

Indian River County Indian River Lagoon Management Plan



April 2023



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Tables

A list of all tables will be included with page numbers for easy reference.



Acronyms and Abbreviations

BCC	Indian River County Board of County Commissioners
IRLMP	Indian River Lagoon Management Plan
IRL	Indian River Lagoon
R & R	Research and Review Phase
FDEP	Florida Department of Environmental Protection
IRLNEP	Indian River Lagoon National Estuary Program
SJRWMD	St. Johns River Water Management District
FWC	Florida Fish and Wildlife Conservation Commission
FIND	Florida Inland Navigational District
FEMA	Federal Emergency Management Agency
FDEO	Florida Department of Economic Opportunity
NOAA	National Oceanic Atmospheric Association
FDOT	Florida Department of Transportation
HAB	Harmful Algal Bloom
ALA	Anchoring Limitation Areas
DO	Dissolved Oxygen
TMDL	Total Maximum Daily Load
BMP	Best Management Practices
BMAP	Basin Management Action Plan
OSTDS	On-site Sewage Treatment Disposal Systems



1. Goal: The Indian River County Lagoon Management Plan addresses key factors impacting the health of the Indian River Lagoon through research and the implementation of restoration projects to improve resiliency and conditions for the Indian River Lagoon and citizens of Indian River County.

2. Introduction

- On July 16, 2019, the Indian River Board of County Commissioners (BCC) adopted an outline for developing the County’s Indian River Lagoon Management Plan (IRLMP).
- Research and Review phase
 - The development of the Indian River Lagoon Management Plan followed a specific process beginning with the research and review phase (R & R).
 - The research and review phase identified 17 key factors (Table 1), which may be impacting the health of the IRL located within the County.
 - Staff worked with numerous departments and stakeholders to gather scientific data on the 17 key factors. Through the process, staff consolidated data, identified data gaps and prepared infographics to disseminate information learned.
- Plan Development Phase
 - Develop the outline for approval by the BCC
 - Write the management plan for managers, stakeholders and citizens
 - Create goals and objectives for the County to manage the region of the IRL
 - Define impacts occurring in our section of IRL
 - Incorporate strategic management ideas by IRL stakeholders
 - Indian River County Board of County Commissioners Meetings
 - Receive input through Board of County Commissioners meetings
 - Incorporate Research and Knowledge Gaps
 - Define clear priorities for County projects and collaborations
 - Identify research needs for IRL
 - Create Recommendations for Innovative Projects
 - Multi-pronged objective projects
 - Partnership projects
- Plan Implementation Phase
 - Implementation will focus on the prioritization and implementation of projects within the IRL. It will discuss plan updates as new research comes to light and data gaps are closed.
- The 17 key factors are addressed in the Management Plan, along with the goals and objectives. The IRLMP is a living document, able to be modified based on emerging factors and research.

A. State of the IRL in Indian River County

Natural History of the IRL

Information on the natural history of the Indian River Lagoon and the region will be provided to give the reader a greater understanding of the dynamics of the ecosystem. In addition, it will assist the reader in understanding the changes the ecosystem has experienced.



Unique Location

It is important to provide information on the uniqueness of the Indian River Lagoon in Indian River County, comparing it to other regions of the lagoon to give the reader a better understanding of the widespread and local issues. Some of the unique parameters setting Indian River County apart are listed below:

- Bordered by inlets
- Reduced retention time
- Consistent salinity
- Watershed and canal system

Current Conditions

Understanding the past is important to better understand the impacts the Indian River Lagoon has faced. In addition, it is important to provide the reader with data on the current conditions of the Lagoon as a whole and those specific to the IRL in Indian River County. This would include information on water quality, habitat fragmentation and seagrass.

B. Plan Funding

Represents a portion of grant funding sources available and is by no means a comprehensive list. As new funding sources come available they will be added to the list.

Funding Sources for Research

- o Florida Department of Environmental Protection (FDEP) Grants
- o Indian River Lagoon National Estuary Program (IRLNEP)
- o St. Johns River Water Management District (SJRWMD)
- o Protecting Florida Together Resilient Florida Planning Grant
- o Additional funding opportunities are welcome, including research partnerships with universities and research entities.

