

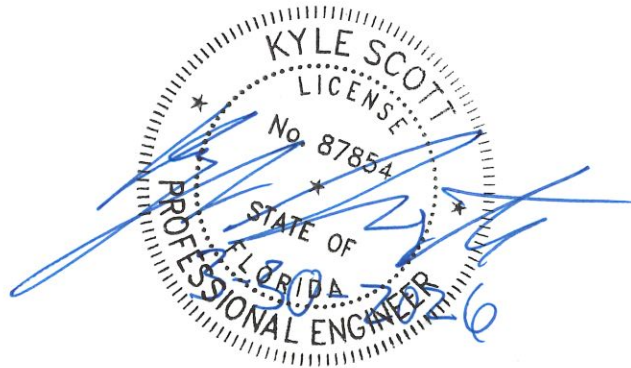


# South Beaches: Riverside Drive Force Main Improvements - 30-inch Parallel Force Main

Project Number: WW05118

## FACILITIES PLAN

February 16, 2026



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Acronyms	
AACE	Association for the Advancement of Cost Engineering International
AADF	Annual Average Daily Flow
BCUSD	Brevard County Utility Services Department
DIP	Ductile Iron Pipe
EPS	Extended Period Simulation
FAC	Florida Administrative Code
FAWN	Florida Automated Weather Network
FDEP	Florida Department of Environmental Protection
FM	Force Main
fps	Feet per second
GIS	Geographic Information System
gpm	Gallons per Minute
HDD	Horizontal Directional Drill
HDPE	High-Density Polyethylene
HP	Horsepower
LF	Linear Feet
MG	Million Gallons
NOAA	National Oceanic and Atmospheric Administration
O&M	Operation and Maintenance
PHF	Peak Hourly Flow
PVC	Polyvinyl Chloride
SBWWTF	South Beach Regional Wastewater Treatment Facility
SCADA	Supervisory Control and Data Acquisition
SOIRL	Save Our Indian River Lagoon
SSO	Sanitary Sewer Overflow
VFD	Variable Frequency Drive
WRF	Wastewater Reclamation Facility
WWF	Wet Weather Flow

## 1.0 EXECUTIVE SUMMARY

### 1.1 Introduction

This Facilities Plan has been prepared to establish the eligibility of Brevard County for State Revolving Fund (SRF) loans to finance wastewater system improvements. The SRF program provides low interest loans to local governments for the planning, design, and construction of utility systems.

The Florida Department of Environmental Protection (FDEP) administers the Florida SRF program. Under the SRF program, local governments are required to submit a Facilities Plan containing detailed planning, financial, and technical information for the purpose of obtaining environmental clearance, identifying project alternatives and costs, and coordinating public participation for the proposed project.

This Facilities Plan was prepared to meet the requirements of the SRF loan program for wastewater systems within Brevard County's South Beaches service area. Maps of the planning area and the project area are included in Section 2 (Figure 2-1) and Section 5 (Figure 5-1).

Review of this planning document, consideration of public input, and adoption of the Facilities Plan by Brevard County's Board of County Commissioners is required by the SRF program. Adoption of the plan by Brevard County in no way commits the Brevard County Utility Services Department (BCUSD) to construct the project, nor does it commit the BCUSD to use SRF funding.

### 1.2 Existing Wastewater Treatment and Collection System

Brevard County owns and operates several wastewater treatment plants and collection systems throughout its service area. The South Beaches collection system consists of a network of gravity sewer mains interconnected by sanitary sewer manholes which discharge into lift stations. Lift stations, consisting of submersible and dry pit duplex and triplex stations which range from 5 to 185 horsepower, contribute flow into a shared, manifolded force main that conveys wastewater to the SBWWTF. The pressurized piping network is comprised of larger diameter pipes, with the majority of the system being made up of 20-inch and 24-inch diameter pipes, accounting for 25.5% and 38.5% of the total system, respectively. The total length of the force main system spans nearly 23 miles and pipe materials varies, although ductile iron pipe is the most prevalent material across multiple sizes.

Sewage from the collection system is conveyed to the SBWWTF for treatment and disposal.

### 1.3 Need for the Project

The wastewater system improvements proposed in this Facilities Plan are needed to improve the reliability and long-term performance of the wastewater collection system by addressing aging infrastructure and reducing the risk of failures that can lead to SSOs. The proposed improvements will add redundancy where feasible and strengthen system resilience during peak wet-weather conditions,

power interruptions, and equipment outages. This will help to ensure continuous service to customers. By minimizing the likelihood of SSOs, improvements protect the public health and safety by reducing potential exposure to untreated wastewater, by preventing impacts to streets and private property, and by safeguarding nearby waterways and environmentally sensitive areas. The project supports responsible utility operations by enhancing system dependability and helping the County maintain compliance with applicable regulatory requirements.

## **1.4 The Selected Plan**

The proposed project includes construction of 5,945 LF of 30-inch PE4710 Force Main, 1,331 LF of 30-inch DIP force main, eight 30-inch valves, five Air Release Valve Assemblies, fittings, and associated appurtenances as well as restoration to areas impacted by HDD trenching equipment and trench excavation during construction. Additionally, this alternative includes the costs to connect to the existing system and serve in parallel to the existing 24-inch force main.

## **1.5 Financing the Improvement Project**

Brevard County is responsible for financing its wastewater system improvements and plans to use SRF loan funding to minimize the financial impact of the project on the rate-payers. The pledged revenues supporting this debt issue will be the generated by sewer impact fees and the utilities operating revenues.

The preliminary estimate of probable construction cost of the project is approximately \$16.72 million. Adding other elements associated with the SRF program, the anticipated loan value is approximately \$19.74 million including capitalized interest.

## 2.0 INTRODUCTION

### 2.1 Background

Brevard County's roots trace back to Florida's early settlement era along the Indian River Lagoon and Atlantic barrier islands, beginning with Indigenous communities and later Spanish and American influence. The county was originally organized as St. Lucie County in 1844 and was later renamed Brevard County in 1855 (after Florida Comptroller Theodore W. Brevard). Today, Brevard County is one of Florida's larger coastal counties, stretching approximately 72 miles north-to-south and including 16 municipalities, with a 2024 estimated population of 658,447 residents across 1,015 square miles of land area.

Brevard County is governed under a commission-manager form of government where the community elects a Board of County Commissioners to set countywide policy, adopt the budget, and approve major ordinances and long-range plans. The board is made up of commissioners elected from individual districts who represent residents across the county and make decisions in public meetings. The day-to-day administration of county operations is handled by a professional County Manager appointed by the commission, who oversees county departments and implements the board's direction. The County is responsible for operating multiple departments, including the Utility Services Department, which oversees water/wastewater utilities in its service area to ensure adequate levels of service to the residents, businesses, and visitors of Brevard County.

The Brevard County Utilities Services Department operates a comprehensive wastewater collection and treatment system designed to manage and treat wastewater from six distinct service areas: North Brevard, Port St. John, Merritt Island, South Central, South Beaches, and Barefoot Bay. Wastewater collected from these areas are conveyed to six wastewater reclamation facilities (WRFs): North Brevard (NBWRF), Port St. John (PSJWRF), Sykes Creek Regional (SCRWRF), South Central (SCWRF), South Beaches Wastewater Treatment Facility (SBWWTF), and Barefoot Bay Advanced (BFBWRF). This facilities plan focuses on a project within the SBWWTF service area.

### 2.2 Planning Area

In 2025, Wade Trim completed the *South Beaches Service Area Hydraulic Model Expansion and Improvement Study* to identify cost-effective projects that reduce the probability of sanitary sewer overflow occurrences and improve long-term system reliability for BCUSD. Building on prior regional work, the hydraulic network was extended to include 15 lift stations manifolded to the primary force main, integrated updated GIS, SCADA, pressure monitoring, rainfall, and as-built information, and produced a validated and calibrated SewerGEMS model suitable for planning and design support.

The model was used to evaluate existing and future conditions, including Average Annual Daily Flow (AADF), and a Future (Year 2045) 24-hour, 25-year wet weather flow (WWF) event selected to be consistent with state agency and BCUSD objectives. Results indicate that lift stations in the northern portion of the service area exhibit the greatest sensitivity to surcharge and elevated Sanitary Sewer

Overflow risk under the 2045 WWF scenario, while stations south of SBWWTF generally retain available capacity. These findings focused the improvement concepts on relieving head, upsizing pumping capacity, and adding targeted storage where it is most effective.

An optimization framework then tested thousands of project combinations, balancing capital cost against performance penalties for SSOs, high/low velocities, and high pressures. A preferred scenario was selected as the optimized solution because it achieves the targeted hydraulic performance and reliability with lower complexity and greater cost efficiency compared to the alternatives.

The selected scenario comprises a coordinated set of projects that address the primary constraints: Lift Station B06 replacement (capacity and reliability gains), a parallel force main along South Patrick (30-in corridor) to increase conveyance and redundancy, a 24-in interconnect on Riverside Drive to provide a relief pathway and operational flexibility, and major upgrades at Lift Station B20 to manage both base and peak flows. Collectively, these projects reduce SSO probability, improve operability, and strengthen system resiliency in the areas of greatest need.

A construction sequencing plan prioritizes early conveyance relief and redundancy, completing the Riverside interconnect, South Patrick parallel force main, and B06 replacement in parallel, followed by the Lift Station B20 dry-weather, wet-weather, and equalization facilities, and then the hydraulic isolation north of Lift Station B20. The recommended program equips BCUSD with a clear, defensible path to reduce the probability of SSO occurrences under future wet-weather conditions, enhance operational flexibility, and invest capital where it most improves reliability. The study provides a calibrated planning tool, prioritized projects, transparent cost assumptions, and an implementation roadmap to guide near-term decisions and long-term resilience.

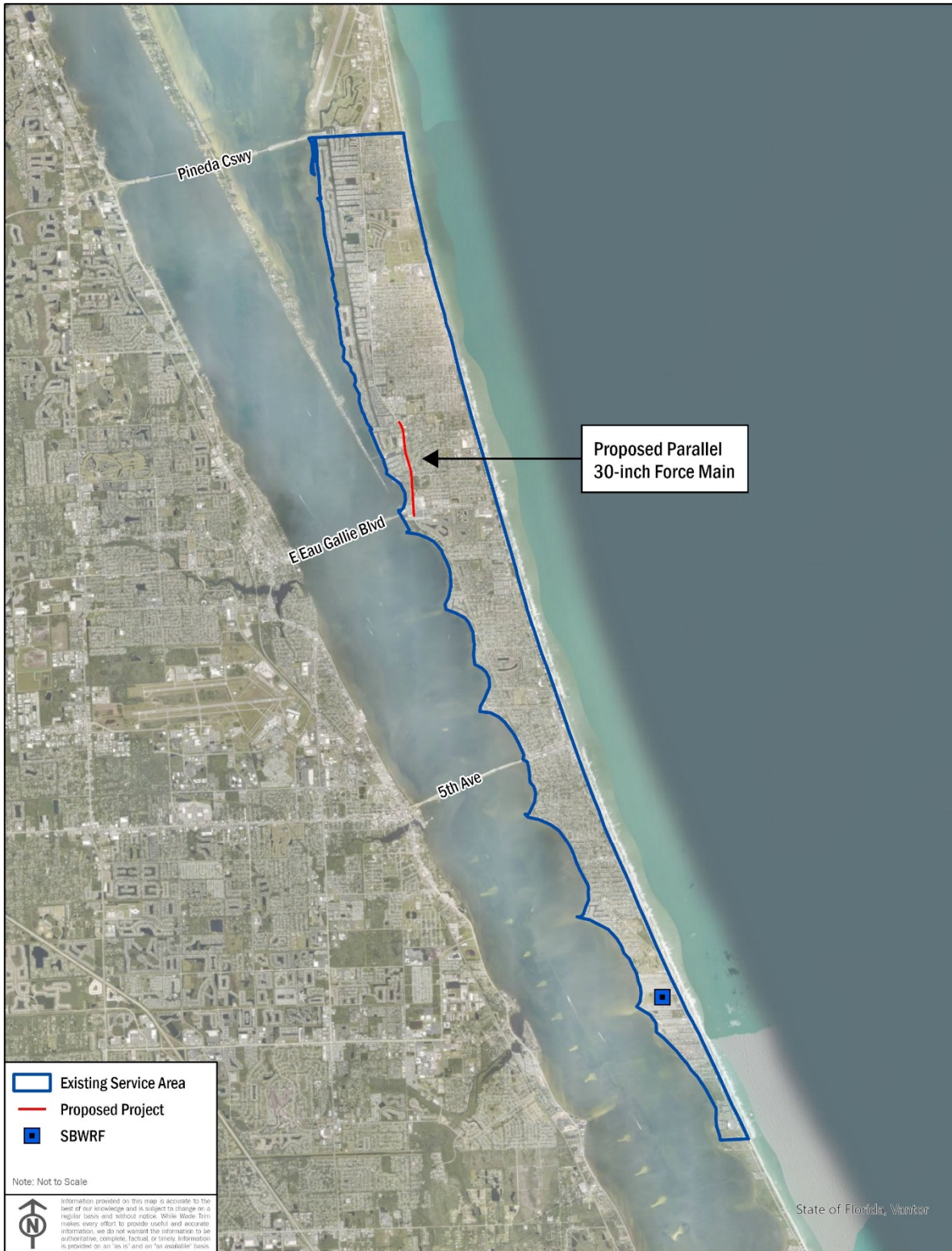
## 2.3 Planning Area Needs

The Clean Water projects identified in this Facilities Plan will provide additional sewer infrastructure to serve approximately 30,000 residents of the South Beaches service area. The primary objectives of the projects are to reduce the probability of SSOs and to ensure that the South Beaches collection system has adequate and reliable capacity to meet short- and long-term planning requirements. A map of the South Beaches service area as well as the general location of the proposed project is shown in **Figure 2-1**.

In accordance with FDEP requirements, this Facilities plan provides the following:

- an environmental assessment of the proposed project area,
- project alternatives,
- a detailed cost estimate for the project alternatives,
- a financing plan, and
- public participation meeting documentation

Figure 2-1. Project Planning/Service Area



## 3.0 ENVIRONMENTAL REVIEW

### 3.1 Introduction

The environmental aspects of the project construction areas (PCA) have been evaluated as described in this section. It is not anticipated that any negative site related environmental impacts will occur; however, Florida Royal Palms located in landscaped areas within the project limits may require relocation to accommodate the project. The project design will mitigate these and any other potential impacts, and the specifications will require appropriate mitigation measures.

Temporary adverse impacts anticipated during construction include increased noise levels and an increase in the amount of airborne particulates. Control measures will be implemented to mitigate these temporary impacts.

It is expected that review by various environmental agencies will establish that the proposed project will not have a significant adverse effect upon flora, fauna, threatened or endangered plant or animal species, prime agricultural lands, wetlands, undisturbed natural areas, or the socioeconomic character of the area. Refer to **Appendix C** for additional detail related to the environmental review.

### 3.2 Description of the Project Construction Area

The PCA runs along Florida State Road 513 (SR-513), from North Riverside Drive, extends north along South Patrick Drive through a connection point at the existing Lift Station B20 in Riverside Park Drive. The PCA is entirely within the Brevard County public right of way, and the PCA encompasses an area of approximately 14.4 acres.

This road serves as local connection to the barrier-island communities of Indian Harbour Beach, Satellite Beach, and South Patrick Shores. The PCA includes urban roadways, stormwater infrastructure, connections to local waterways, residential and commercial developments on both sides immediately adjacent or within the road right-of-way.

### 3.3 Climate

The PCA has a humid, subtropical climate. The month of January typically has the lowest temperatures during the year with an average high of 72° Fahrenheit (F) and an average low of 51° F. The average high temperature steadily increases during the year until reaching an average of 91° F in July before beginning to cool again through December. The PCA experiences a distinct rainy season from June to September, with the wettest months being July and August ( $\pm 8$  inches) while the drier winter months (Nov-April) see significantly less rainfall of around  $\pm 3$  inches.

### 3.4 Topography and Drainage

The topography of the PCA is characterized as relatively flat, low-lying, and poorly draining. The elevation is between 4 feet (ft) and 7 ft above sea level. Both natural and man-made drainage features

currently accommodate stormwater drainage within the PCA. These systems provide on-site retention/detention and a certain amount of percolation of run-off.

### 3.5 Geology and Soils

The PCA has, according to the US Department of Agriculture's (USDA) Natural Resources Conservation Services (NRCS), five (5) soil types exist within the footprint of the Project. **Table 3.1** provides a summary of the project area soils. A map of the soils is provided in **Figure 3-1**.

Map Unit	Soil Type	Hydric Rating	Capability Unit	Acreage	Percentage
36	Myakka Sand	Yes	IVw-2	5.5	37.90%
49	Pomello Sand	Yes	Vis-3	1.2	8.30%
50	Pomello-Urban Land Complex	Yes	Not Assigned	2	14%
51	Pompano Sand	Yes	Ivw-1	2.4	16.90%
69	Urban Land	Yes	Not Assigned	3.3	22.80%
			Total	14.4	100%

A detailed description of the encountered soils is as follows:

- **Myakka sand (Mk), 0 to 2 percent slopes (Map Unit: 36)** – The Myakka Series consists of nearly level, poorly drained sandy soils in broad areas in the flatwoods and in areas between sand ridges and sloughs and ponds. The representative profile has a sandy surface layer about 8 inches thick. This Series is ranked as a hydric soil and flooded for 2 to 7 days once in 1 to 5 years. Capability unit IVw-2.
- **Pomello sand (Ps), 0 to 5 percent slopes (Map Unit: 49)** – The Pomello Series consists of nearly level, moderately well drained sandy soils on broad low ridges and low knolls in the flatwoods. The representative profile has a surface layer of about 3 inches thick. This Series is ranked as a hydric soil. Capability unit Vis-3.
- **Pomello-Urban land complex (Pu) (Map Unit: 50)** – This complex is about 45-60 percent of Pomello sand, 20 percent Pomello sand that has been altered for use as building sites, and 20-45 percent Urban land or areas covered by houses, streets, driveways, buildings, parking lots, and other related uses. This complex is ranked as a hydric soil; however, it does not have an assigned capability unit.
- **Pompano sand (Pw), 0 to 2 percent slopes (Map Unit: 51)** – The Pompano Series consists of nearly level, poorly drained soils on broad flats, in shallow depressions, and in sloughs. The

representative profile has a sandy surface layer about 7 inches thick. Capability unit IVw-1. This Series is ranked as a hydric soil.

- **Urban land (Ur), 0 to 2 percent slopes (Map Unit: 69)** – The Urban land consists of areas covered with about 60-75 percent streets, buildings, large parking lots, shopping centers, industrial parks, airports, and related facilities. This Series is ranked as a hydric soil; however, it does not have an assigned capability unit.

Figure 3-1. Project Area Soils Map



### 3.6 Land Use

The Land use descriptions have been created for the entire state by the Florida Department of Transportation. These Florida Land Use, Cover, and Forms Classifications System (FLUCCS) codes are used to generally categorize land types by use and vegetative compositions. The descriptions that are closest to the habitats onsite are utilized to document the current land use. Modifications of categories are done to be more descriptive of conditions onsite.

FLUCCS data, aerial photographs, and USGS National Wetland Inventory (NWI) map were reviewed to evaluate past and current land use and habitat types within the PCA. The Project is compatible with the existing land use and is located in land designated for transportation (FLUCCS 814) and commercial activities (FLUCCS 140). **Table 3-2** describes the existing land use within the project area.

Type	FLUCCS Code	FLUCCS Description	Acreage (approx)	Percentage
Uplands	814	Transportation [Roads and highways (divided 4-lane with medians)]	10.6	73.60%
Uplands	140	Urban and Built-Up (Commercial and Services)	3.8	26.40%
total			14.4	100%

A detailed explanation of the FLUCCS Code descriptions is as follows:

- FLUCCS 814 (Transportation): Transportation facilities are used for the movement of people and goods; therefore, they are major influences on land, and any land use boundaries are outlined by them. This category involves rail-oriented facilities including stations, round-houses, repair and switching yards and related areas.
- FLUCCS 140 (Urban and Built-Up): Urban and built-up land consists of areas of intensive use with much of the land occupied by man-made structures. Included in this category are cities, towns, villages, strip developments along highways and such areas as those occupied by malls, shopping centers, industrial and commercial complexes and institutions that may, in some instances, are isolated from urban areas.
  - Commercial areas are predominantly associated with the distribution of products and services. This category is composed of a large number of individual types of commercial land uses which often occur in complex mixtures. This category includes all secondary structures associated with an enterprise in addition to the main building

and integral areas assigned to support the base unit. This includes sheds, warehouses, office buildings, driveways, parking lots and landscaped areas.

### 3.7 Protected Species

The PCA was evaluated for the presence of federally and state listed species in accordance with Part 2, Chapter 16 of the FDOT PD&E Manual, and Section 7 of the Endangered Species Act (ESA). In addition, field observations were conducted in December 2025.

According to the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online system, protected species may occur in the Project vicinity. However, federally listed species were not observed in the project study area during the field observations. Furthermore, critical habitat does not occur within the project footprint. The PCA is located within the existing roadway footprint and does not contain typical features to support wildlife and their habitat.

Protected plant species do not occur within the project study area, with exception for Florida Royal Palm (*Roystonea elata*) that was observed within the South Patrick Drive median and landscape areas. The Florida Royal Palm is a state endangered species that typically grows in tropical and subtropical habitats such as coastal lowlands, hammocks, and wetlands. This species is extensively planted and proliferates in disturbed habitats. Although not federally listed, it is considered endangered in Florida due to habitat loss and limited natural range. This species plays an important ecological role in providing food and shelter for wildlife and is often used in restoration and landscaping projects to preserve native biodiversity. Due to the Project design this species may need to be relocated to accommodate the required construction zones (e.g., launching and receiving areas) for the proposed force main. Anticipated impacts to this species would be mitigated following FDACS Chapter 5B.40.0055, F.A.C., and Chapter 62, Section 62-4331 of Brevard County Code of Ordinances. Table 4-1 outlines federally and state regulated species that may occur in the vicinity and outside the Project.

