING PROGRESS:

Number of municipalities and water management entities adopting BMPs

Number of BMPs adopted

Reductions in nutrients and sediments

REGULATORY NEEDS:

None



Typical drainage canal in residential area

FUNDING:

Annual budgets for local governments and water management/drainage districts

POTENTIAL PARTNERS:*

PBC, SFWMD, Lake Worth Drainage District, Indian Trails DD, Acme DD, Loxahatchee Groves Water Control District, Seminole WCD, Pine Tree WCD, Northern PBC Improvement District, 30 municipalities within Lagoon watershed

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*

¹ Canals in South Florida: A Technical Support Document. Carter, K., Redfield, G., et al. 2016.



Mowing a canal bank (Photo credit: Lake Worth Drainage District)



WQ-4 MONITOR AND ASSESS WAYS TO REDUCE BACTERIAL CONTAMINATION AND HARMFUL ALGAL BLOOMS

ACTION: Continue sampling for harmful algae blooms and bacteria in the Lake Worth Lagoon. Consider bacterial sampling of additional recreation sites in the Lagoon. Identify sources of bacteria and ways to reduce loads. Improve public understanding of HABs and waterborne pathogens.

IMPORTANCE:

Bacteria associated with fecal matter and blooms of harmful algae are serious threats to humans and environmental health, and can also devastate the region's economy through loss of water recreation such as fishing and swimming.

RELATED ACTIONS:

WQ-1, WW-1, WW-2, PU-1

BACKGROUND:

Contamination of waterways with human or animal waste can contribute bacteria, viruses and parasites that cause a variety of illnesses when ingested or absorbed through the skin via a cut or sore. Health effects range from rashes, infections and diarrhea to life-threatening conditions such as hepatitis, salmonella and giardia.

Harmful algal blooms (HABs) such as the Red Tide organism (*Karenia brevis*)

and Cyanobacteria, or blue-green algae (primarily *Microcystis aeruginosa*), can cause oxygen levels in water to plummet and lead to widespread fish kills. These blooms also may cause severe respiratory distress in people (red tides) or fever, vomiting, headache, sore throat, and diarrhea in people (blue-green algae). Toxins

in HABs can be fatal to manatees, sea turtles, seabirds and other marine life.

Bacterial Contamination

Thirteen recreational areas in Palm Beach County are regularly sampled by the county Health Department as part of the Florida Healthy Beaches



No swimming sign and flag at Phil Foster Park (Photo credit: PBC-ERM)



Algae bloom in C-51 canal, 2016 (Photo credit: WPTV)






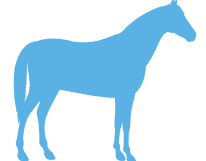


Program. Phil Foster Park is the only sampling site within the Lagoon; the others are at oceanside parks and municipal beaches.

As with all marine waters in Florida, enterococci bacteria (*Enterococcus* species) are now used to indicate fecal contamination instead of *E. coli*, which is a short-lived and less reliable indicator than enterococci in saltwater. If they are present in high concentrations in recreational waters and are ingested while swimming or enter the skin through a cut or sore, enterococci may cause human disease, infections or rashes.

Health advisories due to high bacterial counts were posted at Phil Foster Park 16 times from 2016-2020, or 9.9% of the time that samples were taken.

Additional bacteria sampling is conducted at 16 sites in the Lagoon by the Lake Worth Waterkeeper organization, using commercial test kits. This information is shared with the public through the Waterkeeper social media network, to assist recreational users in making informed decisions about diving, swimming, paddling or other activities. No advisories are issued based on these sampling results, and the sampling protocols have not been vetted by the Health Department.

The potential sources of fecal bacteria are numerous: Municipal sewer overflows and spills (*see Action WW-1*);

TABLE 1.1 SOURCES OF BACTERIAL CONTAMINATION					
 Malfunctioning septic systems	 Sewer overflows	 Operations	 Equestrian Facilities	 Urban pet waste	 Wildlife

leaking septic tanks (*see Action WW-2*); pet waste (especially dog poop, which contains almost as much bacteria as human waste); equestrian facilities, livestock operations; even manure from backyard chickens (*see Table 1.1*). Expanded water quality monitoring that incorporates bacterial source tracking would be useful in identifying chronic hot spots and targeting management strategies (*see Action WQ-1*). Broad-based Best Management Practices and education programs that promote proper disposal of pet waste or horse manure also could result in significant and measurable reductions in bacteria (*see Action PU-1*).

Harmful Algal Blooms (HABs)

In general, the Lagoon is not considered a high risk for red tide and blue-green algae blooms, with only one occurrence of each in more than a decade. However, resource managers are keenly aware that these trends can change, in particular as we gain a better understanding of the effects of nutrients as a primary driver in algae proliferation and degradation of water quality. The influence of nutrients on the formation, magnitude and persistence of blue-green algae blooms in Florida’s waters, is likely to be exacerbated in the future by changes in land-use and hydrology, along with rising temperatures and rainfall variations associated with climate change.¹

The County’s participation in the Blue-Green Algae Task Force, created in 2019 by Florida Governor Ron DeSantis, offers a forum for elevating awareness of the Lagoon’s vulnerability to

algae blooms as part of a statewide effort to reduce harmful algal blooms in state waterways.

The Florida Department of Environmental Protection (FDEP) is charged with coordinating the response to blue-green algae (BGA) blooms throughout Florida. FDEP dispatches a sampling team to investigate reported blooms and collect water samples to ascertain if toxins are present. Potential blooms can be reported by the public through a DEP online portal that also presents recent sampling results, maps and other data in a graphical dashboard format.

Blue-green algae (BGA) blooms in the Lagoon are seeded by blooms originating in Lake Okeechobee. Thus, management of lake levels and freshwater discharges are of paramount interest to Lagoon resource managers.

The last BGA bloom to reach the LWL was in 2016, in waters north and south of the C-51 Canal. Sampling at Summa Beach along the western side of the Central Lagoon identified the bloom as the toxic cyanobacteria *Microcystis aeruginosa*. In 2018, releases of surface water from Lake Okeechobee to the Palm Beach Canal (C-51) via the L-8 Canal fueled blue-green algae blooms that came within eight miles of the Lagoon. During algae blooms, Environmental Resources Management (ERM) staff conducts reconnaissance in the C-51 Canal and southeast inflow locations of Lake Okeechobee to assess the threat of BGA reaching the Lagoon. Extensive and economically devastating BGA blooms in the St. Lucie, Caloosahatchee and other northern estuaries draining Lake

FLORIDA HEALTHY BEACHES
PROGRAM CATEGORIES

GOOD =
0-35 Enterococci
per 100 milliliters
of marine water

MODERATE =
36-70 Enterococci
per 100 milliliters
of marine water

POOR =
71 or greater
Enterococci per
100 milliliters of
marine water

Okeechobee prompted development of a draft risk assessment metric as part of pending updates to the U.S. Army Corps of Engineers' Lake Okeechobee System Operation Manual.² The South Florida Water Management District also increased sampling in watersheds vulnerable to toxic algae outbreaks. The Lagoon was not included in the ramped-up monitoring, but has indirectly benefitted from a concerted effort to avoid releases of nutrient-enriched water from Lake Okeechobee during the summer when algae blooms peak.

When necessary, ERM in conjunction with SFWMD and DEP conducts reconnaissance for blue-green algae in particular during the wet season when flows from the watershed into the Lagoon increase or when a suspected BGA bloom is reported by the public. Although the risk of BGA blooms in the Lagoon is currently low, ongoing vigilance is required. Additionally, there is clear evidence that cyanobacteria blooms are increasing with climate change, and scientists suspect these blooms could trigger or exacerbate blooms of other species including red tide.³

Red tide monitoring is coordinated at the state level with sampling results reported weekly by the Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute (FWRI). Red tides are rare on Florida's East Coast, although one reached Palm Beach County in fall 2018, causing fish kills and multiple beach closures. Concentrations high enough to cause respiratory irritation were detected inside the Lake Worth Lagoon at Phil Foster Park. ERM staff worked with FWRI to monitor levels for several weeks until the bloom subsided. FWRI continues to routinely monitor for red tide along established sites throughout Palm Beach County.

Prior to the 2018 event, red tide was last reported in the County in 2007. Red tides have been documented along the Florida east coast at least 8 times since the 1950's.

APPROACH:

- STEP 1 Continue sampling for HABs, including blue-green algae and red tides, in addition to bacterial contaminants that could pose a health risk to marine life and the public. Evaluate the need to add additional sampling sites.
- STEP 2 Better understand the current factors contributing to harmful algal blooms in the lagoon, and potential problem species in the future due to changing climate.
- STEP 3 Identify sources of bacterial contamination at Phil Foster Park and other recreation areas where additional sampling indicates ongoing problems. Provide education about Best Management Practices (BMPs) to reduce bacterial loads in wastewater and stormwater.
- STEP 4 Increase public education and awareness of HABs and waterborne pathogens, and ways to reduce exposure. Coordinate with the Health Department and FDEP to ensure that health advisories are posted in a timely manner utilizing multiple communication channels in order to reduce the potential health risks to the public.

TIMEFRAME:

- STEP 1 Ongoing. Evaluation of additional sites can occur in 2021 or 2022.
- STEP 2 TBD, as opportunities to collaborate in research or expand monitoring arise.
- STEP 3 TBD, when funds for source tracking study are available. Outreach about BMPs to reduce bacteria from broad-based sources such as pet waste or equestrian facilities can begin in 2021, with a literature review of existing programs and materials

that can be adapted for County use.

- STEP 4 A review of educational messages, materials and communication channels can occur in 2022 via collaboration with the Health Department, Lake Worth Waterkeeper, recreational equipment and ecotour providers, with an eye toward expanding outreach and leveraging internal and external communication platforms.



ADVISORY

HIGH BACTERIA LEVELS
SWIMMING NOT RECOMMENDED
INCREASED RISK OF ILLNESS
AT THIS TIME
FOR FURTHER INFORMATION, PLEASE CONTACT THE
LOCAL COUNTY HEALTH DEPARTMENT



(Photo credit: Florida Healthy Beaches Program)

COST ESTIMATE:

- STEP 1 \$\$\$ for sampling of sites within Lagoon by Health Department and FWRI
- STEP 2 Costs highly variable depending on scope of research and lead entities
- STEP 3 \$-\$\$ for educational outreach; \$\$-\$\$\$ for source tracking study
- STEP 4 \$ Staff time only to coordinate communication review and planning

EVALUATING PROGRESS:

Number of recreation or high public use sites routinely sampled for bacterial contamination

Number of sites with high bacteria counts

Number of red tide or HAB events in or near the Lagoon

Number of citizens reached by health advisories

Number of targeted audiences (dog owners, septic tank owners, horse owners) reached by educational messages and materials about BMPs to responsibly manage waste

REGULATORY NEEDS:

None

FUNDING:

Recurring county/city budget allocations, recurring state agency budgets, grants for research or targeted education programs

POTENTIAL PARTNERS:*

PBC-ERM, PBC Health Department, FDEP, State Blue-Green Algal Task Force, FWRI, SFWMD, Lake Worth Waterkeeper, UF/ IFAS Florida Sea Grant, academic institutions and research organizations

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

- 1 Governor’s Blue-Green Algae Task Force Consensus Document. October 2019. https://floridadep.gov/sites/default/files/Final%20Consensus%20%231_0.pdf
- 2 LOSOM Algae Bloom Risk Assessment Metric, CERP System-Wide or Project Performance Measure. October 2020. https://protectingfloridatogether.gov/sites/default/files/documents/LOSOM_Algal_Bloom_Risk_Metric_Documentation_Sheet.pdf
- 3 State of the Science for Harmful Algal Blooms in Florida: Karenia brevis and Microcystis spp. Summary from Florida Harmful Algal Bloom State of the Science Symposium. August 2019.

WQ-5 IDENTIFY AND ASSESS THE IMPACTS OF EMERGING CONTAMINANTS

ACTION: Identify sources and distribution pathways for contaminants found in pharmaceuticals, personal care products and microplastics throughout the watershed and Lake Worth Lagoon. Assess and monitor impacts on living resources. Promote education to reduce pollution from microplastics and emerging contaminants.

IMPORTANCE:

Currently, the short term and cumulative impacts of emerging contaminants to the Lagoon's environment, fish, shellfish, turtles, manatees and water quality are unknown. Gathering baseline information about these contaminants is an important first step in assessing whether and to what extent they pose a threat to fish, wildlife and human uses of the Lagoon.

RELATED ACTIONS:

WQ-1, WW-1, WW-2, PO-1

BACKGROUND:

Global research is confirming the widespread presence in waterways of a variety of chemical compounds that are byproducts of our everyday lives. These include tiny fragments of plastic, human and animal medications, and personal care products such as cosmetics and lotions. Together they encompass literally thousands of substances.

These "emerging contaminants" find their way to surface and groundwater through multiple routes. They may be flushed down drains and transported in wastewater effluent or septic leachate (*See Actions WW-1 and WW-2*). They may be tossed in trash cans and wind up in landfills, where they can spread to groundwater. They may be carried in rainfall runoff from biosolids used on farms or manure from ranches and livestock operations. Research has shown that some of these compounds are not completely removed by wastewater treatment processes, and may persist for decades in the water column or sediments.¹ Scientific understanding of how these chemicals influence living organisms, what concentrations or combinations trigger effects, and how they interact with complex aquatic food webs is far from complete.

Little is known about the existence, distribution or accumulation of these contaminants in the waters, sediments or fish and wildlife of the Lake Worth Lagoon. A basic assessment of the

presence of these contaminants in the Lagoon is a practical first step to inform future actions.

Microplastics

Microplastics are pieces of plastic less than 5 millimeters, or about one-quarter inch, in size. These tiny plastic pellets, also called "nurdles," may be manufactured as small pellets, or may result from the breakdown of larger plastic marine debris. Aquatic life and birds can mistake microplastics for food, causing physical blockage or damage to the digestive tract, and leaching of chemical components into tissues. Filter feeders also may unintentionally ingest them: Microplastics have been found embedded in the tissues of worms, crustaceans, and sea cucumbers.² Microplastics were found in nearly 80% of upside-down jellyfish (*Cassiopea xamachana*) examined in three Florida estuaries, including Jupiter in Palm Beach County.³ Plankton tows conducted in 2019-2020 by researchers studying Giant Manta Rays (*Manta*





birostris) in Indonesia (a species also found in Southeast Florida waters) unexpectedly harvested microplastics in virtually every tow.⁴ The Loggerhead Marinelife Center (LMC) in Juno Beach reports that nearly 100% of post-hatchling sea turtles brought to the facility for care have plastics in their stomachs.⁵

A study completed in 2020 on the abundance and variation of microplastics in surface waters of the Lagoon found an average of 8.6 microplastic pieces per liter.⁶ A total of 414 pieces of microplastics were counted from 48 samples collected at three sampling locations in the north, central and south Lagoon (see Figure 1.1). Fibers were the most abundant type of microplastics found, followed by fragments and films (See Table 1.1). No microbeads were present. There was no statistical difference in the amount of microplastics found in the sampling locations. To date, this work is the most extensive sampling for microplastics conducted in the Lagoon.

Prior to this effort, the only known microplastics sampling in the Lagoon was conducted in 2016 at Phil Foster Park, as part of the Florida Microplastics Awareness Project (FMAP) coordinated by UF/IFAS Florida Sea Grant. That limited effort (only a handful of samples) collected primarily fibers rather than plastic pieces. More data from more sites, gathered and analyzed consistently over a longer timeframe utilizing improved protocols, is needed to better understand the scope

TABLE 1.1 MEANS, STANDARD ERROR, AND SUMS FOR THE THREE TYPES OF MICROPLASTICS (N=48)

MICROPLASTIC TYPE	MEAN +/- SE	SUM
Fibers	5.40 ± 0.50	259
Fragments	2.42 ± 0.35	116
Films	0.81 ± 0.17	39
TOTAL		414

SOURCE: Palm Beach Atlantic University

of microplastics pollution in the Lagoon.

Ocean currents and circulation patterns scatter microplastics like confetti, making them difficult to track. But this also presents an opportunity to capitalize on a citizen-science effort that is exploring how localized currents affect the way particles, including marine debris and pollutants, travel in and around the Lagoon. Launched in 2017 by the ANGARI Foundation, the project enlists citizens to decorate, deploy, recover and report small wooden degradable drift cards. For the most recent data for the LWL Drift Card Study, visit angari.org/lagoondrift. Four deployments occurred in the Lagoon from 2017-2019. Deployments for 2020 were cancelled due to Covid-19, with tentative plans to resume in 2021 (see Figure 1.2).

Some 59% of the recovered drift cards were found within the Lagoon, with the majority recovered along the western shore. The remainder were found outside the Lagoon, a somewhat surprising result given the Lagoon's limited connectivity with the ocean (See Table 1.2).

This information could help to guide initial baseline sampling for microplastics that aligns with the County's goal of expanded, watershed-scale monitoring in the Lagoon (see Action WQ-1). The ANGARI Foundation is interested in partnering with the County, collecting samples at stationary locations and through plankton tows within the Lagoon. A partner with the capability for laboratory analysis is needed; researchers from Florida Atlantic University's Harbor Branch Oceanographic Institute and Harriet L. Wilkes Honors College already are conducting a range of research into the fate and transport of microplastics and may be logical partners, along with other regional universities.



PREVIOUS PAGE

NEXT PAGE



The lack of a dedicated Sea Grant agent for Palm Beach County has posed challenges to participation in the Florida Microplastic Awareness Project, a citizen-science project that trains volunteers to collect, filter and document microplastics. However, the Loggerhead MarineLife Center serves as a local hub for education about microplastics, and plastic pollution

FIGURE 1.2 DRIFT CARD RELEASE SITES



SOURCE: ANGARI Foundation

in general. The Center is a logical partner for outreach to encourage reuse, reduction and recycling of plastics and to involve citizen-scientists in microplastics sampling.

Pharmaceuticals and Personal Care Products

Pharmaceuticals and Personal Care Products (PPCPs) include thousands of substances used for personal health or cosmetic purposes, as well as prescription and over-the counter drugs intended for human and veterinary use. These substances have been shown to pose a risk to fish or other wildlife in aquatic environments, by affecting their ability to reproduce, altering their behavior, or through direct toxicity.⁷

For example, the synthetic estrogen used in human contraceptives (ethinyl estradiol) and constituents of six commonly prescribed anti-depressants were observed at detectable and, in some cases, quantifiable levels in plasma of Caloosahatchee River sharks.⁸

Research published in 2015 found that fathead minnows exposed to a suite of highly prescribed narcotics, sleep aids, muscle relaxants and anti-depressants found in treated wastewater experienced variable effects ranging from reduced growth, to abnormally large livers (females), to production of proteins indicative of feminization (males).⁹

Wastewater treatment plants, which are built to remove solids and contaminants from water before release into the environment, aren't designed to remove chemicals found in pharmaceuticals and similar products, although there is evidence that treatment can dilute them. However, proof is mounting that even at exceptionally low concentrations, these contaminants can be harmful to fish.

Once in a water body, actual exposure is difficult to determine because of the varied source pathways (wastewater, stormwater, landfill leachate) as well as highly variable environmental conditions. Another challenge lies in assessing

the potential effects on fish and wildlife of exposure to multiple PPCPs, potentially over long periods.

Current toxicity testing required of chemical products does not evaluate endocrine-disrupting effects. Research also is needed to assess the efficacy of various wastewater treatment technologies at removing these contaminants prior to discharge or reuse.

To date, no studies have been conducted to assess potential source pathways or concentrations of PPCPs in Lagoon sediments, waters, or living organisms.

Educational efforts are underway to draw attention to the environmental threats posed by PPCPs. A National Prescription Drug Take Back Day provides a mechanism for safe disposal of prescription drugs. The most recent Take Back Day, held on October 24, 2020, brought in a record 492.7 tons of medications nationwide and 19 tons in Florida. Many major pharmacy retailers, including CVS and Walgreens in Palm Beach County, also routinely accept unused prescription medications for disposal.

APPROACH:

- STEP 1 Support sampling and analysis to assess the scope and distribution of microplastics in the watershed and LWL. Monitoring data is essential to better characterize occurrence levels and to inform next steps.
- STEP 2 Track research on PPCPs in wastewater and surface water, and emerging research on associated toxicity in fish and wildlife. Support localized research that addresses the presence of microplastics or PPCPs in treated effluent, septic and landfill leachate, agricultural runoff, and in downstream receiving waters in the Lagoon watershed.
- STEP 3 Promote and support education about emerging





contaminants to the public, and ways to reduce plastic pollution and PPCPs. Support prescription drug take-back programs.

TIMEFRAME:

STEP 1 can be expanded in 2021 if a partnership can be established for lab analysis of samples.

STEP 2 is ongoing, with in-kind support for localized research as opportunities arise.

STEP 3 can begin in 2021, with inclusion of info about microplastics and PPCPs in social media posts and with distribution of existing materials at community events and through K-12 education partners.

COST ESTIMATE:

STEP 1 \$-\$\$ depending on scope of sampling program

STEP 2 \$ (no direct costs associated with monitoring published research; staff time for letters of support for local research, or access to water quality monitoring program data)

STEP 3 \$ (utilizing existing materials developed by partner organizations such as The Loggerhead Marinelife Center or UF/IFAS Extension Sea Grant)

EVALUATING PROGRESS:

Number of samples collected and analyzed for microplastics

Number of citizens engaged in Drift Card project, or microplastics sampling and analysis

Number of citizens reached with educational messages and materials

REGULATORY NEEDS:

None

FUNDING:

Possible grant funding through NOAA Marine Debris grants or private foundations

POTENTIAL PARTNERS:*

PBC-ERM, local municipalities, ANGARI Foundation, Loggerhead Marine Life Center, PBAU, FAU or other universities and colleges, UF/IFAS Extension Sea Grant

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*

- 1 The occurrence of pharmaceuticals, personal care products, endocrine disruptors and illicit drugs in surface water in South Wales, UK. Kasprzyk-Hordern, B. et al. Water Research 2008.
- 2 Critical Review: Grand Challenges in Assessing the Adverse Effects of Contaminants of Emerging Concern on Aquatic Food Webs. Nilsen, E., et al. Environmental Toxicology and Chemistry. 2018.
- 3 Evidence of microplastics from benthic jellyfish (*Cassiopea xamachana*) in Florida estuaries. Iliff S.M., et al. Marine Pollution Bulletin 159. 2020.
- 4 Pate, Jessica. Personal Communication. 2020.
- 5 <https://marinelife.org/2020/10/11/the-plastic-apocalypse/>
- 6 Effects Tides and Location Have on the Abundance and Variation of Microplastics in the Surface Waters of the Lake Worth Lagoon. O'Brien, K. Senior Research Paper, Palm Beach Atlantic University. 2020.
- 7 Options for a strategic approach to pharmaceuticals in the environment. Final Report to the European Commission. Deloitte Sustainability. 2018.
- 8 Uptake of human pharmaceuticals in bull sharks (*Carcharhinus leucas*) inhabiting a wastewater-impacted river. Gelsleichter J, Szabo NJ. Sci Total Environ. 2013
- 9 <https://www.usgs.gov/news/understanding-how-pharmaceuticals-environment-affect-fish>

TABLE 1.2 DRIFT CARD DEPLOYMENT AND RECOVERY SITES

RELEASE DATE (TIME)	RELEASE SITES	# CARDS RELEASED	# CARDS RECOVERED (RECOVERY RATE IN %)		
November 2, 2019 (15:00)	Burt Reynolds Park C-17 Canal Manatee Lagoon WPB Public Dock C-51 Canal C-16 Canal	240	58 (24%)		
			IN LWL	OUTSIDE	CANAL/ ICW
			26 (45%)	27 (47%)	5 (9%)
April 11th, 2019 (15:00)	North end LWL C-17 Canal Manatee Lagoon WPB Public Dock C-51 Canal C-16 Canal	240	78 (33%)		
			IN LWL	OUTSIDE	CANAL/ ICW
			30 (38%)	41 (53%)	7 (9%)
September 9th, 2018 (11:00)	North end LWL C-17 Canal Manatee Lagoon WPB Public Dock C-51 Canal C-16 Canal	240	35 (15%)		
			IN LWL	OUTSIDE	CANAL/ ICW
			27 (77%)	7 (20%)	1 (3%)
April 8th, 2018 (15:30)	North end LWL North end LWL C-17 Canal Manatee Lagoon WPB Public Dock C-51 Canal C-16 Canal	240	34 (14%)		
			IN LWL	OUTSIDE	CANAL/ ICW
			23 (68%)	10 (29%)	1 (3%)
November 5th, 2017 (12:00)	C-17 Canal Manatee Lagoon WPB Public Dock C-51 Canal	160	48 (30%)		
			IN LWL	OUTSIDE	CANAL/ ICW
			43 (90%)	5 (10%)	0 (0%)
TOTAL		1,120	253 (23%)		
			IN LWL	OUTSIDE	CANAL/ICW
			149 (59%)	90 (36%)	14 (6%)

* Percentages may not total 100 due to rounding

SOURCE: ANGARI Foundation





WQ-6 MANAGE FRESHWATER INFLOWS TO OPTIMIZE ENVIRONMENTAL BENEFITS

ACTION: Evaluate and implement strategies to balance freshwater flows to achieve optimal salinities for oysters and seagrasses, and decrease nutrients and sediments entering the Lagoon.

IMPORTANCE:

The delivery and timing of freshwater to the Lagoon is critical to maintaining the health of the Lagoon's living resources and to boosting their resiliency to climate change and sea level rise.

RELATED ACTIONS:

WQ-1, WQ-2

BACKGROUND:

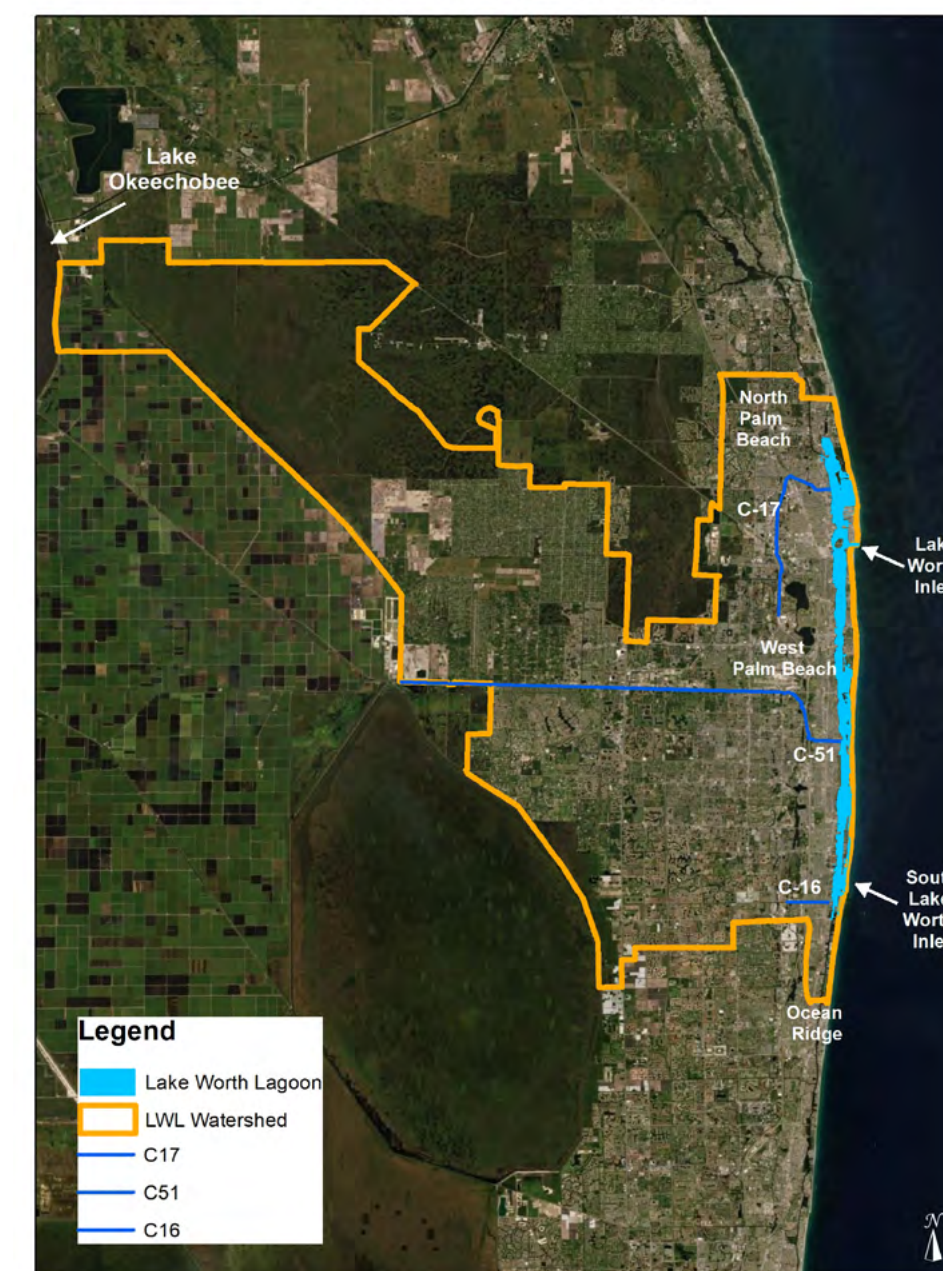
Almost all of the freshwater entering the Lake Worth Lagoon is transported via three major drainage canals - the C-51, C-16 and C-17 (see Figure 1.1). They receive water from more than 850 miles of smaller canals that, combined, drain a watershed 42 times the size of the Lagoon itself. Responsibility for management of this vast network is shared by the South Florida Water Management District (SFWMD), eight additional water improvement

agencies and water control districts, Palm Beach County and 30 municipalities within the watershed.

The C-51, C-16 and C-17 canals and associated water control structures are managed by the South Florida Water Management District for the primary purpose of flood control. They are not as a matter of principle or practice operated to deliver freshwater in volumes or on schedules that meet the ecological needs of the Lagoon's key indicators of ecosystem health: the American oyster (*Crassostrea virginica*) and three species of seagrass: paddle grass (*Halophila decipiens*), shoal grass (*Halodule wrightii*) and Johnson's seagrass (*Halophila johnsonii*), a federally threatened species.

The optimal salinity range for oysters in the Lake Worth Lagoon is 12-20 parts per thousand (ppt).^{2,3} The optimal

FIGURE 1.1 WATERSHED MAP



Water control structure on the C-51 Canal (Photo credit: PBC-ERM)



salinity range for seagrasses is 22-35 ppt.⁵ Current operational protocols for the canal network mean that Lagoon oysters are exposed to higher salinities than they prefer during the dry winter months, while seagrasses, especially within the Central Lagoon, are often subjected to lower salinities than optimal for sustained growth and/or survival.

Nine years of data collected from a salinity sonde at John’s Island, located directly east of the C-51 canal, show that salinity fell below 10 ppt on 180 of 620 days recorded, or 30% of the time (see Table 1.1). Adverse effects to paddle, shoal and Johnson’s seagrass can occur when salinity falls below 15 ppt for prolonged periods¹ (see Action HE-3). Additionally, oyster reproduction is impaired at salinity levels below 8 ppt⁵ (see Action HE-1).

Conversely, oysters experience higher prevalence of predation

and disease at salinities greater than 32 ppt.⁵ Average salinities for the Lagoon from 2005 to April 2019 exceeded the optimal range for oysters 70% of the sampled months and were in the optimal range only 26% of the time sampled.²

Freshwater flows to the Lagoon are frequently characterized by extreme highs and lows which subsequently impact salinity. The most recent oyster monitoring report from the Florida Fish and Wildlife Conservation Commission shows that salinity varied significantly month to month (from a low of 8 ppt to a high of 36 ppt), corresponding with variable flows from the C-51 Canal (see Figure 1.2). The lowest flow rates were measured in March 2020 when the monthly mean was 0 cubic feet per second. Highest flows were in March 2019, at 743 cfs.³ Additionally, analysis of high frequency salinity data recorded in the Central Lagoon at John’s Island revealed several distinct events, both in duration and severity (low salinity), that could severely stress seagrass species.⁶ These extended periods of no flows and extremely high flows are the main culprit in salinity fluctuations that are damaging to oysters and seagrass.

This action seeks to modulate freshwater inflows to maximize environmental benefits, especially in the Central Lagoon. This segment is a priority because it receives a disproportionate amount of freshwater via the C-51 Canal, it has the largest population of oysters, and the longest water residence time (up to 13 days).⁴ The desired salinity envelope within the Central Lagoon is 12-20 ppt.

Progress in addressing freshwater inflows has been hampered by the exclusion of the Lagoon from the Northern Estuaries management area of the Comprehensive Everglades Restoration Plan since 2007. However, a pending update of the Lake Okeechobee Standard Operating Manual (LOSOM) has provided an opportunity for Palm Beach County to request that salinity standards, or Performance Indicators, be established for discharges from Lake Okeechobee to the Lagoon.

Although discharges from the Lake are historically a small fraction of the total freshwater coming from the Lagoon watershed, development of Performance Indicators would facilitate use of a predictive model to evaluate ways to maintain optimal salinities for oysters and seagrasses. The model could serve as a pilot for subsequent adaptation and expansion to address the timing and quantity of freshwater runoff from the entire Lagoon drainage basin (see Action WQ-2). In addition to seagrasses and oysters, Lagoon fisheries also would benefit from more dependable and consistent freshwater flows, as several species require predictable salinities, especially in juvenile and sub-adult life stages (see Action FW-3).

Deployment of the model would also help system operators and Lagoon managers evaluate options for achieving optimal salinities, among them:

- Modifications to existing Stormwater Treatment Areas (STAs) to increase capacity and reduce nutrient and sediment loads to the Lake Worth Lagoon.
- Identification of new STAs and alternate water storage options, potentially within urban stormwater systems.
- Modifications to water control structures to release water from the top rather than the bottom of floodgates and weirs, to slow water movement. This option would require ongoing removal of sediments that build up behind the structures.

APPROACH:

- STEP 1 Evaluate and implement modifications to operational protocols for drainage canals and water control structures to reduce damaging freshwater pulses and velocities, as well as nutrient and sediment loading (See Action WQ-3).
- STEP 2 Evaluate and implement improvements to canal operations to reduce dramatic fluctuations in freshwater flows that contribute to salinity extremes.

TABLE 1.1 ACTUAL VS. OPTIMAL SALINITY FOR CENTRAL LAGOON (JOHN’S ISLAND SONDE)

	Minimum Salinity Target (ppt)	Optimal Salinity	Central LWL Salinity (ppt)	References for Optimal Salinity
Oyster Tolerance (Adult)	15	10-28	22.7	Loosanoff, 1965 in Rudolph 1998
Oyster Growth (Adult)	15	8-22	22.75	Mote Marine Laboratory, 1990 in Rudolph, 1998
Oyster Growth (Spat)	15	15-22	22.7	Sellers and Stanley, 1984
Oyster Spawning	15	>7.5	22.7	Sellers and Stanley, 1984
Seagrass Growth (Halodule wrightii)	20	23-37	22.7	McMahan, 1968 in Rudolph 1998
Seagrass Flowering (Halodule wrightii)	20	26-36	22.7	McMahan, 1968 in Rudolph 1998

Optimum target range: WITHIN ABOVE BELOW

Salinity ranges contained in the Northern Estuaries Performance Measure Salinity Envelopes.² SOURCE: PBC-ERM



Develop a long-term water management plan to maintain optimal salinity ranges for oysters and seagrasses.

STEP 3 Support modifications to existing STAs to improve storage capacity, nutrient reduction and sediment containment.

STEP 4 Identify potential new Stormwater Treatment and Water Conservation Areas in the western C-51 basin to capture, treat and gradually release freshwater downstream. Identify potential STAs in the eastern C-51 basin, including small-scale sites of 1 acre or more within neighborhoods and golf courses.

TIMEFRAME:

STEP 1 can begin in 2021 with initial consideration of operational modifications, and development of a framework for hydrodynamic modeling. Development of the model itself is dependent upon funding through grants or other mechanisms.

STEPS 2, 3 and 4 can begin in FY 2021, with evaluation of effectiveness of techniques in FY 2022-2023 and beyond.

COST ESTIMATE:

\$\$-\$\$\$\$\$

EVALUATING PROGRESS:

Water quality monitoring combined with data from salinity sondes will document salinities in relation to flows from C-51, rainfall, and other parameters.

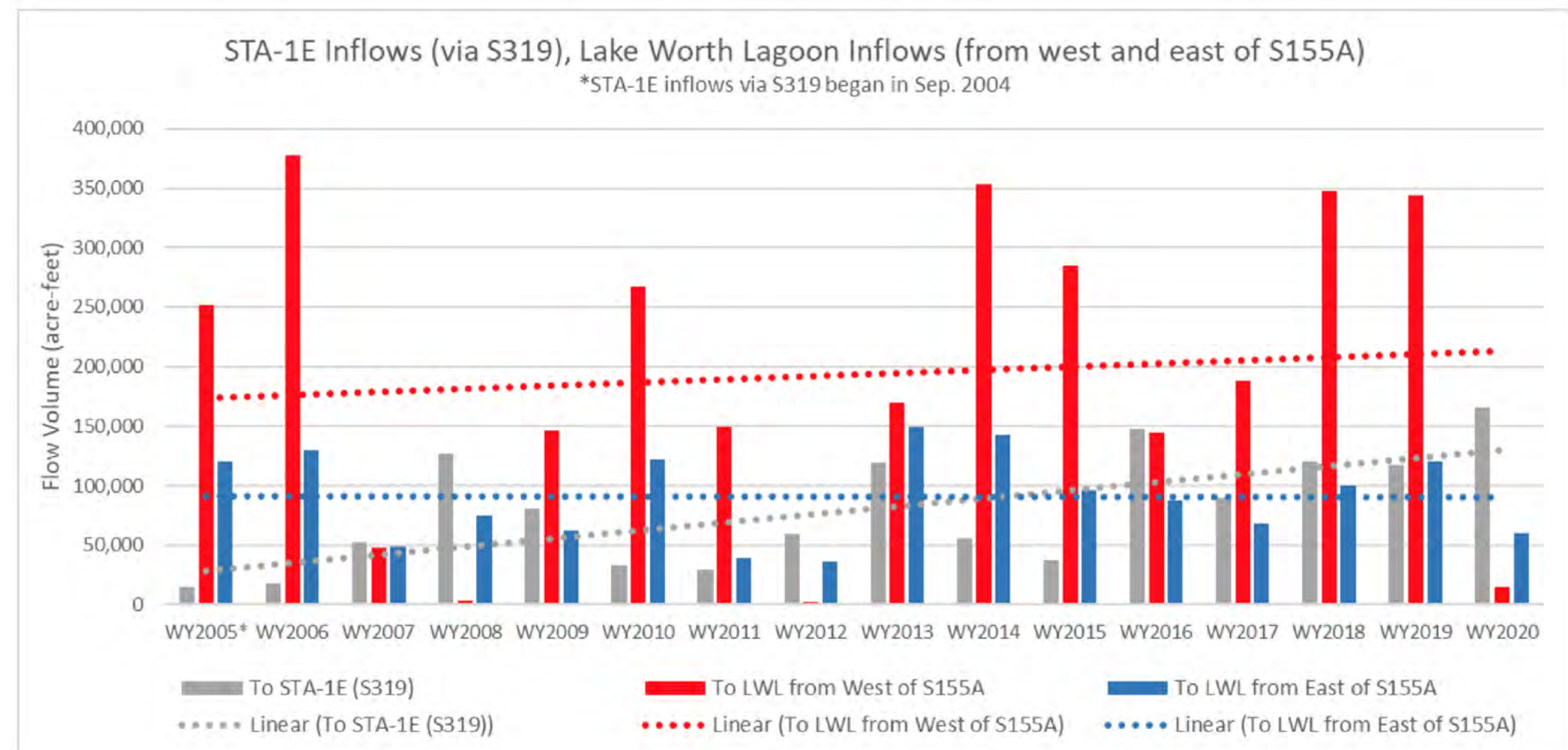
REGULATORY NEEDS:

None

FUNDING:

To be determined, depending on management steps to be implemented and land acquisition needs identified.

FIGURE 1.2 FRESHWATER FLOWS TO LAKE WORTH LAGOON FROM EAST AND WEST OF S155A 2005-2020



SOURCE: PBC

POTENTIAL PARTNERS:*

ERM, SFWMD, USACOE, Local Municipalities

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*

¹ Northern Estuaries Performance Measure Salinity Envelopes. CERP System-Wide Performance Measure Documentation Sheet. 2007 and 2020.

² LWL Oyster Monitoring Program Summary. Parker, M. Florida Fish and Wildlife

Conservation Commission. 2020.

³ Oyster monitoring in Lake Worth Lagoon Final Report April 2019 - June 2020. Geiger, S and Maloney, N. Florida Fish and Wildlife Conservation Commission. 2020.

⁴ Assessment of Freshwater Inflow and Water Quality for an Urbanized, Subtropical Estuary (Lake Worth Lagoon, Florida, USA). Buzzelli, C., et al. Marine Technology Society Journal. 2018.

⁵ LOSOM Performance Measure Documentation Sheet. 2020.

⁶ 2020 Lake Worth Lagoon Fixed Transect Seagrass Monitoring. CSA Ocean Sciences Inc. 2021.



WW-1 ASSESS AND REDUCE OCCURRENCE OF SEWER OVERFLOWS

ACTION: Create a decision-support tool to assess, prioritize and inform management decisions about wastewater system problem areas that could impact the Lake Worth Lagoon. to ensure uninterrupted wastewater collection, the implementation of proactive management, implement short- and long-term solutions, and what items should not be disposed of.

IMPORTANCE:

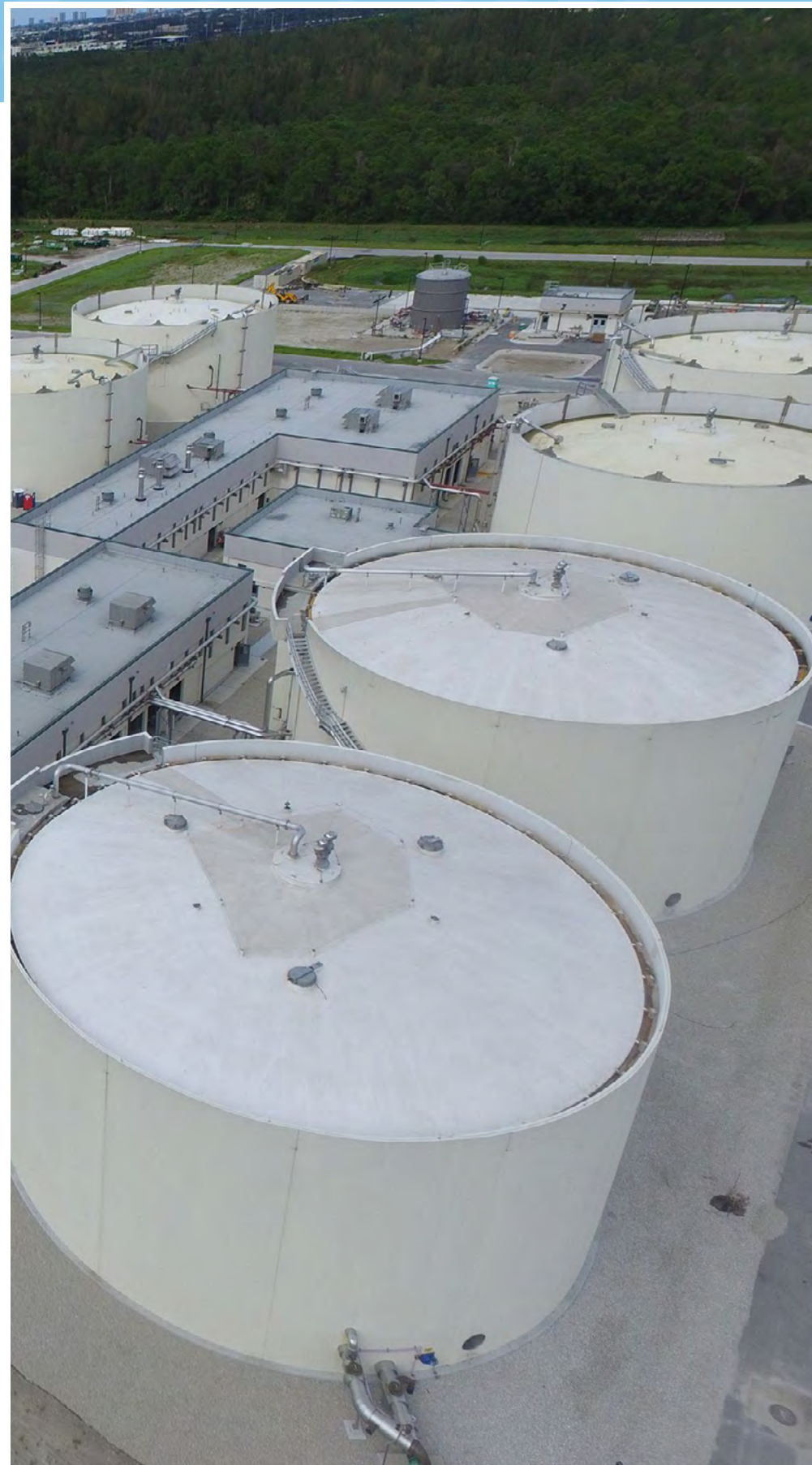
Overflows and spills of treated and untreated wastewater pose a threat to public health, environmental resources, and the economic viability of tourist-driven local economies.

RELATED ACTIONS:

WQ-1, WQ-5, WW-2, PO-1

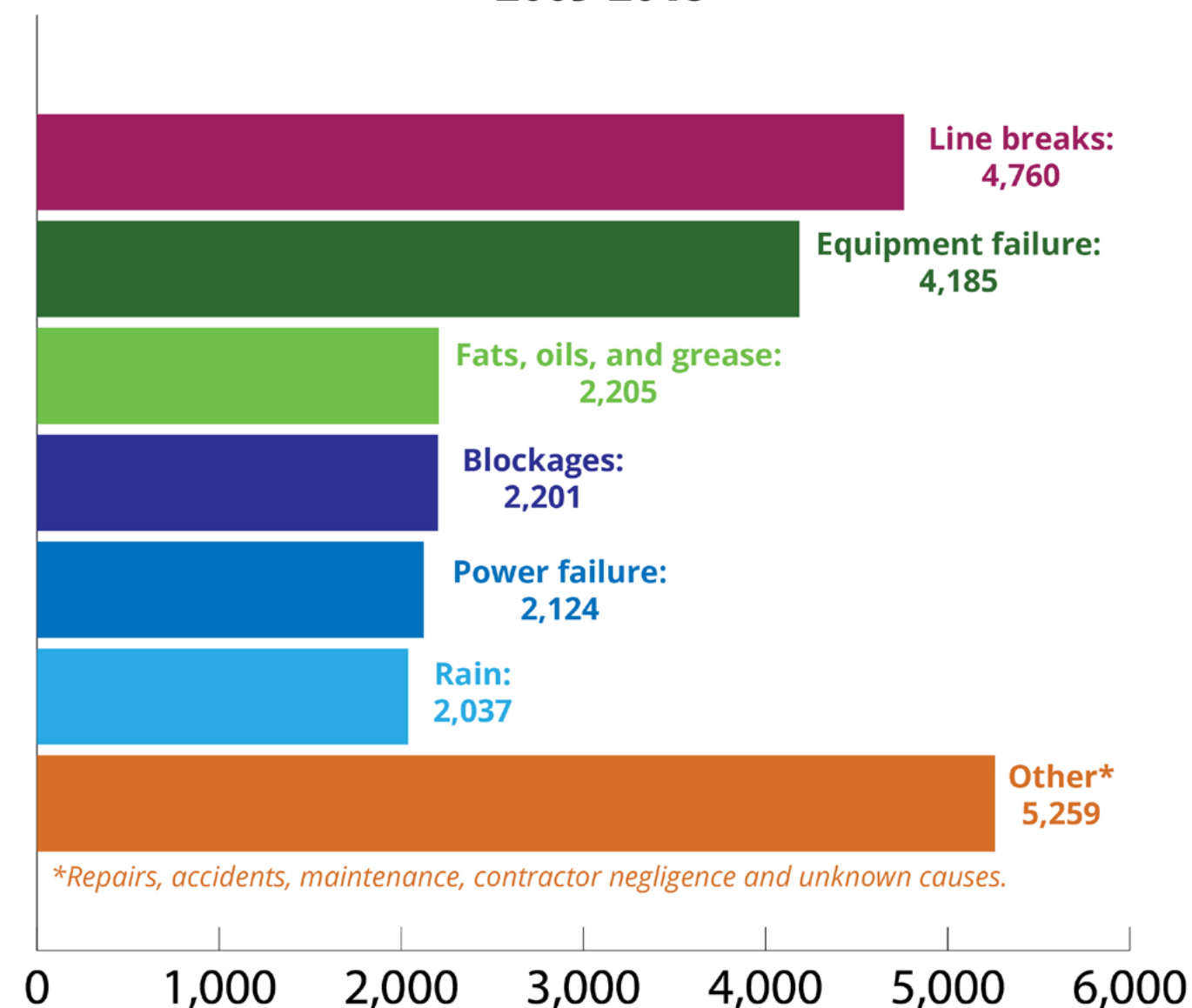
BACKGROUND:

Sanitary sewers can overflow for a number of reasons, including improper design and capacity, aging infrastructure, line blockages and breaks, infiltration and inflow of stormwater, malfunctioning equipment and a lack of backup power sources to keep lift stations operating in emergencies. Wastewater discharged into the Lake Worth Lagoon is a threat to both environmental and human



East Central Water Reclamation Facility (Photo credit: PBC)

FIGURE 1.1 CAUSES OF SEWER SPILLS IN FLORIDA 2009-2018



SOURCE: Florida Department of Environmental Protection

Sanitary sewer overflows (SSOs) in urban areas like the Lagoon watershed are primarily caused by stormwater infiltration/inflow from heavy rains, and line blockages and breaks (see *Figure 1.2*). Heavy rains funnel stormwater into cracked sewer pipes, overwhelming lift station capacity, causing manholes to overflow, and sending wastewater into nearby water bodies. Spills happen most often during storm events: In October 2020, rains from Hurricane Eta combined with stormwater inflows to overwhelm some lift stations and cause force main breaks in West Palm Beach, Lake Worth Beach and Palm Beach County, according to reports submitted by those governments to FDEP. Approximately 1,500 gallons of raw sewage spilled along Washington Road and South Flagler Drive in West Palm Beach, flowing into a storm drain discharging to the Lagoon before the spill was contained.

Multiple communities own and operate wastewater utility components within the Lagoon watershed (see *Figure 1.3*). Infrastructure improvements are underway or planned in several communities. For example, the City of West Palm Beach's capital improvement plan includes 18 lift station projects involving, rehabilitation or replacement of wet wells, pumps, electrical systems and/or operational controls. The City also plans repair or replacement of existing sewer pipelines in high-priority areas.

Throughout the Lagoon watershed, installation of emergency generators at central lift stations is an interim step that could immediately reduce the potential for overflows (see *Figure 1.4*).

Preventive maintenance is a cost-effective strategy that could benefit all communities in the Lagoon watershed. The U.S. Environmental Protection Agency's Capacity, Management, Operation, and Maintenance (CMOM) manual provides guidance for self-audits of wastewater systems to reduce overflows. CMOM programs shift maintenance actions from reactive to proactive, create operational efficiencies, reduce risk, and save money by lowering emergency repair and response costs.

 [CLICK IMAGE TO ZOOM IN. CLICK AGAIN TO ZOOM OUT.](#)

They also improve internal and external communications.

The 2020 Clean Waterways Act creates a wastewater grants program within FDEP that provides 50% matching funds to local governments for constructing, upgrading, or expanding facilities to provide advanced wastewater treatment. The law also gives preference in state revolving loan funds to wastewater projects that prevent leaks, overflows, infiltration, and inflow. It also substantially increases penalties for failing to prevent spills.

An important first step in developing a comprehensive plan

to reduce spills in the Lagoon watershed is to develop a GIS database and prioritization process to help identify and communicate wastewater collection components with the highest potential to impact Lagoon water quality. This tool would consider age, condition, proximity to the Lagoon or drainage canals, water table elevation, vulnerability to sea level rise and other relevant factors. The County's Department of Environmental Resources Management (ERM) has expertise in identifying sensitive habitats and other environmental considerations, while the County's Wastewater Department can provide information about chronic problem areas, based on documented spills, emergency repairs and cleanouts in response to line breaks, overflowing manholes and blockages.

Together, this information could be used to create a decision tool or matrix that sets priorities for short- and long-term infrastructure improvements that reduce the potential for overflows or spills impacting the Lagoon.

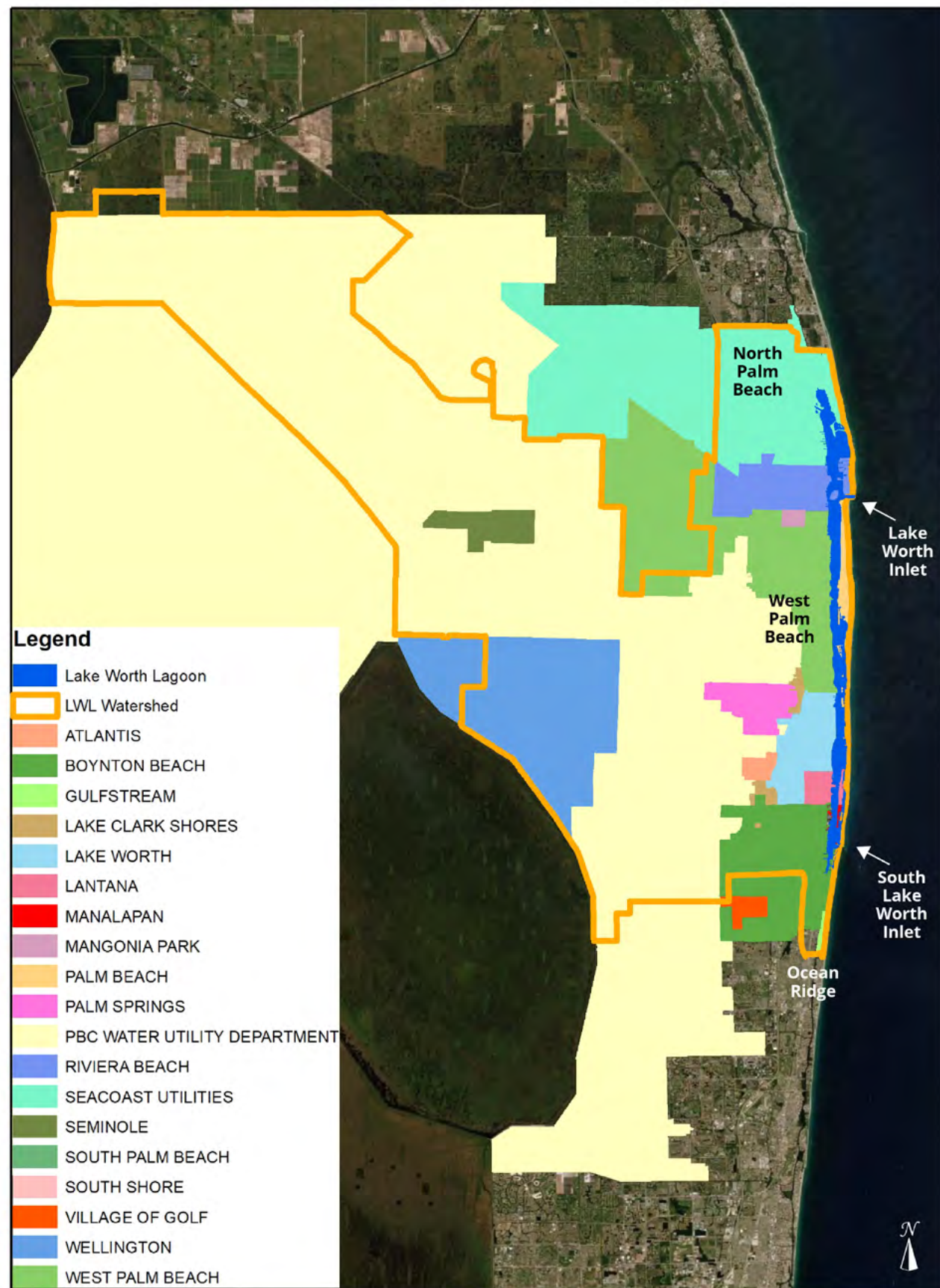
Public education is a critical component of efforts to reduce overflows. Restaurants, transportation/equipment cleaning establishments, service stations, repair shops, and other commercial activities are required to use grease traps, interceptors, or oil/water separators to keep greases and oils out of the sewer system.

However, residents routinely flush inappropriate items down drains and toilets - including disposable wipes, kitchen grease, oils, and feminine products - clogging pipes and overflows of raw sewage into the environment. Consolidation of these



Typical "fatberg" in municipal sewer line

**FIGURE 1.3 WATERSHED UTILITY SERVICE AREAS
IN THE LAGOON WATERSHED**



Source: PBC

materials in sewer pipes is so common worldwide that they've been given the name "Fatbergs."

Cracked lateral sewer lines that connect homes and businesses to the public sewer system also cause backups and overflows by allowing stormwater and groundwater to enter and swamp the system (*see Figure 1.3*). Property owners are largely unaware that they are responsible for maintenance and replacement of these private laterals. Costs for lateral line replacement range from \$3,000-\$10,000, depending on the length of the line and excavation difficulty. A rebate program like those offered by the cities of Gulfport and St. Petersburg in the Tampa Bay area could encourage homeowners in priority "hot spots" to invest in upgrades.

Educating and incentivizing citizens to understand what can and cannot be flushed down toilets, sinks and drains, and the importance of maintaining their privately owned laterals, will reduce sewage spills and overflows. Addressing proper use and maintenance of the sanitary sewer system will reduce the release of nutrients and pathogens into the environment.

APPROACH:

STEP 1 Encourage installation of emergency generators to ensure continued operation of lift stations in the event of power failures.

STEP 2 Create a decision-support tool for prioritizing wastewater system improvements, including a map of "hot spots" of chronic overflows and problem areas, and identification of environmental risk factors.



STEP 3 Encourage wastewater utilities within the Lagoon watershed to develop and implement a CMOM program to proactively address maintenance needs. A working group of representatives of wastewater departments could develop a uniform checklist for adoption throughout the watershed. This working group could also develop protocols for improved coordination and communications especially during high rainfall/storm events.

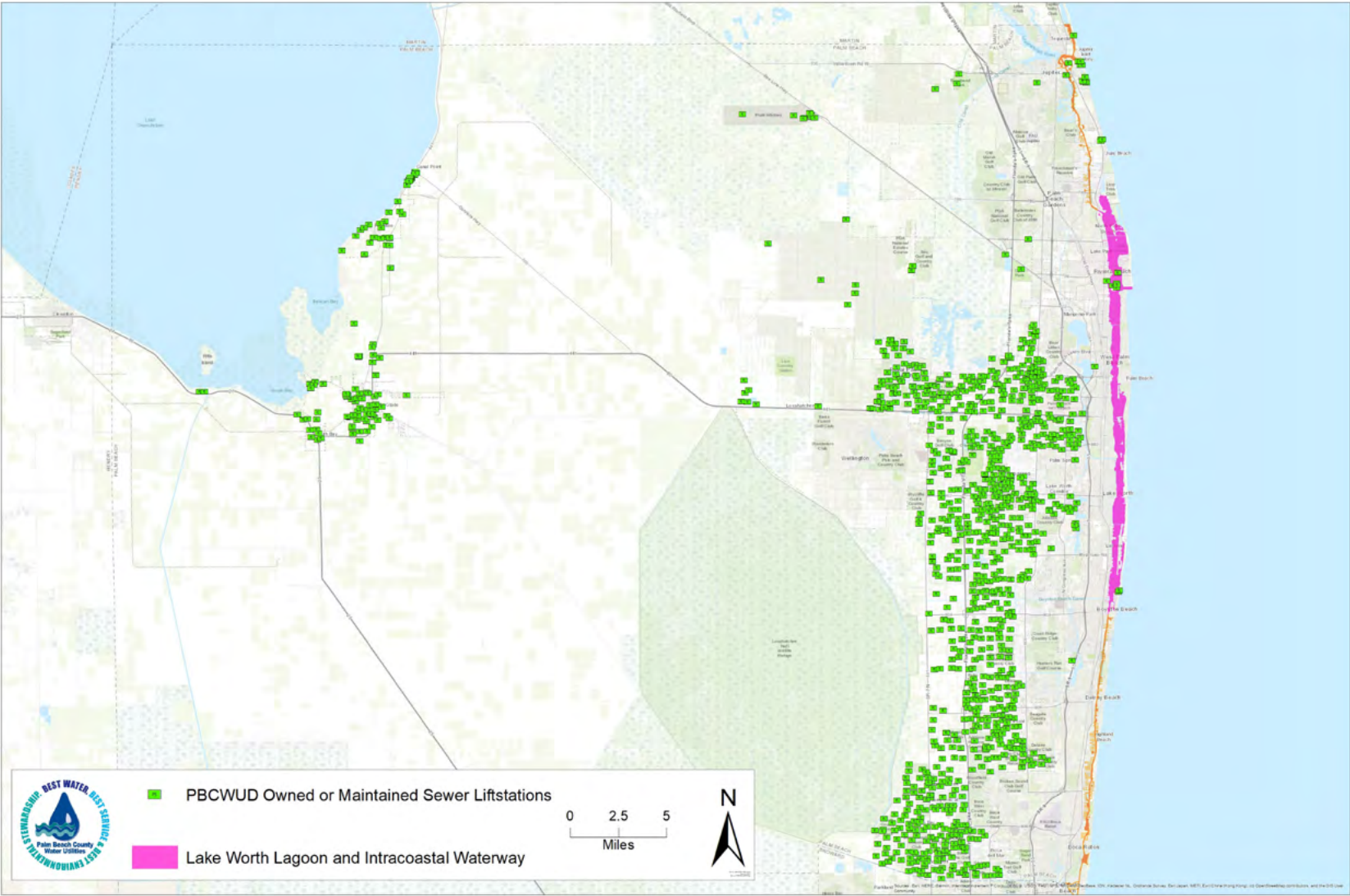
STEP 4 Educate citizens about what can and cannot be flushed down toilets, sinks and drains, and the importance of maintaining their privately owned lateral lines. Create incentives for repair or replacement of laterals.

TIMEFRAME:

STEP 1 is dependent upon funding, possibly through a DEP grant

STEPS 2, 3 and 4 can be initiated in FY 2021-2022

FIGURE 1.4 PALM BEACH COUNTY WATER UTILITY DEPARTMENT OWNED OR MAINTAINED LIFT STATIONS



Source: PBC

COST ESTIMATE:

- STEP 1 \$\$\$
- STEP 2 \$\$
- STEP 3 \$
- STEP 4 \$-\$\$\$ (higher cost for lateral line rebate program)

EVALUATING PROGRESS:

- Number of sanitary sewer overflows reported to DEP database
- Number of wastewater utilities participating in CMOM self-audit program
- Reduction in maintenance and emergency response costs for local utilities
- Number of participants in rebate or other incentive programs
- Reduction in sewer line clogs and backups caused by disposal of improper items

REGULATORY NEEDS:

None

FUNDING:

PBC, local municipalities, EPA (wastewater grants), DEP (wastewater and revolving loan fund grants), other federal and state funding mechanism as opportunities arise. Specific wastewater improvement projects, or Lagoonwide initiatives, could be submitted as part of the Lake Worth Lagoon Initiative’s annual request to the Florida Legislature.

POTENTIAL PARTNERS:*

PBC-ERM and Wastewater Departments, Local municipalities, FDEP, Florida Department of Health, EPA Region 4

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

1 Aging infrastructure and storms contribute to massive spills. Salman, J. et al. Gatehouse Media. 2019.



WW-2 IDENTIFY PRIORITY AREAS FOR CONVERSION OF SEPTIC SYSTEMS TO CENTRAL SEWER

ACTION: Create a detailed inventory of Onsite Sewage Treatment and Disposal Systems, (OSTDS), commonly referred to as septic systems in the Lagoon watershed. Identify and prioritize septic systems for upgrade or conversion based on estimated nutrient loading, potential failure and/or underperformance, soil conditions, groundwater table conditions, proximity to surface water bodies, etc. Pursue funding and homeowner assistance programs for conversion of priority areas to central sewer and/or advanced or nutrient-reducing septic systems. Support statewide requirements for inspection and maintenance.