Funding Sources for Projects

- o FDEP Grants
- o FWC Derelict Vessel Removal Grant Program
- o Derelict Vessel Grant Florida Inland Navigational District (FIND) Cost Share Grant
- o FIND Grant Program
- o Cooperative Assistance Program Florida Inland Navigational District (FIND)
- o Small-Scale Spoil Island Restoration and Enhancement Program
- o Building Resilient Infrastructure and Communities grant through Federal Emergency Management Agency (FEMA)
- o IRLNEP
- o SJRWMD
- o Florida Department of Economic Opportunity (FDEO)
- o Protecting Florida Together Grants
- o National Oceanic and Atmospheric Association (NOAA) Transformational Habitat Restoration and Coastal Resilience Grants
- o Florida Department of Transportation (FDOT)
- o Restore America's Estuaries (RAE) National Estuary Program Coastal Watershed Grant
- o Restore America's Estuaries National Estuary Program Watershed Grant
- o Additional funding opportunities are welcome, including research partnerships with universities and research entities.



3. Coastal

A. Goals and Objectives

Each section begins with a list of the goals and objectives.

B. Key Factors

Water Quality

Information on water quality and its influence on the Indian River Lagoon will be provided to the reader. The topic area will include cover water quality parameters and trends. How water quality data is collected and used by the County and State with a focus on state and federal water quality regulations. Finally, it will cover water quality impacts nutrient loading events on the IRL system leading into the next section on HABs.

Harmful Algal Blooms

This area will discuss the impacts of algal blooms and the history of algal blooms in the IRL with a focus on Indian River County. What is a harmful algal bloom (HAB)? What causes an algal bloom? Breaking down algal blooms by type, including information on macroalgae. Concluding with information on the HAB Response Plan for the County.

Organics and Sediments

This area will provide details on the components of muck, how muck is formed in the IRL and its impacts on the ecosystem. This will include information on muck as a source of nutrients to the lagoon, options for muck management and the prevention of muck formation in the IRL. In addition, it will include information on the data gaps regarding muck in Indian River County and how to fill those gaps.

Hydrology and Hydrodynamics

The reader will gain a better understanding of hydrology and hydrodynamics of surface water with a focus on the region of the IRL in IRC. It will cover historical and current information for the Lagoon and what those changes have meant to the ecosystem.

Sea Level Rise

Data on sea level rise will provide the backbone for the section. This section will focus on sea level rise in the IRL, more specifically within the County. Information will be provided on the vulnerability of the IRL to sea level rise, impacts to the ecosystem and homeowners.

Aquatic Ecosystem Functions and Habitat Use

Ecosystem function and habitat use will provide details on the habitats found within the IRL watershed. This section will highlight various species within the IRL watershed and how lagoon health impacts habitat and the associated species. This is vital information, because the reader must look at the IRL as a functioning ecosystem with negative and positive implications on species health and human health. In addition, it is necessary to highlight endemic species, which depend on the IRL ecosystem for survival.



Marinas, Boats and Boat Ramps

Marinas, boats and boat ramps will provide details on the various boating resources located within the County. The section will discuss information on The Clean Vessel Act and the Clean Marina Program, while providing information on marine sanitation devices and other clean boating practices. Along with these resources, this section will educate citizens on Florida laws and local government regulations, pump out locations, derelict vessels and Anchoring Limitation Areas (ALA). The section will be divided into management and education for boaters and marina operators.

C. Operational Projects

A list of all operational projects with associated cost and benefits.

D. Projects Under Construction

A list all projects currently under construction with associated costs.

E. Upcoming and Funded Projects

List all projects which are currently funded and will be implemented in the near future with associated costs and funding sources.

F. Potential Projects

List all potential projects in each category with a focus on benefits to the Lagoon and community.

4. Stormwater

A. Goals and Objectives

Each section begins with a list of the goals and objectives.

B. Key Factors

Annual Rainfall

Rainfall on the IRL will include historical data, along with trends. The section will provide the reader with information on the influence rainfall has on the IRL, which will include information on salinity, dissolved oxygen (DO) and sediment transport. Stormwater is a major source of freshwater inputs to the IRL. This section will include information on the watershed of the IRL. It will cover changes to the watershed through development in the region.

Basin Management Action Plan

The section on the Basin Management Action Plan (BMAP) for the Central Indian River Lagoon will provide information on the requirements, Total Maximum Daily Loads (TMDLs), and management actions recommended for this region of the IRL. It will cover actions taken by the County to meet these requirements and the timeline in place to meet nutrient reductions.



Best Management Practices

What are Best Management Practices (BMPs)? What BMPs are in place and required by the BMAP? What methods are in place to enforce and educate on BMPs relating to stormwater? This area of the plan will cover Best Management Practices, discussing all aspects related to the BMAP as well as BMPs which can be implemented by businesses and homeowners. Emphasis will be placed on the stormwater parks and the efforts to remove plant material and nutrients before reaching the IRL. It will conclude with educational information for people along the IRL, including the fertilizer ordinance.