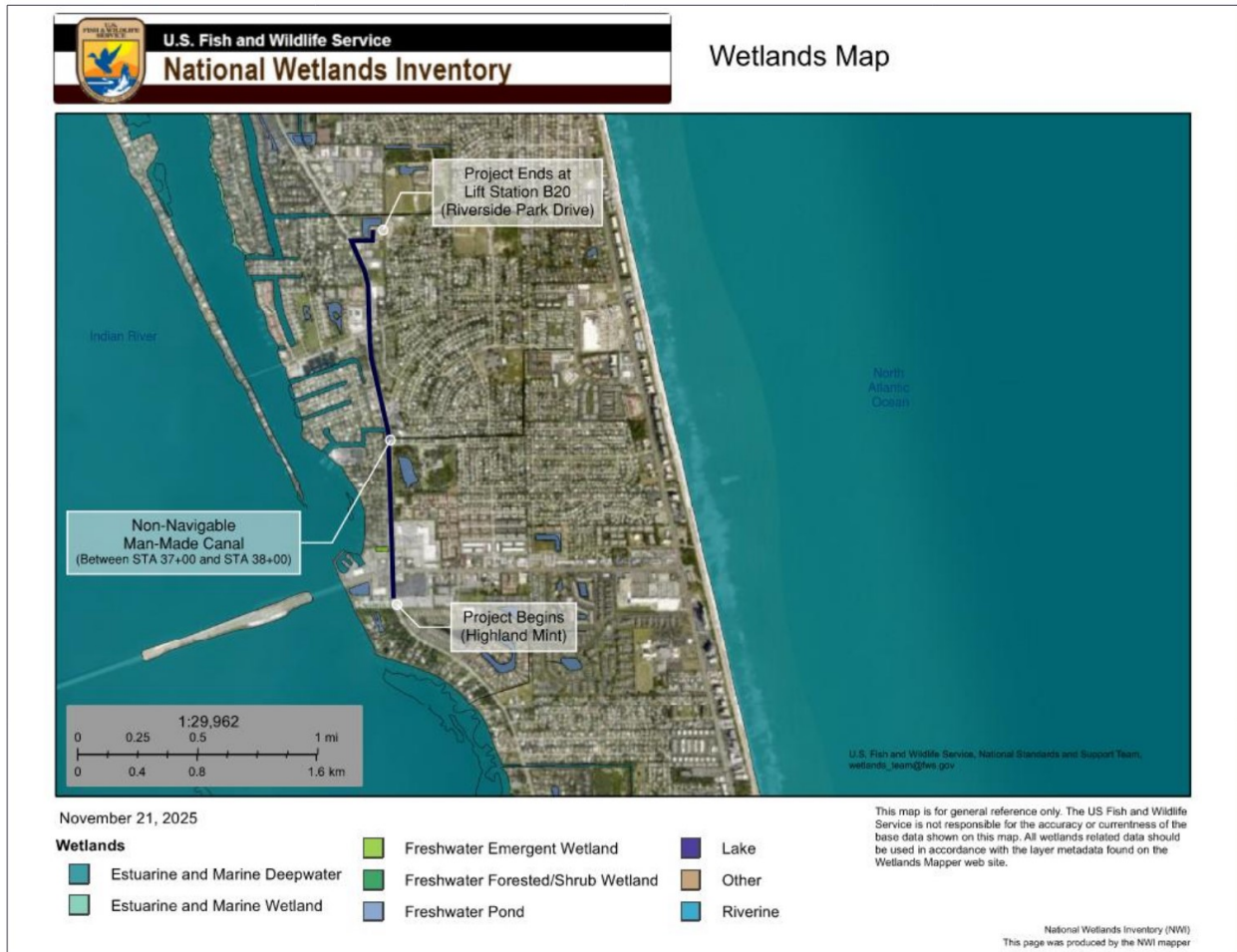
### 3.8 Wetlands and Surface Waters

Wetlands and other surface waters were evaluated in accordance with Chapter 62-340, F.A.C., USACE 1987 Corps of Engineers Wetland Delineation Manual, and 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) (ERDC/EL TR-10-20).

According to the USFWS National Wetlands Inventory, and Brevard County databases, wetland does not occur within the project study area (see **Figure 3-2**). A non-navigable jurisdictional man-made canal crosses the Project just north of Yacht Club Boulevard, with two (2) 60-inch box culverts. This canal extends from west to east across South Patrick Drive, ultimately connecting to the Indian River on the west side. The canal primarily functions as stormwater infrastructure, collecting runoff from Golden Beach Estates and Town House Estates areas. The proposed 30-inch force main will be installed using

horizontal directional drilling at approximately 25 feet below the canal bed. Therefore, impacts to this canal are not anticipated.

Figure 3-2. Project Area Wetlands Inventory



### 3.9 Essential Fish Habitat

The Project has been evaluated for potential impacts to Essential Fish Habitat (EFH) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. EFH and Habitat Areas of Particular Concern (HAPC) are designated by the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) and the regional fishery management councils for species to support the conservation of habitats critical to the lifecycles of federally managed fish species.

The review of EFH in the project study area follows guidelines from the FDOT PD&E Manual (Part 2, Chapter 17), and the USFWS. Available NMFS data were assessed to evaluate if EFH and HAPC occur within the project study area, as these types of habitats are protected under the Magnuson-Stevens

Fishery Conservation and Management Act, which helps safeguard marine species and their environment.

Based on the NMFS EFH Mapper, EFH does not occur within the project study area. Therefore, the Project will have “no effect” on EFH.

### 3.10 Cultural, Archaeological and Historic Sites

The Project was evaluated to identify the presence of archaeological resources within the project study area and to assess their eligibility for listing on the National Register of Historic Places (NRHP), in accordance with Section 106 of the National Historic Preservation Act (NHPA). According to the NRHP, there are no listed properties within or to be affected by the Project. The nearest NRHP-listed property, Historic Rossetter House Museum, is approximately 1.80 miles west of the project site.

According to the Florida Master Site File (FMSF) obtained on January 14, 2026, three (3) cultural resources were identified in the vicinity of the Project. Based on the FMSF database, resource BR00101 has been mapped within the PCA. However, open-cut work or staging activities are not planned in this location. Therefore, no effect on this resource or location is anticipated.

Based on the results of the NRHP and FMSF review, the Proposed Action is not anticipated to affect any historic properties. Although one recorded cultural resource (BR00101) is located within the project limits, no ground disturbing activities are planned in that area, and no impacts are expected. With State Historic Preservation Office (SHPO) review and concurrence requested on January 14, 2026, the cultural resource analysis for the Project supports a determination that the Proposed Action will have no effect on historic properties.

### 3.11 Flood Plain

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Panels 38 (12009C0536H, and 12009C0538H, eff. 1/29/2021), the Project is located within Zone X, and Zone AE with Base Flood Elevation (BFE) estimated in 3 to 4 feet (see Figure 5-5 and Figure 5-6). Zone X corresponds to area of minimal flood hazard, while Zone AE consists of areas subject to the 1-percent annual chance flood hazard in a coastal zone. Due to the nature of the Project and proposed installation method using HDD and trenchless excavation, no impacts on flood elevation are anticipated.

### 3.12 Potential Risk of Known Contamination Sites

A Level I Contamination Screening Evaluation Report (CSER) was conducted to assess potential contamination involvement and evaluate the level of risk associated with known sites containing hazardous materials or petroleum products in the vicinity of the Project. The CSER follows Chapter 20 of the FDOT PD&E Manual (effective July 31, 2024).

The contamination screening identified a total of 60 reported sites or facilities within the vicinity of the Project with current or historical activities involving hazardous materials or petroleum products. Each site was assessed and assigned a risk rating based on its distance from the project, environmental compliance history, and available information from federal, state, and local environmental databases. None of the documented contamination sites intersect the project limits; therefore, no contamination impacts are expected based on current information. However, risk ratings may change if sites fall out of regulatory compliance, new contamination is discovered, or site operations are altered.

### 3.13 Environmental Review Summary

No impacts on federally protected species, wetlands or EFH are expected as a result of the Proposed Action. Due to the nature of the Project and proposed installation method using horizontal directional drilling, dewatering may be employed during construction. Best management practices and protective measures will be implemented to avoid or minimize any possibility of unanticipated impacts. Since the Proposed Action does not involve impacts to natural resources or impacts are anticipated to be minimal, a technical memorandum is applicable and sufficient for this phase.

Pursuant to Section 7 of the ESA and Part 2, Chapter 16 of the FDOT PD&E Manual, the project study area was evaluated for the presence of protected species. According to the USFWS IPaC online system, federally protected species or designated critical habitat do not occur within the project study area. In addition, federally protected species were not observed during site observations. Therefore, the Proposed Action would have no effect on federally listed species.

Furthermore, the Florida Royal Palm (*R. elata*) was observed in some sections along South Patrick Drive during site observations. Due to the Project design this species may be relocated to accommodate the proposed force main. Anticipated impacts to this species will be mitigated following FDACS, Chapter 5B.40.0055, F.A.C., and Chapter 62, Section 62-4331 of Brevard County Code of Ordinances.

Wetland does not occur within the project limits. Therefore, no impacts on this resource are expected. Although a non-navigable jurisdictional man-made canal crosses the Project, the Project does not include impacts to this canal. In addition, due to the project design and proposed installation method using horizontal directional drilling at approximately 25 feet below the canal bed, impacts to water resources are not anticipated.

Best management practices and protective measures will be implemented to avoid or minimize any possibility of unanticipated impacts, specifically due to construction dewatering. Any construction dewatering would be short-term and best management practices would be implemented by the contractor during construction phase.

## 4.0 EXISTING SYSTEM

### 4.1 Description of the Existing Wastewater System

Brevard County owns and operates several wastewater treatment plants and collection systems throughout its service area. The overall system is comprised of six wastewater treatment plants, 598 miles of sanitary gravity sewers, 205 miles of sanitary force main, and 291 public lift stations.

The South Beaches collection system consists of a network of gravity sewer mains interconnected by sanitary sewer manholes which discharge into lift stations. Lift stations, consisting of submersible and dry pit duplex and triplex stations which range from 5 to 185 horsepower, contribute flow into a shared, manifolded force main that conveys wastewater to the SBWWTF. The pressurized piping network is comprised of larger diameter pipes, with the majority of the system being made up of 20-inch and 24-inch diameter pipes, accounting for 25.5% and 38.5% of the total system, respectively. The total length of the force main system spans nearly 23 miles and pipe materials varies, although ductile iron pipe is the most prevalent material across multiple sizes.

Sewage from the collection system is conveyed to the SBWWTF for treatment and disposal.

### 4.2 Need for Facilities

The wastewater system improvements proposed in this Facilities Plan are needed to improve the reliability and long-term performance of the wastewater collection system by addressing aging infrastructure and reducing the risk of failures that can lead to SSOs. The proposed improvements will add redundancy where feasible and strengthen system resilience during peak wet-weather conditions, power interruptions, and equipment outages. This will help to ensure continuous service to customers. By minimizing the likelihood of SSOs, improvements protect the public health and safety by reducing potential exposure to untreated wastewater, by preventing impacts to streets and private property, and by safeguarding nearby waterways and environmentally sensitive areas. The project supports responsible utility operations by enhancing system dependability and helping the County maintain compliance with applicable regulatory requirements.

## 5.0 PROGRAM ALTERNATIVES

### 5.1 Introduction

To provide better service and ensure current and future demands needs are met, BCUSD intends to make necessary improvements to its wastewater system. The alternatives listed below have been evaluated and compared based on cost effectiveness, technical feasibility, permit requirements, constructability, and environmental soundness.

Figure 5-1 illustrates the location of the proposed wastewater improvements that are described in Alternatives 1 and 2 of this section.

Figure 5-1. Proposed Wastewater Improvements



## 5.2 Alternative 1 – 30-Inch Parallel Force Main on South Patrick – Primarily HDD

Install a new 30-inch polyethylene pipe (PE4710) and ductile iron pipe force main, approximately 7,300 linear feet in length, extending from Lift Station B20 to the south side of Eau Gallie Boulevard along South Patrick Drive and North Riverside Drive. As South Patrick Drive is a large, primary thoroughfare through the planning area and contains numerous existing underground utility installations, 85% of the pipe will be installed via horizontal directional drilling (HDD). Though the project will require Maintenance of Traffic at points of connection to the existing system and HDD entry/receiving pits, much of the new force main will be over 20 feet deep and protected from surface-related disturbances.

The proposed force main would operate in parallel with the existing 24-inch force main, increasing conveyance capacity and providing critical redundancy along a key transmission corridor serving the South Beaches service area. By reducing overall system head and improving hydraulic performance, the parallel force main enhances operational reliability at multiple lift stations in the region, particularly during peak wet-weather conditions. The added conveyance and redundancy reduce the likelihood of surcharge conditions, improve system response during equipment outages or emergency events, and lower the risk of sanitary sewer overflows by improving the system's ability to reliably convey peak flows to the SBWWTF. Collectively, these benefits strengthen system resiliency, reduce operational vulnerability, and support long-term compliance with regulatory requirements.

## 5.3 Alternative 2 – 30-Inch Parallel Force Main on South Patrick – Open Cut

Install a new 30-inch ductile iron pipe force main, approximately 7,300 linear feet in length, extending from Lift Station B20 to the south side of Eau Gallie Boulevard along South Patrick Drive and North Riverside Drive. The open cut installation would occur primarily in the northbound side of South Patrick Drive due to the presence of multiple utilities in the southbound lane. An approximately 200-foot Jack and Bore of the force main would be completed through the intersection of South Patrick Drive and the Eau Gallie Causeway. Due to the number of utilities within the PCA, over 80 pipe deflections would be required. Significant Maintenance of Traffic efforts would be necessary to protect the public and the work.

The proposed force main would operate in parallel with the existing 24-inch force main, increasing conveyance capacity and providing critical redundancy along a key transmission corridor serving the South Beaches service area. By reducing overall system head and improving hydraulic performance, the parallel force main enhances operational reliability at multiple lift stations in the region, particularly during peak wet-weather conditions. The added conveyance and redundancy reduce the likelihood of surcharge conditions, improve system response during equipment outages or emergency events, and lower the risk of sanitary sewer overflows by improving the system's ability to reliably convey peak flows to the SBWWTF. Collectively, these benefits strengthen system resiliency, reduce operational vulnerability, and support long-term compliance with regulatory requirements.

## 5.4 Alternative 3 – No Action

This alternative consists of performing no action. No infrastructure additions or modifications to the community are considered as part of this alternative. BCUSD will continue to struggle with maintaining operations during wet weather and/or emergency events. The risk of SSOs will remain high and can result in environmental impacts to surrounding soils, surface waters, and sensitive receiving bodies, create public health concerns, cause odor and nuisance complaints, and result in potential regulatory enforcement actions, including consent orders and monetary penalties.

## 5.5 Cost Comparison of the Alternatives

The estimated present worth value associated with each clean water alternative is listed in **Table 5-1**. The present worth estimate is based on a planning period of 20 years and incorporates a discount interest rate of 2.2%. Annual O&M for the force main was estimated using an activity-based approach, including routine inspection, valve/air release valve exercising, periodic cleaning/pigging as needed to maintain conveyance capacity, and an allowance for corrective repairs. Salvage value was assumed to be zero since buried utility assets are typically abandoned in place and no salvage proceeds would be realized.

Name	Capital Cost	O&M Cost	Salvage Value	Present Worth
Alternative 1 – 30-Inch Parallel Force Main on South Patrick – Primarily HDD	\$19,232,000	\$81,966 \$5,110 (Annually)	\$0	\$19,313,966
Alternative 2 – 30-Inch Parallel Force Main on South Patrick – Open Cut	\$34,237,000	\$128,803 \$8,030 (Annually)	\$0	\$34,365,803
Alternative 3 – No Action	\$0	\$0	\$0	\$0

The construction cost estimates for Alternative 1 and Alternative 2 can be found in **Appendix D**.

## 5.6 Summary of Alternatives

The Clean Water alternatives have been compared based on complexity, construction impact to community, availability, Inflow and Infiltration potential, feasibility, environmental, and financial aspects. **Table 5-2** summarizes these comparisons.

**Table 5-2. Wastewater Alternatives Selection Comparison Matrix**

Criteria	Alternative 1 – HDD Installation	Alternative 2 – Open Cut Installation	Alternative 3 – No Action
Ease of Operation	3	3	1
Construction Impact to Community	2	1	3
Required Maintenance	3	3	1
Inflow and Infiltration Prevention	3	3	1
Private Property Cost to Customers	3	3	2
Environmental	3	3	1
Financial	2	1	2
Total	19	17	11

1 = Poor, 2 = Acceptable, 3 = Excellent

## 6.0 THE SELECTED PLAN

### 6.1 Introduction

The Brevard County Utility Services Department has established that the improvements to the wastewater system proposed in this plan are a necessary step to protect its residents and the environment.

### 6.2 Selected Improvement

Based primarily on the financial impact and the construction impact to the Indian Harbour Beach community, this facilities plan selects Wastewater Alternative 1 corresponding to the installation of a 30-inch sanitary sewer force main along South Patrick Drive primarily utilizing Horizontal Directional Drilling Technology.

The proposed project includes construction of 5,945 LF of 30-inch PE4710 Force Main, 1,331 LF of 30-inch DIP force main, 8 30-inch valves, 5 Air Release Valve Assemblies, fittings, and associated appurtenances as well as restoration to areas impacted by HDD trenching equipment and trench excavation during construction. Additionally, this alternative includes the costs to connect to the existing system and serve in parallel to the existing 24-inch force main.

### 6.3 Site Conditions

The project proposes to construct the alignment of the 30-inch force main primarily in the median spaces of South Patrick Drive utilizing the HDD method to minimize pipe installation cost and disturbances to the main roadway. The force main along Riverside Park Drive will be installed in the green space and the roadway (as needed). It is not anticipated that any site related environmental impacts will occur, however, the project design will mitigate any potential impacts and the specifications will provide for appropriate mitigation measures.

Site restoration is primarily limited to the green spaces of South Patrick Drive and the open cut areas (green space and asphalt) along Riverside Park Drive.

### 6.4 Construction Costs

The preliminary estimate of probably construction costs for the proposed project is \$19,232,000.

### 6.5 Operational and Maintenance Costs

The estimate of annual operations and maintenance costs for the proposed project is \$5,110.

BCUSD currently operates and maintains a wastewater collection system that includes force mains of similar size and complexity. Existing operations and maintenance staff and procedures will be used for the proposed improvements, which can be supported within BCUSD's existing managerial and technical capacity.

## 7.0 IMPLEMENTATION AND COMPLIANCE

### 7.1 Public Hearing

A Public Participation Meeting was held to present this Facilities Plan to the public for review and comment in conjunction with the adoption of the Plan by the Brevard County Board of Commissioners. The selected alternatives were discussed, and the environmental and cost impacts were presented. This public participation meeting allowed the public to participate in the evaluation of the alternatives as well as any potential financial impacts to the affected parties. **Appendix B** contains a copy of the Notice of Public Participation Meeting and a copy of the Resolution adopted by the County.

### 7.2 Regulatory Agency Review

#### 7.2.1 Florida Department of Environmental Protection

FDEP is the lead agency dealing with issues of environmental quality with regulatory authority encompassing large and small quantity hazardous waste generators, air pollution emissions, solid waste disposal, potable water usage, dredge and fill permitting, and development in environmentally sensitive areas. FDEP is the State agency with regulatory authority over the use of submerged lands and waters. FDEP is also charged with protecting and conserving Florida's natural resources and managing State owned land and aquatic preserves. The project is located within FDEP's Central District.

#### 7.2.2 Florida Department of Agriculture and Consumer Services

The Florida Department of Agriculture and Consumer Services (FDACS) administers statewide programs that promote and regulate agriculture, ensure consumer protection and fair business practices, oversee food and measurement standards, manage forest resources and wildfire response, and enforce pesticide and related environmental regulations.

#### 7.2.3 Florida Department of Health

The Florida Department of Health (DOH) performs water tests for surface water quality and has the authority to issue health notices, advisories, and boil water orders when the potential for contamination exists in public water supply systems. It also issues health warnings and notices for surface water bodies and food sources that may place the public at a health risk.

#### 7.2.4 Florida Fish and Wildlife Conservation Commission

The Florida Fish and Wildlife Conservation Commission (FWC) manages and regulates the State's fish and wildlife resources and enforces related laws. With regards to the State Revolving Fund Program, the FWC serves as a principle reviewer of the environmental assessment portion of each submitted Facilities Plan to protect endangered wildlife, flora, and the overall environmental welfare of protected areas.

### **7.2.5 St. Johns River Water Management District**

The St. Johns Water Management District (SJRWMD) is one of five water management districts in Florida created by the Water Resources Act of 1972. SJRWMD is responsible for managing groundwater and surface water supplies in part or all of 18 counties in northeast and east-central Florida. The District contains 119 local governments spread over approximately 12,000 square miles. SJRWMD provides a variety of regulatory programs including programs regulating the consumptive use of water, construction of wells, licensing water well contractors, surface water management facilities, stormwater management systems, and artificial recharge of ground water.

### **7.2.6 United States Environmental Protection Agency**

The United States Environmental Protection Agency (EPA) reviews the actions of other governmental agencies and retains the authority to veto permits under the provisions of Section 404 of the Clean Water Act. It also manages the collection of water supply quality information under the Information Collection Rule. Many EPA responsibilities have been delegated to State agencies for implementation.

### **7.2.7 Clean Air Act**

The Clean Air Act was amended in 1990. The Clean Air Act Amendments, Title I, address regional air quality for six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter and sulfur dioxide. If a particular area does not meet national ambient air quality standards it is established as a non-attainment area.

### **7.2.8 Federal Water Pollution Control Act**

The Federal Water Pollution Control Act, commonly known as the Clean Water Act, was passed by Congress in 1972 to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands.

### **7.2.9 United States Army Corps of Engineers**

The United States Army Corps of Engineer (USACE) mission is to provide vital public engineering services in peace and war to strengthen our Nation's security, energize the economy, and reduce risks from disasters. The Jacksonville District of the Corps was established in 1884 and encompasses Florida, Puerto Rico, and the U.S. Virgin Islands. The Corps also has a Civil Works environmental mission that ensures all Corps projects, facilities and associated lands meet environmental standards. The program has four functions: compliance, restoration, prevention and conservation.

### **7.2.10 Florida Department of Transportation**

The Florida Department of Transportation's (FDOT) mission is to provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities. District Five includes nine counties: Brevard, Flagler,

Lake, Marion, Orange, Osceola, Seminole, Sumter, and Volusia counties. The District serves 4.1 million residents and encompasses approximately 9,000 square miles. The Central Florida District is headquartered at 719 South Woodland Boulevard in DeLand, Florida.

### 7.2.11 Brevard County Public Works

The Brevard County Public Works Department is responsible for planning, building, operating, and maintaining many of the county's essential infrastructure systems that support daily life and safe travel within Brevard County. The department typically oversees services such as roadway and drainage maintenance, stormwater management, traffic operations, and the repair and upkeep of public facilities and rights-of-way. Through capital improvement projects and ongoing maintenance programs, Public Works helps protect residents and property, improve mobility, and keep Brevard County's infrastructure reliable and resilient.

## 7.3 Implementation Responsibility

Brevard County has the sole responsibility and authority to implement the recommended improvements.

## 7.4 Implementation Schedule

Under the SRF program, entities who wish to receive funding must receive project and funding approval before construction may take place. This Facilities Plan, including the Capital Financing Plan, and biddable plans and specifications with all necessary permits to construct the selected plan must be approved by the FDEP for the entity to receive SRF funding for the proposed project.

Adoption of these Plans by Brevard County's Board of County Commissioners is a necessary step to establish eligibility for the SRF program; however, adoption of the Plans in no way commits Brevard County to construct the projects, nor does it commit the County to using SRF funding or FDEP to offering SRF funding.

The proposed schedule for this project is shown in **Table 7-1**.

<b>Activity</b>	<b>Target Completion Date</b>
Readiness to Proceed – Submit biddable plans, specs, and permits to FDEP	June 27, 2026
Bid Project	August 2026
Begin Construction	November 2026
Substantial Completion	October 2027
Final Completion	November 2027

## 7.5 Compliance

The wastewater collected and treated will be in compliance with the FDEP clean water standards.

The wastewater system will meet the reliability requirements in Chapter 62-604, F.A.C.

The environmental aspects of the proposed facilities are satisfactory.

## 7.6 Request for Inclusion

An updated Request for Inclusion (RFI), reflecting the project scope, cost, and implementation schedule presented in this Facilities Plan, has been submitted to the Florida Department of Environmental Protection as part of the State Revolving Fund funding cycle. The revised RFI is consistent with the information contained herein and is incorporated by reference. See **Appendix E**.

## 8.0 FINANCIAL PLANNING

### 8.1 General

Brevard County is seeking to finance wastewater system improvements from the SRF Loan program. Adoption of these Plans by the Brevard County's Board of Commissioners is a necessary step to establish eligibility for the SRF program; however, adoption of the Plans in no way commits the County to construct the project, nor does it commit the County to use SRF funding or FDEP to offer SRF funding.