IMPORTANCE:

While newer and properly maintained septic systems can provide more effective nutrient removal, all septic systems discharge nitrogen and phosphorus to the environment via their drainfields. In addition, underperforming and/or failing septic systems can contribute disproportionately to nutrient pollution in surface and ground water and pose increased risks to human and environmental health.

RELATED ACTIONS:

WW-2, WQ-4, WQ-5, CC-1

BACKGROUND:

Data from the Florida Department of Health (FDOH) show nearly 22,000 septic systems in the Lake Worth

Lagoon watershed in 2018, with approximately 16,500 of those in unincorporated areas and 5,500 within municipalities. Palm Beach County has completed basic mapping of these systems and noted general densities (see Figure 1.1).

Failing or underperforming septic systems can contribute nitrogen to surface and ground water, especially in areas with high densities of older septic systems more prone to malfunctioning. Septic systems also may contribute phosphates, “emerging contaminants” such as pharmaceuticals, personal care products and microplastics (see Action WQ-5) and bacterial pollution (see Action WQ-4).

A properly constructed and functioning septic system can remove between 30% and 40% of the gross nitrogen load, according to the Florida Department

of Health. Removal occurs primarily in the drainfield, where bacteria readily convert ammonia nitrogen to nitrate through nitrification (see Figure 1.2). Many factors influence the efficiency of this process, including how well the system has been maintained, how old it is and, most importantly, whether natural denitrification is likely to occur downstream before the effluent reaches a waterway (see Figure 1.3). Soil type, in particular, may have an outsized influence in how fast and far nutrients from septic systems travel, with sandy soils common to coastal areas providing less denitrification.¹ Understanding all these factors is important for accurately estimating nutrient loads to the Lagoon from septic systems, and for prioritizing upgrades to central sewer or advanced or nutrient-reducing septic systems.

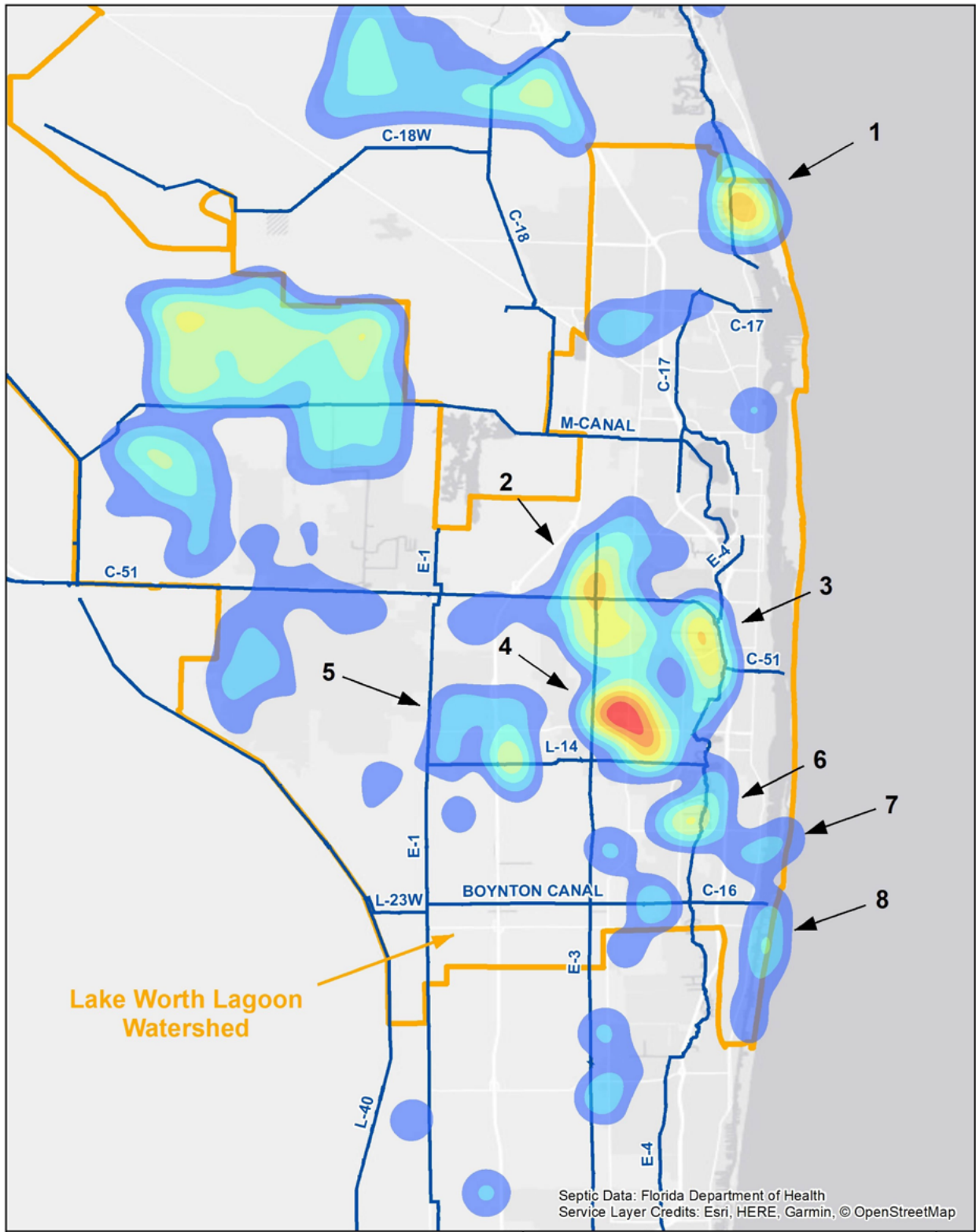
Additionally, knowledge of septic



Septic system being installed (Photo credit: Stock photo/Dreamstime)



FIGURE 1.1 MAP OF SEPTIC SYSTEM DENSITIES



AREA 1:
Little Lake Worth Lagoon
1,255 systems

AREA 2:
West of Palm Beach Intl. Airport
2,357 systems

AREA 3:
Lake Clarke
1,051 systems

AREA 4:
West Lake Worth
2,104 systems

AREA 5:
Turnpike and Lake Worth Rd.
1,135 systems

AREA 6:
Lake Osborne
881 systems

AREA 7:
Manalapan
158 systems

AREA 8:
South of the SLWI
545 systems



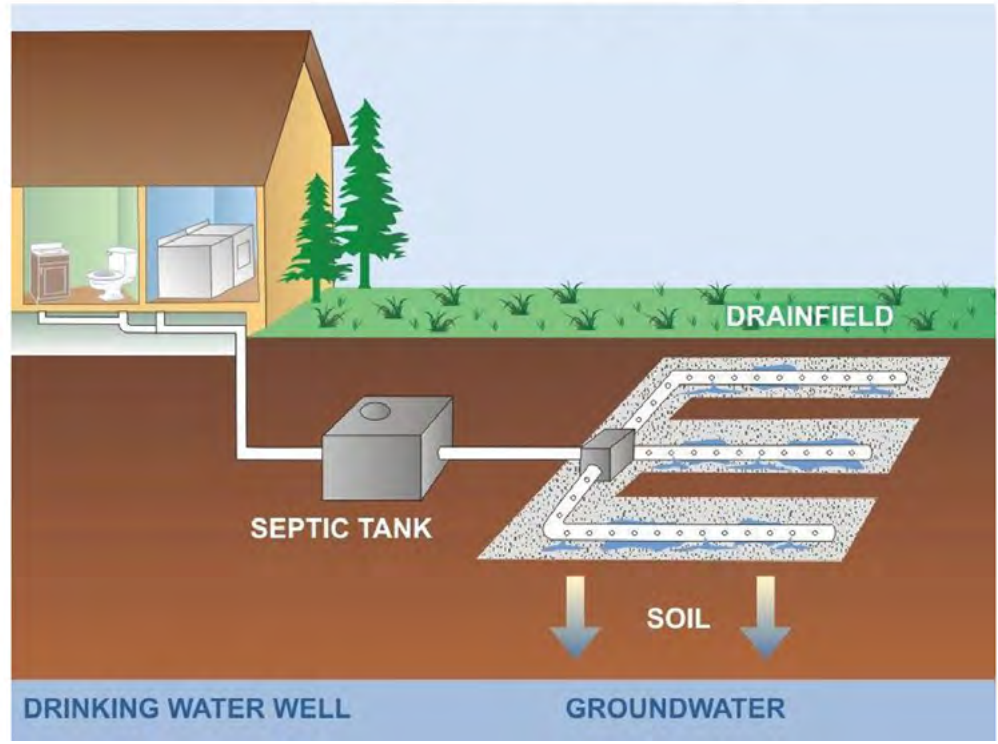
provide valuable insights into older units impacts from sea level rise, and those future impacts (see Action CC-1).

study with potential applicability to the d in the St. Lucie Estuary by researchers Oceanographic Institute at Palm Beach his study documented a strong correlation e of multiple constituents associated septic systems (dissolved nutrients, the ucralose, and stable nitrogen isotope issue) in ground and surface waters al areas with septic systems.² These drivers of harmful blooms of blue-green

s with septic systems to central sewer itial hookup fees ranging from \$2,000 re total cost of conversion projects to n range from \$30,000 - \$60,000 per tance through interest-free loans and an assist residents who may have limited nally, local governments must bear the erating capacity for their wastewater hough user fees can offset those.

nd municipalities in the Lagoon watershed imental and public health threats posed sited or poorly maintained septic systems. st Tree Village Septic-to-Sewer project on in 2018 by the Florida Legislature, al matching funds. This project, which er to 246 homes directly on or adjacent bmitted by the Lake Worth Lagoon LWLI also requested \$333,600 for a sewer n of Hypoluxo in 2020 - a project that the only remaining septic systems in the 1000 feet of the Lagoon. The Legislature at was subsequently eliminated from the

FIGURE 1.2 DIAGRAM OF A TRADITIONAL SEPTIC SYSTEM



SOURCE: Snohomish County, WA

final state budget.

The 2020 state Clean Waterways Act incorporates several important changes relating to management of septic systems, including:

- Transferring oversight of septic systems from FDOH to the Florida Department of Environmental Protection (FDEP).
- Mandating that FDOH approve more nutrient-reducing septic systems for use in ecologically sensitive watersheds where sewers are not feasible. These “Performance-Based Treatment Systems” incorporate the denitrification of effluent into the system design itself, and can reduce nitrogen inputs by 90% or more.³
- Creating an On-Site Treatment and Disposal System Technical Advisory Committee within FDEP

- Requiring Basin Management Action Plans (BMAPs) for impaired waters to include remediation plans where septic systems are responsible for at least 20% of point or non-point source pollution (or if FDEP deems necessary). The Plan must identify cost-effective, financially feasible projects necessary to achieve nutrient load reductions and include:
 - An inventory of septic systems and identification of systems to be eliminated, replaced, upgraded, or left in place
 - Cost estimates for alternatives
 - Timeline for projects
- Requiring FDEP to submit reports on wastewater projects in BMAPs
- Establishing a Wastewater Grant program

Requiring routine inspection and maintenance of septic systems is a cost-effective tool for reducing pollution and extending their service life until central sewer can be extended to more neighborhoods. A law requiring septic system inspections and pumpouts every five years was passed in 2010 but repealed in 2012. In 2019, another bill to require septic system inspection and monitoring was introduced but again failed to gain traction.

APPROACH:

- STEP 1 Create an inventory and geographic database of septic systems with the most potential to contribute problematic nutrients to the Lake Worth Lagoon based on proximity to Lagoon, age of system, density, soil conditions, depth to groundwater table, potential for denitrification, vulnerability to sea level rise and other relevant factors.
- STEP 2 Estimate nutrient loading associated with leaching from septic systems by conducting a source tracking study or generating estimates based on information gathered from the STEP 1 inventory.

- STEP 3 Create priority list for conversion of septic systems to central sewer and/or advanced or nutrient-reducing septic systems and identify and pursue cost-sharing opportunities, grants and/or capital improvement funds to implement septic system conversion projects.
- STEP 4 Support state legislation to require regular maintenance and inspection of septic systems. Support efforts to allow stricter setbacks and standards for new septic systems in areas with impaired waters.

TIMEFRAME:

- STEP 1 can be initiated in 2021 or 2022
- STEPS 2 and 3 can occur in 2023
- STEP 4 is dependent on obtaining sponsors for legislation.

COST ESTIMATE:

- STEP 1 \$\$
- STEP 2 \$-\$\$\$
- STEP 3 \$\$\$\$-\$\$\$\$\$ (based on cost of septic-to-sewer construction)
- STEP 4 \$

FIGURE 1.3 FACTORS AFFECTING SEPTIC TANKS AND WATER QUALITY



EVALUATING PROGRESS:

- Creation of a septic tank inventory and geographic database of septic system areas within the Lagoon watershed. This database should include physical parameters that increase risk of septic system failure or underperformance such as soil conditions, depth to groundwater, proximity to surface water bodies, etc.
- Nutrient Loading Estimates
- Ranked list of priority projects for septic-to-sewer conversions/upgrades
- Implementation of septic system management and reporting provisions in the Clean Waterways Act
- Approval of state legislation require maintenance and inspection of septic systems

REGULATORY NEEDS:

City and county permits issued through the National Pollutant Discharge Elimination System (NPDES) offer a mechanism for addressing chronic failures of septic systems. Local Land Development Codes may also address problem areas with repeated failures of septic tanks, or mandate stricter setbacks for new systems.

FUNDING:

State Legislative funding requests, county and city capital investment funds, FDEP Wastewater Grants or 319 Program grants,

POTENTIAL PARTNERS:*

PBC-ERM, Wastewater and Planning Departments’ local municipalities, LWLI, FDEP, FDOH. Harbor Branch Oceanographic Institution or other research institutions

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

the St. Lucie Estuary, Southeast Florida, USA. Lapointe, B. et al. HARMFUL ALGAE. 2017.

³ Florida Onsite Sewage Nitrogen Reduction Strategies Study: Evaluation of Full Scale Prototype Passive Nitrogen Reduction Systems (PNRS) and Recommendations for Future Implementation. Hazen and Sawyer. 2015.

¹ Developing Data-Driven Septic Policy for the Indian River Lagoon. Listopad, C., et al. Applied Ecology. 2018.

² Septic systems contribute to nutrient pollution and harmful algal blooms in





SW-1 REDUCE STORMWATER RUNOFF FROM URBAN LANDSCAPES

ACTION: Quantify nutrient loadings to Lagoon from residential fertilizers and expected reductions from decreased use. Support education about local fertilizer ordinances. Expand Best Management Practices (BMPs) certification programs for general landscape maintenance personnel. Expand outreach to homeowner and condo associations. Increase golf course compliance with best practices recommended by DEP.

IMPORTANCE:

Stormwater runoff from residential and commercial landscapes and golf courses transports excess nutrients and chemical contaminants to the Lagoon, contributing to water quality problems.

RELATED ACTIONS:

SW-2, PO-1, PU-1

BACKGROUND:

Lush manicured lawns and fairways are synonymous with Florida for many people, yet the nutrients and chemicals required to achieve this look can harm the waterways that are the centerpiece of the state's tourism and growth.

The price of our "green obsession" is high: It costs local governments an average of \$3,500 to remove a pound of nitrogen once it enters a waterway, based on information from statewide stormwater projects.¹ Preventing the pollution in the first place is much more practical. A 2018 management

plan for the Boynton Inlet watershed identified the reduction of fertilizer use as potentially the most impactful and cost-effective strategy for decreasing nitrogen loads in the coastal waters that support southeast Florida's coral reefs.²

Fertilizer ordinances can be an important tool for motivating changes in landscape practices by homeowners, property managers and lawn care professionals. All local governments are required to adopt, at a minimum, a state-approved Florida-Friendly Fertilizer Ordinance, that prohibits lawn fertilizer application when flood or storm watches are issued, or heavy rains are expected. The ordinance also bans fertilizer application within 10 feet of a water body or wetland, and prohibits blowing or sweeping of fertilizer and grass clippings into water bodies, storm drains or streets.

As of 2020, Palm Beach County and 20 municipalities had enacted the state-approved ordinance, a few with minor deviations from the state template. (It



Riding lawn mower (Photo credit: iStock)

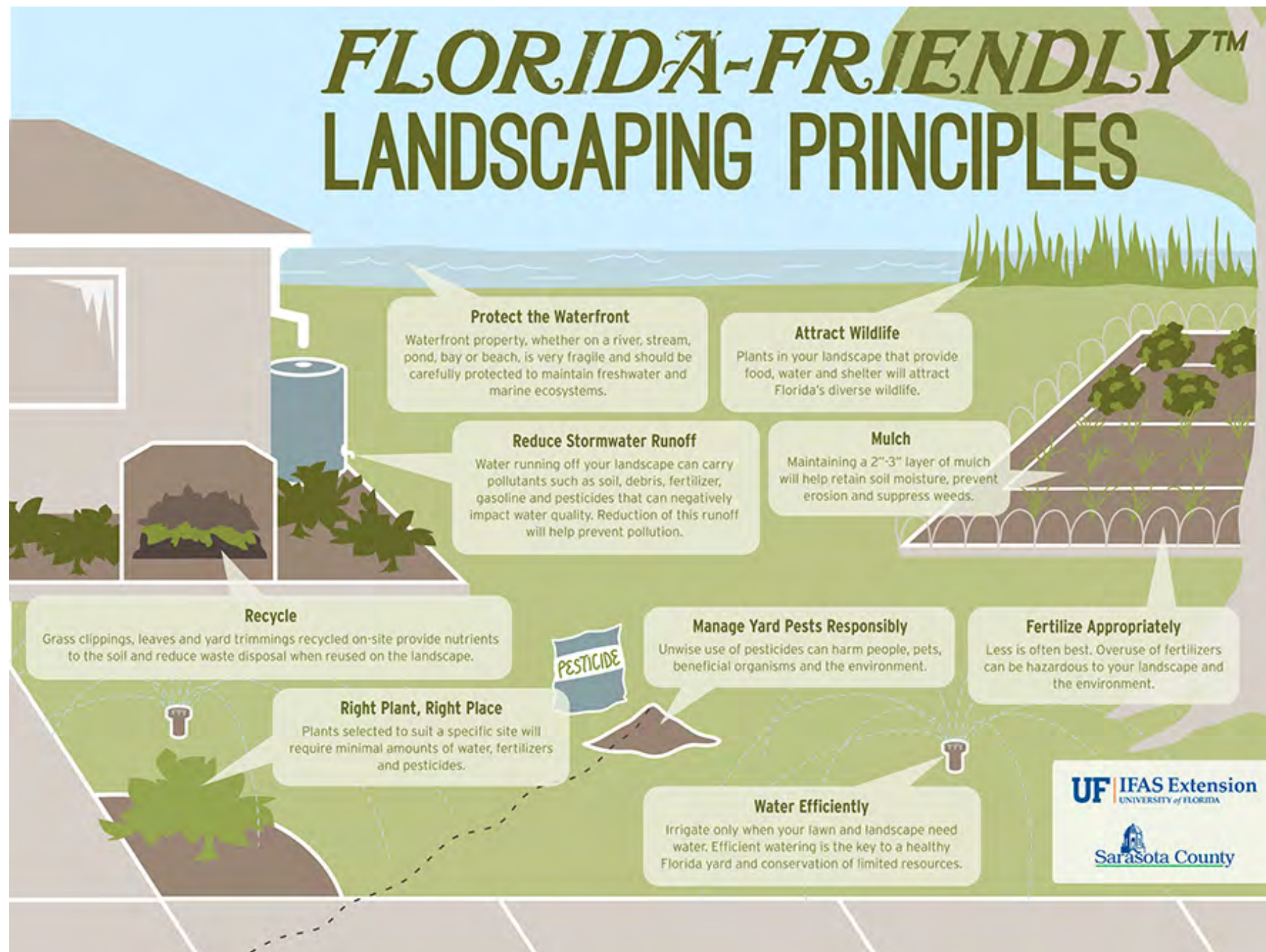
is worth noting that some 90 Florida communities have enacted stricter laws banning most fertilizer use altogether during summer months, when frequent rains increase the potential for runoff.)

Education about fertilizer restrictions would benefit from uniform messaging countywide, by the County, municipalities and UF/IFAS Extension, to avoid conflicting information about when and where fertilizer use is allowed. Effectiveness also could be enhanced by requiring stores where fertilizer is sold to post signs about the laws. Local governments also should be role models for their own ordinances,



Old Palm Golf Club





with native or Florida-compatible plants that are drought-

Among the topics covered are turfgrass cultural practices, fertilization, irrigation, and chemical handling/application.

There is no certification process for golf courses, and compliance with the manual is strictly voluntary. The non-profit Audubon International organization (not affiliated with the Audubon Society) does offer technical assistance and certifications for golf courses that demonstrate principles of environmental stewardship. This certification encompasses six key components: environmental planning, wildlife and habitat management, chemical use reduction and safety, water conservation, water quality management and outreach and education.

APPROACH:

- STEP 1 Quantify estimates of nutrient loading from residential landscapes and golf courses.
- STEP 2 Foster compliance with fertilizer ordinances and landscape BMPs on public properties owned by Palm Beach County and municipalities, including government centers, parks and athletic fields.
- STEP 3 Review existing educational messaging about fertilizer and promote consistent messaging countywide to foster compliance with local ordinances. Provide suggested language for signage in retail outlets selling fertilizer.



Example of a Florida-friendly landscape (Photo credit: UF-IFAS)

PRIVATE COURSES IN THE LAGOON WATERSHED THAT HAVE EARNED AUDUBON INTERNATIONAL CERTIFICATION:

Ballen Isles Country Club	The Everglades Club
Frenchman’s Reserve	High Ridge Country Club
Old Palm Club (Gold Certification)	Quail Ridge Country Club

PUBLIC COURSES IN THE LAGOON WATERSHED THAT HAVE EARNED AUDUBON INTERNATIONAL CERTIFICATION:

John Prince Golf Learning Center	The Links at Boynton Beach
	Okeeheelee Golf Course
Park Ridge Golf Course	

- STEP 4 Quantify reductions in water, fertilizer, and pesticide use, and associated cost savings, for one or more golf courses in the Lagoon watershed that follow the DEP Manual of BMPs or are certified through Audubon International. Share results with other courses.
- STEP 5 Identify a potential program and partners to offer voluntary, no-commitment site visits to golf courses and community associations to identify improvements to maintenance programs to reduce impact to the Lagoon. Offer voluntary, no-commitment inspections to golf courses and community associations to identify improvements to maintenance programs to reduce impact to the Lagoon.
- STEP 6 Continue to promote Florida-Friendly Landscaping™ through programs and community events sponsored by ERM and partners in the Lake Worth Lagoon Initiative Outreach Working Group.

TIMEFRAME:

STEP 1 is contingent upon development of a Lagoon watershed model and analysis of nutrient loading by source. (See Action WQ-2).

STEPS 2 and 3 can begin in FY 2021.

STEP 4 can be initiated upon identification of one or more golf course partners, as soon as FY 2021-2022, and extending for at least two years to accurately assess reductions in cost and pollutants.

STEP 5 will commence upon completion of STEP 4, contingent on identification of a partner agency or organization to coordinate site visits.

STEP 6 is ongoing.

COST ESTIMATE:

STEP 1 \$\$\$\$ for modeling and assessment of nutrient sources to Lagoon

STEP 2-5 \$ for educational components

EVALUATING PROGRESS:

Updated messaging about local fertilizer ordinances to ensure uniformity and consistency countywide.

Percentage of public properties managed according to fertilizer ordinance and landscape BMPs.

Number of lawn and landscape professionals certified in Green Industries BMPs.

Number of golf courses in the Lagoon watershed following DEP Manual or certified through Audubon International.

Number of residents reached through Florida-Friendly

Landscaping™ educational efforts.

REGULATORY NEEDS:

Amendments to fertilizer ordinances likely would be needed for any local governments that wish to require retail signage about fertilizer restrictions; Land Use Plan updates could incorporate language recommending that new golf courses adhere to the FDEP Manual of BMPs.

FUNDING:

Educational activities funded through recurring budget allocations. Possible funding or in-kind contributions from Audubon International or the Golf Course Superintendents Association of America for gold course assessments and partnerships.

POTENTIAL PARTNERS:*

ERM, Local Municipalities, UF IFAS/PBC Cooperative Extension Service, LWLI Outreach Working Group, Palm Beach County Soil and Water Conservation District, PBC Parks and Recreation, Golf Course Superintendents, Audubon International, Palm Beach County Chapter of Florida Native Plant Society, Loxahatchee Group of the Sierra Club

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

- 1 Florida Department of Environmental Protection 319h stormwater project database. <https://fdep.maps.arcgis.com/apps/MapSeries/index.html?appid=1696c8bc33e7464b8249998f23f6795a>.
- 2 Boynton Inlet Contributing Area Watershed Management Plan. Prepared by Hurlsey Whitten for Palm Beach County. 2018.
- 3 Golf and the environment: A deadly serious debate. O’Connor, T. Score, 1990.





SW-2 EXPAND USE OF GREEN INFRASTRUCTURE AND LOW IMPACT DEVELOPMENT PRACTICES

ACTION: Expand use of Green Infrastructure (GI) and Low Impact Development (LID) practices to treat rainfall runoff in place. Conduct a cost-benefit analysis of a local GI and LID versus conventional stormwater project. Support development and delivery of tools and incentives to expand GI/LID implementation, including professional training; compatibility reviews of land development codes and comprehensive plans; and demonstration sites. Consider creation of stormwater utilities to finance stormwater improvements.

IMPORTANCE:

Green Infrastructure and Low Impact Development offers potentially significant cost savings over traditional stormwater management systems in urban areas, while also providing quality-of-life benefits to the community. GI can reduce nutrients and sediments by storing and treating stormwater that would otherwise flow directly into the Lagoon.

RELATED ACTIONS:

CC-1, CC-2

BACKGROUND:

Green Infrastructure and Low Impact Development is an innovative, low-impact approach to managing stormwater that works by slowing down stormwater to treat it at its source, instead of discharging it to the nearest water body. The results are more natural, and often more aesthetically

pleasing, than traditional stormwater practices that utilize pipes, drains and retention ponds. Studies show that Green Infrastructure can be easier to maintain, may reduce or eliminate the need for regulatory permits, and often results in lower capital costs than conventional stormwater management approaches.

Beyond stormwater management and flood control, Green Infrastructure adds value by creating recreational and passive greenspace and wildlife habitats within urban areas. Together, these benefits improve overall community resilience to climate change (see Figure 1.1).

Examples of Green Infrastructure include:

- **Bioswales:** Vegetated, mulched, or xeriscaped shallow, gently sloping drainage channels that capture runoff and allow it to evaporate or percolate into the ground.

- **Pervious Surfaces** such as pavers, bricks, gravel, shell and porous concrete that allow gradual absorption of rainwater in parking areas, driveways and walkways.
- **Tree Boxes or Islands:** A pre-manufactured concrete box in which trees are planted to serve as compact bioretention areas, especially suited for urban streetscapes where space is limited.
- **Rainwater harvesting systems**, such as aboveground and underground cisterns, to capture rainfall and store it for later use.
- **Green Roofs**, featuring small plants and shrubs embedded in planting trays or grown directly on building rooftops, can intercept rainfall before it hits the ground.

Multiple techniques can be incorporated in a single project or interconnected projects to create a “treatment train” that maximizes environmental, recreational and aesthetic benefits



Example of bioswale to treat and retain stormwater
(Photo credit: City of Hallandale Beach, FL)

Green Infrastructure for Climate Resiliency

Climate change is impacting urban areas in many ways, from exacerbating the urban heat island effect to elevating flood risk. Build green infrastructure to help improve community resilience.



Figure 1.2.). One example of a sequenced retrofit of Lake Shore Drive. As part of the stormwater Master Plan, the Town of Park plans to use GI techniques such as wet detention areas, where sufficient land is available, that capture stormwater and allow sediments to gradually settle out. In densely developed areas with impervious surfaces and lack of open land, highly engineered systems of curb-and-gutter, catch basins, and drains are the norm.

By 2082, Florida's stormwater rules have been updated to require new and redevelopment projects to capture the first inch of rainfall runoff, which is the majority of nutrients, suspended solids, and heavy metals. In general, this has been accomplished through construction of wet detention areas, where sufficient land is available, that capture stormwater and allow sediments to gradually settle out. In densely developed areas with impervious surfaces and lack of open land, highly engineered systems of curb-and-gutter, catch basins, and drains are the norm.

For example, a report commissioned by FDEP in 2010 determined that the existing criteria for stormwater management in many cases, not achieving the sediment load reductions necessary to protect water quality.¹ A subsequent series of task force recommendations drafted in March 2010 were adopted.

As part of the 2020 Clean Waterways Act, the Florida Legislature marks a potential turning point for stormwater management. The act requires the Florida Department of Environmental Protection (FDEP) and the state's Water Management Districts (WMDs) – each

with their own specific stormwater design and performance standards – to initiate rulemaking on new statewide stormwater criteria by January 1, 2021.

This process presents an opportunity to create unified standards for low-impact development to accelerate the use of Green Infrastructure techniques. Updated state criteria also could encourage revision of local development codes and stormwater manuals to provide guidance in Green Infrastructure techniques that are especially appropriate to urban redevelopment and stormwater retrofits.

The 2019 completion of a [comprehensive manual](#) prepared for FDEP's Coral Reef Conservation Program provides a regionally tailored foundation for site selection, planning, design, operation, maintenance, and evaluation of Green Infrastructure projects in the unique Southeast Florida physical and regulatory environment.² A companion [reference matrix](#) allows users to compare and assess different Green Infrastructure siting and design options.

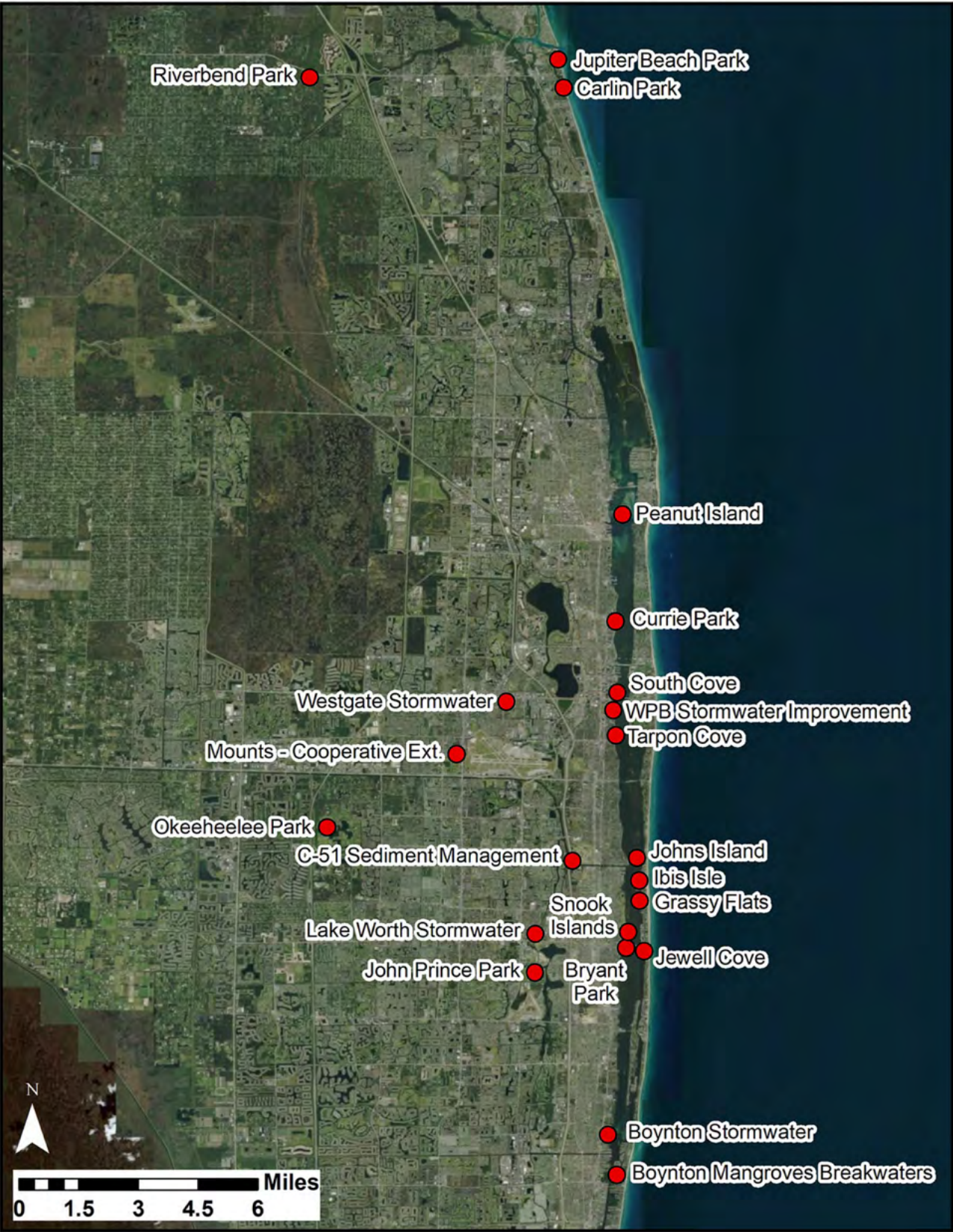
Multiple studies show that implementation of Green Infrastructure practices provide significant cost-savings over conventional stormwater methods and provide multiple community benefits in addition to water quality protection, including improvements to human and environmental health, recreational opportunities, property value, natural habitat and quality of life. These case studies provide a useful starting framework and suggest methods that could be applied to a cost-benefit analysis of “green” versus “gray” infrastructure in the Lake Worth Lagoon watershed.

Palm Beach County (PBC) is already implementing Green Infrastructure, with 21 projects that incorporate low-impact stormwater management techniques completed or underway as of 2020 (see Figure 1.3). Figure 1.3 only shows projects funded in part by PBC and is not an exhaustive list of all Green infrastructure projects in the County completed by other entities. The County's Office of Resilience conducted a successful workshop on Green Infrastructure for County staff, municipal partners, and community stakeholders in 2019. Similar workshops for the private development community would help to encourage more widespread use of these techniques.

Mapping of County-maintained stormwater culverts and roads is underway, a task that can help to identify suitable locations for Green Infrastructure retrofits. As part of a shoreline characterization study to be completed in 2022, PBC's Environmental Resources Management Department has mapped 204 outfall pipes along



FIGURE 1.3 GREEN INFRASTRUCTURE PROJECTS
PALM BEACH COUNTY ONLY



SOURCE: PBC-ERM

stormwater utility fees by the County or would provide a stable and recurring source of revenue for comprehensive stormwater improvements in the county, including GI activities on public lands. Approximately 170 stormwater utilities had been established by local governments throughout Florida, including Pompano Beach and Jupiter, and the Village of Wellington (see Figure 1.5). The average monthly fee collected was \$7.80 per unit (average unit size of 2,857 sq ft) with revenues ranging from \$21,000 a year for a small town like Fruitland Park to \$5.7 million a year for Palm Beach and \$31 million a year for Miami-Dade.

Encourage expanded use of GI/LID techniques to manage rainfall runoff in place. Promote and implement “green infrastructure” that leverage multiple GI techniques in a development to maximize water efficiency.

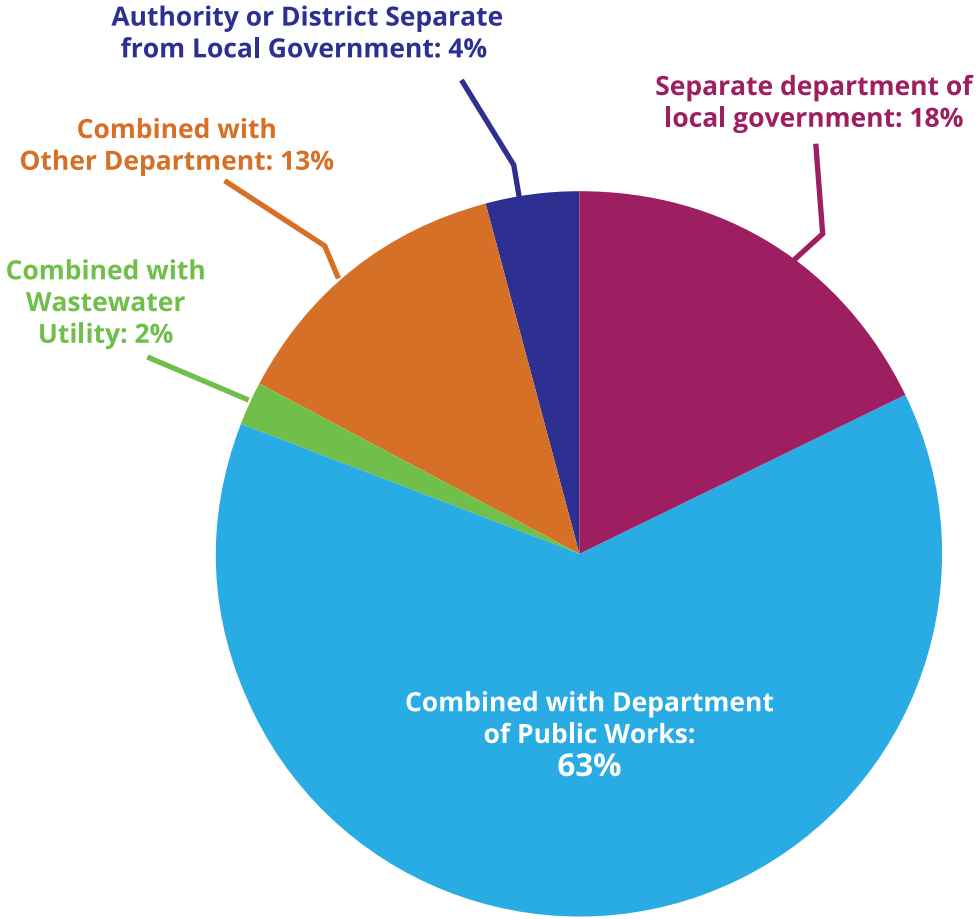
Conduct a cost-benefit analysis on the benefits associated with a local Green Infrastructure project compared to traditional “gray” stormwater treatment.

Conduct a Green infrastructure workshop for water professionals, landscape architects, and resource planners hosted by the PBC Office of Planning and appropriate partners.

Develop a public education about the benefits of GI, including signage at a demonstration project or a tour showcasing examples in Palm Beach County.

Obtain corporate support for GI in comprehensive plans and zoning codes. Review and update ordinances and codes to remove barriers to GI implementation, such as the requirement for curb-and-gutter or large building setbacks in residential areas.

FIGURE 1.5 HOW FLORIDA STORMWATER
UTILITIES ARE ORGANIZED



SOURCE: FLORIDA STORMWATER ASSOCIATION



STEP 6 Consider incentives such as increasing density allowances or streamlining permitting when GI is used within a development.

STEP 7 Consider creation of County and municipal stormwater utilities as a mechanism to finance ongoing water quality improvements.

TIMEFRAME:

STEP 1 is ongoing

STEPS 2-7 can occur in 2021-2024 timeframe

COST ESTIMATE:

STEPS 1-7 combined \$\$

EVALUATING PROGRESS:

Increase in number of Green Infrastructure projects.

Number of Public Outreach elements, such as a training workshop or signs at demonstration projects.

Changes in land use plans, zoning regulations or land development codes to facilitate GI projects.

Adoption of stormwater utility fees by County and Municipalities.

REGULATORY NEEDS:

Adoption of policies, regulations or ordinances to facilitate GI implementation. Adopt of stormwater utility fees.

FUNDING

Legislative allocation, FDEP Nonpoint Source Management Program grants, Stormwater Utility Fees or other user-based revenues

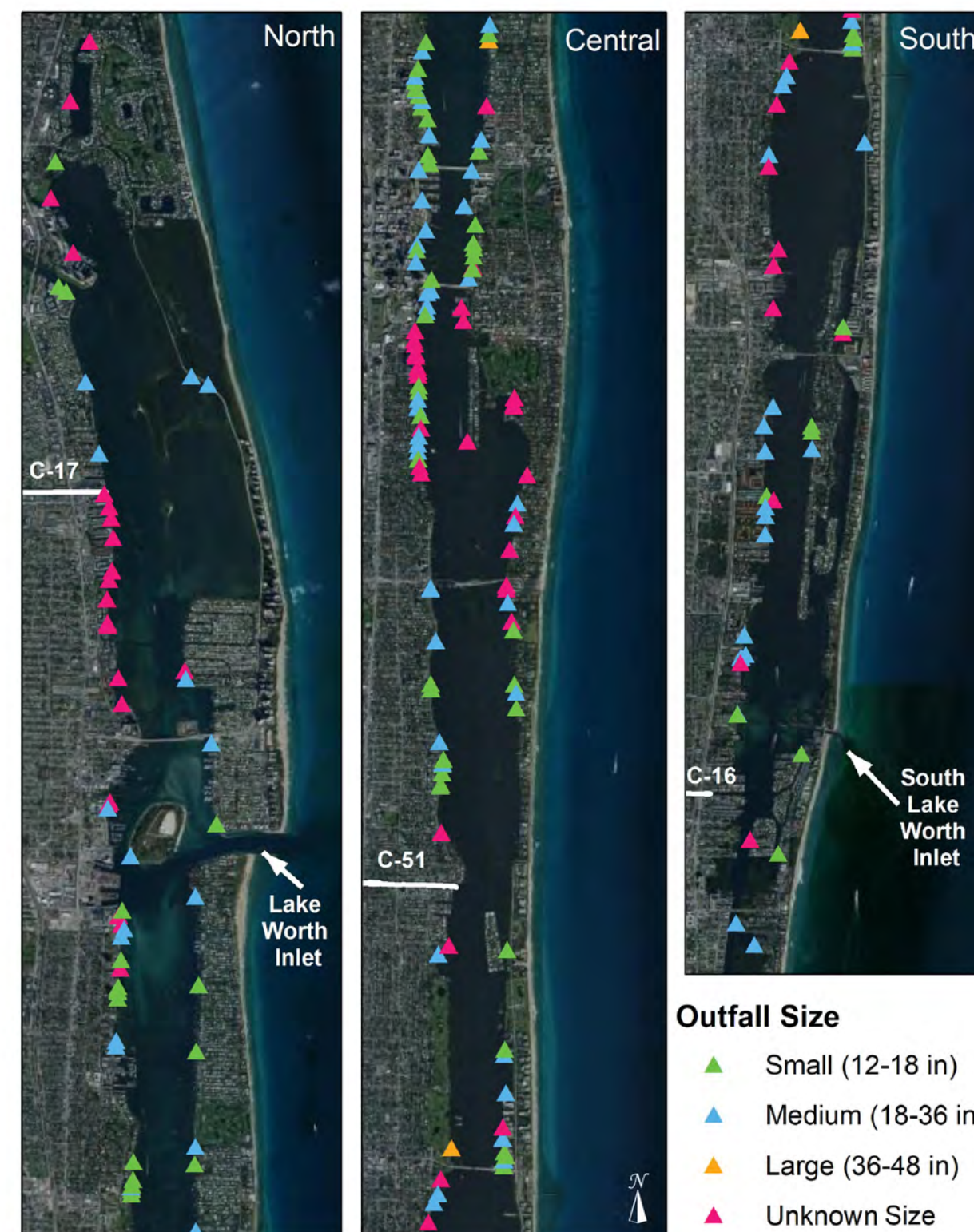
POTENTIAL PARTNERS:*

PBC-ERM and Office of Resilience, Local Municipalities, FDEP, SFWMD

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*

- ¹ Evaluation of Current Stormwater Design Criteria within the State of Florida. Final Report prepared for DEP by Environmental Research & Design, Inc. Harper, H. and Baker, D. 2007.
- ² Low-Impact Development & Green Infrastructure: Pollution Reduction Guidance for Water Quality in Southeast Florida. Prepared for FDEP Coral Reef Conservation Program. Bean, E., et al. 2019.
- ³ FSA 2018 Stormwater Utility Report. Florida Stormwater Association. 2018.

FIGURE 1.4 STORMWATER OUTFALLS OF LAKE WORTH LAGOON



SOURCE: PBC-ERM



SE-1 ASSESS AND MANAGE SEDIMENT LOADING

ACTION: Complete study of C-51 sediment trap efficiency and identify strategies to reduce sediment loads throughout the watershed. Assess and characterize sediment contributions to the Lake Worth Lagoon from all major stormwater conveyances. Implement projects to reduce sediment loading to the Lagoon and cap or remove muck sediments in the Lagoon to improve benthic health and foster seagrass colonization.

IMPORTANCE:

Water and habitat quality in the Central Lagoon is significantly impacted by the ongoing accumulation of organic muck transported in freshwater inflow from drainage canals.

RELATED ACTIONS:

WQ-1, WQ-2, WQ-3, WQ-6, HE-2, HE-3

BACKGROUND:

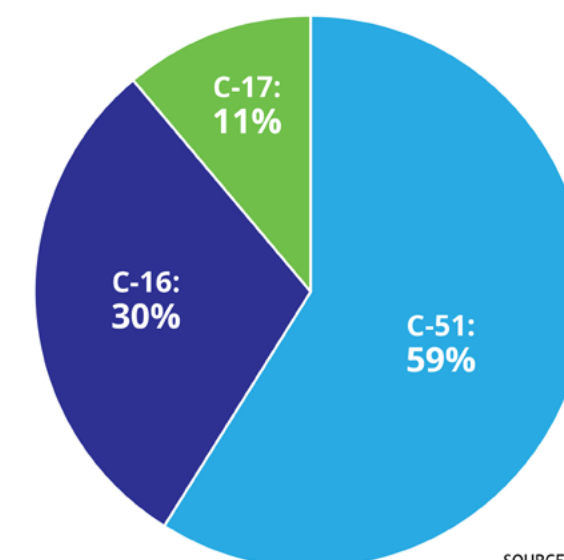
The sprawling network of drainage canals that crisscross the Lake Worth Lagoon watershed deliver problematic sediments in addition to freshwater to the estuary. These sediments build up as layers of oxygen-deficient muck in the Lagoon, and constant resuspension by wind and waves creates murky water that is less supportive of seagrass, fish and shellfish. The sediments contribute to excess nutrient loads, reduce light penetration to benthic habitats and may also contain heavy metals and other toxins.

Three drainage canals - the C-17, C-51 and C-16 - collect and convey most of the runoff from the Lagoon's expansive watershed, as well as sediments that accompany those flows. The C-51 Canal is the largest and oldest of those, with initial construction completed in 1929. It is now managed, along with the C-16, C-17, and multiple other flood control conveyances, by the South Florida Water Management District (SFWMD).

From 2008-2020, the C-51 delivered 59% of the freshwater flows into the Lagoon via the S-155 spillway¹ (See Figure 1.1). The S-155 opens at the bottom, allowing sediments to flow more easily into adjacent coastal waters. The amount of sediment entering the Lagoon is not quantified: the only detailed study to date determined that Lagoon sediments within 1.2 miles of the canal terminus are derived largely from the canal.² Canal sediments in turn are derived primarily from agricultural lands in the western portion of the canal.

The structure empties into the Central Lagoon, an area characterized by the poorest circulation and longest water residence time because of its distance from ocean inlets. Sediments deposited in the Central Lagoon tend to stay in the Central Lagoon, accumulating over time. Water quality in the Central Lagoon is generally the poorest overall, and sites closest to the C-51 Canal's discharge location (e.g. S-155 spillway)

FIGURE 1.1 FRESHWATER INFLOWS INTO THE LAKE WORTH LAGOON, 2008-2020



SOURCE: USACE



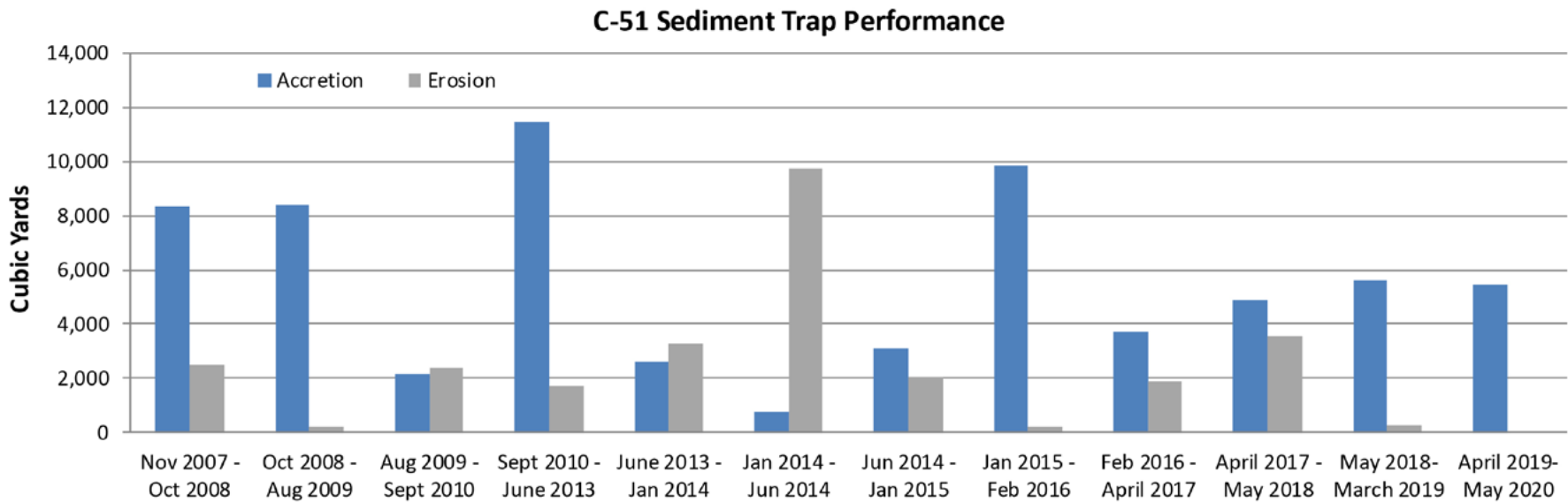
Water conveyed down the C-51 Canal also carries sediments to the Lagoon
(Photo credit: PBC-ERM)



TABLE 1.1
C-51 SEDIMENT TRAP PERFORMANCE



- Net accumulation 3,119 CY/year
- Net accumulation 38,987 CY to date



SOURCE: South Florida Water Management District

In 2007, a 12-acre sediment trap was constructed in the C-51 Canal to act as a “sump” to sequester sediments that would otherwise be discharged to the Lagoon (See Figure 1.2). Per a 2006 Interlocal Agreement, SFWMD is responsible for the operation, management and maintenance of the trap, and has been conducting annual surveys to determine accretion and

while 35% was produced through primary production in the Lagoon itself.⁵

Also included in the 2021 SFWMD



Central Lagoon muck sample (Photo credit: PBC-ERM)

2019, a measured

in 2021, that it has 850 tons.⁴ In its flow, the trap is able to capture sediment

num flow

an as a sink

nk erosion, reduced runoff

TABLE 1.2 NUTRIENTS (TP AND TN) AND METALS IN THE THREE SEDIMENT TRAP SAMPLES

NUTRIENT	CONTENT PER VOLUME (MG/KG) IN SAMPLE		
	I	II	III
TP	491	378	704
TN	1910	1810	2730
METALS			
Arsenic	6.35	7.20	5.52
Barium	51.40	57.50	47.40
Cadmium	0.27	0.34	0.28
Chromium	20.60	23.70	19.40
Lead	14.70	17.10	14.20
Mercury	0.16	0.16	0.10
Selenium	1.10	2.50	1.20
Silver	0.03	0.03	0.03

SOURCE: Palm Beach Environmental Laboratories Inc., 2017

report was an analysis of the sediments for the presence of contaminants and their specific concentrations. Early results show high levels of arsenic (see Table 1.2). Additional analysis would clarify the potential effects of nutrients and metals on estuary and human health.

Once in the Lagoon, muck may be continually dispersed with tides, wind and waves, filling deep dredge holes first and eventually covering shallow-water benthic communities that are the foundation of a healthy estuary. The County has invested significant time and financial resources in capping muck layers with lagoon-compatible sediments to facilitate habitat restoration, often in conjunction with fill material derived from dredging of the Intracoastal Waterway by the Florida Inland Navigation District (see Action HE-2).





Figure 1.2 Location of C-51 Sediment Trap

Understanding the sources, distribution, constituents and fate of sediments discharged to the Lagoon from the C-51 Canal - and, more generally, from the entire system of drainage canals and structures that affect the Lagoon - is essential to improving habitat and ecological diversity. Solutions will require a wide-angle management approach that seeks to address land uses and runoff from the 30 municipalities, large unincorporated area, and over 1 million residents that comprise the Lagoon watershed.

APPROACH:

- STEP 1** Continue annual surveys of the C-51 Canal sediment trap and consider expanding the survey area along the C-51 closer to the S-155 structure. Incorporate recommendations of the SFWMD sediment trap efficiency study into future sediment management activities.
- STEP 2** Assess sediment loads to the Lagoon along the main drainage canals (C-17, C-51, C-16) and structures (S-44, S-155, S-41). Implement a Lagoon-wide sediment characterization and sourcing study.
- STEP 3** Conduct a feasibility study to identify strategies for reducing sediment loads within the C-51 Canal. Evaluate both structural and non-structural actions,

including modifications to canal and/or trap maintenance, re-engineering of the S-155 structure to facilitate reduced sediment loads to the lagoon, construction of additional sediment traps, and new Stormwater Treatment Areas. Regulatory, policy and educational initiatives aimed at reducing sediment contributions from land-based activities also should be considered. (see Action WQ-3).

- STEP 4** Implement projects to reduce sediment loading to the Lagoon (structural and non-structural) and manage sediment within the Lagoon by capping or removing muck layers to improve habitat value (see Action HE-2).

TIMEFRAME:

STEP 1 A Phase II Sediment Trap Study is necessary to fine tune the operation of the S-155 structure during high flow events and to determine how to improve C-51 trap efficiency. Annual surveys of the sediment trap should continue until optimal flows and maintenance regimes can be determined to ensure the trap's effectiveness as a sediment sink.

STEP 2 is contingent upon identification of funding partners.

STEP 3 Feasibility study can begin in 2021.

STEP 4 is ongoing to ensure consistency with state water quality improvement

activities and proposed statewide stormwater rules, and as opportunities arise to obtain and use dredged material to cap muck sediments or to support removal of muck from the system.

COST ESTIMATE:

- STEP 1 \$ per year for annual monitoring of accretion/erosion and trap capacity.
- STEP 2 \$\$-\$\$\$ depending on scope and phasing of assessments and sediment source tracing.
- STEP 3 \$\$ for feasibility study.
- STEP 4 \$\$\$\$-\$\$\$\$\$ significant costs savings are realized from beneficial uses of dredged material.

EVALUATING PROGRESS:

- Number of stormwater treatment projects.
- Implementation of actions to reduce sediment loading to Lagoon.
- Volume of sediment removed from canals that drain to the Lagoon (via dredging or other technologies).
- Volume of nutrients (e.g. phosphorus, nitrogen) removed from canals that drain to the Lagoon (via dredging or other technologies).
- Capping or removal of muck from dredge holes in Lagoon.

Education/Outreach, Policy and Regulatory Actions implemented.

REGULATORY NEEDS:

Stronger requirements for stormwater system components to capture sediments and regular maintenance of current systems through MS4 or NPDS permits.

FUNDING:

State, regional, county/city budget allocations, LWLI Legislative Funding Request

POTENTIAL PARTNERS:*

SFWMD, FDEP, USACE, PBC-ERM, local municipalities, UF-IFAS, universities or research consortiums, Lake Worth Lagoon Keepers

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

⁴ C-51 Canal Sediment Trap Assessment. South Florida Engineering and Consulting LLC. January 26, 2021.

⁵ Sediment Sourcing Study of Lake Worth Lagoon and C-51 Basin, Palm Beach County. Trefry, J., et al. 2009.

¹ Engineering Appendix for Lake Worth Lagoon Ecosystem Restoration Project. U.S. Army Corps of Engineers and Palm Beach County. 2016.

² Sediment Sourcing Study of Lake Worth Lagoon and C-51 Basin, Palm Beach County. Trefry, J., et al. 2009.

³ Assessment of Freshwater Inflow and Water Quality for an Urbanized, Subtropical Estuary (Lake Worth Lagoon, Florida, USA). Buzzelli, C., et al. Marine Technology Society Journal. 2018.





HABITAT ENHANCEMENT AND PROTECTION ACCOMPLISHMENTS AT A GLANCE



More than 8,500 tons of limestone rock, concrete or other materials were used to **enlarge existing reefs or create new reefs** at four locations: Peanut Island, Phil Foster Park, the Southern Boulevard Bridge Reef, and Sugar Sands.

**SEE ACTION
HE-1**



From 2014-2020, nearly **43 acres of habitat** was created in the Lake Worth Lagoon, including 30 acres of seagrass habitat, 6.1 acres of mangroves and salt marshes, and 7.2 acres of breakwaters, living shorelines and reefs.

**SEE ACTION
HE-2**



More than **400,000 cubic yards of material** from dredging projects—enough to fill 130 Olympic-sized swimming pools—is being re-used to **create habitat** at the Tarpon Cove Restoration Project.

**SEE ACTION
HE-2**



More than **83% of the Lagoon's total seagrass acreage** is in the Northern Lagoon, in close proximity to the Lake Worth Inlet.

**SEE ACTION
HE-3**



Palm Beach County is working to identify funding to purchase 152 acres of submerged land near Singer Island from willing sellers to **permanently protect the large seagrass beds** there.

**SEE ACTION
HE-4**



HE-1 CREATE, PROTECT AND MONITOR HARDBOTTOM HABITATS

ACTION: Develop an Oyster Enhancement and Monitoring Plan to guide future restoration efforts. Create a baseline map and inventory of natural hardbottom areas in the Lake Worth Lagoon. Continue to create and enhance artificial reefs in locations with appropriate water quality to support these habitats.

IMPORTANCE:

Hardbottom habitats contribute to the Lagoon's biodiversity by supporting unique assemblages of invertebrates, fish, and shellfish.

RELATED ACTIONS:

HE-2, HE-3, FW-3, FW-4, CC-2

BACKGROUND:

Hardbottom habitats in the Lake Worth Lagoon include oyster reefs, live and fossilized corals, Anastasia rock formations, and other natural "reef-like" materials, and artificial reefs and submerged riprap limestone that act as breakwaters to the newly established mangrove islands and living shoreline projects. Together, they provide important substrate for benthic species such as sponges, corals and oysters, and support a diverse community of invertebrates and fish.

Precise estimates of the amount and location of natural hardbottom

communities in the Lagoon are lacking. Sonar mapping verified by groundtruthing could be a useful tool for assessing the type and distribution of hardbottom. Baseline mapping would help identify additional monitoring needs (e.g., for corals) and facilitate watershed-level management of these rare and valuable habitats.

Presently there are 17.52 acres of artificial reefs at 11 locations throughout the Lagoon (see Figure 1.1). Since 2013, reefs constructed of various materials - including limestone rock and concrete slabs, pilings and bridge sections - have been installed at Peanut Island Reef Complex, Phil Foster Snorkel Trail, Southern Boulevard Bridge Reef, and Sugar Sands Reef (including Roach's Reef). Some 6,000 tons of donated concrete from the bridge replacement project were

strategically placed to create ledges and discrete pods at the Southern Boulevard Bridge Reef alone (see Table 1.1).

All artificial reef sites listed in Table 1.1 have active permits and can accommodate additional structures. When structures are deployed, the placement and quantity of each component are carefully evaluated to provide valuable habitat and foraging areas. The degree of rugosity and

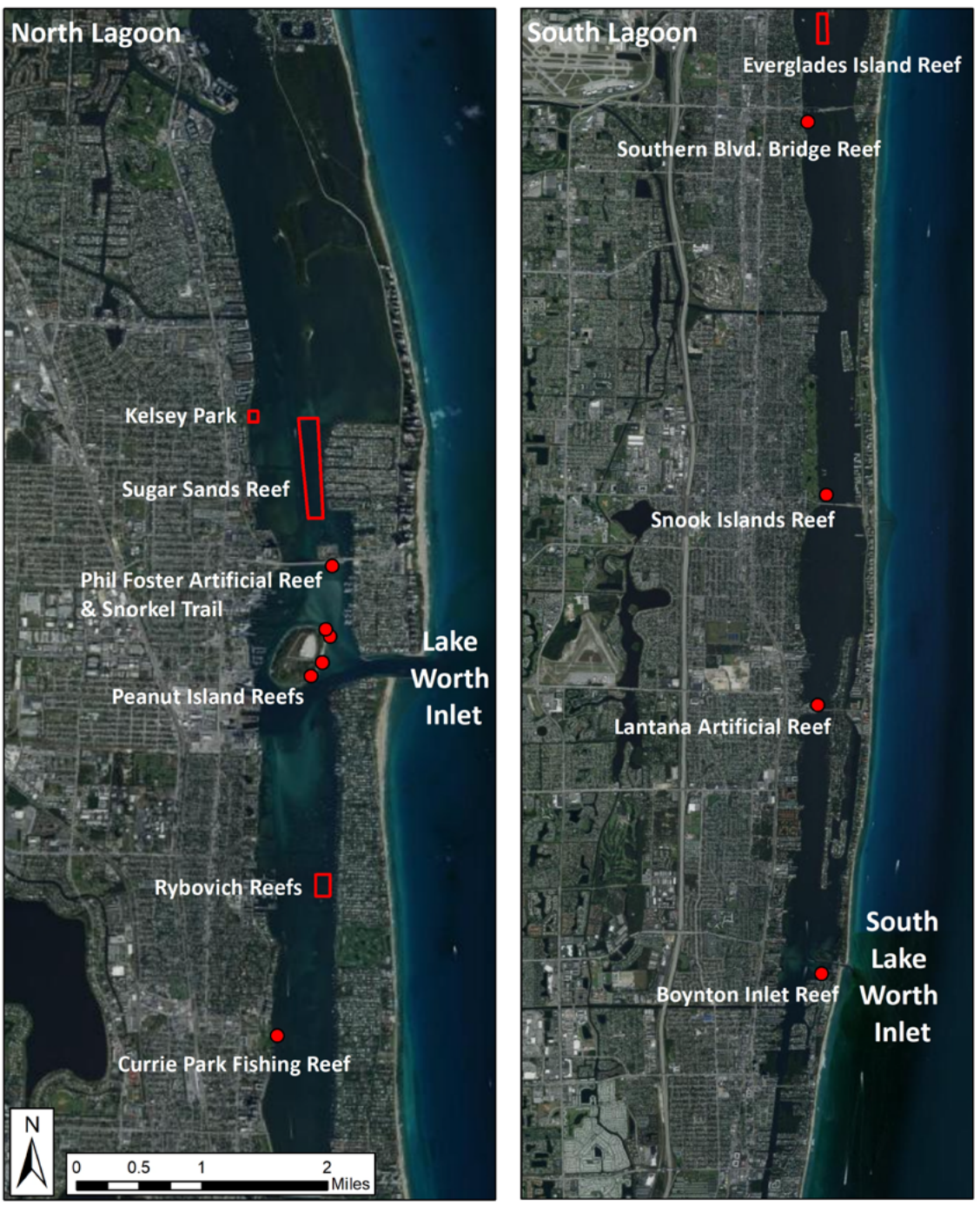


Lowering concrete reef components at Southern Boulevard
(Photo credit: PBC-ERM)



Reef components placed at Phil Foster Snorkel Trail attract thousands of visitors each year (Photo credit: PBC-ERM)

FIGURE 1.1
ARTIFICIAL REEF LOCATIONS



SOURCE: PBC-ERM

complexity of the structures are two important components incorporated into the design of artificial reefs deployed throughout the Lagoon.

More than 9.4 acres of natural and created/enhanced oyster reefs were present in the Lagoon in 2020, according to estimates from Palm Beach County’s Department of Environmental Resources Management (ERM). This figure includes 1.6 acres resulting from habitat restoration projects from 2013-2020.