C. Operational Projects

A list of all operational projects with associated costs and benefits

D. Projects Under Construction

A list all projects currently under construction with associated costs.

E. Upcoming and Funded Projects

List all projects which are currently funded and will be implemented in the near future with associated costs and funding sources.

F. Potential Projects

List all potential projects in each category with a focus on benefits to the Lagoon and community.

5. Conservation Lands

A. Goals and Objectives

Each section begins with a list of the goals and objectives.

B. Key Factors

Terrestrial Ecosystem Function and Habitat Use (could remove and include in Coastal)

Ecosystem function and habitat use was discussed in the Coastal Section of the management plan. However, it is important to highlight the ecosystems found within conservation lands and how their protection benefits the IRL. Conservation lands will include information from the County's Conservation Lands program, SJRWMD and other protected lands found within the IRL watershed. Conservation lands will include improved lands and lands conserved to reduce habitat loss. Furthermore, this area will discuss management strategies currently in place, best management practices at parks and recreation areas, as well as strategies for the community to help protect the Lagoon.



Islands

As part of the conservation lands section, it is necessary to provide information on natural and spoil islands within the IRL. Several natural islands are located within Pelican Island National Wildlife Refuge and Indian River County Conservation Lands program. Spoil islands are managed under the Florida Department of Environmental Protection's Indian River Lagoon Aquatic Preserve. The section will provide information on the importance of both natural and spoil islands and current management strategies.

C. Operational Projects

A list of all operational projects with associated costs and benefits.

D. Projects Under Construction

A list all projects currently under construction with associated costs.

E. Upcoming and Funded Projects

List all projects which are currently funded and will be implemented in the near future with associated costs and funding sources.

F. Potential Projects

List all potential projects in each category with a focus on benefits to the Lagoon and community.

6. Utilities

A. Goals and Objectives

Each section begins with a list of the goals and objectives.

B. Key Factors

Wastewater

A section on wastewater was not included in the research and review phase. However, it is necessary to highlight wastewater treatment, including important advances and regulations designed to benefit the Indian River Lagoon. This section will cover historical wastewater issues impacting the Lagoon, transitioning into current wastewater treatment methods and the benefits. Finally, it will provide information on research and advancements in wastewater treatment.

Biosolids

Biosolids is an important topic for the IRL, other bodies of water, human health and agriculture. Biosolid categories will be defined, providing information on the processing procedures of each category. Concerns regarding biosolid application, current restrictions and data on biosolid application.



Onsite Sewage Treatment and Disposal Systems (OSTDS)

The components and function of onsite sewage treatment and disposal systems will be provided to the reader. Issues relating to septic systems and their potential impacts on the IRL will provide information to the reader on the benefits of septic system updates and conversions within the watershed. The County's septic to sewer conversions, past and present will be highlighted.

Water Consumption

This section will provide information on trending water quantity issues and consumption in Florida with a focus on the region of the Central IRL. Provide information on education and out-reach on water conservation. It will include water consumption use by category and future considerations.

C. Operational Projects

A list of all operational projects with associated costs and benefits.

D. Projects Under Construction

A list all projects currently under construction with associated costs.

E. Upcoming and Funded Projects

List all projects which are currently funded and will be implemented in the near future with associated costs and funding sources.

F. Potential Projects

List all potential projects in each category with a focus on benefits to the Lagoon and community.

7. Community Development

A. Goals and Objectives

Each section begins with a list of the goals and objectives.

B. Key Factors

Land Use Changes

Land use changes will follow the historical and current land use within Indian River County, with an emphasis on impacts to the IRL. Current land use will identify the different types of use within the County, including development, agriculture and shoreline hardening. The section will list various County ordinances, permit requirements and state permit requirements for development.

Sustainability and Resiliency

What is sustainability and resiliency? How does it benefit the IRL? The section will highlight pressures on the IRL, which have impacted resiliency within the ecosystem, as well as strategies to bolster resiliency.



C. Operational Projects

A list of all operational projects with associated costs and benefits.

D. Projects Under Construction

A list all projects currently under construction with associated costs.

E. Upcoming and Funded Projects

List all projects which are currently funded and will be implemented in the near future with associated costs and funding sources.

F. Potential Projects

List all potential projects in each category with a focus on benefits to the Lagoon and community.

8. References

References included in the document will be cited at the end of the document.



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