FDEP administers the Florida SRF program. Eligible entities are required to submit detailed project information to FDEP as part of the application process, consistent with the following SRF objectives:

- To establish the financial capability of local governments to provide complete wastewater systems; and,
- To ensure that local government capital financing plans will not jeopardize the viability of the SRF program; and,
- To ensure consistency between the capital financing plans, user system charges, and facilities plans; and,
- To ensure the timeliness and consistency of reviews of capital financing plans and public hearing documentation; and,
- To establish that adequate disclosure to the public of the project financing and public review and comment has been provided for; and,
- To identify unusual or potentially controversial financing mechanisms that may be of concern in negotiating loan agreements.

### 8.2 Projected Costs

The County is seeking funding eligibility for the construction of the wastewater system improvements projects included in this plan. **Table 8-1** summarizes the preliminary estimate of probable construction cost, loan service fees, and capitalized interest totaling approximately \$19.74 million.

<b>Project Components</b>	<b>Cost</b>
Estimated Construction	\$16,720,000
Contingency	\$1,672,000
Technical Services During Construction	\$840,000
Capitalized Interest	\$119,662
Loan Service Fee	\$384,640
<b>Total</b>	<b>\$19,736,302</b>

### 8.3 Financing Capital Improvements

Brevard County is responsible for financing its wastewater system improvements and plans to use SRF loan funding to minimize the financial impact of the project on the rate-payers. The pledged revenues supporting this debt issue will be the generated by sewer impact fees and the utilities operating revenues.

SRF funding will be instrumental in allowing Brevard County to proceed with the project. This action supports the County's intent to secure maximum eligibility for all anticipated wastewater system improvements utilizing the lowest cost funding available. The County has already adopted indexing provisions tied to the Water and Sewer Maintenance Index, allowing for annual rate adjustments. The projected financial analysis indicates that this indexing mechanism is projected to yield approximately 4% annually. When combined with anticipated customer growth, this revenue will provide sufficient funds to support debt coverage for existing and projected bonds as well as State Revolving Fund loans through 2030. Consequently, no rate adjustments beyond the adopted index are anticipated to be required to meet debt coverage requirements.

The preliminary estimate of probable construction cost of the project is approximately \$16.72 million. Adding other elements associated with the SRF program, the anticipated loan value is approximately \$19.74 million including capitalized interest.

As the SRF interest rate may fluctuate by calendar quarters, a conservative rate of 1.22% has been used to calculate the estimated annual payments at \$1,282,353 (including coverage of 115%). The actual interest rate is set based on the quarter in which the loan agreement is signed and is anticipated similar to the rate used in this analysis.

The planning process for this project has established that the gross revenues currently generated by the system will be sufficient to support the estimated annual SRF loan debt payments.

The Capital Financing Plan can be found in **Appendix A**.

### 8.4 Operational and Maintenance Costs

The annual Operation and Maintenance costs are estimated at \$5,110 per year. This cost includes all anticipated operations and personnel costs related to the projects included in the Facilities Plan.

## APPENDIX A. CAPITAL FINANCING PLAN

# CAPITAL FINANCING PLAN

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Edward Fontanin

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(Project Sponsor)

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Brevard County Utility Services Director

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(Authorized Representative and Title)

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Viera, FL 32940

---

(City, State, and Zip Code)

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Thierry Boveri, Senior Vice President, 407-628-2600

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(Capital Financing Plan Contact, Title and Telephone Number)

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(Mailing Address)

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tboveri@raftelis.com

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(Email Address)

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Maitland, FL 32751

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(City, State, and Zip Code)

The Department needs to know about the financial capabilities of potential State Revolving Fund (SRF) loan applicants. Therefore, a financial capability demonstration (and certification is required well before the evaluation of the actual loan application).

The sources of revenues being dedicated to repayment of the SRF loan are Utility operating revenues (**Note: Projects pledging utility operating revenues should attach a copy of the existing /proposed rate ordinance**)

### Estimation of Proposed SRF Loan Debt Service

Capital Cost [1]	\$	19,232,000
Loan Service Fee (2% of Capital Cost)	\$	384,640
Subtotal	\$	19,616,640
Capitalized Interest [2]	\$	119,662
Total Cost to be Amortized (Rounded)	\$	19,736,302
Interest Rate [3]		1.22%
Annual Debt Service	\$	1,115,090
Annual Debt Service Including Coverage Factor [4]	\$	1,282,353

Notes:

- 
- [1] Capital Cost = Allowance + Construction Cost.  
[2] Estimated based on linear draw of project amount over a 1 year construction period.  
[3] Based on previous CFP interest rate submission. FY 25/26 Q2 reported CWSRF rate equals 1.22%.  
[4] Coverage Factor is assumed at 1.15 recognizing that no impact fees are assumed within the Schedule of Revenue and Debt Service Coverage.

## SCHEDULE OF EXISTING DEBT SERVICE AND DEBT EQUIVALENTS<sup>[1]</sup>

List annual debt service beginning two years before the anticipated loan agreement date and continuing at least fifteen fiscal years.

Use additional pages as necessary.

### IDENTIFY EACH OBLIGATION

<b>#1 Water &amp; Wastewater Utility Revenue Bonds, Series 2014</b>  Coverage % [2] <span style="float: right;">110%</span> Revenue Pledge Lien Priority <span style="float: right;">1st</span> Insured (Yes/No) <span style="float: right;">Yes</span>	<b>#2 CW-051170</b>  Coverage % <span style="float: right;">115%</span> Revenue Pledge Lien Priority <span style="float: right;">2nd</span> Insured (Yes/No) <span style="float: right;">N/A</span>	<b>#3 WW05110</b>  Coverage % <span style="float: right;">115%</span> Revenue Pledge Lien Priority <span style="float: right;">2nd</span> Insured (Yes/No) <span style="float: right;">N/A</span>
<b>#4 CW-051130</b>  Coverage % <span style="float: right;">115%</span> Revenue Pledge Lien Priority <span style="float: right;">2nd</span> Insured (Yes/No) <span style="float: right;">N/A</span>	<b>#5 Estimate - SRF Loan 1 (CDM2)</b>  Coverage % <span style="float: right;">115%</span> Insured (Yes/No) <span style="float: right;">N/A</span>	<b>#6 Estimate - SRF Loan 2 (Jacobs)</b>  Coverage % <span style="float: right;">115%</span> Insured (Yes/No) <span style="float: right;">N/A</span>
<b>#7 Estimate - SRF Loan 3 (CDM1)</b>  Coverage % <span style="float: right;">115%</span> Insured (Yes/No) <span style="float: right;">N/A</span>		

Fiscal Year	Annual Debt Service (Principal + Interest)							Total Non-SRF Debt Service w/coverage (Excludes Leases)	Total SRF Debt Service w/ coverage
	1	#2 <sup>[3]</sup>	#3 <sup>[3]</sup>	#4	#5 [4]	#6 [4]	#7[4]		
2025	1,473,431	113,183	2,166,769	598,006	0	0	\$0	\$1,620,774	\$3,309,652
2026	1,473,431	113,183	2,166,769	598,006	0	0	0	\$1,620,774	\$3,309,652
2027	1,475,056	113,183	2,166,769	598,006	0	0	0	\$1,622,562	\$3,309,652
2028	1,472,406	113,183	2,166,769	598,006	0	0	0	\$1,619,647	\$3,309,652
2029	1,474,156	113,183	2,166,769	598,006	982,848	647,491	1,350,980	\$1,621,572	\$6,738,169
2030	1,475,156	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,622,672	\$7,482,783
2031	1,475,406	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,622,947	\$7,482,783
2032	1,472,781	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,620,059	\$7,482,783
2033	1,474,344	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,621,778	\$7,482,783
2034	1,473,800	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,621,180	\$7,482,783
2035	1,471,075	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,618,183	\$7,482,783
2036	1,472,650	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,619,915	\$7,482,783
2037	1,472,200	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,619,420	\$7,482,783
2038	1,474,725	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,622,198	\$7,482,783
2039	1,475,000	113,183	2,166,769	598,006	982,848	1,294,981	1,350,980	\$1,622,500	\$7,482,783
2040	1,473,025	113,183	1,083,385	598,006	982,848	1,294,981	1,350,980	\$1,620,328	\$6,236,892
2041	1,473,800	113,183		299,003	982,848	1,294,981	1,350,980	\$1,621,180	\$4,647,146
2042	1,473,400	113,183			982,848	1,294,981	1,350,980	\$1,620,740	\$4,303,292
2043	1,471,000	113,183			982,848	1,294,981	1,350,980	\$1,618,100	\$4,303,292
2044	1,471,600	56,592			982,848	1,294,981	1,350,980	\$1,618,760	\$4,238,212
2045					982,848	1,294,981	1,350,980	\$0	\$4,173,131
2046					982,848	1,294,981	1,350,980	\$0	\$4,173,131
2047					982,848	1,294,981	1,350,980	\$0	\$4,173,131
2048					982,848	1,294,981	1,350,980	\$0	\$4,173,131
2049						647,491		\$0	\$744,614
2050								\$0	\$0
2051								\$0	\$0
2052								\$0	\$0
2053								\$0	\$0
2054								\$0	\$0

Footnote:

- [1] Reflects debt service schedules from outstanding bonds and active SRF loans. It should be noted that the projections contained herein do not reflect any additional debt service that may be contemplated or required to fund future capital pursuant to the County's Capital Improvement Plan.
- [2] Pursuant to the Bond Resolution authorizing the issuance of the outstanding Water and Wastewater Revenue Bonds, Series 2014, the county must:
  - a) generate sufficient Net Revenue equal to or greater than 110% of the annual debt service of the outstanding bonds; and b) generate sufficient Net Revenues plus impact fees equal to or greater than 120% of the annual debt service of the outstanding bonds. For purposes of the CFP we have assumed the senior lien coverage requirement at 110% in recognition that no impact fees were assumed in the projections contained in the *schedule of Projected Revenues and Debt Coverage for Pledged Revenue*.
- [3] Amounts shown reflect estimates and are subject to change based on completion of actual project cost and timing of completion.
- [4] Amounts shown reflect estimates of additional proposed SRF loans which would be submitted in parallel with the current submission.

**SCHEDULE OF ACTUAL REVENUES AND DEBT COVERAGE  
FOR PLEDGED REVENUE**

(Provide information for the two fiscal years preceding the anticipated date of the SRF loan agreement)

	<u>FY 23-24</u> [1]	<u>FY 24-25</u> [1]
(a) Operating Revenues (Identify)		
Charges for Service [2]	\$ 52,168,786	\$ 57,601,404
Other Operating Revenue	<u>-</u>	<u>-</u>
(b) Interest Income	<u>\$6,075,498</u>	<u>\$4,907,624</u>
(c) Other Incomes or Revenues	<u>\$0</u>	<u>\$0</u>
(d) Total Revenues	<u>\$58,244,284</u>	<u>\$62,509,028</u>
(e) Operating Expenses (excluding interest on debt, depreciation and other non-cash items)	<u>\$41,469,096</u>	<u>\$43,860,028</u>
(f) <b>Net Revenues (f = d - e)</b>	<u>\$16,775,188</u>	<u>\$18,649,000</u>
(g) Debt Service (including coverage) Excluding SRF Loans [3]	<u>\$1,618,849</u>	<u>\$1,620,774</u>
(h) Debt Service (including coverage) for Outstanding SRF Loans [3]	<u>\$3,179,491</u>	<u>\$3,193,528</u>
(i) <b>Net Revenues After Debt Service (i = f - g - h)</b>	\$11,976,847	\$13,834,698

Source:
Notes:
[1] Unless otherwise noted, amounts shown are derived from the County's audited financial statements for FY24 and unaudited budget to actuals document for FY25.
[2] The Board approved the following rate adjustments at the February 8, 2022 Public Hearing;
a. The water and sewer user rates will be indexed as follows effective each year:
2022 – 6.5%
2023 – 8.5%
2024 – 8.5%
2025 – 8.5%
2026 – 7.5%
Beginning and in all subsequent years, the water and sewer user rates shall automatically increase based on the actual change in the Consumer Price Index Sewer and Water Maintenance Index (S W M I)(U) based on the average of the index from the previous 12 months (November to November).
[3] Amounts shown reflect debt service as noted in the prior <i>Schedule Of Debt Service And Debt Equivalents</i> .

**SCHEDULE OF PROJECTED REVENUES AND DEBT COVERAGE  
FOR PLEDGED REVENUE**

	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>
(a) Operating Revenues Service Charges [1]	\$58,515,000	\$60,776,000	\$63,127,000	\$65,573,000	\$68,116,000
(b) Interest Income [2]	\$3,500,000	\$3,500,000	\$3,500,000	\$3,500,000	\$3,500,000
(c) Other Incomes or Revenues (Identify) [3]	\$0	\$0	\$0	\$0	\$0
(d) Total Revenues	\$62,015,000	\$64,276,000	\$66,627,000	\$69,073,000	\$71,616,000
(e) Operating Expenses (excluding interest on debt, depreciation and other non-cash items) [4]	\$46,698,633	\$48,416,401	\$50,197,623	\$52,044,655	\$53,959,937
(f) <b>Net Revenues</b> <b>(f = d - e)</b>	\$15,316,367	\$15,859,599	\$16,429,377	\$17,028,345	\$17,656,063
(g) Existing Debt Service on Non-SRF Projects (including coverage) [5]	\$1,620,774	\$1,622,562	\$1,619,647	\$1,621,572	\$1,622,672
(h) Existing SRF Loan Debt Service (including coverage)	\$3,309,652	\$3,309,652	\$3,309,652	\$6,738,169	\$7,482,783
<b>Total Existing Debt Service</b> <b>(i = g + h)</b>	\$4,930,426	\$4,932,214	\$4,929,299	\$8,359,741	\$9,105,455
(j) Projected Debt Service on Non-SRF Future Projects (including coverage)	\$0	\$0	\$0	\$0	\$0
(k) Projected SRF Loan Debt Service (including coverage) [6]	\$0	\$0	\$641,176	\$1,282,353	\$1,282,353
<b>Total Debt Service (Existing and Projected)</b> <b>(l = i + j + k)</b>	\$4,930,426	\$4,932,214	\$5,570,475	\$9,642,094	\$10,387,808
(m) <b>Net Revenues After Debt Service (m = f - l) [7]</b>	\$10,385,941	\$10,927,385	\$10,858,901	\$7,386,251	\$7,268,255

Source:

Notes:

- [1] Revenue projection for FY26 is assumes a 7.5% rate adjustment (adopted by the County) (pro rated for only 8 months since it is effective February 1st 2026) and for all future years 4.0% rate adjustments were assumed which is slightly below the 5 year average for the BLS water and sewerage maintenance index w the County adopted as its rate adjustment index for future years. Revenue projections exclude impact fees.
- [2] Includes interest income on unrestricted cash balances, which were assumed to be held constant during the forecast.
- [3] Although excluded from the projections, the County recovered on average approximately \$4.76 million in water and wastewater impact fees during the Fiscal Years 2024 and 2025. The County continues to charge new connections the impact fees.
- [4] Amounts are based on the County's adopted budget for operating expenses for the Fiscal Year 2026 and escalated thereafter at an average annual factor of approximately 3.7%.
- [5] Pursuant to the Bond Resolution authorizing the issuance of the outstanding Water and Wastewater Revenue Bonds, Series 2014, the county must:  
a) generate sufficient Net Revenue equal to or greater than 110% of the annual debt service of the outstanding bonds; and b) generate sufficient Net Revenues plus impact fees equal to or greater than 120% of the annual debt service of the outstanding bonds. For purposes of the CFP we have assumed the senior lien coverage requirement at 110% in recognition that no impact fees were assumed in the projections contained in the Schedule of Projected Revenues and Debt Coverage for Pledged Revenue.
- [6] Amounts reflect the estimated annual debt service for the proposed SRF Loan.
- [7] For the purposes of full disclosure, the County budgets and funds: a) transfers to the general fund associated with Payment in Lieu of Taxes and b) capital outlay for minor units of equipment and vehicles. The following provides a forecast of net revenues after such transfers and payments:

Net Revenues After Debt	\$10,385,941	\$10,927,385	\$9,516,950	\$7,386,251	\$7,268,255
Less:					
Payment in Lieu of Taxes (PILOT)	\$1,754,149	\$1,754,149	\$1,754,149	\$1,754,149	\$1,754,149
Capital Outlay (Excludes Major Maintenance)	2,750,000	2,750,000	2,750,000	2,750,000	2,750,000
Net Available to Utility Reserve Fund	\$5,881,792	\$6,423,237	\$5,012,801	\$2,882,102	\$2,764,106

**CERTIFICATION**

I, Edward Fontanin, PE, certify that I have reviewed the information  
Utility Services Department Director

included in the preceding capital financing plan worksheets, and to the best of my knowledge, this  
information accurately reflects the financial capability of Brevard County Utility Services  
Department,  
Local Government

I further certify that Brevard County Utility Services Department  
Local Government

adequate construction, operation, and maintenance of the system, including this SRF project.

  
\_\_\_\_\_  
Signature

MAR 18/26  
\_\_\_\_\_  
Date

**Table 6**  
**Brevard County, Florida**  
**Water and Wastewater Utility System**

**Projected Debt Service Coverage Analysis [1]**

Line No.	Description	Historical			Projected					
		2023	2024	2025	2026	2027	2028	2029	2030	2031
Gross Revenues:										
1	Water User Service Fees [1]	\$ 1,687,730	\$ 1,862,189	\$ 2,213,092	\$ 2,324,000	\$ 2,417,000	\$ 2,514,000	\$ 2,615,000	\$ 2,720,000	\$ 2,829,000
2	Wastewater User Service Fees [2]	43,412,307	48,536,699	\$ 51,610,188	54,191,000	56,359,000	58,613,000	60,958,000	63,396,000	65,932,000
3	Other Revenues	1,534,020	2,111,651	\$ 2,307,012	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
4	Investment Earnings	2,259,620	3,836,317	\$ 4,121,471	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000
5	Transfers (to) / from Rate Stabilization Fund	-	-	-	-	-	-	-	-	-
6	Total	\$ 48,893,677	\$ 56,346,856	\$ 60,251,762	\$ 62,015,000	\$ 64,276,000	\$ 66,627,000	\$ 69,073,000	\$ 71,616,000	\$ 74,261,000
Operating Expenses:										
7	Compensation and Benefits	\$ 12,015,751	\$ 14,045,840	\$ 16,022,308	\$ 16,663,201	\$ 17,329,729	\$ 18,022,918	\$ 18,743,834	\$ 19,493,588	\$ 20,273,331
8	Operating Expenses	21,313,536	28,337,664	\$ 29,019,741	30,035,432	31,086,672	32,174,706	33,300,820	34,466,349	35,672,671
9	Total	\$ 33,329,287	\$ 42,383,504	\$ 45,042,049	\$ 46,698,633	\$ 48,416,401	\$ 50,197,623	\$ 52,044,655	\$ 53,959,937	\$ 55,946,003
10	Net Revenues	\$ 15,564,390	\$ 13,963,351	\$ 15,209,713	\$ 15,316,367	\$ 15,859,599	\$ 16,429,377	\$ 17,028,345	\$ 17,656,063	\$ 18,314,997

**Footnotes:**

[1] Projected water revenues are increased by the County adopted inflationary index (water and sewerage maintenance index) of 4%

[2] Projected wastewater revenues are increased by the County adopted inflationary index (water and sewerage maintenance index) of 4%

## APPENDIX B. PUBLIC HEARING DOCUMENTATION

## **RESOLUTION NUMBER 2026-**

**A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF BREVARD COUNTY, FLORIDA, RELATING TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) STATE REVOLVING FUND (SRF), ADOPTION OF THE WASTEWATER FACILITIES PLAN FOR THE IMPLEMENTATION OF THE SOUTH BEACHES: RIVERSIDE DRIVE FORCE MAIN IMPROVEMENTS - 30-INCH PARALLEL FORCE MAIN, AND PROVIDING FOR AN EFFECTIVE DATE.**

**WHEREAS**, Florida Statutes provide for loans to local government agencies to finance the construction of wastewater facilities, and the Florida Administrative Code requires authorization by the Board to formally adopt a Facilities Plan outlining necessary wastewater facility improvements to comply with State of Florida funding requirements;

**WHEREAS**, formal adoption of the proposed Facilities Plan, including public participation through a public hearing, is required for Brevard County to participate in the State Revolving Loan Fund Program;

**WHEREAS**, the Board of County Commissioners of Brevard County, Florida agrees with the findings and summary of necessary improvements as outlined in the Facilities Plan for the purpose of wastewater system improvements;

**NOW THEREFORE BE IT RESOLVED** by the Board of Commissioners of Brevard County, Florida, that:

### **SECTION 1. FINDINGS**

The foregoing recitals are incorporated herein by reference and made a part hereof.

The Board of County Commissioners of Brevard County, Florida, is authorized to approve the proposed Facilities Plan, and hereby formally approves and adopts the South Beaches: Riverside Drive Force Main Improvements - 30-inch Parallel Force Main Facilities Plan as written and presented to the Board on this date, a copy of which is attached hereto and incorporated herein by reference.

The County Manager is hereby designated as the authorized representative to provide the assurances and commitments that will be required by the Facilities Plan.

The County Manager is hereby designated as the authorized representative to execute the Facilities Plan which will become the foundation of all activities related to the wastewater facility improvements. The County Manager is authorized to represent the County in carrying out the County's responsibilities under the Facilities Plan. The County Manager is authorized to delegate responsibility to appropriate County Staff to carry out technical, financial, and administrative activities associated with the Facilities Plan.

The legal authority for adoption of this facilities plan is pursuant to the County Charter, County Code of Ordinances, and the Laws of the State of Florida.

All Resolutions or part of Resolutions in conflict with any of the provisions of this Resolution are hereby repealed.

If any section or portion of a section of this Resolution proves to be invalid, unlawful, or unconstitutional, it shall not be held to invalidated or impair the validity, force, or effect or any other section or part of this Resolution.

**SECTION 2. EFFECTIVE DATE**

This Resolution shall take effect upon its approval and adoption by the Board.

**DONE, ORDERED, AND ADOPTED** in Regular Session this \_\_\_\_ day of \_\_\_\_\_,  
\_\_\_\_\_.

ATTEST:

BOARD OF COUNTY COMMISSIONERS  
OF BREVARD COUNTY, FLORIDA

\_\_\_\_\_  
Rachel M. Sadoff, Clerk of Court

By: \_\_\_\_\_  
Thad Altman, Chair

As approved by the Board on:  
\_\_\_\_\_

## APPENDIX C. ENVIRONMENTAL REVIEW DOCUMENTATION

*Appendix E has been abbreviated for brevity. The full environmental technical memorandum is available upon request*

# NATURAL RESOURCES EVALUATION

## Technical Memorandum

### 30-INCH PARALLEL FORCE MAIN

South Patrick/North Riverside Drive  
Indian Harbour Beach  
Brevard County, Florida

January 2026

**Prepared for:**

Wade Trim, Inc.  
225 E. Robinson Street, Suite 210  
Orlando, FL 32801  
kscott@wadetrim.com

**Prepared by:**

McFarland-Johnson, Inc.  
4601 Sheridan Street, Suite 500  
Hollywood, FL 33021



McFARLAND  
JOHNSON

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Appendix 2	USFWS IPaC Official Species List
Appendix 3	Historical Aerial Photos
Appendix 4	Historical Topo Maps
Appendix 5	Photographic Documentation

## EXECUTIVE SUMMARY

---

This Natural Resources Evaluation (NRE) technical memorandum has been prepared in support to the proposed South Patrick/Riverside Drive Force Main Improvements Project (the “Proposed Action” or the “Project”). The purpose of this technical memorandum is to identify, review, and evaluate natural resources, such as protected species and habitat, wetlands, and Essential Fish Habitat (EFH) within the project boundaries that may be impacted by the Proposed Action. This technical memorandum has been prepared in accordance with Chapter 16 of the Florida Department of Transportation (FDOT) Project Development and Environment (PD&E) Manual (effective July 31, 2024)<sup>1</sup>, and the FDOT Natural Resources Evaluation Outline and Guidance of August 2022<sup>2</sup>. Since the Proposed Action does not involve impacts to natural resources or impacts are anticipated to be minimal, a technical memorandum is applicable and sufficient for this phase.