Additional artificial reef locations throughout the Lagoon will be determined as hardbottom mapping and habitat monitoring progress and the need for additional sites becomes evident. Table 1.1 on Page 146 lists locations under consideration for future artificial reefs. Final siting determinations will include consultations with the fishing community, FWC partners and regulatory agencies involved in permitting these structures.

Oysters are a special management focus in the Lagoon because of their response to changes in salinity and function as indicators of overall estuarine health. Oyster reefs provide a number of ecological, economic and recreational benefits, including food and habitat for fish, shellfish, and shorebirds. They also can reduce erosion, stabilize shorelines and improve water quality.

The Florida Fish and Wildlife Conservation Commission (FWC) began to monitor three natural oyster reefs in the Lagoon in 2005. The program was expanded in 2015 to include oyster reefs created at three restoration sites. Palm Beach County’s Environmental Resources Management (ERM) Department has committed to fund monitoring of all six oyster reefs through 2023.

The goal of the monitoring is to document the responses of oyster populations to changes in water quality arising from water management activities and natural events.

Researchers examine oyster density, juvenile recruitment and presence of a disease known as Dermo (*Perkinsus marinus*) that degrades oyster tissues.

In the sampling period that ended in June 2020, oyster abundance, health and population ecology within the Lagoon generally fell within expected ranges for south Florida oyster populations and no substantial differences were detected between oysters at the natural reef stations and the restored reef stations.¹

The optimal salinity range for oysters is approximately 12 to 20 parts per thousand. Salinities measured in Lagoon sampling trips from 2005 through April 2019 exceeded the optimal range in 70% of sampled months. Salinity was within the optimal range only 26% of the time.² Those optimal salinities occurred most frequently during the summer months (July - September) when freshwater runoff and inflow rates were elevated.

Higher salinities and temperatures are associated with a high percentage of *Dermo* infections, though infection intensities in Lagoon oysters were generally below levels considered fatal.

Future management actions that improve the timing, volume and consistency of freshwater flows in the Lagoon during the dry season could substantially reduce disease and predation rates, according to FWC researchers. Increased freshwater flows in the cooler winter months could also help Lagoon oysters physiologically adapt to lower salinities in the warm summer period.

Between 40% and 100% of oysters at the natural reef stations in 2019 were infected with Dermo. Between 20% and 100% of oysters at the constructed reefs at restoration sites were infected.

APPROACH:

- STEP 1 Continue and expand the Oyster Enhancement and Monitoring Plan that defines long-term goals, assesses the suitability of restoration sites to support oysters, and evaluates available larval supplies to sustain oyster populations. Specifically, oyster restoration efforts should consider:
- Water quality parameters (dissolved oxygen concentrations, pH, etc.) appropriate for oysters.
 - Risk of exposure to high wave energy or frequent large boat wakes. For example, sites that are less than 100 meters from the Intracoastal Waterway may be less successful than those placed further from congested areas. Alternatively, place oyster reefs on the backside of restoration sites where they are not directly exposed to boat wakes and waves from the Intracoastal Waterway.
 - Sedimentation rates. High rates may bury settled oysters or impede their filter-feeding efficiency. One solution may be to allow the first layer of substrate to settle before adding additional layers to ensure the reef remains elevated above the soft sediments.
 - Availability of hard substrate appropriate for oyster settlement.
 - Proximity to other oyster reefs for larval recruitment. If there is limited larval supply, planting of hatchery-raised oysters (spat on

- shell) or oyster gardening programs may be a viable alternative.
- Design and Layout of Habitat. Oyster shell is preferred for construction, but costs and availability are often prohibitive. Alternatives include fossil shell and limerock. Large rocks or boulders typically used for breakwater or shoreline stabilization projects offer minimal value as they provide little to no refuge. Materials should be

- selected based on project goals and locations - the generally high salinities in the Lagoon emphasize the need for interstitial space and 3-D structure to provide adequate refuge from predators and exposure.
- STEP 2 Inventory/map all natural hardbottom areas to characterize communities and identify monitoring and management needs.

TABLE 1.1 ARTIFICIAL REEFS IN THE LAKE WORTH LAGOON											
REEFS	ACRES	Pre - 2002 (tons)		2003 - 2007		2008 - 2012			2013 - 2018		
		Concrete	Limestone	Concrete	Limestone	Concrete	Limestone	Other	Concrete	Limestone	Other
Kelsey Park	2.00			2,300	2,000	12					
Sugar Sands Reef	7.50	5,770	4,265						10	815	
Phil Foster Snorkel Trail	0.60					12	600			300	3 statues, 17 modules
Peanut Island Reefs	1.70	20	40		1,000	2.5	4,240		170	1,270	
Rybovich Reefs	2.00	1,323	4,730		3,500						
Currie Park Fishing Reef	0.01		100								
Everglades Island Reef	0.76					1,100		87 ft. Barge			
Southern Blvd. Bridge Reef	1.70								6,000		
Snook Islands Reef	0.05					700					
Lantana Artificial Reef	0.50	250			500						
Boynton Inlet Reef	0.70		1,400								
Total	17.52										

SOURCE: PBC-ERM

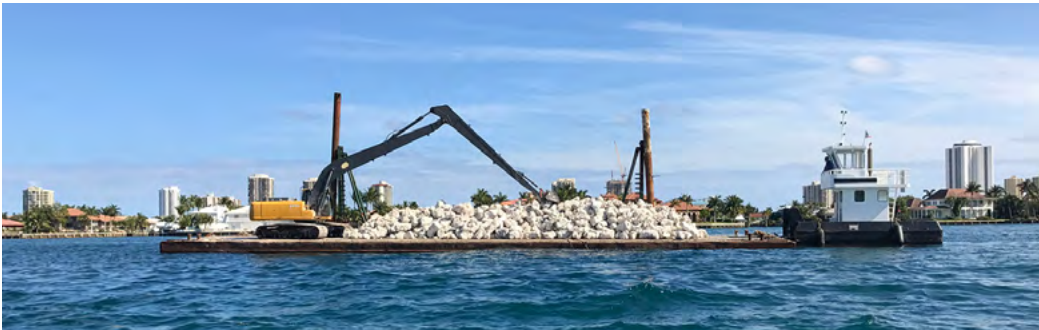
- STEP 3 Continue to pursue opportunities to create artificial reefs to provide habitat for marine life, reduce erosion of shorelines, and provide recreational areas for anglers and snorkelers. Support research on artificial reef design and evaluate and compare results.
- STEP 4 Encourage volunteer and stakeholder involvement by creating an oyster gardening program. The program would provide bags of oyster shells covered in oyster larvae (spat) for placement along residential docks. Homeowners, students or community groups monitor the growth of the spat for several months, and resulting live oysters are used to seed new reef sites.

TIMEFRAME:

STEP 1 can be initiated in FY 2021-2022 through internal discussion of goals, long-range restoration projects and data reviews. Additional support may be needed from FWC, FAU-HBOI, or other local researchers.

STEP 2 will likely require grant funds and in-kind support to achieve. ERM could request seed money for this effort in FY 2022-2023.

STEP 3 is ongoing. ERM plans to install new reefs as appropriate locations are determined and enhance existing reefs at Sugar Sands Reef in the northern Lagoon and Everglades Reef and Southern Boulevard Bridge Reef in the



Installing artificial reef at Sugar Sands (Photo credit: PBC-ERM)



Restored oyster bars at Grassy Flats Restoration Area (Photo credit: PBC-ERM)

central Lagoon.

STEP 4 can be initiated in FY 2021-2022 through partnerships with interested non-profits, waterfront Lagoon communities, Palm Beach Zoo and area schools.

COST ESTIMATE:

- STEP 1 \$-\$\$
- STEP 2 \$\$-\$\$\$
- STEP 3 \$\$-\$\$\$
- STEP 4 \$

EVALUATING PROGRESS:

Completed baseline map of hardbottom communities throughout Lagoon.

Creation and implementation of Comprehensive Oyster Enhancement and Monitoring Plan.

Improved survival of oysters and reduction in prevalence of Dermo disease at both natural and artificial reef sites.

Increase in acres of reefs.

Weight or volume of cultivated oysters from oyster gardening program placed at restoration sites.

REGULATORY NEEDS:

Federal or state permits to install reefs and oyster gardening structures within the Lagoon.

FUNDING:

Recurring county allocation for ongoing FWC oyster monitoring. Special allocation or grant funding to support mapping of all hardbottom communities and new reef creation/enhancement. Grant funds from FDEP, NOAA, FWC and non-profit groups for artificial reefs.

POTENTIAL PARTNERS:*

PBC-ERM, FWC, FIND, FDOT, local universities and non-profit conservation and research organizations

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

¹ Oyster monitoring in Lake Worth Lagoon Final Report April 2019-June 2020. Geiger S. and Maloney N., FWC Fish and Wildlife Research Institute. 2020.

² Lake Worth Lagoon Oyster Monitoring Program. Parker, M. FWC Fish and Wildlife Research Institute. 2020



HE-2 CREATE AND PROTECT INTERTIDAL HABITATS

ACTION: Identify and pursue opportunities for beneficial reuse of dredged materials to create and enhance habitats. Complete shoreline characterization and restoration suitability modeling study to identify and prioritize future restoration opportunities. Develop measurable standards for determining restoration success and expand post-restoration assessments beyond permit requirements. Increase public support for and involvement in habitat protection and enhancement.

IMPORTANCE:

Coastal habitats such as mangrove, wetland or marsh grasses and seagrasses support fish and wildlife, create recreational opportunities, store carbon, filter pollutants, buffer the impacts of storm, and absorb and mitigate rising sea levels.

RELATED ACTIONS:

HE-1, HE-3, HE-4, SW-2, PU-1

BACKGROUND:

Palm Beach County's innovative habitat enhancement program is widely recognized as a model for creative estuarine renewal in an urban setting. Projects include widespread reuse of lagoon-compatible dredge material to fill deep holes, build protected islands and cap silt and mucky, oxygen-deficient sediments; installation of rock breakwaters and concrete or limestone reefs to reduce erosion and facilitate oyster colonization; and an expanding

network of Living Shorelines to mitigate sea level rise by naturally stabilizing shorelines and enhancing intertidal habitats.

From 2014-2020, nearly 43 acres of habitat was created in the Lake Worth Lagoon (see *Figure 1.1* and *Table 1.1*). This includes 30 acres of shallow-water habitat suitable for seagrasses, 6.1 acres of mangroves and salt marshes, and 7.2 acres of breakwaters, living shoreline planters and reefs (oyster and artificial). By 2023, future projects will add more than 60 acres of habitat that includes potential seagrass habitat, mangroves and cordgrass, oyster reefs and bird nesting mounds (see *Figure 1.1*).

Table 1.1 presents a list of the 18 projects completed during this timeframe. Most of the enhancements occurred in the Central Lagoon, where 30 acres of potential seagrass habitat resulted from just five projects: Grassy Flats, Bryant Park Islands and

Living Shorelines, Jewell Cove Living Shoreline, and Tarpon Cove, Phase 1. The Central Lagoon is a priority for water quality improvement because of its distance from the two ocean inlets, and its dubious distinction as the destination for fully half of the freshwater (and associated sediment loads) discharged from drainage canals in the Lagoon watershed.¹

Monitoring underway at select project sites demonstrates the value of habitat restoration and enhancement to the



Sand shooter in use at Ibis Isle restoration (Photo credit: PBC-ERM)



Volunteer planting mangrove at Tarpon Cove Restoration (Photo credit: PBC-ERM)



TABLE 1.1 LIVING SHORELINE AND HABITAT RESTORATION PROJECTS FOR LWL FROM 2014-2020**TOTAL ACRES OF HABITAT CREATED AND/OR ENHANCED**

Projects	Completion Date	SAV Habitat (ac)	Intertidal Habitat (Mangrove/ Spartina) (ac)	Breakwater (ac)	Revetment (ac)	Oyster Reef (ac)	Artificial Reef (ac)	Hammock (ac)	Bird Habitat (ac)	Total Acres Restored	Structures & Features
Bryant Park Islands	2014	4.6	0.3	0.2		0.1				5.3	Islands
Grassy Flats	2015	10.5	1.9	0.3		0.09			0.2	12.9	Islands
Bryant Park Living Shorelines (Phase 1)	2015		0.04		0.1	0.04				0.2	Includes 124 feet of artistic modules for breakwater
Peanut Island Reef Complex	2016						0.2				limestone & concrete modules
Jewell Cove Living Shorelines	2016	9.1	0.7		0.2	0.07		0.7		10.7	Intertidal planters
Phil Foster Trail	2017						0.2				limestone, 3 statutes and 17 concrete modules
Sugar Sands Reef	2017						0.2				limestone & concrete modules
Currie Park Living Shoreline	2017		0.3		0.4	0.1				0.8	Intertidal planters
Osprey Park Living Shoreline	2017		0.05		0.06	0.02				0.1	Intertidal planters
Bryant Park Living Shorelines (Phase 2)	2017		0.1		0.3	0.1				0.6	Intertidal planters
Old Bridge Park Dock	2017				0.04	0.01				0.05	Dock, Seawall
Lyman Kayak Park Living Shoreline	2018		0.01		0.03	0.01				0.05	Intertidal planters
Snook Island Modifications	2018	0.2	0.6	0.2	1	0.4			0.4	2.8	Islands
Grassy Flats Modifications	2018			0.04		0.1			0.1	0.3	Islands
Bryant Park Repairs	2018			0.2		0.05			0.1	0.36	Islands
Southern Blvd Bridge Reef	2018						1.7				
Tarpon Cove (Phase 1)	2019	6	2	0.2		0.2			0.2	8.6	Islands
LWL Mangrove Pods	2020		0.1	0.1							mangroves and limestone rocks
	Totals	30.4	6.1	1.3	2.3	1.3	2.3	0.7	1.1	42.8	

Summary 2014-2020 timeline:

* 18 living shoreline/enhancement and restoration projects completed in the Lagoon from 2014-2020

* A total of 42 acres of habitat was created/enhanced throughout the LWL

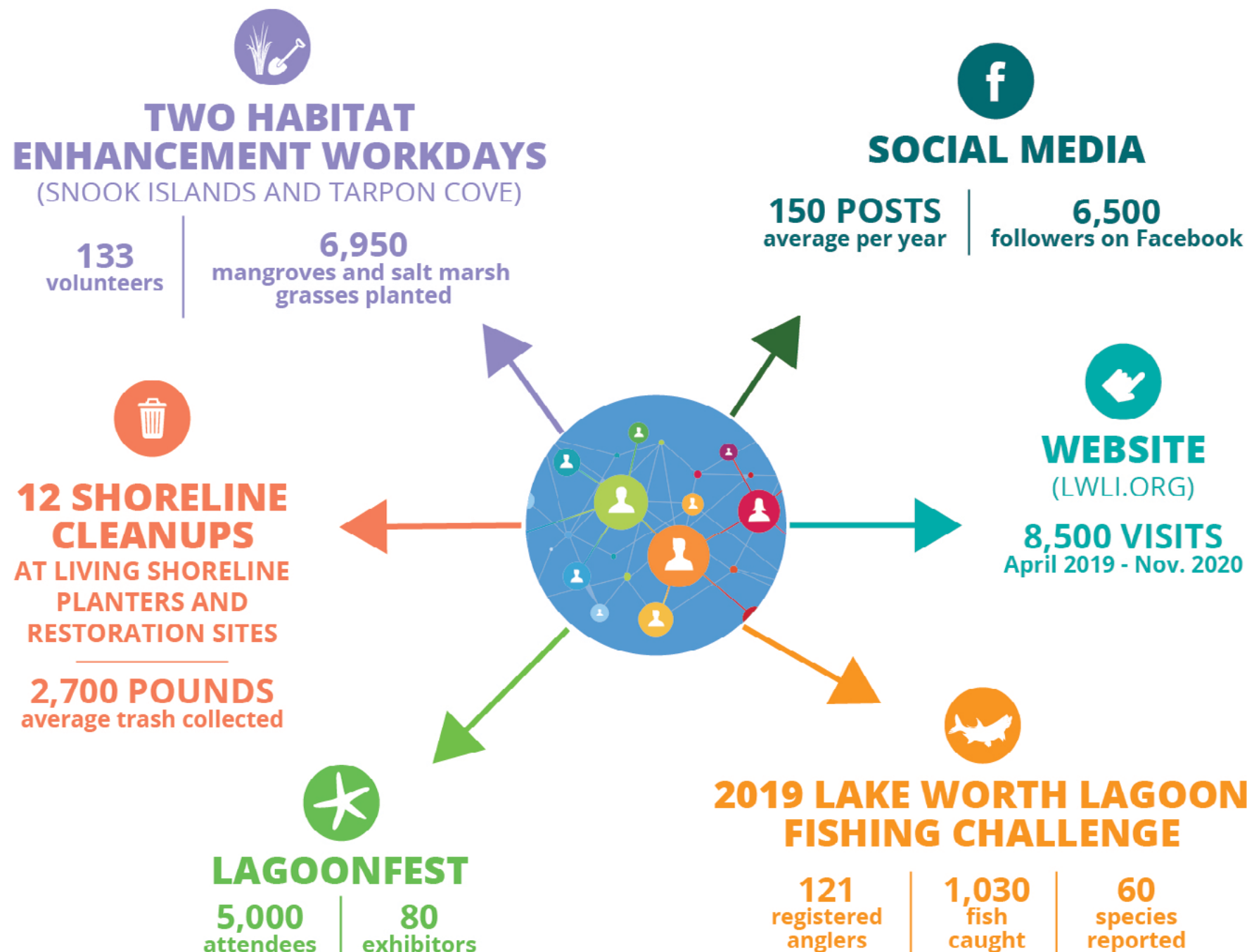
* 5 projects in the Central Lagoon created 30 acres of potential SAV habitat during this timeline (Grassy Flats, Bryant Park, Repairs and Jewell Cove, Tarpon-Phase I)

* 1.1 acres of bird habitat added to the Lagoon

* 6 additional projects in the Lagoon have been identified and are currently in the construction, permitting and/or design process (Tarpon Cove, Monceaux LS, Bonefish Cove, Providencia Cay Restoration, Lake Worth Inlet Flood Shoal, Palm Beach Resilient Islands)

FIGURE 1.1 2019-2020 COMMUNITY OUTREACH HIGHLIGHTS

PALM BEACH COUNTY ENVIRONMENTAL RESOURCES MANAGEMENT



- COMPLETED RESTORATION PROJECTS 2013-2020
- UPCOMING RESTORATION PROJECTS 2021-2026



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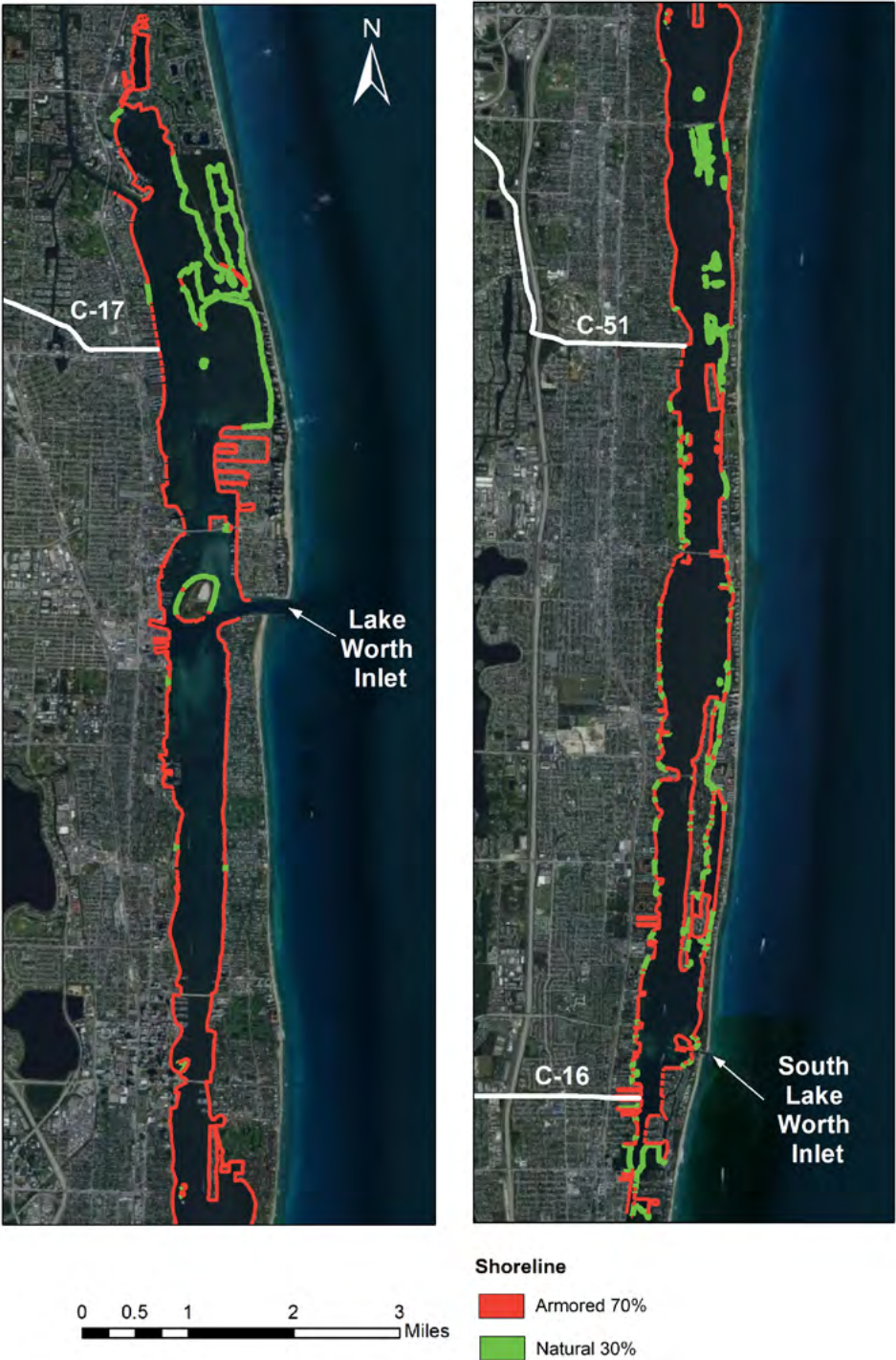


Creation of Tarpon Cove, phase 1 (Photo credit: PBC-ERM)

- To fill deep holes that were originally dredged decades ago to create land for development, but are now muck-filled, often anoxic pits with little habitat value.
- To create islands that, when complete, form the foundation of multi-purpose “habitat mosaics” including oyster reefs, intertidal areas for mangroves and subtidal areas for seagrasses, and even nesting mounds for shorebirds.
- To cover, or “cap,” silty sediments that have been deposited over time by runoff from drainage canals. Entombing these sediments under a layer of clean fill prevents turbidity caused by constant resuspension and provides a more suitable substrate for submerged vegetation to grow.

Snook Islands NA, Bryant Park Islands, South Cove NA, Ibis Isles Restoration, Grassy Flats and Tarpon Cove Restoration are examples of restoration projects aided by beneficial reuse of dredged materials. At Tarpon Cove, all of the sand needed to construct habitat islands in Phase 1 came from maintenance dredging of the ICW and Town of Palm Beach navigation channels, as well as the expansion of the Rybovich Marina and

FIGURE 1.2 2020 LAKE WORTH LAGOON SHORELINE CHARACTERIZATION



the Palm Beach Town Docks. The availability of this material saved \$10.8 million versus purchase of an equivalent volume of fill.

The planned Bonefish Cove restoration, slated for completion in 2023, also will utilize dredged material: about 375,000 cubic yards of fill will be barged to the site from FIND’s and the Port of Palm Beach’s Dredged Material Management Areas (DMMA) at Peanut Island, representing a cost savings of \$15.8 million.

The Lake Worth Lagoon has been intensely altered by human activities for more than a century. Restoration is an important tool for repairing and replacing areas already damaged or destroyed. Just as important is preservation of the natural habitats that remain - especially seagrasses, a fragile and sensitive indicator of estuarine health that, once lost, is difficult to recover. Acquisition and protection of privately owned submerged lands in the Northern Lagoon that harbor dense seagrass is significantly more cost-effective than restoring seagrass to areas where it has been lost. The cost of restoring suitable substrates and elevations to recruit an acre of seagrass habitat in the Lagoon averaged \$550,000 over the last five years, with success in fostering seagrass growth at the restored location not guaranteed.

APPROACH:

- STEP 1 Complete the shoreline characterization and suitability restoration modeling study and implement recommendations to enhance seawalls with Living Shorelines or focus future restoration efforts in specific areas of the Lagoon where habitat improvements would be most beneficial.
- STEP 2 Continue to pursue opportunities for beneficial reuse of lagoon-compatible dredge material to enhance/expand existing restoration projects, create new restoration sites and cap silty sediments to increase elevations and improve substrate for seagrass recruitment and expansion.

TABLE 1.2 FUTURE RESTORATION PROJECTS

Tarpon Cove (Phase 2)	2020-2022
Monceaux Park Living Shoreline	2021
Bonefish Cove	2021
Lake Worth Inlet Flood Shoal	2021
Providencia Cay Restoration	2022
Palm Beach Resilient Islands	2022

- STEP 3 Develop quantifiable criteria to determine long-term restoration success. Expand post-construction monitoring to assess utilization by fish and wildlife over a longer period, as sites mature and evolve. Integrate with water quality and living resources monitoring to direct future restoration activities based on the needs of the entire Lagoon system. Integrate adaptive management into existing restoration projects and make improvements where applicable.
- STEP 4 Increase public awareness of the value and connectedness of coastal habitats, the economic contribution of ecosystem services provided by the Lagoon, and the importance of community investment in habitat restoration and protection. Enlist volunteer involvement in monitoring restoration sites or maintaining a county nursery to provide wetland plants for restoration projects.

TIMEFRAME:

- STEP 1 Shoreline study to be completed in 2021-2022. Restoration suitability modeling will be completed when funding is acquired.
- STEP 2 is ongoing, as opportunities arise to time restoration needs with scheduled maintenance dredging.

SOURCE: PBC-ERM

CLICK IMAGE TO ZOOM IN. CLICK AGAIN TO ZOOM OUT.

STEP 3 can begin in 2021 with development of measurable criteria for determining restoration success. Long-term monitoring of restoration sites could be conducted by graduate students. Citizens could also be trained in monitoring techniques and involved in monitoring, particularly for Living Shorelines readily accessible from land.

STEP 4 is ongoing. An existing corps of volunteers who participate in habitat restoration projects can be expanded and deployed as Habitat Ambassadors to share information with community members. Volunteers can be trained to assist in monitoring of restoration sites and maintenance of any future county-run wetland plant nursery.

COST ESTIMATE:

- STEP 1 \$ The field work for the shoreline characterization and restoration suitability modeling study has been completed. Funding for the analysis of the collected datasets and restoration suitability modeling still require funding. Development of recommendations and priorities would require staff time.
- STEP 2 \$\$\$\$ County provides baseline or matching funds for Lagoon restoration.
- STEP 3 \$ Monitoring criteria can be developed by LWLI Habitat and Water and Sediment Quality Working Groups. Staff time is required to train and supervise students and citizens involved in monitoring and determining individual project’s long-term restoration success.

STEP 4 \$

EVALUATING PROGRESS:

Acres of specific habitat types restored.

Number of Living Shoreline projects completed.

Creation and utilization of monitoring criteria. Number of students/citizens involved in monitoring.

Number of volunteers for community restoration projects.

Number of residents reached by educational messages and programs about Lagoon habitats.

REGULATORY NEEDS:

None

FUNDING:

LWLI Legislative Funding Request, County/city budget allocations, grants, FDOT (for projects financed by mitigation)

POTENTIAL PARTNERS:*





PBC-ERM, FIND, FDOT, FDEP, FWC, West Palm Beach Fishing Club, area universities, waterfront developers and marine industries, The Nature Conservancy and other land trusts, regional or local conservation organizations, community volunteers

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*




¹ Assessment of Freshwater Inflow and Water Quality for an Urbanized, Subtropical Estuary (Lake Worth Lagoon, Florida, USA). Buzzelli, C., et al. Marine Technology Society Journal. 2018.


BONEFISH COVE: ANATOMY OF A RESTORATION PROJECT

345,000 cu. yds of sand + **16,860** tons of rock
will be transported from Peanut Island to create
3 islands with **48** acres of habitat including...

 9.4 ACRES OF MANGROVES	 33 ACRES OF SEAGRASS HABITAT
 1.5 ACRES OF OYSTER REEF	 3 NESTING MOUNDS FOR AMERICAN OYSTERCATCHERS



 LOCATION: East side of the Intracoastal Waterway in Lake Worth Lagoon	 CONSTRUCTION: Anticipated to begin mid-late 2021 Completion by 2022-2023	 FUNDING: Palm Beach County and the U.S. Army Corps of Engineers
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**COST: \$12.5 MILLION**

A total of \$15.8 million was saved by using 345,000 cubic yards of beneficial reuse materials from Peanut Island dredge storage, in partnership with the Florida Inland Navigation District.



HE-3 MAINTAIN AND EXPAND SEAGRASS HABITATS

ACTION: Continue annual transect sampling and Lagoonwide mapping. Expand water quality monitoring to better understand factors impacting seagrass in the Lagoon. Update seagrass recovery targets for North, Central and Southern Lagoon segments, and pursue acquisition of submerged lands with dense seagrass beds in the Northern Lagoon.

IMPORTANCE:

Seagrass is an important ecological barometer of water quality and an essential habitat that provides food, shelter, and nursery areas for numerous marine and estuarine dependent species.

RELATED ACTIONS:

WQ-1, WQ-2, HE-2

BACKGROUND:

Seagrasses are a valuable and vulnerable habitat in the Lake Worth Lagoon. Although all seven seagrass species found in Florida occur in the Lagoon (see Table 1.1), more than 83% of the total seagrass acreage is in the Northern Lagoon, from John D. MacArthur State Park to Singer Island, in close proximity to the Lake Worth (Palm Beach) Inlet.

Significant and troubling changes have occurred in overall seagrass cover and

composition throughout the Lagoon since 2013.¹ These changes have been documented by annual sampling of 10 permanent transects to assess fine-scale data including seagrass species and abundance, supplemented by GIS analysis and field verification every five years.

GIS analysis and groundtruthing surveys show the overall extent of seagrass within the LWL decreased by 30 acres from 1,582 acres in 2013 to 1,552 acres in 2018 (see Table 1.2). However, the declines were disproportional, with greater losses in the Southern and Central Lagoon, and dramatic thinning of seagrass and compositional shifts in canopy species in the Northern Lagoon (see Figure 1.1). A major reduction in seagrass was documented in the Central Lagoon.

Among the specific changes observed in the 2013 and 2018 mapping:

- In 2018, only 1.2 acres of seagrass were found in the Central Lagoon, in

shallow waters at Snook Islands and South Cove Natural Areas.

- A loss of nearly 100 acres of seagrass occurred from 2013-2018 between the Central/ Southern Lagoon boundary and the Ocean Boulevard Bridge.
- Seagrass cover increased by 94 acres in the north segment between 2013 (1,207 acres) and 2018 (1,301 acres). However, seagrass density experienced a seismic shift. The amount of moderate/high density seagrasses plummeted from 588

SEAGRASS SPECIES FOUND IN THE LAKE WORTH LAGOON

- Shoal Grass (*Halodule wrightii*)
- Manatee Grass (*Syringodium filiforme*)
- Turtle Grass (*Thalassia testudinum*)
- Widgeon grass (*Ruppia maritima*)
- Star Grass (*Halophila engelmannii*)
- Paddle Grass (*Halophila decipiens*)
- Johnson's Seagrass (*Halophila johnsonii*)*

*Listed as a threatened species under the Federal Endangered Species Act



Table 1.1: Seagrass species found in Lake Worth Lagoon



Mixed bed of shoal grass and Johnson's seagrass (Photo credit: PBC-ERM)



acres in 2013 to 256 acres in 2018, a drop of 56%. The amount of low density/patchy seagrass habitat increased by nearly 67% increase during that period, from 528 acres to 881 acres. The greatest retraction has occurred in John D. MacArthur Beach State Park and Munyon Cove, home to the largest remaining seagrass beds in the Lagoon.

- MacArthur Beach State Park and Munyon Cove are now the only areas within the Lagoon that support the canopy species, *Syringodium filiforme* and *Thalassia testudinum*, important food sources for green sea turtles and manatees, and nursery areas for fish and invertebrates. But overall cover and distribution of these species declined between 2013 and 2018. The declines coincided with a transition from those larger, longer-lived seagrass species to small canopy species (e.g., *Halophila* spp.). Algal species also have increased; sea turtles now consume a higher proportion of *Halophila* and algae that they



Horseshoe crab molt, Northern Lagoon
(Photo credit: PBC-ERM)

did prior to 2013 (see Action FW-2).²

- The percentage of sites with no seagrass increased between 2013 and 2018, as did the percentage of sites with less than 5% cover. There were lagoon-wide declines in the number and percentage of sites with more than 5% seagrass cover.

Transect sampling in 2019 and 2020 shows that the Northern Lagoon continues to support the highest seagrass cover and diversity of the three lagoon segments. However, overall frequency of seagrass occurrence continued to decline there and elsewhere in the Lagoon. In May 2020, five transects (all four transects in the Central Lagoon and one in the Southern Lagoon) had no seagrasses at all.

It is likely that multiple factors interacting synergistically, and not a single culprit, are responsible for the precipitous spatial and temporal changes in Lagoon seagrasses. Freshwater inflows, especially in the Central Lagoon, frequently lower salinities below tolerances for many seagrass species and contribute nutrients, sediments, and contaminants (see Action WQ-6). Sediments carried in the freshwater discharges form thick layers of black muck ill-suited to seagrass growth (see Action SE-1). Wind and boat wakes cause repeated resuspension of these sediments, increasing the light attenuation and severely reducing the light available for seagrasses to grow, let alone flourish.

A lagoon-wide seagrass restoration target of 2,000 acres was set in 2006. Verification of the methodology used and updated data is needed to accurately determine the maximum depth

TABLE 1.2 SEAGRASS ACREAGE IN LAKE WORTH LAGOON 2013 AND 2018

2013 Acreage Summary				
	North Segment	Central Segment	South Segment	LWL Total
2013 Seagrass Habitats				
Moderate to High Density Seagrass Habitat	588	-	2	590
Low Density/Patchy Seagrass Habitat	528	16	266	809
Zone of Seagrass Occurrence	91	12	82	184
Unvegetated Potential Seagrass Habitat	72	105	88	265
Unvegetated Softbottom	-	71	-	71
Not Surveyed	4	2	2	9
All Habitat Total	1283	205	439	1927
Total 2013 Seagrass Habitat	1207	27	349	1582
2018 Acreage Summary				
2018 Seagrass Habitats				
Moderate to High Density Seagrass Habitat	256	-	15	271
Low Density/Patchy Seagrass Habitat	881	-	121	1002
Emergent Shoal Low Density / Patchy Seagrass Habitat	1	-	-	1
Zone of Seagrass Occurrence	162	1	114	277
Unvegetated Potential Seagrass Habitat	150	109	101	360
Unvegetated Potential Seagrass Habitat (2013)	-	26	97	26
All Habitat Total	1451	137	448	2036
Total 2018 Seagrass Habitat	1301	1	249	1552
New Seagrass Habitats Added in 2018				
Moderate to High Density Seagrass Habitat	41	-	1	42
Low Density/Patchy Seagrass Habitat	34	-	1	35
Emergent Shoal Low Density / Patchy Seagrass	1	-	-	1
Zone of Seagrass Occurrence	16	-	0	16
Unvegetated Potential Seagrass Habitat	2	-	0	2
All Habitat Total	94	0	2	96
Total New Seagrass Habitat	92	0	2	94

SOURCE: Coastal Eco-Group, Inc.



at which seagrass will recruit in each lagoon segment.

More importantly, additional research and monitoring is needed to evaluate which environmental parameters are driving current declines in seagrass cover throughout the lagoon.

Since 2013, an additional 30 acres of potential seagrass habitat has been added through the construction of five habitat restoration projects, each containing a seagrass component: Grassy Flats and Bryant Park Island, Jewell Cove Living Shorelines, Snook Islands Natural Area Phase II and Tarpon Cove Phase I Restoration (see Action HE-2). Another 29 acres of seagrass habitat will be created by Phase 2 of the Tarpon Cove Restoration project, followed by 35 acres from the Bonefish Cove Restoration, slated for completion in 2023. Acquisition of privately owned submerged lands, from interested sellers, in the Northern Lagoon is also important for protecting existing seagrasses (see Action HE-4).



Paddle grass in the Northern Lagoon (Photo credit: PBC-ERM)

In 2018, ERM staff began routinely filling new habitat restoration sites to a shallower depth (from -5 feet to -4 feet) to increase the probability of seagrass recruitment. This practice is an interim approach based on best available information and can be modified with more precise knowledge of growth and natural recruitment requirements for seagrasses in the north, central and south Lagoon sections.

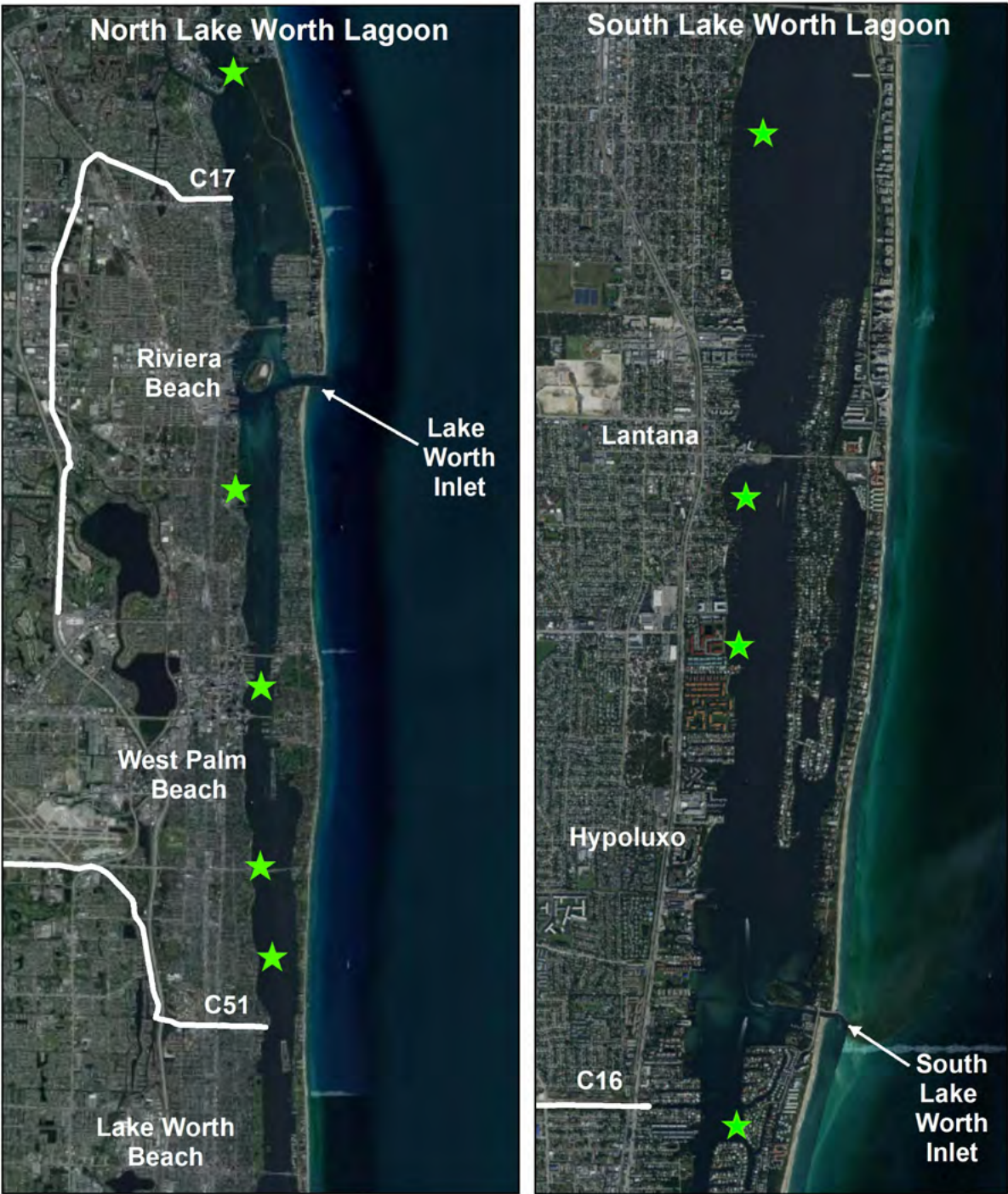
APPROACH:

- STEP 1 Continue annual transect sampling and Lagoonwide mapping every 5 years.
- STEP 2 Expand water quality monitoring for additional environmental parameters affecting SAV (temperature, turbidity, light, seasonality, wind-boat wakes, sedimentation) to better understand factors impacting seagrass in the Lagoon (See Action WQ-1).
- STEP 3 Install photosynthetically active radiation (PAR) sensors to understand light requirements for seagrass to flourish at different depths in the Lagoon.
- STEP 4 Identify causes of seagrass declines and species shifts in the Northern Lagoon.
- STEP 5 Update seagrass recovery targets for Lagoon segments based on light attenuation, sediment types and other factors.
- STEP 6 Pursue acquisition of important seagrass resources in the Northern Lagoon (See Action HE-4).

TIMEFRAME:

Transect sampling in STEP 1 occurs annually. Lagoonwide seagrass mapping next scheduled in 2023.

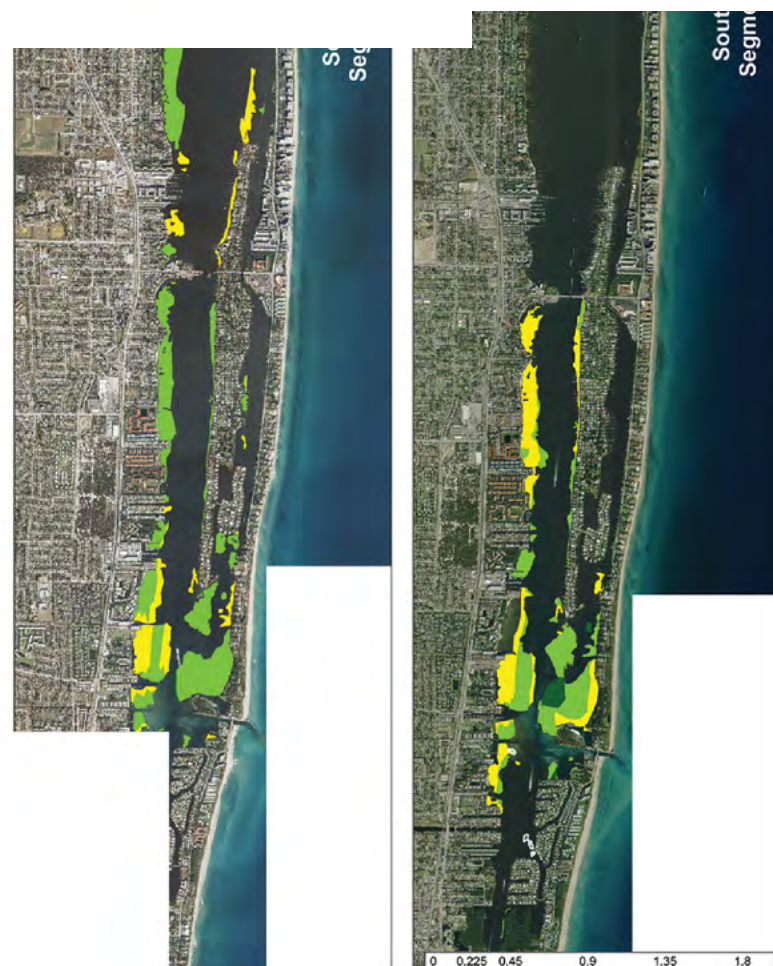
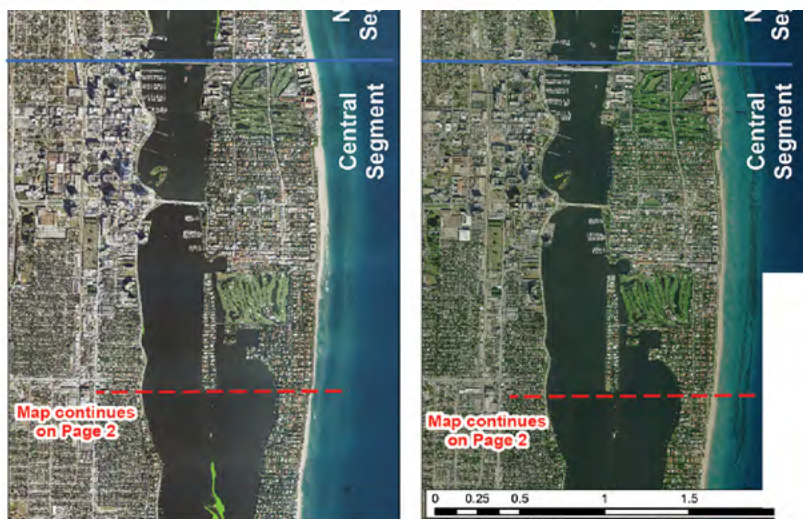
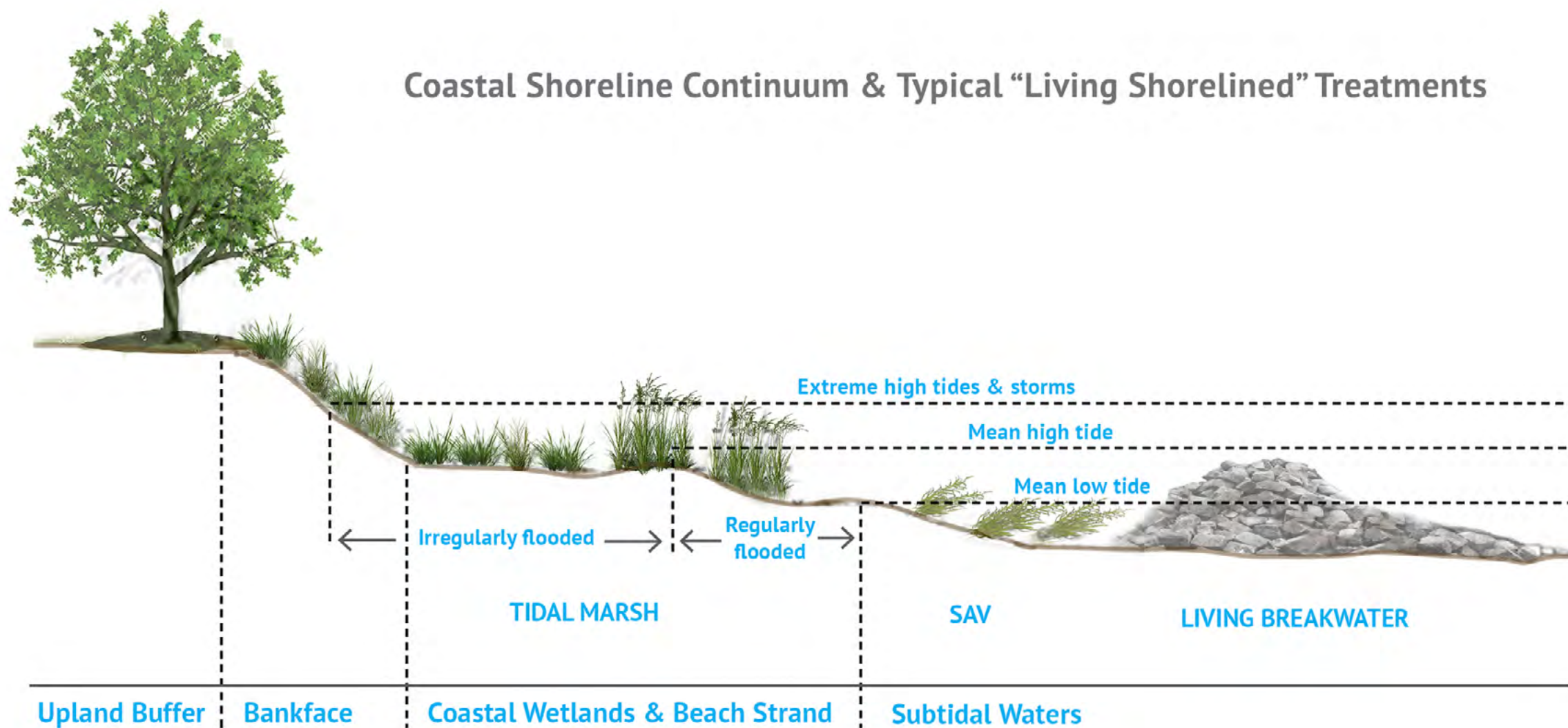
FIGURE 1.1 LWL TRANSECT MONITORING



Legend
★ Fixed Seagrass Transects

SOURCE: PBC-ERM

Coastal Shoreline Continuum & Typical “Living Shorelined” Treatments



or donors can
t upon available

EVALUATING PROGRESS:

Increases in seagrass recruitment per target goals for each Lagoon segment.

Acres of seagrass documented in restoration areas.

Acquisition of privately owned submerged lands supporting seagrass beds from willing sellers or donors.

REGULATORY NEEDS:

None

FUNDING:

LWLI Legislative Funding Request, recurring or special county/city budget allocations, grants to assist with research and land acquisition

POTENTIAL PARTNERS:*

PBC-ERM, SFWMD, Local Municipalities, FIND, FWC, HBOI/FAU, FDEP

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*

- ¹ 2018 Lake Worth Lagoon Seagrass Status and Annual Transect Monitoring Report. Coastal Eco-Group, Inc. Cumulative Report 2018.
- ² Assessment of Marine Turtles in Lake Worth Lagoon 2017-2018. Inwater Research Group. 2019.



HE-4 ACQUIRE ECOLOGICALLY SIGNIFICANT SUBMERGED AND INTERTIDAL LANDS

ACTION: Acquire and/or protect privately owned submerged and intertidal lands of particular ecological value from willing sellers or donors throughout the Lagoon.

IMPORTANCE:

Seagrass beds in the Northern Lagoon are among the healthiest and most dense in the estuary and provide critical habitat for a multitude of species. Protection of existing seagrasses is considerably more cost-effective than fostering new seagrass growth through habitat restoration. Other submerged lands throughout the Lagoon also support valuable habitat and could be acquired as opportunities become available.

RELATED ACTIONS:

HE-3, FW-1, FW-2, FW-3

BACKGROUND:

Seagrass meadows are an ecologically valuable and vulnerable habitat in the Lake Worth Lagoon (See Action HE-3). Submerged lands harboring some of the Lagoon's healthiest remaining seagrasses are in private ownership, placing them at risk of development impacts.

In particular, 29 parcels of submerged

land comprising 152 acres near Singer Island are the highest priority for acquisition and conservation (see Figure 1.1). These lands, primarily located within the City of Riviera Beach, range in size from 1.13 acre to 23.05 acres and are owned by various private entities. Together, the parcels contain the largest and most dense beds of turtle grass and manatee grass in the Lagoon. The seagrasses are a nursery for dozens of species of fish and shellfish, mating grounds for horseshoe crabs, and an important food source for manatees and juvenile green sea turtles (See Action FW-2).

Conservation of these ecologically sensitive lands through public ownership or other private protection measures is supported by Palm Beach County and the City of Riviera Beach, who have previously committed up to \$250,000 in matching funds for their purchase. In 2020, the Florida Legislature allocated \$150,000 toward acquisition, but the funds were vetoed at the end of the State's budget process. The County resubmitted the proposal as part of the 2021 LWLI Legislative Funding Request.



Shoal grass and turtle grass in Northern Lagoon (Photo credit: PBC-ERM)

The County desires to acquire the lands through donations or fee-simple purchases with willing sellers, but could also pursue other strategies such as conservation easements. Currently, the average cost of creating suitable substrate and elevations to recruit an acre of seagrass in the Lagoon is about \$500,000. Acquisition of submerged lands with existing seagrass, or shallow waters suitable for seagrass, would be considerably less costly than restoring deep-water areas to foster seagrass recruitment which is not guaranteed.



Mixed seagrass bed at Singer Island (Photo credit: PBC-ERM)

APPROACH:

- STEP 1** Continue to maintain contact with willing property owners regarding interest in sale or donation of lands. Resubmit funding request for Singer Island submerged lands to Legislature, and galvanize public support for funding from conservation organizations, recreational user groups and citizens. Once funding is secured, develop an acquisition timetable.
- STEP 2** Work with regulatory agencies to ensure the protection of submerged resources with ecologically valuable submerged and intertidal lands are fully considered when processing permit applications. Encourage permitting agencies to consider acquisition and preservation of these properties as partial mitigation for unavoidable impacts when evaluating permits.

TIMEFRAME:

STEP 1 can be initiated in 2021 with LWLI funding request and a concerted effort to galvanize support for acquisition of lands. Acquisition of priority submerged lands near Singer Island is expected to take several years, and is contingent on willingness of property owners to sell or place lands under conservation easements.

STEP 2 can be initiated in 2021 and continue thereafter as long as ecologically important submerged lands remain in private ownership.

COST ESTIMATE:

- STEP 1** \$-\$\$\$\$ for acquisition of priority lands over time
- STEP 2** \$ Staff time

EVALUATING PROGRESS:

Parcels acquired from willing sellers or donated.

Acres of seagrass protected or enhanced.

Marine species utilization of acquired lands.

REGULATORY NEEDS:

Limited entry or boating speed zones may be needed to protect seagrass beds. Regulatory oversight required to prevent impacts to priority submerged lands, and to authorize mitigation credits or other permitting incentives in exchange for placement of conservation easements on submerged lands by property owners or third parties.

FUNDING:

ERM, LWLI Legislative Request, Local Municipalities, USFWS National Coastal Wetlands Conservation Grant Program, NOAA Coastal and Estuarine Land Conservation Program

POTENTIAL PARTNERS:*

PBC-ERM and Property and Real Estate Management Departments, City of Riviera Beach, FDEP, FWC, USFWS

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*

FIGURE 1.1 LAND ACQUISITION MAP



SOURCE: PBC-ERM



FISH AND WILDLIFE MONITORING AND PROTECTION ACCOMPLISHMENTS AT A GLANCE



From 2013-2020, law enforcement agencies provided 11,250 hours of on-water enforcement of seasonal manatee protection zones.

**SEE ACTION
FW-1**



920 sea turtle observations were reported in the North Lagoon from 2005-2018. The vast majority were juvenile green sea turtles about the size of a dinner plate.

**SEE ACTION
FW-2**



22 commercially important species of fish and shellfish have been documented in the lagoon since monitoring began in 2014. The most abundant fish collected is the Bay Anchovy, a baitfish that compromised 38.3% of the total Lagoon catch.

**SEE ACTION
FW-3**



American Oystercatchers successfully fledged 35 chicks at restoration sites in the Lagoon from 2005-2020. Least Terns, Black Skimmers, and American Oystercatchers—all protected—use restored areas for both nesting and foraging.

**SEE ACTION
FW-4**



New research utilizing drones indicates that the coastal waters of Southeast Florida are a nursery area for Manta Rays. Juvenile Manta Rays have been observed at the Blue Heron Bridge and feeding in the South Lake Worth Inlet.

**SEE ACTION
FW-5**



FW-1 CONTINUE IMPLEMENTING PALM BEACH COUNTY'S MANATEE PROTECTION PLAN

ACTION: Continue implementation of PBC-MPP and improve manatee protection in and around the Lake Worth Lagoon.

IMPORTANCE:

Continued implementation of the County's Manatee Protection Plan and boat facility siting component will provide a unified, countywide approach to manatee conservation.

RELATED ACTIONS:

HE-3, PO-1, PU-2, FW-5

BACKGROUND:

As one of 13 designated "Key" Counties for manatees in Florida, Palm Beach County continues to implement a Manatee Protection Plan (MPP) that requires siting restrictions on marinas and docks, enforcement of boating speed zones, community education, and data collection and monitoring. The Plan was approved in 2007; the County's Department of Environmental Resources Management (ERM) has primary implementation responsibility.

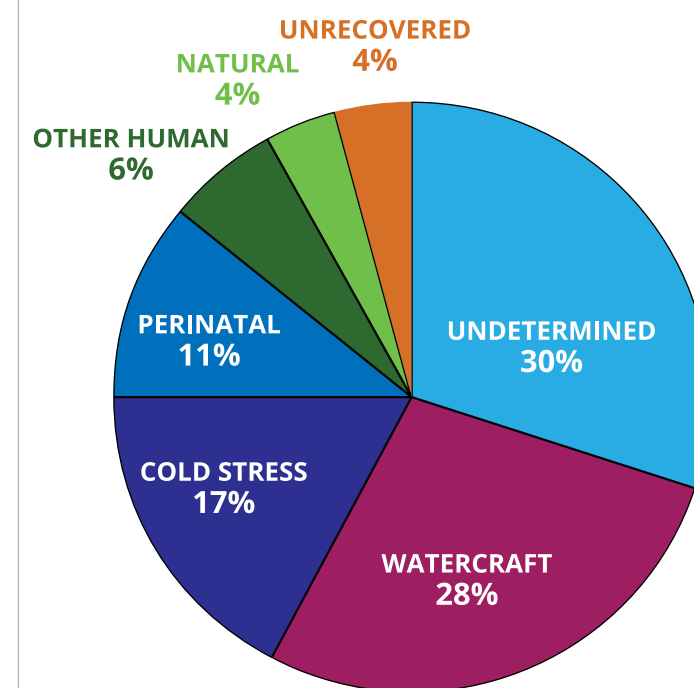
The County dedicates \$750,000 a year in ad valorem revenues to implementing the MPP (see Table 1.1). The bulk of that, \$575,000, is used for habitat restoration that benefits manatees as

well as other wildlife, in conjunction with state and federal matching funds. The restored habitats provide various recreational opportunities for residents and tourists, in addition to their fundamental wildlife value. About \$150,000 is devoted to enforcing boating speed zones and \$25,000 to public education.

Program goals are to:

- Reduce manatee injuries and mortalities due to watercraft collisions.
- Assess manatee populations and use of the Lagoon to track conservation success and identify important habitats. The Florida Fish and Wildlife Conservation Commission (FWC) typically conducts annual statewide synoptic surveys of manatees, usually after a winter cold front when manatees are aggregated at warm-water refuges. However, weather conditions and FWC's staffing constraints mean that Palm Beach County is not always surveyed.
- Provide public education relating to manatees and safe boating practices to avoid injury.

FIGURE 1.1
2014-2019 MANATEE MORTALITY
IN PALM BEACH COUNTY BY CAUSE



SOURCE: FWC

- Address waterway sign installation, maintenance and replacement in a timely manner.
- Assist FWC with manatee strandings in the Lagoon.
- Support additional research by partner agencies to monitor manatee occurrence, health and habitat utilization within the Lagoon.



FWC and Palm Beach County staff work to rescue an injured manatee in the Lagoon (Photo credit: PBC-ERM)



TABLE 1.1 SUMMARY OF MANATEE LAW ENFORCEMENT PROGRAM 2007-2018

Manatee Season	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	Total
Educational Contacts	789	2,321	3,276	4,868	3,341	2,226	2,150	1,244	1,464	1,025	989	1,071	978	25,742
Total Citations	255	370	239	292	232	227	183	147	125	125	104	93	57	2,449
Manatee Zone Citations	153	215	151	178	137	202	152	118	100	101	87	70	46	1,710
Total Written Warnings	293	1,152	815	1,409	1,002	591	931	621	670	698	762	656	444	10,044
Manatee Zone Warnings	165	712	872	1,589	649	283	467	349	362	392	538	417	393	7,188
TOTAL HOURS	1,000	2,179	2,341	2,193	1,669	1,604	1,717	1,643	1,657	1,573	1,635	1,559	1,466	22,236

SOURCE: PBC-ERM

As winter sets in, large numbers of manatees gather near the Florida Power and Light (FPL) Next Generation Clean Energy Center in Riviera Beach to take advantage of the power plant’s warm-water discharges. More than 500 manatees have been counted there during cold-weather periods. FPL’s Manatee Lagoon Eco-Discovery Center has an observation deck and educational exhibits that annually offer visitors the chance to learn about and view manatees up close. In 2019, FPL’s Manatee Lagoon Eco-Discovery Center welcomed 162,422 visitors.

Palm Beach County has an active on-water law enforcement presence, especially during the winter “Manatee Season,” which runs from November 15 to March 31. During this period,



Manatees at FPL Riviera Beach power plant outfall (Photo credit: FWC)

seasonal slow-speed zones are in effect and the population of manatees swells in the Lagoon as they migrate from colder regions in north and central Florida in search of warmer waters. These slow speed zones are intended to protect manatees as they traverse shallow waters and busy boating channels throughout the County’s waterways.

Year-round slow speed zones also are in effect in waters heavily trafficked by resident and visiting boaters. These regulations help protect the small year-round resident manatee population that feeds on seagrass adjacent to Munyon and Peanut Islands, and rests around the South Cove and Snook Islands Natural Areas. Manatees have also been spotted visiting the newly constructed Tarpon Cove Islands.

For the 2018-2019 manatee season, the County’s coordinated Manatee Law Enforcement (MLE) Program provided funding for an additional 1,559 hours of on-water patrols throughout the County’s waterways. Nine local law enforcement agencies participated in the program: Tequesta, Jupiter, North Palm Beach, Riviera Beach, West Palm Beach, Lantana, Boynton Beach, Boca Raton and the Palm Beach County Sheriff’s Office.

This partnership operates under a series of 5-year Interlocal Agreements that provide overtime funding for on-water enforcement personnel during manatee season. The current agreements expire on March 31, 2023.

Officers with the Florida Fish and Wildlife Conservation Commission also enforce the speed zones and are an additional visible presence on Lagoon waters.

Three watercraft-related manatee mortalities were reported during the 2018-2019 manatee season. From 2014-2019, 15 of the 53 manatee deaths in the County (28%) were a result of watercraft collisions (see Figure 1.1).

Palm Beach County staff occasionally ride along with law enforcement officers for a firsthand look at how existing protections are working and to assess potential new problem areas.

Education targeting boaters and the general public supplements and enhances law enforcement efforts: Since 2013, informational kiosks at 12 local boat ramps have been redesigned and updated, and new educational materials

MANATEE MORTALITY VIA WATERCRAFT 2013-2019
(654 TOTAL MANATEES STATEWIDE)

County	Number of Manatees	%
Lee	126	19.3%
Brevard	69	10.6%
Palm Beach	19	2.9%



Law enforcement officer enforcing manatee slow speed zones in Palm Beach County (Photo credit: PBC-ERM)

have been created and displayed at numerous boating and environmental events, including the annual LagoonFest and Manatee Fest at Manatee Lagoon Eco-Discovery Center. Print and video news releases routinely provide public updates on manatee issues and manatee season reminders.

As part of the educational outreach, officers instruct boaters to obey posted speed zones and be alert for manatees that travel the Intracoastal Waterway (ICW) to reach warm waters as far south as Broward and Dade counties in winter, and back again in spring. Officers also hand out laminated information cards with manatee protection tips (see Figure 1.2).

The MPP was incorporated in the County's Comprehensive Plan. The County also encouraged local municipalities to adopt the MPP into their respective Comprehensive Plans. The cities of West Palm Beach and Boynton Beach adopted the MPP in 2008 and 2009, respectively.

APPROACH:

STEP 1 Continue implementing the Manatee Protection Plan. Maintain funding for MPP implementation at existing

levels.

STEP 2 Continue to utilize funding for overtime hours for law enforcement during manatee season. Add municipalities to the LE program, and encourage agencies to increase regional multi-agency manatee enforcement patrols like "Operation Mermaid" in PBC and adjacent Counties. As resources permit, return funding of the MLE program to 2007 levels (\$200,000 per year).

STEP 3 Continue to raise public awareness of the importance of the Lagoon to manatees through education about critical habitats and manatee-friendly boating. Support education efforts at the Manatee Lagoon FPL Eco-Discovery Center and other facilities.

FIGURE 1.2 WHAT CAN YOU DO TO PROTECT MANATEES?