### E.1 Proposed Action

The Proposed Action consists of the installation of approximately 7,146 linear feet of a new 30-inch sanitary parallel force main within public right-of-way (ROW) in Indian Harbour Beach, Brevard County, Florida. The Project alignment begins at North Riverside Drive, extends north along South Patrick Drive and terminates at a connection point at Riverside Park Drive. No ROW acquisition or eminent domain actions are anticipated (see **Appendix 1** for Project Design Plans).

The purpose of the Project is to increase conveyance capacity, reduce system head, improve redundancy, and enhance hydraulic performance at Lift Stations B20, S28, and S15. The new parallel force main will improve operational reliability, resiliency, and overall system optimization for Brevard County. The Project will also yield significant environmental benefits by reducing the risk of system overflows, minimizing potential impacts to the Indian River Lagoon and adjacent waterways. The Project is being advanced for funding consideration under the Florida Department of Environmental Protection (FDEP) State Revolving Fund (SRF) Program.

### E.2 Project Location and Study Area

The project study area entails the Project footprint shown in **Appendix 1**, which runs along the existing Florida State Road 513 (SR-513), from North Riverside Drive, extends north along South Patrick Drive through a connection point at the existing Lift Station B20 in Riverside Park Drive. The Project is proposed entirely within the Brevard County public ROW, and the project study area encompasses an area of approximately 14.4 acres (see **Figure 1-1**). SR-513 is a two-directional-lane state-maintained road under FDOT jurisdiction, running approximately 5.25 miles from Eau Gallie Causeway (SR-518) in Indian Harbour Beach north to Pineda Causeway (SR-404), just south of Patrick Space Force Base. This road section serves as local connection to the barrier-island communities of Indian Harbour Beach, Satellite Beach, and South Patrick Shores. The project study area includes urban roadways, stormwater infrastructure, connections to local waterways, residential and commercial developments in both sides immediately adjacent or within the road right-of-way.

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<sup>1</sup> [https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/environment/pubs/pdeman/2024/pt2ch16\\_073124\\_clean.pdf?sfvrsn=284cd6c8\\_1](https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/environment/pubs/pdeman/2024/pt2ch16_073124_clean.pdf?sfvrsn=284cd6c8_1)

<sup>2</sup> [https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/environment/pubs/protected-species/finalnreguidance082322.pdf?sfvrsn=dd265025\\_2](https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/environment/pubs/protected-species/finalnreguidance082322.pdf?sfvrsn=dd265025_2)

### E.3 Protected Species and Habitat

The Project was evaluated for the presence of federally and state listed species in accordance with Part 2, Chapter 16 of the FDOT PD&E Manual, and Section 7 of the Endangered Species Act (ESA). In addition, field observations were conducted in December 2025.

According to the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online system, protected species may occur in the Project vicinity (see **Appendix 2** for USFWS IPaC Official Species List). However, federally listed species were not observed in the project study area during field observations conducted in December 2025. Furthermore, critical habitat does not occur within the project footprint. The Project is located within the existing roadway footprint and does not contain typical features to support wildlife and their habitat.

Protected plant species do not occur within the project study area, with exception for Florida Royal Palm (*Roystonea elata*) that was observed within the South Patrick Drive median and landscaped areas, near design stations 35+00, 37+00, 39+00, 45+00, and 50+00. The Florida Royal Palm is a state endangered species that typically grows in tropical and subtropical habitats such as coastal lowlands, hammocks, and wetlands. This species is extensively planted and proliferates in disturbed habitats. Although not federally listed, it is considered endangered in Florida due to habitat loss and limited natural range. This species plays an important ecological role in providing food and shelter for wildlife and is often used in restoration and landscaping projects to preserve native biodiversity. Due to the Project design this species may need to be relocated to accommodate the required construction zones (e.g., launching and receiving areas) for the proposed force main. Anticipated impacts to this species would be mitigated following Chapter 5B.40.0055, Florida Administrative Code (F.A.C.)<sup>3</sup> of Florida Department of Agriculture and Consumer Services (FDACS), and Chapter 62, Section 62-4331 of Brevard County Code of Ordinances<sup>4</sup>. **Table E-1** outlines federally and state regulated species that may occur in the vicinity and outside the Project.

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<sup>3</sup> <http://flrules.elaws.us/fac/5B-40.0055>

<sup>4</sup>

[https://librarystage.municode.com/fl/brevard\\_county/codes/code\\_of\\_ordinances?nodeId=COORBRCOFLVOII\\_CH62LADERE\\_ARTXIIIILATRPRCLLAAL\\_DIV2LACLLATPRR](https://librarystage.municode.com/fl/brevard_county/codes/code_of_ordinances?nodeId=COORBRCOFLVOII_CH62LADERE_ARTXIIIILATRPRCLLAAL_DIV2LACLLATPRR)

Table E-1: Protected Species and Effect Determination

Common Name	Scientific Name	Listing Status <sup>5</sup>		Potential of Occurrence	Present in Project Area	Effect Determination
		Federal	State			
<b>Mammals</b>						
Audubon's Crested Caracara	<i>Polyborus plancus audubonii</i>	T	FT	Low	No	No Effect
Eastern Black Rail	<i>Laterallus jamaicensis ssp. jamaicensis</i>	T	FT			
Everglade Snail Kite	<i>Rostrhamus sociabilis plumbeus</i>	E	FE			
Florida Scrub-jay	<i>Aphelocoma coerulescens</i>	T	FT			
Piping Plover	<i>Charadrius melodus</i>	T	FT			
Rufa Red Knot	<i>Calidris canutus rufa</i>	T	FT			
Wood Stork	<i>Mycteria americana</i>	T	FT			
<b>Reptiles</b>						
American Crocodile	<i>Crocodylus acutus</i>	T	FT	Low	No	No Effect
Eastern Indigo Snake	<i>Drymarchon couperi</i>	T	FT			
<b>Insects</b>						
Monarch Butterfly	<i>Danaus plexippus</i>	PT		Low	No	N/A <sup>6</sup>
<b>Plants</b>						
Carter's Mustard	<i>Warea carteri</i>	E	E	Low	No	No Effect
Lewton's Polygala	<i>Polygala lewtonii</i>	E	E			
Florida Royal Palm	<i>Roystonea elata</i>	N	T	High	Yes	No adverse effect anticipated

<sup>5</sup> T= Threatened; E= endangered; PT= Proposed Threatened; FE= Federally designated Endangered; FT= Federally designated Threatened; N= Not Listed

<sup>6</sup> USFWS does not issue formal effect determination for species proposed for listing. Instead, Section 7(a)(4) of the Endangered Species Act (ESA) requires a conference process when an action is likely to jeopardize proposed species or adversely modify proposed critical habitat. If the species becomes listed prior to project completion, formal consultation under Section 7(a)(2) will be initiated with USFWS.

## E.4 Essential Fish Habitat

Essential Fish Habitat (EFH) does not occur within the project study area. Therefore, no impacts to EFH are anticipated.

## E.5 Wetlands and Other Surface Waters

According to the USFWS National Wetlands Inventory (NWI), and Brevard County databases, wetland does not occur within the project study area. A non-navigable jurisdictional man-made canal crosses the Project between STA 37+00 and STA 38+00, containing two (2) 60-inch box culverts. This canal extends from west to east across South Patrick Drive, ultimately connecting to the Indian River on the west side. The canal primarily functions as stormwater infrastructure, collecting runoff from Golden Beach Estates and Town House Estates areas. The proposed 30-inch force main will be installed using horizontal directional drilling at approximately 25 feet below the canal bed. Therefore, impacts to this canal are not anticipated.

## E.5 Assumption and Limitations

This technical memorandum has been prepared based on the information available and within the defined scope of work:

- **Data Availability:** The report relies on information provided by the client, public records, and site observations. It is assumed that all data sources are accurate and complete.
- **Site Access:** Site observations and evaluation were limited to areas accessible during the site reconnaissance. Conditions in inaccessible areas may differ.
- **Design and Site Conditions:** It is assumed that site design and conditions remain consistent with those reviewed during the preparation of this report. Any changes may affect the findings and conclusions.
- **Regulatory Framework:** The report is based on current federal, state, and local regulations as of the report date. Future regulatory changes may alter compliance requirements.
- **Intrusive Investigation:** Unless otherwise stated, no soil and/or water sampling or wetland delineation were performed. Conclusions are based on visual observations and available documentation.
- **Third-Party Information:** Information obtained from third parties, including historical records and agency databases, is assumed to be reliable but has not been independently verified.

## LIST OF ABBREVIATIONS AND ACRONYMS

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EDR	Environmental Data Resources
EFH	Essential Fish Habitat
ESA	Endangered Species Act
F.A.C.	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FLUCCS	Florida Land Use, Cover and Forms Classification System
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
HAPC	Habitat Areas of Particular Concern
HDD	Horizontal Directional Drilling
HDPE	High-Density Polyethylene
IPaC	Information for Planning and Consultation
MOT	Maintenance of Traffic Plan
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Services
NRE	Natural Resources Evaluation
NWI	National Wetlands Inventory
PD&E	Project Development and Environment
ROW	Right-of-Way

SJRWMD	St. Johns River Water Management District
SJWWMD	St. Johns River Water Management District
SRF	State Revolving Fund
TCP	Traffic Control Plan
USACE	United States Army Corps of Engineers
USDA	US Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	US Geological Survey

# 1. INTRODUCTION

---

## 1.1 Project Background

Brevard County proposes the installation of a 30-inch diameter force main along North Riverside Drive, South Patrick Drive and Riverside Park Drive (“the Project” or “the Proposed Action”) in Indian Harbour Beach, Florida. The Project begins at North Riverside Drive, extends north along South Patrick Drive and ends at exiting Lift Station B20 in Riverside Park Drive. No ROW acquisition or eminent domain actions are anticipated (see **Appendix 1** for Project Design Plans). The Project is being advanced for funding consideration under the Florida Department of Environmental Protection (FDEP) State Revolving Fund (SRF) Program (see **Figure-1-1** for Project Location and Project Study Area).

The Project begins roughly 300 feet south of North Riverside Drive and East Eau Gallie Boulevard, connecting to the existing system, and continues along South Patrick Drive to the existing Lift Station B20 at Riverside Park Drive.

A Natural Resources Evaluation (NRE) technical memorandum was prepared for the Project in accordance with Chapter 16 of Florida Department of Transportation (FDOT) Project Development and Environment (PD&E) Manual (effective July 31, 2024), and FDOT’s Natural Resources Evaluation Outline and Guidance (revised August 2022). The purpose of this technical memorandum is to identify, review, and evaluate natural resources, such as protected species and habitat, wetlands, and Essential Fish Habitat (EFH) within the project boundaries that may be impacted by the Proposed Action. Since the Proposed Action does not involve impacts to natural resources or impacts are anticipated to be minimal, a technical memorandum is applicable and is sufficient for this phase.

This technical memorandum involves a desktop screening of readily available data, and considers the following sources of information:

- Environmental records readily and publicly available through agency databases (i.e., Florida Department of Environmental Protection (FDEP), and Brevard County)
- Environmental Data Resources (EDR) historical aerial photos
- EDR Topographic Maps
- U.S. Geological Survey (USGS) Geologic Map
- Field Review and Site Reconnaissance
- Brevard County GIS Open Data Hub<sup>7</sup>
- FDEP Statewide Land Use Land Cover<sup>8</sup>
- FDOT Florida Land Use, Cover and Forms Classification System (FLUCCS) Handbook<sup>9</sup>
- FDEP Florida’s Geospatial Open Data<sup>10</sup>

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<sup>7</sup> <https://brevard-gis-open-data-hub-brevardbocc.hub.arcgis.com/>

<sup>8</sup> <https://geodata.dep.state.fl.us/datasets/FDEP::statewide-land-use-land-cover/explore?location=26.092525%2C-80.124348%2C14.00>

<sup>9</sup> <https://www.fdot.gov/docs/default-source/geospatial/documentsandpubs/fluccmanual1999.pdf>

<sup>10</sup> <https://geodata.floridagio.gov/>

- U.S. Department of Agriculture (USDA) Web Soil Survey<sup>11</sup>
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory<sup>12</sup>
- USFWS Information for Planning and Consultation (IPaC) online system<sup>13</sup>
- Florida Natural Areas Inventory<sup>14</sup>
- Florida Fish and Wildlife Conservation Commission (FWC) Florida’s Endangered and Threatened Species<sup>15</sup>
- Project design plans (75% drawings)
- Wade Trim South Beaches Service Area Hydraulic Model Expansion and Improvements Study

Foreseeable impacts on protected species and their habitat are discussed in **Section 4**.

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<sup>11</sup> <https://websoilsurvey.nrcs.usda.gov/app/>

<sup>12</sup> <https://www.fws.gov/program/national-wetlands-inventory>

<sup>13</sup> <https://ecos.fws.gov/ecp/>

<sup>14</sup> <https://www.fnai.org/>

<sup>15</sup> <https://myfwc.com/media/1945/threatened-endangered-species.pdf>

Figure 1-1: Project Location (Project Study Area)



## 2. PROJECT DESCRIPTION

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Brevard County proposes installing approximately 7,146 linear feet of a new 30-inch diameter force main in Indian Harbour Beach, Florida. The pipeline will be constructed entirely within Brevard County public ROW and will run parallel to the existing 24-inch diameter PVC force main. The Project begins roughly 300 feet south of North Riverside Drive and East Eau Gallie Boulevard, connecting to the existing system, and continues along South Patrick Drive to the existing Lift Station B20 at Riverside Park Drive (see **Appendix 1**).

The Project encompasses the following components:

- Construction of seven (7) Horizontal Directional Drilling (HDD) entry and exist pits along South Patrick Drive.
- Installation of 30-inch diameter high-density polyethylene (HDPE) force main pipe.
- Open-cut installation of 30-inch diameter ductile iron pipe to the existing 30-inch force main South of Eau Gallie Causeway.
- Open-cut installation of 30-inch diameter ductile iron pipe along Riverside Park Drive.
- Connection to existing 30-inch force main.
- Installation of necessary fittings, valves, and appurtenances.
- Maintenance of Traffic (MOT) Plan / Traffic Control Plan (TCP)
- Restoring all disturbed areas to pre-construction conditions, including roadway pavements and landscaping.

Most of the new force main will be installed using HDD beneath North Riverside Drive and South Patrick Drive, with limited open-cut trenching at tie-in locations and along Riverside Park Drive. Excavation pits necessary for HDD operations will be located within the roadway median and will require short term dewatering during construction. Open-cut sections will also involve temporary dewatering. Construction dewatering is necessary due to the high groundwater table elevation at the project site for the installation of the proposed force main.

### 2.1 Purpose and Need

The purpose of the Project is to increase conveyance capacity, reduce system head, improve redundancy, and enhance hydraulic performance at Lift Stations B20, S28, and S15. The new parallel force main will improve operational reliability, resiliency, and overall system optimization for Brevard County.

The Project will also yield significant environmental benefits by reducing the risk of system overflows, minimizing potential impacts to the Indian River Lagoon and adjacent waterways. Improved hydraulic efficiency decreases energy demand at upstream lift stations, supporting lower long-term operational emissions. Additionally, the use of HDD reduces surface disturbance, limits vegetation and habitat impacts, and minimizes construction-related runoff compared to traditional open-cut methods.

### 3. EXISTING CONDITIONS

#### 3.1 Project Study Area

The project study area entails the Project footprint shown in **Appendix 1**, which runs along the existing Florida State Road 513 (SR-513), from North Riverside Drive, extends north along South Patrick Drive through a connection point at the existing Lift Station B20 in Riverside Park Drive. The Project is proposed entirely within the Brevard County public ROW, and the project study area encompasses an area of approximately 14.4 acres (see **Figure 1-1**). SR-513 is a two-directional-lane state-maintained road under FDOT jurisdiction, running approximately 5.25 miles from Eau Gallie Causeway (SR-518) in Indian Harbour Beach north to Pineda Causeway (SR-404), just south of Patrick Space Force Base (see **Table 3-1** for Project Boundaries). This road section serves as local connection to the barrier-island communities of Indian Harbour Beach, Satellite Beach, and South Patrick Shores. The project study area includes urban roadways, stormwater infrastructure, connections to local waterways, residential and commercial developments on both sides immediately adjacent or within the road right-of-way.

**Table 3-1: Project Boundaries**

Boundary	Description
North	South Patrick Drive (SR-513)
South	North Riverside Drive
East	Residential and commercial developments SR-513 North Riverside Drive E Eau Gallie Boulevard
West	Residential and commercial developments SR-513 North Riverside Drive E Eau Gallie Boulevard

#### 3.2 Land Use

FLUCCS data, aerial photographs, and USGS National Wetland Inventory (NWI) map were reviewed to evaluate past and current land use and habitat types within the project study area. The Project is compatible with the existing land use and is located in land designated for transportation (FLUCCS 814) and commercial activities (FLUCCS 140). **Table 3-2** describes the existing land use within the project area.

**Table 3-2: Existing Land Use**

Type	FLUCCS Code	FLUCCS Description	Acreage (Approx.)	Percentage
Uplands	814	Transportation [Roads and highways (divided 4-lane with medians)]	10.6	73.6%
	140	Urban and Built-Up (Commercial and Services)	3.8	26.4%
<b>Total</b>			<b>14.4</b>	<b>100%</b>

- **FLUCCS 814 (Transportation):** Transportation facilities are used for the movement of people and goods; therefore, they are major influences on land, and any land use boundaries are outlined by them. This category involves rail-oriented facilities including stations, round-houses, repair and switching yards and related areas.
- **FLUCCS 140 (Urban and Built-Up):** Urban and built-up land consists of areas of intensive use with much of the land occupied by man-made structures. Included in this category are cities, towns, villages, strip developments along highways and such areas as those occupied by malls, shopping centers, industrial and commercial complexes and institutions that may, in some instances, be isolated from urban areas.
  - Commercial areas are predominantly associated with the distribution of products and services. This category is composed of a large number of individual types of commercial land uses which often occur in complex mixtures. This category includes all secondary structures associated with an enterprise in addition to the main building and integral areas assigned to support the base unit. This includes sheds, warehouses, office buildings, driveways, parking lots and landscaped areas.

### 3.3 Historical Aerial Photographs

A review of historical aerial photographs of the project area from 1943 to 2023 was conducted using EDR database (see **Appendix 3** for Historical Photos). Also included a review of USGS historical topo maps from 1941 to 2021 (see **Appendix 4**). **Table 3-3** provides a summary of historical aerial photographs of the project area dated 1943, 1951, 1958, 1969, 1979, 1980, 1983, 1993, 1994, 1999, 2007, 2010, 2015, 2019, and 2023.

**Table 3-3: Historical Land Use Summary**

Year	Comments
1943-1951	<ul style="list-style-type: none"> <li>• Baseline period showing the natural state of the project study area.</li> <li>• Primarily undeveloped with woodland and pastureland.</li> </ul>
1958	<ul style="list-style-type: none"> <li>• First major infrastructure development with South Patrick Drive extending north of the project study area.</li> <li>• Beginning of residential development on the west side.</li> </ul>
1969-1980	<ul style="list-style-type: none"> <li>• Significant expansion period with both residential and commercial development.</li> <li>• Infrastructure improvement with South Patrick Drive widening to the south.</li> </ul>
1983-1999	<ul style="list-style-type: none"> <li>• Continued development phase including:               <ul style="list-style-type: none"> <li>○ Noticeable residential and commercial growth,</li> <li>○ Construction of Indian Harbour Place Shopping Center (west side),</li> <li>○ Creation of pond on the north side of the project study area, near Riverside Park Drive.</li> </ul> </li> </ul>
2007-2010	<ul style="list-style-type: none"> <li>• Development focus shifted to residential expansion east of the project area.</li> <li>• Development particularly noted near E Eau Gallie Boulevard.</li> </ul>
2015-2023	<ul style="list-style-type: none"> <li>• Current land use patterns established, with minimal changes from what exists today.</li> </ul>

### 3.4 Soils

According to the US Department of Agriculture’s (USDA) Natural Resources Conservation Services (NRCS), five (5) soil types exist within the footprint of the Project<sup>16</sup>. See **Figure 3-1** for Soil Map. A description of these soils is presented below.

- **Myakka sand (Mk), 0 to 2 percent slopes (Map Unit: 36)** – The Myakka Series consists of nearly level, poorly drained sandy soils in broad areas in the flatwoods and in areas between sand ridges and sloughs and ponds. The representative profile has a sandy surface layer about 8 inches thick. This Series is ranked as a hydric soil and flooded for 2 to 7 days once in 1 to 5 years. Capability unit IVw-2.
- **Pomello sand (Ps), 0 to 5 percent slopes (Map Unit: 49)** – The Pomello Series consists of nearly level, moderately well drained sandy soils on broad low ridges and low knolls in the flatwoods. The representative profile has a surface layer of about 3 inches thick. This Series is ranked as a hydric soil. Capability unit VIs-3.
- **Pomello-Urban land complex (Pu) (Map Unit: 50)** – This complex is about 45-60 percent of Pomello sand, 20 percent Pomello sand that has been altered for use as building sites, and 20-45 percent Urban land or areas covered by houses, streets, driveways, buildings, parking lots, and other related uses. This complex is ranked as a hydric soil; however, it does not have an assigned capability unit.
- **Pompano sand (Pw), 0 to 2 percent slopes (Map Unit: 51)** – The Pompano Series consists of nearly level, poorly drained soils on broad flats, in shallow depressions, and in sloughs. The representative profile has a sandy surface layer about 7 inches thick. Capability unit IVw-1. This Series is ranked as a hydric soil.
- **Urban land (Ur), 0 to 2 percent slopes (Map Unit: 69)** – The Urban land consists of areas covered with about 60-75 percent streets, buildings, large parking lots, shopping centers, industrial parks, airports, and related facilities. This Series is ranked as a hydric soil; however, it does not have an assigned capability unit.

**Table 3-4: Soil Composition**

Map Unit	Soil Type	Hydric Rating	Capability Unit	Acreage (Approx.)	Percentage
36	Myakka sand, 0 to 2 percent slopes	Yes	IVw-2	5.5	37.9%
49	Pomello sand, 0 to 5 percent slopes	Yes	VIs-3	1.2	8.3%
50	Pomello-Urban land complex	Yes	Not Assigned	2	14%
51	Pompano sand, 0 to 2 percent slopes	Yes	IVw-1	2.4	16.9%
69	Urban land, 0 to 2 percent slopes	Yes	Not Assigned	3.3	22.8%
<b>Total</b>				<b>14.4</b>	<b>100%</b>

<sup>16</sup> <https://archive.org/details/brevardFL1974/mode/2up>

Figure 3-1: Soil Map



## 4. PROTECTED SPECIES

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The Project was evaluated for the presence of federally and state listed species in accordance with Part 2, Chapter 16 of the FDOT PD&E Manual, and Section 7 of the Endangered Species Act (ESA). In addition, field observations were conducted in December 2025.

According to the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online system, protected species may occur in the Project vicinity (see **Appendix 2**). However, federally listed species were not observed in the project study area during field observations conducted in December 2025. Furthermore, critical habitat does not occur within the project footprint. The Project is located within the existing roadway footprint and does not contain typical features to support wildlife and their habitat.

Protected plant species do not occur within the project study area, with exception for Florida Royal Palm (*Roystonea elata*) that was observed within the South Patrick Drive median and landscape areas, near design stations 35+00, 37+00, 39+00, 45+00, and 50+00. The Florida Royal Palm is a state endangered species that typically grows in tropical and subtropical habitats such as coastal lowlands, hammocks, and wetlands. This species is extensively planted and proliferates in disturbed habitats. Although not federally listed, it is considered endangered in Florida due to habitat loss and limited natural range. This species plays an important ecological role in providing food and shelter for wildlife and is often used in restoration and landscaping projects to preserve native biodiversity. Due to the Project design this species may need to be relocated to accommodate the required construction zones (e.g., launching and receiving areas) for the proposed force main. Anticipated impacts to this species would be mitigated following FDACS Chapter 5B.40.0055, F.A.C., and Chapter 62, Section 62-4331 of Brevard County Code of Ordinances. **Table 4-1** outlines federally and state regulated species that may occur in the vicinity and outside the Project.

Table 4-1: Protected Species Potentially Occurring in Project Vicinity

Common Name	Scientific Name	Listing Status <sup>17</sup>		Potential of Occurrence	Present in Project Area	Effect Determination
		Federal	State			
<b>Mammals</b>						
Audubon's Crested Caracara	<i>Polyborus plancus audubonii</i>	T	FT	Low	No	No Effect
Eastern Black Rail	<i>Laterallus jamaicensis ssp. jamaicensis</i>	T	FT			
Everglade Snail Kite	<i>Rostrhamus sociabilis plumbeus</i>	E	FE			
Florida Scrub-jay	<i>Aphelocoma coerulescens</i>	T	FT			
Piping Plover	<i>Charadrius melodus</i>	T	FT			
Rufa Red Knot	<i>Calidris canutus rufa</i>	T	FT			
Wood Stork	<i>Mycteria americana</i>	T	FT			
<b>Reptiles</b>						
American Crocodile	<i>Crocodylus acutus</i>	T	FT	Low	No	No Effect
Eastern Indigo Snake	<i>Drymarchon couperi</i>	T	FT			
<b>Insects</b>						
Monarch Butterfly	<i>Danaus plexippus</i>	PT		Low	No	N/A <sup>18</sup>
<b>Plants</b>						
Carter's Mustard	<i>Warea carteri</i>	E	E	Low	No	No Effect
Lewton's Polygala	<i>Polygala lewtonii</i>	E	E			
Florida Royal Palm	<i>Roystonea elata</i>	N	T	High	Yes	No adverse effect anticipated

<sup>17</sup> T= Threatened; E= endangered; PT= Proposed Threatened; FE= Federally designated Endangered; FT= Federally designated Threatened; N= Not Listed

<sup>18</sup> USFWS does not issue formal effect determination for species proposed for listing. Instead, Section 7(a)(4) of the Endangered Species Act (ESA) requires a conference process when an action is likely to jeopardize proposed species or adversely modify proposed critical habitat. If the species becomes listed prior to project completion, formal consultation under Section 7(a)(2) will be initiated with USFWS.

## 5. WETLANDS AND OTHER SURFACE WATERS

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Wetlands and other surface waters were evaluated in accordance with Chapter 62-340, F.A.C., USACE 1987 Corps of Engineers Wetland Delineation Manual, and 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) (ERDC/EL TR-10-20).

According to the USFWS National Wetlands Inventory, and Brevard County databases, wetland does not occur within the project study area (see **Figure 5-1**). A non-navigable jurisdictional man-made canal crosses the Project between STA 37+00 and STA 38+00, containing two (2) 60-inch box culverts. This canal extends from west to east across South Patrick Drive, ultimately connecting to the Indian River on the west side. The canal primarily functions as stormwater infrastructure, collecting runoff from Golden Beach Estates and Town House Estates areas. The proposed 30-inch force main will be installed using horizontal directional drilling at approximately 25 feet below the canal bed. Therefore, impacts to this canal are not anticipated.

Figure 5-1: National Wetlands Inventory Map



Natural Resources Evaluation – Technical Memorandum  
 30-Inch Parallel Force Main  
 South Patrick/North Riverside Drive  
 Brevard County, Florida

## 6. ESSENTIAL FISH HABITAT

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The Project has been evaluated for potential impacts to Essential Fish Habitat (EFH) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. EFH and Habitat Areas of Particular Concern (HAPC) are designated by the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) and the regional fishery management councils for species to support the conservation of habitats critical to the life cycles of federally managed fish species.

The review of EFH in the project study area follows guidelines from the FDOT PD&E Manual (Part 2, Chapter 17)<sup>19</sup>, and the USFWS. Available NMFS data<sup>20</sup> were assessed to evaluate if EFH and HAPC occur within the project study area, as these types of habitats are protected under the Magnuson-Stevens Fishery Conservation and Management Act, which helps safeguard marine species and their environment.

Based on the NMFS EFH Mapper<sup>21</sup>, EFH does not occur within the project study area. Therefore, the Project will have “no effect” on EFH (See **Appendix 2**).

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<sup>19</sup> [https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/environment/pubs/pdeman/2024/pt2ch17-073124\\_clean.pdf?sfvrsn=e9b75cb4\\_1](https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/environment/pubs/pdeman/2024/pt2ch17-073124_clean.pdf?sfvrsn=e9b75cb4_1)

<sup>20</sup> <https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=68d8df16b39c48fe9f60640692d0e318>

<sup>21</sup> <https://www.habitat.noaa.gov/apps/efhmapper/?page=South-Atlantic-Map>

## 7. ANTICIPATED PERMITS

Due to the nature of the Project, impacts on water resources or federally protected species are not expected. Coordination with regulatory agencies may be required during the permitting process, as necessary. **Table 7-1** provides a description of anticipated permits for the Proposed Action.

**Table 7-1: Anticipated Permits and Authorization**

Regulatory Agency	Permit Description	Requirements
SJWWMD	Environmental Resource Permit	Not required – No impacts on wetland or surface waters.
FDEP	NPDES Construction Generic Permit	Yes – Applies to construction sites that disturb $\geq 1$ acre, or $< 1$ acre if part of a common plan of development or sale, and discharge stormwater to surface waters or a municipal separate storm sewer system (MS4).
	Wastewater Permit	Yes – Force main.
	Notice of Intent	Yes – Force main.
USACE	Section 404 Permit	Not required – No impacts on wetland or surface waters.
USFWS	Protected Species Consultation	Not required – No effect on protected species or critical habitat.
Brevard County	ROW Permit	Yes – Impacts on existing county ROW.
	Utility Coordination	Yes – Impacts on utilities.
	Land Clearing / Tree Protection Permit	Yes – Relocation of native species ( <i>R. elata</i> ). Required under native vegetation and tree protection ordinances.
FADCS	Native Plant Harvesting Permit	Yes – Relocation of native species ( <i>R. elata</i> ).

## 8. CONCLUSION

No impacts on federally protected species, wetlands or EFH are expected as a result of the Proposed Action. Due to the nature of the Project and proposed installation method using horizontal directional drilling, dewatering may be employed during construction. Best management practices and protective measures will be implemented to avoid or minimize any possibility of unanticipated impacts. Since the Proposed Action does not involve impacts to natural resources or impacts are anticipated to be minimal, a technical memorandum is applicable and sufficient for this phase.

### 8.1 Protected Species and Habitat

Pursuant to Section 7 of the ESA and Part 2, Chapter 16 of the FDOT PD&E Manual, the project study area was evaluated for the presence of protected species. According to the USFWS IPaC online system, federally protected species or designated critical habitat do not occur within the project study area. In addition, federally protected species were not observed during site observations. Therefore, the Proposed Action would have no effect on federally listed species.

Furthermore, the Florida Royal Palm (*R. elata*) was observed in some sections along South Patrick Drive during site observations. Due to the Project design this species may be relocated to accommodate the proposed force main. Anticipated impacts to this species will be mitigated following FDACS, Chapter 5B.40.0055, F.A.C., and Chapter 62, Section 62-4331 of Brevard County Code of Ordinances.

**Table 8-1: Protected Species and Effect Determination**

Common Name	Scientific Name	Listing Status		Potential of Occurrence	Present in Project Area	Effect Determination
		Federal	State			
<b>Mammals</b>						
Audubon's Crested Caracara	<i>Polyborus plancus audubonii</i>	T	FT	Low	No	No Effect
Eastern Black Rail	<i>Laterallus jamaicensis ssp. jamaicensis</i>	T	FT			
Everglade Snail Kite	<i>Rostrhamus sociabilis plumbeus</i>	E	FE			
Florida Scrub-jay	<i>Aphelocoma coerulescens</i>	T	FT			
Piping Plover	<i>Charadrius melodus</i>	T	FT			
Rufa Red Knot	<i>Calidris canutus rufa</i>	T	FT			
Wood Stork	<i>Mycteria americana</i>	T	FT			
<b>Reptiles</b>						
American Crocodile	<i>Crocodylus acutus</i>	T	FT	Low	No	No Effect
Eastern Indigo Snake	<i>Drymarchon couperi</i>	T	FT			
<b>Insects</b>						
Monarch Butterfly	<i>Danaus plexippus</i>	PT		Low	No	N/A
<b>Plants</b>						
Carter's Mustard	<i>Warea carteri</i>	E	E	Low	No	No Effect
Lewton's Polygala	<i>Polygala lewtonii</i>	E	E			
Florida Royal Palm	<i>Roystonea elata</i>	N	T	High	Yes	No adverse effect anticipated

## 8.2 Wetlands and Other Surface Waters

Wetland does not occur within the project limits. Therefore, no impacts on this resource are expected. Although a non-navigable jurisdictional man-made canal crosses the Project between STA 37+00 and STA 38+00, the Project does not include impacts to this canal. In addition, due to the project design and proposed installation method using horizontal directional drilling at approximately 25 feet below the canal bed, impacts to water resources are not anticipated.

## 8.3 Essential Fish Habitat

Essential Fish Habitat (EFH) does not occur within the project study area. Therefore, no impacts to EFH are anticipated.

## 8.4 Implementation Measures and Environmental Commitments

### 8.4.1 Implementation Measures

Best management practices and protective measures will be implemented to avoid or minimize any possibility of unanticipated impacts, specifically due to construction dewatering. Any construction dewatering would be short-term and best management practices would be implemented by the contractor during construction phase. The dewatering activities to be conducted during construction would take into consideration the following protection measures:

- Avoid direct discharge of untreated dewatering water into natural water bodies or open water canal.
- Avoid direct discharge of untreated dewatering water into high functional wetland ecosystems.
- Avoid permanent impacts to downgradient natural resources or property.
- Awareness of location of known contamination sites adjacent to the Project and control exacerbation of known contamination plume
- Install silt fence along trench lines where runoff may occur.
- Use inlet protection at nearby storm drains.
- Provide stabilized construction entrance to minimize sediment tracking.
- Apply water spray for dust control during trenching and backfill.
- Designate lined concrete washout areas.
- Store fuels and lubricants in secondary containment; maintain spill kits.
- Keep pipe and materials on stabilized surfaces within ROW.

### 8.4.2 Environmental Commitments

- The contractor will comply with all federal and state requirements regarding native species.
- Land clearing and grubbing would be performed in such a manner as to minimize damage outside the Project footprint. Maintain construction activities within authorized project boundaries, construction staging areas and clearing limits as per approved permits.

- Prior to the initiation of the earthwork phase involving vegetation clearing and tree trimming, the site would be inspected to validate that imperiled species or active nests from migratory birds are not within the construction work zone. The contractor would be directed not to damage or remove any nest without prior approval or confirmation from the FWC or USFWS.
- Use appropriate dust control methods during construction activities such as water sprays.
- Re-vegetate exposed soils following completion of construction activities in designated areas.
- Minimize the amount of exposed soil at any given time during construction activities. Dispose of debris and solid waste generated by the Project according to applicable federal, state, and local regulations.
- Stage and service construction equipment in designated staging areas. Perform construction vehicle maintenance and inspections to reduce the potential for incidental release of vehicle fluids.
- Maintain spill kits to rapidly respond to and limit impacts from accidental releases of vehicle fluids.

## 9. REFERENCES

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## 10. APPENDICES

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Appendix 1	Project Design Plans Set
Appendix 2	USFWS IPaC Official Species List
Appendix 3	Historical Aerial Photos
Appendix 4	Historical Topo Maps
Appendix 5	Photographic Documentation

## Appendix 1

Project Design Plans Set  
Appendix Excluded - Available Upon  
Request

## Appendix 2

### USFWS IPaC Official Species List



## United States Department of the Interior



### FISH AND WILDLIFE SERVICE

Florida Ecological Services Field Office

777 37th St

Suite D-101

Vero Beach, FL 32960-3559

Phone: (352) 448-9151 Fax: (772) 562-4288

Email Address: [fw4flesregs@fws.gov](mailto:fw4flesregs@fws.gov)

<https://www.fws.gov/office/florida-ecological-services>

In Reply Refer To:

11/21/2025 15:12:59 UTC

Project Code: 2026-0018636

Project Name: South Patrick/North Riverside Drive 30-inch Parallel Force Main

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

**Please include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project.** Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

**Florida bonneted bat:** If the Florida bonneted bat or Florida bonneted bat Critical Habitat is on your Official Species List, please make sure you are using the [2024 Florida Bonneted Bat Guidelines and Key](#) and submitting acoustic survey data to [NABat](#) if acoustic surveys are conducted.

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/program/migratory-bird-permits/what-we-do>.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of

Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Marine Mammals
- Wetlands

## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Florida Ecological Services Field Office**

777 37th St

Suite D-101

Vero Beach, FL 32960-3559

(352) 448-9151

## PROJECT SUMMARY

Project Code: 2026-0018636  
Project Name: South Patrick/North Riverside Drive 30-inch Parallel Force Main  
Project Type: Water Supply Pipeline - New Constr - Below Ground  
Project Description: Brevard County proposes the installation of approximately 7,146 linear feet of a new 30-inch diameter parallel force main in Indian Harbour Beach, Florida. The new force main will operate in parallel with the existing 24-inch PVC force main, running from Riverside Park Drive to the south side of Eau Gallie Blvd, along the east side of South Patrick Drive and North Riverside Drive.

### Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@28.14690105,-80.5989602793292,14z>



Counties: Brevard County, Florida

## ENDANGERED SPECIES ACT SPECIES

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

NAME	STATUS
West Indian Manatee <i>Trichechus manatus</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. <b>This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.</b> Species profile: <a href="https://ecos.fws.gov/ecp/species/4469">https://ecos.fws.gov/ecp/species/4469</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/7H34RYBYJZCLFO245XOBDUUVY/documents/generated/7281.pdf">https://ipac.ecosphere.fws.gov/project/7H34RYBYJZCLFO245XOBDUUVY/documents/generated/7281.pdf</a>	Threatened

## BIRDS

NAME	STATUS
Crested Caracara (audubon's) [fl Dps] <i>Caracara plancus audubonii</i> Population: FL DPS No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8250">https://ecos.fws.gov/ecp/species/8250</a>	Threatened
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/10477">https://ecos.fws.gov/ecp/species/10477</a>	Threatened
Everglade Snail Kite <i>Rostrhamus sociabilis plumbeus</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7713">https://ecos.fws.gov/ecp/species/7713</a>	Endangered
Florida Scrub-jay <i>Aphelocoma coerulescens</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6174">https://ecos.fws.gov/ecp/species/6174</a>	Threatened
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a>	Threatened
Rufa Red Knot <i>Calidris canutus rufa</i> There is <b>proposed</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a>	Threatened
Wood Stork <i>Mycteria americana</i> Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8477">https://ecos.fws.gov/ecp/species/8477</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/7H34RYBYJZCLFO245XOBDUUVY/documents/generated/6954.pdf">https://ipac.ecosphere.fws.gov/project/7H34RYBYJZCLFO245XOBDUUVY/documents/generated/6954.pdf</a>	Threatened

## REPTILES

NAME	STATUS
American Crocodile <i>Crocodylus acutus</i> Population: U.S.A. (FL) There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6604">https://ecos.fws.gov/ecp/species/6604</a>	Threatened
Eastern Indigo Snake <i>Drymarchon couperi</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/646">https://ecos.fws.gov/ecp/species/646</a>	Threatened
Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is <b>proposed</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6199">https://ecos.fws.gov/ecp/species/6199</a>	Threatened

## INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> There is <b>proposed</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Proposed Threatened

## FLOWERING PLANTS

NAME	STATUS
Carter's Mustard <i>Warea carteri</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5583">https://ecos.fws.gov/ecp/species/5583</a>	Endangered
Lewton's Polygala <i>Polygala lewtonii</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6688">https://ecos.fws.gov/ecp/species/6688</a>	Endangered

## CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

# USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

**THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.**

## BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act <sup>2</sup> and the Migratory Bird Treaty Act (MBTA) <sup>1</sup>. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

- 
1. The [Bald and Golden Eagle Protection Act](#) of 1940.
  2. The [Migratory Birds Treaty Act](#) of 1918.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

### Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

### Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information](#)

[on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<b>Bald Eagle <i>Haliaeetus leucocephalus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a>	Breeds Sep 1 to Jul 31

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

### Breeding Season (■)

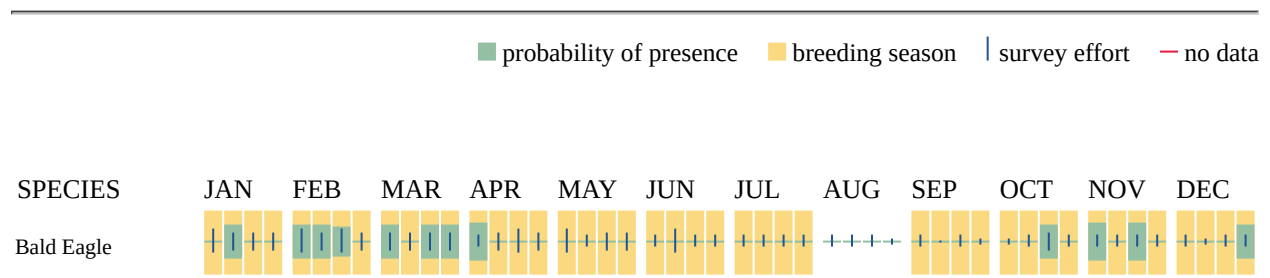
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

### Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

### No Data (-)

A week is marked as having no data if there were no survey events for that week.



Non-BCC  
Vulnerable

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

## MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) <sup>1</sup> prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9587">https://ecos.fws.gov/ecp/species/9587</a>	Breeds Apr 1 to Aug 31
Bachman's Sparrow <i>Peucaea aestivalis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/6177">https://ecos.fws.gov/ecp/species/6177</a>	Breeds May 1 to Sep 30

NAME	BREEDING SEASON
<b>Bald Eagle <i>Haliaeetus leucocephalus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a>	Breeds Sep 1 to Jul 31
<b>Black Skimmer <i>Rynchops niger</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/5234">https://ecos.fws.gov/ecp/species/5234</a>	Breeds May 20 to Sep 15
<b>Chimney Swift <i>Chaetura pelagica</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9406">https://ecos.fws.gov/ecp/species/9406</a>	Breeds Mar 15 to Aug 25
<b>Great Blue Heron <i>Ardea herodias occidentalis</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/10590">https://ecos.fws.gov/ecp/species/10590</a>	Breeds Jan 1 to Dec 31
<b>Least Tern <i>Sternula antillarum antillarum</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/11919">https://ecos.fws.gov/ecp/species/11919</a>	Breeds Apr 25 to Sep 5
<b>Lesser Yellowlegs <i>Tringa flavipes</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a>	Breeds elsewhere
<b>Magnificent Frigatebird <i>Fregata magnificens</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9588">https://ecos.fws.gov/ecp/species/9588</a>	Breeds Oct 1 to Apr 30
<b>Painted Bunting <i>Passerina ciris</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9511">https://ecos.fws.gov/ecp/species/9511</a>	Breeds Apr 25 to Aug 15
<b>Prairie Warbler <i>Setophaga discolor</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9513">https://ecos.fws.gov/ecp/species/9513</a>	Breeds May 1 to Jul 31
<b>Red-headed Woodpecker <i>Melanerpes erythrocephalus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9398">https://ecos.fws.gov/ecp/species/9398</a>	Breeds May 10 to Sep 10

NAME	BREEDING SEASON
<b>Reddish Egret <i>Egretta rufescens</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/7617">https://ecos.fws.gov/ecp/species/7617</a>	Breeds Mar 1 to Sep 15
<b>Ruddy Turnstone <i>Arenaria interpres morinella</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/10633">https://ecos.fws.gov/ecp/species/10633</a>	Breeds elsewhere
<b>Semipalmated Sandpiper <i>Calidris pusilla</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9603">https://ecos.fws.gov/ecp/species/9603</a>	Breeds elsewhere
<b>Short-billed Dowitcher <i>Limnodromus griseus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a>	Breeds elsewhere
<b>Swallow-tailed Kite <i>Elanoides forficatus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8938">https://ecos.fws.gov/ecp/species/8938</a>	Breeds Mar 10 to Jun 30
<b>Whimbrel <i>Numenius phaeopus hudsonicus</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/11991">https://ecos.fws.gov/ecp/species/11991</a>	Breeds elsewhere
<b>Willet <i>Tringa semipalmata</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/10669">https://ecos.fws.gov/ecp/species/10669</a>	Breeds Apr 20 to Aug 5
<b>Worthington's Marsh Wren <i>Cistothorus palustris griseus</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9560">https://ecos.fws.gov/ecp/species/9560</a>	Breeds Apr 10 to Aug 31