- Be mindful when boating
- Obey posted manatee protection areas, know speed zones for the areas you travel to
- Travel slowly giving manatees a chance to get out of your way
- Wear polarized sunglasses help to see manatees in the water
- Minimize your interactions with manatees:
 - Keep wild creatures wild
- Never pursue a manatee with your boat, kayak or paddleboard for a better look
- Report damaged or missing Manatee Speed Zone signs -866-405-Buoy (2869) or waterway.management@myfwc.com
- Report injured or distressed manatees to FWCC's Wildlife Hotline

STEP 4 Continue Seagrass and Water Quality Monitoring. Consider engaging a contractor to survey manatees in the Lagoon as part of FWC's annual statewide synoptic counts. Support additional research, including remote sensing technology if proposed by FWC or USFWS to better understand manatee utilization and distribution in the Lagoon. (See FW-5)

STEP 5 Identify opportunities to create or enhance habitat for manatees within the Lagoon. (See HE-2, HE-3)

TIMEFRAME:

STEP 1 Ongoing.

STEP 2 Ongoing. ERM requests annual funding allocations through the County's budget process.

STEP 3 Ongoing.

STEP 4 Ongoing. Seagrass transects sampled annually. Water quality monitoring occurs monthly. Funding to conduct annual synoptic surveys of manatees in the Lagoon could be requested in 2022-2023.

STEP 5 Ongoing, through restoration that includes seagrass habitats. Acquisition of seagrass beds near Singer Island (See HE-4) would protect an important year-round feeding area for manatees.

COST ESTIMATE:

STEP 1 \$



Officer enforcing manatee slow speed zones (Photo credit: PBC-ERM)



Manatee cow and calf (Photo credit: PBC-ERM)

- STEP 2 \$\$\$
- STEP 3 \$
- STEP 4 \$\$\$
- STEP 5 \$-\$\$\$\$\$

EVALUATING PROGRESS:

Increased creation, enhancement or preservation of manatee foraging or refugia habitat.

Reduction in manatees injured/killed by watercraft.

Increase in compliance with regulatory speed zones.

REGULATORY NEEDS:

Continued implementation of on-water law enforcement and marina/boat siting facility restrictions in Manatee Protection Plan.

FUNDING:

Recurring County budget allocations (for law enforcement and habitat restoration); Grants (for education programs)



Rescue of manatee at Bird Island 2018 (Photo credit: PBC-ERM)

POTENTIAL PARTNERS:*

ERM, FWC, FDEP, municipalities, FPL Manatee Lagoon Eco Discovery Center, environmental education centers

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*





FW-2 CONTINUE SEA TURTLE MONITORING

ACTION: Monitor the health and abundance of sea turtles utilizing the Lake Worth Lagoon by continuing to perform annual monitoring, including visual surveys and captures. Acquire more information on sea turtle growth rates, spatial distribution, and movements in the Lagoon. Explore potential relationships between seagrass fluctuations, water quality, and turtle dietary shifts. Determine whether, and what, environmental factors contribute to the presence of fibropapilloma (FP) virus in turtles in the Lagoon.

IMPORTANCE:

Sea turtles are an important indicator species of estuarine health. Monitoring their health, abundance and distribution in the Lagoon is important to overall assessments of water quality and habitat conditions. Green sea turtles, the most prevalent species in the Lagoon, are federally listed as an endangered species.

RELATED ACTIONS:

WQ-1, HE-3, HE-4, FW-5, PO-1

BACKGROUND:

Turtle monitoring has been conducted in the Northern Lagoon since 2005. This work, performed by Inwater Research Group under contract to Palm Beach County's Department of Environmental Resources Management (ERM), provides critical baseline information on species, size, and abundance. The surveys have revealed many more turtles than expected utilizing the Lagoon, particularly juvenile green turtles (*Chelonia mydas*). In 2018, a density of

37.4 turtles/km² was reported in the Munyon Island area, markedly higher than other study sites in the Florida Keys, Indian River Lagoon, and offshore areas of Palm Beach County.¹

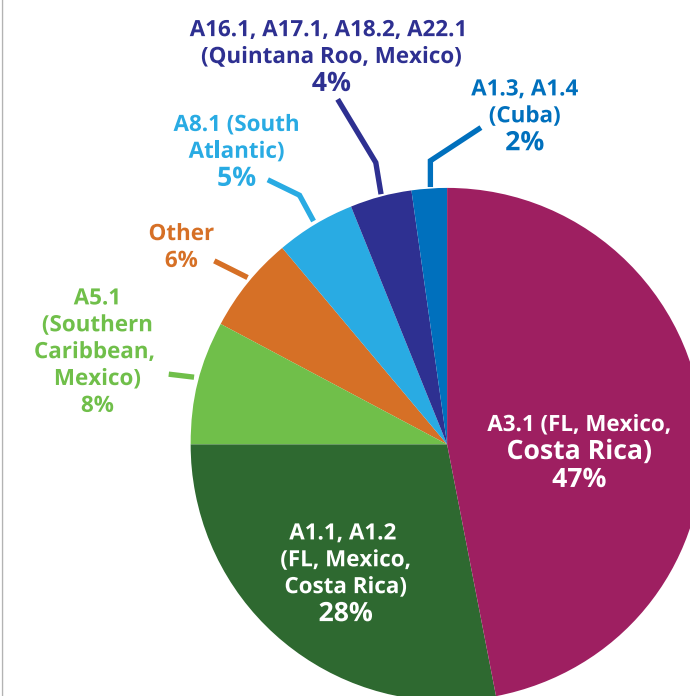
Among the highlights of this long-term data collection:

- Munyon Cove, with its rich seagrass beds, was identified as a hot spot for juvenile green sea turtles. The vast majority of the 920 sightings of sea turtles from 2005-2018 were juvenile greens observed in the North Lagoon, east of Little Munyon Island. The average size of turtles captured in surveys was 33 cm, about the size of a large dinner plate.
- DNA sampling traced the birthplace of the 179 turtles captured in the Lagoon to nesting beaches in Florida, Cuba, Mexico, Costa Rica, southern Caribbean, and the South Atlantic. Some of the home beaches are more than 5,000 miles away. About 75% of the Lagoon turtles surveyed were hatched on beaches in Florida, Mexico, or Costa Rica (see

Figure 1.1).

- Nearly half (48.3%) of the 179 turtles captured (or recaptured) exhibited the presence of benign but debilitating external tumors associated with fibropapillomatosis (FP), a virus that occurs primarily in green turtles (see Figure 1.2). By

FIGURE 1.1 HOME BEACHES OF LWL SEA TURTLES 2005-2017



SOURCE: Inwater Research Group



Researcher measuring width of turtle carapace
(Photo credit: Inwater Research Group)



- comparison, the presence of FP in turtles found in offshore waters is around 3%-4%.
- All but three of 22 recaptured turtles were originally tagged in the Lagoon. The three from elsewhere were initially tagged at the Kennedy Space Center, the St. Lucie Power Plant, and Cape Lookout, NC. The maximum interval between recaptures of a single individual was five years, indicating the importance of the Munyon Island area to the growth of green turtles utilizing the Lagoon.
 - Dietary analysis indicates a significant shift in the diets of turtles near Munyon Island since 2014. Prior to then, turtles mostly consumed seagrasses like turtle grass (*Thalassia testudinum*) and manatee grass (*Syringodium filiforme*) with little to no algae. From 2014-2018, their diets shifted largely to shoal grass (*Halodule wrightii*), with *Thalassia* almost absent from the samples. Analysis also showed a significant increase in algal species. These dietary shifts generally coincide with changes in seagrass abundance and benthic species composition in the Northern Lagoon.

The dietary shift observed in Lagoon green turtles coincides with a dramatic retraction of seagrass beds beginning in 2014. The percent of high- and moderate-density seagrass

cover dominated by *Ti* significantly, while the cover dominated by *Hi*. Scientists documented 528 acres of patchy seagrass. The reduced coverage of

The potential link between turtle forage preference and Lagoon green turtles v

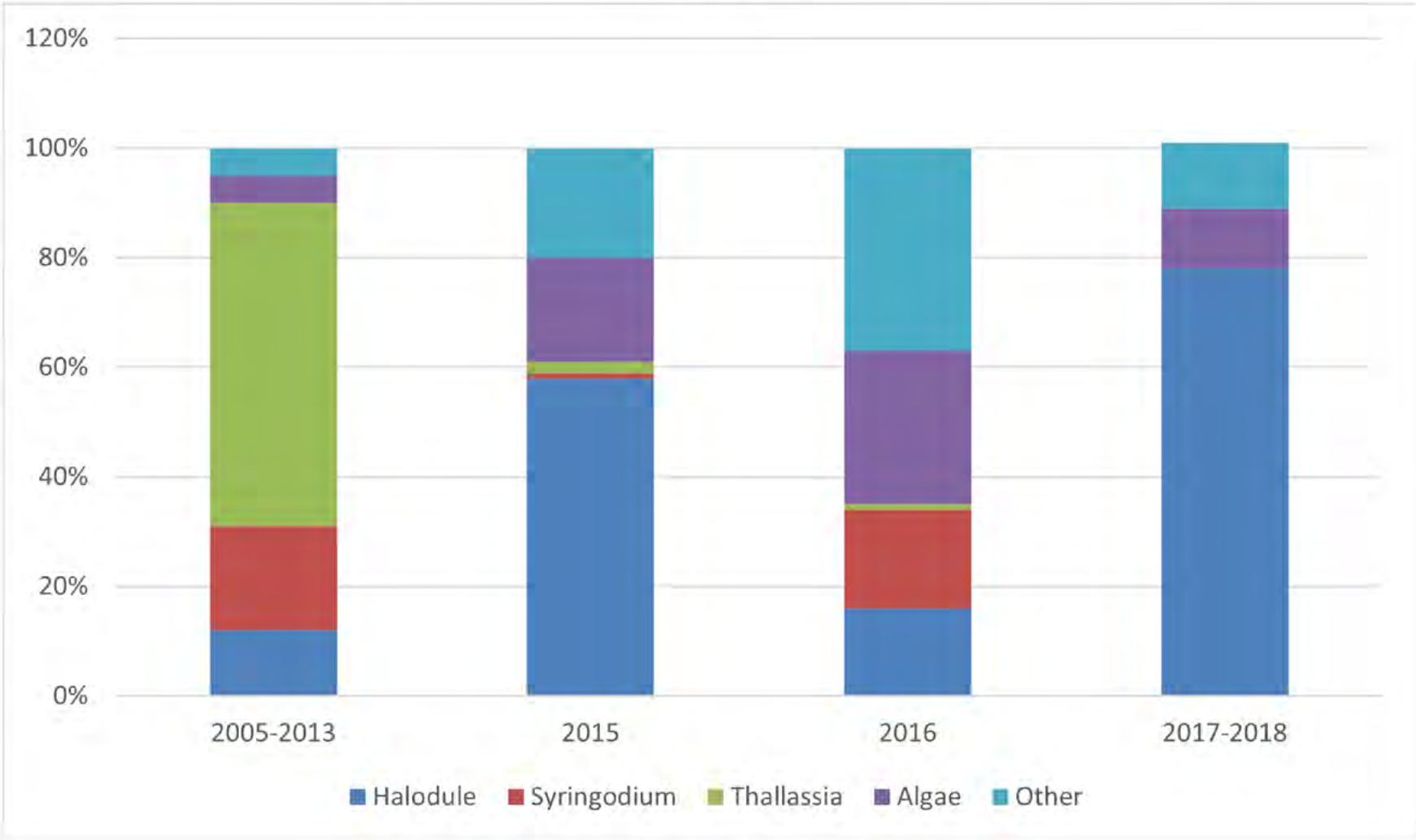
In 2019, sampling effort from individual turtles Branch Oceanographic sales of the Helping Seaplate. Results, when a for assessing impacts of environmental factors information with GPS and long-term movement how turtles use Lagoon various life stages and

These monitoring efforts the future; sea turtle juvenile recruitment to estuaries over the next on Caribbean beaches

Whether suitable habitat and sufficient food will be available to accommodate increased populations is uncertain. Adequate monitoring can drive timely management strategies to improve overall habitat conditions for sea turtles.

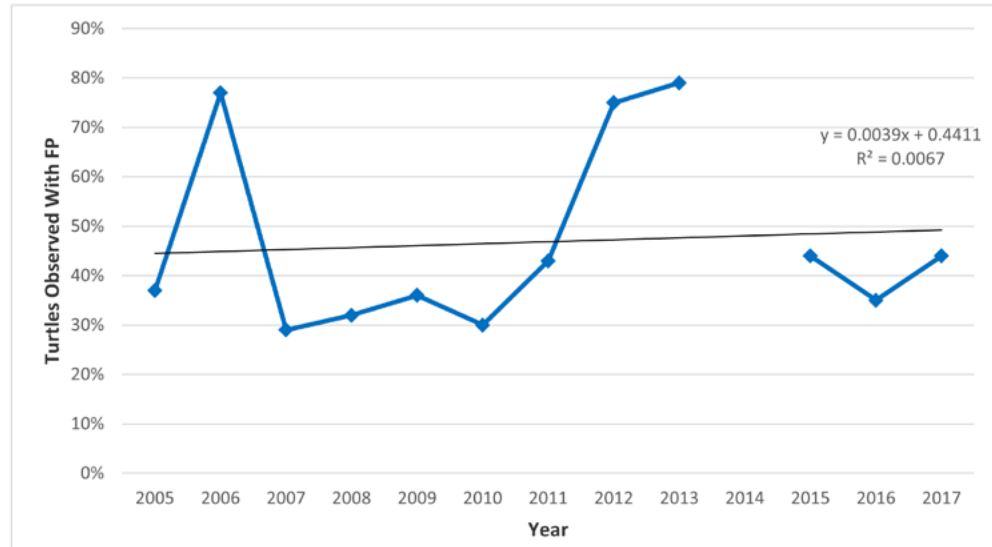
Continued educational efforts also are needed to increase community awareness of the Lagoon's significance to sea turtles, and to encourage support for conservation measures,

FIGURE 1.3 DIETARY COMPOSITION OF LWL SEA TURTLES 2005-2018



SOURCE: Inwater Research Group

FIGURE 1.2 FP OCCURRENCE IN LWL SEA TURTLES 2005-2018



SOURCE: Inwater Research Group



Juvenile green turtle with papilloma tumors (Photo credit: Inwater Research Group)

- identified by sea turtle researchers as possibly associated with FP.
- STEP 4 Initiate an acoustic telemetry program to tag and track the movements of individual turtles throughout the Lagoon. An acoustic array network would be beneficial for tracking multiple species of fish and wildlife about which more information is needed to direct management actions.
- STEP 5 Expand a health assessment program, including blood samples and chemical analysis, to evaluate the overall health of the turtles in the Lagoon and understand relationships with food availability and presence of FP.
- STEP 6 Continue educational initiatives to promote community awareness of the Lagoon’s importance to sea turtles. Promote community participation in water

quality improvement, habitat restoration, ethical angling practices and other activities that benefit sea turtles as well as all marine life in the Lagoon.

TIMEFRAME:

- STEPS 1-2 Continue turtle surveys quarterly or more often if funding is available. Continue seagrass surveys, ideally in the same months that turtle dietary sampling occurs.
- STEPS 3, 4 and 5 require collaborative partnerships with local universities, governmental and non-governmental organizations, beginning in 2022. The length of time will be determined by funding/grant sources.

STEP 6 Ongoing.

COST ESTIMATE:

- STEPS 1-2 \$\$
- STEP 3 \$-\$\$ Cost dependent on additional monitoring parameters and analysis required.
- STEP 4 \$ -\$\$ Cost varies according to the number of receivers and tags deployed. Acoustic receivers cost \$1,700-\$2,200 each, depending on quality. Battery life is 9-12 months, with replacement batteries costing \$25. Acoustic tags cost about \$350 each.
- STEP 5 \$-\$\$
- STEP 6 \$ (mainly staff time)

FUNDING:

Funding is available through the county budget process and the Sea Turtle License Plate Grants. Matching funds are provided by Palm Beach Atlantic University and Harbor Branch when

applicable for specific research objectives. Additional funding sources will be investigated.

POTENTIAL PARTNERS:*

PBC-ERM, FWC, Inwater Research Group, Sea Turtle Conservancy, Sea Turtle License Plate Grants Program, USFWS, Palm Beach Atlantic University, Harbor Branch Oceanographic Institute, National Save The Sea Turtle Foundation

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

¹ Assessment of Marine Turtles in Lake Worth Lagoon 2017-2018. Inwater Research Group. 2019

² 2018 Lake Worth Lagoon Seagrass Status and Annual Transect Monitoring Report. Coastal Eco-Group, Inc. Cumulative Report 2018.

³ C. Mott, Personal Communication. October 2020.





FW-3 CONTINUE FISHERIES MONITORING

ACTION: Continue fisheries sampling in the Northern and Central Lagoon to evaluate overall status and trends and assess fisheries utilization of restored habitats. Expand monitoring throughout the entire Lagoon. Update the species list for fish and selected invertebrates documented in the Lagoon. Expand use of acoustic telemetry to better document movement of fish and habitat utilization. Continue the Lake Worth Lagoon Fishing Challenge and explore other citizen-science initiatives to supplement fisheries-independent data.

IMPORTANCE:

Fisheries monitoring informs management decisions supporting habitat enhancement and protection, water quality improvements and stock assessments for economically important species.

RELATED ACTIONS:

FW-5, HE-1, HE-2, HE-3, HE-4, HE-5.

BACKGROUND:

The Florida Fish and Wildlife Conservation Commission's Fisheries Independent Monitoring Program (FWC-FIM) began sampling Lake Worth Lagoon in late 2014. The initial effort focused on fisheries utilization of waters adjacent to restored habitats in the Central Lagoon. Sampling was expanded in 2016 to incorporate sites in the Northern Lagoon, where the Lagoon's healthiest seagrass beds comprise an important and vulnerable habitat (See Figure 1.1).

Palm Beach County (PBC) contracts with

the FIM program for fisheries sampling. A new 3-year monitoring contract for the Northern and Central Lagoon will extend monitoring from Jan 2021 to Dec 2023.

Multiple fishing gear types are used to determine the abundance and distribution of adult and juvenile species. Samples are collected at randomly selected sites stratified by habitat and depth, and in both wet and dry seasons. Surveys record the number, species and length of fish captured, as well as environmental parameters such as salinity, temperature and dissolved oxygen.

The most abundant fish collected in the Lagoon is the Bay Anchovy (*Anchoa mitchilli*), a ubiquitous baitfish that is the most prevalent species caught in FIM surveys across all Florida estuaries. In 2019, Bay Anchovy accounted for 38.3% of the total Lagoon catch.

Central Lagoon

From 2014-2020, quarterly sampling in the Central Lagoon provided a comparative evaluation of fish usage of a mature restoration site (Snook Island), a then-new restoration site (Grassy Flats) and an unimproved control site (see Table 1.1).

TABLE 1.1 SUMMARY OF CATCH AND EFFORT DATA AT LAKE WORTH LAGOON RESTORATION SITES AUG 2014 - AUG 2018

	21.3-m Bay Seine		40-m Boat Seine		TOTALS	
	Animals	Hauls	Animals	Hauls	Animals	Hauls
Control	10,495	68	2,599	51	13,094	119
Grassy Flats	31,125	68	1,252	51	32,377	119
Snook Island	17,668	68	2,456	51	20,124	119
Totals	59,288	204	6,307	153	65,595	357

Source: FWC



Sampling crew using a seine net (Photo Credit: FWC)





African pompano collected during survey
(Photo credit: FWC)

The assessments have demonstrated the value of created habitats to fish and shellfish in the Central Lagoon. The recurring presence of juveniles of economically important species such as commercial shrimp (*Farfantepenaeus spp.*), Spot (*Leiostomus xanthurus*), Striped Mullet (*Mugil cephalus*), and others indicates that restoration areas may provide nursery habitat. The presence of both juvenile and adult Common Snook (*Centropomus undecimalis*) and Sheepshead (*Archosargus probatocephalus*) suggests that the sites serve as foraging grounds for resident species.¹

For the 2021-2023 period, Central Lagoon fisheries sampling will include Snook Islands, Grassy Flats and the new Tarpon Cove-Phase I restoration, completed in 2019. Tarpon Cove was created by filling and capping a deep dredge hole to facilitate restoration of seagrasses and intertidal habitat, including mangroves, oyster bars and artificial reefs.

Northern Lagoon

Monthly fisheries assessments conducted in the Northern Lagoon since 2016 align with FIM’s statewide sampling protocols. Sampling in this segment of the Lagoon contributes data toward species-specific stock assessments and provides

valuable baseline information about the ecological contributions of the seagrasses found in the Northern Lagoon.

This effort has documented a more diverse fish community in the Northern Lagoon than in the Central Lagoon. Sampling shows many juvenile reef species (e.g., snappers and grunts) not found in abundance in the Central Lagoon restoration sites; barracuda, permit and green sea turtles also are frequently captured in net trawls there. These findings are not surprising considering the presence of seagrass beds and the proximity of Lake Worth Inlet to the northern sampling area.² In Summer 2020, a juvenile African pompano was collected, which was the first time this pelagic species has been collected by the FIM program anywhere in Florida.³

Additionally, there is limited fisheries data collected by the Palm Beach County Reef Research Team at artificial reefs monitored in the north Lagoon where visibility allows for visual surveys, such as at Sugar Sands and John Rybovich Reefs.

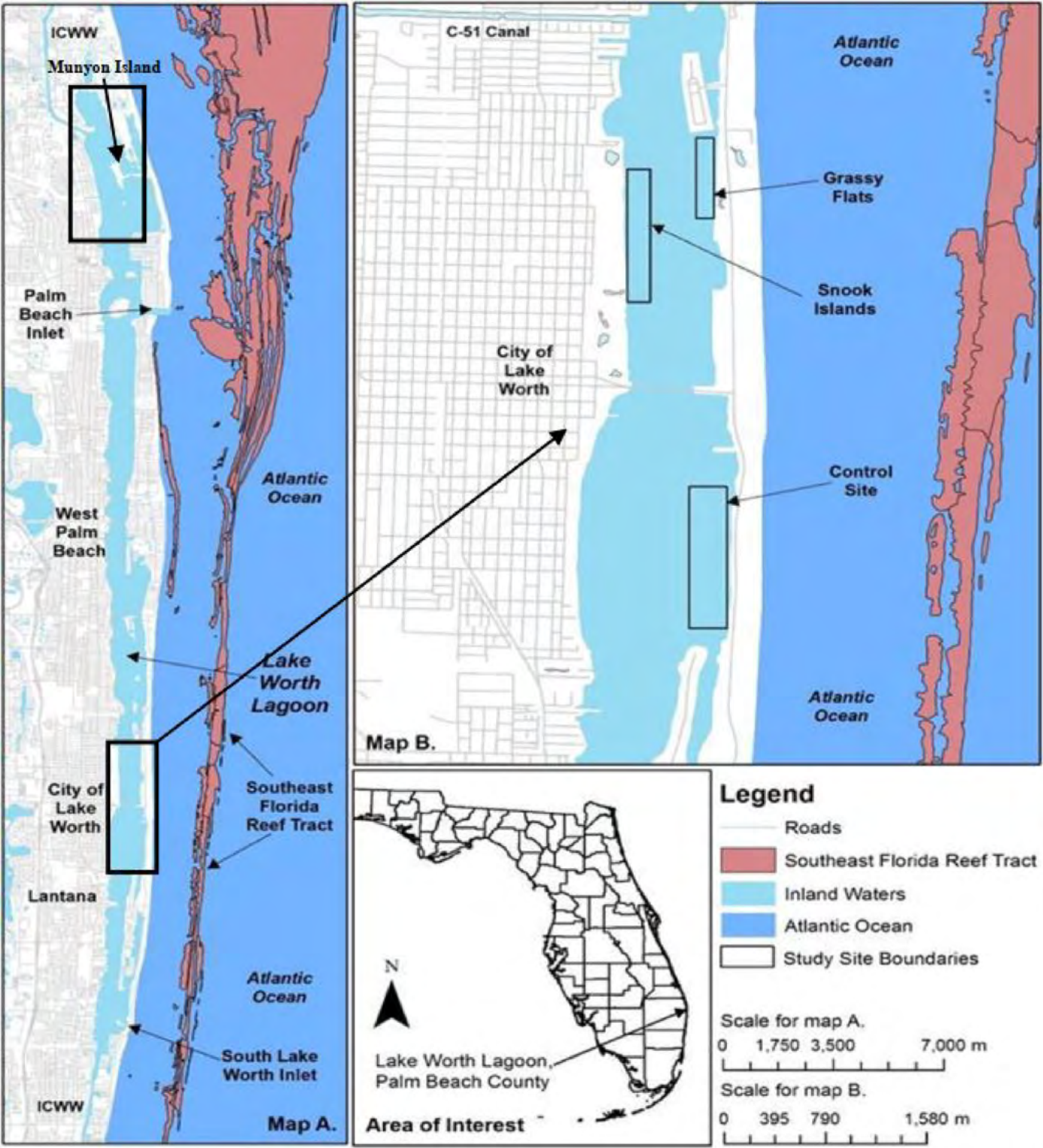
Southern Lagoon

Expanding FIM surveys to the Southern Lagoon is a logical extension of a comprehensive monitoring program, and would provide a valuable comparison with fisheries in the two other segments. Fisheries sampling in this area could support an overall assessment of the effects of large-scale stormwater discharges on local fish populations.

Lagoonwide

In addition to traditional sampling methods, ERM staff are exploring options for expanding use of

FIGURE 1.1 FISHERIES SAMPLING LOCATIONS IN LWL



SOURCE: FWC

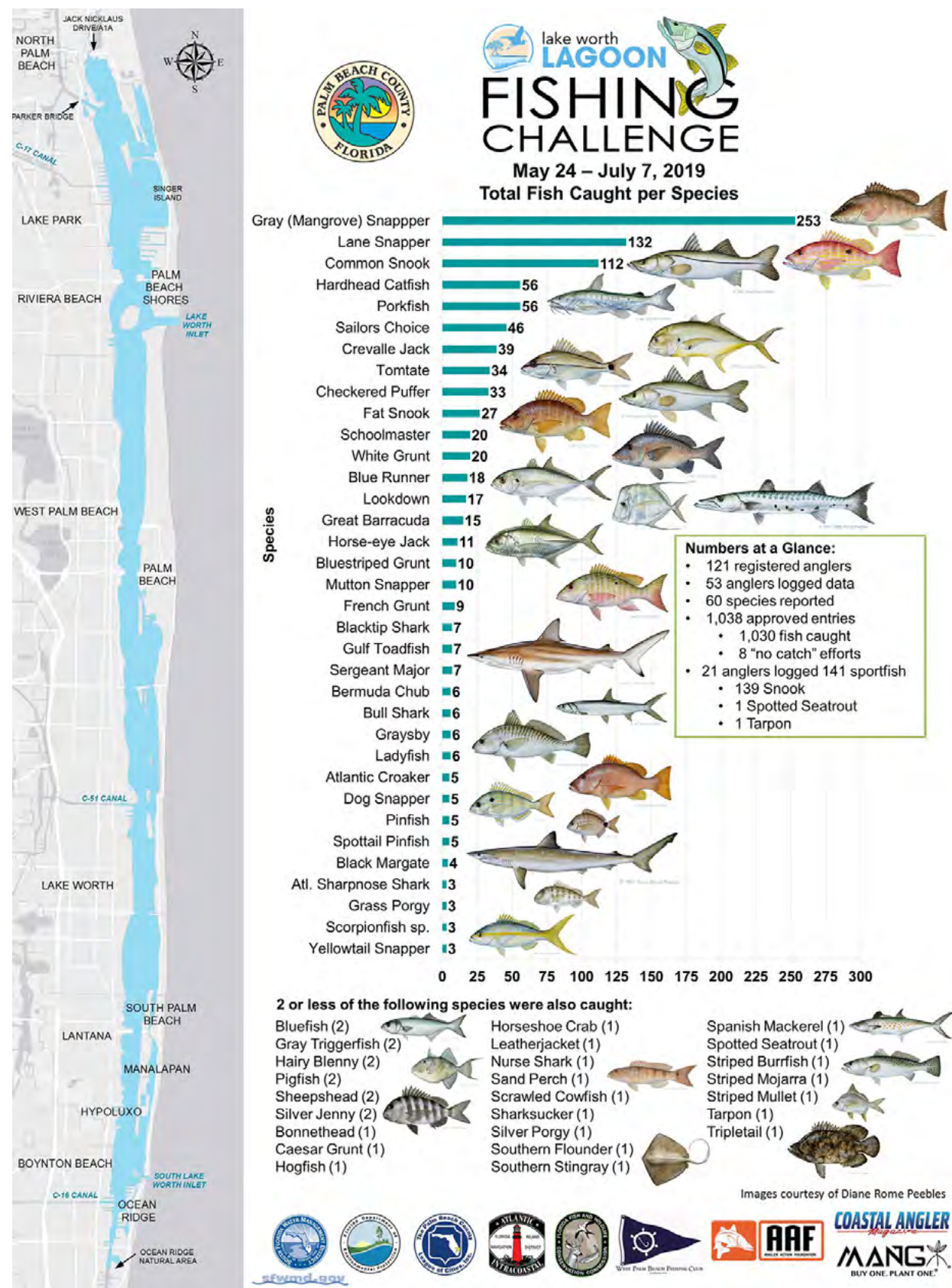


Figure 1.2 2019 Lake Worth Lagoon Fishing Challenge result poster (Photo credit: PBC-ERM)

acoustic telemetry to better document movement of fish between estuarine and ocean and overall habitat utilization of targeted species throughout the Lagoon (See Action FW-5).

Recreational anglers also provide important data that contributes to knowledge of Lagoon fisheries. The annual Lake Worth Lagoon Fishing Challenge enlists anglers to photo-document fish caught anywhere in the Lagoon, using the iAngler app, with prizes sponsored by local businesses and organizations (see Figure 1.2). The tournament provides information about fish usage of Lagoon areas not currently monitored by FIM, including the South Lagoon and canals. It should continue as a supplement to fisheries-independent surveys, or as a valuable stopgap measure if funding for expanded monitoring cannot be secured.

Fish Health

The FIM program serves as an early warning system to detect diseases, abnormalities and toxins such as mercury in fish. All fish (≥ 75 mm Standard Length) and selected invertebrates collected in the Lagoon were visually examined; specimens with external abnormalities were sent to the FWC’s Fish and Wildlife Health (FWH) group in St. Petersburg for detailed diagnosis. Mercury samples were collected from economically important species. Juvenile Snook and Sheepshead were the most common species collected for mercury analysis, with mean concentrations within acceptable limits.

APPROACH:

STEP 1 Continue monthly/quarterly fisheries sampling in the Northern and Central LWL. Starting in 2021, the Tarpon Cove-Phase I restoration site is



Snook collected from Central Lagoon (Photo credit: FWC)

being added to the areas sampled in the Central Lagoon.

- STEP 2 Expand sampling, employing statewide FIM protocols, to the Southern Lagoon.
- STEP 3 Update the species list for fish and selected invertebrates documented in the Lagoon.
- STEP 4 Expand acoustic tagging of fish and install an acoustic telemetry network in the Lagoon.
- STEP 5 Continue the Lake Worth Lagoon Fishing Challenge.

TIMEFRAME:

- STEP 1 Funding for current monitoring programs to continue through 2023. STEP 2 can occur concurrently if funds are secured.
- STEP 3 Completed in 2021, and updated as needed, or

- no less than every five years.
- STEP 4 Contingent on available funds and/or research partners.
- STEP 5 Annually.

COST ESTIMATE:

- STEP 1 \$\$
- STEP 2 \$\$\$
- STEP 3 Staff time only
- STEP 4 \$
- STEP 5 \$ (mainly staff time)

EVALUATING PROGRESS:

Monitoring surveys completed in each Lagoon segment.

Abundance and diversity of economically important species documented.

Number of acoustic telemetry receivers deployed in Lagoon.

Number of anglers participating and catches reported in Lake Worth Lagoon Fishing Challenge.

REGULATORY NEEDS:

None anticipated.

FUNDING:

County Budget, Direct and in-kind contributions from partners for acoustic telemetry and Fishing Challenge

POTENTIAL PARTNERS:*

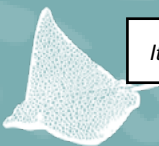
ERM, FWC, NOAA / NMFS, West Palm Beach Fishing Club, Angler Action Foundation, Coastal Angler Magazine, FACT Network, PBAU, HBOI/FAU

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

¹ Lake Worth Lagoon Fisheries Monitoring Program. Annual Report for Palm Beach County. Jan. 2019 - Dec.2019. Florida Fish and Wildlife Conservation Commission. 2020.

² Same as above

³ Richard Paperno, FWC, pers. comm.



FW-4 MANAGE AND MONITOR SHOREBIRD HABITAT

ACTION: Continue to provide additional habitat for shorebirds via restoration and habitat enhancement projects in the Lake Worth Lagoon.

IMPORTANCE:

Shorebird populations are a valuable barometer of the biodiversity of the Lagoon. Monitoring shorebirds offers another tool for measuring the value of county-sponsored restoration projects to Lagoon fish and wildlife. Shorebirds also provide economic benefits through ecotourism that supports tour providers, hotels, restaurants and other businesses.

RELATED ACTIONS:

HE-2, HE-3, HE-5, PO-1, PU-2

BACKGROUND:

Despite its highly urban shoreline, the Lake Worth Lagoon attracts a variety of migratory, wintering and resident shorebirds, including imperiled species like the Black Skimmer (state listed as threatened); the American Oystercatcher (state listed as threatened); the Least Tern (state listed as threatened); and Piping Plover (federally listed as threatened). These species, along with others that nest directly on beaches, are extremely

vulnerable to predation and human disturbance.

With less than 30% of natural shorelines left in the Lagoon, Palm Beach County (PBC) has made an extraordinary commitment to providing sheltered, protected foraging and nesting for shorebirds. Since 2014, 34 acres of habitat that benefits shorebirds has been created, including mangroves, seagrass areas, oyster reefs, cordgrass, intertidal shorelines, islands and maritime hammocks. Rock mounds specifically designed to support nesting American Oystercatchers have been installed as part of intertidal island creations such as Tarpon Cove. These projects have significantly boosted options for nesting, roosting and foraging throughout the Lagoon.

Investment in shorebird habitats has quickly paid dividends. Immediately upon completion of the Snook Islands Natural Area in the Central Lagoon in 2005, an American Oystercatcher pair began nesting there. They nested at Snook Islands every year until 2015, when they moved to the Grassy Flats restoration project. To date, this pair has produced 17 chicks, with 15 successfully fledged. Nesting of American Oystercatchers has now been documented at four restoration sites: Snook Islands, Grassy Flats, Bryant Park Wetlands and Tarpon Cove, producing a total of 35 fledglings since 2005 (see Table 1.1).

Routine monitoring of shorebirds at restoration projects began in 2015 when the County's Environmental Resources Management (ERM) Department began

TABLE 1.1 AMERICAN OYSTERCATCHER NESTING SUCCESS

Location	Years	Chicks	Successfully fledged
Snook Islands NA and Grassy Flats	2005-2015	17	15
Bryant Park Wetlands Project	2014-2020	17	11
Snook Islands NA	2017-2020	8	7
Tarpon Island (Phase I)	2020	4	2

SOURCE: PBC ERM



Banding oystercatcher chick 2020 (Photo credit: PBC-ERM)



participating in the Florida Shorebird Alliance breeding bird surveys and annual shorebirds surveys coordinated by the Florida Fish and Wildlife Conservation Commission (FWC). The surveys continue to reinforce the value of restored habitats to a variety of year-round and migratory species, including the Piping Plover and Red Knot (both federally threatened), Least Tern, and Black Skimmer, along with the American Oystercatcher.

In 2019, five oystercatcher chicks were tagged by FWC biologists at Snook Islands and Tarpon Cove. Resighting of tagged birds provides additional information on fledgling success and overall utilization of the Lagoon for foraging, roosting and nesting. In 2019, a chick tagged at Tarpon Cove was sighted multiple times foraging along the oyster reefs by Johns Island, along with another juvenile tagged in 2019 in the Indian River Lagoon.

APPROACH:

STEP 1 Continue to provide and manage nesting and foraging habitat for shorebirds in the Lake Worth Lagoon through habitat creation, restoration and enhancement. Ensure island elevations are appropriate to provide nesting and wintering habitat above the high tide line.



Oystercatcher in flight (Photo credit: PBC-ERM)

- STEP 2 Actively manage island habitats to ensure shorebird success:
- Control vegetation on islands through trimming, weed pulling and removal of trash.
 - Strategically place gravel, shell hash, or sand to improve the nesting substrate.
 - Monitor and maintain decoys put in place to attract nesting least terns. Remove or deter invasive/exotic species such as green iguanas and Egyptian geese with potential to disrupt nesting or prey on eggs or chicks. Treat areas for fire ants.
 - Post educational signage on islands during nesting season to alert the public to keep their distance and minimize disturbance of nesting and fledgling birds.

- STEP 3 Continue to monitor shorebird utilization of the Lagoon.
- STEP 4 Evaluate and identify important, publicly accessible bird “hot spots” within the Lagoon worthy of nomination to the Great Florida Birding Trail.
- STEP 5 Continue banding American Oystercatcher chicks and adults to track habitat utilization and fledgling success.

TIMEFRAME:

- STEPS 1,2, 3 and 5 are ongoing
- STEP 4 can occur in FY 2021-2022

COST ESTIMATE:

- STEP 1-2 \$\$\$\$\$
- STEPS 3-5 \$ Mainly staff time



Oystercatcher with two chicks (Photo credit: PBC-ERM)

EVALUATING PROGRESS:

- Annual surveys of foraging adults, nesting pairs, chicks and fledglings.
- Resighting of birds tagged in the Lagoon.

REGULATORY NEEDS:

- Possible ordinance to prohibit drone flyovers of nesting areas.

FUNDING:

- Recurring County and state budget allocation, Lake Worth Lagoon Initiative request to Florida Legislature (for habitat creation), in-kind support from Audubon and Florida Shorebird Alliance

POTENTIAL PARTNERS:*

- PBC-ERM, FWC, USFWS, FIND, Florida Shorebird Alliance, Audubon

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*





FW-5 IMPLEMENT REMOTE TRACKING TECHNOLOGIES FOR FISH AND WILDLIFE MONITORING

ACTION: Design and implement a collaborative acoustic telemetry network to track species of special management interest within the Lagoon.

IMPORTANCE:

Documenting the spatial and temporal distribution of fish, sea turtles, manta rays and other species will provide insights into estuarine-marine connections, migration patterns, and critical habitats at various life stages, contributing to informed management strategies on a watershed scale.

RELATED ACTIONS:

FW-1, FW-2, FW-3, FW-4, WQ- 5

BACKGROUND:

Remote tracking technologies enable resource managers to document where and when animals travel, and what pathways they use. They can help determine exactly where an animal is at any moment in time and often what that animal is doing.

The technologies can be used for a wide variety of purposes, from following the movements of large marine animals like manatees and sharks to tracking

how marine pollution travels through the environment. Information gained from these remote tracking systems can be used to identify, map and protect critical foraging and nursery habitats, fill in missing life cycle data, and better manage human activities such as commercial and recreational fishing that may impact a species.

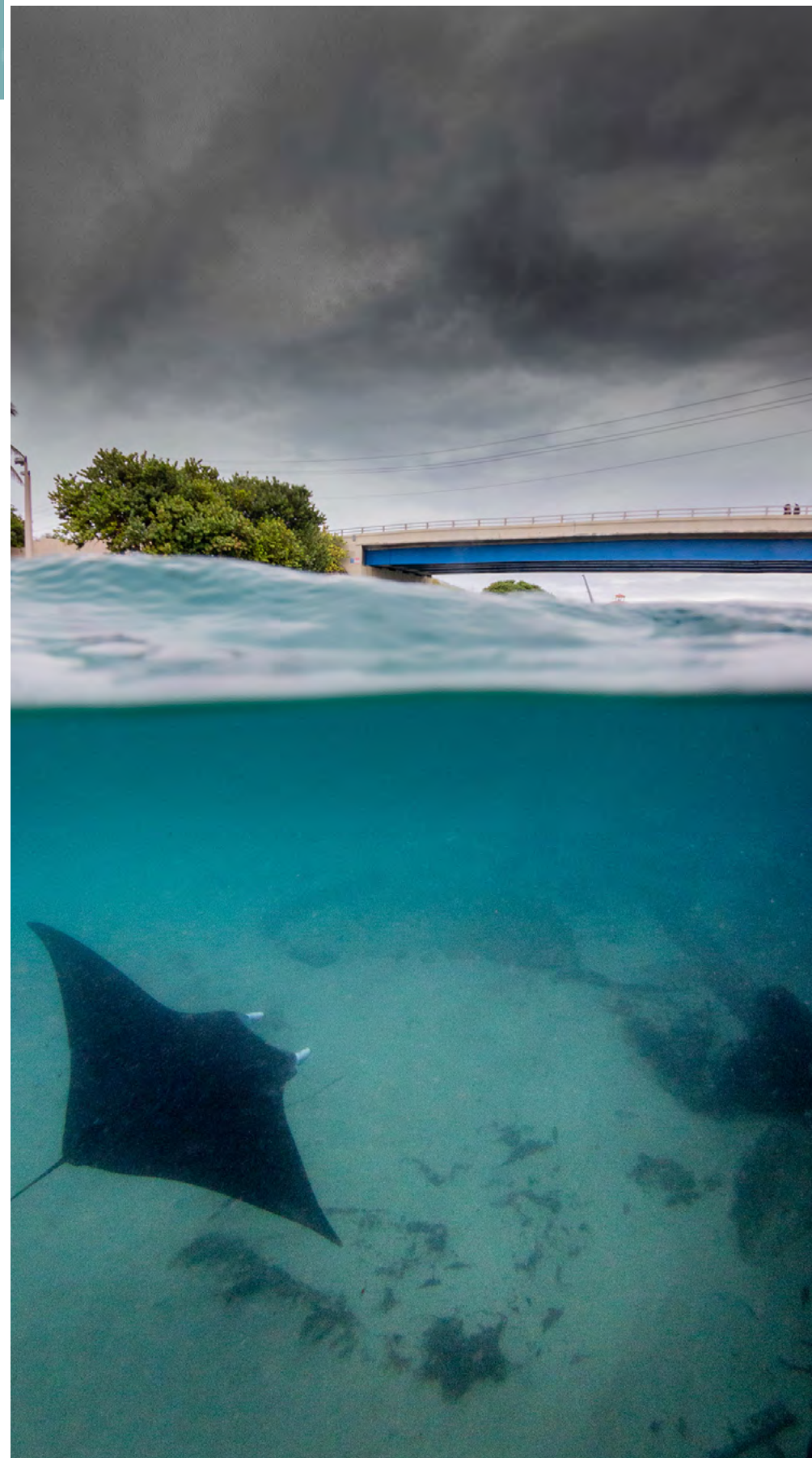
Examples of tracking technologies include acoustic, GPS and satellite tags. The choice of technology depends on the length of time the animal will be monitored; how data will be transmitted; and funds available for tracking equipment. Satellite tags, for example, are mainly useful on animals that come to the surface to breathe, such as manatees or whales.

Remote tracking technologies utilizing satellites, GPS and acoustic telemetry mean scientists don't have to be near the animal to pick up its signal. Data is transmitted from the animal, or a receiving station, to a computer.

In recent years acoustic telemetry has

been widely used by scientists studying fish and sea turtles (*See Figure 1.1*). This system uses sound (acoustics) to relay information across open space (telemetry). Information is gathered by attaching acoustic transmitters, or "tags," to the fish or turtles. Each tag emits a unique sound pulse that is relayed by tracking stations (receivers) placed underwater at strategic intervals. When a tagged animal passes in range of the receiver, a unique "ping" identifies the animal and its location. Receivers can typically detect signals within a radius of 500-1000 meters.

The collaborative, open access Florida Atlantic Coast Telemetry (FACT) Network, has established a system of 900 tracking stations from North Carolina to the Bahamas (*See Figure 1.2*). This acoustic array supports research conducted by state and federal wildlife agencies, universities, not-for-profit and private marine research organizations. More than 83 species, comprising 4,700 individuals,



Manta Ray in South Lake Worth Inlet (Photo credit: Bryan Turffs)



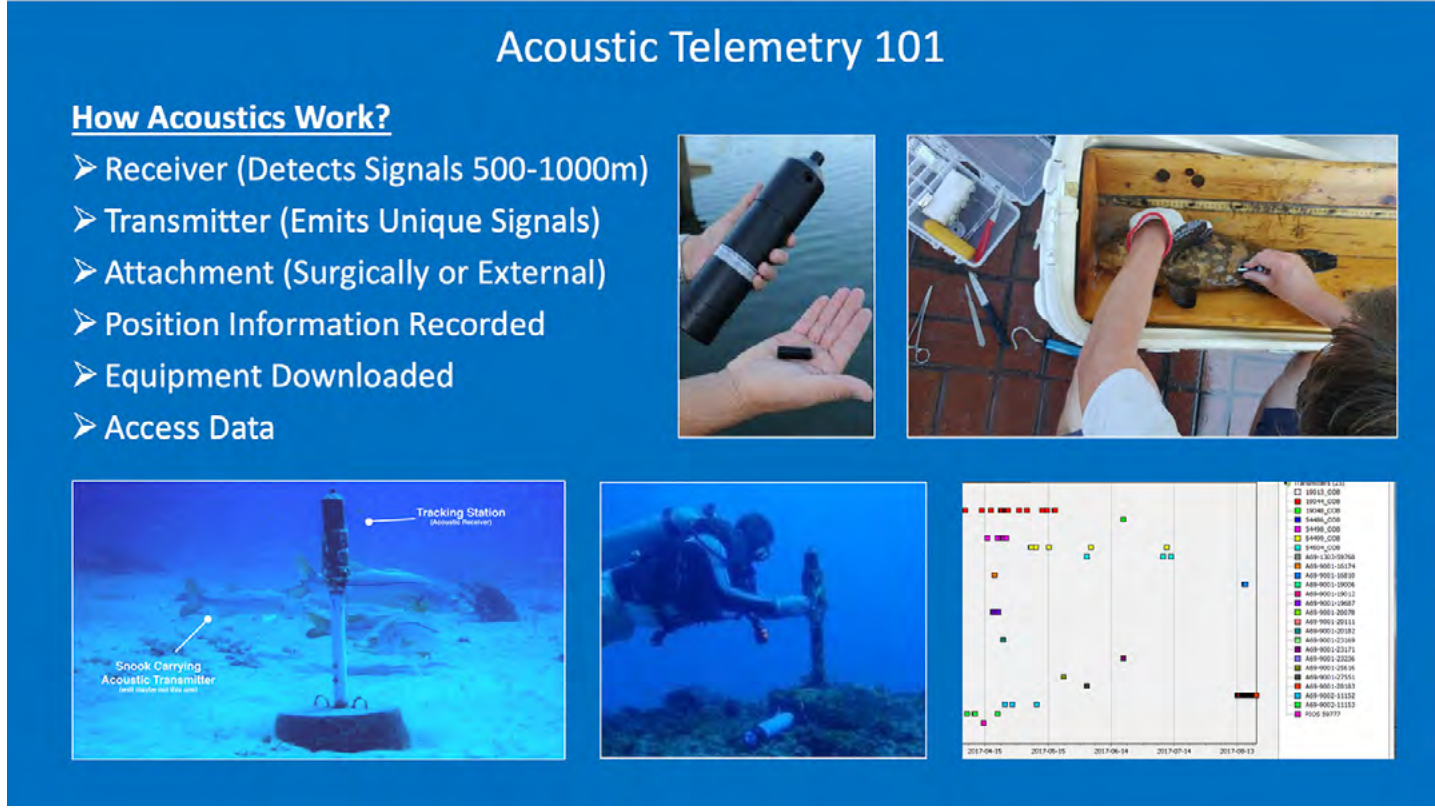


Figure 1.1: How acoustic telemetry works (SOURCE: FWC)

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have been tracked since 2007. Members of the FACT Network already maintain receivers at reef sites offshore of Palm Beach County, within the Loxahatchee River and Jupiter Inlet, and within the Indian River Lagoon. Acoustic receivers installed off Singer Island have detected more than 400 acoustic signals from 33 individual animals utilizing repurposed concrete poles (called “Reef Darts”) installed by the West Palm Beach Fishing Club and the County’s Department of Environmental Resources Management (ERM). Among the tagged animals were small-toothed sawfish, great white sharks, tiger sharks, great hammerheads, a cownose ray and a cobia that was originally tagged in Pensacola.

The installation of an acoustic array within the Lagoon itself would be beneficial to researchers studying multiple marine species. For example, the ability to document movement of fish between estuarine and ocean habitats would add to our

understanding of relationships between restored and natural habitats. Understanding the movement of sea turtles within the Lagoon is important for documenting population dynamics over time, especially given the Lagoon’s status as an important nursery habitat for the species.

Acoustic telemetry could potentially play a role in tracking the movement of microplastics or other marine debris in the Lagoon.

Recent research conducted by the Marine Megafauna Foundation indicates the coastal waters of south Florida, including Palm Beach County, are a potential nursery ground for giant manta rays (*Mobula birostris*), an endangered species.¹ Evidence indicates that manta rays are using the Lake Worth Lagoon. They have been seen three times by divers at the Blue Heron Bridge, in 2015 and 2020. They have also

been documented feeding and resting within South Lake Worth Inlet.

Up to six mantas have been observed inside the South Lake Worth Inlet at one time. Survey data showed young manta rays with embedded fishing line and tackle suggesting impacts from living in a highly urbanized coastal area.

Use of acoustic telemetry to track mantas would help to understand the importance of the Lagoon to these charismatic creatures and contribute to development of conservation strategies for this federally listed species.

APPROACH:

- STEP 1 Identify a funding source to purchase and maintain equipment within Lagoon.
- STEP 2 Collaborate with universities, researchers, non-profits and other interested partners to direct tagging efforts and data analysis to understand species utilization of Lagoon habitats, and the environmental and biological factors that influence their movement.



Researcher Jessica Pate approaches a juvenile Manta Ray (Photo credit: Bethany Augliere)



A Manta Ray swims close to shore (Photo credit: Jessica Pate)

TIMEFRAME:

Initial acoustic array installed in 2022, pending availability of funds for receivers and tags.

COST ESTIMATE:

STEP 1 \$ Acoustic receivers cost \$1,700-\$2,200 each, depending on quality. Battery life is 9-12 months, with

replacement batteries costing \$25. Acoustic tags cost about \$350 each. Ongoing staff time to coordinate this program is a recurring cost.

STEP 2 \$

EVALUATING PROGRESS:

Number of receivers installed.

Number of Species and Individuals Tagged and Tracked.

REGULATORY NEEDS:

None

FUNDING:

Direct and in-kind funding provided by Palm Beach County ERM, West Palm Beach Fishing Foundation, FAU, FWC, state and federal grants.

POTENTIAL PARTNERS:*

PBC-ERM, FWC, West Palm Beach Fishing Club, USFWS, Marine Megafauna Foundation, ANGARI Foundation, Palm Beach Atlantic University

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

¹ Urban Manta Rays: Potential Manta Ray Nursery Habitat along a Highly Developed Florida Coastline. Pate. J and Marshall, A. ENDANGERED SPECIES RESEARCH. 2020.





CLIMATE CHANGE AND SEA LEVEL RISE ACCOMPLISHMENTS AT A GLANCE



Palm Beach County and seven municipalities formed a **Coastal Resilience Partnership** in 2019 to work cooperatively on strategies to **mitigate and adapt to sea levels** expected to rise by 17 inches by 2040.

**SEE ACTION
CC-1**



Completion of a **vulnerability assessment** in early 2021 will examine risks to critical community assets, including **natural resources and water infrastructure**, from climate change.

**SEE ACTION
CC-1**



Living Shorelines that **use native plants and natural materials to improve resiliency** have been installed at five locations since 2013: Bryant Park, Currie Park, Osprey Park, Jewell Cove and Lyman Kayak Park.

**SEE ACTION
CC-2**



A shoreline characterization study completed in 2020 shows that 70% of the Lagoon shoreline has been **hardened by seawalls, bulkheads or other armoring**.

**SEE ACTION
CC-2**



CC-1 CONDUCT A VULNERABILITY ASSESSMENT OF RESOURCES AT RISK FROM CLIMATE CHANGE

ACTION: Identify living resources, infrastructure and community assets vulnerable to sea level rise and climate change, and implement appropriate adaptive strategies to reduce impacts.

IMPORTANCE:

Identification of natural and societal resources most vulnerable to climate change will guide critically important decisions about mitigation and adaptation strategies, bolstering the resilience of the Lake Worth Lagoon watershed.

RELATED ACTIONS:

WW-1, WW-2, HE-1, HE-2, SW-2

BACKGROUND:

The Southeast Florida Regional Climate Change Compact's 2019 unified sea level rise projections estimate that seas will rise by approximately 10 to 17 inches by 2040 and 21 to 40 inches by 2070 as the rate of rise accelerates in the four Southeast Florida counties that comprise the partnership: Broward; Miami-Dade; Monroe; and Palm Beach County.¹ With one foot of sea level rise (SLR), extensive areas of the Lake Worth Lagoon shoreline are at risk of inundation (see Figure 1.1).

Rising sea levels are expected to elevate groundwater, increase infiltration, corrode infrastructure, and alter the effectiveness of wastewater treatment systems. Higher water levels may also shrink or even eliminate habitats that do not have room to migrate landward as waters rise (see Actions HE-1 and HE-2). Similarly, anticipated increases in storm intensity may increase stormwater inflow and overwhelm sewer system capacity (see Action WW-1).

Impacts are already occurring, most recently with sanitary sewer overflows in West Palm Beach in October 2020 caused by extremely high “king” tides, compounded by rain, wind and infrastructure failures. Additionally, sunny day flooding is becoming more and more routine in communities along the Lagoon and within its watershed, as extreme rain events overwhelm the conveyance capacity of existing stormwater systems.

Other far-reaching effects of climate change include increasing



Flooded street in West Palm Beach during September 2020 King Tide (Photo credit: PBC-ERM)

temperatures, changing precipitation patterns, fluctuating water availability, and increases in waterborne illnesses, storm intensity, and the spread of invasive species, all with potential negative impacts to the Lagoon's resources and residents.

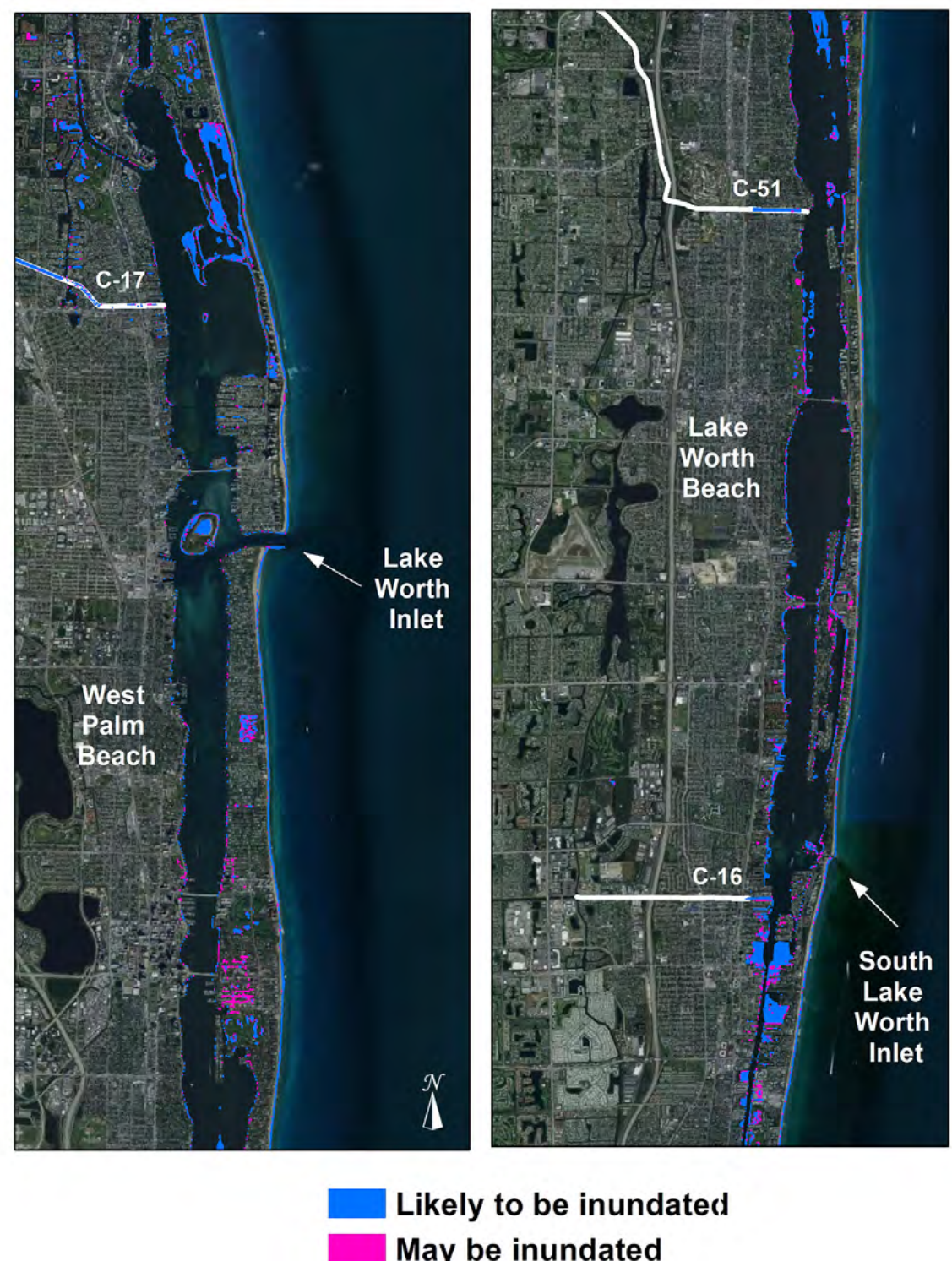
A 2020 report commissioned by the Southeast Florida Regional Climate Change Compact and other partners found that if the region does not adapt to climate change, daily tidal inundation by 2070 could threaten \$53.6 billion in property, affect 17,800



Flooded street in West Palm Beach during September 2020 King Tide (Photo credit: PBC-ERM)



FIGURE 1.1 SEA LEVEL RISE PROJECTION MAP (1 FOOT)



SOURCE: PBC-ERM

jobs, and cause \$384 million in fiscal losses.² The report also found that, regionally, the benefits outweigh the costs for climate adaptation projects studied in the report. For every \$1 invested in community-wide adaptations such as raising the height of seawalls, nourishing beaches, or restoring natural dunes, the counties would gain \$2 in economic benefits. For every \$1 invested in building-level adaptation strategies, such as elevating or flood proofing structures, the region will see \$4 in benefits (see Figure 1.2).

King tides, or exceptionally high spring tides that occur when the moon is at its closest point to Earth, provide a worrying glimpse of the future. While only a temporary phenomenon, king tides demonstrate the potential impacts of rising seas on critical coastal resources and infrastructure such as roads, hospitals, drinking water, and wastewater treatment facilities. They are also a valuable educational tool for helping citizens visualize future shoreline conditions, and may encourage the public to take proactive steps to make their own homes and landscapes more resilient (see Action SW-1). For municipal and county planners, areas flooded by king tides may be prioritized for stormwater retrofits or Green Infrastructure installations (e.g., permeable pavement, rainwater gardens, etc.)

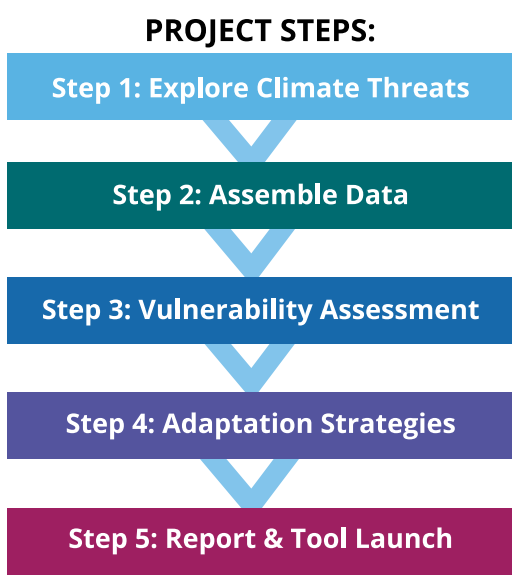
Palm Beach County created an Office of Resilience (OOR) in 2017 to advance the County’s climate resilience and sustainability efforts. OOR helps coordinate climate vulnerability assessments for the County in partnership with other County departments. PBC, together with the municipalities of Boca Raton, Boynton Beach, Delray Beach, Highland Beach, Lake Worth Beach, Lantana and Ocean Ridge, formed the Coastal Resilience Partnership (CRP) of Southeast Palm Beach County to conduct a micro-regional climate change vulnerability assessment. Supported by funding from the Florida Department of Environmental Protection’s Florida Resilient Coastlines

Program, the assessment is examining how various climate threats such as flooding, high winds, extreme heat, pests, and harmful algal blooms will affect major community assets in the study area (see Figure 1.3). Assets to be studied include:

- Critical Facilities, such as hospitals, fire and police stations, utilities and government facilities
- Water Infrastructure, including stormwater, wastewater, and potable water systems
- Businesses and Industries
- Natural Resources, including beaches, parks, preserves, intertidal habitats, and tree canopy
- People, including populations that may be disproportionately vulnerable to climate threats
- Commercial, cultural,

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FIGURE 1.3 CLIMATE CHANGE VULNERABILITY ASSESSMENT





and residential property

- Transportation and mobility networks

The CRP of Southeast Palm Beach County's climate change vulnerability assessment is a critical first step in identifying elements most vulnerable to climate threats and developing equitable adaptation strategies for each participating jurisdiction to consider. Results will help inform actions that can be taken in areas of the Lagoon watershed within the study area, and provide a valuable foundation for future Lagoonwide assessments and adaptive management.

Building on this success, the County plans to develop a vulnerability assessment of all unincorporated areas of the County and a resilience action plan by 2025. An \$800,000 Rebuild Florida grant from the state Department of Economic Opportunity will jump-start this process. Additionally, the County is developing an internal policy requiring that climate change and sea level rise impacts be considered in all future capital improvement projects. At the state level, a bill passed by the Florida Legislature in 2020 requires state, local governments, and other public entities to conduct a Sea Level Impact Projection Study before construction of any new state-funded project in a coastal building zone.



King Tides at Flagler Drive with West Palm Beach and Lake Worth Lagoon in background (Photo credit: PBC-ERM)

The County and several municipalities are already embracing the use of Living Shorelines as one cost-effective resilience strategy. Living Shorelines use natural elements like coastal plants, rock and sand to stabilize and protect shorelines instead of hardening them with seawalls (*see Action SW-2*). A system of "mangrove planters" at Currie Park in West Palm Beach is one successful example: Here, Palm Beach County and the City of West Palm Beach collaborated to install a series of connected planters containing mangroves waterward of the park's existing seawall. West Palm Beach recently applied for a \$21 million grant from the Florida Department of Economic Opportunity's Rebuild Florida Infrastructure Repair Program to expand the Currie Park Living Shoreline with more mangrove planters, a higher seawall, improved stormwater capacity, walkways, landscaping, lighting and other features to make the park more resilient.

APPROACH:

- STEP 1 Once the CRP of Southeast Palm Beach County's Climate Change Vulnerability Assessment is complete, encourage the incorporation of resilience adaptations into the comprehensive plans or other planning initiatives of all municipalities within the Lagoon's watershed.
- STEP 2 Identify current and potential flooding impacts to low-lying communities throughout the watershed due to king tides and future sea level rise. Assess the need for new check valves, retrofits and/or pumps in stormwater management systems to minimize flooding.
- STEP 3 Enhance community understanding of the far-ranging impacts of climate change, to build support for individual and collective actions to help adapt to or mitigate effects.
- STEP 4 Consider managed retreat from areas chronically

impacted by flooding, storm surge, and SLR, where use is not sustainable because of high maintenance or repair costs, or threats to public safety.