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

**Breeding Season (■)**

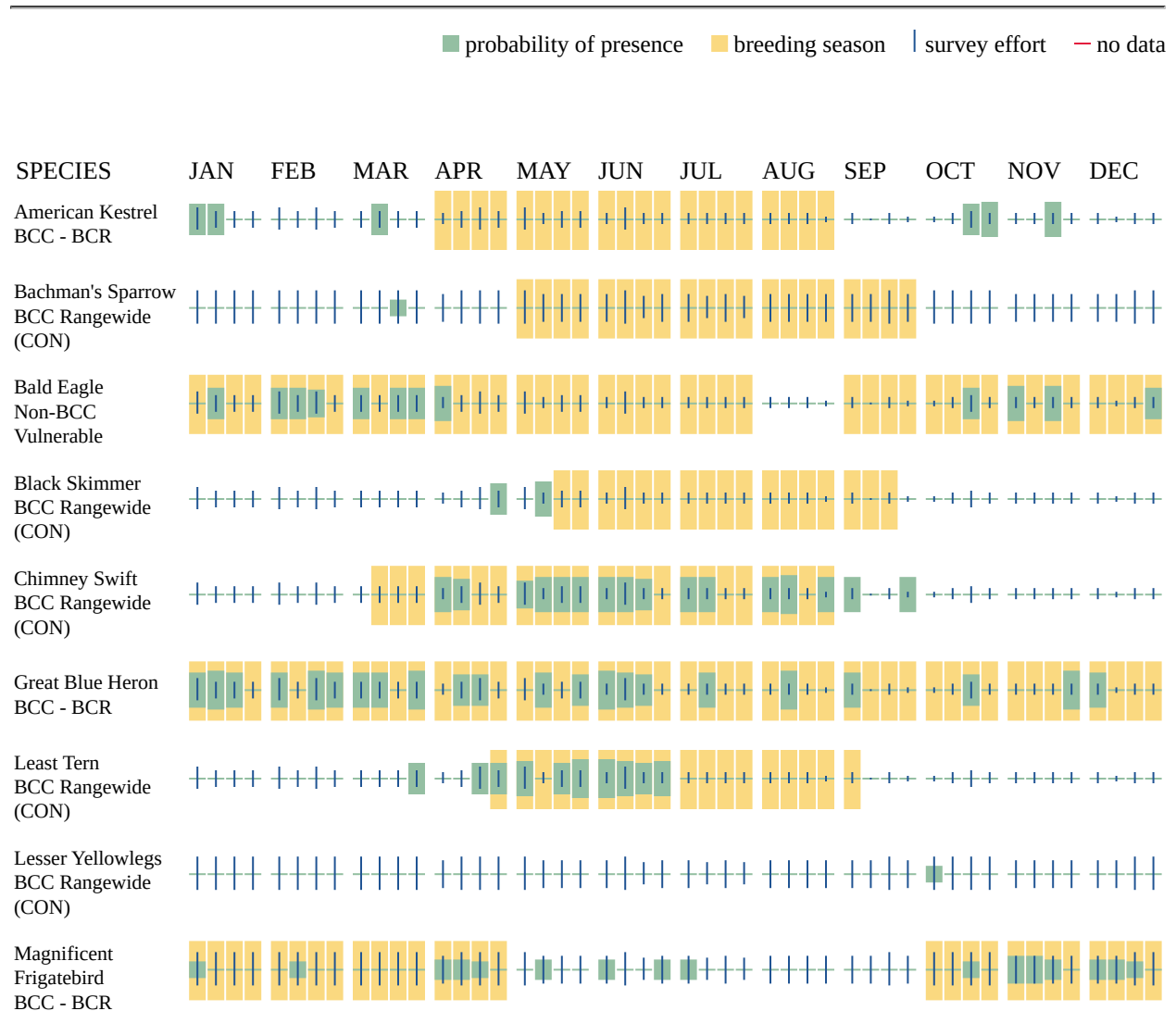
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

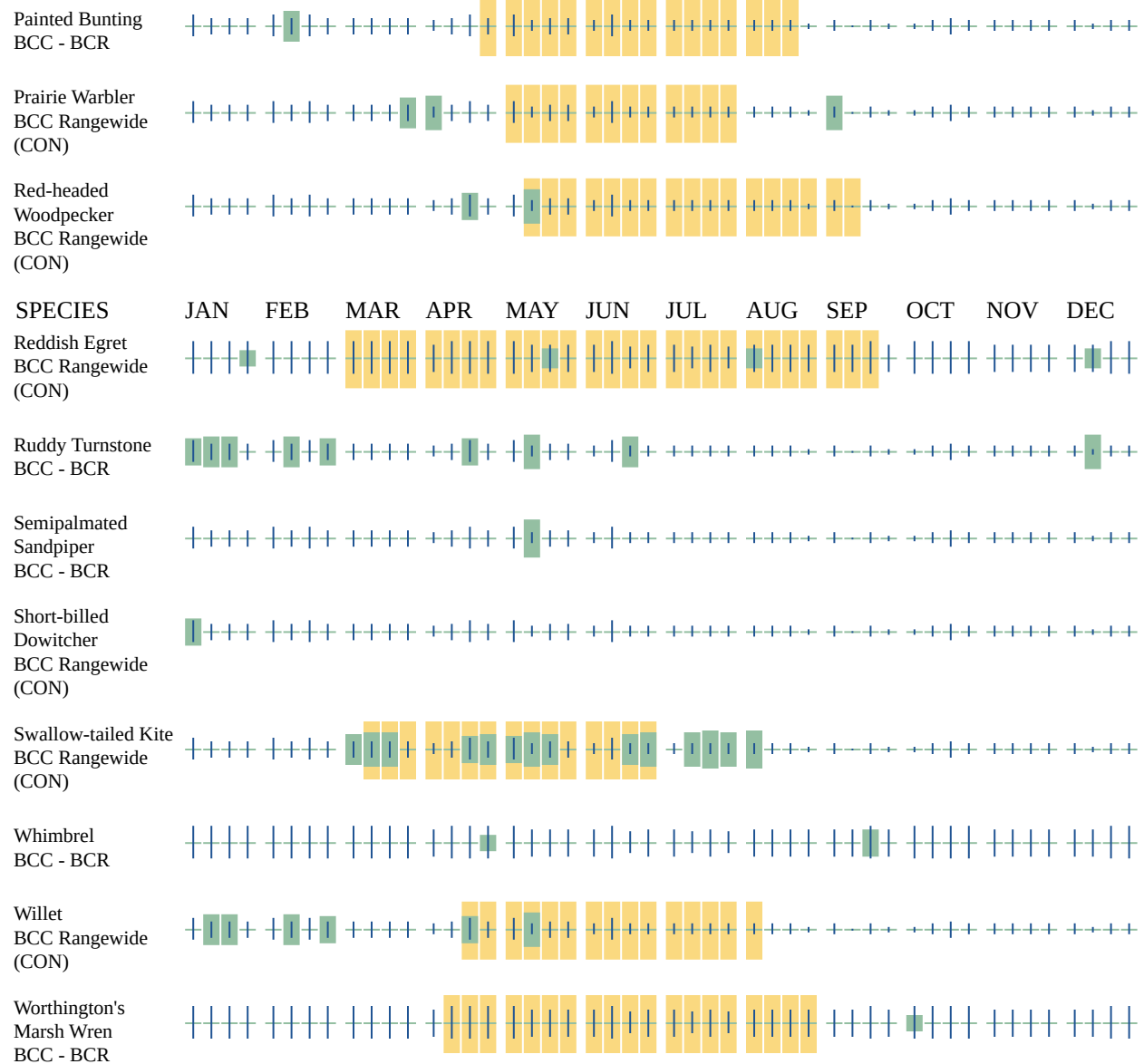
**Survey Effort (|)**

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

**No Data (-)**

A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

## MARINE MAMMALS

Marine mammals are protected under the [Marine Mammal Protection Act](#). Some are also protected under the Endangered Species Act<sup>1</sup> and the Convention on International Trade in Endangered Species of Wild Fauna and Flora<sup>2</sup>.

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries<sup>3</sup> [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the [Marine Mammals](#) page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

- 
1. The [Endangered Species Act](#) (ESA) of 1973.
  2. The [Convention on International Trade in Endangered Species of Wild Fauna and Flora](#) (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
  3. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

### NAME

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West Indian Manatee *Trichechus manatus*

Species profile: <https://ecos.fws.gov/ecp/species/4469>

## WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

### RIVERINE

- R5UBFx

## **IPAC USER CONTACT INFORMATION**

Agency: County of Brevard  
Name: Antonin Forestil  
Address: 4601 Sheridan St  
Address Line 2: Ste 500  
City: Hollywood  
State: FL  
Zip: 33021  
Email: aforestil@mjinc.com  
Phone: 3057054871

## **LEAD AGENCY CONTACT INFORMATION**

Lead Agency: Florida Department of Environmental Protection

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## Appendix 3

### Historical Aerial Photos

**S Patrick/N Riverside Dr 30 Parallel Force Main**

Brevard County

Indian Harbour Beach, FL 32937

Inquiry Number: 8181378.8

November 24, 2025

## The EDR Aerial Photo Decade Package



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

# EDR Aerial Photo Decade Package

11/24/25

**Site Name:**

S Patrick/N Riverside Dr 30 Pa  
 Brevard County  
 Indian Harbour Beach, FL 3296  
 EDR Inquiry # 8181378.8

**Client Name:**

McFarland Johnson  
 4601 Sheridan Street Suite 500  
 Hollywood, FL 33021  
 Contact: Antonin Forestil



Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

**Search Results:**

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
2023	1"=1000'	Flight Year: 2023	USDA/NAIP
2019	1"=1000'	Flight Year: 2019	USDA/NAIP
2015	1"=1000'	Flight Year: 2015	USDA/NAIP
2010	1"=1000'	Flight Year: 2010	USDA/NAIP
2007	1"=1000'	Flight Year: 2007	USDA/NAIP
1999	1"=1000'	Flight Year: 1999	USGS/DOQQ
1994	1"=1000'	Flight Year: 1994	USGS/DOQQ
1993	1"=1000'	Flight Date: March 10, 1993	FDOT
1983	1"=1000'	Flight Date: November 16, 1983	FDOT
1980	1"=1000'	Flight Date: February 28, 1980	FDOT
1979	1"=1000'	Flight Date: November 27, 1979	U of FL
1969	1"=1000'	Flight Date: December 01, 1969	U of FL
1958	1"=1000'	Flight Date: April 24, 1958	U of FL
1951	1"=1000'	Flight Date: March 17, 1951	U of FL
1943	1"=1000'	Flight Date: February 14, 1943	U of FL

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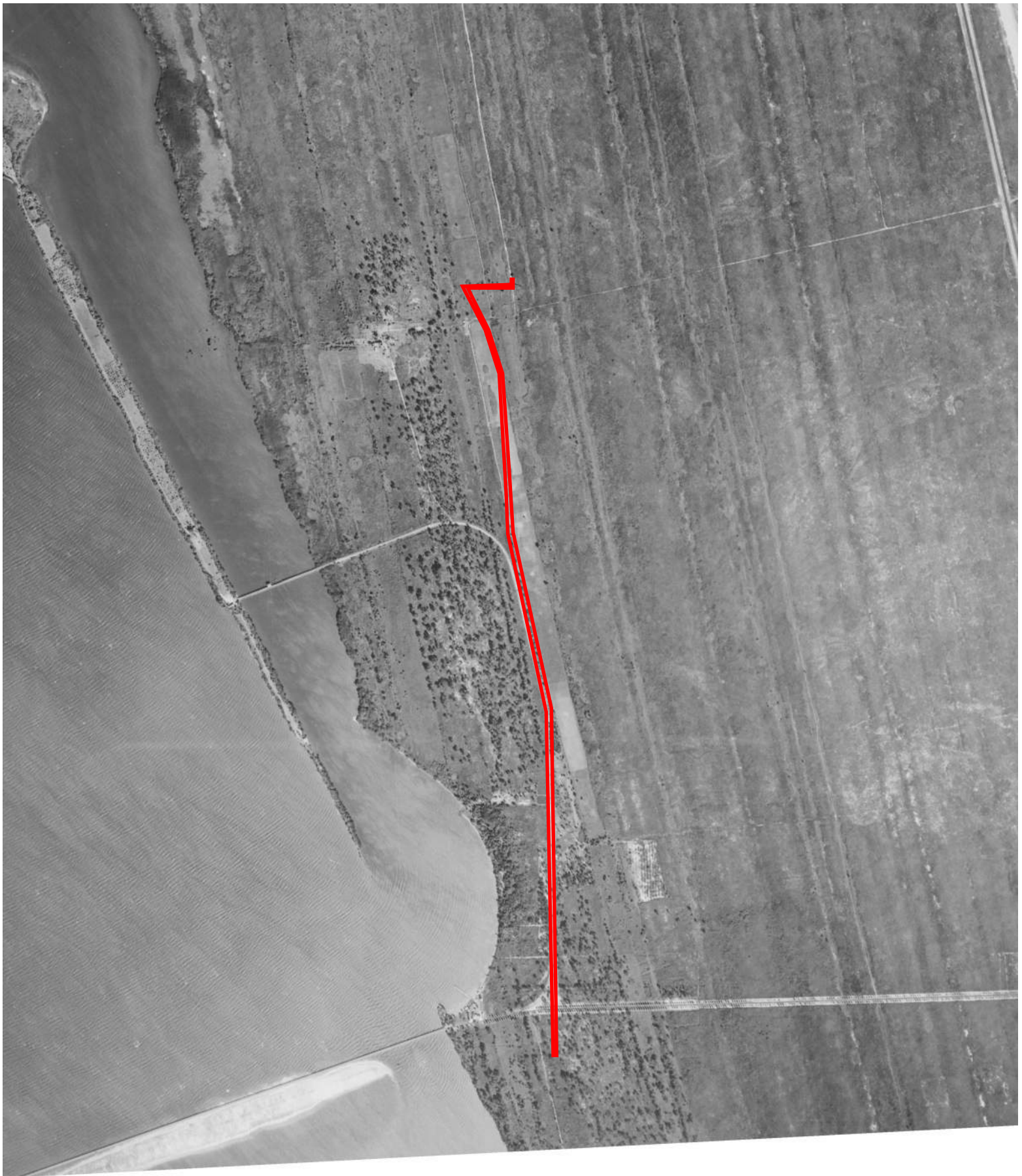
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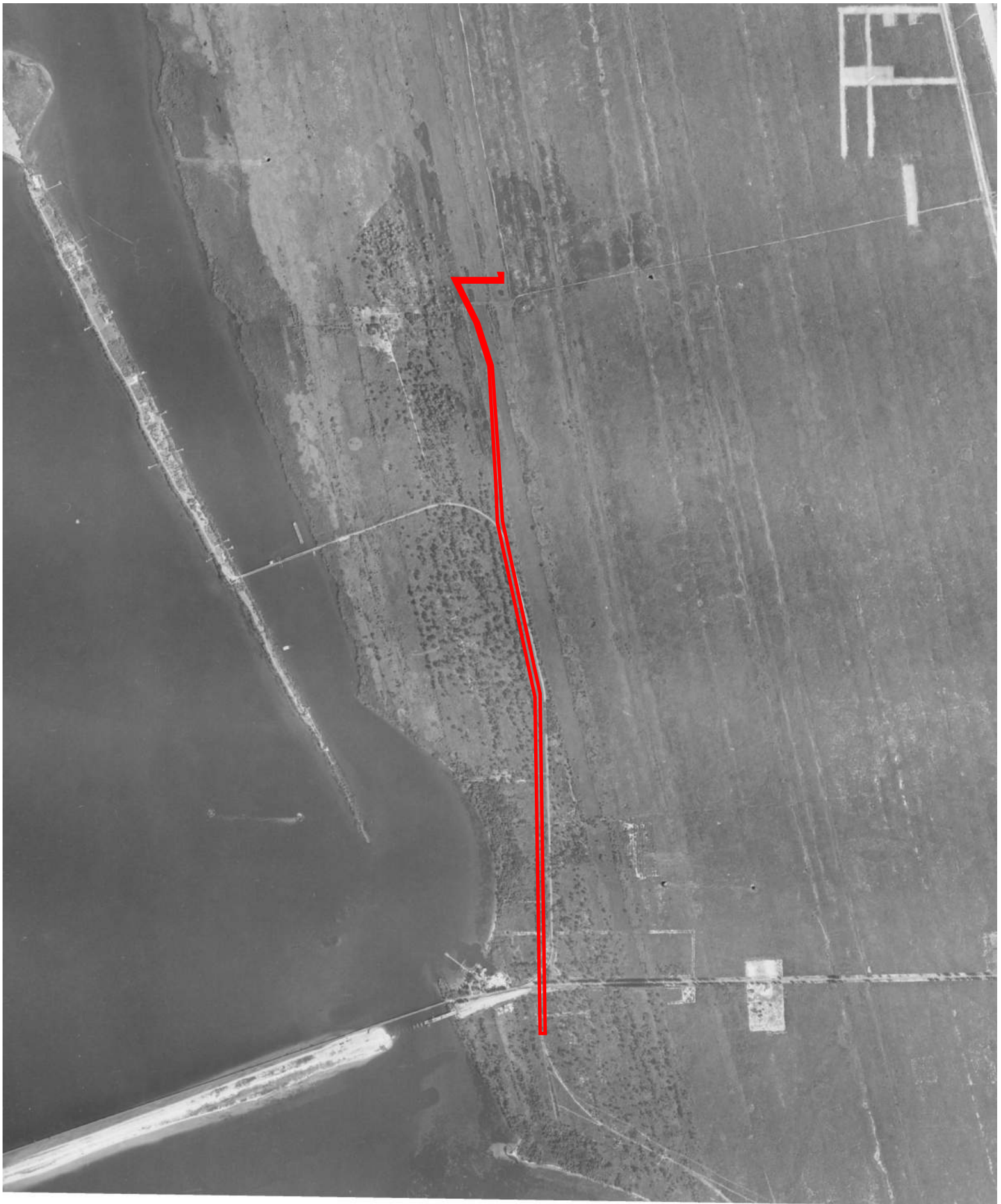


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YEAR: 1943

— = 1000'



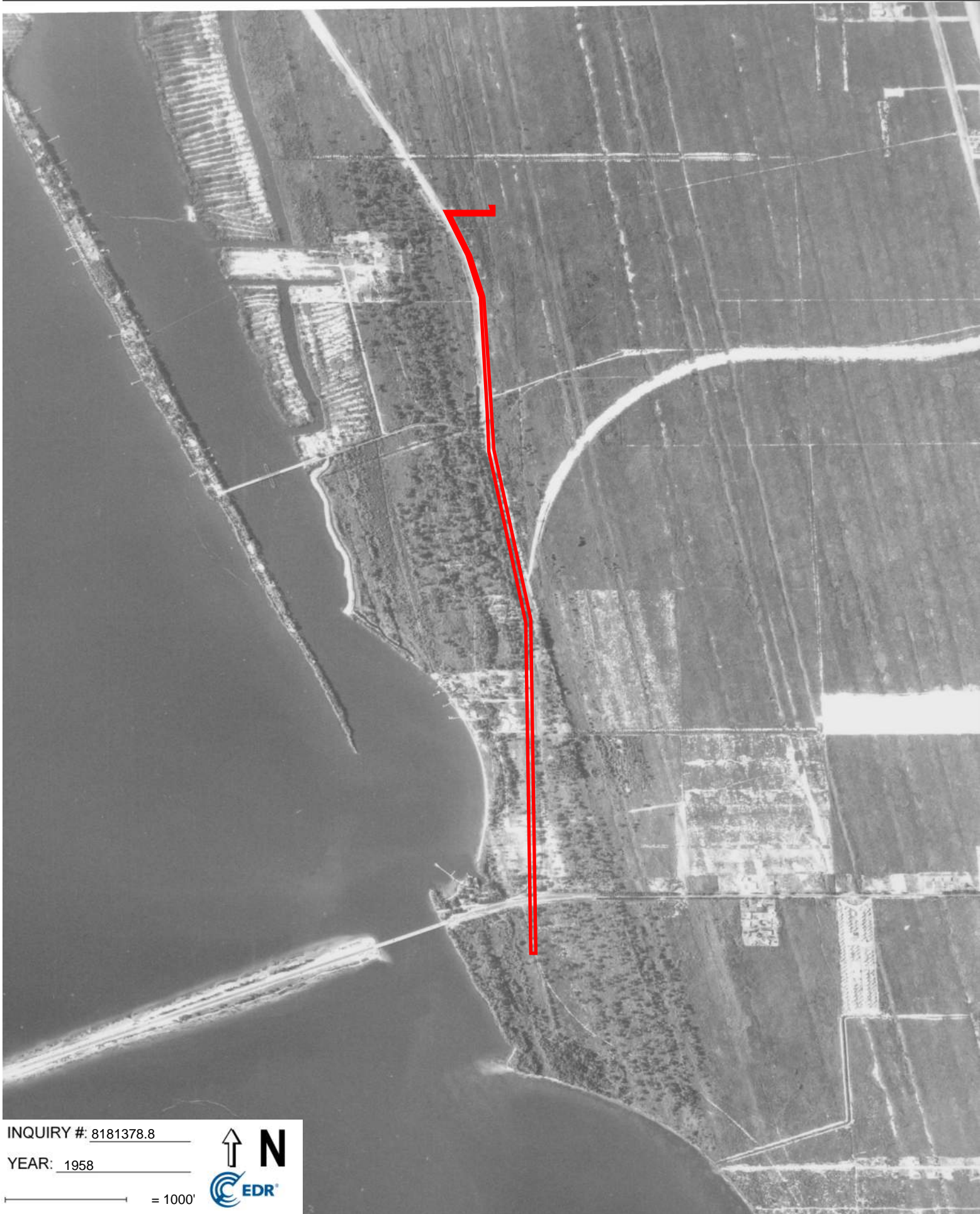


INQUIRY # 8181378.8

YEAR: 1951

— = 1000'