TIMEFRAME:

- STEPS 1-3 Can begin in 2021, upon completion of the CRP of Southeast Palm Beach County's Climate Change Vulnerability Assessment.
- STEP 4 Policies and Decision Tools to determine when, where and whether managed retreat should be considered can be initiated in 2025.

COST ESTIMATE:

- STEP 1 \$
- STEP 2 \$\$
- STEP 3 \$
- STEP 4 \$\$\$\$

EVALUATING PROGRESS:

Number of communities within Lagoon watershed incorporating resilience adaptations into comp plans.

Modifications or upgrades to existing critical infrastructure assets in the Lagoon watershed.

Increase in community support for adaptation and mitigation strategies.

REGULATORY NEEDS:

Updates to comprehensive plans and other land use development guidelines.



lake worth
LAGOON

FUNDING:

LWLI Legislative Funding Request, Recurring or special county/ city budget allocations, federal or state grants

POTENTIAL PARTNERS:*

PBC-Office of Resilience, South Florida Regional Climate Compact, FDEP, PBC-ERM, local municipalities, SFWMD, local and special drainage districts, EPA, NOAA

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

¹ Unified Sea Level Rise Projection: 2019 Update. Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group (Compact). February 2020.

² The Business Case for Resilience in Southeast Florida: Regional Economic Benefits of Climate Adaptation. Urban Land Institute. 2020.





CC-2 IMPROVE RESILIENCY OF CRITICAL HABITATS TO CLIMATE CHANGE AND SEA LEVEL RISE

ACTION: Enhance resilience to climate change within the Lake Worth Lagoon through Living Shorelines and habitat restoration and enhancement. Foster community awareness of the potential impacts of a changing climate on Lagoon habitats, and encourage individual and collective actions to mitigate those effects.

IMPORTANCE:

Critical habitats in the Lagoon provide significant climate mitigation benefits including sequestration of carbon, absorption of wave energy and tidal flows, protection against storm surge, and preservation of fish and wildlife species that are an integral part of this unique estuary. Mangroves, cordgrass, maritime hammocks, seagrass beds, oyster reefs, artificial reefs, and breakwaters not only perform important ecological services, but also support valuable commercial and recreational activities.

RELATED ACTIONS:

CC-1, HE-1, HE-2, HE-3, HE-4

BACKGROUND:

Climate change presents a significant threat to fish, wildlife, and natural ecosystems that will likely exacerbate other ecological threats such as habitat loss, invasive species, and water

pollution. Preparing for the future impacts of climate change is an urgent concern for the Lagoon that requires planning, implementation of adaptive measures, and long-term monitoring.

Coastal habitats including mangroves and seagrass beds provide critical nursery and foraging areas for fish, oysters and waterbirds. They are among the first to experience climate change impacts, but are also an important first line of defense in mitigating their effects (*see Figure 1.1*). In addition to absorbing and buffering the impacts of storm surge, intertidal wetlands are highly effective carbon sinks, removing carbon from the atmosphere and storing it in their biomass or in the sediments below at roughly 10 times the rate of tropical forests.¹ Conversely, destruction or degradation of these habitats releases the carbon they have stored to become a source of greenhouse gases that perpetuate and compound climate change.

FIGURE 1.1
CRITICAL STORAGE
OCEAN + COASTAL HABITATS



83% of the global carbon cycle is circulated through the ocean. Coastal habitats cover less than 2% of the total ocean area, but account for approximately half of the total carbon sequestered in ocean sediments.

The Lagoon has been dramatically altered by development, with seawalls, bulkheads or other armoring along 70% of the shoreline (*see Action HE-2*). These hardened, artificial shorelines increase erosion, harm water quality, provide poor habitat, and can magnify storm damage and flooding. Preserving the remaining natural areas and enhancing armored shores through use of Living Shorelines is a cost-effective tool for improving habitat resiliency (*see Table 1.1*).

Living Shorelines use “softer,” more natural materials that buffer the effects of increased storms and floods, shield critical coastal infrastructure, and provide habitat for a variety of fish and wildlife (*see Figure 1.2*). They



Living Shoreline at Bryant Park (Photo credit: PBC-ERM)



TABLE 1.1 PROJECTS THAT CONTRIBUTE TO HABITAT RESILIENCY IN THE LAKE WORTH LAGOON

Breakwaters, Artificial Reefs and Oyster Reefs	Year(s)
Peanut Island Reef Complex	2007-2014 (Multiple projects)
Phil Foster Park Snorkel Trail Enhancement	2015
Old Bridge Park Restoration and Dock	2016
Sugar Sands Reef	2017
Southern Boulevard Bridge Reef	2018
Intertidal Habitat Creation	
Snook Islands Natural Area	2015, 2017
Peanut Island Reef Complex	2016
Bryant Park Islands	2014, 2017
Grassy Flats Natural Area	2015
Living Shorelines with Intertidal Wetland Planters	
Bryant Park Living Shorelines	2015, 2017
West Palm Beach- Currie Park and Osprey Park Living Shorelines	2017

SOURCE: PBC-ERM

can be installed in place of or as an enhancement to armored shorelines (see Figure 1.3).

Institutional and educational barriers currently discourage the use and acceptance of Living Shorelines by both the public and private sector. For example, regulatory agencies often lack institutional support for permitting alternatives to traditional shoreline stabilization techniques. Additionally, shoreline management is often viewed in a site-specific vacuum that overlooks the cumulative effects of shoreline hardening, rather than on a watershed basis that prioritizes ecological continuity and connectedness. A general lack of awareness and support for Living Shorelines among waterfront homeowners, developers and planning organizations hampers

more widespread use, a shortcoming that initiatives like the Southeast Florida Regional Climate Compact and The Nature Conservancy (TNC) seek to address.

Changes in coastal management policies and rules at the federal, state and local level would help to even the playing field for Living Shorelines. For example, in 2017 the U.S. Army Corps of Engineers authorized a simpler nationwide permit for certain types of Living Shorelines. State regulators could adopt a similar streamlined permit for natural shoreline solutions. Recently, Palm Beach County adopted changes to its Comprehensive Land Use Plan to encourage the use of Green Infrastructure, including Living Shorelines.

Changes also could include tax incentives to replace seawalls with Living Shorelines, and regulations that prioritize ecologically beneficial re-use of clean, dredged materials (see Action HE-5).

Incorporation of sea level rise projections in all Lagoon intertidal habitat restoration projects would ensure that public investments continue to pay dividends by providing opportunities for created or restored habitats to adapt and evolve over time.

Public education efforts could include workshops for marine contractors and demonstration projects that involve citizens in installation and monitoring. The Bryant Park and Jewell Cove Living Shoreline projects are existing examples of “SLR Community Stewardship Sites.” Bryant Park is used as a youth education site for the Lake Worth Waterkeeper’s “Lagoonies” program, and Jewell Cove hosts “Scientist For A Day” activities coordinated by the County’s Environmental Resources Management (ERM) staff. The Palm Beach Resilient

Islands, a joint project of ERM and The Nature Conservancy, is an upcoming education-stewardship site.

Finally, a publicly funded, willing-seller land acquisition program would create a sustainable funding mechanism for preserving critical habitats that perform vital services by sequestering carbon, absorbing storm surges, and filtering pollutants.

APPROACH:

- STEP 1 Measure sea level rise in the Lagoon watershed to identify and prioritize habitats at greatest risk of inundation and in greatest need of protection. Install a tide gauge at the Port of Palm Beach and/or document SLR at targeted areas in the Lagoon.
- STEP 2 Support funding and implementation of one or more demonstration projects to provide diverse and tangible examples of the ecological and aesthetic attributes of Living Shorelines.
- STEP 3 Support life-cycle analysis and monitoring of current and future living shoreline projects to quantify costs





and benefits versus traditional seawalls.

- STEP 4 Host workshops in Living Shoreline design and installation, to boost the pool of qualified consultants and contractors that can design, permit and install living shorelines.
- STEP 5 Consider tax incentives or mitigation credits for Living Shorelines.
- STEP 6 Support education about Living Shorelines and “climate-friendly” landscapes featuring drought-tolerant native groundcovers, shade-producing trees, rain gardens and other elements that reduce emissions from lawn mowers, power tools and air conditioners.

TIMEFRAME:

STEPS 1, 3, 4 and 5 can be initiated in FY 2021-2022

STEPS 2 and 6 are ongoing

COST ESTIMATE:

- STEP 1 \$
- STEP 2 \$ if using existing or already budgeted Living Shoreline projects as demo sites.
- STEP 3 \$-\$\$ depending on number of sites, length of monitoring and depth of cost analysis.
- STEP 4 \$
- STEP 5 No additional cost; Staff time only.
- STEP 6 \$

EVALUATING PROGRESS:

Number/Acres of Living Shoreline and Intertidal Restoration projects.



Figure 1.3: Currie Park Living Shoreline before and during September 2020 King Tide (Photo credit: PBC-ERM)

Number of Participants in activities at SLR Stewardship Sites.

Number of Participants in training workshop(s).

Updated rules, policies and codes.

Number of citizens receiving education about Living Shorelines and climate-friendly landscaping.

REGULATORY NEEDS:

Revisions to permitting rules, land development codes, property tax assessments or comprehensive plan schedules.

FUNDING:

County budget allocations, potential climate resilience or habitat restoration grants from NOAA, USFWS, or EPA, FDEP (Florida Resilient Coastlines Program) and National Fish and

Wildlife Foundation (National Coastal Resilience Fund Request)

POTENTIAL PARTNERS:*

PBC-ERM and the Office of Resilience, local municipalities, SE Florida Regional Climate Compact, UF/IFAS Extension and Florida Sea Grant, Treasure Coast Regional Planning Council, Florida Department of Environmental Protection, local chapters of the Florida Marine Contractors Association and American Society of Civil Engineers, regional academic and research institutions, and The Nature Conservancy.

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

ⁱ What is eutrophication? National Ocean Service website, <https://oceanservice.noaa.gov/facts/eutrophication.html>, 10/05/17.





PUBLIC OUTREACH AND ENGAGEMENT ACCOMPLISHMENTS AT A GLANCE



The annual LagoonFest community celebration of the Lagoon's beauty and value attracted 5,000 attendees and 80 exhibitors in 2019.

SEE ACTION PO-1



The Lake Worth Lagoon Initiative website was revamped in 2019 and received 8,500 visits from April 2019-Nov. 2020.

SEE ACTION PO-1



More than 10,500 pounds of trash was removed from nine restoration sites from 2014-2020.

SEE ACTION PO-1



900 citizen-scientists participated in an ANGARI Foundation project to deploy and track small wooden "drift cards" from 2017-2019 to improve understanding of how surface currents disperse marine pollution.

SEE ACTION PO-1



26 interns from 2017-2019 graduated from the Green Futures mentoring program that provides first-hand experience and training in the environmental science field.

SEE ACTION PO-2



Virtual field trips to the Lagoon and natural areas were expanded from 45 students in Spring 2020 to 70+ students in Fall 2020 in response to COVID-19 safety measures.

SEE ACTION PO-2



LagoonFest 2019, held on Flagler Drive in downtown West Palm Beach
(Photo credit: PBC-ERM)

PO-1 FOSTER PUBLIC AWARENESS AND ENGAGEMENT

ACTION: Increase direct citizen involvement and awareness of the intrinsic natural value of LWL. This direct connection may foster stewardship to protect and restore the Lagoon. Expand efforts to reach underserved audiences, including communities of color as well as those with disabilities. Accelerate use of digital technology and communications tools to broaden reach and leverage efforts.

IMPORTANCE:

Informed and engaged citizens are empowered to make changes in their own lives and in their communities that benefit the Lagoon.

RELATED ACTIONS:

WQ-4, SW-1, HE-2, PO-2, PU-1

BACKGROUND:

Public outreach plays a critical role in galvanizing support for protecting and improving the Lake Worth Lagoon. Educational efforts coordinated by the Environmental Resources Management (ERM) Department encompass mediums as diverse as print, web, social media, community events and person-to-person interactions (see *Figure 1.1*). ERM's professional staff regularly shares information about the Lagoon through presentations to community groups, educational venues, interactive, experiential events, media interviews, content creation shared through social and web platforms and

through collaborative partnerships with governmental and nongovernmental organizations.

Among key outreach achievements since 2013:

Lagoon Fest

LagoonFest is an annual festival that connects and engages attendees with the natural wonders in Lake Worth Lagoon. Celebrating what makes the Lagoon special, it is held each November since 2014 on the West Palm Beach waterfront. LagoonFest invites residents and visitors to interact with eco-themed exhibitors to learn about the Lagoon's habitats and inhabitants and what actions they can take to impact the lagoon in a positive way. The 2019 LagoonFest attracted 5,000 attendees, and featured more than 80 vendors with interactive, marine-themed displays, demonstrations, live animals, giveaways, kayaking/boat tours and more. This event is produced in partnership with the City of West Palm Beach, The Palm Beaches and the

Lake Worth Lagoon Initiative partners. The Covid-19 pandemic forced cancellation of the 2020 LagoonFest.

LagoonFest is scheduled to return beginning in 2021.

Discover A Local Treasure campaign

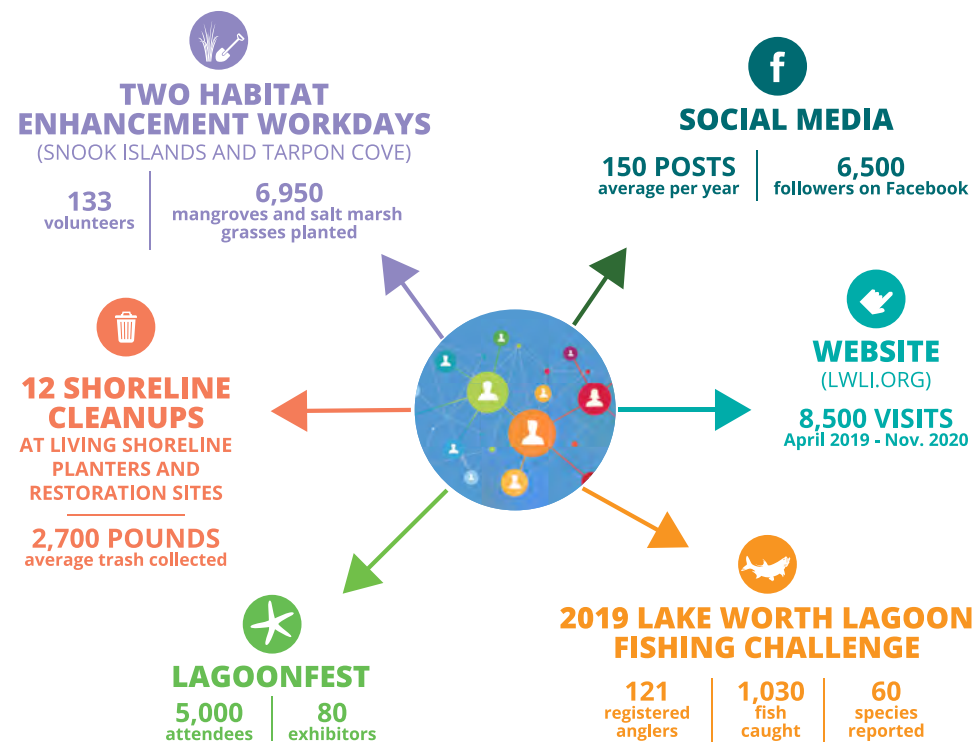
In partnership with Palm Beach County's tourism development arm, *The Palm Beaches*, ERM staff continue to support the "Discover A Local Treasure" marketing campaign to encourage residents to explore and enjoy their home waters. The campaign's branding includes a Lagoon-specific logo, and a costumed spotted eagle ray mascot called Laguna who appears at community events and children's programs. Multiple short, compelling videos produced for the

LAGOON
FEST



lake worth
LAGOON

FIGURE 1.1 2019-2020 COMMUNITY OUTREACH HIGHLIGHTS PALM BEACH COUNTY ENVIRONMENTAL RESOURCES MANAGEMENT



CLICK IMAGE TO ZOOM IN. CLICK AGAIN TO ZOOM OUT.

campaign showcase environmental restoration projects and the value of the Lagoon as seen through the eyes of people who live, work and play in, on and around it. The videos, including the introductory “[Lake Worth Lagoon: A Lake Worth Saving](#)” are housed on ERM’s YouTube, where they have been viewed 7,500 times as of 2020. They also are shared via Facebook and Instagram channels, with more than 25,000 views from 2015-2020.

Volunteer Opportunities

- ERM Public Outreach staff coordinates approximately 10 cleanup and planting events per year at Lagoon restoration sites. Additionally, partners such as LagoonKeepers.org,

Lake Worth Lagoon Waterkeeper and Cultivating Lake Worth Lagoon (a Homeschool group) conduct dozens more cleanup and planting efforts.

- In 2020, ERM staff coordinated a volunteer planting of 6,100 mangroves on a newly created island at Tarpon Cove Natural Area, with participation from 90 local residents and students. Partners included the Florida Department of Environmental Protection, National Oceanic and Atmospheric Administration, and the West Palm Beach Fishing Club. MANG LLC is an official “adopter” of Tarpon Cove Restoration Project. MANG has and continues to donate mangroves, coordinate volunteer planting projects and regular trash cleanups at the site.
- In 2019, ERM also hosted a community restoration event at Snook Islands Natural Area, with 850 mangroves planted by 43 volunteers participating along with the local company 4Ocean. [The event was filmed and posted to YouTube.](#)

Citizen-Science Opportunities

- ANGARI Foundation’s Drift Card Study in the LWL. This project enlisted volunteers to assist in deployment of small biodegradable floating cards to improve understanding of how currents and associated marine pollution flow within the Lagoon. More than 1,260 citizen scientists have participated in the study since it commenced in 2017, including those who decorated, released, or reported the location of the drift cards and those who provided access to drift card release sites. Although most of the recovered drift cards were retrieved inside the Lagoon, more than one-third were recovered outside along Atlantic beaches (see *Action WQ-5*).
- The Lake Worth Lagoon Fishing Challenge encourages anglers to document their catches over 2-week and 6-week tournaments with prizes awarded in several categories. This event, started in 2016, has contributed valuable information about the Lagoon’s sport fish stocks, especially fish caught in canals, reefs and areas throughout the Lagoon that are not sampled by the fisheries monitoring program.

A record 121 anglers participated in 2019, reporting catches of 139 snook, one tarpon and one spotted seatrout.

- ERM staff regularly coordinate marine debris cleanups at restoration sites during the Great American Cleanup and International Coastal Cleanup, where volunteers record the amount and types of trash they collect.



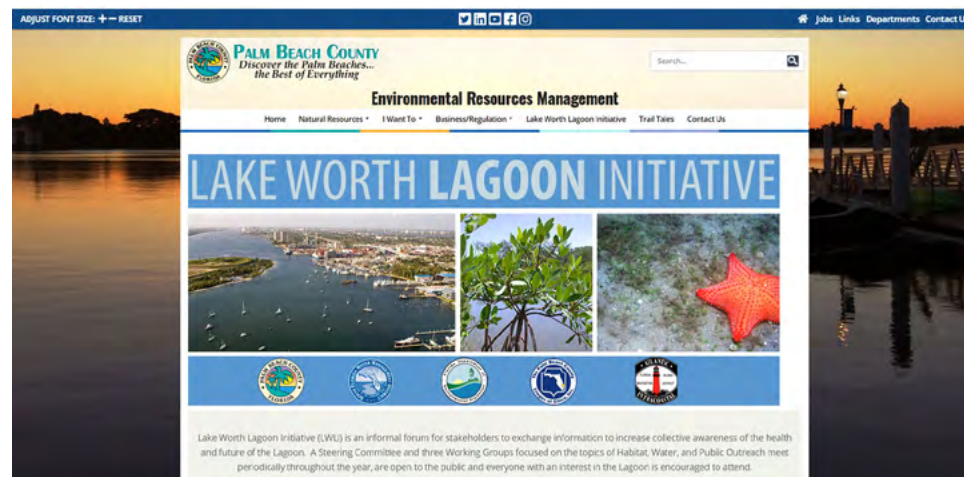
Above: Drift card

Right: Volunteers tossing drift cards into Lagoon (Photo credit: Palm Beach Post)

Digital Communications Tools

The Lake Worth Lagoon Initiative website ([LWLI.org](#)) was overhauled in 2019 with fresh images, improved navigation and an updated design compatible with mobile devices. Additionally, the Lake Worth Lagoon page on the County’s website is regularly populated with new, user-friendly content. ERM outreach staff also actively maintain Facebook and Instagram platforms. ERM’s quarterly Environmental Times Newsletter includes updates on Lagoon news and activities. Interested parties can subscribe via [LWLI.org](#).

Despite these successes, more can be done to foster stewardship that is truly reflective of the diversity of the Lagoon watershed’s residents. A concentrated commitment is needed to reach and engage disadvantaged communities often far removed from glitzy, sophisticated waterfront entertainment and residential areas. More educational messages and materials should be translated into Spanish to connect with the growing population of county residents with limited English language skills. Access to recreational, educational and volunteer activities in the Lagoon should be expanded to provide opportunities for those with physical



Screenshot of Lake Worth Lagoon Initiative website

disabilities or developmental challenges (see Action PO-2). These diverse communities influence the health of the Lagoon, yet often have limited knowledge of its value and fewer opportunities to directly connect with and be inspired by it.

APPROACH:

- STEP 1** Increase multicultural outreach and education to underserved communities. Improve awareness and enjoyment of the Lagoon through the many free recreational activities and facilities available to all County residents, and promote specific activities and values important to different cultures and communities.
- STEP 2** Expand availability of educational messaging and materials in Spanish, Creole or other languages as appropriate to target key audiences in the Lagoon watershed. Produce outreach materials listing public use facilities and activities, as well as project Fact Sheets, in various languages. Provide electronic versions for posting/distribution at schools, libraries, community centers.
- STEP 3** Enhance use of social media campaigns to deliver targeted, repeated, consistent educational messages that promote direct behavior changes to benefit the Lagoon (such as reducing single-use plastics, creating

Lagoon-friendly landscapes, or practicing responsible recreational use.

- STEP 4** Enlist support and assistance from Lagoon-dependent businesses, recreational groups and community service organizations to disseminate educational messages and materials. Consider a “Friend of the Lagoon” partnership recognition program utilizing the “Laguna” spotted eagle ray mascot (see Action PU-1).
- STEP 5** Increase opportunities for residents of all ages and abilities to participate in hands-in volunteer projects and citizen-science initiatives, such as the Adopt A Living Shoreline initiative (see Action CC-2).

TIMEFRAME:

STEPS 1 and 3 are ongoing, especially via outreach efforts to youth throughout Palm Beach County (see Action PO-2).

STEP 2 can occur as educational materials are revised and updated, beginning in FY 2021-2022.

STEP 4 is ongoing through partner fishing clubs and businesses involved in the Lake Worth Lagoon Fishing Challenge. Formal development of a “Friend of the Lagoon” program could begin in FY 2021-2022, and be expanded over time.

STEP 5 is ongoing through programs like LagoonFest, Lake Worth Lagoon Fishing Challenge and Adopt a Natural Area and can occur at any time. A logical first action is to identify local organizations that provide services to specific target audiences such as seniors or citizens with special needs to discuss appropriate activities for participation.

COST ESTIMATE:

STEP 1 \$

STEP 2 \$-\$\$

STEP 3 \$



Lake Worth Lagoon Fishing Challenge poster

STEP 4 \$ Staff time to engage businesses; expenditures required for decals, tent cards and other collaterals associated with a formal partnership program.

STEP 5 \$

EVALUATING PROGRESS:

Number of participants in volunteer events, citizen-science activities and LagoonFest.

Number of participants representing special target audiences.

Website metrics, including visitors and time spent on website.

Social Media Metrics, including Facebook/ Instagram followers, post reach and engagement rates over time.

Number of business partners.

REGULATORY NEEDS:

None

FUNDING:

Recurring county budget allocation; possible grant funding for specific programs; private sector donations or in-kind contributions

POTENTIAL PARTNERS:*

PBC-ERM, Local non-profit organizations such as ANGARI Foundation, Lagoon Keepers.org, Lake Worth Waterkeeper; MANG; Manatee Lagoon Eco-Discovery Center, special interest groups such as fishing, paddling or hiking clubs; Florida Fish and Wildlife Conservation Commission (through its Becoming an Outdoorswoman and Fishing/Hunting outreach programs)

**Listed Agencies have not committed funds and are subject to Agencies' budget approvals*



Volunteers installing shoreline plants at the South Cove natural area (Photo credit: PBC-ERM)



PO-2 PROMOTE YOUTH EDUCATION AND ENGAGEMENT

ACTION: Continue and expand formal and informal learning experiences and hands-on volunteer and career mentoring opportunities for youth throughout the Lagoon watershed.

IMPORTANCE:

The future health of the Lagoon depends on nurturing younger generations who understand and appreciate its value and are committed to protecting it.

RELATED ACTIONS:

PO-1, PU-2

BACKGROUND:

With increasing evidence that experiential learning is the most effective way to deliver impactful environmental education, Palm Beach County's Environmental Resources Management (ERM) Department has refocused its limited resources to create more direct hands-on learning opportunities.

In 2020 with the arrival of the Covid-19 coronavirus, and subsequent remote learning and social distancing mandates, ERM staff pivoted to create new experiential learning opportunities. Using only an iPhone and linking into science classrooms with a

teacher moderator, staff scientists were able to explore and enthusiastically share their intimate knowledge of the County's unique natural areas and restoration sites through live virtual field trips.

Using Google Meet in Spring 2020, then transitioning to YouTube Live in Fall 2020, the virtual field trips showcased diverse habitats from freshwater swamps and hardwood hammocks to mangrove-fringed tidal flats and large-scale restoration projects. In January 2021, ERM hosted a virtual event at Tarpon Cove for 55 students in 8th and 9th grade pre-Chemistry and Biology to learn about water quality, sediments, and marine life in the Lagoon. The magic of live video allowed the students to visually accompany ERM staff, discovering plants and animals simultaneously, ask questions and even make special requests to look more closely at natural artifacts found along the way.

In addition to being "Covid-19 Safe," the virtual field trips provided an unexpected opportunity to connect with children who had never before



PBC-ERM staff conducting a virtual field trip

seen a mangrove or a gopher tortoise, or even ventured much outside their rural communities in the western part of the county. Even students in urban areas are often unaware of the unique natural resources in their own backyard.

In 2020-2021, the virtual experiences expanded from one teacher and 20 students to multiple teachers and more than 200 students.

In addition to this formal classroom outreach, ERM staff also coordinates the following informal education and internship activities, all of which were temporarily suspended in 2020 due to the pandemic:



A young Lagoon resident plants a mangrove during a "Growing Up Wild" workshop (Photo credit: PBC-ERM)



- **The Tri-City Trailblazers**, launched in 2018, provides hands-on outdoor experiences to youth in the Glades Area communities of Pahokee, Belle Glade and South Bay, a population far removed from the Lagoon geographically and culturally. Participants explore and learn about the Lagoon over four different field days working alongside professional scientists, as they encourage and inspire a positive connection with nature. Partners include the South Florida Water Management District and Palm Beach County Youth Services. As of 2020, 35 students had participated. In 2021, the program was expanded to include the PBC-supported Youth Empowerment Centers in Riviera Beach and Lake Worth, with the goal of reaching and connecting disadvantaged youth throughout the county to nature and exposing them to new interests, activities and career paths.
- **The Adventure Awaits/Growing up Wild series** connects children under 14 and their parents/guardians to the natural wonders within the LWL through a variety of immersive activities. All the Lagoon-centered adventures are led by ERM staff scientists. Important Natural Areas such as Snook Islands are featured in this series. Four Growing Up Wild events have been held since the program's launch in 2018, with 85 children participating.
- **The Green Futures Summer Internship/Mentoring Program** began in 2017 through a partnership with Palm Beach County Youth Services. The Green Futures program pairs graduating high school and college-aged youth with environmental science professionals working in the LWL and throughout Palm Beach County. During a 4-week paid internship, participants between the ages of 17 and 22 assist ERM staff in duties such as water quality monitoring, mangrove planting and relocations, wetland vegetation and seagrass surveys, bird counts and site cleanups at restoration sites. To date, 26 interns have graduated from the program.
- **The Annual LagoonFest event** (see Action PO-1) features many interactive exhibitors, touch tanks and a popular Kids Zone with customized eco-themed activities for youngsters,



The three teens featured in the "Hidden Wild" documentary film kayaking in the Lagoon (Photo credit: PBC-ERM)

as well as appearances by a costumed spotted eagle ray mascot named "Laguna," along with several of her friends from partner agencies, who serve as engaging ambassadors for introducing children to the treasures found in the Lagoon.

- **"Hidden Wild" Documentary Film.** ERM, in partnership with The Palm Beaches, contracted with Day's Edge Productions to complete a documentary film called "Hidden Wild." It follows an adult expedition leader and three youth explorers on a 70-mile, 7-day journey through the County's wildest environments. The film will serve as both an eco-tourism tool/asset as well as a curriculum component for 7th and 10th grade science classes in the Palm Beach County School District beginning in 2021. ERM worked with a team of teachers and administrators from the school district to craft the lesson plans associated with the film. The project seeks to inspire the deeper connections required to develop an understanding and sense of "place" in the community. These connections will lead to personal actions that have

a positive effect on the environment. In addition to its use in schools, the film will be aired on South Florida PBS channels, and made available for streaming online.

APPROACH:

- STEP 1** Expand science-based K-12 education for youth in Palm Beach County, especially for underserved communities in the western basin and highly urbanized areas along the coast. Expand the number of schools participating in virtual field trips during the school year.
- STEP 2** Continue hands-on opportunities to learn and contribute to Lake Worth Lagoon improvements through the Adventure Awaits and Tri-City Trailblazers programs.
- STEP 3** Continue to model and promote career opportunities in STEM fields through the Green Futures Internships. Expand participation as staff resources allow.

STEP 4 Encourage other organizations offering youth education programs - including municipalities, Florida Power & Light’s Manatee Lagoon, the Loggerhead Marine Life Center, Loxahatchee River Center, Lake Worth Lagoon Waterkeeper, and John D. MacArthur Beach State Park - to utilize the strategies and steps presented in this Action to leverage and strengthen our collective impact.

STEP 5 Maximize distribution of the “Hidden Wild” documentary film through environmental education centers, community groups, private schools, home-school groups and online streaming on multiple platforms.

TIMEFRAME:

STEPS 1-3 Ongoing and should be maintained and expanded over time.

STEP 4 Programs to target specific youth communities and interests can be incorporated in existing summer camps and regular children’s programming beginning in 2021.

STEP 5 Classroom use of film starting in Spring 2021, along with broadcast on public television. Reach can be expanded throughout 2021 and beyond.

COST ESTIMATE:

STEPS 1, 2 and 3 \$ Generally staff time only, although some additional materials, equipment or supplies may be required.

STEP 4 \$ Primarily staff time, as existing programs can be adapted to meet the needs of specific groups.

Production of targeted educational materials, such as translations to Spanish, Creole or other languages, would entail direct costs.

STEP 5 \$\$

EVALUATING PROGRESS:

- Number of participants in virtual field trips and other education programs.
- Number of Green Futures interns who complete the program.
- Number of youth who volunteer for ERM restoration/cleanup events.
- Number of Community Service Hours awarded to high school students annually.
- Number of youth from underserved communities such as the Tri-City area who participate in Lagoon-related education and recreation activities.
- Number of 7th and 10th graders who view eco-adventure film (Hidden Wild) annually.

REGULATORY NEEDS:

None

FUNDING:

Recurring county budget allocation; possible grant funding for specific programs; direct or in-kind services provided by key public or private partners.



Photo montage: Snook Islands Natural Area

POTENTIAL PARTNERS:*

Palm Beach County School District, PBC Youth Services, ANGARI Foundation, SFWMD, Local municipalities, Florida Power & Light’s Manatee Lagoon, the Loggerhead Marine Life Center, Lake Worth Lagoon Waterkeeper, and John D. MacArthur Beach State Park, public and private organizations that provide youth education

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*



PUBLIC USES OF THE LAGOON ACCOMPLISHMENTS AT A GLANCE



The economic value of boating, fishing, snorkeling and birdwatching in the Lagoon is estimated at \$199.8 million a year.



More than 120 anglers caught more than 1,000 fish of 60 species in the 2019 Lake Worth Lagoon Fishing Challenge showcasing the Lagoon's value for sportfishing.



More than 162,000 people visited FPL's Manatee Lagoon Eco-Discovery Center in 2019 to view the hundreds of manatees that gather near the power plant outfall in winter.



Palm Beach County ranked sixth in the state in 2019 in registered boats, with 36,358.



Fourteen marinas located within the Lake Worth Lagoon are designated by the state as Clean Marinas, along with two Clean Boatyards.



From 2014 to 2019, 34 derelict vessels were removed from the Lake Worth Lagoon.

SEE ACTION PU-1



PU-1 ENSURE ADEQUATE, AND APPROPRIATE ACCESS TO THE LAGOON

ACTION: Provide adequate and equitable access for fishing, boating, paddling, diving and other recreational uses while safeguarding the Lake Worth Lagoon's natural resources from overuse and degradation.

IMPORTANCE:

Facilitating responsible recreational use will create a community of engaged stakeholders with a vested interest in protecting the Lagoon, while reducing impacts to living resources and building a foundation of trust important to successful resolution of conflicting uses.

RELATED ACTIONS:

PO-1, FW-1, FW-4, HE-1, HE-2, HE-3

BACKGROUND:

As one of Florida's wealthiest counties, with a per capita income of \$71,946 a year, Palm Beach County benefits from a large seasonal influx of well-heeled winter residents and a thriving year-round tourism industry valued at \$7.7 billion in 2019.¹ The County hosted more than eight million visitors that year, who supported 70,000 jobs in tourism-related businesses such as hotels, restaurants, stores, and transportation services.

The Lake Worth Lagoon plays an underappreciated but vital role in

the County's economic underpinning. Its contribution was confirmed in an economic valuation commissioned by the Everglades Law Center in 2020 (see Figure 1.1). The report concluded that the overall economic value of the Lagoon is \$5.37 billion - a figure that includes water-dependent activities and the commerce they support; the value of waterfront property and the increased spending tied to those higher property values; and the intrinsic worth of services such as improved water quality and erosion control provided by the Lagoon ecosystem.²

The value of outings to boat, fish, dive, snorkel or watch birds in the Lagoon is estimated at \$199.8 million a year. Residents who repeatedly enjoy Lagoon recreation account for almost two-thirds of that spending, compared with tourists who may only engage in one recreational activity during their stay.

Managing the Lagoon's resources requires a delicate balance of two disparate and sometimes diverging goals: Ensuring adequate access to the Lagoon's bounty for all who wish to enjoy it, while safeguarding it from



Aerial view of fishing pier and kayak launch at Snook Islands Natural Area (Photo credit: PBC-ERM)

overuse and degradation. Achieving this balance is further complicated by the geographic scale of the Lagoon itself: There is simply not enough space for everyone to enjoy unrestricted access without compromising the welfare of the humans and wildlife who share the waters, or the ecological integrity of the natural system.

Equitable access - particularly for underserved communities - is another important consideration. Both socio-economic and physical mobility limitations can serve as barriers to enjoyment of Lagoon amenities and resources that contribute to overall quality of life.



Exploring marine life along the Phil Foster Snorkel Trail
(Photo credit: The Palm Beaches)

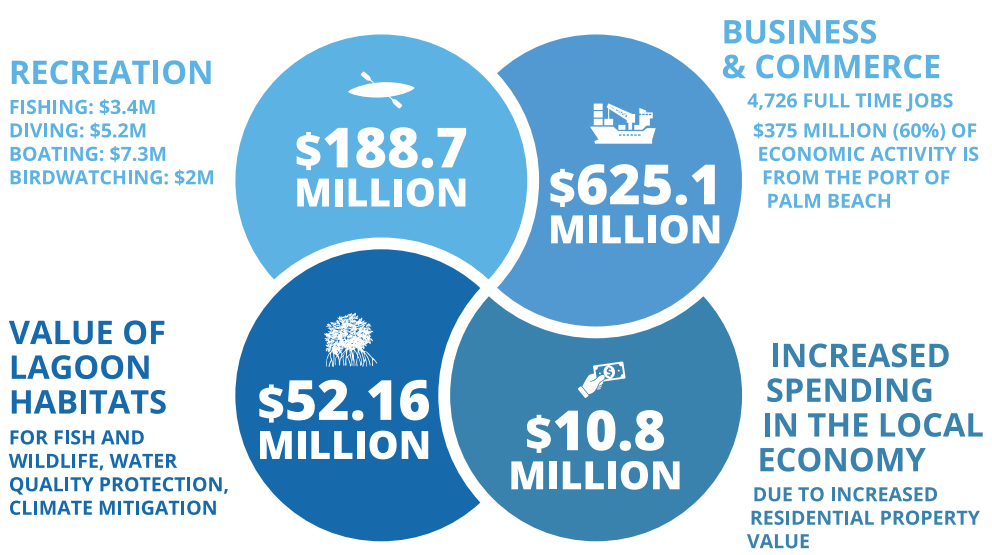


Ensuring Adequate, Appropriate and Equitable Access

Extensive armoring of the Lagoon shoreline with seawalls, along with the sheer density of private waterfront development, make sufficient public access challenging. Despite this, the County and municipalities bordering the Lagoon have created an impressive network of free public parks and natural areas, many with amenities such as picnic areas, fishing piers, boat ramps, floating day use docks, kayak launches, boardwalks and gazebos (see Table 1.1). These facilities are often constructed in partnership with other public and private entities such as the Florida Inland Navigation District. Examples include:

- The highly acclaimed Snorkeling Trail at Phil Foster Park near Blue Heron Bridge in the City of Riviera Beach. In 2018, close to 478,000 people visited this marked

MEASURING THE LAGOON’S WORTH
(ANNUAL FIGURES)



ADDITIONAL REAL ESTATE VALUE ON LAGOON WATERFRONT:
SINGLE-FAMILY HOME: \$73,761 CONDOMINIUM UNIT: \$11,292

SOURCE: Everglades Law Center and PFM Group Consulting LLC



Typical weekend crowd near Phil Foster Park (Photo credit: Palm Beach Post)

underwater route along artificial reefs constructed of rock, concrete and limestone, in addition to numerous whimsical underwater statues. Protected snorkeling opportunities also are available at Peanut Island Park near the Palm Beach Inlet. Both of these popular snorkeling sites are free to visit, easily accessed off a beach entry to the water, and have on-site lifeguards. Unregulated collection of tropical marine life for aquariums prompted FWC in 2019 to ban specimen collecting Heron Bridge.

- Peanut Island Park is a popular destination for boaters, offering fishing, swimming, snorkeling, picnicking and even overnight camping (for a small fee). Day trippers can catch a ferry or kayak over from Phil Foster Park to the 80-acre island created from material dredged from the Intracoastal Waterway, and several ecotour providers offer boat, kayak and paddleboard tours. The park itself is free to visit. Peanut Island recorded 240,930 visitors in 2018.
- Florida Power and Light’s Manatee Lagoon Eco-Discovery Center offers residents and tourists an opportunity to view the hundreds of manatees who congregate in the Riviera

Beach power plant’s warm-water outfall in the winter. The Center also hosts exhibits and a variety of educational programs for school and camp groups, daily walking tours of the center’s exhibits, yoga on the waterfront observation deck, and story and craft time for toddlers. More than 162,000 people visited the Center in 2019.

- Snook Islands Natural Area is a series of islands created from dredge spoil and restored to provide intertidal habitats for fish and wildlife. The area is leased to the County by the City of Lake Worth Beach and managed for passive recreational uses such as birdwatching, kayaking and boating, with boardwalks and a dedicated fishing pier used by an estimated 19,386 people in 2018.
- The South Cove Natural Area in downtown West Palm Beach offers a wheelchair-accessible boardwalk for watching

TABLE 1.1 VISITATION AT PUBLIC USE FACILITIES AT NATURAL AREAS AND PARKS IN LAKE WORTH LAGOON

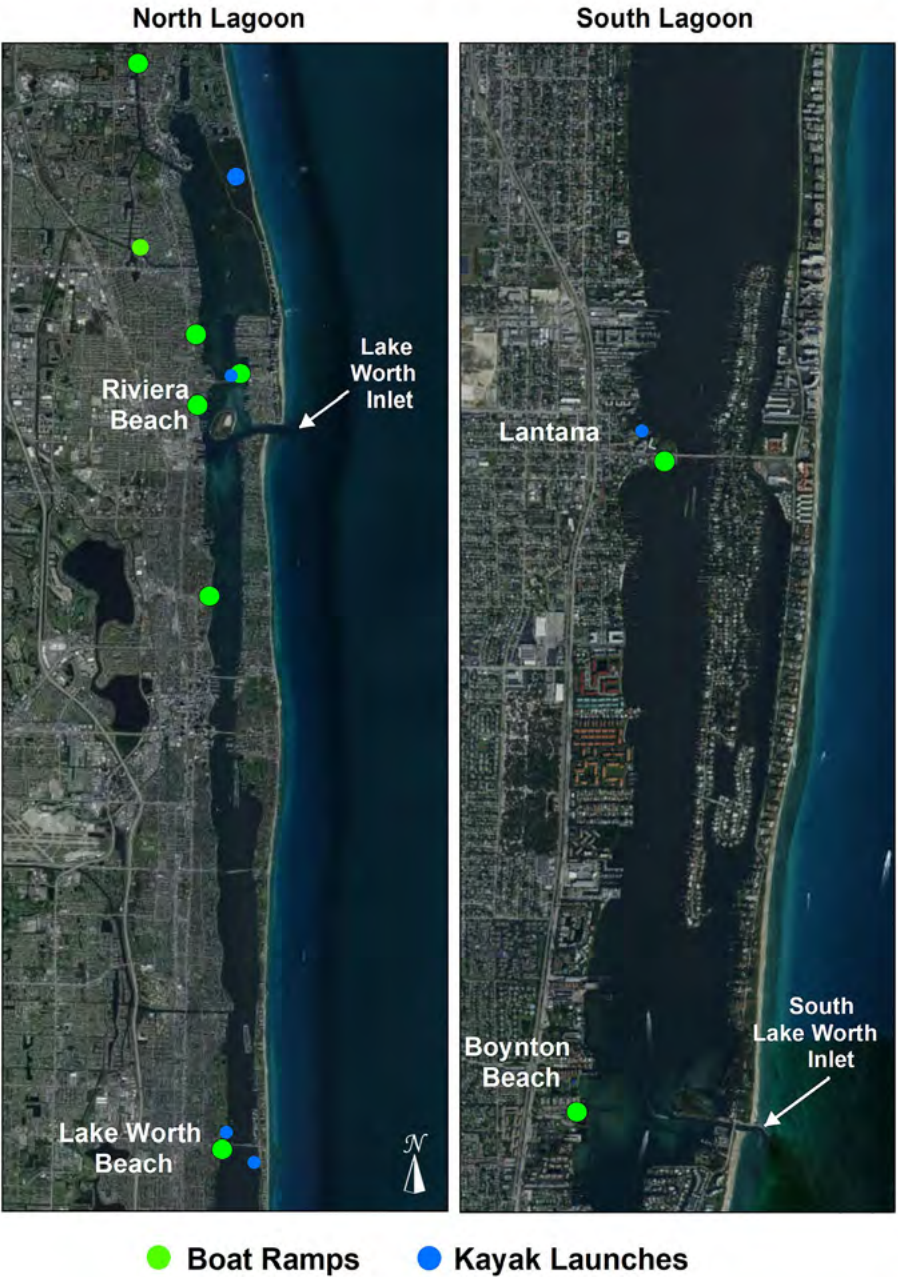
Boat Ramps and Parks	Annual Visitors	Daily Use Boat Trailer Permits
Jim Barry Light Harbor Park		2744
Phil Foster Park	478,000	6924
Annual Permits for all County Boat Ramps		4740

Parks, Natural Areas and Educational Centers	Annual Visitors
Peanut Island Park	240,930
FPL Manatee Lagoon Eco-Discovery Center	162,000
Snook Islands Natural Area	19,386
South Cove Natural Area	42,766

All numbers from 2018 except FPL-Manatee Lagoon numbers from 2019

SOURCE: PBC ERM

FIGURE 1.2 PUBLIC BOAT RAMPS AND KAYAK LAUNCHES



SOURCE: PBC-ERM

wildlife on three small manmade islands covering six acres of the Lagoon just north of the Royal Palm Bridge. Visitor use was estimated at 42,766 in 2018.

- Bryant Park in the City of Lake Worth Beach offers a boat ramp, shaded picnicking and sitting areas, and a

meandering waterfront promenade with sweeping views of the Lagoon.

- Summa Beach Park, in West Palm Beach, is the terminus of the scenic Flagler Drive linear waterfront park. It has a grassy open space with benches and beautiful views of the Lagoon. Numerous other parks are located within the overall Flagler Drive linear park.
- Eight public boat ramps and five dedicated kayak launches offer direct access to the Lagoon, along with several privately owned launch sites (see Figure 1.2 and Table 1.2). In 2018, the County sold 4,740 annual boat trailer permits, which grant unlimited access to all five County-owned boat ramps. Additionally, some 2,744 daily permits were issued at the Jim Barry Light Harbor Park, and 6,924 for Phil Foster Park.
- Paddling opportunities abound throughout the Lagoon, starting in the north with John D. MacArthur State Park, Munyon Island, Peanut Island, and Audubon Islands; and including restoration projects at Tarpon Cove, Grassy Flats, Snook Islands, Jewell Cove and Bryant Park in the central and south Lagoon.
- Recreational opportunities should be accessible to residents of all physical abilities and income levels. For example, ADA-compliant fishing areas serve wheelchair-bound anglers at Snook Islands Natural Area, Ocean Inlet, Phil Foster, Jim Barry Light Harbor, and Peanut Island Parks.

Managing Marine Debris

The non-profit LagoonKeepers.org has conducted quarterly marine debris cleanups at restoration areas since 2014. The County has funded this effort with \$100,000 from fines paid to the Pollution Recovery Trust Fund for pollution violations. Cleanups from 2014-2017 removed trash from the South Cove and Snook Islands Natural Areas, Ibis Isles Restoration and Bryant Park Islands. As new Living Shorelines were constructed and additional areas restored, Bryant Park, Jewell Cove, Osprey Park, Currie Park and the Grassy Flats Natural Area

TABLE 1.2 PUBLIC BOAT RAMPS AND KAYAK LAUNCHES

Public Boat Ramps	City
Juno Park Boat Ramp	North Palm Beach
Anchorage Park Marina	North Palm Beach
Jim Barry Light Harbor Park	Riviera Beach
Sportsman Park Boat Ramp	Lantana
Harvey Oyer Jr. Park	Boynton Beach
Lake Park Harbor Marina	Lake Park
Bryant Park Boat Ramp	Lake Worth Beach
Currie Park and Boat Ramp	West Palm Beach
Phil Foster Park Boat Ramp	Riviera Beach
Dedicated Kayak Launches	City
John D. MacArthur Beach State Park	North Palm Beach
Phil Foster Park	Riviera Beach
Snook Islands Natural Area	Lake Worth Beach
Jewell Cove Natural Area	Lake Worth Beach
Lyman Kayak Park	Lantana

Juno Park Boat Ramp not in the Lagoon proper but just north in North Palm Beach included in side by side map for boat ramps and kayak launches.

were added to the schedule. LagoonKeepers.org removed approximately 10,570 pounds of trash from all sites from 2014-2019.

The County’s Environmental Resources Management (ERM) also hosts monthly cleanups at several restoration projects throughout the Lagoon (see Action PO-1).

Promoting Responsible Boating

State records show Palm Beach County ranked sixth in the state in 2019 in registered boats, with 36,358. That is a decline of 4.7% from 2013. The Lagoon is a popular fishing

and boating destination itself, and a prime launching area for boaters bound for offshore waters via the Lake Worth (Palm Beach) and South Lake Worth (Boynton) Inlets.

The 125-foot-wide Intracoastal Waterway runs the entire length of the Lagoon, generating congestion especially on weekends and holidays. Slow speed zones have been established around inlets, bridges, boat ramps and other areas identified as safety concerns. Minimum or no wake zones also have been created to protect manatees, recreation areas like Peanut Island, and natural areas. A robust multi-jurisdictional law enforcement coalition enforces speed restrictions during the November 15-March 31 manatee season (see Action FW-1). In 2019, 85 manatees were killed by watercraft strikes statewide, with 3 of those, or 3.5%, in Palm Beach County.

Projected population growth will undoubtedly bring more people who want to enjoy boating, and commensurate challenges in protecting the Lagoon’s living resources. Seagrasses, for example, are particularly vulnerable to both direct (propeller scarring) and indirect (wave-generated re-



Fishing piers, some with wheelchair access, provide fishing opportunities for residents of all abilities (Photo credit: PBC-ERM)

suspension and scouring of bottom sediments) impacts from boating (see Action HE-3). Shorebirds require quiet, protected areas off-limits to people and pets to successfully raise chicks (see Action FW-4). User conflicts - between boaters, personal watercraft users, anglers, and paddlers, for instance - also are likely to increase.

Sustained education efforts would help reduce resource impacts resulting from increased recreation in the Lagoon.

Clean Boating Facilities and Sewage Pumpouts

There are 94 marine facilities in Palm Beach County, including marinas, boatyards, and retailers. The Florida Department of Environmental Protection (FDEP) has designated 22 of them as Clean Boating facilities, signifying adherence to Best Management Practices to protect habitats, manage waste and stormwater, prevent spills, and prepare for emergencies. Fourteen marinas located within the Lake Worth Lagoon are recognized as Clean Marinas, as well as two Clean Boatyards (see Table 1.3). Eight of the facilities offer sewage pumpouts for boaters. FDEP continues to offer funding assistance through the federal Clean Vessel Act (CVA) for the purchase, installation, and maintenance of pumpout equipment in marinas.

Additional public and private marinas throughout the County offer pumpouts, but are not designated as Clean Marinas - pointing to opportunities to provide technical assistance to help them apply for pumpout grants and achieve formal recognition.

Derelict Vessels

Abandoned and derelict vessels can cause environmental damage by physically impacting sensitive coastal habitats or by leaking sewage, oil, and fuel.

It is unlawful in Florida to store, leave or abandon any derelict

TABLE 1.3 DESIGNATED CLEAN MARINAS AND BOATYARDS IN THE LAGOON				
	Facility Name	City	Pumpout Type	Land Ownership
Marina	North Palm Beach Marina	North Palm Beach	Stationary	Private
Marina	Old Port Cove Marina	North Palm Beach	Vacuum	Private
Marina	Lake Park Harbor Marina	Lake Park	Vacuum	Public
Marina	Loggerhead Marina - South Lantana	Lantana	NONE	Private
Marina	Rybovich Marina	West Palm Beach	Vacuum	Private
Marina	Rybovich Marine Center	Riviera Beach	NONE	Private
Marina	Loggerhead Marina - Lantana	Lantana	NONE	Private
Marina	Palm Harbor Marina	West Palm Beach	Stationary	Private
Marina	Sailfish Marina Resort	Palm Beach Shores	NONE	Private
Marina	New Port Cove Marine Center	Riviera Beach	Stationary	Private
Marina	Palm Beach Town Docks	Palm Beach	Stationary	Private
Boatyard	Viking Yacht Service Center	Riviera Beach	NONE	Private
Boatyard	Rybovich Marina	West Palm Beach	NONE	Private
Marina	Loggerhead Marina - Riviera Beach	Riviera Beach	Vacuum	Private

SOURCE: Florida Department of Environmental Protection



Derelict vessel in water at Grassy Flats Restoration project (Photo credit: PBC-ERM)

vessel in state waters, but removal can be a long, drawn-out and costly process. From 2014 to 2019, 34 derelict vessels were removed from the Lake Worth Lagoon in partnership with LagoonKeepers.org. Costs for removal and disposal were shared by Palm Beach County, the Florida Inlet Navigation District (FIND), and the Florida Fish and Wildlife Conservation Commission (FWC). Palm Beach County annually dedicates \$20,000 from the Pollution Recovery Trust Fund for this purpose. In 2020, the County received two grants totaling \$93,450 from FWC to remove five derelict vessels in the Lagoon. The contract with LagoonKeepers.org to assist with future derelict vessels was extended to 2023.

[FWC](#) and the [City of Riviera Beach](#) both have websites documenting the location and status of derelict, at risk and abandoned vessels.

Mooring Fields

Mooring fields provide a mechanism for both increasing and managing boating access. By concentrating boats where essential services are more easily provided, they help to reduce boating-related impacts such as waste discharges and damage to seagrasses or reefs from anchoring.

Appropriate siting of mooring fields is critical. FDEP recently adopted a new environmental resource general permit for public mooring fields. This rule allows public mooring fields for up to 100 boats under certain conditions, including a demonstration of minimal adverse environmental effect on water resources.

The City of Riviera Beach is working on permitting three mooring fields in the northern lagoon with a total of 180 mooring buoys. Potential locations include near Phil Foster Park, along the Intracoastal Waterway between the city marina and Blue Heron Bridge, and south of Peanut Island. The city will also provide sewage pumpout service and a water taxi to ferry boaters to and from shore. The project is anticipated to begin in 2021. ERM staff will provide input on potential locations away from seagrasses or important shorebird areas.

Promoting Responsible Ecotourism

Millions of tourists from all over the nation and world visit Palm Beach County. Oceanside beaches, watersports, and waterfront dining and lodging are a major lure for visitors. Fishing, paddling or a stroll along a boardwalk are often part of the tourism experience. These visitors may stay only a short time but their influence on the health of the Lagoon is



Kayaking is a popular recreational activity in the Lagoon (Photo credit: PBC-ERM)

outsized because of the network of businesses they support.

Ecotourist providers that offer tours and rentals of boats, kayaks, paddleboards, and personal watercraft have a particular interest and opportunity in promoting ethical enjoyment of the Lagoon. Many already provide education about Lagoon wildlife and habitats as part of their services; this initiative could be formalized and expanded through a “Lagoon Steward” or “Lagoon-Friendly Business” certification for businesses who complete a training program and commit to ethical nature-based tourism experiences. Such a program would help to amplify consistent messages about Lagoon stewardship for both tourists and residents who patronize the businesses.

LagoonFest already offers a visible forum for residents to interact with ecotourism providers and for those businesses to showcase their commitment to eco-ethics. The one-day festival could also serve as an opportunity for the County to jump-start an ongoing partnership with ecotour companies.

The “Discover a Local Treasure” program developed by the County’s tourism marketing arm, *The Palm Beaches*, was launched in 2019 to promote summer staycations for residents. The marketing effort proved especially timely in 2020 by motivating residents to explore their own home waters. Spending by locals also provided some financial respite for tourist-dependent businesses hard hit by the economic slowdown during the worldwide pandemic. “Discover A Local Treasure” is an ideal foundation for ongoing initiatives aimed at inspiring community commitment to protecting the Lagoon.

APPROACH:

STEP 1 Continue to provide opportunities for residents and



tourists to experience the Lagoon. Ensure that people of all ages, physical abilities and income levels have access to recreational activities.

- STEP 2 Continue to support partnerships to remove marine debris and derelict vessels from Lagoon waters.
- STEP 3 Encourage all marinas, boatyards and retail facilities in the Lagoon to achieve designation through FDEP’s Clean Boating program. Support additional marina applications for assistance in funding sewage pumpouts.
- STEP 4 Actively participate in development of criteria for siting and design of mooring fields to minimize risks to critical habitats.
- STEP 5 Implement a certification program for ecotour businesses to foster community commitment to ethical enjoyment of the Lagoon.

TIMEFRAME:

STEPS 1,2 and 4 are ongoing.

STEP 3 can begin in 2021 and continue thereafter.

STEP 5 Certification program can be developed in 2021, for implementation beginning in 2022.

COST ESTIMATE:

STEP 1 \$-\$\$\$\$\$ depending on size and scope of access facility.

- STEP 2 \$-\$\$\$ for annual removal of marine debris and derelict vessels via contract with LagoonKeepers.org and ERM-coordinated volunteer cleanups.
- STEP 3 \$ staff time only.
- STEP 4 \$ staff time only.
- STEP 5 \$-\$\$ for promotion of marketing of certification program, development of training materials, workshops, and marketing collaterals (decals, signs, etc.). These tasks could be performed by a contractor, with support and assistance from staff.

EVALUATING PROGRESS:

Number of boat ramps, waterfront parks, fishing piers, paddling trails.

Number of Handicapped-accessible boardwalks, trails and piers.

Derelict Vessel Removed Annually.

Marine Debris Removed Annually.

Increase in Clean Marinas and Clean Boatyards.

Number of Certified Ecotourism Businesses.

REGULATORY NEEDS:

Mooring Fields-permitting compliance for proper siting and approval by FDEP.

FUNDING:

Recurring or special county/city budget allocations, FIND, FDEP

POTENTIAL PARTNERS:*

PBC-ERM and Parks and Recreation, The Palm Beaches, Local Municipalities, LagoonKeepers.org, FIND, FDEP, FWC

**Listed Agencies have not committed funds and are subject to Agencies’ budget approvals*

1 <https://www.thepalmbeaches.com/record-breaking-822-million-visitors-palm-beaches-2019>

2 ECONOMIC VALUATION OF LAKE WORTH LAGOON, PALM BEACH COUNTY, FL. Everglades Law Center & PFM Group Consulting LLC. 2020.

RESEARCH AND MONITORING

This update of the Lake Worth Lagoon Management Plan identifies the following specific needs for additional Research, Monitoring, Modeling and Mapping initiatives important for Plan implementation. Palm Beach County and the Lake Worth Lagoon Initiative welcome partnerships with government, university and non-profit organizations to address these needs.

RESEARCH NEEDS:

- Factors influencing the growth, persistence and distribution of Harmful Algal Blooms. (see Action WQ-4)
- Identify sources and pathways for bacterial contaminants that affect recreational use of Lagoon waters. (see Action WQ-4)
- Occurrence, transport and fate of microplastics and/or pharmaceuticals and personal care products (PPCPs) in treated effluent, septic and landfill leachate, agricultural runoff, and in downstream receiving waters in the Lagoon watershed. (see Action WQ-5)
- Lagoon-wide sediment transport, characterization and sourcing. (see Action SE-1)
- Feasibility study to identify strategies for reducing sediment loads within the C-51 Canal. (see Action SE-1)
- Quantify reductions in water, fertilizer, and pesticide use, and associated cost savings, for one or more golf courses in the Lagoon watershed that follow the FDEP

Manual of BMPs or are certified through Audubon International. (see Action SW-1)

- Cost-benefit analyses of one or more local Green Infrastructure and Low Impact Development projects versus traditional “gray” stormwater treatment. (see Action SW-2)
- Cost-benefit analyses of one or more Living Shoreline projects versus armored shoreline stabilizations. (see Action CC-2)
- Identify causes of seagrass declines and species shifts throughout the Lagoon. (see Action WQ-3)
- Assess vulnerability of natural resources at risk from climate change and sea level rise. (see Action CC-1)

MONITORING NEEDS:

- Increase water quality monitoring stations throughout the Lagoon, increase frequency of monitoring at existing stations and add monitoring of specific parameters necessary to support modeling efforts, pinpoint impairments or identify specific issues of concern related to water quality. (see Actions WQ-1, WQ-2,



Spotted eagle ray (Photo credit: PBC-ERM)

WQ-4, WQ-5 and WQ-6)

- Assess the scope, scale and distribution of microplastics in the watershed. (see Action WQ-5)
- Develop quantifiable criteria for measuring the long-term success of habitat restoration. (see Action HE-2)
- Expand monitoring for additional environmental parameters affecting seagrass health and density, such as freshwater discharges, temperature, turbidity, light, seasonality, wind-wave-boat wakes, and sedimentation. (see Action HE-3)
- Assess seasonal manatee use of the Lagoon including abundance, distribution, and habitat utilization. (see Action FW-1)
- Expand health assessment of sea



American Oystercatcher fledgling being tagged, weighed and measured (Photo credit: PBC-ERM)

turtles in the Lagoon to evaluate overall condition and explore potential connections with food availability and presence of Fibropapilloma virus. (see Action FW-2)

- Conduct fisheries sampling in the Southern Lagoon, using statewide Fisheries Independent Monitoring protocols. (see Action FW-3)
- Assess bird utilization throughout the Lagoon and identify publicly accessible areas worthy of nomination to the Great Florida Birding Trail. (see Action FW-4)
- Implement a collaborative acoustic telemetry network to track species of interest within the Lagoon (fish, turtles, manta rays, etc.). (see Action FW-5)
- Install a tide gauge at the Port of Palm Beach and/or document Sea Level Rise at targeted areas in the Lagoon. (see Actions CC-2)
- Increase opportunities for residents of all ages and abilities to participate in hands-on volunteer projects and citizen-science monitoring programs. (see Actions PO-1 and PO-2)

MODELING NEEDS:

- A pollutant loading model to estimate contributions of nutrients and other pollutants currently entering the Lagoon, and potential reductions from implementation of



Manatee rescue in the Lake Worth Lagoon (Photo credit: PBC-ERM)



New mangroves at Snook Islands Natural Area (Photo credit: PBC-ERM)

- BMPs and other water quality improvements. (see Actions WQ-2, SW-, WW-1, WW-2)
- A hydrodynamic estuary model assessing physical and meteorological influences on Lagoon ecology, to assist in evaluating the effects of freshwater inflow, tidal flushing, sedimentation, sea level rise and other environmental stressors. (see Actions WQ-2, WQ-6 and SE-1)
 - Comprehensive shoreline characterization study incorporating wind and wave modeling to determine most suitable locations for restoration and living shoreline enhancements.
 - Update seagrass recovery targets for Lagoon segments based on light attenuation, sediment types, impact of freshwater discharges, and effect of wind and waves on the resuspension of sediments and other factors. (see Action HE-3)
 - Identify current and potential flooding impacts to low-lying communities throughout the watershed due to king tides and future sea level rise. (see Action CC-1)

MAPPING NEEDS:

- Inventory and map all natural hardbottom areas to characterize communities and identify monitoring and management needs. (see Action HE-1)
- Map “hot spots” of chronic sewer overflows and problem areas, in conjunction with identification of environmental risk factors that increase probability of wastewater spills and overflows. (see Action WW-1)
- Inventory and map septic systems with greatest potential to contribute problematic nutrients to the Lake Worth Lagoon based on proximity to Lagoon, age of system, density, soil conditions, depth of groundwater table, potential for denitrification, vulnerability to sea level rise and other relevant factors. (see Action WW-2)
- Map muck and sediments throughout the Lagoon (see Action SE-1)



FINANCING AND IMPLEMENTATION

This chapter describes how the Lake Worth Lagoon Management Plan will be implemented and funded in partnership with the Florida Legislature; the Lake Worth Lagoon Initiative; Palm Beach County; municipal governments; state, regional and local agencies; non-governmental organizations; and other stakeholders with a vested interest in the health of the Lagoon.

THE ROLE OF THE LAKE WORTH LAGOON INITIATIVE

The Lake Worth Lagoon Initiative (LWLI) has primary responsibility for implementing the Management Plan. LWLI is an informal forum for stakeholders to facilitate information-sharing and develop research, restoration and education strategies to improve Lagoon health. A Steering Committee and three topic-driven Working Groups (Habitat, Water, and Public Outreach) meet three times each year. The 5-member Steering Committee is composed of representatives from Palm Beach County Board of County Commissioners and the League of Cities; the Florida Inland Navigation District (FIND); a Governing Board member of the South Florida Water Management District; and the Southeast District Director of the Florida Department of Environmental Protection (FDEP) (see Figure 1.1).

Palm Beach County's Environmental Resources Management (ERM) staff provide administrative support and coordination for the LWLI.

LWLI partner responsibilities include:

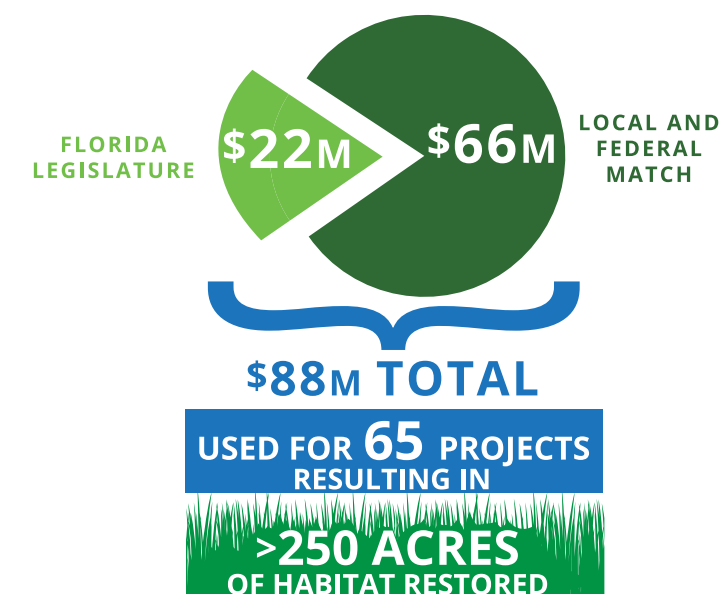
- Submitting the annual request from the Lake Worth Lagoon Initiative

(LWLI) to the Florida Legislature to finance priority projects such as habitat restoration, storm water retrofits and septic-to-sewer conversions. Palm Beach County coordinates the application and project ranking process.

Projects submitted for Legislative consideration are reviewed and forwarded by the LWLI Steering Committee to the Palm Beach County Board of County Commissioners. Adoption of the Lagoon Management Plan by formal resolution is required of entities offering projects for consideration. Partners and applicants are encouraged to advocate on behalf of the LWLI funding request.

- From 2013-2020, the Legislature allocated \$5.9 million in grant funds, matched by \$5.9 million in local funds, for a total of \$11.9 million in restoration and water quality projects. The Legislature approved project-specific funding for the Lagoon in FY 2021, but the funds were vetoed by the Governor (see Table 1.1).

FINANCING LAGOON IMPROVEMENTS



- Identifying grant opportunities to achieve Plan objectives.
 - From 2014-2020, FIND awarded \$1.2 million in grant funds from its Waterway Assistance Program for County-sponsored projects within the LWL.¹ These grants were matched 1-to-1 by local funds to leverage \$2.5 million for LWL habitat and public access projects (see Table 1.2).
 - Also, during this timeframe, FIND provided \$8.1 million in grant funds, matched by \$37.9 million in local funds, to construct municipal public use facilities,



Starfish and seagrass (Photo credit: PBC-ERM)

TABLE 1.1 PROJECTS FUNDED BY THE LWL INITIATIVE LEGISLATIVE FUNDING REQUEST FROM 2013-2021

FY	PROJECT NAME	AMOUNT REQUESTED	FUNDING AWARD	MATCHING FUNDS	TOTAL PROJECT COST
2021	4 projects received a preliminary allocation of \$850,000*				
2018	City of Riviera Beach - Singer Island South	\$1,183,000	\$750,000	\$750,000	\$1,500,000
2017	Lost Tree Village-Septic to Sewer	\$1,646,750	\$1,000,000	\$1,000,000	\$2,000,000
2016	Lake Worth Lagoon Living Shorelines	\$500,000	\$500,000	\$500,000	\$1,000,000
2016	Tarpon Cove Mangrove Islands and Seagrass	\$1,500,000	\$1,300,000	\$1,300,000	\$2,600,000
2016	Monitoring and Administration	\$200,000	\$200,000	\$200,000	\$400,000
2014	Peanut Island Reef Complex in Riviera Beach	\$75,000	\$90,000	\$90,000	\$180,000
2014	West Palm Beach Currie Park Living Shoreline	\$300,000	\$360,000	\$360,000	\$720,000
2014	Palm Beach Grassy Flats Restoration	\$900,000	\$960,000	\$960,000	\$1,920,000
2014	Bryant Park & Old Bridge Park Living Shorelines in Lake Worth	\$400,000	\$515,000	\$515,000	\$1,030,000
2014	Monitoring and Administration	\$400,000	\$150,000	\$150,000	\$300,000
2013	Monastery Artificial Reef at Peanut Island	\$250,000	\$150,000	\$150,000	\$300,000
TOTALS		\$7,354,750	\$5,975,000	\$5,975,000	\$11,950,000

*Preliminary allocation vetoed in final state budget

SOURCE: PBC-ERM

- marinas, and waterfront enhancements (*see Action PU-1*).
- Working collaboratively with each other and additional partners to enhance the Lagoon (*see Table 1.3*).
 - From 2014-2020, the Florida Department of Transportation contributed \$3.9 million in Lagoon improvements through mitigation projects at Snook Islands and Bryant Park Islands.
 - Contributions from 10 agencies and organizations brought the \$3.5 million Grassy Flats intertidal restoration to life. The project received a \$960,000 legislative appropriation, matched by \$842,000 from the U.S. Army Corps of Engineers, \$794,000 from the

- County, and contributions from the Town of Palm Beach, City of Lake Worth, U.S. Fish & Wildlife Service, National Oceanic and Atmospheric Administration, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, Marine Industries Association, and West Palm Beach Fishing Club.
- The Florida Department of Environmental Protection contributed \$346,000 toward restoration at Grassy Flats, artificial reefs at Phil Foster Snorkel Trail and Sugar Sands, and Living Shoreline mangrove pods throughout the Lagoon.
 - FIND and local maritime contractors have provided

critical support for restoration by donating lagoon-compatible material from dredging and marina projects to fill historic dredge holes and create intertidal habitat and islands (*see Action HE-2*). This contribution resulted in an \$10.8 million cost savings on the Tarpon Cove restoration project alone, and is expected to save \$15.8 million on the Bonefish Cove restoration slated for completion by 2023.

- The South Florida Water Management District provides sampling and laboratory analysis for monthly water quality monitoring and for assessment of the sediment trap installed on the C-51 Canal. SFWMD installed and maintains two automated water quality stations in the Central Lagoon and a nutrient analyzer at S155 to support data collection related to freshwater flow and sediment discharges to the Lagoon (*see Action WQ-1*).
- FWC provides significant direct and in-kind contributions to Lagoon management through fisheries, oyster and habitat monitoring, as well as for restoration via delegated funds from the U.S. Fish and Wildlife Service (USFWS). A total of \$1.45 million in funding came from FWC, USFWS, NOAA and local partners between 2014-2020.
- Adopting rules, policies and ordinances that uphold and encourage responsible use of the lagoon.
 - SFWMD and local municipalities in the Lagoon watershed are formally requested to adopt a resolution supporting the restoration, monitoring, funding and education strategies presented in each Management Plan update.
 - As of 2020, Palm Beach County and 20 municipalities have enacted a state model ordinance that prohibits lawn fertilizer application when flood or storm watches are issued, or heavy rains are expected (*see Action SW-1*).
 - Palm Beach County adopted a policy requiring that climate change/sea level rise impacts be factored

TABLE 1.2 FLORIDA INLAND NAVIGATION DISTRICT WATERWAYS ASSISTANCE PROGRAM (WAP) PROJECTS IN LAKE WORTH LAGOON 2013-2020

Complete list-Florida Inland Navigation District- Waterways Assistance Program Projects in Lake Worth Lagoon 2013-2020. (Table adapted from FIND website)

PROJECT NAME	PROJECT NUMBER	PROJECT SPONSOR	GRANT AMOUNT	TOTAL COST
Old Bridge Park Natural Area	PB-14-182	Palm Beach County	\$251,875	\$503,750
Peanut Island Erosion Control & Reef Project	PB-14-184	Palm Beach County	\$166,800	\$333,600
West Palm Beach Living Shorelines	PB-15-186	Palm Beach County	\$391,175	\$782,350
Anchorage Park	PB-NPB-17-197	Village of North Palm Beach	\$200,000	\$400,000
Municipal Marina Construction - Phase B1	PB-RB-13-177	City of Riviera Beach	\$750,000	\$4,341,396
Riviera Beach Marina Construction - Part B, Phase I	PB-RB-14-185	City of Riviera Beach	\$75,000	\$150,000
Riviera Beach City Marina Dock G and Lifts	PB-RB-16-189	City of Riviera Beach	\$1,157,500	\$2,315,000
Riviera Beach Marina Pier F	PB-RB-17-196	City of Riviera Beach	\$1,200,000	\$2,400,000
Currie Park Boat Access, PH II	PB-WPB-16-190	City of West Palm Beach	\$428,000	\$856,000
Anchorage Park Part 2	PB-NPB-18-202	Village of North Palm Beach	\$300,000	\$600,000
Town of Palm Beach Docks Replacement Phase I	PB-PB-180-201	Town of Palm Beach	\$325,000	\$650,000
Riviera Beach Marina Final Docks Phase I	PB-RB-18-199	City of Riviera Beach	\$325,000	\$650,000
Ocean Inlet Park Marina Phase I	PB-18-200	Palm Beach County	\$200,000	\$400,000
Riviera Beach Municipal Marina Pier E		City of Riviera Beach	\$250,000	\$500,00
Riviera Beach Public Mooring Field Phase I		City of Riviera Beach	\$75,000	\$125,000
Lake Worth Inlet Flood Shoal Dredging Phase I		Palm Beach County	\$140,000	\$280,000
Town of Palm Beach Dock Replacement		Town of Palm Beach	\$3,062,000	\$32,300,000
		TOTALS	\$19,297,350	\$47,087,096

SOURCE: PBC-ERM

TABLE 1.3 COMPLETED PROJECTS BY FUNDING SOURCE

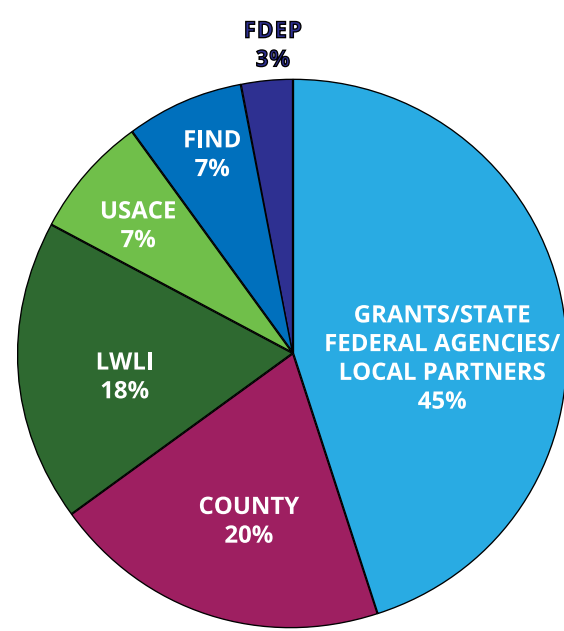
YEAR COMPLETED	PROJECT NAME	LWLI	FIND	FDOT	FDEP	FWC/USFWS/NOAA/TNC/LOCAL PARTNERS	USACE	PBC	DONATED MATERIAL	TOTAL PROJECT COST
2014	Bryant Park Islands			\$3,674,983		\$416,658		\$340,000		\$4,431,641
2015	Grassy Flats	\$960,000			\$110,000	\$788,020	\$842,000	\$794,475		\$3,494,495
2015	Bryant Park Living Shorelines (Phase I)	\$64,908				\$40,000		\$64,908		\$169,816
2015	Peanut Island Erosion Control & Reef Project	\$90,000	\$68,796							\$158,796
2016	Peanut Island Reef Complex		\$58,135					\$58,135		\$116,270
2016	Jewell Cove Living Shorelines	\$150,000				\$100,000		\$150,362		\$400,362
2017	Phil Foster Snorkel Trail and Sugar Sands Reef				\$150,000			\$4,918		\$154,918
2017	Currie Park Living Shoreline	\$303,502	\$321,715					\$45,542		\$670,759
2017	Osprey Park Living Shoreline	\$56,498	\$34,377					\$1,550		\$92,425
2017	Bryant Park Living Shorelines (Phase II)	\$168,954						\$168,954		\$337,908
2017	Old Bridge Park Restoration & Dock		\$251,875					\$157,925		\$409,800
2018	Lyman Kayak Park Living Shoreline							\$16,209	\$3,960	\$20,169
2018	Snook Island Modifications			\$163,070						\$163,070
2018	Grassy Flats Modifications							\$62,754		\$62,754
2018	Bryant Park Repairs			\$64,994						\$64,994
2018	Southern Boulevard Bridge Reef								100% donation of material and placement	
2019	Tarpon Cove (Phase I)	\$331,073				\$43,142		\$444,320	\$11.5 million	\$818,535
2020	Lake Worth Inlet Flood Shoal Phase I - Modeling		\$140,000			\$70,000		\$70,000		\$280,000
2020	LWL Mangrove Pods				\$86,963					\$86,963
		\$2,124,935	\$874,897	\$3,903,047	\$346,963	\$1,457,820	\$842,000	\$2,380,052	> \$11.5 million	\$11,933,674

SOURCE: PBC-ERM



- into all future capital improvement projects (see Action CC-1).
- FWC banned harvest of tropical aquarium species at the Blue Heron Bridge dive site effective April 1, 2019.
 - The Town of Palm Beach enacted an ordinance prohibiting use of plastic straws and stirrers in 2019. Palm Beach and other coastal municipalities are working together on measures to restrict all single-use plastics.
 - Increasing awareness and appreciation of the Lagoon’s biological diversity and importance to regional quality of life.
 - LWLI partners actively support and promote the annual LagoonFest celebration and the Lake Worth Lagoon Fishing Challenge, along with shoreline cleanups and other hands-on volunteer opportunities (see Action PO-1).

FIGURE 1.2 FUNDING BREAKDOWN - ALL AGENCIES (\$11.9M TOTAL)



The Role of Palm Beach County

Palm Beach County is a driving and cohesive force for comprehensive Lagoon management. The County coordinates both the Lake Worth Lagoon Initiative and the Lake Worth Lagoon Management Plan, dedicating significant staff time and financial resources for Lagoon priorities. This commitment totaled nearly \$2.4 million in funding for habitat restoration

and enhancement projects alone from 2014-2020, 20% of expenditures from all sources (see Table 1.4).

Additionally, the County funds all or part of major Lagoon monitoring programs - including water quality, seagrass, fisheries, sea turtles and oysters - at a prorated cost of \$223,000 a year (see State of the Lagoon chapter). Expanding those base monitoring programs to include shorebird surveys and creation of an Acoustic Telemetry Array in the north LWL, both recommended new actions in this Plan update, would add \$40,000 to the County’s annual monitoring costs (see Figure 1.3).

ERM staff also develop and implement an array of innovative community education and involvement programs, such as virtual field trips for students launched in 2020 in response to COVID-19, and the Green Futures Summer Internship/ Mentoring Program (see Actions PO-1 and PO-2).

FINANCING STRATEGY

The County pursues dedicated and variable funding for Lagoon priorities at all levels of government, and from private and non-profit sources. The Lake Worth Lagoon Initiative- Legislative Funding Request Program has been a critical component of many projects and partnerships, yet its dependence on legislative approval each year makes it difficult to activate the kind of multi-year, multi-scale projects needed to achieve watershed-wide restoration and monitoring.

The major objectives for the 2021-2031 timeframe of this Management Plan recognize this shortcoming and seek to diversity and identify dedicated, recurring, and durable funding for the Lagoon:

- Resume annual appropriations from the Florida Legislature for priority projects endorsed by the Lake Worth Lagoon Initiative Steering Committee.
- Secure funding in State agencies’ (line item) budget.
- Secure Federal Legislative authorization through the

- Water Resources Redevelopment Act (WRDA) to support restoration initiatives through the U.S. Army Corps of Engineers.
- Aggressively pursue municipal, state, and federal grant partnerships for Lagoon improvement.
 - Maintain local funding at existing levels to provide matching funds to accomplish more with public dollars.
 - Continue partnerships with the maritime community to facilitate beneficial use of dredged material.
 - Promote public-private partnerships with the potential for

TABLE 1.4 LWL MONITORING CURRENT CONTRACTS AND COST SCHEDULE

ACTIVITIES	TOTAL	ON ANNUAL BASIS
Fixed Transect Seagrass (2yr) 2020-2021	\$118,530	\$59,265
Sea Turtle Monitoring (2yr) 2020-2021	\$76,000	\$38,000
Oyster Monitoring (3 yr) 2020-2022	\$198,000	\$66,000
Fisheries Monitoring (3yr) 2021-2023	\$179,549	\$59,850
TOTAL	\$572,079	\$223,115
MONITORING THROUGH PARTNERSHIPS		
Bird Monitoring and tagging (ERM and FWC staff time and equipment)	\$30,000	\$30,000*
Acoustic Telemetry Array: WPB Fishing Foundation, PBC and FWC partnership	\$28,000	\$10,000*
TOTAL	\$58,000	\$40,000
GRAND TOTAL	\$630,079	263,115

*Equipment and staff time estimate

SOURCE: PBC-ERM



- bottom-line benefits for LWL businesses, land trusts, environmental organizations and others.
- Establish a LWL Restoration Fund as a subset of FDEP’s Florida Pollution Recovery Trust Fund to direct state fines collected from enforcement of environmental laws within the Lagoon watershed to Lagoon restoration.

IMPLEMENTATION STRATEGY

The 2021 Update of the LWL Management Plan presents specific Action Plans and strategies to build upon progress made in improving the Lagoon and address emerging issues that will require action in the coming decade.

This update of the Plan strategically embraces watershed management as a central theme, acknowledging that the health of the Lagoon is inextricably connected to the activities and inputs occurring in a voluminous watershed that is 42 times the size of the Lagoon itself.

Mechanisms for Implementation

Adoption of the Plan through a formal Resolution by its contributors will provide a confirmation of the consensus that is essential for securing future resource allocation and grant funding.

Local governments are encouraged to integrate the LWL Management Plan’s goals and priorities into their comprehensive land use plans, to elevate and codify consideration of the Lagoon in their long-range blueprint for growth. Likewise, incorporating Plan strategies and actions into ordinances, land development codes, operating protocols, regional restoration plans and other guidance documents can lead to significant progress in Lagoon protection and enhancement.

Municipalities and additional agencies of the state (such as drainage districts) are required to adopt the 2021 Lake Worth Lagoon Management Plan Resolution (see Figure 1.4) to submit projects for the LWLI-Legislative Funding Request.

¹ The Waterway Assistance Program was established by the Florida Legislature and FIND to address problems associated with the Atlantic Intracoastal Waterway and other District-owned waterways.

Figure 1.4 DRAFT LWL RESOLUTION 2021

A RESOLUTION OF THE _____
IN SUPPORT OF THE 2021 LAKE WORTH LAGOON
MANAGEMENT PLAN

WHEREAS, the Lake Worth Lagoon restoration efforts have been underway since 1998 and the State of Florida designated the lagoon a priority water body in 2004 in section 373.453, Florida Statutes; and

WHEREAS, in 2008, the Lake Worth Lagoon Initiative (LWLI) was established to provide interagency coordination with the purpose of seeking awareness, support and legislative funding assistance for projects that will improve and protect the natural resources within the watershed; and

WHEREAS, the LWLI provides partnerships between government agencies and stakeholders that incorporate and combine funding acquisition support, outreach and technical expertise, increase stakeholder and public awareness; and

WHEREAS, the 2021 Lake Worth Lagoon Management Plan Update (LWLMP) is a revision to the 1998, 2008 & 2013 LWL Management Plans, which outline actions and projects to restore the ecological health of the water body; and

WHEREAS, the _____
_ desires to support the 2021 LWLMP, which provides for the following elements:

Continue construction of priority environmental enhancement and restoration projects, increase stakeholder participation, increase partnering efforts for funding support and acquisition, complete Action Plans, increase public awareness and outreach efforts, and prioritize and combine data collection efforts to assess project successes and guide future management decisions; and

NOW THEREFORE, BE IT RESOLVED BY _____:

Section 1: The foregoing recitals are hereby adopted and ratified.

Section 2: This Resolution shall take effect immediately upon adoption.

PASSED and ADOPTED this _____day of _____, 2021.

LAKE WORTH LAGOON
INITIATIVE

MEMBERSHIP

The business of the LWLI shall be managed by a 5-member Steering Committee and 3 Working Group Leads.

The Steering Committee shall consist of one representative from each of the following entities:

- Palm Beach County Board of County Commissioners
- Governing Board member - South Florida Water Management District
- Director of the SE District Florida Department of Environmental Protection (FDEP)
- Palm Beach County League of Cities
- Florida Inland Navigation District (FIND)

MEMBERSHIP-WORKING GROUP LEADS

Working Groups shall cover major areas of emphasis:

Water: An appointed technical representative by the Governing Board Member of SFWMD

Habitat: An appointed technical representative by the Director of ERM.

Public Outreach: An appointed representative by the Director of ERM

Working Group Leads will organize and schedule Working Group meetings, prepare agendas, maintain minutes and be responsible for communicating, to the LWLI, information from their respective working group.



Oystercatchers hanging out in the Lake Worth Lagoon (Photo credit: PBC-ERM)

ACRONYMS AND ABBREVIATIONS

BMP Best Management Practice

CERP Comprehensive Everglades Restoration Plan

CWA U.S. Clean Water Act

DEO Department of Economic Opportunity

EPA U.S. Environmental Protection Agency

FDACS Florida Department of Agriculture and Consumer Services

FDEP Florida Department of Environmental Protection

FDOH Florida Department of Health

FWC Florida Fish and Wildlife Conservation Commission

FWC-FWRI FWC Fish and Wildlife Research Institute

FIND Florida Inland Navigation District

FPL Florida Power & Light

GIS Geographical Information Systems

HAB Harmful Algal Bloom

HBOI Harbor Branch Oceanographic Institute

HOA Homeowner Association

ICW Intracoastal Waterway

IRL Indian River Lagoon

LWDD Lake Worth Drainage District

LWL Lake Worth Lagoon

LWLI Lake Worth Lagoon Initiative

MPP Manatee Protection Plan

NNC Numeric Nutrient Criteria

NOAA National Oceanic and Atmospheric Administration

PBC Palm Beach County

PBAU Palm Beach Atlantic University

PBC-ERM Palm Beach County-Environmental Resources Management

SFWMD South Florida Water Management District

TMDL Total Maximum Daily Load

UF-IFAS University of Florida-Institute of Food and Agricultural Sciences

USACE United States Army Corps of Engineers

USFWS United States Fish and Wildlife Service

USGS United States Geological Survey

WAP Waterway Assistance Program

WWTP Wastewater Treatment Plant



SUMMARY ACTION PLAN COSTS AND TIMELINE



WATER AND SEDIMENT QUALITY SUMMARY

WATER QUALITY		
WQ-1 EXPAND WATER QUALITY MONITORING	TIMELINE	ESTIMATED COST
Step 1 Continue water quality monitoring and trend analysis	2021-2031	\$
Step 2 Increase frequency of monitoring or add parameters to pinpoint impairments or specific issues of concern	2022-2031	\$\$\$
Step 3 Develop Additional Monitoring Plans to Address Management Needs	2022-2031	\$\$-\$\$\$
WQ-2 DEVELOP A WATERSHED-BASED MODELING PROGRAM	TIMELINE	ESTIMATED COST
Step 1 Develop two predictive watershed models: model for estimating pollutant loading from the watershed and a hydrodynamic estuary model for the Lagoon	2022-2024	\$\$\$
Step 2 Utilize Model to determine optimal water quality conditions and salinities and apply into water management decisions	2023-2031	\$
Step 3 Develop additional modeling tools as needed to address specific management needs	2023-2031	\$\$\$
WQ-3 IMPLEMENT BEST MANAGEMENT PRACTICES FOR DRAINAGE CANALS	TIMELINE	ESTIMATED COST
Step 1 Establish working group to develop standardized guidelines for non-structural BMPs	2021-2023	\$
Step 2 Adoption of BMPs by partner agencies and organizations	2022-2028	\$
Step 3 Evaluate reductions in nutrients and sediments over time	2023-2031	\$
WQ-4 MONITOR AND ASSESS WAYS TO REDUCE BACTERIAL CONTAMINATION AND HARMFUL ALGAL BLOOMS	TIMELINE	ESTIMATED COST
Step 1 Sample for Harmful Algal Blooms, including blue-green algae and red tides, in addition to bacterial contaminants that could pose a health risk to marine life and the public	2021-2031	\$-\$\$\$
Step 2 Understand the current factors contributing to Harmful Algal Blooms in the Lagoon, and potential problem species in the future due to climate change	2023-2028	\$\$-\$\$\$
Step 3 Identify sources of bacterial contamination at Phil Foster Park and other recreation areas in the Lagoon	2022-2031	\$\$-\$\$\$
Step 4 Increase public education and awareness of Harmful Algal Blooms and waterborne pathogens, and ways to reduce exposure	2022-2031	\$
WQ-5 IDENTIFY AND ASSESS THE IMPACTS OF EMERGING CONTAMINANTS	TIMELINE	ESTIMATED COST
Step 1 Implement sampling and analysis to assess scope and distribution of microplastics in the watershed and LWL	2021-2031	\$-\$\$
Step 2 Track ongoing research on Emerging Contaminants and support localized research	2021-2031	\$
Step 3 Support education on Emerging Contaminants, reduction of plastic pollution and pharmaceuticals and personal care products (PPCP's)	2021-2031	\$
WQ-6 MANAGE FRESHWATER INFLOWS TO OPTIMIZE ENVIRONMENTAL BENEFITS	TIMELINE	ESTIMATED COST
Step 1 Evaluate and implement modifications to operational protocols for drainage canals and water control structures to reduce damaging freshwater pulses and velocities, as well as nutrient and sediment loading	2022-2031	\$
Step 2 Support modifications to canal operations to reduce dramatic fluctuations in flows that contribute to salinity extremes. Develop long-term water management plan to maintain optimal salinity ranges for oysters and seagrasses.	2023-2031	\$
Step 3 Support modifications to existing Stormwater Treatment Areas to improve storage capacity, nutrient reduction and sediment containment	2023-2031	\$-\$\$
Step 4 Identify potential new Stormwater Treatment Areas and Water Conservation areas in the western C-51 basin and elsewhere in the LWL watershed to capture, treat and gradually release freshwater downstream	2023-2031	\$-\$\$

ESTIMATED COSTS KEY:		
\$	\$0-\$25,000	
\$\$	\$25,000-\$100,000	
\$\$\$	\$100,000-\$500,000	
\$\$\$\$	\$500,000-\$1,000,000	
\$\$\$\$\$	More than \$1,000,000	



WASTEWATER		
WW-1 ASSESS AND REDUCE OCCURRENCE OF SEWER OVERFLOWS	TIMELINE	ESTIMATED COST
Step 1 Installation of emergency generators for continued operation of lift stations during power failures	2022-2024	\$\$\$
Step 2 Create decision-support tool for prioritizing wastewater system improvements and identification of environmental risk factors	2023-2028	\$
Step 3 Encourage wastewater utilities within the Lagoon watershed to develop and implement a Capacity, Management, Operation and Maintenance program to address maintenance needs	2023-2031	\$
Step 4 Educate on importance of maintaining privately owned lateral lines	2023-2029	\$-\$\$\$
WW-2 SEPTIC SYSTEM INVENTORY AND ASSESSMENT	TIMELINE	ESTIMATED COST
Step 1 Create an inventory and geographic database of septic systems with potential to contribute nutrients to the Lagoon based on selected factors	2022-2025	\$
Step 2 Determine nutrient loading associated with leaching from septic systems by conducting a source tracking study	2023-2028	\$- \$\$\$
Step 3 Create priority list for conversion of septic systems to central sewer and/or advanced or nutrient-reducing septic systems	2023-2028	\$\$\$\$-\$\$\$\$\$
Step 4 Support State legislation to require regular maintenance and inspection of septic systems and stricter setbacks and standards for new septic systems in areas with impaired waters	2023-2029	\$
STORMWATER RUNOFF		
SW-1 REDUCE STORMWATER RUNOFF FROM URBAN LANDSCAPES	TIMELINE	ESTIMATED COST
Step 1 Quantify estimates of nutrient loading from residential landscapes in the watershed	2024-2028	\$\$\$
Step 2 Foster compliance with fertilizer ordinances and landscape Best Management Practices on County's properties and municipalities within the watershed	2021-2031	\$
Step 3 Promote consistent educational messaging about fertilizers to foster compliance with local ordinances.	2021-2031	\$
Step 4 Quantify reductions in water, fertilizer and pesticide use, and associated cost savings, for golf courses in the Lagoon watershed that follow DEP's manual of Best Management Practices or certified by Audubon International	2022-2025	\$-\$\$
Step 5 Offer site visits to golf courses to identify improvements to maintenance programs to reduce impacts to Lagoon	2025-2031	\$
Step 6 Continue promoting Florida Friendly Landscaping through programs and community events and Lake Worth Lagoon Initiative Outreach Working Group	2021-2031	\$
SW-2 EXPAND USE OF GREEN INFRASTRUCTURE AND LOW IMPACT DEVELOPMENT PRACTICES (GI/LID)	TIMELINE	ESTIMATED COST
Step 1 Encourage expanded use of GI/LID techniques to treat rainfall runoff	2021-2031	\$
Step 2 Conduct cost-benefit analysis on benefits associated with local Green Infrastructure projects relative to traditional stormwater treatment	2021-2024	\$
Step 3 Conduct Green Infrastructure workshop of stormwater professionals, landscape architects and water resource planners	2021-2031	\$
Step 4 Education on benefits of Green Infrastructure, signage at demonstration project or webinar showcasing examples in the County	2021-2031	\$
Step 5 Incorporate Support for Green Infrastructure in comprehensive plans and land use codes	2021-2031	\$
Step 6 Consider incentives such as increasing density allowances with Green Infrastructure is used	2021-2031	\$
Step 7 Creation of County and municipal stormwater utilities as a mechanism to finance ongoing water quality improvements	2021-2031	\$
SEDIMENT MANAGEMENT		
SE-1 ASSESS AND MANAGE SEDIMENT LOADING	TIMELINE	ESTIMATED COST
Step 1 Continue annual surveys of C51 sediment trap and implement results of sediment trap efficiency study	2021-2031	\$-\$\$\$
Step 2 Assess sediment loads to the Lagoon along the main drainage canals and structures. Implement a Lagoon-wide sediment characterization and sourcing study	2022-2024	\$\$-\$\$\$
Step 3 Conduct feasibility study to identify strategies for reducing sediment loads within the C-51	2022-2031	\$
Step 4 Implement projects to reduce sediment loading to the Lagoon and manage sediment within the Lagoon to improve habitat value via capping or removing muck deposits	2021-2031	\$\$\$\$-\$\$\$\$\$

ESTIMATED COSTS KEY:		
\$	\$0-\$25,000	
\$\$	\$25,000-\$100,000	
\$\$\$	\$100,000-\$500,000	
\$\$\$\$	\$500,000-\$1,000,000	
\$\$\$\$\$	More than \$1,000,000	



HABITAT ENHANCEMENT AND PROTECTION SUMMARY

HE-1 CREATE, PROTECT AND MONITOR HARDBOTTOM HABITATS	TIMELINE	ESTIMATED COST
Step 1 Continue and expand an oyster enhancement and monitoring plan that defines long term goals for oyster restoration in the Lagoon	2022-2031	\$-\$\$
Step 2 Inventory and map all natural hardbottom areas to characterize communities and identify monitoring and management needs	2022-2031	\$\$-\$\$\$
Step 3 Continue to pursue opportunities to create artificial reefs to provide habitat, reduce erosion and provide recreational areas	2022-2031	\$\$-\$\$\$
Step 4 Encourage stakeholder involvement in creating an oyster gardening program	2022-2031	\$
HE-2 RESTORE, CREATE AND PROTECT INTERTIDAL HABITATS	TIMELINE	ESTIMATED COST
Step 1 Complete shoreline characterization and suitability restoration modeling study and implement recommendations to enhance seawalls with Living Shorelines or focus restoration efforts in specific areas of the Lagoon determined most beneficial	2021-2024	\$
Step 2 Continue to pursue beneficial reuse of lagoon compatible dredge material to expand or create new restoration sites	2021-2031	\$\$\$-\$\$\$\$
Step 3 Develop criteria to determine long-term restoration success and expand post-construction monitoring	2022-2025	\$
Step 4 Increase awareness of the value of coastal habitats, the economic contribution of ecosystem services provided by the Lagoon and the importance of community investment in habitat restoration and protection	2021-2031	\$
HE-3 MAINTAIN AND EXPAND SEAGRASS HABITATS	TIMELINE	ESTIMATED COST
Step 1 Continue annual seagrass transect monitoring and Lagoon-wide mapping every 5 years	2021-2031	\$-\$\$
Step 2 Expand water quality monitoring for additional environmental parameters affecting seagrass to better understand factors impacting seagrasses in the lagoon	2022-2031	\$\$-\$\$\$
Step 3 Install photosynthetically active radiation (PAR) sensors to understand light requirements for seagrass to flourish at different depths in the Lagoon	2022-2028	\$
Step 4 Identify causes of seagrass declines and species shifts in the Lagoon	2022-2028	\$\$\$-\$\$\$\$
Step 5 Update seagrass recovery targets for Lagoon segments based on light attenuation, sediment types and other factors	2022-2028	\$
Step 6 Pursue acquisition of important seagrass resources in the North Lagoon from willing sellers	2021-2031	\$\$\$\$
HE-4 ACQUIRE ECOLOGICALLY SIGNIFICANT SUBMERGED AND INTERTIDAL LANDS	TIMELINE	ESTIMATED COST
Step 1 Continue to determine property owners interest in sale or donation of lands, resubmit funding request for Singer Islands submerged lands to Legislature	2021-2031	\$-\$\$\$
Step 2 Work with regulatory agencies to ensure the protection of submerged resources with ecologically valuable submerged and intertidal lands are fully considered when processing permit applications	2021-2031	\$

ESTIMATED COSTS KEY:		
\$	\$0-\$25,000	
\$\$	\$25,000-\$100,000	
\$\$\$	\$100,000-\$500,000	
\$\$\$\$	\$500,000-\$1,000,000	
\$\$\$\$\$	More than \$1,000,000	





FISH AND WILDLIFE MONITORING AND PROTECTION SUMMARY

FW-1 CONTINUE IMPLEMENTING PALM BEACH COUNTY’S MANATEE PROTECTION PLAN	TIMELINE	ESTIMATED COST
Step 1 Continue Implementing the Manatee Protection Plan	2021-2031	\$
Step 2 Continue funding the Manatee Law Enforcement Program and add municipalities to program	2021-2031	\$\$\$
Step 3 Continue raising awareness of the importance of the Lagoon to manatees as critical habitat and encourage manatee friendly boating practices	2021-2031	\$
Step 4 Continue seagrass and water quality monitoring. Participate in manatee surveys in the Lagoon to better track manatee utilization and distribution in the Lagoon	2021-2031	\$\$\$
Step 5 Identify opportunities to create or enhance habitat for manatees	2021-2031	\$-\$\$\$\$
FW-2 CONTINUE SEA TURTLE MONITORING	TIMELINE	ESTIMATED COST
Step 1 Continue annual sea turtle monitoring	2021-2031	\$
Step 2 Design and implement seagrass surveys to determine and track correlations between sea turtle dietary shifts and changes in seagrass species and cover	2021-2031	\$
Step 3 Continue collecting water quality data and expand parameters to evaluate constituents that may be associated with fibropapillomatosis (FP)	2021-2031	\$-\$\$
Step 4 Initiate an acoustic telemetry program to tag and track the movements of individual turtles throughout the Lagoon to direct potential management actions	2022-2031	\$-\$\$
Step 5 Expand the turtle health assessment program, including blood samples and chemical analysis, to evaluate the overall health of turtles in the Lagoon	2022-2031	\$-\$\$
Step 6 Continue educational initiatives to promote awareness of the Lagoon’s importance to sea turtles	2022-2031	\$
FW-3 CONTINUE FISHERIES MONITORING	TIMELINE	ESTIMATED COST
Step 1 Continue fisheries sampling in the North and Central Lagoon	2021-2031	\$
Step 2 Expand sampling, employing statewide Fisheries-Independent Monitoring protocols, to the South Lagoon	2021-2031	\$\$\$
Step 3 Update the species list for fish and selected invertebrates documented in the Lagoon	2021-2031	\$
Step 4 Expand acoustic tagging of fish and install an acoustic telemetry network in the Lagoon	2022-2031	\$
Step 5 Continue the Lake Worth Lagoon Fishing Challenge	2021-2031	\$
FW-4 MANAGE AND MONITOR SHOREBIRD HABITAT	TIMELINE	ESTIMATED COST
Step 1 Continue to provide and manage nesting and foraging habitat for shorebirds in the Lagoon	2021-2031	\$-\$\$\$\$
Step 2 Actively manage island habitats to ensure shorebird success	2021-2031	\$
Step 3 Continue to monitor shorebird utilization of the Lagoon	2021-2031	\$
Step 4 Evaluate and identify important, publicly accessible bird “hot spots” for nomination to the Great Florida Birding Trail	2021-2031	\$
Step 5 Continue banding American Oystercatcher chicks and adults to track habitat utilization and fledgling success and add species to banding program	2021-2031	\$
FW-5 IMPLEMENT REMOTE TRACKING TECHNOLOGIES FOR FISH AND WILDLIFE MONITORING	TIMELINE	ESTIMATED COST
Step 1 Identify a funding source to purchase and maintain equipment within the Lagoon	2021-2031	\$-\$\$
Step 2 Collaborate with interested partners to direct tagging efforts and data analysis to understand species utilization of Lagoon habitats, and the environmental and biological factors that influence their movements	2021-2031	\$-\$\$

ESTIMATED COSTS KEY:	\$	\$0-\$25,000
	\$\$	\$25,000-\$100,000
	\$\$\$	\$100,000-\$500,000
	\$\$\$\$	\$500,000-\$1,000,000
	\$\$\$\$\$	More than \$1,000,000





CLIMATE CHANGE AND SEA LEVEL RISE SUMMARY

CC-1 CONDUCT A VULNERABILITY ASSESSMENT OF RESOURCES AT RISK FROM CLIMATE CHANGE	TIMELINE	ESTIMATED COST
Step 1 Complete Climate Change Vulnerability Assessment and encourage incorporation of resilience adaptations into comprehensive plans for other municipalities in the watershed	2021-2022	\$
Step 2 Identify current and potential flooding impacts to low-lying communities through the watershed	2021-2031	\$\$
Step 3 Education on far-ranging impacts of climate change for individual and collective action to adapt or mitigate effects	2021-2031	\$
STEP 4 Consider managed retreat from chronically impacted areas where use is not sustainable or there are threats to public safety	2028-2031	\$\$\$\$
CC-2 IMPROVE RESILIENCY OF CRITICAL HABITATS TO CLIMATE CHANGE AND SEA LEVEL RISE	TIMELINE	ESTIMATED COST
Step 1 Measure sea level rise in the Lagoon’s watershed to identify and prioritize habitats at greatest risk	2021-2024	\$
Step 2 Support implementation of one or more demonstration projects with examples of living shorelines	2021-2031	\$
Step 3 Conduct analysis and monitoring of current and future living shoreline projects to quantify costs and benefits versus traditional seawalls	2021-2024	\$-\$\$
Step 4 Promote workshops for Living Shoreline design and installation, to boost the number of qualified consultants and contractors that can design, permit and install living shorelines	2021-2024	\$
Step 5 Tax incentives or mitigation credits for Living Shorelines	2021-2024	\$
Step 6 Continue education about Living Shorelines and climate friendly landscapes	2021-2031	\$

ESTIMATED COSTS KEY:	\$	\$0-\$25,000
	\$\$	\$25,000-\$100,000
	\$\$\$	\$100,000-\$500,000
	\$\$\$\$	\$500,000-\$1,000,000
	\$\$\$\$\$	More than \$1,000,000



PUBLIC OUTREACH AND ENGAGEMENT SUMMARY

PO-1 FOSTER PUBLIC AWARENESS AND ENGAGEMENT	TIMELINE	ESTIMATED COST
Step 1 Increase muticultural outreach and education to underserved communities	2022-2031	\$
Step 2 Expand availability of educational messaging and materials in Spanish, Creole or other languages as appropriate to target key audiences in the Lagoon watershed	2021-2031	\$-\$\$
Step 3 Enhance use of social media campaigns to deliver targeted and consistent educational messages that promote direct behavior changes to benefit the Lagoon	2022-2031	\$
Step 4 Enlist assistance from Lagoon-dependent businesses, recreational groups and community service organizations to disseminate educational messages and materials	2022-2031	\$
Step 5 Increase opportunities for residents of all ages and abilities to participate in hands-on volunteer projects and citizen-science initiatives	2021-2031	\$
PO-2 PROMOTE YOUTH EDUCATION AND ENGAGEMENT	TIMELINE	ESTIMATED COST
Step 1 Expand science-based K-12 education for youth in Palm Beach County, especially for underserved communities	2021-2031	\$
Step 2 Continue hands-on opportunities to learn and contribute to Lagoon improvement through Adventure Awaits and Tri-City Trailblazers programs	2021-2031	\$
Step 3 Continue to model and promote career opportunities in STEM fields through the Green Futures Internships	2021-2031	\$
Step 4 Encourage other organizations offering youth education programs to utilize the strategies and steps presented in the Action to leverage and strengthen our collective impact	2021-2031	\$
Step 5 Maximize distribution of the “Hidden Wild” documentary film through environmental education centers, community groups, private schools, home-school groups and online streaming on multiple platforms	2021-2031	\$\$

ESTIMATED COSTS KEY:	\$	\$0-\$25,000
	\$\$	\$25,000-\$100,000
	\$\$\$	\$100,000-\$500,000
	\$\$\$\$	\$500,000-\$1,000,000
	\$\$\$\$\$	More than \$1,000,000





PUBLIC USES OF THE LAGOON SUMMARY

PU-1 ENSURE ADEQUATE AND APPROPRIATE ACCESS TO THE LAGOON	TIMELINE	ESTIMATED COST
Step 1 Continue to provide opportunities for residents and tourists to experience the LWL	2021-2031	\$-\$\$\$\$\$
Step 2 Continue to support partnerships to remove marine debris and derelict vessels from LWL waters	2021-2031	\$-\$\$\$
Step 3 Encourage all marinas, boatyards and retail facilities in the Lagoon to achieve designation through FDEP’s Clean Boating program	2022-2031	\$
Step 4 Actively participate in development of criteria for siting and design of mooring fields to minimize risks to critical habitats	2021-2031	\$
Step 5 Implement a certification program for ecotour businesses to foster community commitment to ethical enjoyment of the Lagoon	2022-2031	\$-\$\$

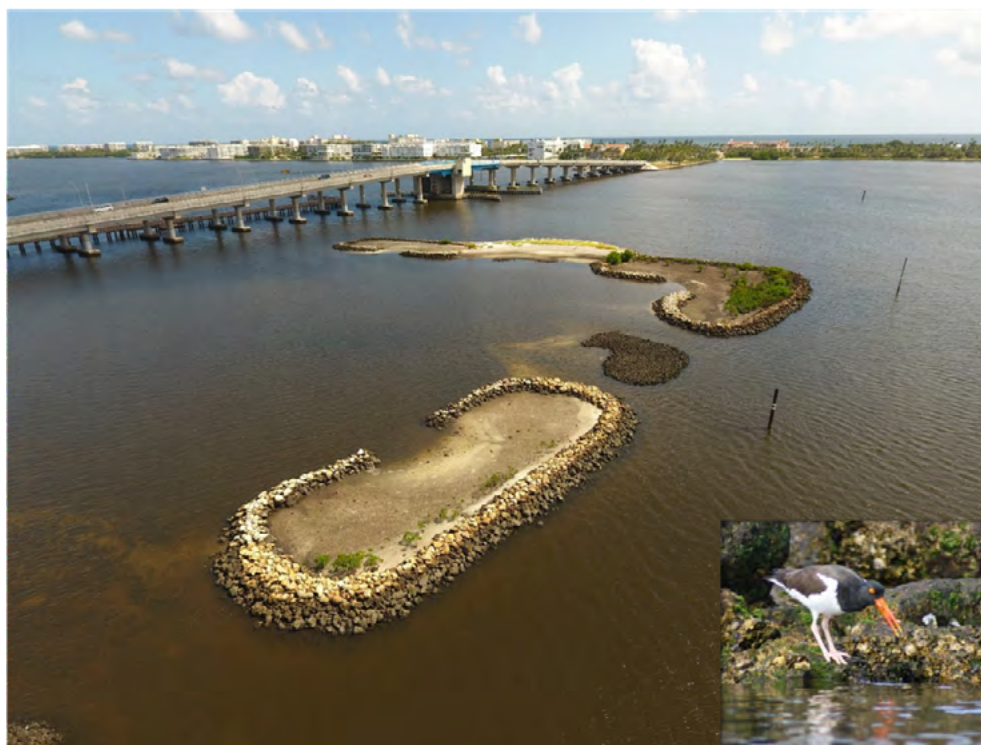
ESTIMATED COSTS KEY:	\$	\$0-\$25,000
	\$\$	\$25,000-\$100,000
	\$\$\$	\$100,000-\$500,000
	\$\$\$\$	\$500,000-\$1,000,000
	\$\$\$\$\$	More than \$1,000,000



COMPLETED PROJECTS

BRYANT PARK ISLANDS (2014 AND 2018)

More than 5 acres of habitat created including seagrass, oysters and three intertidal islands planted with mangroves and cordgrass. Limestone rocks placed along the eastern and southern shorelines serve as breakwaters to stabilize the island and provide oyster habitat. Birds nest and forage in the restored area. Modifications in 2018 added more limestone rock and shell for shoreline protection and nesting bird habitat.



GRASSY FLATS NATURAL AREA (2015 AND 2018)

Thirteen acres of muck sediments were capped with sand creating two intertidal islands. Limestone rock was placed along the western edge of the islands for stabilization and to provide oyster reef habitat. Created wetland habitat includes salt marsh, mangrove vegetation, and tidal flats used as food and nursery habitat for fish and wildlife. This project provides additional recreational opportunities, including fishing, birding and kayaking.

Enhancements in 2018 added more than 750 tons of shell hash and smaller rock for increased oyster reef habitat on the eastern edges and foraging areas for American Oystercatchers on both intertidal islands.



BRYANT PARK LIVING SHORELINES PHASE I AND II (2015 AND 2017)

In Phase I a 575-foot long Living Shoreline planter designed and sculpted by a local artist was installed as a unique integration of art and ecology. Sculptural elements offered openings for fish to swim in and out of the structure at high tide, while supporting mangroves and cordgrass. The outside shelf/ledges also provide oyster reef habitat.

For Phase II, more than 1,160 linear feet of living shoreline was created along the barren seawall at Bryant Park in the City of Lake Worth Beach, including four wetland planters made of limestone rock. Together, the planters buffer wave action and storm surge along the seawall and provide valuable habitat for oysters, fish and other wildlife.



PEANUT ISLAND EROSION CONTROL AND REEF COMPLEX PROJECTS (2015 AND 2016)

Multiple reef breakwaters were installed to reduce wave energy and provide shoreline protection on the southeastern shoreline of Peanut Island. These emergent artificial reef structures provide valuable habitat for numerous fish and invertebrate species, making it a premier snorkeling location within the Lake Worth Lagoon.



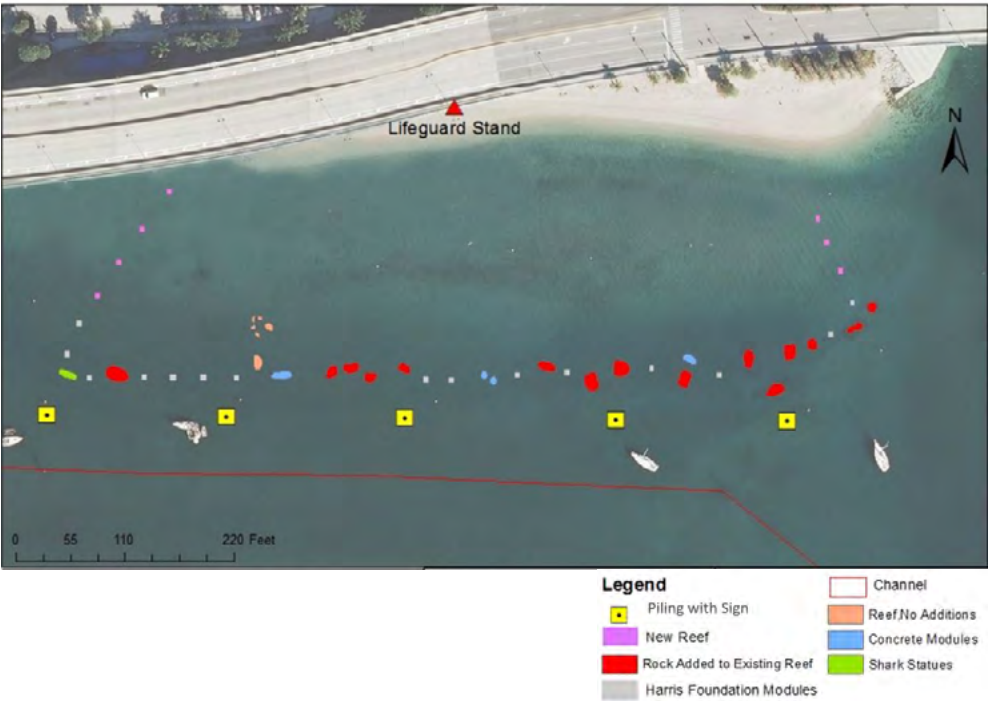
JEWELL COVE LIVING SHORELINE (2016)

This project restored 11.4 acres of natural shoreline along the Lake Worth Lagoon by removing invasive vegetation and planting native maritime hammock species such as Royal palms, Gumbo Limbo trees, coontie, and coral bean along 1,100 linear feet of upland. Additionally, 700 feet of limestone rip rap helps stabilize the shoreline and provide mangrove, cordgrass and oyster reef habitat. The project provides recreational and environmental education opportunities for visitors, local students and residents.



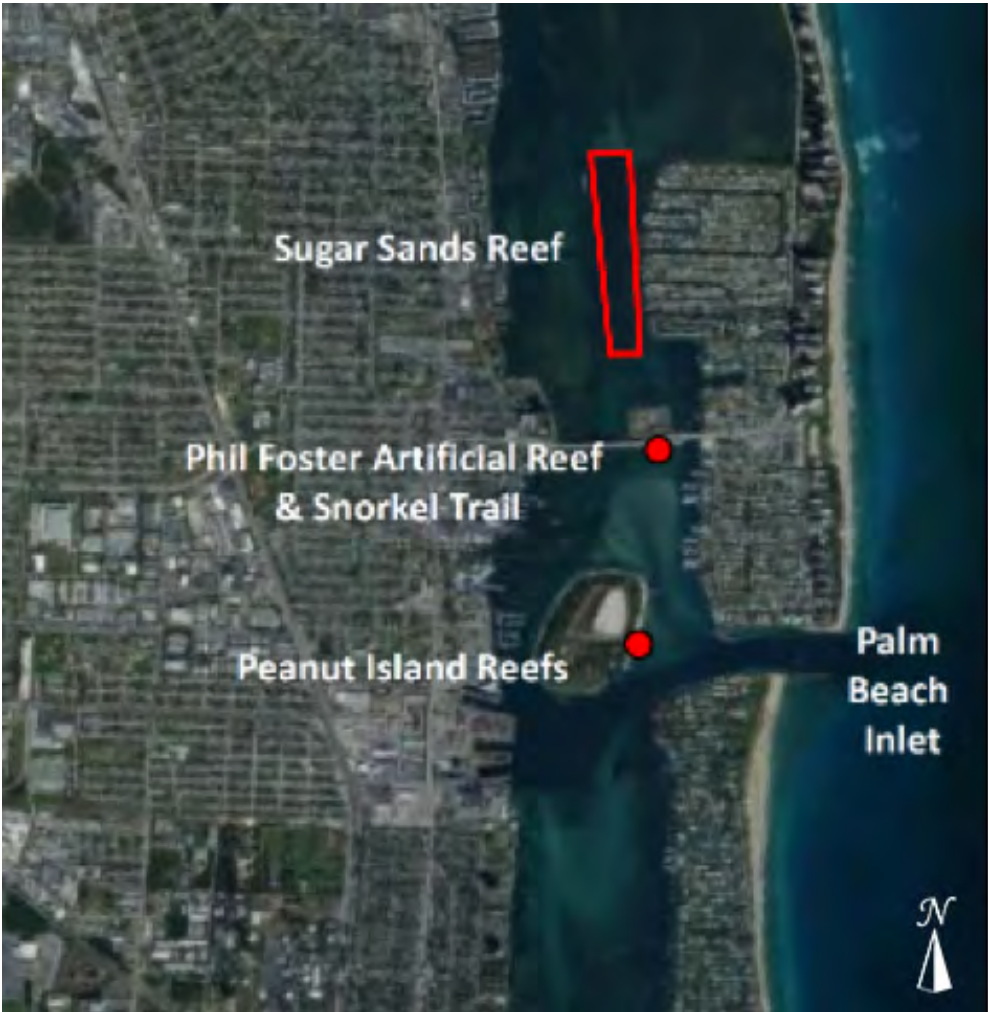
PHIL FOSTER SNORKEL TRAIL (2017)

An 800-foot-long snorkel trail was created on the south side of Phil Foster Park in Lake Worth Lagoon. This location is bathed in clear oceanic water with each incoming tide due to its proximity to Lake Worth Inlet. The underwater trail includes concrete modules, boulder mounds and shark sculptures, as well as smaller rocks that serve as markers to guide snorkelers between the larger features. The trail is located in 6 to 10 feet of water and accessible from the beach at Phil Foster Park. The reef components include ledges and small spaces that attract a variety of sea life.



SUGAR SANDS REEF (2017)

This artificial reef complex is located in a deep dredged hole spanning 7.5 acres north of the Blue Heron Bridge and east of the Intracoastal Waterway. The site features pyramid modules, limestone boulders, and reused concrete which provide habitat complexity and support a diverse fish assemblage. More than six placements of reef material have occurred since 1991.



CURRIE AND OSPREY PARKS LIVING SHORELINES (2017)

Together, these two projects created more than 1,400 feet of Living Shoreline along a barren seawall at Currie Park and another 130 feet at Osprey Park. Seven wetland planters were built at Currie and one at Osprey Park. These were planted with mangroves and cordgrasses to increase nursery areas and habitat for fish and other wildlife. The limestone planters also provide shoreline protection.

Currie Park



Osprey Park



OLD BRIDGE PARK RESTORATION (2017)

This project replaced the failing seawall along Old Bridge Park. A new seawall stabilizes the shoreline, and rip rap placed waterward of the seawall reduces wave energy and creates habitat for benthic organisms, invertebrates and fish. A new sidewalk, fishing pier and floating dock significantly enhance access for recreational anglers.



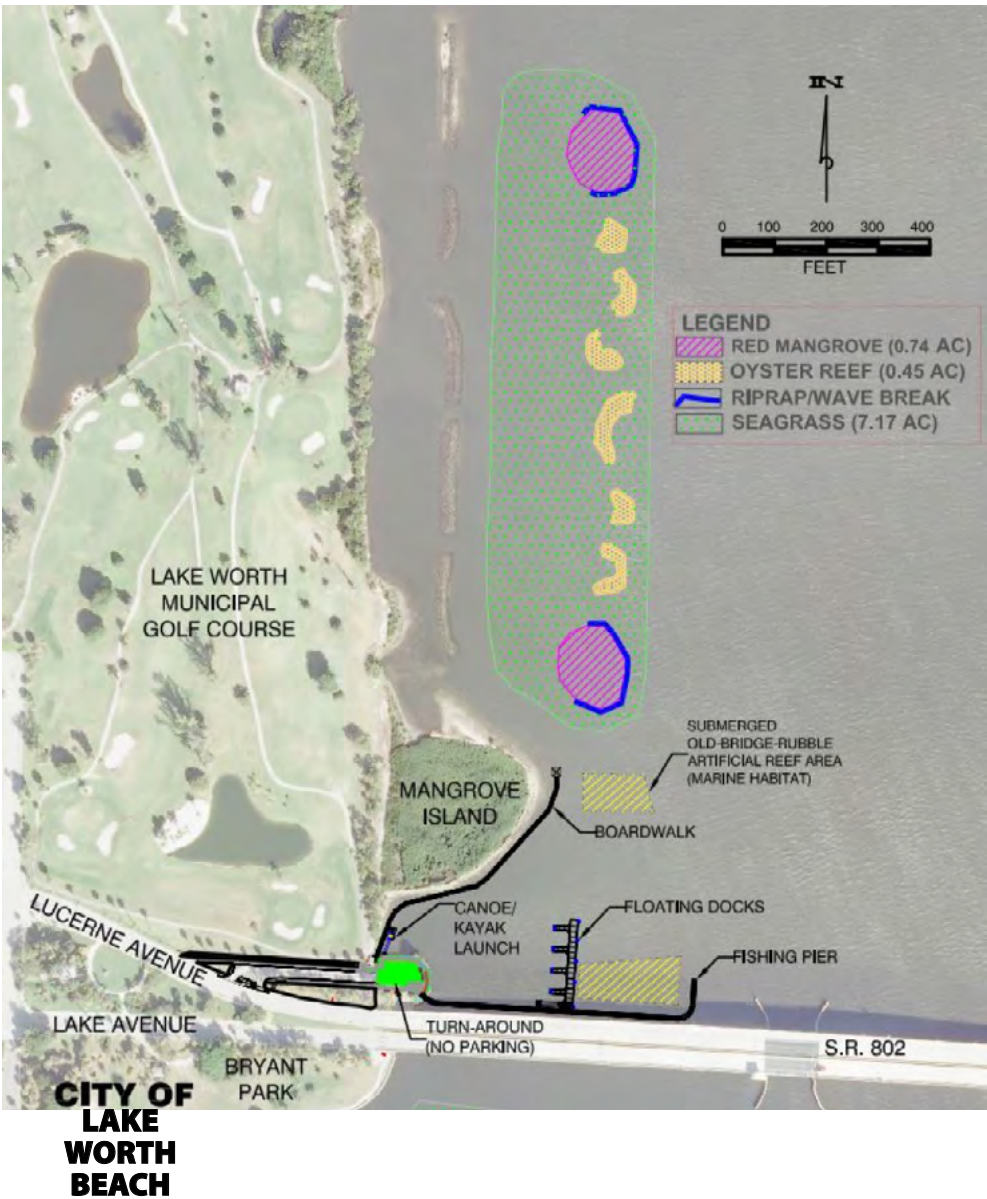
LYMAN KAYAK PARK LIVING SHORELINE (2018)

Two wetland planters were constructed using limestone rock, creating 148 linear feet of Living Shoreline and providing oyster habitat. Red mangroves and cordgrass placed behind the planters provide nursery and foraging areas for fish and birds while stabilizing the shoreline. This park also has a kayak ramp that allows direct access to the Lagoon.



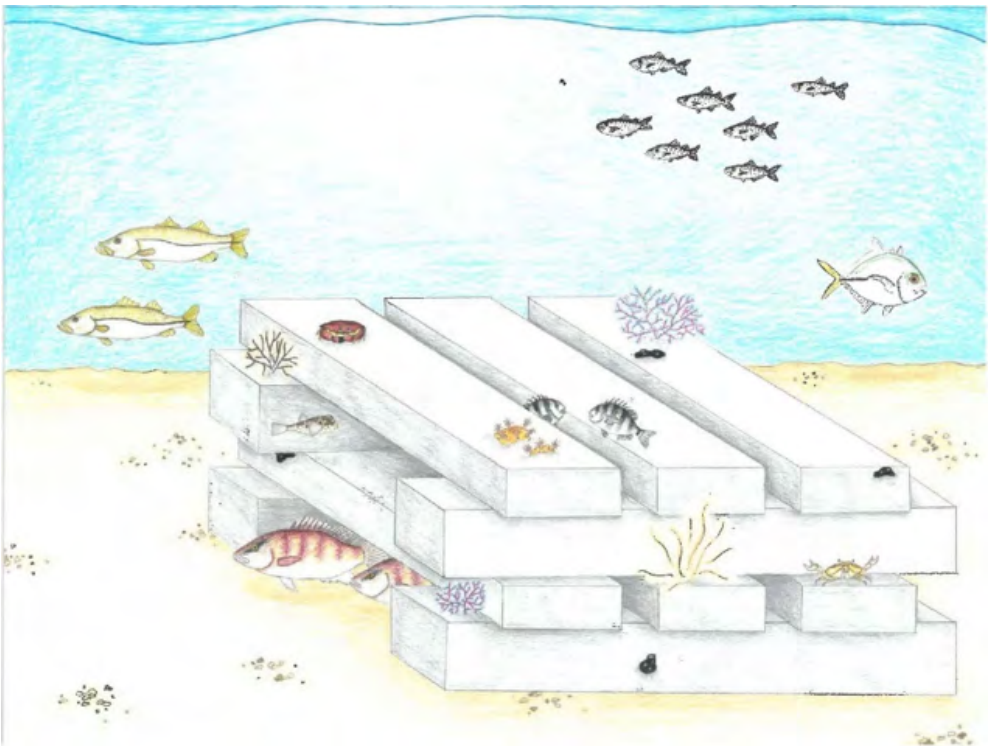
SNOOK ISLANDS PHASE II MODIFICATIONS (2018)

More than 7 acres of additional wetland habitat was added to the 100 acres successfully restored since 2005. New islands were planted with mangrove and cordgrass, along with oyster reefs and submerged habitat for seagrass recruitment. The restoration resulted in increased nursery and foraging grounds for birds, fish, and manatees. Snook Islands is a popular fishing and kayaking destination in the Central Lake Worth Lagoon.



SOUTHERN BOULEVARD BRIDGE REEF (2018)

This 1.7-acre reef is composed of 6,000 tons of reused concrete from the Southern Boulevard Bridge replacement, and placed by hardhat divers in an old dredge hole just to the south of the bridge. The dredge hole ranged in depth from 14-30 feet. Material was stacked to create ledges in discrete pods. After the new bridge is constructed, the site will receive additional material from the dismantling of the temporary bridge.



Southern Boulevard bridge reef: A depiction of the material stacked on the bottom, creating ledges and additional fish habitat.

LAKE WORTH LAGOON MANGROVE PODS
(2020)

These mangrove pods were installed waterward of Jewell Cove Natural Area as a pilot project to demonstrate the construction of low-profile wetland habitat for additional oyster and mangrove habitat in the Lake Worth Lagoon. The project involves planting mangroves in discretely placed limestone rock mounds to provide additional oyster and mangrove habitat, testing the feasibility of this cost-effective technique versus traditional methods (intertidal island creation, mangrove planters, etc.). Benefits include water quality improvements, improved fishing and wildlife-watching opportunities, increased shoreline protection, and increased carbon storage to mitigate the effects of climate change. The mangrove pods serve as a model for waterfront homeowners seeking eco-friendly options for enhancing habitat and climate resiliency of armored shorelines.



Pilot mangrove pod at Jewell Cove Natural Area (Photo credit: PBC-ERM)

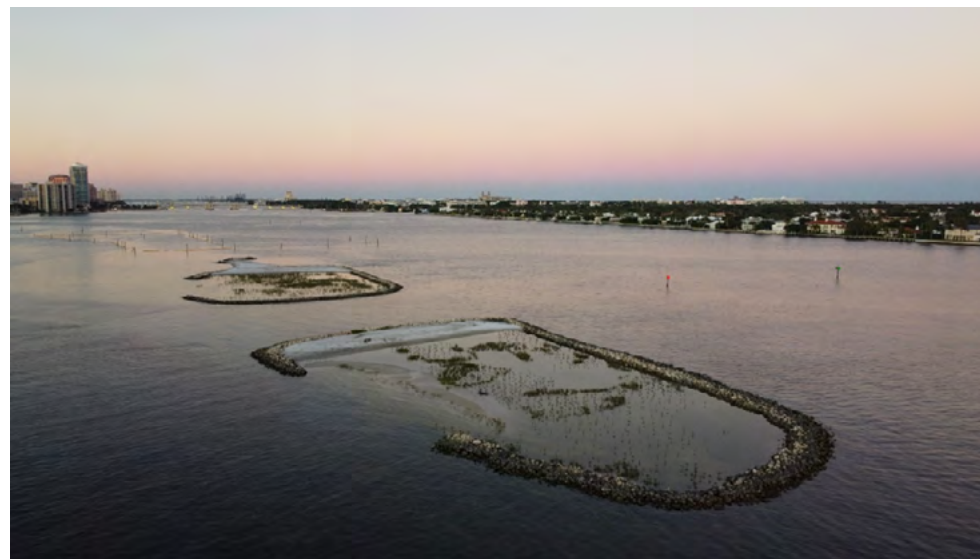
ONGOING PROJECTS

ONGOING AND POTENTIAL PROJECTS

TARPON COVE PHASE I (2019) AND PHASE II

When completed, Tarpon Cove will provide 46 acres of tidal and intertidal habitats in the Central Lagoon. The enhancements include 5 intertidal islands with 2.7 acres of mangrove and tidal marsh, 2.1 acres of oyster reef habitat, 34 acres of potential seagrass habitat and 0.3 acres of shorebird nesting habitat. Multiple partners are working together to reuse beneficial sand sources from the Rybovich Marina expansion, the Town of Palm Beach maintenance dredging, FIND's dredging of the Intracoastal Waterway and additional waterway improvement projects within the Lagoon. Approximately 418,600 cubic yards of sand and 24,000 tons of rock are needed to complete the project.