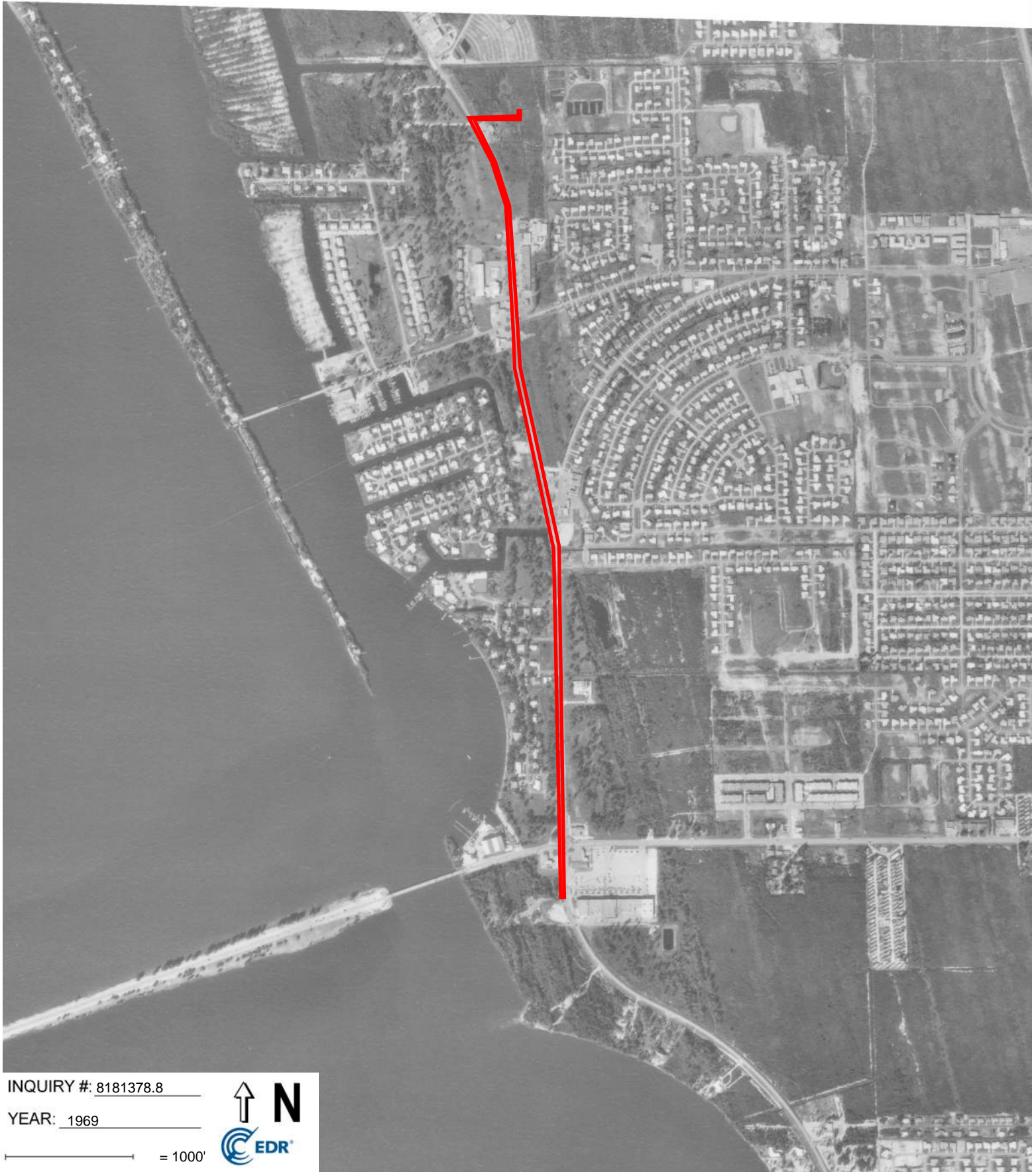


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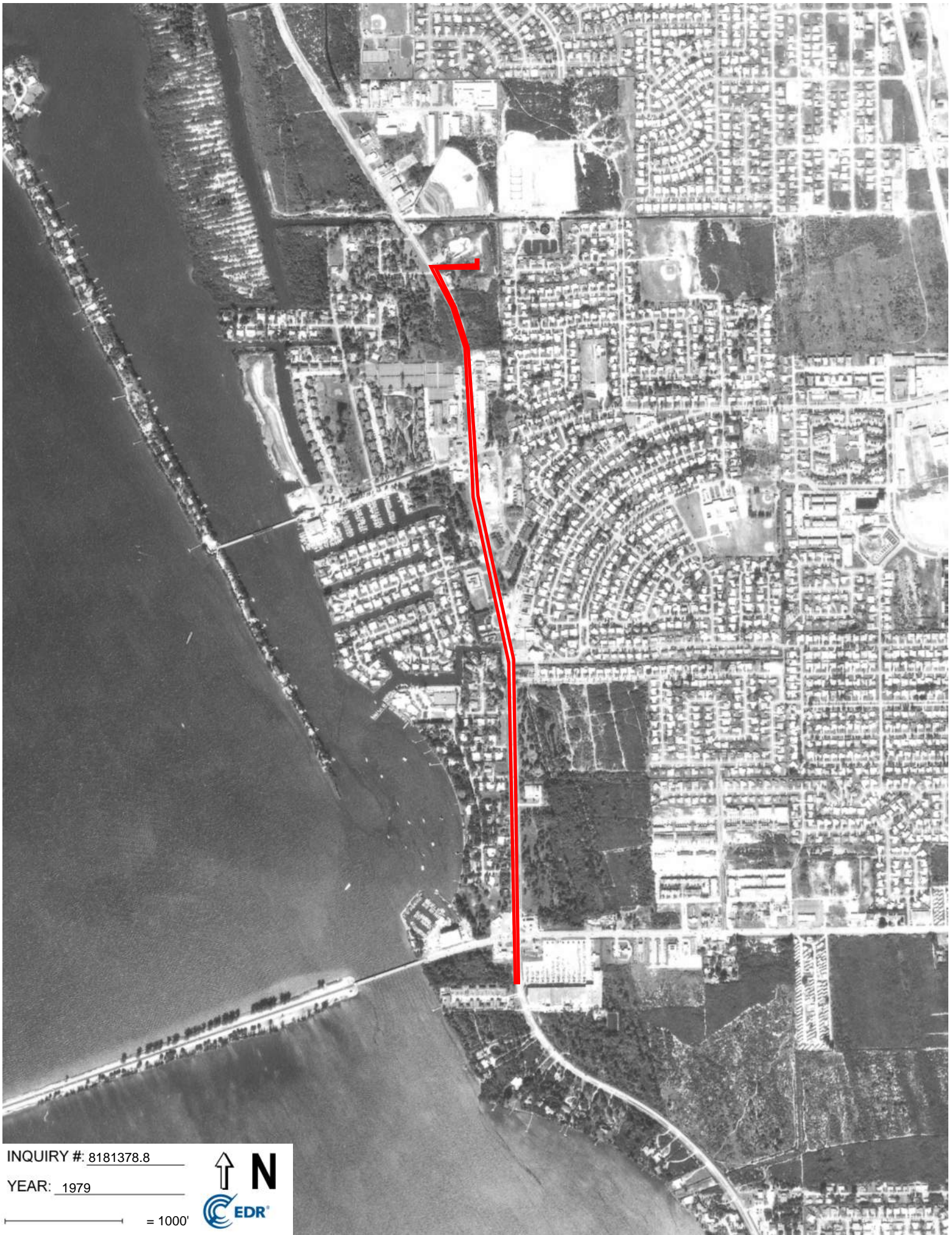


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YEAR: 1969

— = 1000'





INQUIRY #: 8181378.8

YEAR: 1979

— = 1000'



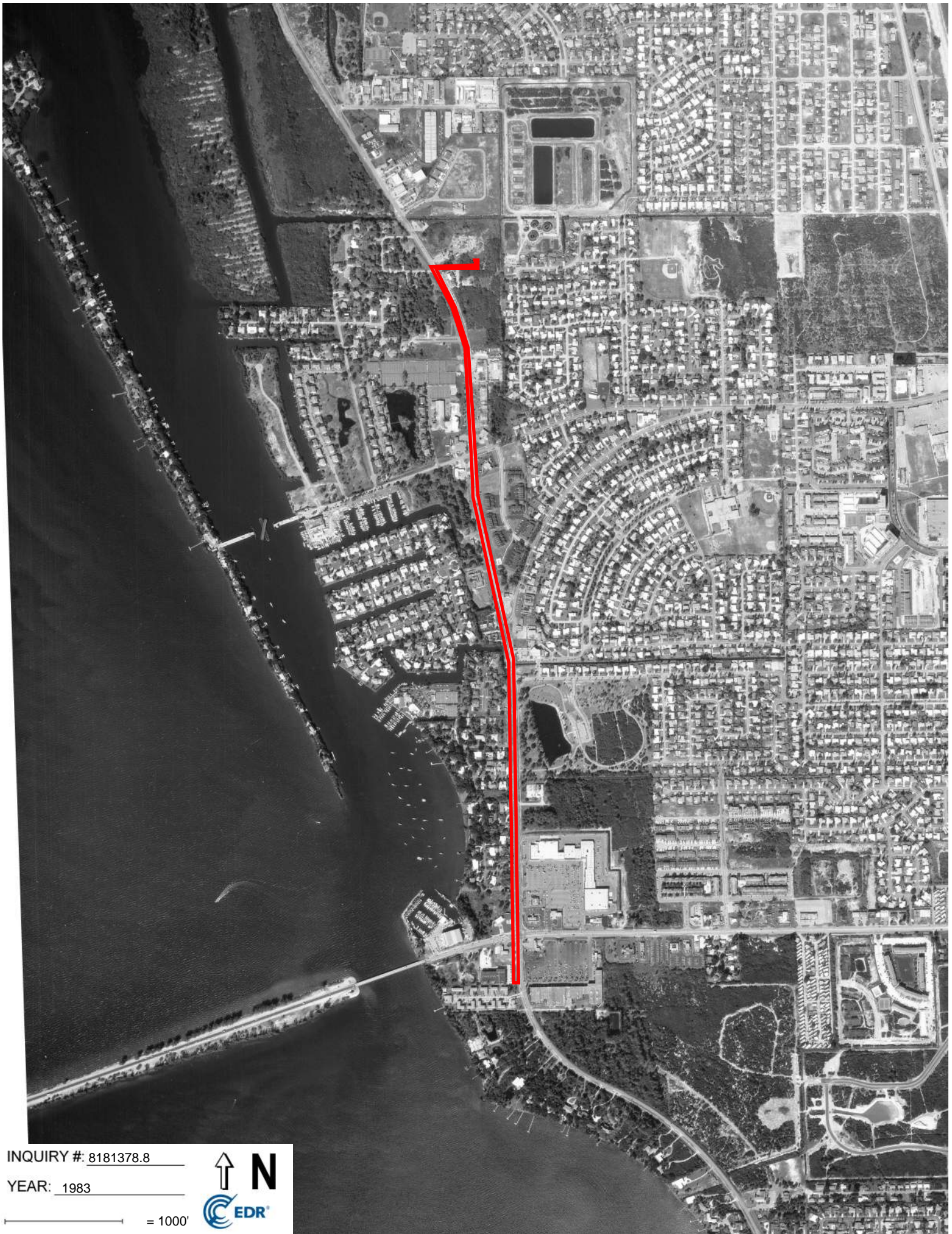


INQUIRY # 8181378.8

YEAR: 1980

— = 1000'





INQUIRY # 8181378.8

YEAR: 1983

— = 1000'





INQUIRY # 8181378.8

YEAR: 1993

— = 1000'





INQUIRY # 8181378.8

YEAR: 1994

— = 1000'





INQUIRY # 8181378.8

YEAR: 1999



— = 1000'

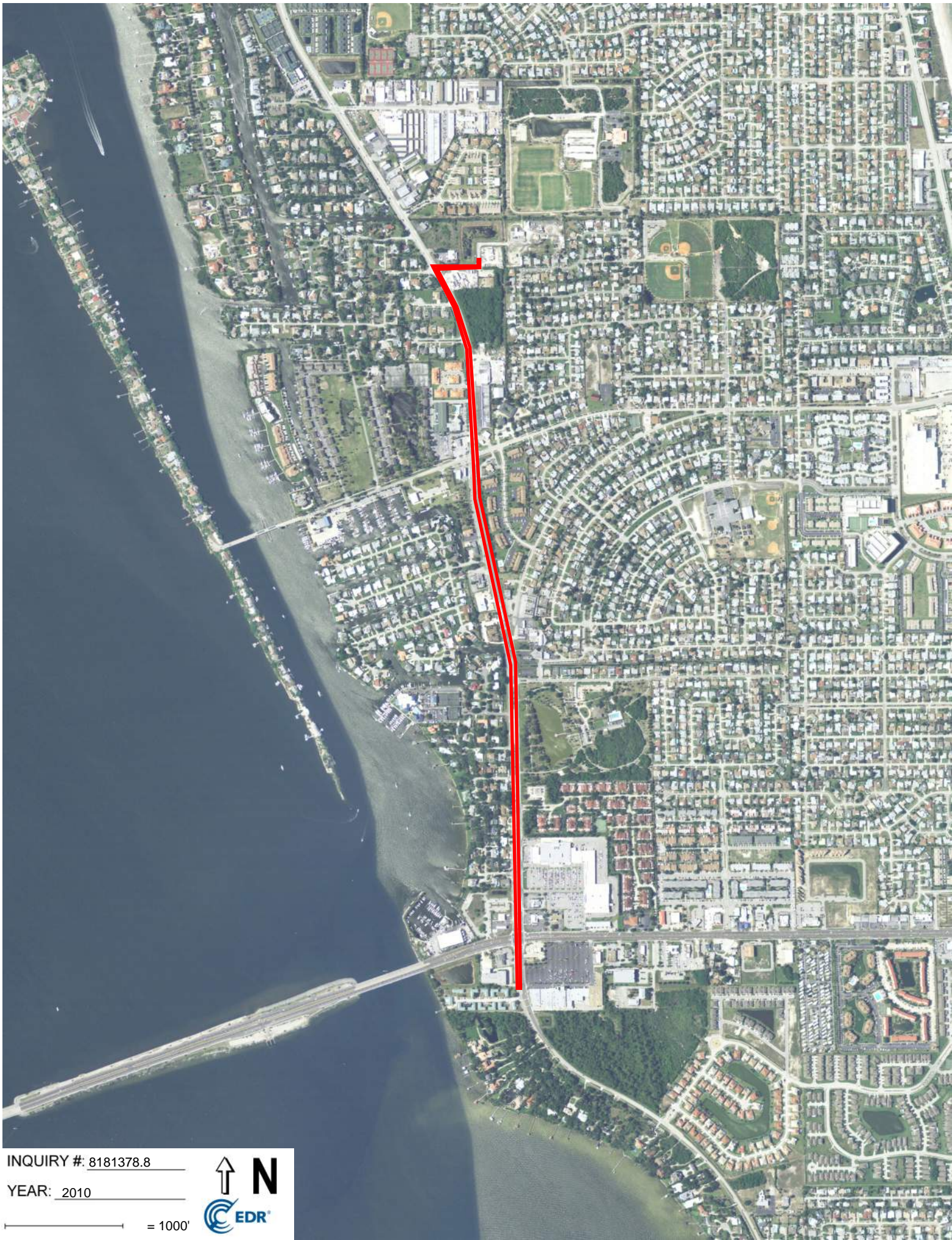


INQUIRY # 8181378.8

YEAR: 2007

— = 1000'



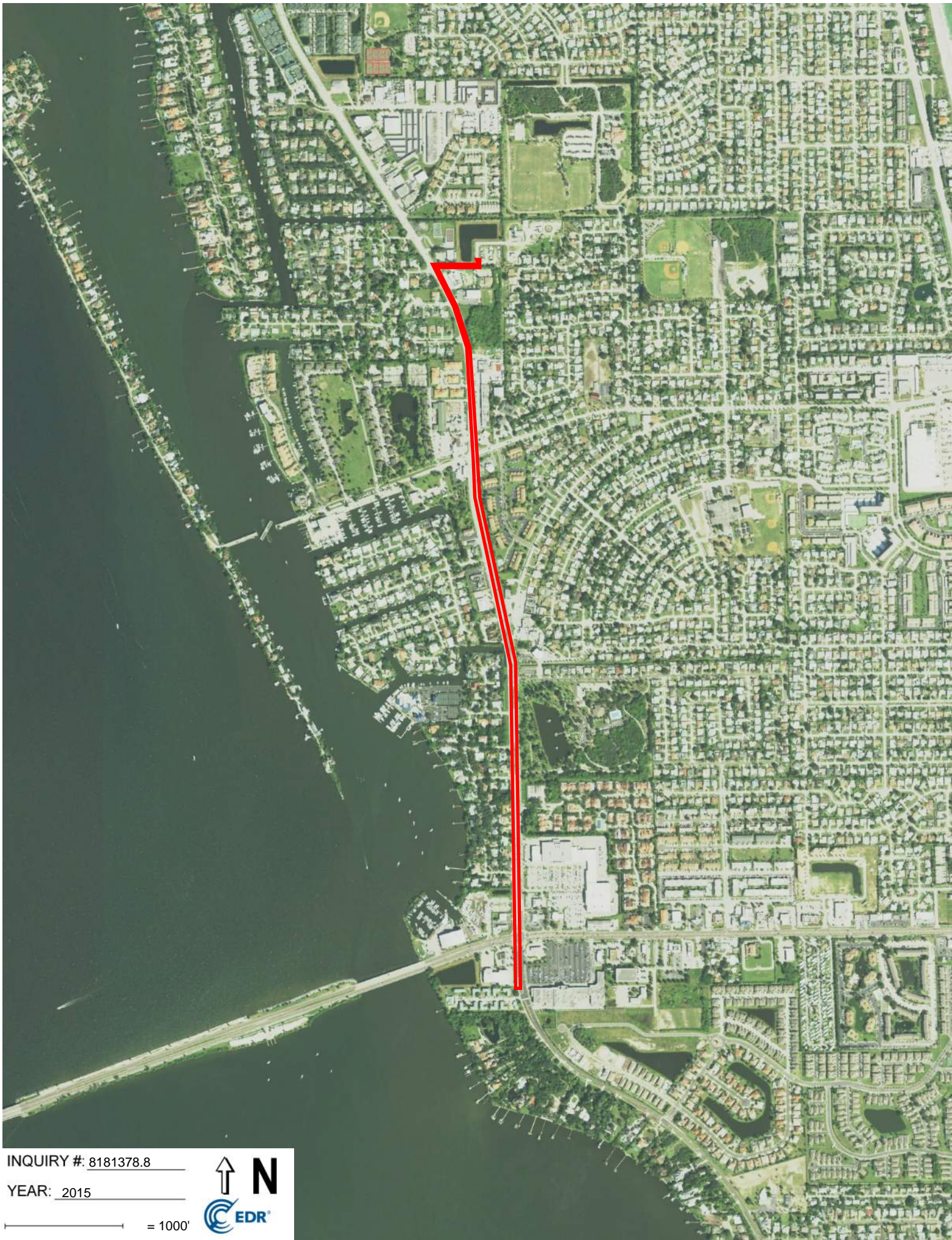


INQUIRY # 8181378.8

YEAR: 2010

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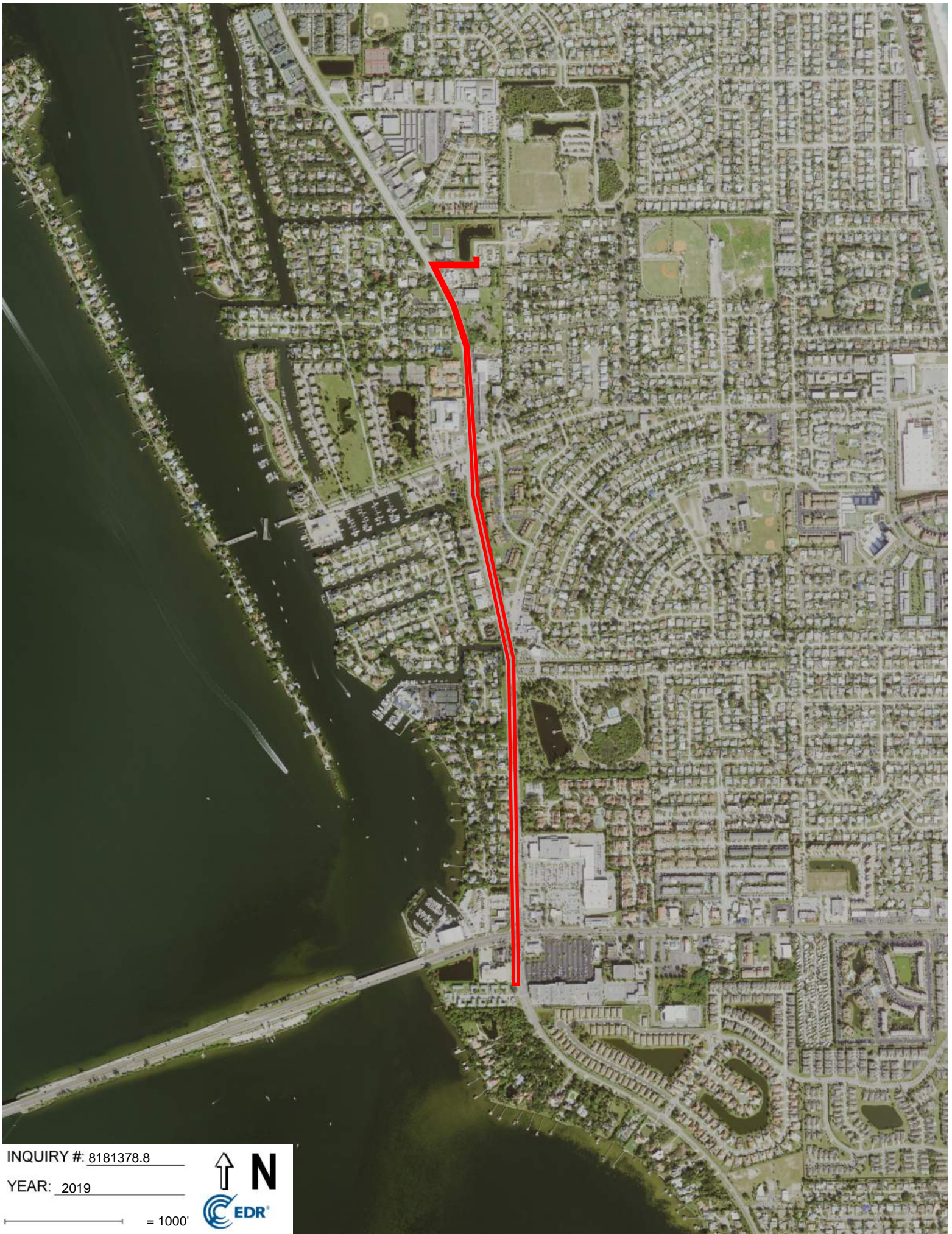


INQUIRY # 8181378.8

YEAR: 2015

— = 1000'



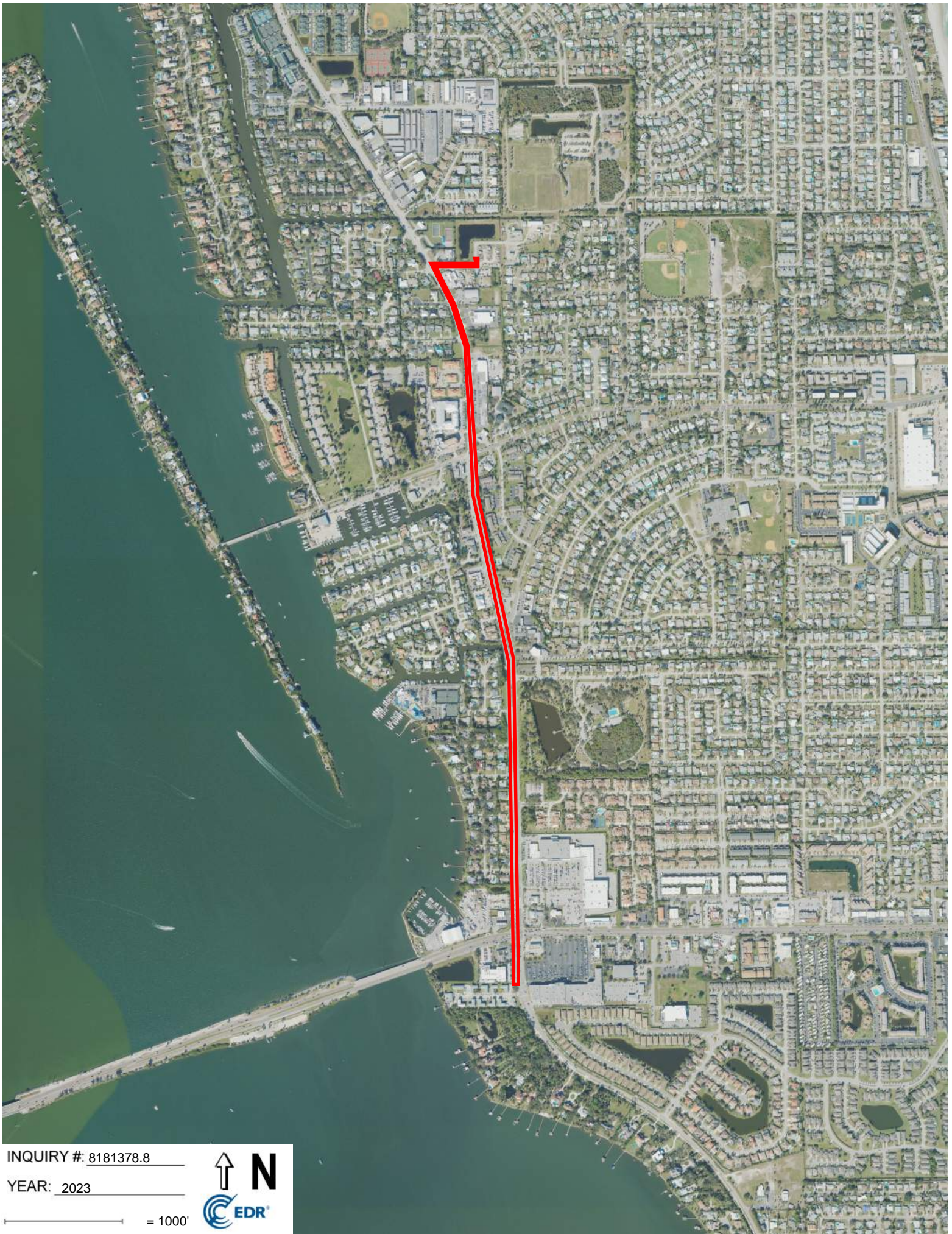


INQUIRY # 8181378.8

YEAR: 2019

— = 1000'





INQUIRY # 8181378.8

YEAR: 2023

— = 1000'



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## Appendix 4

### Historical Topo Maps

S Patrick/N Riverside Dr 30 Parallel Force Main

Brevard County

Indian Harbour Beach, FL 32937

Inquiry Number: 8181378.4

November 21, 2025

# EDR Historical Topo Map Report

with QuadMatch™



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

# EDR Historical Topo Map Report

11/21/25

**Site Name:**

S Patrick/N Riverside Dr 30 Pa  
Brevard County  
Indian Harbour Beach, FL 32961  
EDR Inquiry # 8181378.4

**Client Name:**

McFarland Johnson  
4601 Sheridan Street Suite 500  
Hollywood, FL 33021  
Contact: Antonin Forestil



EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by McFarland Johnson were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDR's Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

**Search Results:****Coordinates:**

<b>P.O.#</b>	NA	<b>Latitude:</b>	28.14983 28° 8' 59" North
<b>Project:</b>	30-inch Parallel Force Main	<b>Longitude:</b>	-80.599637 -80° 35' 59" West
		<b>UTM Zone:</b>	Zone 17 North
		<b>UTM X Meters:</b>	539310.30
		<b>UTM Y Meters:</b>	3113864.78
		<b>Elevation:</b>	2.00' above sea level

**Maps Provided:**

2021	1949
2018	
2015	
2012	
1988	
1980	
1970	
1951	

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## **Topo Sheet Key**

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

### **2021 Source Sheets**



Tropic  
2021  
7.5-minute, 24000

### **2018 Source Sheets**



Tropic  
2018  
7.5-minute, 24000

### **2015 Source Sheets**



Tropic  
2015  
7.5-minute, 24000

### **2012 Source Sheets**



Tropic  
2012  
7.5-minute, 24000

## Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

### 1988 Source Sheets



Tropic  
1988  
7.5-minute, 24000  
Aerial Photo Revised 1984

### 1980 Source Sheets



Tropic  
1980  
7.5-minute, 24000  
Aerial Photo Revised 1977

### 1970 Source Sheets



Tropic  
1970  
7.5-minute, 24000  
Aerial Photo Revised 1970

### 1951 Source Sheets



Tropic  
1951  
7.5-minute, 24000  
Aerial Photo Revised 1947

## ***Topo Sheet Key***

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

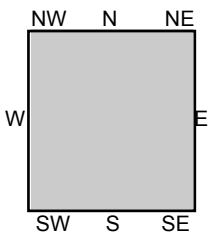
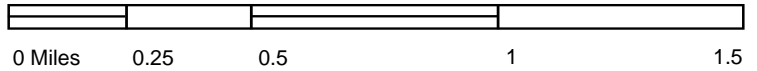
### **1949 Source Sheets**



Tropic  
1949  
7.5-minute, 24000  
Aerial Photo Revised 1947



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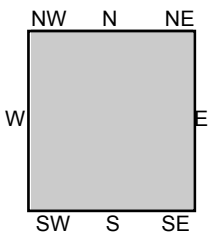
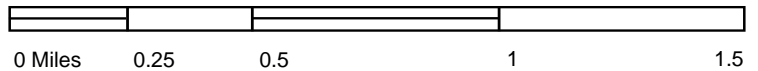
TP, Tropic, 2021, 7.5-minute

SITE NAME: S Patrick/N Riverside Dr 30 Parallel Force  
 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson





This report includes information from the following map sheet(s).