During Phase I, two islands were created by capping organic-rich muck sediments in a historic dredge hole. In Phase II, three more islands will be created and rock breakwaters installed for additional habitat and protection against waves and storm surge.



Tarpon Cove (Photo credit: Lake Worth Waterkeeper)



Tarpon Cove under construction (Photo credit: PBC-ERM)

MONCEAUX PARK LIVING SHORELINES

This project will create 200 linear feet of Living Shoreline along the barren seawall at Monceaux Park in the City of West Palm Beach. Work includes construction of three wetland planters using limestone rock to provide shoreline protection and habitat for fish and wildlife.



LAKE WORTH INLET FLOOD SHOAL DREDGING PROJECT

Local Sponsors: Palm Beach County/Marine Industries Association

The flood shoal north of Peanut Island continues to accrete sand, creating both environmental and navigational concerns. The project will dredge a portion of the flood shoal to reduce sedimentation at Phil Foster Park Snorkel Trail, increase areas for recreational boat use, and improve navigation and safety by providing easier access for first responders.



BONEFISH COVE

Local Sponsors: Palm Beach County/U.S. Army Corps of Engineers Section 1135 Project

This project encompasses 48 acres in the Central Lagoon along the Town of Palm Beach. It will create 3 intertidal mangrove islands with a footprint of 9.4 acres, 1.5 acres oyster reefs, 33 acres of potential seagrass habitat and 3 nesting mounds for American Oystercatchers. Beneficial reuse of sand includes 345,000 cubic yards of fill to be transported from Peanut Island for construction. Construction is expected to begin mid to late 2021.

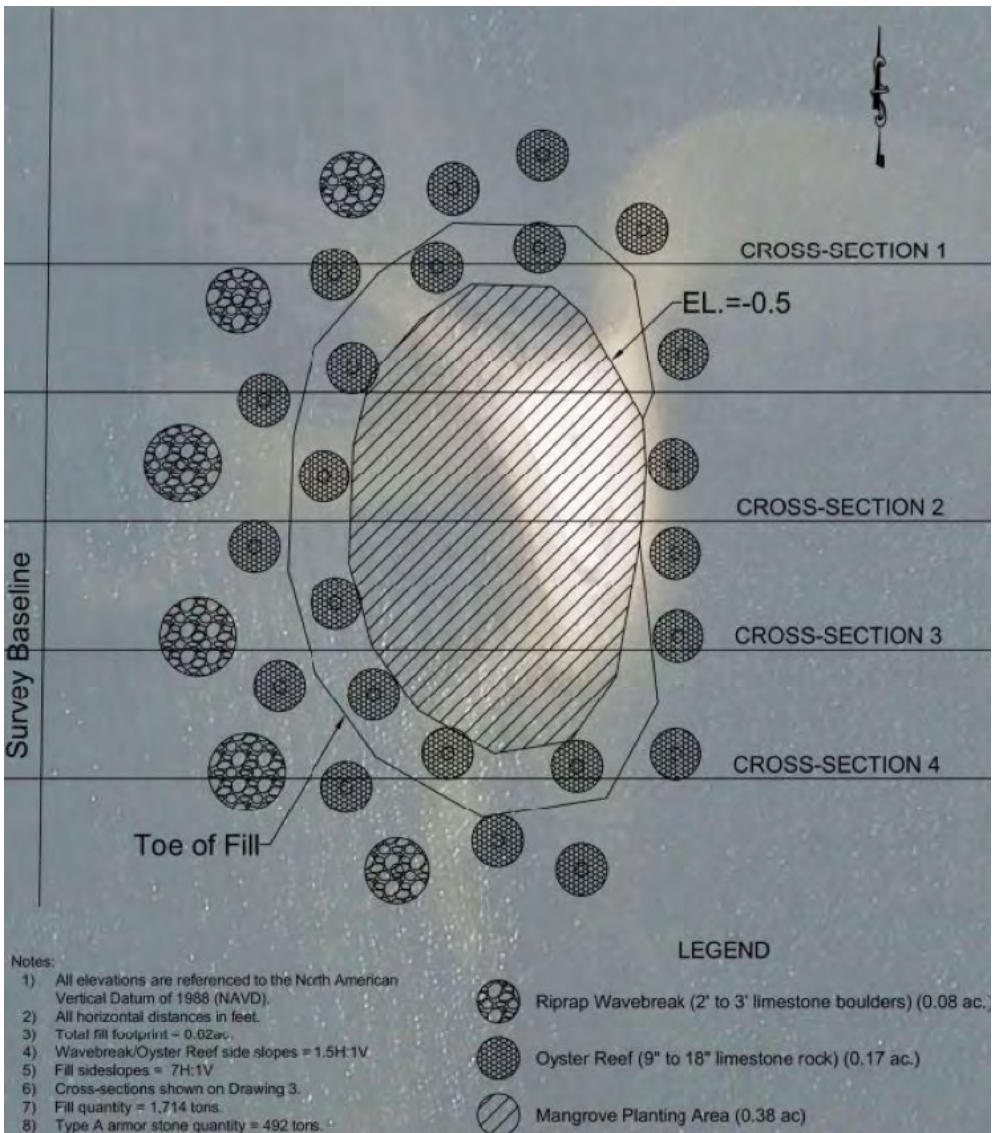
Bonefish Cove will provide additional intertidal and tidal habitat for numerous species of birds, fish and invertebrates in an area that has otherwise been lost to shoreline hardening. The islands will also provide recreational opportunities such as kayaking, boating, fishing and bird watching.



PALM BEACH RESILIENT ISLANDS

Local Sponsors: Palm Beach County/The Nature Conservancy

Located in the Central Lagoon, the first phase of this project will create an 0.8-acre oyster reef and mangrove intertidal island surrounded by limestone rocks to act as a wavebreak. This project will serve as a valuable education and stewardship site for the public to experience first-hand the benefits of Living Shoreline restoration projects, while providing important habitat to support fish and wildlife in the Lagoon.



PROVIDENCIA CAY RESTORATION

This project in West Palm Beach will create an intertidal island, oyster reef and seagrass habitat, restoring a total of 6 acres in a historic dredge hole area. Enhancements will support recreational activities and improved water quality and habitat for fisheries, birds, oyster, manatees, and sea turtles. The island will provide an “Ecotourism Destination” to view and visit estuarine habitats.



LAKE WORTH LAGOON FUTURE PROJECT PLANNING

LOCATION	CATEGORY	NAME	DESCRIPTION	ACTION PLAN
Lake Worth Lagoon	Living Shoreline	LWL Living Shorelines	Location TBD- living shorelines incorporating oysters, cordgrass, mangroves and other living shoreline components	HE-1, HE-2, CC-2
Lake Worth Lagoon	Artificial Reefs	LWL Artificial Reefs	Location TBD- artificial reef projects to add habitat for fisheries, invertebrates, etc.	HE-1, HE-2, FW-3
Lake Worth Lagoon	Mangroves	LWL Mangrove Pods	Location TBD- Mangrove pods (rocks placed at intertidal elevations planted with red mangroves) to add habitat for birds, fish and invertebrates	HE-2
Lake Worth Lagoon	Islands	LWL Island Restoration	Location TBD- Intertidal islands created with lagoon compatible sand and rock breakwaters; incorporating oyster, seagrass, mangrove, cordgrass and bird habitat, as well as other living shoreline components	SE-1, HE-1, HE-2, HE-3, FW-1, FW-3, FW-4, CC-2, PO-1, PU-1
North Lagoon	Submerged Land Purchase	Singer Islands Submerged Land Acquisition	Purchase submerged lands from willing sellers for seagrass conservation	HE-4, HE-3, FW-1, FW-2 and FW-3
North Lagoon	Navigation/ Safety/Beneficial Reuse Material	Lake Worth Inlet Flood Shoal	Dredge the Lake Worth Inlet flood shoal to improve boater safety/navigation. Beneficial reuse of material for intertidal island creation and/or capping muck sediments	SE-1, PU-1
North Lagoon	Living Shoreline	Palm Beach Country Club Living Shoreline	Living shoreline improvements	HE-1, HE-2, CC-2
North Lagoon	Breakwater/Island/ Living Shoreline	Providencia Cay Restoration	Place sand/rock for intertidal island- mangroves and wetland vegetation	HE-1, HE-2, HE-3, FW-1, CC-2
North Lagoon	Living Shoreline	Kelsey Park Living Shoreline	Living shoreline improvements	HE-1, HE-2, CC-2
North Lagoon	Living Shoreline	Lake Park Marina Living Shoreline	Living shoreline improvements	HE-1, HE-2, CC-2
North Lagoon	Artificial Reef	Sugar Sands Reef	Rock substrate added for reef	HE-1, PU-1, CC-2
Central Lagoon	Ongoing/Dredged Hole/Island/ Living Shoreline/ Breakwater	Tarpon Cove Restoration	Islands, seagrass, oyster, breakwaters and bird habitat	HE-1, HE-2, HE-3, FW-1,FW-3, FW-4, CC-2, PO-1

Continued on next page





A sea robin glides across the Lagoon (Photo credit: PBC-ERM)

LAKE WORTH LAGOON FUTURE PROJECT PLANNING <i>(Continued)</i>				
LOCATION	CATEGORY	NAME	DESCRIPTION	ACTION PLAN
Central Lagoon	Islands and Living Shoreline	Bird Islands and Oyster Habitat Restoration From Everglades to John's Islands	Mangrove/Oyster Habitat Restoration; Place sand, oyster and mangrove pods between Everglades and John's Islands	HE-1, HE-2, HE-3, FW-4, CC-2, PO-1, PU-1
Central Lagoon	Artificial Reef	Everglades Reef	Rock substrate added for reef/fish habitat	HE-1, FW-3, CC-2
Central Lagoon	Living Shoreline	Monceaux Park Living Shoreline	Living shoreline improvements	HE-1, HE-2, CC-2
Central Lagoon	Island Restoration/ Living Shoreline	Palm Beach Resilient Islands	Add mangrove island with breakwater, oyster reefs and bird nesting habitat	HE-1, HE-2, FW-4, CC-2, PO-1
Central Lagoon	Seagrass Habitat	Currie Park Dredge Hole EAST	Add sand to dredge hole and bring to -5 MHW elevation and encourage natural recruitment of seagrass	HE-2, HE-3
Central Lagoon	Manage Sediment	C-51 Sediment Trap Dredging	Dredge existing sediment trap to reduce sediments entering the Lagoon and negatively impacting water quality and resources such as oysters and seagrasses	SE-1, WQ-1, WQ-3
Central Lagoon	Artificial Reef	Southern Blvd Bridge Artificial Reef	Create fish and invertebrate habitat using demolition materials from Southern Blvd Bridge	HE-1, FW-3, CC-2
Central to South Lagoon	Islands and Rock	Bird Islands and Oysters from Ibis Isle to Bonefish Cove	Add rock, sand & mangroves along rock spine to enhance/build upon existing islands and oyster habitat	HE-1, HE-2, FW-4, CC-2, PO-1
South Lagoon	Dredged Hole/ Islands/ Living Shoreline/ Breakwater	Bonefish Cove	Fill dredge hole offshore to improve seagrass habitat; add mangrove island with rock breakwater, oyster reefs and bird nesting habitat	HE-1, HE-2, HE-3, FW-1,FW-3, FW-4, CC-2, PO-1, PU-1
South Lagoon	Living Shoreline	Intracoastal Park Living Shoreline	Removal of upland exotic plants and addition of living shoreline improvements	HE-2, CC-2, PO-1



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025

Originating Department: Community Development (Karen Golonka)

Agenda Title: Ordinance No. 03-2025 - Creating Chapter 65 "Workforce Housing" - Town of Lake Park Code of Ordinances

Agenda Category (i.e., Consent, New Business, etc.): Public Hearings – Ordinance on Second Reading

Approved by Town Manager: _____ **Date:** _____

Cost of Item: 1)Legal display
Ad: approximately
\$800
2)Legal review:
TBD **Funding Source:** Advertising & Legal (General Fund)

Account Number: 1)524-500-34920
2)514-108-31100 **Finance Signature:** _____

Advertised:

Date: June 7, 2025 **Newspaper:** Palm Beach Post

Attachments: A. Staff report with attachments 1, 2, and 3. B. Proposed Ordinance
C. Business Impact Estimate D. Legal Ad E. Sample Land Use Restriction Agreement

Please initial one:

KJG Yes I have notified everyone **Palm Beach Post Ad**

____ Not applicable in this case

Summary Explanation/Background:

The Community Development Department is requesting the Town Commission to consider an Ordinance No. 03-2025 that would establish a new chapter - "Chapter 65 Workforce Housing" - within the Town of Lake Park's Code of Ordinances.

The “Live Local Act” (LLA), passed by the State Legislature in 2023 and amended in 2024, created a State program to encourage the construction of rental housing projects in which a minimum of 40 % of the units are “affordable”. The Town’s major concern with the legislation was the preemption of the local government control regarding various zoning decisions, and potential fiscal impact. Any housing project that qualifies under the LLA can locate in any district in the Town that allows industrial, commercial or mixed use. Density and height are tied to the highest allowed in the Town. Only administrative approval (not Town Commission) of the municipality is required. The Commission also expressed concerns with potential incompatibility of uses, conflicts with the Comprehensive Plan, lack of public involvement, and lack of specificity in the statute regarding the process and certain mandates.

The proposed ordinance establishes regulations for workforce housing within the Town, primarily to address the recent, new state law [“Live Local Act” (LLA) – Section 166.04151, Florida Statute]. The proposed Ordinance was presented previously to the Town Commission during a Workshop on August 7, 2024.

Following the workshop, the Commission adopted a “zoning in progress” (ZIP) in October 4, 2025 to enable the Town to develop regulations providing for workforce housing and to implement the state’s LLA law. This ZIP was intended to ensure that any new language within the Town’s Code regarding proposed workforce housing projects would be coordinated with anticipated changes related to the Park Avenue Downtown District (PADD). The Workforce Housing ZIP was previously extended to March 31, 2025, which has now expired.

Although the PADD text amendment changes are still being developed/considered by the Town, staff and the Town Attorney have determined that the proposed workforce housing code language is eligible to proceed ahead of any changes that may be approved related to the PADD.

Thus, a proposed new Chapter 65 within the Town’s Code is being recommended and addresses housing that falls into the “Workforce Housing” category, as this is how the Town proposes to define “affordable” with respect to the LLA . If approved, the new Workforce Housing chapter would include five (5) income categories:

- Very Low Income Household Level
- Low Income Household Level
- Moderate Income Household Level
- Upper Moderate Income Household Level
- Middle Income Household Level

Additionally, this new section would establish the Town’s procedure that would be required to be met to apply/be considered for as Workforce Housing project within the Town. This procedure would include, but not limited to, where such housing can be located, requirements to ensure that housing is built to standards compatible with other units in any project, other regulations to ensure the health, safety, and welfare of those who will reside in the workforce and affordable units, etc.

In addition to providing regulations for any LLA project, the proposed Ordinance would also be applicable to any workforce housing project within the Town.

Since the August 7, 2024 workshop, staff, in conjunction with the Town Attorney, has revised the proposed Workforce Housing language to reflect the Town Commission’s comments and public input as well as to incorporate useful text from a University of Florida Live Local Act model/draft ordinance, that includes a focus on workforce housing. Additionally, the proposed ordinance has been revised to include language required by the new Live Local Act amendments, which are anticipated to go into effect statewide on July 1, 2025.

Note: To date, the Town has not received any proposed project applications nor is the Town aware of any projects under the LLA that are intended to be submitted for consideration. However, the Town has received inquiries related to the LLA. However, potential applicants may make submittals under the proposed Code and the LLA through October 2033, unless the LLA is amended by the State of Florida.

The proposed Ordinance was prepared by the Community Development Department and reviewed by the Town Attorney.

The proposed Ordinance was approved on first reading by the Town Commission (June 18, 2025 – 4 to 1 vote) and is being presented on second and final reading.

While many of the Town Commission’s questions and concerns were answered during first reading of the proposed Ordinance, additional staff responses are contained below.

1. Concern with whether there sufficient design standards in the ordinance.

The LLA mandates that a local government must apply “development regulations for multi-family developments in areas zoned for such use”. Staff has not developed separate exterior design guidelines for LLA projects but rather has proposed to utilize the design requirements of the particular districts which are being used for the multi-family regulations.

Sec. 65-5 of the proposed ordinance provides that any LLA project in a mixed use district will follow the regulations of that district. The Town’s mixed use districts of Park Avenue Downtown (PADD), C-3 Twin Cities, Mixed Use-TND, and the Federal highway Use District Overlay (FHMUDO) all have design regulations that will be followed by any project within those districts, to insure consistency and good design.

As presented on first reading Chapter 25 required that LLA projects in Industrial or Commercial districts the C-3 District regulations. **However, after review, staff is proposing the following changes to the ordinance, which have been incorporated into it for second reading:**

- LLA projects in **Industrial districts** and any on church property shall follow the regulations of the “Mixed Use, Traditional Neighborhood District”.
- LLA projects in **Commercial districts** shall follow the PADD regulations.

Reasoning: The C-3 was initially recommended as it sets out requirements by typology to follow. However, staff is recommending changes to use districts that provide more detail on façade appearance. The PADD district has very specific requirements. The Mixed Use-TND district was originally developed to “promote and control revitalization and new development in the western extension of the town”. It’s regulations for apartment buildings provide specifics on required building appearance, such as:

- *All building facades shall have windows, sills, lintels, expression lines and a cornice.*
- ***Architectural characteristics** shall change every 30 feet for row houses and every 60 feet for large apartment buildings. Architectural characteristics may include, but not be limited to, entrances, window treatments, color, building materials, reveals, height of facade, and appurtenances.*
- *Building fronts are required to have at least one of the following: stoop, front porch, balcony, or bay windows extending at least 25 percent of the building facade.*
- *Expression lines are required between the first and second floors along the front facade and the sides if visible from the street.*
- ***A vertically oriented change in the facade is required** at least every 60 feet of frontage. Vertical changes may include a reveal, brought forward or receding, changes in the fenestration pattern, height of facade, or appurtenances.*

2. Could an LLA rental project be converted to a condominium?

The LLA is focused on addressing the shortage of affordable rental units and does not include any provisions to allow such a change. The legislation states that “at least 40 percent of the residential units in a proposed multifamily development are rental units that, for a period of at least 30 years, are affordable as defined in s. 420.0004.” The granting of property tax relief for the affordable units, tax credits, and any other public grants or loans would require this stipulation as well. Therefore, the Town is not empowered to allow any conversion.

3. **What if the project is sold?**

As explained at the Hearing, the conditions and requirements run with the land. The applicant would enter into Land Use Restriction Agreement approved by the Town Attorney. A sample agreement from the University of Florida is now included in the packet as Attachment E.

4. **The Town needs to encourage Non- LLA workforce housing**

Staff has envisioned that while the proposed Ordinance addresses workforce housing under the LLA and any other federal or state funded or incentive projects, Chapter 65 will also include future Town programs to encourage or require workforce housing.

Staff had introduced one such program at the August 24, workshop, due to concerns with redevelopment that might eliminate existing workforce housing. However, as the program incentives were linked to the PADD, it was put on hold until any changes to the PADD were finalized. The goal is to have Town programs that would be preferred by developers over the LLA so that workforce housing occurs in locations best suited for housing

5. **Double subsidy?** Could an extremely low income family (that wouldn't qualify on income) receive a voucher that would then put them into an income level to qualify?

Under the Housing Choice (section 8) voucher, the program pays the difference between 30% of the family's income and the actual rent charged by the landlord. Staff would take the position that as the Housing Choice (section 8) voucher dollars are paid from the Housing Authority directly to a landlord, this should not be considered income. Therefore, the income levels must be met.

Even if interpreted as income, a landlord must agree to participate in the program. The Housing Authority indicates that it may take up to two to seven years to be pulled from the waiting list

Conclusion

The Town currently has no regulations pertaining to workforce housing. As previously summed up by the Town Attorney, the ordinance provides regulations and guidelines that set a framework under which the Town would process and review any workforce housing project including those under the LLA. While the state has pre-empted local control of certain zoning aspects, the ordinance provides the Town some measure of authority under which to review a project and to require adherence to Comprehensive Plan policies.

Recommended Motion:

I move to approve Ordinance No. 03-2025 on second and final reading, which includes changes recommended by staff, to create a new Chapter 65 "Workforce Housing" within the Town of Lake Park's Code of Ordinances.

STAFF REPORT: SECOND READING OF ORDINANCE # 03- 2025 ESTABLISHING “CHAPTER 65 WORKFORCE HOUSING”

Update from the June 18 Town Commission Public Hearing

At the June 18 Public Hearing the Town Commission voted 4-1 to approve Ordinance 03-2025 on first reading. The Commission also posed questions and concerns, for which staff has provided responses below.

1. Concern with whether there sufficient design standards in the ordinance.

The LLA mandates that a local government must apply “development regulations for multi-family developments in areas zoned for such use”. Staff has not developed separate exterior design guidelines for LLA projects, but rather has proposed to utilize the design requirements of the particular districts which are being used for the multi-family regulations.

Sec. 65-5 of the proposed ordinance provides that any LLA project in a mixed use district will follow the regulations of that district. The Town’s mixed use districts of Park Avenue Downtown (PADD), C-3 Twin Cities, Mixed Use-TND, and the Federal highway Use District Overlay (FHMUDO) all have design regulations that will be followed by any project within those districts, to insure consistency and good design.

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3. **What if the project is sold?**

As explained at the Hearing, the conditions and requirements run with the land. The applicant would enter into Land Use Restriction Agreement approved by the Town Attorney. A sample agreement from the University of Florida is included in the packet as Attachment E, merely as an informational item.

4. **The Town needs to encourage Non- LLA workforce housing**

Staff has envisioned that while the proposed Ordinance addresses workforce housing under the LLA and any other federal or state funded or incentive projects, Chapter 65 will also include future Town programs to encourage or require workforce housing.

Staff had introduced one such program at the August 24, workshop, due to concerns with redevelopment that might eliminate existing workforce housing. However, as the program was linked to the PADD, it was put on hold until any changes to the PADD were finalized. The goal is to have Town programs that would be preferred by developers over the LLA so that workforce housing occurs in locations best suited for housing

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Even if interpreted as income, a landlord must agree to participate in the program. The Housing Authority indicates that it may take up to two to seven years to be pulled from the waiting list, depending on available funding.

The Town currently has no regulations pertaining to workforce housing. As previously summed up by the Town Attorney, the ordinance provides regulations and guidelines that set a framework under which the Town would process and review any workforce housing project including those under the LLA. While the state has pre-empted local control of certain zoning aspects, the ordinance provides the Town some measure of authority under which to review a project and to require adherence to Comprehensive Plan policies.

BACKGROUND AND SUMMARY of ORDINANCE

Ordinance 03-2025, establishing a code chapter, “Chapter 65 Workforce Housing” is before the Town Commission for **second reading**. The ordinance establishes regulations for workforce housing in the Town, primarily to address the “Live Local Act” (LLA). The ordinance, in its initial form, was presented to the Commission at an August 7, 2024 workshop. Following the workshop the Commission extended “zoning in progress” (ZIP) for any affordable housing projects to allow time to coordinate with possible changes in the PADD that might impact the proposed ordinance. The ZIP has now expired as of March 31.

The “Live Local Act” (LLA), passed by the State Legislature in 2023 and amended in 2024 and 2025, created a State program to encourage the construction of rental housing projects in which a minimum of 40 % of the units are “affordable”. The Town’s major concern with the legislation is the preemption of the local government control regarding various zoning decisions, and a loss of ad valorem taxes for the affordable units.

Any housing project that qualifies under the LLA can locate in any district in the Town that allows industrial, commercial or mixed use. A LLA project is entitled to the highest density in the Town and the greatest allowable height in the Town that is within one mile of the project. Only administrative approval of the municipality is required. The 2025 legislation also created the ability for LLA projects to be constructed on sites owned by religious institutions on which a house of worship is located.

The Commission had expressed concerns with potential incompatibility of uses, conflicts with the Comprehensive Plan, lack of public involvement, and lack of specificity in the statute regarding the process. Attachment 3 of this report contains the relevant section of the Act.

It has also been determined by staff that the housing ordinance can proceed ahead of any changes to the PADD. The Town Attorney is in agreement with proceeding at this time, and has also been involved in the ordinance revisions.

The proposed Chapter 65 addresses housing that falls into the “Workforce Housing” category, as this is how the Town proposes to define “affordable” in the context of the LLA. Workforce Housing includes five income categories which are classified as very low, low, moderate, upper moderate and middle. The ordinance sets out the Town’s procedure to apply, establishes where such housing can be located, provides requirements to insure that such housing is built to standards compatible with other units in any project and other such regulations to insure the health, safety, and welfare of those who will reside in the workforce and affordable units. In addition to providing

regulations for any LLA project, the ordinance will also be applicable to any workforce housing project. Additional detail is provided in this report. Please see **Attachment B**, following the staff report, for the proposed ordinance.

To date, the Town is not aware of any developers intending to submit projects under the LLA, although we have received inquiries. However, unless amended, this act will be in effect until October 2033.

Update from August 7 2024 Town Commission Workshop

Public input and TC discussion

Since the August 7 Workshop the Workforce Housing Ordinance has been revised to reflect Commission comments, public input, incorporate useful text from a recent draft model ordinance on administration of the LLA prepared by the University of Florida, and focus on workforce housing. The ordinance has also been revised in response to new amendments to the Live Local Act which will go into effect July 1. These changes are summarized in **Attachment 1** of this report.

One change to note- staff has added the upper level of the “very low” income range to the definition of workforce housing, based on comments from Commissioner Thomas, who was concerned that that a teacher with a family would not have sufficient income to qualify for workforce housing. Currently a starting teacher’s salary of \$53,000 (source: PB Post). Therefore, while Palm Beach County workforce housing starts with those making 60% of the median family income, the Lake Park program proposes to start at 50%. The income categories and allowable rents are contained in **Attachment 2** of this report.

This addition will also help qualify an entry level public employee, as well as mid-range public employees with families’

LIVE LOCAL ACT PROJECTS: LOCATION, AND MAXIMUM HEIGHT AND DENSITY IN THE TOWN

In order to understand the reasoning for some of the requirements in the Town’s proposed ordinance, the potential locations of any LLA project, density and height as it relates to the Town are set out below.

Location of Live Local Housing

The LLA mandates that local governments must allow any qualified LLA project in any district that allows commercial, industrial, or mixed use. For Lake Park, such projects could be located in the C-1, C-2 and C-1B commercial districts, the C-4 and CLIC-1 industrial districts and the mixed use districts of Park Avenue Downtown (PADD), Twin Cities (C-3), and Federal Highway Mixed Use District Overlay (FHMUDO), which are shown below. Another way to describe the allowed location- anywhere on the zoning map that is not yellow or pink (residential) or dark green (Conservation).

LLA: MUST ALLOW QUALIFIED PROJECTS IN DISTRICTS THAT PERMIT COMMERCIAL, INDUSTRIAL , OR MIXED USE

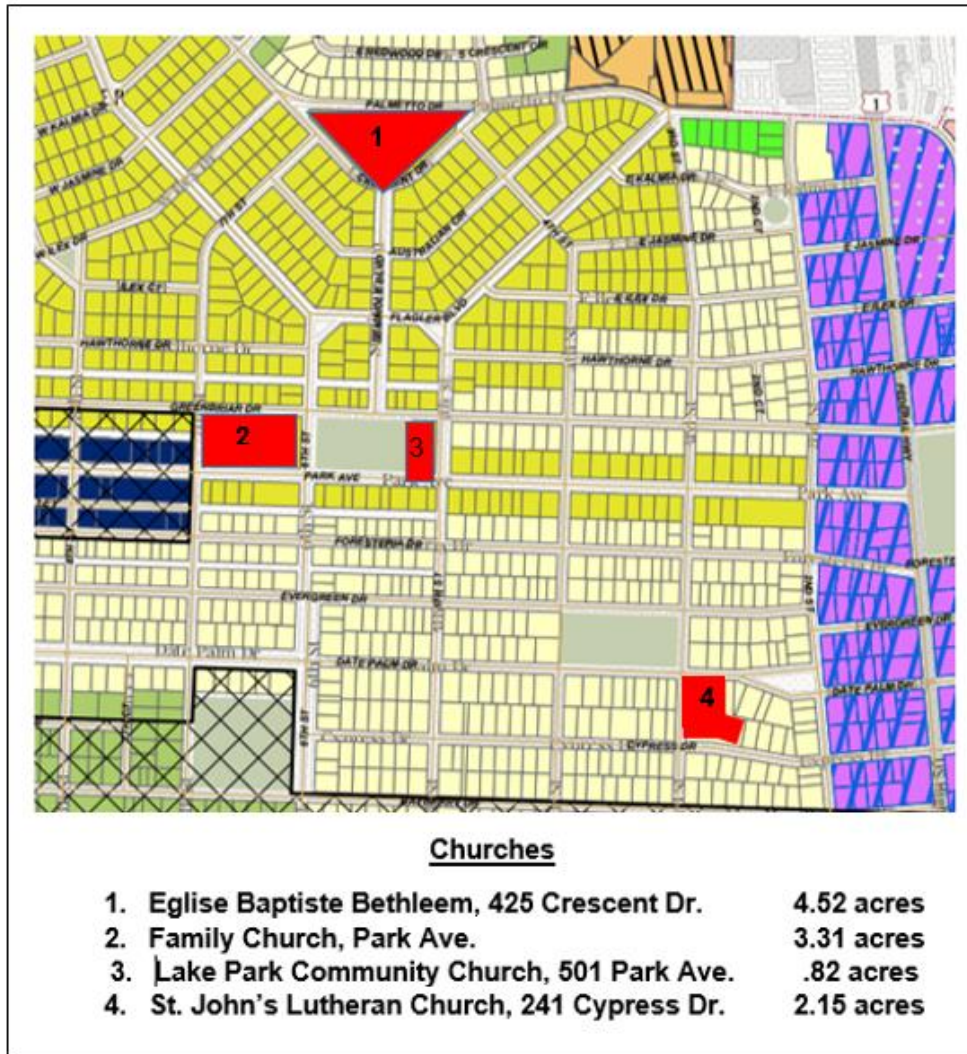
IN LAKE PARK

INDUSTRIAL DISTRICTS: BROWN (C-4) AND BLUE (CLIC) COMMERCIAL: ORANGE (C-1),
RED(C-2), AND PURPLE (C1B)

MIXED USE DISTRICTS: DARK BLUE (PADD), LIGHT ORANGE (C-3) AND PURPLE/BLUE STRIPES (FHMUDO)



As of July 1, 2025 qualified LLA projects can also be located on property owned by a religious institution that has a house of worship on the site. There are four such properties in the Town, located in single-family districts, shown on the map below. While use of this section is unlikely for most of the additional sites, regulations have been added to the ordinance to address such a location.



Mandated Allowable Density

BY statute, A LLA project is entitled to the maximum density permitted in the Town, not including any density bonuses. Therefore the **maximum allowable density would be 48 du/acre**. This reflects the density of the C-3 Twin Cities District, the PADD District, and the FHMUDO District (excluding bonuses).

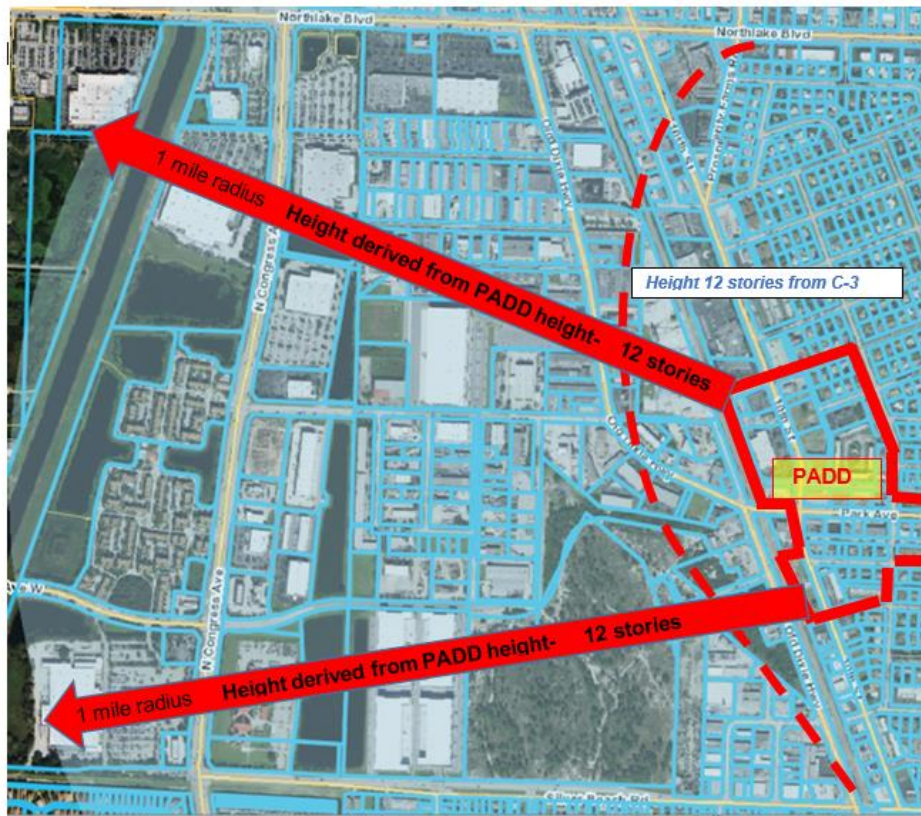
Mandated Allowable Height

The statute mandates that a LLA project is entitled to the maximum height (excluding bonuses) allowed by the Town within one mile of the project. Depending on location, the maximum allowable

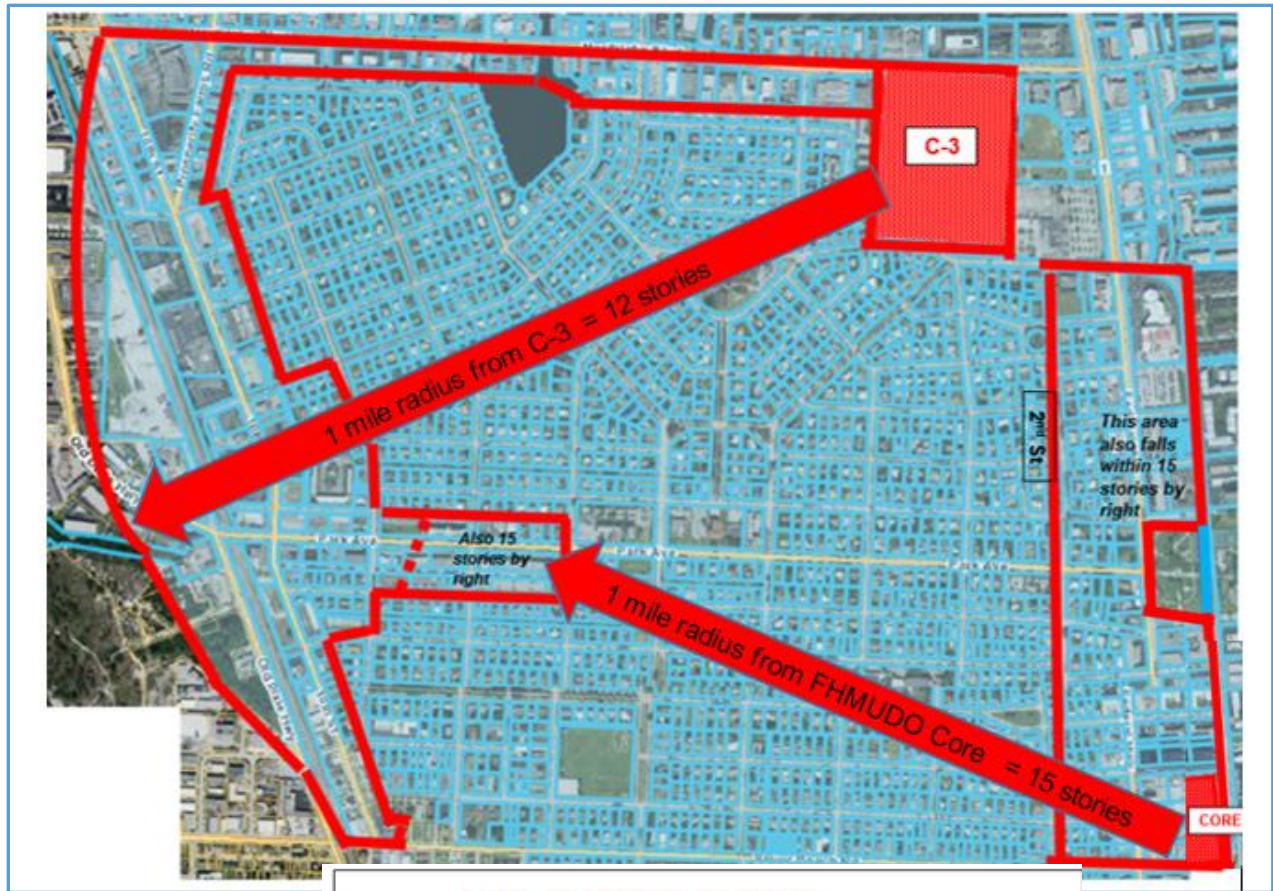
LLA heights in the Town could vary from 12 stories to 15 stories. (However by limiting the density to 48 du/acre, this alone would likely significantly reduce the height of any LLA project.)

The heights and the governing districts are shown on the two maps that follow.

Most of the Industrial area, as well as the Congress Ave. commercial corridor and San Marco would be governed by PADD height, currently 12 stories. Under the 2025 amendments to the LLA (pending the Governor's signature) this height would continue to govern, even if the PADD height is reduced.



East of the RR tracks, the height in Commercial or Mixed Use Districts will be governed by the maximum 12 story height of the C-3 District or the maximum 15 story height of the Core Area of the FHMUDO, as shown below . These heights would govern any LLA project in the PADD area, regardless of any change to the PADD height regulations. The four “religious institution” properties would be entitled to either 12 or fifteen stories, depending on the location



PADD -15 STORIES BY RIGHT



PROPOSED ORDINANCE # 03-2025

TOWN REGULATIONS FOR WORKFORCE HOUSING

The LLA authorizes the locations and densities without regard for the compatibility of the proposed development with surrounding properties as required by the Town's Comprehensive Plan and Land Development Regulations, and without regard for the impacts of height, density or intensity on adjacent existing properties. Without Town regulations, this would result in serious land use conflicts and impacts on the general welfare of residents and businesses.

Without regulation the implementation of the LLA would be inconsistent with existing objective and policies of the Town's Comprehensive Plan, including specifically Future Land Use Element Policy 5.4 that requires that the Town "utilize such techniques as distance requirements, buffering, landscaping, lower- intensity development, and scale-down requirements to provide appropriate transitions between high density uses and zoning districts having different intensities, densities, and functions." Thus the Zoning in Progress allowed the Town the time to develop the necessary regulations.

The primary goal of the new chapter is to insure that the Town has in place regulations that would be utilized should any developer propose housing under Florida Statute 166.04151 (7) of the LLA. The ordinance has also been drafted such that these would apply to any proposed workforce housing project as well. The proposed regulations would insure the health and safety of any occupants and help to mitigate any impacts due to projects being located in commercial and industrial use districts. The ordinance also includes regulations to protect single-family neighborhoods should any church property be the site of a LLA project. The proposed Chapter 65 establishes a framework under which the Town can consider and process any applications under this statute.

While the LLA uses the term "affordable housing", the local government can choose what income categories are used. The Town is providing its "affordable housing" in the form of "workforce housing", which excludes the lowest income tier that is best served through subsidized housing programs. The current median household income in Palm Beach County for a family of four is \$104,000. The Town's workforce housing covers five household income categories, ranging from 50 % to 120% of the County's median household income. The income ranges and related rents are shown in Attachment 2 of this report.

Major provisions proposed for Chapter 65

Several key components of the proposed ordinance are listed below. Please see **Attachment B** for the ordinance itself which contains Chapter 65.

(Reference to applicable proposed chapter section provided in parenthesis.)

- Provides definitions and income ranges of the various categories typically used when considering who is eligible for "affordable housing", which follow the income ranges those used by HUD. The Town is proposing to use the same income categories adopted by the County for its workforce housing program, for ease of administration.

The one exception is the Town's addition of a Very Low category, which includes the upper levels "very low". The specific ranges are contained in the definition section of the proposed chapter. (sec. 65-2)

- Defines "affordable" in keeping with the State Statute, which states that monthly rents or mortgage payments cannot exceed 30 percent of monthly household income. (sec. 65-2)
- Affordable" Income Categories: Specifies how the income levels will be used by the Town to address the "affordable housing" requirements set by the LLA to **insure that a developer doesn't only use the highest income level in the affordable category. The Town's ordinance provides that affordable rental units be equally allocated among the four specified income level ranges** in workforce housing of very low, low, moderate, and upper moderate. Any project proposing units for sale must provide for the three income levels of moderate, upper moderate, and middle as set out in the ordinance. (sec.65-6)
- Requires submittal of a Sustainable Workforce Housing Plan (SWHP) that provides specific detail regarding the program being utilized, financing and details of the workforce units, including rental ranges, location, etc. This is to be submitted along with the site plan. (sec.65-4)
- Provides requirements to ensure the affordable units are substantially similar to market units regarding quality and are interspersed throughout the project. Includes usable open space and buffering requirements.(sec. 65-6)
- Sets out requirements to help mitigate the impact of any adjacent incompatible uses and provide for the health and safety of residents living in a LLA project. Requirements include an impact review of adjacent uses, protections such as buffering and setbacks, and the provision of open space for recreation. (sec.65-7)
- Provides requirements to mitigate impacts of LLA projects proposed for sites owned by religious institutions in residential neighborhoods.
- Provides that demolition of any local historic structure on the site of a LLA project, while mandated by the State to be handled administratively, shall follow the same adopted review criteria as any historic project.
- Sets out a process for the mandated administrative review for the LLA projects. Under the Town Code projects would normally follow a Public Hearing Process. However as this does not occur for administrative review, staff has included a requirement for the project to be the subject of a workshop meeting with notice to all properties within 300 feet. (sec.65-9)
- Requires a monitoring plan, annual monitoring reports for duration of affordable units (sec.65-13) and sets out enforcement (sec.65-14)

- Requirements of Town Chapter 65 would also apply to any project that is proposing “affordable” housing under any federal, state or local developer funding/financial assistance program.

Legal Notice and other Legal Requirements

State Statutes now require that the governments prepare a “Business Impact Estimate” for all ordinances adopted, with certain exceptions. This must be posted on a local government’s website no later than the date of public notice for the public hearing, and included in the agenda package. This document is included as **Attachment C.**

A display ad was published in the May 24 edition of the Palm Beach Post, in accordance with statutory and Town requirements (Attachment D).

Following second reading, the Department will prepare an outline of the Town’s procedures and requirements for administrative approval of LLA projects which will be posted on the Town’s website as required by the act.

STAFF RECOMMENDATION: I move to approve Ordinance No. 03-2025 on second reading which includes the changes recommended by staff, to create a new Chapter 65 "Workforce Housing" within the Town of Lake Park’s Code of Ordinances.

Attachments to this report:

1. Summary of changes to the Ordinance since August Workshop
2. Workforce Housing Income and Rental Ranges
3. LLA Statute

Attachment 1**ORDINANCE ON FIRST READING: REVISIONS SINCE AUGUST 7, 2024 WORKSHOP**

Since the August 7 Workshop the Workforce Housing Ordinance has been revised to reflect Commission comments and incorporate useful text from a recent draft model ordinance on administration of the LLA. These revisions are summarized below, as well as staff response to all issues raised by the Commission.

A. ADDRESSING ISSUES RAISED BY THE COMMISSION AND PUBLIC AT THE AUGUST 7 WORKSHOP:

1. **There is no reasonable buffer to protect residential from industrial uses.** *The proposed ordinance requires a forty foot landscaped buffer and minimum six foot masonry wall adjacent to industrial uses. Further conditions may be imposed depending on the type of adjacent uses as an “Environmental Assessment and Mitigation Plan” is required to address impacts within 300 feet of the property.*
2. **How does monitoring work?**
Section 65.14 of the proposed chapter sets forth reporting and monitoring requirements, which would be expanded upon in a “land use restriction agreement” that must be executed by the property owner. There are detailed annual reporting requirements, and the ability for the Town to request monthly monitoring and reporting if deemed necessary. All reports would be reviewed by a 3rd party, hired by the Town and paid by the property owner. .
3. **Concern with any parking reductions.**
The proposed ordinance does not reduce parking for LLA projects.
4. **Teachers don’t qualify for workforce housing.**
According to the Palm Beach Post the starting salary for a teacher in PB County is now \$53,000. Therefore, a starting teacher with a family would not be eligible under this program, making too little to qualify for workforce housing under a program based on the Palm Beach County Workforce Program which begins with the low income category.

Staff has added the upper level of the “very low” income range, 50% to 60% of the median family household income, to the definition of workforce housing, based on

comments from Commissioner Thomas. This addition will also help qualify an entry level public employee, as well as mid-range public employees with families.

Therefore, while Palm Beach County workforce housing starts with those making 60% of the median family income, the Lake Park program proposes to start at 50%.

5. Why are all income brackets not included?

The very low income category is proposed to be added, as noted above. However, the extremely low income category is best addressed through subsidized programs rather than the private sector.

B. PROPOSED CHANGES BASED ON THE “MODEL LLA ADMINISTRATIVE REVIEW POLICY”

A draft “Model Administrative Review Policy to Implement Florida’s Live Local Act” was recently released by the Univ. Florida. Staff has reviewed this document and incorporated some of the language. Staff has not restructured the Town’s proposed ordinance to reflect the model, as our ordinance also covers any workforce housing project that receives financial aid for construction.

C. 2025 AMENDMENTS TO THE LIVE LOCAL ACT: POTENTIAL IMPACT FOR THE TOWN

The governor recently signed SB 1730, effective July 1. The bill includes corresponding amendments impacting both counties and municipalities pertaining to the Live Local Act.

Those that may have an impact on the Town are listed below. Staff explanation and/or proposed changes to Ordinance 03-2025 (Chapter 65 Workforce Housing) to address the amendment are shown in blue italic below, as well as in the staff report.

1. Extends the districts/area in which LLA housing may be built to include any parcel of land with a house of worship owned by a religious institution, regardless of zoning district.

In Lake Park this would include

- *Eglise Baptiste Haitienne Bethlehem Church, Crescent Circle, zoned R-1A single-family*
- *Lake Park Community Church, 501 Park Ave., zoned R-1A single-family*
- *Family Church, 600 block of Park Avenue, zoned R1A single-family.*
- *St. John’s Evangelical Lutheran Church, 241 Cypress Dr., zoned R-1 single-family.*

Staff has added a section to address mitigating impacts with single- family neighborhoods

2. Essentially prevents municipalities from reducing maximum height or density requirements in other districts which would then govern the LLA projects. The bill states that the government must use current regulations or those that were in effect on July 1, 2023, whichever is least restrictive. (pgs. 15,16)

Therefore, any reduction in height in the PADD would not change the height to be allowed for LLA projects within 1 mile, as the PADD maximum allowable height as of July 2023 would be applied. (The PADD was amended in July 2022.) The industrial, commercial, and mixed use properties west of the PADD would continue to be allowed up to 12 stories

3. Requires that “The municipality must administratively approve the demolition of an existing structure associated with a proposed development..., without further action by the governing body of the municipality .., if the proposed demolition otherwise complies with all state and local regulations.” (pg. 18)

*Therefore IF there was a qualified LLA project submitted for the 918 Park Avenue project, the Town would have to administratively approve the demolition. However, it does **not appear that demolition must necessarily occur due to the phrase “if the demolition otherwise complies with all state and local regulations”, which would then include the process and standards set out in Chapter 66 on historic preservation.** However, this should be confirmed by the Town Attorney.*

Staff is proposing to add language to insure that while handled administratively the staff is able to utilize the same process and requirements as the HPB would use by adding “3)Should an historic structure be located on a parcel for a proposed Live Local Act project, the Community Development Department shall assume the responsibilities otherwise reserved for the Historic Preservation Board and the Town Commission when evaluating any special certificate of appropriateness or request for demolition.”

4. Differentiates between structures designated historic on the National Register of Historic Places and those that are locally designated. If a proposed development is on a parcel that is on the National Register, the municipality can limit the project height to the maximum height within $\frac{3}{4}$ mile of the project, as compared to 1 mile required. (pg. 17)

As written then the height reduction does not related to locally designated historic structures in the Town. Therefore this will have no impact on the Town.

5. Changes from “must consider” to “must reduce” parking by 15% if requested by the LLA applicant, if any one of three conditions exist: within ¼ mile of a transit stop (as defined by the town) and the stop is accessible by the development, within ½ mile of a major transportation hub, or there is available parking within 600 feet of the proposed development.

As proposed in Chapter 65 “Workforce Housing” of the Town code, transit stop would mean “a designated location with a covered structure recognized by the transit authority as a pick-up/drop off connection to a countywide transit system that provides routine service with a frequency of service interval of 20 minutes or less during the morning and afternoon peak commute periods. Connection to the transit system shall be sufficient for commuters in terms of number of daily connections and destinations.” Given the limited Palm Tran service at this time, a project would not be able to utilize this option to obtain reduced parking.

Staff has also proposed to add a definition of “accessible” as it relates to a transit stop: “Accessible to a transit stop shall mean (1) that a person walking between the transit stop and the development may travel the entire distance on even, paved sidewalks or within marked crosswalks, (2) that the entire route meets applicable standards of the Americans with Disabilities Act, and (3) that the route does not cross any road having a design speed greater than 25 miles per hour or having more than two motor vehicle lanes.”

It may be possible for a LLA project in the Downtown or certain areas of Federal Highway to utilize the option of available parking, but it’s not entirely clear from the statute.

6. Specifically limits a municipalities’ ability to enact more than a 90 day building moratorium to delay the construction of LLA project. The subsection does not apply if it relates to addressing “stormwater or flood water management or the supply of potable water, or due to the necessary repair of sanitary sewer systems, so long as it applies to “all types of residential and mixed -use development”.

With the pending adoption of Chapter 65 - Workforce Housing there will be no need to consider a moratorium at this time. However, any moratorium in an area related to lack of various utilities could apply.

7. Sets limits on attorney fees for the prevailing party in any civil action filed against municipality.

Attachment 2**TOWN OF LAKE PARK PROGRAM: WORKFORCE HOUSING CATEGORIES****2024 Rents and Incomes****Effective July 1, 2024****Income and Rental Ranges by Category**

<i>Income Levels – family of 4</i>			<i>Studio</i>	<i>1 BR</i>	<i>2BR</i>	<i>3BR</i>	<i>4BR</i>
Very Low2	50-60% MFI	\$52,000-\$62,399	\$843-\$1,125	\$903-\$1,205	\$1,084-\$1,446	\$1,253-\$1,671	\$1,398-\$1,864
Low	60-80% of MFI	\$62,400 - \$83,200	\$1,125 - 1,500	\$1,205 - 1,607	\$1,446 - 1,928	\$1,671 - 2,228	\$1,864 - 2,486
Moderate 1	>80-100% of MFI	>\$83,200 - \$104,000	\$1,500 - 1,875	\$1,607 - 2,009	\$1,928 - 2,410	\$2,228 - 2,785	\$2,486 - 3,108
Moderate 2	>100-120% of MFI	\$104,000 - \$124,800	\$1,875 - 2,250	\$2,009 - 2,410	\$2,410 - 2,892	\$2,785 - 3,342	\$3,108 - 3,729

Tables for Income sources: Low –Middle: Palm Beach County Workforce Housing categories; Very low 2: Florida Housing Finance Corp. All information derived from HUD. Updated annually

INCOME LEVELS AND RENTAL LIMITS.**EFFECTIVE JULY 2024**

Percentage Category	Income Limit by Number of Persons in Household										Rent Limit by Number of Bedrooms in Unit					
	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5
50%	37,500	42,850	48,200	53,550	57,850	62,150	66,400	70,700	74,970	79,254	937	1,004	1,205	1,392	1,553	1,713
60%	45,000	51,420	57,840	64,260	69,420	74,580	79,680	84,840	89,964	95,105	1,125	1,205	1,446	1,671	1,864	2,056
70%	52,500	59,990	67,480	74,970	80,990	87,010	92,960	98,980	104,958	110,956	1,312	1,406	1,687	1,949	2,175	2,399
80%	60,000	68,560	77,120	85,680	92,560	99,440	106,240	113,120	119,952	126,806	1,500	1,607	1,928	2,228	2,486	2,742

Palm Beach County Median Income (Family of 4) \$104,000

Source: from Table "2024 Income Limits and Rents", Florida Housing Finance Corp. Data Origin HUD

Effective July 2024 Effective July 2024

Chapter 166.0415, the "Live Local Act"**Proposed 2025 amendments are shown underlined.**

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378 that section, to read:

379 **166.04151 Affordable housing.-**

380 (6) Notwithstanding any other law or local ordinance or
 381 regulation to the contrary, the governing body of a municipality
 382 may approve the development of housing that is affordable, as
 383 defined in s. 420.0004, including, but not limited to, a mixed-
 384 use residential development, on any parcel zoned for commercial
 385 or industrial use, or on any parcel, including any contiguous
 386 parcel connected thereto, which is owned by a religious
 387 institution as defined in s. 170.201(2) which contains a house
 388 of public worship, regardless of underlying zoning, so long as
 389 at least 10 percent of the units included in the project are for
 390 housing that is affordable. The provisions of this subsection
 391 are self-executing and do not require the governing body to
 392 adopt an ordinance or a regulation before using the approval
 393 process in this subsection.

394 (7) (a) A municipality must authorize multifamily and mixed-
 395 use residential as allowable uses in any area zoned for
 396 commercial, industrial, or mixed use, and in portions of any
 397 flexibly zoned area such as a planned unit development permitted
 398 for commercial, industrial, or mixed use, if at least 40 percent
 399 of the residential units in a proposed multifamily development
 400 are rental units that, for a period of at least 30 years, are
 401 affordable as defined in s. 420.0004. Notwithstanding any other
 402 law, local ordinance, or regulation to the contrary, a
 403 municipality may not require a proposed multifamily development
 404 to obtain a zoning or land use change, special exception,
 405 conditional use approval, variance, transfer of density or
 406 development units, amendment to a development of regional

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407 impact, amendment to a municipal charter, or comprehensive plan
408 amendment for the building height, zoning, and densities
409 authorized under this subsection. For mixed-use residential
410 projects, at least 65 percent of the total square footage must
411 be used for residential purposes. The municipality may not
412 require that more than 10 percent of the total square footage of
413 such mixed-use residential projects be used for nonresidential
414 purposes.

415 (b) A municipality may not restrict the density of a
416 proposed development authorized under this subsection below the
417 highest currently allowed, or allowed on July 1, 2023, density
418 on any land in the municipality where residential development is
419 allowed under the municipality's land development regulations.
420 For purposes of this paragraph, the term "highest currently
421 allowed density" does not include the density of any building
422 that met the requirements of this subsection or the density of
423 any building that has received any bonus, variance, or other
424 special exception for density provided in the municipality's
425 land development regulations as an incentive for development.
426 For purposes of this paragraph, "highest currently allowed, or
427 allowed on July 1, 2023," means whichever is least restrictive
428 at the time of development.

429 (c) A municipality may not restrict the floor area ratio of
430 a proposed development authorized under this subsection below
431 150 percent of the highest currently allowed, or allowed on July
432 1, 2023, floor area ratio on any land in the municipality where
433 development is allowed under the municipality's land development
434 regulations. For purposes of this paragraph, the term "highest
435 currently allowed floor area ratio" does not include the floor

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436 area ratio of any building that met the requirements of this
437 subsection or the floor area ratio of any building that has
438 received any bonus, variance, or other special exception for
439 floor area ratio provided in the municipality's land development
440 regulations as an incentive for development. For purposes of
441 this subsection, the term "floor area ratio" includes floor lot
442 ratio and lot coverage.

443 (d)1. A municipality may not restrict the height of a
444 proposed development authorized under this subsection below the
445 highest currently allowed, or allowed on July 1, 2023, height
446 for a commercial or residential building located in its
447 jurisdiction within 1 mile of the proposed development or 3
448 stories, whichever is higher. For purposes of this paragraph,
449 the term "highest currently allowed height" does not include the
450 height of any building that met the requirements of this
451 subsection or the height of any building that has received any
452 bonus, variance, or other special exception for height provided
453 in the municipality's land development regulations as an
454 incentive for development.

455 2. If the proposed development is adjacent to, on two or
456 more sides, a parcel zoned for single-family residential use
457 that is within a single-family residential development with at
458 least 25 contiguous single-family homes, the municipality may
459 restrict the height of the proposed development to 150 percent
460 of the tallest building on any property adjacent to the proposed
461 development, the highest currently allowed, or allowed on July
462 1, 2023, height for the property provided in the municipality's
463 land development regulations, or 3 stories, whichever is higher,
464 not to exceed 10 stories. For the purposes of this paragraph,

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the term "adjacent to" means those properties sharing more than one point of a property line, but does not include properties separated by a public road or body of water, including manmade lakes or ponds. For a proposed development located within a municipality within an area of critical state concern as designated by s. 380.0552 or chapter 28-36, Florida Administrative Code, the term "story" includes only the habitable space above the base flood elevation as designated by the Federal Emergency Management Agency in the most current Flood Insurance Rate Map. A story may not exceed 10 feet in height measured from finished floor to finished floor, including space for mechanical equipment. The highest story may not exceed 10 feet from finished floor to the top plate.

3. If the proposed development is on a parcel with a contributing structure or building within a historic district which was listed in the National Register of Historic Places before January 1, 2000, or is on a parcel with a structure or building individually listed in the National Register of Historic Places, the municipality may restrict the height of the proposed development to the highest currently allowed, or allowed on July 1, 2023, height for a commercial or residential building located in its jurisdiction within three-fourths of a mile of the proposed development or 3 stories, whichever is higher. The term "highest currently allowed" in this paragraph includes the maximum height allowed for any building in a zoning district irrespective of any conditions.

(e)1. A proposed development authorized under this subsection must be administratively approved without ~~and no~~ further action by the governing body of the municipality or any

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494 quasi-judicial or administrative board or reviewing body ~~is~~
495 ~~required~~ if the development satisfies the municipality's land
496 development regulations for multifamily developments in areas
497 zoned for such use and is otherwise consistent with the
498 comprehensive plan, with the exception of provisions
499 establishing allowable densities, floor area ratios, height, and
500 land use. Such land development regulations include, but are not
501 limited to, regulations relating to setbacks and parking
502 requirements. A proposed development located within one-quarter
503 mile of a military installation identified in s. 163.3175(2) may
504 not be administratively approved. Each municipality shall
505 maintain on its website a policy containing procedures and
506 expectations for administrative approval pursuant to this
507 subsection. For purposes of this paragraph, the term "allowable
508 density" means the density prescribed for the property in
509 accordance with this subsection without additional requirements
510 to procure and transfer density units or development units from
511 other properties.

512 2. The municipality must administratively approve the
513 demolition of an existing structure associated with a proposed
514 development under this subsection, without further action by the
515 governing body of the municipality or any quasi-judicial or
516 administrative board or reviewing body, if the proposed
517 demolition otherwise complies with all state and local
518 regulations.

519 3. If the proposed development is on a parcel with a
520 contributing structure or building within a historic district
521 which was listed in the National Register of Historic Places
522 before January 1, 2000, or is on a parcel with a structure or

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building individually listed in the National Register of Historic Places, the municipality may administratively require the proposed development to comply with local regulations relating to architectural design, such as facade replication, provided it does not affect height, floor area ratio, of density of the proposed development.

(f)1. A municipality must, upon request of an applicant, ~~reduce~~ ~~consider reducing~~ parking requirements for a proposed development authorized under this subsection by 15 percent if the development:

a. Is located within one-quarter mile of a transit stop, as defined in the municipality's land development code, and the transit stop is accessible from the development; ~~or~~

~~2. A municipality must reduce parking requirements by at least 20 percent for a proposed development authorized under this subsection if the development:~~

~~b.a.~~ Is located within one-half mile of a major transportation hub that is accessible from the proposed development by safe, pedestrian-friendly means, such as sidewalks, crosswalks, elevated pedestrian or bike paths, or other multimodal design features; ~~or~~

~~c.b.~~ Has available parking within 600 feet of the proposed development which may consist of options such as on-street parking, parking lots, or parking garages available for use by residents of the proposed development. However, a municipality may not require that the available parking compensate for the reduction in parking requirements.

~~2.3.~~ A municipality must eliminate parking requirements for a proposed mixed-use residential development authorized under

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this subsection within an area recognized by the municipality as a transit-oriented development or area, as provided in paragraph (h).

3.4. For purposes of this paragraph, the term "major transportation hub" means any transit station, whether bus, train, or light rail, which is served by public transit with a mix of other transportation options.

(k) Notwithstanding any other law or local ordinance or regulation to the contrary, a municipality may allow an adjacent parcel of land to be included within a proposed multifamily development authorized under this subsection.

(l) The court shall give any civil action filed against a municipality for a violation of this subsection priority over other pending cases and render a preliminary or final decision as expeditiously as possible.

(m) If a civil action is filed against a municipality for a violation of this subsection, the court must assess and award reasonable attorney fees and costs to the prevailing party. An award of reasonable attorney fees or costs pursuant to this subsection may not exceed \$250,000. In addition, a prevailing party may not recover any attorney fees or costs directly incurred by or associated with litigation to determine an award of reasonable attorney fees or costs.

(n) As used in this subsection, the term:

1. "Commercial use" means activities associated with the sale, rental, or distribution of products or the performance of services related thereto. The term includes, but is not limited to, such uses or activities as retail sales; wholesale sales; rentals of equipment, goods, or products; offices; restaurants;

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public lodging establishments as described in s. 509.242(1)(a);
food service vendors; sports arenas; theaters; tourist
attractions; and other for-profit business activities. A parcel
zoned to permit such uses by right without the requirement to
obtain a variance or waiver is considered commercial use for the
purposes of this section, irrespective of the local land
development regulation's listed category or title. The term does
not include home-based businesses or cottage food operations
undertaken on residential property, public lodging
establishments as described in s. 509.242(1)(c), or uses that
are accessory, ancillary, incidental to the allowable uses, or
allowed only on a temporary basis. Recreational uses, such as
golf courses, tennis courts, swimming pools, and clubhouses,
within an area designated for residential use are not commercial
use, irrespective of how they are operated.

2. "Industrial use" means activities associated with the
manufacture, assembly, processing, or storage of products or the
performance of services related thereto. The term includes, but
is not limited to, such uses or activities as automobile
manufacturing or repair, boat manufacturing or repair, junk
yards, meat packing facilities, citrus processing and packing
facilities, produce processing and packing facilities,
electrical generating plants, water treatment plants, sewage
treatment plants, and solid waste disposal sites. A parcel zoned
to permit such uses by right without the requirement to obtain a
variance or waiver is considered industrial use for the purposes
of this section, irrespective of the local land development
regulation's listed category or title. The term does not include
uses that are accessory, ancillary, incidental to the allowable

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610 uses, or allowed only on a temporary basis. Recreational uses,
611 such as golf courses, tennis courts, swimming pools, and
612 clubhouses, within an area designated for residential use are
613 not industrial use, irrespective of how they are operated.

614 3. "Mixed use" means any use that combines multiple types
615 of approved land uses from at least two of the residential use,
616 commercial use, and industrial use categories. The term does not
617 include uses that are accessory, ancillary, incidental to the
618 allowable uses, or allowed only on a temporary basis.

619 Recreational uses, such as golf courses, tennis courts, swimming
620 pools, and clubhouses, within an area designated for residential
621 use are not mixed use, irrespective of how they are operated.

622 4. "Planned unit development" has the same meaning as
623 provided in s. 163.3202(5)(b).

624 (o) ~~(k)~~ This subsection does not apply to:

625 1. Airport-impacted areas as provided in s. 333.03.

626 2. Property defined as recreational and commercial working
627 waterfront in s. 342.201(2)(b) in any area zoned as industrial.

628 3. The Wekiva Study Area, as described in s. 369.316.

629 4. The Everglades Protection Area, as defined in s.
630 373.4592(2).

631 (p) ~~(l)~~ This subsection expires October 1, 2033.

632 (9)(a) Except as provided in paragraphs (b) and (d), a
633 municipality may not enforce a building moratorium that has the
634 effect of delaying the permitting or construction of a
635 multifamily residential or mixed-use residential development
636 authorized under subsection (7).

637 (b) A municipality may, by ordinance, impose or enforce
638 such a building moratorium for no more than 90 days in any 3-

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639 year period. Before adoption of such a building moratorium, the
640 municipality shall prepare or cause to be prepared an assessment
641 of the municipality's need for affordable housing at the
642 extremely-low-income, very-low-income, low-income, or moderate-
643 income limits specified in s. 420.0004, including projections of
644 such need for the next 5 years. This assessment must be posted
645 on the municipality's website by the date the notice of proposed
646 enactment is published and must be presented at the same public
647 meeting at which the proposed ordinance imposing the building
648 moratorium is adopted by the governing body of the municipality.
649 This assessment must be included in the business impact estimate
650 for the ordinance imposing such a moratorium required by s.
651 166.041(4).

652 (c) If a civil action is filed against a municipality for a
653 violation of this subsection, the court must assess and award
654 reasonable attorney fees and costs to the prevailing party. An
655 award of reasonable attorney fees or costs pursuant to this
656 subsection may not exceed \$250,000. In addition, a prevailing
657 party may not recover any attorney fees or costs directly
658 incurred by or associated with litigation to determine an award
659 of reasonable attorney fees or costs.

660 (d) This subsection does not apply to moratoria imposed or
661 enforced to address stormwater or flood water management, to
662 address the supply of potable water, or due to the necessary
663 repair of sanitary sewer systems, if such moratoria apply
664 equally to all types of multifamily or mixed-use residential
665 development.

666 (10)(a) Beginning November 1, 2026, each municipality must
667 provide an annual report to the state land planning agency which

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includes:

1. A summary of litigation relating to subsection (7) that was initiated, remains pending, or was resolved during the previous fiscal year.

2. A list of all projects proposed or approved under subsection (7) during the previous fiscal year. For each project, the report must include, at a minimum, the project's size, density, and intensity and the total number of units proposed, including the number of affordable units and associated targeted household incomes.

(b) The state land planning agency shall compile the information received under this subsection and submit the information to the Governor, the President of the Senate, and the Speaker of the House of Representatives annually by February 1.

Section 3. An applicant for a proposed development authorized under s. 125.01055(7), Florida Statutes, or s. 166.04151(7), Florida Statutes, who submitted an application, a written request, or a notice of intent to use such provisions to the county or municipality and which application, written request, or notice of intent has been received by the county or municipality, as applicable, before July 1, 2025, may notify the county or municipality by July 1, 2025, of its intent to proceed under the provisions of s. 125.01055(7), Florida Statutes, or s. 166.04151(7), Florida Statutes, as they existed at the time of submittal. A county or municipality, as applicable, shall allow an applicant who submitted such application, written request, or notice of intent before July 1, 2025, the opportunity to submit a revised application, written request, or notice of intent to

ORDINANCE NO. 03-2025

AN ORDINANCE OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AMENDING THE CODE OF ORDINANCES OF THE TOWN OF LAKE PARK, FLORIDA BY CREATING CHAPTER 65 TO BE ENTITLED “WORKFORCE HOUSING”; PROVIDING FOR CODIFICATION; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town of Lake Park, Florida (“Town”) is a duly constituted municipality having such power and authority conferred upon it by the Florida Constitution and Chapter 166, Florida Statutes; and

WHEREAS, in response to the adoption of the Live Local Act, (“Act”) the Town Commission directed the Community Development Department (“Department”) in consultation with the Town Attorney to consider, study and prepare regulations to be applicable in the Town to address workforce housing; and

WHEREAS, on October 4, 2023 the Town adopted Resolution 84-10-23 declaring Zoning in Progress to allow for the development of regulations providing for workforce housing and to specifically implement Section 166.04151(7) of the Act; and

WHEREAS, the Act authorizes the development of residential housing in non-residential zoning districts in the Town without regard to the compatibility of the new residential housing with the land uses of surrounding properties, including developed commercial and industrial properties; and

WHEREAS, the Act authorizes the development of residential housing in areas designated with non-residential land use designations, including those already developed as commercial and industrial uses without regard to the new residential uses’ compatibility with the height, massing, density or intensity of the designated or developed non-residential properties; and

WHEREAS, the Act mandates that there shall only be administrative review of projects utilizing the Live Local Act for the development of workforce housing and elected officials of local governments are not permitted to evaluate potentially serious land use conflicts, adverse impacts on public facilities, and the cost of providing public services upon their residents and property owners; and

WHEREAS, the Act permits local governments to take into consideration the limited application of the objectives and policies of their comprehensive plans; and

WHEREAS, the Act allows workforce housing units to be constructed in the Town's designated and existing commercial, industrial, and mixed-use zoning districts, which is not consistent with existing objectives and policies of the Town's Comprehensive Plan, including, specifically, Future Land Use Element Policy 5.4; and

WHEREAS, Future Land Use Policy 5.4 directs the Department to utilize techniques such as distance requirements, buffering, landscaping, lower-intensity development, and scale-down requirements to provide appropriate transitions between high density residential uses and the uses in adjacent zoning districts having different intensities, densities, and functions; and

WHEREAS, the Act cannot be reconciled with Policy 1.1 of the Comprehensive Plan's Future Land Use Element which requires that the Town's Land Development Regulations be amended as necessary to regulate the use and intensity of land development consistent with this element to ensure the compatibility of adjacent land uses and "to encourage redevelopment, renewal or renovation, to maintain or improve existing neighborhoods and commercial areas;" and

WHEREAS, despite the constraints of the Act, the Town Attorney and Community Development Department, after careful review have prepared regulations to establish a workforce housing program that is consistent with the Comprehensive Plan; and

WHEREAS, the Town Commission, after its review of the recommendations from the Town Attorney and the Department finds that it is appropriate and necessary to adopt a new chapter 65 entitled to be entitled "Workforce Housing".

NOW THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA:

Section 1. The whereas clauses are hereby incorporated as the legislative findings of the Town Commission.

Section 2. Chapter 65 of the Lake Park Code of Ordinances, entitled "Workforce

Housing” is hereby created to read as follows:

CHAPTER 65. WORKFORCE HOUSING

Sec. 65-1. Purpose and Intent.

The purpose of this chapter is to provide for a workforce housing units program in the Town.

The intent of the workforce housing program is to:

- (1) Ensure adequate inventories of owner-occupied and rental housing throughout the Town that is available to very low, low, moderate, moderate-high and middle income households to meet the specific housing needs of the Town as reflected in the Affordable Housing Needs Assessment prepared by the Shimberg Center of Affordable Housing.
- (2) Encourage a diversity of housing options to allow for new residents to move into Town and existing residents to remain in the Town as they age and to provide for multi-generational housing opportunities.
- (3) Establish regulations to encourage the production of both rental and for-sale housing units to provide workforce units to residents of the Town having various income levels.
- (4) Encourage and prioritize the construction of residential units for purchase to correct an existing rental-homeownership imbalance in the Town.
- (5) Identify locations for workforce units in residential or mixed-use zoning districts, areas with transit opportunities and provide incentives for new construction in these targeted areas.
- (6) Improve the quality of housing stock by providing incentives to facilitate the redevelopment of older, declining apartment buildings.
- (7) Provide for workforce units in concert with federal, state, and county programs.
- (8) Provide regulations to ensure the health, safety, and welfare of occupants of workforce units.
- (9) Provide regulations to ensure the compatible integration of workforce units into the Town’s existing neighborhoods.
- (10) To provide standards for land use, density, intensity, height and parking for certain development proposals submitted under FS 166.04151 and to set forth an administrative review procedure under which the Department shall decide whether to permit said proposals.

- (11) To provide regulations to mitigate any conflicts with adjacent incompatible land uses for those projects proposed for development in the commercial, mixed use, or industrial zoning districts of the Town pursuant to FS 166.04151 (6) and (7).

Sec. 65-2. - Definitions.

“Affordable dwelling unit” shall mean that monthly rents or mortgage payments including taxes, insurance, and utilities do not exceed 30 percent of the amount of the monthly payments which represents the percentage of the median adjusted gross annual household income level for the households as indicated in the definitions below.

“AMI” shall mean area median income, as established for Palm Beach County.

“Highest allowable density” shall mean the highest allowable density by right in a zoning district. Additional or “bonus density” that is only granted at the discretion of the Town Commission shall not be used in determining the highest density permitted.

“Land Use Restriction Agreement” shall mean a legally executed document that sets forth the terms and conditions established by the Town of Lake Park that must be met by any workforce housing project and is recorded in the official records of Palm Beach County.

“Low Income household level” shall mean the annual gross household income is between 60.1% and 80% of the median annual adjusted gross income for households within Palm Beach County, as determined by HUD and updated annually.

“Major transit stop” shall mean a terminal or station designed to move a substantial volume of daily workforce commuters or others, via a mobility service such as a bus or train with a mix of other transportation options. It shall not mean a bus stop.

“Moderate Income household level” shall mean the annual gross household income is between 80.1% and 100% of the median annual adjusted gross income for households within Palm Beach County, as determined by HUD and updated annually.

“Preserved Affordable Unit (PAU)” shall mean new workforce units that are provided in equivalent number and affordable categories to compensate for any workforce units lost through redevelopment of a property.

“Middle Income household level” shall mean the annual gross household income is between 120.1% and 140% of the median annual adjusted gross income for households within Palm Beach County, as determined by HUD and updated annually.

“Transit stop” shall mean a designated location with a covered structure recognized by the transit authority as a pick-up/drop off connection to a countywide transit system that provides routine service with a frequency of service interval of 20 minutes or less during the morning and afternoon peak commute periods. Connection to the transit system shall be sufficient for commuters in terms of number of daily connections and destinations

provided.

Accessible to a transit stop shall mean (1) that a person walking between the transit stop and the development may travel the entire distance on even, paved sidewalks or within marked crosswalks, (2) that the entire route meets applicable standards of the Americans with Disabilities Act, and (3) that the route does not cross any road having a design speed greater than 25 miles per hour or having more than two motor vehicle lanes.

“Upper Moderate Income household level” shall mean the annual gross household income is between 100.1% and 120 % of the median annual adjusted gross income for households within Palm Beach County., as determined by HUD and updated annually.

“Very Low Income household level” shall mean the annual gross household income is between 50 % and 60% of the median annual adjusted gross income for households within Palm Beach County as determined by HUD and updated annually.

“Workforce housing” shall mean residential dwelling units that are affordable to those households which fall into the very low, low, moderate, upper moderate, or middle income categories as defined above.

“Workforce unit” shall mean a residential dwelling unit that is affordable to a household whose income, adjusted for family size, falls into the very low, low, moderate, upper moderate, or middle income categories, as defined above.

“Workforce housing project” shall mean a residential or mixed use project that provides all or a percentage of its total units as workforce housing, and typically associated with a public or private program that provides a financial incentive for the construction of workforce housing

Sec. 65-3. Reserved.

Section 65-4. - Application Requirements for Workforce Housing.

(a) In addition to a development plan application which addresses the requirements contained in Town Code sections 67-38 and 67-38.1, any project proposing workforce units shall submit:

(1) A Sustainable Workforce Housing Plan (SWHP)

a. Any applicant who proposes a development plan which intends to use the provisions of FS 166.04151 or any County, State or Federal program

for the production of workforce units, shall submit a Sustainable Workforce Housing Plan (SWHP) per section (2) below.

(2) The Plan shall include:

- a. A description of the specific requirements of the assistance program being used and documentation demonstrating that the proposed project complies with the requirements of the program(s).
- b. Funding sources to be used to develop the project including, but not limited to, construction grants or loans, loans from private lenders, funding from equity partners, tax credits, or relief from property taxes.
- c. The amount of funding requested and documentation of the approval status from each of the funding sources
- d. Anticipated fiscal impact to the Town, including the Town's cost on a pro rata basis to provide services to the residents of the workforce housing project and document any loss of revenue to the Town as a result of providing these services.
- e. Anticipated dates to begin and complete construction.
- f. Details on the workforce units as follows:
 1. Units for sale: The type, size and sales price for proposed market-rate and workforce units.
 2. Rental Units: The type, size and corresponding estimated rents of the proposed market-rate and workforce units.
 3. A floor plan and site plan for the project which specifically identifies the location of the proposed workforce units and which demonstrates that these units are integrated within a workforce housing project.
 4. Evidence demonstrating that the workforce units are of the same quality as the market-rate units;
 5. An inventory of the workforce units by income household level.
 6. The anticipated completion date and delivery of the workforce units.
- g. If an application would result in the demolition of existing workforce units, provide documentation as to how these units will be replaced or their loss will be mitigated by Preserved Affordable Units (PAU).

- h. For projects with for sale workforce units that will be owned as condominiums, the developer shall be responsible for the payment of the first year of condominium fees for the workforce units.
 - i. Monitoring and Compliance Plan in accordance with section 65-12.
 - j. Any additional information reasonably requested by the Department, or by an entity that has been delegated by the Town Commission as having the responsibility of implementing the Town's workforce housing program.
- (b) The submission to the Department of a Sustainable Workforce Housing Plan shall be a condition of the approval of any workforce housing project and shall be incorporated into the development order of an approved site plan.

Section 65-5. - Location of Workforce Housing

- (a) Workforce housing may be located in the Town's residential districts (R-1, R-1A, R-2, R-2, and R-1B) or its mixed use districts (PADD, C-3 Twin Cities Mall, and FHMUDO), shall meet the regulations of those zoning districts, land development regulations, and be otherwise consistent with the Comprehensive Plan.
- (b) Projects with workforce units applied for under 166.04151:
 - 1) Only those workforce housing projects which meet the statutory provisions of section 166.04151, F.S. and fall within the workforce housing categories set forth in this chapter may be located within the Town's commercial districts (C-1, C-1B or C-2). Projects which include workforce units shall be developed in accordance with the land development regulations for multi-family development as set out in the "Park Avenue Downtown District (PADD)", meet all land development regulations, and otherwise be consistent with the Comprehensive Plan
 - 2) Only those workforce housing projects which meet the statutory provisions of 166.04151 and provide units that are within the workforce housing categories set forth in this chapter may be located within the Town's Industrial zoned districts (C-4 and CLIC-1). Workforce housing projects shall be developed in accordance with the land development regulations for multi-family development as set out in the "Mixed Use- Traditional Neighborhood Development District", meet all land development regulations, and otherwise be consistent with the Comprehensive Plan.
 - 3) Only those workforce housing projects which meet the statutory provisions of 166.04151 and provide units that are within the workforce housing categories

set forth in this chapter may be located on properties owned by a religious institution on which a house of worship is located. Workforce housing projects shall be developed in accordance with the land development regulations for multi-family development as set out in the "Mixed Use- Traditional Neighborhood Development District", meet all land development regulations and otherwise be consistent with the Comprehensive Plan

Sec. 65-6. - Required elements for projects that include workforce housing units.

- a) Any project which proposes to include workforce housing units shall meet the following:
- (1) Rental workforce housing units shall be allocated equally among the following four eligible household level income tiers adjusted for family size, beginning with very low: very low, low, moderate, and upper moderate income households. If a workforce housing project is phased, each phase shall also allocate units equally.
 - (2) For sale workforce housing units shall be allocated equally among the following three eligible household income tiers, adjusted for family size: moderate, upper moderate, and middle income households. If a workforce housing project is phased, each phase shall also allocate units equally.
 - (3) Workforce housing units shall be reasonably integrated throughout a project and if phased, its phases shall not be clustered together or segregated in any way from market-rate units.
 - (4) The number of studio, one, two, and three or more-bedroom workforce housing units shall be proportional to the number of studio, one, two and three bedroom market rate units. All projects shall include 3-bedroom units.
 - (5) Workforce housing units shall be developed simultaneously with or prior to the development of the other market-rate units, and allocated per (1) and (2) above.
 - (6) The exterior appearance of workforce units shall be substantially similar to the market-rate units and shall provide exterior building materials and finishes of the same type and quality, with allowances for demonstrable value-engineering deviations.

The interior building materials and finishes of the workforce units shall be of the same type and quality as market-rate, with allowances for demonstrable value-engineering deviations.

- (7) Usable open space and common areas for both children and adults shall be provided. This may include, but is not limited to, tot lots, passive, landscaped sitting areas, open play field.
- (8) Workforce units shall be located within ¼ mile of an existing transit stop, recreation and shopping opportunities whenever possible.
- (9) Any project that displaces existing workforce units, shall replace the same number of the workforce units eliminated based upon the same income category as the workforce units that previously existed, in addition to the affordable units established by the project funding requirements

Section 65-7. - Protection from incompatible land uses

- (a) In order to ensure the health, safety, and welfare of the residents of a workforce housing project in a commercial or industrial zoning districts, the following regulations shall apply to protect the occupants of the workforce units from the impacts of incompatible land uses. In order to be eligible for the Department's processing of a workforce housing project, the applicant shall demonstrate to the Department that it meets all the criteria below.
 - (1) Environmental Assessment and Mitigation plan: Submit and receive an acknowledgement from the Department of an environmental assessment of all businesses within 300 feet of the applicant's property, assessing noise, odor, truck traffic impacts, and proposal to mitigate impacts.
 - (2) Buffer: Provide at least a 40 foot landscaped buffer and six foot masonry wall on all sides of the property where the applicant's property directly abuts industrial- zoned land, in addition to the setbacks of the applicable zoning district. For property that abuts industrial zoned land and is separated by a right-of-way, a minimum of a 30 foot landscape buffer shall be provided. Driveway access through the buffer is permitted. The buffer shall not count towards any open space requirements.
 - (3) Open space: Provide usable outdoor area for active recreational activities, based on 100 sq. ft. of recreational space per unit of all of the units in the project's buildings. Regardless of the number of units, all projects shall provide at least 5,000 square feet of active recreational space within the project

(4) Parking: Parking shall meet the standards established under the Town's general parking code in Sec. 78-142.

(b) Live Local Act Projects in Single-family Zoning Districts.

In order to ensure the health, safety, and welfare of the residents of a single-family neighborhood from the potential incompatible impacts of a multi-family use projects with the heights and densities permitted pursuant to the Live Local Act, the applicant shall meet all of the criteria below.

- (1) Environmental Assessment and Mitigation plan: Shall submit and receive an acknowledgement from the Department of an environmental assessment for the proposed use, assessing traffic, school impacts, town recreation impacts, shadow studies, and a proposal to mitigate any impacts.
- (2) Buffer: Provide a minimum 30 foot landscaped buffer on all sides of the property. Parking is prohibited in the buffer, however the Department may permit driveway access. The buffer shall not count towards any open space requirements.
- (3) Open space: Provide usable outdoor area for active recreational activities, based on 100 sq. ft. of recreational space per unit of all of the units in the project's buildings. Regardless of the number of units, all projects shall provide at least 5,000 square feet of active recreational space within the project
- (4) Parking: Parking shall meet the standards established under the Town's general parking code in Sec. 78-142.

Sec. 65-8 Land Development Regulations specific to projects developed under the Live Local Act, FS 166.04151,

In addition to requirements set forth herein the following shall apply:

- (a) Density. Density shall not exceed the highest base density allowed in any zoning district, and is not permitted to be at a density based upon any bonus for density permitted in any district.
 - (1) For projects developed in single-family residential neighborhoods, the density permitted shall be calculated based on the net area to be used for the residential development and shall not include the area of a religious institution building, its required parking, or any accessory structures or uses.
- (b) Height. Height shall not exceed the base height permitted within the applicable zoning district, and is not permitted to any increased height that could be

based upon any bonuses, for any projects that have been provided a height bonus or waiver within one mile of the project.

Sec. 65- 9- Administrative Approval Process for Projects developed under FS 166.04151 (7).

(a) Submittal requirements: Projects qualifying for administrative approval shall:

- 1) Pay the fee for the administrative review of site plans in accordance with the Town's adopted fee schedule for site plan review. An escrow account shall be established, and payment made at the time of application in accordance with the Town's adopted Master Fee Schedule.
- 2) Comply with all submittal requirements for the submittal of workforce housing as specified in Section 65-4, above.
- 3) Submit two sets of mailing labels for containing the owners of properties and their addresses that are within 300 feet of a project's property line on each side of the project boundaries. The Town will rely upon the mailing labels submitted to notify the property owners of the proposed project

(b) When an application is submitted and deemed by the Department sufficient for review, the Town shall prepare a notice to be sent to the owners of properties that are within 300 feet of a project's property line on each side of the project boundaries. The notice shall state the time/place where an owner or resident can review the proposed project. The notice shall provide a minimum of 30 days to submit written comments to the Community Development Department. The Town may choose to hold an informational meeting to obtain public comments, and if so, the notice shall state the time and place of the meeting.

(c) Administrative Review Standards

All development applications shall meet the standards for workforce units established herein, shall be consistent with the Comprehensive Plan and meet all land development regulations.

- 1) Plan review shall be subject to all Town, state and federal regulations, with the exception of those explicitly exempted by the Live Local Act, FS 166.04151(7).
- 2) The administrative review of all applications shall be subject to the review of the Department and any Town consultants.
- 3) The Department may impose conditions of approval to insure that the project meets the intent of this Chapter.
- 4) The property owner shall execute a Land Use Restriction Agreement, on a form approved by the Town Attorney. This agreement shall include, but is not limited to the details on the workforce units such as number, type and location of workforce units; income levels served; affordability period; requirements regarding

compliance monitoring and annual reporting; enforcement and remedies; and such other information as determined by the Department to be necessary to insure compliance with this chapter. The agreement shall be recorded in the official records of Palm Beach County, and shall run with the land through the duration of the affordability period.

(d) Following the Department's finding that the project has complied with this Chapter, an administrative order shall be prepared by the Department stating such findings and including such conditions that are necessary. The administrative order shall be issued by the Town Manager upon recommendation of approval by the Department, with copy supplied to the Town Commission and Town Clerk who shall maintain same as part of the Town's official records. An administrative development order shall be issued by the Department

(e) The Town Manager shall not issue a development order unless the owner of the land which is subject to the development order has entered into a land use restriction agreement that meets the standards of this chapter.

(f) Proposed demolition of a locally designated historic structure under FS 166.04151 (7).

(1) Requests for demolition of a designated historic structure shall meet all of the requirements, standards and criteria associated with a special certificate of appropriateness (COA) or an amendment or rescission to the COA as set forth in Chapter 66, with the only exception being that only administrative approval shall be required.

(2) The Department shall assume the responsibilities otherwise reserved for the Historic Preservation Board and the Town Commission when evaluating any special certificate of appropriateness or request for demolition.

(3) When an application is submitted and the Department has determined that it is sufficient for review, the Department shall prepare a notice to be sent to the owners of properties that are within 300 feet of a project's property line on each side of the project boundaries. The notice shall state the time/place where an owner or resident can review the proposed application. The notice shall provide a minimum of 30 days to submit written comments to the Department. The Town may choose to hold an informational meeting to obtain public comments, and if so, the notice shall state the time and place of the meeting.

(4) Following the Department's finding that the applicant has met the criteria set out in Chapter 66 an administrative order shall be prepared by the Department stating its findings and any conditions associated with the approval of the project. The administrative order shall be rendered on the date reflected on the date the Town Manager executes the order.

Sec. 65- 10. - Review and Approval of Projects.

- (a) Any workforce housing project not developed under FS 166.04151(7) shall follow the public hearing procedures as required by state law and/or the Town Code for special exception use and site plan applications.

Sec. 65-11.
Reserved.**Sec. 65- 12– Incentives.**

- (a) Expedited Review and Permitting for Projects in any Location
- 1) The Department's director may assign a specific staff member to be a single point of contact who shall have the responsibility of assisting applicants through the Department's development application review and permitting process.
 - 2) The Department shall establish the necessary steps required for permitting qualified projects in a pre-application meeting and shall prepare a permitting timetable for the project's completion of an application to the town for review. An approximate plan review timeline shall be developed and agreed upon by the applicant and the department which include submittal deadlines and review for all development related issues.

Sec. 65-13–Recordation and Monitoring

- (a) Recordation: Upon the approval of a site plan for a residential development or mixed use development, which includes workforce units, a Land Use Restriction Agreement approved by town attorney and executed by the property owner and the Town shall be recorded by the owner in the public records of Palm Beach County.
- (1) The restriction period shall commence upon the issuance of a certificate of occupancy for the first workforce unit in the first building completed in a workforce housing unit project, or .
 - (2) The duration of the restriction shall be the length of the required term to maintain workforce housing as mandated under this program.

(b) Monitoring: Any project providing affordable housing shall provide annual monitoring reports in accordance with this section.

(1) Approved rental workforce units monitoring requirements.

- a. Approved workforce housing rental projects shall submit an annual report to the Department, completed by a qualified third-party reporting firm approved by the Town.
- b. The required annual report shall be accompanied by a notarized affidavit attesting to the truth and veracity of the report, and signed by an authorized representative of the property owner.
- c. The report shall be submitted to the Department on an annual basis for the duration of the restriction period.
- d. The report shall:
 1. Demonstrate that the workforce units are occupied by households that have an annual gross income that is within the established income category for the restricted units, adjusted for actual household size (per natural persons), and that the monthly rents for the restricted units do not exceed the established rent limit per number of bedrooms, as published and updated annually by the Florida Housing Finance Corporation (FHFC).
 2. Provide a narrative of the standard operating procedures used by the project to administer the workforce housing program within the project, along with applications received, approved, and denied, and any inquiries received.
 3. Include a statement explaining the qualifications of the income certification reviewers.
 4. Include a statement explaining the qualifications of the third party reviewer.
- e. The Town may hire a third party such as a housing trust at the applicant's expense, to review and annually monitor proposed workforce housing projects.

65- 14 Enforcement

(a) The owners of real estate that is the subject of an approval pursuant to the Live Local Act, FS 166.04151 (7), and their successors, assigns, and agents shall meet the affordability standards established herein throughout the affordability period and shall comply with all approved land use restrictions contained in the administrative order. If a workforce housing project does not meet the affordability standard or any term of the applicable land use restriction agreement during the development's affordability period, the Department may allow the owner 30 days or such other "reasonable time" as determined by the Department's Director to cure or correct the violation. If an owner does not correct the violation within the time allowed, the Town may enforce the provisions of this chapter by taking any of the following actions:

1. Enforce the land use restriction agreement.
2. Suspend a business tax receipt
3. Pursue code enforcement action pursuant to Chapter 162, Florida Statutes and the Town Code.
4. Seek declaratory and/or injunctive relief in a court of competent jurisdiction

Section 3. Codification. The provisions of this ordinance shall become and be made a part of the Code of Ordinances of the Town of Lake Park. The sections of the ordinance may be re-numbered or re-lettered to accomplish such.

Section 4. Severability. If any section, paragraph, sentence, clause, phrase or word of this ordinance is for any reason held by a court to be unconstitutional, inoperative or void, such holding shall not affect the remainder of this ordinance

Section 5. Effective date. This ordinance shall take effect immediately upon execution.



Town of Lake Park Business Impact Estimate Form

*This Business Impact Estimate Form is provided in accordance with **Section 166.041(4), Florida Statutes** and must be **included in the agenda item backup for each proposed ordinance on first reading. A Business Impact Estimate Form must be prepared and posted on the Town's website** for each ordinance by the date that the notice of the proposed ordinance is published, regardless of whether the ordinance is exempted under Section A below. This Business Impact Estimate Form may be revised following its initial posting.*

Title of Proposed Ordinance

ORDINANCE NO. 03-2025

AN ORDINANCE OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AMENDING THE CODE OF ORDINANCES OF THE TOWN OF LAKE PARK, FLORIDA BY CREATING CHAPTER 65 TO BE ENTITLED "AFFORDABLE AND WORKFORCE HOUSING"; PROVIDING FOR CODIFICATION; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

Section A

Based on a review of the proposed ordinance (choose one):

☐ The Town has determined that the statutory exemption(s) identified below apply to the proposed ordinance and no Business Impact Estimate is required.

☒ The Town has determined that the statutory exemption(s) identified below apply to the proposed ordinance; however, the Town has prepared the Business Impact Estimate as a courtesy and to avoid any procedural issues that could impact the enactment of the proposed ordinance.

☐ The Town has prepared a Business Impact Estimate pursuant to section 166.041(4), Florida Statutes.

- ***The ordinance implements the State-mandated "Live Local Act", but also addresses workforce housing that is not covered by the act.***

Exemptions

If one or more boxes are checked below, this means that the Town has determined that a Business Impact Estimate is not required by state law for the proposed ordinance:

☒ The proposed ordinance is required for compliance with Federal or State law or regulation; **however, the Town has increased the scope, which requires the Business Impact Estimate.**

☐ The proposed ordinance relates to the issuance or refinancing of debt;

☐ The proposed ordinance relates to the adoption of budgets or budget amendments, including revenue sources necessary to fund the budget;

☐ The proposed ordinance is required to implement a contract or an agreement, including, but not limited to, any Federal, State, local, or private grant or other financial assistance accepted by the municipal government;

☐ The proposed ordinance is an emergency ordinance;

☐ The ordinance relates to procurement; or

☐ The proposed ordinance is enacted to implement the following:

- a. Development orders and development permits, as those terms are defined in s. 163.3164, F.S., and development agreements as authorized by the Florida Local Government Development Agreement Act (ss. 163.3220-163.3243, FS);
- b. Comprehensive plan amendments and land development regulation amendments initiated by an application by a private party other than the
- c. Sections 190.005 and 190.046, Florida Statutes, regarding community development districts;
- d. Section 553.73, Florida Statutes, relating to the Florida Building Code; Section 633.202, Florida Statutes, relating to the Florida Fire Prevention Code.

*If an exemption in Section A is applicable, then only Section A needs to be completed.
If there is no exemption in Section A, Section B must be completed.*

Section B

This section with the business impact estimate must be completed if the proposed ordinance does not meet any of the exemptions in Section A.

1. A summary of the proposed ordinance which must include a statement of the public purpose (e.g., public health, safety, morals and welfare).

The purpose of the ordinance is to establish a program for workforce housing. The ordinance sets out the procedure to apply, establishes where such housing can be located, provides requirements to insure that such housing is built to standards compatible with other units in any project, method of approval, and other such regulations to insure the health, safety, and welfare of those who will reside in the workforce and affordable units. The ordinance is developed in part, to provide regulations for development of housing as mandated under the State's "Live Local Act".

2. An estimate of the direct economic impact of the proposed ordinance on private, for-profit businesses in the Town, if any:

- a) An estimate of direct compliance costs that businesses may reasonably incur.

There will be no economic impact on existing businesses in the Town.

- b) Any new charge or fee on businesses subject to the proposed ordinance, or for which businesses will be financially responsible; and

The ordinance does not create a new fee or charge on existing businesses in the Town. However, this ordinance does create an economic impact on any developer that chooses to build affordable housing under this program. This would be 1) the cost of monitoring the program (i.e. for any Live Local Act project this would be for the State-mandated 30 years, to insure the project remains in compliance with the terms of the State Program.) No fee for this is established in the ordinance; it will be based on actual monitoring cost each year, and 2) cost of an environmental assessment to insure that industrial uses in proximity to the project do not impact the health and welfare of residents. Other project costs such as review fees already exist

3. An estimate of the Town's regulatory costs, including an estimate of revenues from any new charges or fees to cover such costs.

There are no new fees or charges created. The projects will be reviewed by staff as any other site plan. The existing site plan review fee is \$4,000. The Town's actual regulatory costs, in terms of Department review, would vary based on the complexity of the project itself.

As with all projects, the developer is responsible for the cost of reviews by Town consultant engineers, landscape, architects, etc. This is passed on directly to the developer.

4. Good faith estimate of the number of businesses likely to be impacted by the proposed ordinance:

No existing businesses are anticipated to be impacted by the ordinance.

5. Additional information/methodology for preparation, if any:

Prepared by:

Karen Golonka, Planner

March 27, 2025

Print name and title

Date

Karen J Golonka

Signature

Copy Uploaded to the Web on May 19, 2025

TOWN OF LAKE PARK NOTICE OF PUBLIC HEARING

NOTICE is hereby given that the Town Commission of the Town of Lake Park is proposing to adopt the following ordinance:

ORDINANCE NO. 03-2025

AN ORDINANCE OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AMENDING THE CODE OF ORDINANCES OF THE TOWN OF LAKE PARK, FLORIDA BY CREATING CHAPTER 65 TO BE ENTITLED “AFFORDABLE AND WORKFORCE HOUSING”; PROVIDING FOR CODIFICATION; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

Two Public Hearings will be held by the Lake Park Town Commission

First Hearing: Wednesday, May 21 at 6:30 pm or as soon as the matter can be heard.

Adoption Hearing: Wednesday, June 4 at 6:30 pm or as soon as the matter can be heard.

Location: Town Commission Chambers 535 Park Avenue, Lake Park.

General Summary of Ordinance:

The ordinance establishes a program for workforce housing in the Town, primarily to address the “Live Local Act”. The ordinance sets out the procedure to apply, establishes where such housing can be located, provides requirements to insure that such housing is built to standards compatible with other units in any project, the method of approval, and other such regulations to insure the health, safety, and welfare of those who will reside in the workforce units.

BE ADVISED: ALL DATES ARE SUBJECT TO CHANGE. Please refer to the Town website and agendas for the most up to date items being presented or call 561-881-3320.

For additional information, or to review the proposed ordinance, please contact the Community Development Department at 535 Park Avenue, Lake Park, FL 33403 at 561-881-3320, or e-mail kgolonka@lakeparkflorida.gov.

Should you wish to attend the meetings to comment on the application please take note of the date, time and location.

If a person decides to appeal any decision made by the Town Commission with respect to any hearing, they will need a record of the proceedings and for such purpose may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based. For additional information please contact Vivian Mendez, Town Clerk, at 561-881-3311.

Publish: Palm Beach Post May 10, 2025

Authorized by: University of Florida Levin College of Law Environmental and Community Development Clinic

EXAMPLE LAND USE RESTRICTION AGREEMENT

Background

This example land use restriction agreement is an educational document. A local government should consult with its attorney when the local government drafts or accepts a land use restriction agreement.

This example land use restriction agreement uses brackets to indicate where a local government should insert language specific to local needs. Within those brackets, instructions are in italics and optional language is within quotation marks. For example: *[insert language specific to local needs such as “option 1” or “option 2”]*.

Agreement

EXAMPLE LAND USE RESTRICTION AGREEMENT

between

[name of local government]

and

[name of real property owner]

This land use restriction agreement (hereinafter “this Agreement”) is made and entered into as of this *[day of month]* day of *[month]*, *[year]* (hereinafter “Effective Date”) by and between *[name of local government]*, a political subdivision of the State of Florida (hereinafter “Local Government”), and *[name of real property owner]*, a *[state and corporate form]* for itself and its successors, assigns, and agents (hereinafter “Owner”).

Recitals

WHEREAS, Owner is the owner in fee of that certain real property located in *[name of local government]*, Florida, as legally described in Exhibit A attached hereto and incorporated herein by reference (hereinafter “the Property”); and

WHEREAS, Local Government has zoned the Property for commercial, industrial, or mixed-use development; and

WHEREAS, pursuant to Florida Statutes sections *[select one: “125.01055(7)–(8)” for a county or “166.04151(7)–(8)” for a city]* Local Government allows multifamily residential and mixed-use residential developments on land zoned for commercial, industrial, or mixed-use if at least 40 percent of the residential units in the development are, for a period of at least 30 years, affordable as defined in Florida Statutes section 420.0004; and

WHEREAS, Owner seeks to develop a multifamily residential or a mixed-use residential development on the Property; and

WHEREAS, in compliance with Florida Statutes sections [*select one: “125.01055(7)–(8)” for a county or “166.04151(7)–(8)” for a city*], Owner seeks to restrict at least 40 percent of the total number of residential units to be developed on the Property to be affordable as defined herein; and

WHEREAS, in compliance with Florida Statutes sections [*select one: “125.01055(7)–(8)” for a county or “166.04151(7)–(8)” for a city*], Owner and Local Government wish to ensure that the restricted units are affordable for a period of not less than 30 years, regardless of any subsequent changes in ownership of the Property.

NOW, THEREFORE, in consideration of the mutual covenants and undertakings set forth herein, and other good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Local Government and Owner do hereby contract and agree as follows:

Article 1. Recitals

The recitals set forth above are true and correct and incorporated into this Agreement by reference.

Article 2. Definitions

Unless otherwise expressly provided herein or unless the context clearly requires otherwise, the following terms have the respective meanings set forth below.

“Adjusted gross income” means all wages, assets, regular cash or noncash contributions or gifts from persons outside the eligible household, and such other resources and benefits as may be determined to be income by the United States Department of Housing and Urban Development, adjusted for family size, less deductions allowable under section 62 of the Internal Revenue Code.

“Affordability period” means the period of time that begins on the day [*name of local government*] issues the first certificate of occupancy for Project and ends 30 years following the day [*name of local government*] issues the last certificate of occupancy for Project.

“Affordable” means that the annualized cost of monthly rents including taxes, insurance, and utilities does not exceed 30 percent of an eligible household’s adjusted gross income.

“Affordable unit” or “affordable units” means the dwelling units for which cost is affordable to an eligible household. The affordable units do not need to be the same dwelling units throughout the affordability period. Instead, which dwelling units are affordable units may change over time.

“Dwelling units” means the residential rental units within the Project, including the affordable units.

“Eligible household” means one or more natural persons, the total annual adjusted gross income of whom does not exceed the greater of (1) 120 percent of the median annual adjusted gross income for households within the state, or (2) 120 percent of the median annual adjusted gross income for households within [*insert “the metropolitan statistical area” or, if not within a metropolitan statistical area, insert name of county*], who rent and actually occupy an affordable unit.

“Project” means the multifamily residential or mixed-use residential development on the Property.

Article 3. Use and occupancy of the Property

Section 3.1. Owner responsible for compliance with these restrictions. Owner must ensure use of the Property complies with the use and occupancy restrictions in this article throughout the affordability period. These restrictions are covenants that run with the land throughout the affordability period and are binding on Owner.

Section 3.2. Use requirement. Owner must develop and maintain Project as a multifamily residential or a mixed-use residential rental housing development. If the Project is a mixed-use residential development, at least 65 percent of the total square footage of the development must be used for residential purposes. Owner must rent at least 40 percent of the dwelling units to eligible households at a cost that is affordable to the eligible households.

Section 3.3. Minimum number of affordable units. Local Government approves [*insert the number of dwelling units Local Government approves in Project*] dwelling units. Throughout the affordability period, the number of affordable units must equal at least the lesser of (1) [*the number of dwelling units Local Government approves in Project times 0.4 and rounded up to the nearest whole number*] or (2), if Owner has not constructed the total number of dwelling units Local Government approves, the actual number of dwelling units existing.

Section 3.4. Certificates of occupancy. Owner will not apply for, and Local Government will not approve, a certificate of occupancy for a dwelling unit if Project does not include the number of affordable units Section 3.3 requires.

Section 3.5. Owner responsible for income verification. For each affordable unit, the Owner is responsible for determining and verifying the adjusted gross income of prospective tenants to ensure tenants renting and actually occupying an affordable unit constitute an eligible household and to ensure the cost is affordable to the eligible household.

Section 3.6. Affordable rents. The cost of an affordable unit must be affordable to the eligible household renting and actually occupying the affordable unit.

Section 3.7. Affordable units must be comparable to other dwelling units. The Owner must intermix affordable units with, and not segregate affordable units from, the other

dwelling units in Project. Throughout the affordability period the affordable units must be comparable to other dwelling units in quality, in features, in size, in number of bedrooms, and in access to common amenities.

Section 3.8. No conflict of interest. Neither Owner nor a person related to or affiliated with Owner may occupy an affordable unit.

Section 3.9. No subleasing. Owner must ensure no person renting an affordable unit sublets the affordable unit or assigns the rental agreement for the affordable unit.

Article 4. Compliance monitoring

Section 4.1. Required recordkeeping. Owner must maintain complete and accurate income records pertaining to each eligible household occupying an affordable unit. Owner must update these records annually and must maintain these records throughout the affordability period. At a minimum, Owner must maintain the following records:

- a. each eligible household's complete application for tenancy and related information including the name, proof of identity, employment, income, and asset information of each member of the eligible household;
- b. a copy of the lease agreement showing the term of tenancy, showing the cost, and identifying each tenant residing in the affordable unit;
- c. documents verifying that the tenants of each affordable unit constitute an eligible household;
- d. documents verifying that the cost of each affordable unit is affordable to the eligible household renting and actually occupying the affordable unit; and
- f. descriptive information about each dwelling unit including which dwelling units are affordable units, floorplans showing the number of bedrooms within and the size of each dwelling unit, the estimated cost of utilities for each dwelling unit, and what amenities Owner provides to the tenants occupying each dwelling unit.

Section 4.2. Annual reporting. Throughout the affordability period, Owner must provide Local Government an annual report to the ["county" or "city"] manager by [date parties select] of each year. The annual report must provide the following information regarding each affordable unit –

- a. the unit address;
- b. the number of people residing in the affordable unit;
- c. the adjusted gross income of the people residing in the affordable unit;
- d. the monthly cost of the affordable unit; and

e. any other information the Local Government timely requests that Local Government reasonably requires to ensure Owner is complying with this Agreement.

Section 4.3. Records inspection. Owner must permit Local Government to inspect all records this Agreement requires Owner to maintain including, but not limited to, financial statements and rental records pertaining to affordable units. Local Government may inspect records in person or virtually. Local Government will provide reasonable notice of its intent to inspect records. Owner may limit inspection to normal working hours. Owner must submit to Local Government copies of records Local Government requests and reasonably requires to ensure Owner is complying with this Agreement.

Section 4.4. Housing quality standards inspection. Local Government may, from time to time, make or cause to be made a housing quality standards inspection of the Property to determine whether Owner is complying with this Agreement. Local Government will provide reasonable notice to Owner of its intent to inspect the Property. Owner must make any and all necessary arrangements to facilitate Local Government's inspection.

Section 4.5. Monitoring fee. The Local Government will annually provide Owner a written fee statement showing Local Government's actual cost to monitor whether Owner is complying with this Agreement. Owner must pay the the Local Government the amount the fee statement shows within 30 days of receiving the fee statement. Owner failing to timely pay the amount the fee statement shows violates this Agreement.

Article 5. Enforcement and remedies

Section 5.1. Local Government entitled to remedies. If Owner violates any of the terms and conditions of this Agreement or breaches a restriction, warranty, covenant, obligation or duty set forth herein, and if such violation or breach remains uncured for a period of 30 days after written notice thereof, Local Government may, in its sole discretion, to any or all of the remedies in this article.

Section 5.2. Local Government may allow additional time to cure breach. If Local Government determines that Owner has taken and diligently continues corrective action and that Owner cannot correct the breach within a 30-day period, Local Government may, in its sole discretion, allow Owner up to 6 months after first notice to cure the breach.

Section 5.3. Local Government may pursue judicial remedy. Local Government may institute and prosecute any proceeding at law or in equity to abate, prevent, or enjoin any such violation or attempted violation and to compel specific performance. Local Government will be entitled to recover its costs and expenses and reasonable attorneys' fees in any such judicial proceeding where the Local Government prevails.

Section 5.4. Local Government may require quarterly reporting. The Local Government may require the Owner to provide the Local Government with a quarterly report meeting the standards of the annual report this Agreement requires for so long as the Local Government deems reasonable and necessary.

Section 5.5. Supplemental monitoring fee. In the event that the violation or breach requires Local Government to conduct supplemental monitoring of whether Owner is complying with this Agreement, Local Government may, in its sole discretion, require Owner to pay to Local Government a supplemental monitoring fee equal to the Local Government's actual cost to conduct supplemental monitoring. This supplemental monitoring fee will be in addition to, and distinct from, any reimbursement of costs and legal fees to which Local Government may be entitled as a result of judicial enforcement action and any fines payable to Local Government and Owner must pay the supplemental monitoring fee without regard to whether Local Government undertakes or succeeds in judicial enforcement or code enforcement activities. Local Government's rights to conduct and to receive compensation for supplemental monitoring will extend for two years following the most Owner breach of this Agreement. If Local Government requires Owner to pay a supplemental monitoring fee, Local Government will submit written fee statements to Owner on a quarterly basis which Owner must pay within 30 days of receipt.

Section 5.6. Owner must reimburse eligible households for overcharges. In the event that Owner charges rent to an eligible household that exceeds the amount that is affordable for that eligible household, Owner must reimburse the eligible household for the amount overcharged either in a lump sum, or by discounting the rent on the affordable unit over the remainder of the lease term. In the event that Owner cannot reimburse the eligible household, Owner may pay the amount overcharged to Local Government.

Section 5.7. Owner must increase the number of affordable units if it fails to provide the number this Agreement requires. In the event that Owner fails to provide at least the number of affordable units this Agreement requires, Owner must increase the number of affordable units Owner provides in the Project by the number of affordable units the Owner failed to provide. Owner must provide the additional affordable units for the longer of (1) the amount of time Owner failed to provide the required number of affordable units or (2) one year.

Section 5.8. Local Government may enforce this Agreement using code enforcement process. Local Government approved Project pursuant to Florida Statutes sections [*select one: "125.01055(7)-(8)" for a county or "166.04151(7)-(8)" for a city*] in reliance upon Owner's promise to comply with this Agreement. A breach of this Agreement violates development standards the state of Florida and Local Government have adopted and the terms of Local Government's development approval for Project. Local Government may, in its sole discretion, enforce Owner compliance with this Agreement through the Local Government Code Enforcement Boards Act or any locally-adopted code enforcement process including by imposing fines on Owner up to the maximum amount allowed by law, attaching a lien to the Owner's real property, and foreclosing on the code enforcement lien. Owner consents to Local Government's authority to enforce the terms of this Agreement through code enforcement processes.

Section 5.9. Local Government may enforce this Agreement against any party with an interest in Project at time of violation. The enforcement provisions within this article apply to the land, run with the land, and are enforceable against Owner and any other person or entity that has or had an ownership interest in the Property at the time of a violation or attempted violation of this Agreement.

Section 5.10. Failure to enforce not waiver. Any failure by Local Government to enforce this Agreement is not a waiver of Local Government's right to do so thereafter.

Article 6. Covenants run with the land

Section 6.1. Covenants run with the land. All conditions, covenants, and restrictions contained in this Agreement are covenants running with the land, and will, in any event, and without regard to technical classification or designation, legal or otherwise, be, to the fullest extent permitted by law and equity, binding for the benefit and in favor of, and enforceable by Local Government its successors and assigns, against Owner, its successors and assigns, to or of the Property or any portion thereof or any interest therein, and any party in possession or occupancy of said Property or portion thereof. Each and every contract, deed, or other instrument hereafter executed covering or conveying the Property or Project or any portion thereof or interest therein will conclusively be held to have been executed, delivered and accepted subject to such covenants, reservations and restrictions, regardless of whether such covenants, reservations and restrictions are set forth in such contract, deed or other instruments. If a portion or portions of the Property or Project are conveyed, all of such covenants, reservations and restrictions will run to each portion of the Property or Project.

Section 6.2. Notice of intent to sell or otherwise transfer the Property and subsequent transfer. Owner agrees to provide written notice to Local Government upon an intent to sell or otherwise transfer the Property. In the event of a sale or transfer of ownership of the Property, Owner agrees to provide written notice to Local Government with contact information regarding the purchaser. Local Government will coordinate with any successors and assigns to ensure the Owner's use of the Property continues to comply with this Agreement.

Article 7. Recording, effective date, and duration

Section 7.1. Recording. Owner must cause this Agreement to be recorded in the Official Records of [name of county], Florida at Owner's sole expense. Owner must provide a certified copy of this Agreement as recorded to Local Government within 10 days of the Effective Date. Local Government must not issue a building permit for the Project before Local Government receives a certified copy of this Agreement as recorded.

Section 7.2. Effective date. This Agreement is effective as of the Effective Date.

Section 7.3. Duration. This Agreement will remain in effect throughout the affordability period.

Article 8. Miscellaneous provisions

Section 8.1. Notice. All notices which Local Government and Owner may give pursuant to this Agreement must be in writing and must be delivered by personal service or by certified mail return receipt requested addressed to the parties at their respective addresses as indicated below or as the Local Government or Owner may state in writing from time to time.

[Local

Governme

nt address]

[Owner

address]

Section 8.2. Severability. If any provision hereof is found invalid, illegal, or unenforceable, the validity, legality and enforceability of the remaining portions hereof will not in any way be affected or impaired thereby.

Section 8.3. Disclaimer against development agreement. This Agreement is not intended to be, and indeed is not, a “development agreement” within the meaning of Florida Statutes sections 163.3220–163.3242. Municipal annexation or contraction impacting any portion of the Property does not terminate, modify or otherwise affect the rights or obligations of Local Government or of Owner under this Agreement.

Section 8.4. Entire agreement. This Agreement together with exhibits attached hereto embodies the entire agreement and understanding between the parties and no other agreements and/or understandings, oral or written, with respect to the subject matter hereof, exist that are not merged herein and superseded hereby.

Section 8.5 Venue and governing law. Local Government and Owner covenant and agree that any and all legal actions arising out of or connected to this Agreement must be instituted in the Circuit Court of the [appropriate state circuit court] in and for [name of county], Florida, or in the United States District Court for the [appropriate federal district] District of Florida, as the exclusive forums and venues for any such action, subject to any right of either party to removal from state court

to federal court, which is hereby reserved, and each party further covenants and agrees that it will not institute any action in any other forum or venue and hereby consents to immediate dismissal or transfer of any such action instituted in any other forum or venue. This Agreement is entered into within, and with reference to the internal laws of, the State of Florida, and will be governed, construed, and applied in accordance with the internal laws (excluding conflicts of law) of the State of Florida.

IN WITNESS HERETO, the parties herein have caused this Agreement to be executed at the place and on the day specified hereinabove.

[signature block.]



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025

Originating Department: Finance Department

Agenda Title: Setting the Current Year Proposed Millage Rate, and Restating the Date, Time and Location for the First Public Budget Hearing

Agenda Category (i.e., Consent, New Business, etc.): New Business

Approved by Town Manager: _____ **Date:** _____

Cost of Item: \$0.00 **Funding Source:** _____

Account Number: _____ **Finance Signature:** Barbara A Gould

Advertised:

Date: n/a **Newspaper:** _____

Attachments: _____

Please initial one:

_____ Yes I have notified everyone

_____ Not applicable in this case

Summary Explanation/Background:

Florida Statute requires each municipality to establish a “Current Year Proposed Operating Millage Rate”. This millage rate is the highest rate that could be enacted at the budget hearings without the municipality having to send a separate mailing to each resident. Florida Statute also requires each municipality to set by motion the date, time and place of the first public budget hearing.

Recommended Motion:

I move that we set the current proposed millage rate at 5.1000 mills, and that we are restating that the date, time and place for the first public budget hearing is set for September 8, 2025, at 6:30pm, here in the Town Commission Chambers.



Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: July 16, 2025

Originating Department: Finance Department

Agenda Title: Town Commission Priorities - FY 2026 Budget

Agenda Category (i.e., Consent, New Business, etc.): New Business

Approved by Town Manager: _____ **Date:** _____

Cost of Item: \$0.00 **Funding Source:** _____

Account Number: _____ **Finance Signature:** Barbara A. Gould

Advertised: _____

Date: _____ **Newspaper:** _____

Attachments: Department of Special Events Summary of Department Priorities

Please initial one:

_____ Yes I have notified everyone

_____ Not applicable in this case

Summary Explanation/Background:

Within the FY 2026 Budget process, each member of the Town Commission was requested to provide their priorities to be considered by the Town Commission (as a whole) within the development of the Town's FY 2026 Budget.

To ensure that the proposed FY 2026 Budget includes the Commission's priorities, the Finance Department is requesting the Commission consider and provide direction on each priority that the Commission (as a whole) would like to include in the proposed Budget document, which is expected to be presented to the Town Commission in August 2025.

Additionally, various departments (i.e., Parks & Recreation – Events, Public Works and Community Development) have included information related to the proposed priorities that were received as well as

additional previous Commission priorities that may need to be considered for inclusion within the proposed FY 2026 Budget.

Attached are the Town Commissioner priorities/initiatives that have been received following the July 2, 2025 Town Commission Meeting outlining their recommendation for each priority to be included (or not be included) within the proposed FY 2026 Budget.

Following direction on the inclusion (or not) of each priority by the Town Commission, staff will develop a final FY 2026 Budget document (that will include the approved priorities), which is expected to be presented to the Town Commission in August 2025. Individual one-on-one meetings are expected to be held along with a Commission Workshop on the proposed FY 2026 Budget prior to final adoption of the FY 2026 Budget and Millage Rates in September 2025.

Recommended Motion:

N/A

Town Commission's FY 2026 Budget Priorities/Initiatives Requested		Yes, supported by # of votes	No, not supported/no response by # of votes
Commissioner's Name _____			
Budget Season	Develop a smoother budget process	4	1
Town Calendar	Ensure Town calendar is up to date	4	1
Town Code Review	Review and propose amendments to all sections of the Town's Code of Ordinances	4	1
Code Compliance	Provide educational materials to residents to assist them to be and remain in code compliance	4	1
Code Enforcement Training	Customer service	3	2
More Proposed Project Signage	Inform residents to provide awareness regarding current and proposed projects	3	2
Golf Cart Parade	Christmas or 4th of July	1	4
Christmas Trolley Tour	Throughout the Town with Santa	2	3
Martin Luther King, Jr Day Holiday	Allocate funds to support programming the Martin Luther King, Jr Day Holiday, including community celebration, educational activities or a service initiative that honors Dr. King's legacy and encourages unity and civic engagement	4	1
Standing Commitment to Haitian Flag Day and MLK Celebration	Both events are proposed to be funded within the FY 2026 Budget	4	1
Hosting a Multi City Parade		1	4
Fall Festival on Park Avenue	Town to engage with the promoters of the Lake Park Music & Food Festival to potentially hold a Fall Festival within the Park Avenue Downtown District (i.e., 3rd Quarter)	4	1
Exclusive recreation events for kids and possibly adults	<u>Kids</u> : Micro Soccer, Flag Football, etc. <u>Adults</u> : Kickball or Soccer	3	2
Senior Citizen Activities with Transportation		3	2
Senior Citizen Event Promotion	Advertise events specifically tailored to our senior citizens (i.e., printed materials, social media or local partnerships)	3	2

Blakeley Memorial Park Improvements	Lighting, landscaping & benches	3	2	Item 10.
New Community Center	Research grant and alternative funding to support construction	3	2	
Oval-A-Bout	Research grant and alternative funding to support construction	3	2	
Traffic Calming	Speed hump on Teak Drive and other needed streets	2	3	
Refine Traffic Safety Ordinance		3	2	
Road Repairs	(i.e., Potholes, Sidewalks etc.)	4	1	
Lighting		2	3	
Public Works Department Staffing	Continue to fully staff department	4	1	
Promote Public Works Service Portal	Ensure that residents, businesses and stakeholders are aware of the Town's Service Portal to report issues and/or request services/repairs/maintenance	2	3	
Updates on Capital Projects	Grants & Communications Department and Public Works develop information on Town Capital Projects to be disseminated throughout the Town	3	2	
Working Sanitation Equipment	Fix or Replace our Sanitation Equipment	4	1	
Tyler Software	Make sure all software modules are implemented and updated	4	1	
USA Semi Quincentennial – 250 th Anniversary of the signing of the Declaration of Independence	Additional celebration of event, more fireworks	2	3	
Education Board	Reactivate the Board	4	1	
<u>Previous Commission Priorities:</u>				
Holiday Lighting & Music - Park Avenue Downtown District	Proposed to be funded within the FY 2026 Budget - CRA	3	2	
Holiday Lighting - Town Hall	Proposed to be funded within the FY 2026 Budget	2	3	
Quarterly Outreach Meetings	Proposed to be funded within the FY 2026 Budget	3	2	
Please see list of current and previous Commission priorities for consideration/direction	Attachment from Director of Special Events			



TOWN OF LAKE PARK
PROPOSED SPECIAL EVENTS ORGANIZED BY TOWN STAFF

	Yes, supported by # of votes	No, or no response by number of votes
<u>SUNSET CELEBRATION (\$106,980.00)</u> Sunset Celebrations are held the last Friday of each month from 6:00 PM – 9:00 PM in Kelsey Park. The event features live entertainment, and a variety of food, beverage, art and craft vendors.	4	1
<u>MLK CELEBRATION (\$20,000.00)</u>		
The MLK Celebration occurs the Friday before the national MLK holiday from 6:00 PM – 9:00 PM in Kelsey Park. The event features live entertainment, food, beverage, art and craft vendors, games, activities and a kid's zone.	4	1
<u>TOUR DE LAKE PARK (\$1,1140.00)</u>		
The Tour de Lake Park is a bicycling event that is held each year in March to recognize Florida Bicycle Month. The Commissioners lead participants (ages 12 and up) on a tour of pre-selected locations around the town.	4	1
<u>EASTER EGGSTRAVAGANZA (\$6,500.00)</u>		
The annual Easter Eggstravaganza is historically held the Saturday before Easter from 10:00 AM – 1:00 PM in Kelsey Park. There are egg hunts for children 3-10 years old, free photos with the Easter Bunny, children's activities, food vendors and more.	4	1
<u>ARBOR DAY CEREMONY (\$1,245.00)</u>		
The annual Arbor Day Ceremony is held the last Friday in April at 10:00 AM to celebrate National Arbor Day and our Tree City USA designation. The Town's Tree Board selects a tree to be planted in a location pre-determined by the Public Works Department.	4	1
<u>MEMORIAL DAY CEREMONY (\$1,040.00)</u>		
Town staff partners with our local VFW Post 9610 to host an annual Memorial Day Ceremony at 11:00 AM in Kelsey Park.	4	1
<u>SUMMER CAMP (\$8,500.00)</u>		
The Town hosts an annual Summer Camp for children ages 6 – 12 from June – August. We hire four Camp Counselors to work with our Recreation Supervisor to provide a wide range of activities and field trips. However, due to the capacity limitations of the 800 Park Avenue building and the Town Bus, we can only host a maximum of 20 campers each year.	4	1
<u>RED, WHITE & BLUE SUNSET CELEBRATION (\$45,000.00)</u>		
The Town hosts a red, white and blue themed event in honor of Independence Day in conjunction with the June Sunset Celebration in Kelsey Park. The event features live entertainment, food, beverage, art and craft vendors, games, activities, a kid's zone and a 25-minute fireworks show.	4	1

<u>BACK 2 SCHOOL EXTRAVAGANZA (\$7,000.00)</u>		
The annual Back 2 School Extravaganza is held the Saturday prior to the first day of school from 10:00 AM – 1:00 PM at Lake Park Town Hall. We provide free backpacks, school supplies, educational resources, healthcare information and food assistance to over 700 K-12 students. We also provide children's activities, entertainment, free books, clothing, food and beverages. You do not have to be a Lake Park resident to participate.	4	1
<u>MULTICULTURAL FESTIVAL (\$20,000.00)</u>		
The Multicultural Festival is held during the month of September in Kelsey Park. There is live music, cultural performances, food, beverage, art and craft vendors, games, activities, and a kid's zone.	4	1
<u>FLORIDA CITY GOVERNMENT WEEK (\$250.00)</u>		
In honor of Florida City Government Week, the 5 th grade classes from Lake Park Elementary and Palm Beach Academy participate in a mock commission meeting and skits within the various town departments. We also have presentations from the Public Works Department, Lake Park Public Library and PBSO District 10.	3	2
<u>FALL FESTIVAL AT SUNSET CELEBRATION (Part of Sunset Celebration Budget)</u>		
The Town hosts a fall festival/Halloween themed event in conjunction with the October Sunset Celebration in Kelsey Park. The event features live entertainment, food, beverage, art and craft vendors, trick-or-treating around the park and a Halloween costume fashion show.	3	2
<u>HOLIDAY CELEBRATION (\$6,700.00)</u>		
The Town and CRA host an annual Holiday Celebration on the first Friday in December, from 6:00 PM – 8:00 PM at the Town Green. The event includes live performances, free photos with Santa and Mrs. Claus, children's activities, food, beverage, art and craft vendors, raffle prizes and the official countdown to light the Christmas tree, menorah and kinara. Attendees can also stroll down Park Avenue to view the Town's Holiday Lights Display.	4	1
<u>SANTA'S MAGICAL SLEIGH RIDE (\$3,200.00)</u>		
Santa and the Town Commission travel through the town on a holiday themed fire truck complete with LED lights and snow.	3	2
<u>HOLIDAY DECORATING CONTEST (\$600.00)</u>		
The Town hosts a Holiday Decorating Contest during the month of December. Residents and Businesses are asked to show their holiday spirit by decorating their home or business. The 1 st place winners in each category win a prize.	4	1
<u>SANTA'S MAILBOX (\$200.00)</u>		
Santa's Mailbox is setup in the Lake Park Public Library during the month of December. Participants are asked to drop their letter for Santa in the mailbox and include their name, mailing address and phone number. Santa will send a personalized reply back straight from the North Pole.	4	1

<u>TOWN OF LAKE PARK</u>		
<u>PROPOSED SPECIAL EVENTS ORGANIZED BY OUTSIDE ORGANIZATIONS</u>		
<u>NEIGHBORHOOD BLOCK PARTY GRANTS (\$5,000.00)</u>		
The Town provides 10 reimbursement grants for \$500.00 each for residents to host a block party in their neighborhood. Grants are provided on a first-come, first-served basis.	3	2
<u>CITY OF RIVIERA BEACH MLK PARADE (\$2,555.00)</u>		
Historically, the Town Commission has participated in the Riviera Beach MLK Parade held during the month of January. Costs include the rental of one or two convertibles, car magnets and staffing.	3	2
<u>HAITIAN FLAG DAY CELEBRATION (\$10,000.00)</u>		
The Haitian Flag Day Celebration is organized by a local group (FAPRE) to celebrate Haiti's independence. The event is held on the Saturday closest to May 18 at Bethlehem Haitian Baptist Church. There is live music, cultural performances, food, beverage, art and craft vendors, a soccer tournament, basketball game and other activities. Historically, the Town has sponsored this event and provided budgeted funding ranging from \$5,000.00 - \$15,000.00 as well as equipment and staffing.	4	1
<u>JET SET YOUTH SUMMER SOCCER CAMP ((\$10,000.00)</u>		
The Town's soccer provider (Jet SetV F.C.) hosts an annual weeklong soccer camp for children ages 6 – 12 during the first week in June at Bert Bostrom Park. Camp is free for Lake Park residents. Historically, the Town has sponsored this event and provided budgeted funding ranging from \$5,000.00 - \$15,000.00.	4	1
<u>PBC VETS DAY PARADE (\$2,555.00)</u>		
Historically, the Town Commission has participated in the Palm Beach County Veterans Day Parade held during the month of November in West Palm Beach. Costs include the rental of one or two convertibles, car magnets and staffing.	3	2
<u>LAKE PARK ELEMENTARY CAROLING EVENT (\$1,000.00)</u>		
The chorus from Lake Park Elementary organizes a caroling event around town for one evening in December. The Town provides budgeted funds to rent light towers as well as provide safety equipment and staffing.	4	1