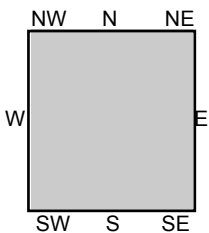
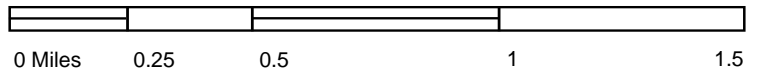
TP, Tropic, 2018, 7.5-minute

SITE NAME: S Patrick/N Riverside Dr 30 Parallel Force  
 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson





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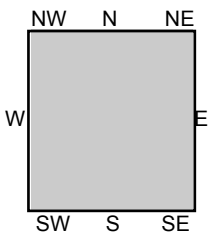
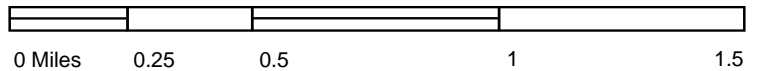
TP, Tropic, 2015, 7.5-minute

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 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson





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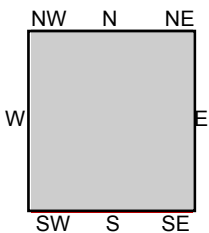
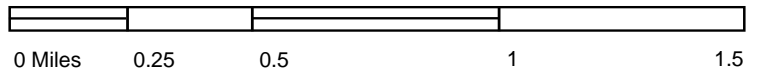
TP, Tropic, 2012, 7.5-minute

SITE NAME: S Patrick/N Riverside Dr 30 Parallel Force  
 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson





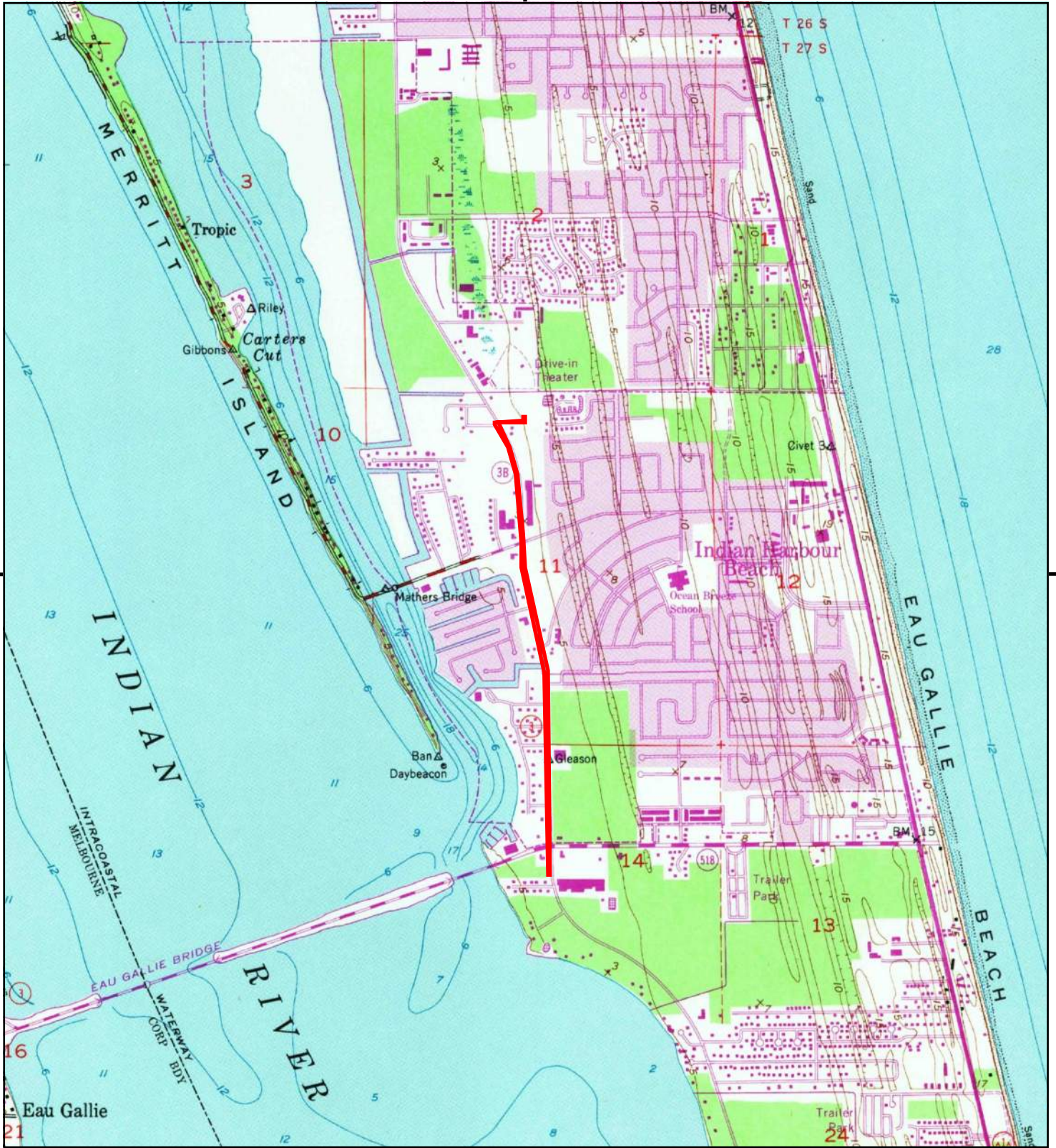
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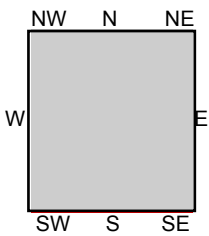
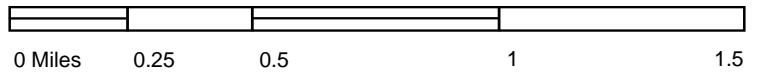
TP, Tropic, 1988, 7.5-minute

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 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson





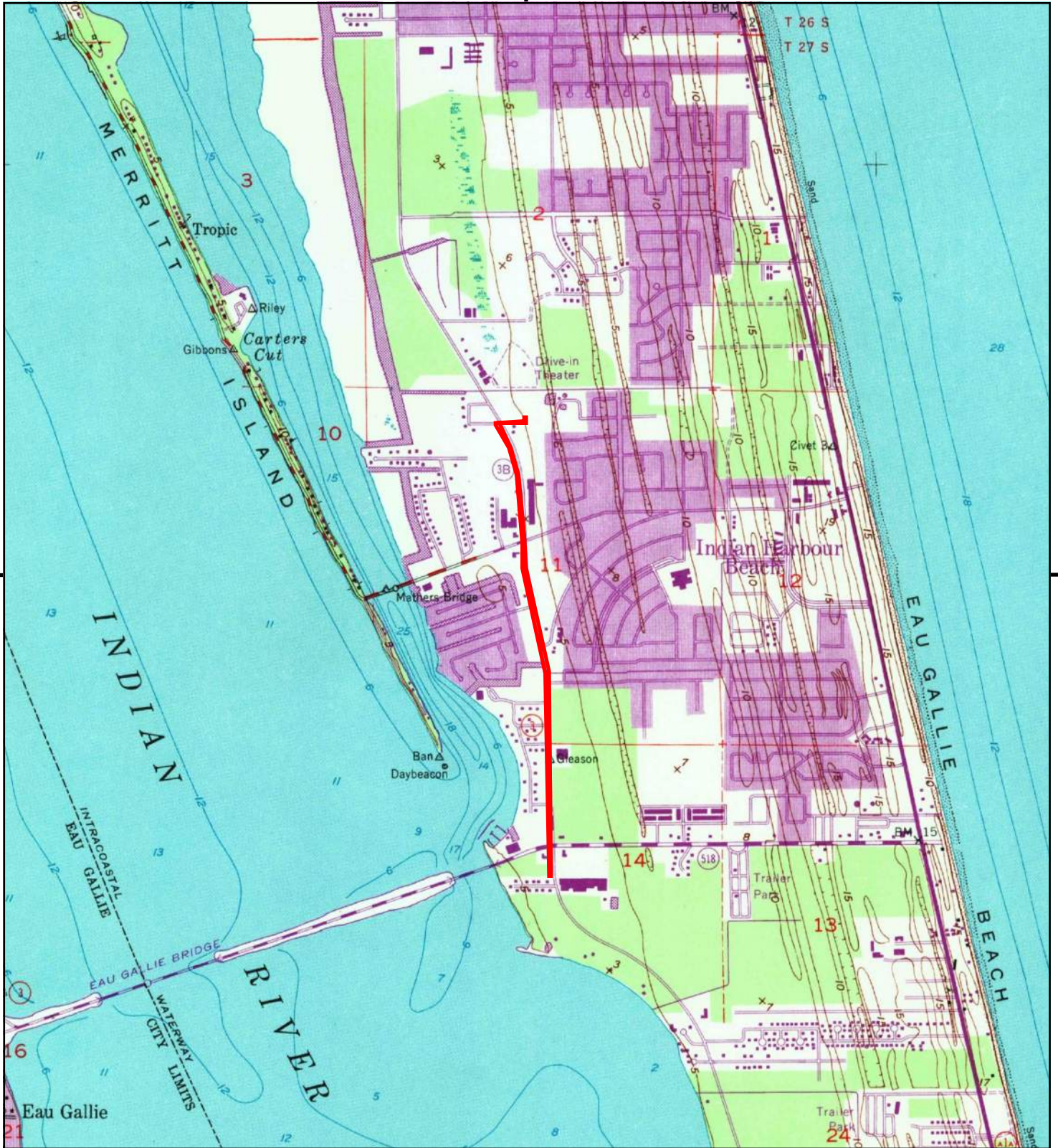
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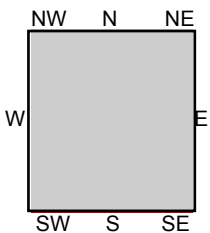
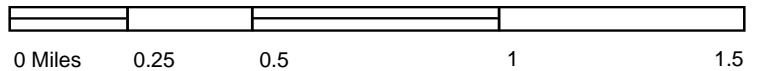
TP, Tropic, 1980, 7.5-minute

SITE NAME: S Patrick/N Riverside Dr 30 Parallel Force  
 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson





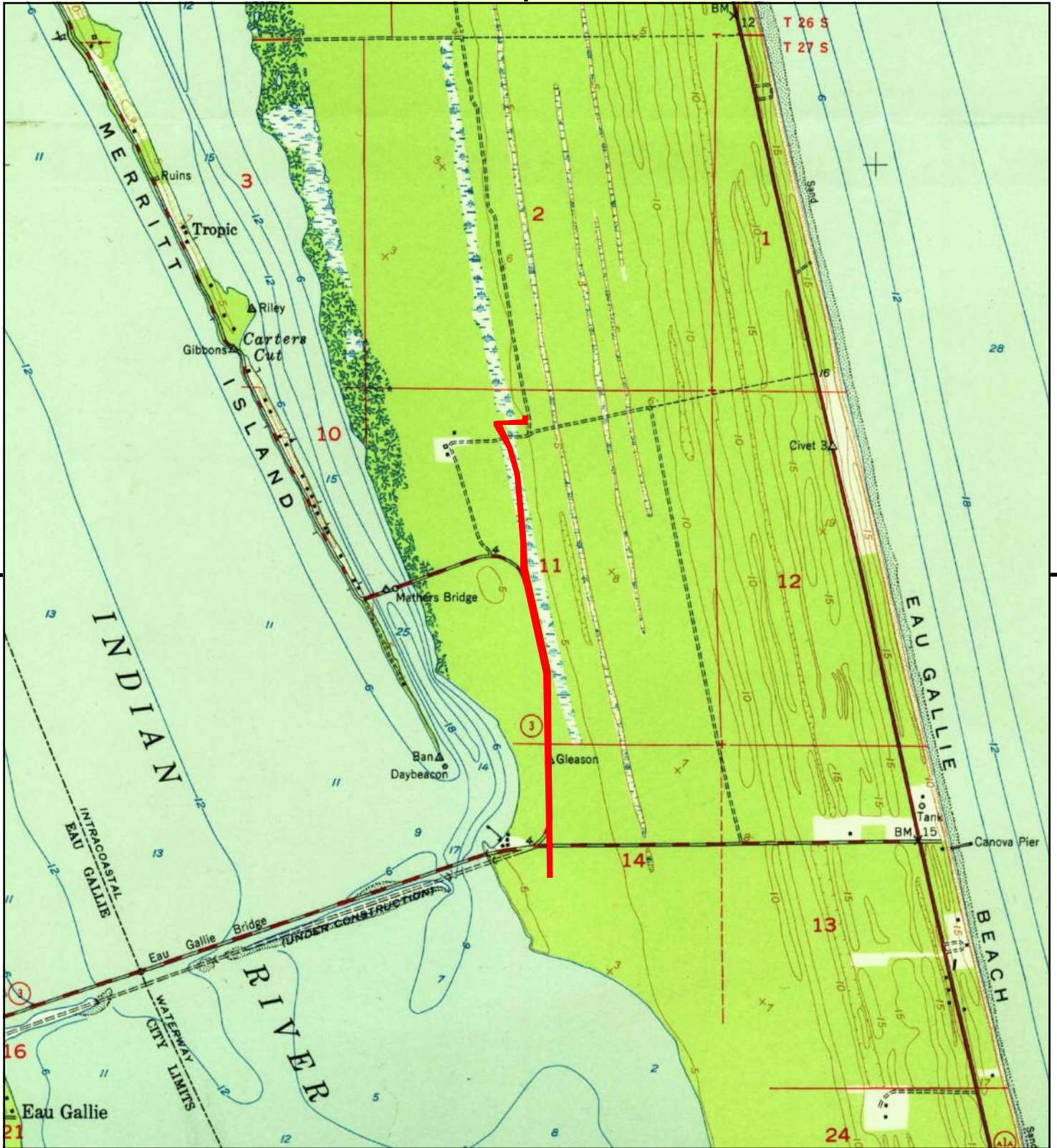
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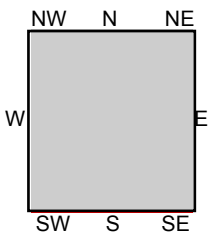
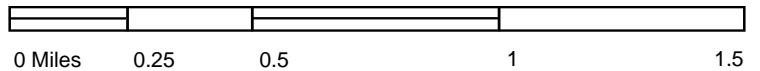
TP, Tropic, 1970, 7.5-minute

SITE NAME: S Patrick/N Riverside Dr 30 Parallel Force  
 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson





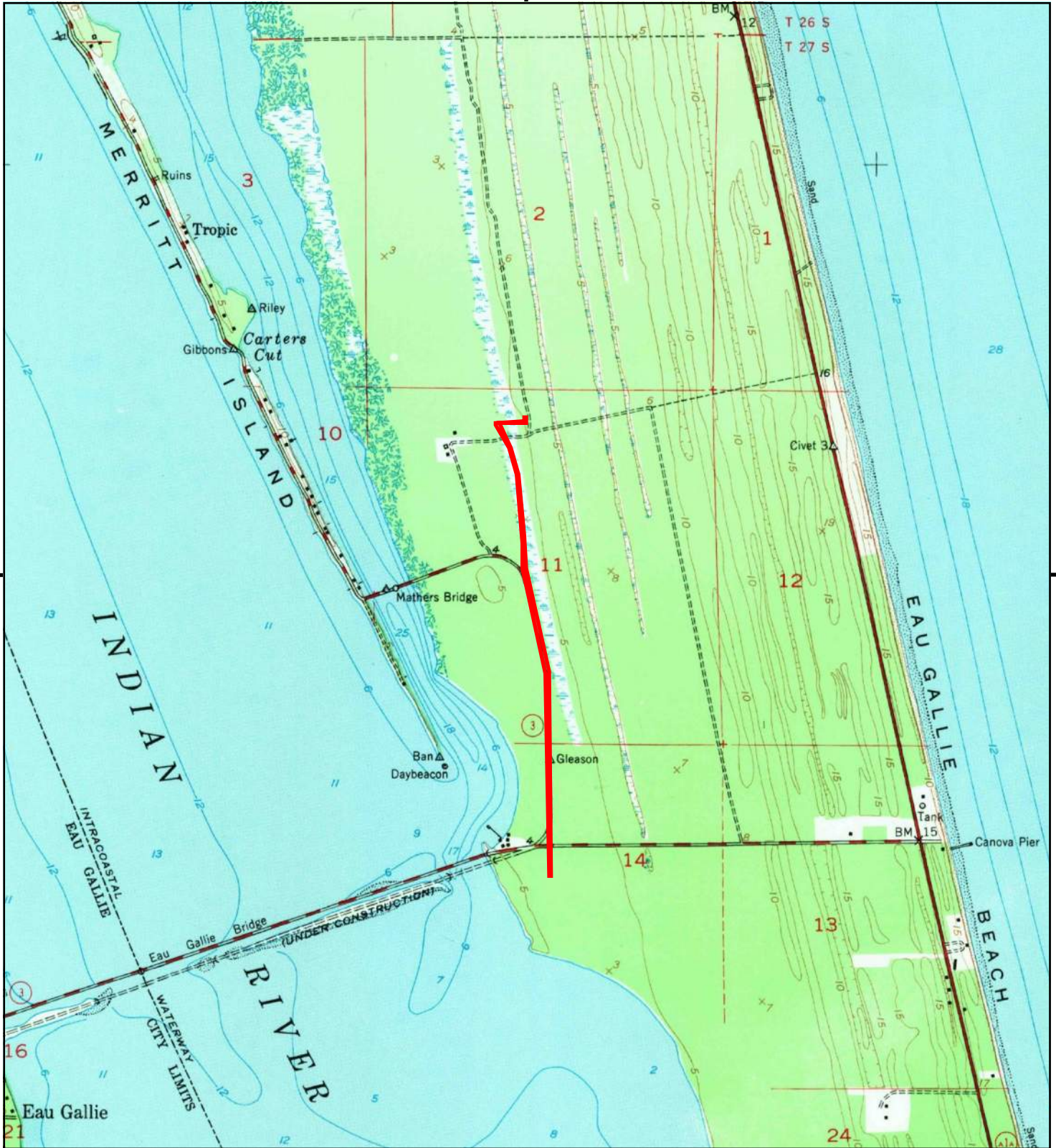
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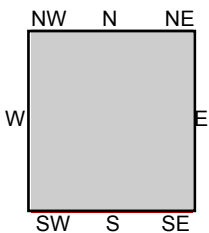
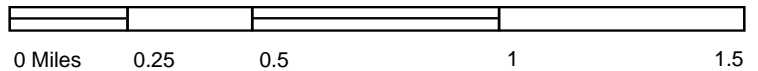
TP, Tropic, 1951, 7.5-minute

SITE NAME: S Patrick/N Riverside Dr 30 Parallel Force  
 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson





This report includes information from the following map sheet(s).



TP, Tropic, 1949, 7.5-minute

SITE NAME: S Patrick/N Riverside Dr 30 Parallel Force  
 ADDRESS: Brevard County  
 Indian Harbour Beach, FL 32937  
 CLIENT: McFarland Johnson



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## Appendix 5

### Photographic Documentation



**McFarland Johnson**

*Innovative Solutions / Sustainable Results*

4601 Sheridan Street, Suite 500 • Hollywood, FL 33021

Phone: (305) 705-4871

[www.mjinc.com](http://www.mjinc.com)

**NATURAL RESOURCES EVALUATION (NRE)  
TECHNICAL MEMORANDUM**

**Photographic Documentation**

30-Inch Parallel Force Main  
South Patrick/North Riverside Drive  
Brevard County, FL 32937

© December 2025



Intersection South Patrick Drive and Riverside Park Drive. East area of site looking north.



Intersection South Patrick Drive and Riverside Park Drive. West area of site looking south.



South Patrick Drive. West area of site looking north.



South Patrick Drive. East area of site looking south.



Intersection South Patrick Drive and Banana River Drive. West area of site looking east.



South Patrick Drive. West area of site looking north.



South Patrick Drive. East area of site looking south.



Residential complex adjacent to South Patrick Drive. West area of site looking north.



Intersection South Patrick Drive and E Eau Gallie Boulevard. West area of site looking west.



Intersection South Patrick Drive and E Eau Gallie Boulevard. West area of site looking south.



Intersection South Patrick Drive and E Eau Gallie Boulevard. East area of site looking south.



Intersection South Patrick Drive and E Eau Gallie Boulevard. East area of site looking south.



South Patrick Drive. East area of site looking south.

South Patrick Drive. East area of site looking south.



Intersection South Patrick Drive and Yacht Club Boulevard. East area of site looking south.



Non-navigable Man-Made Canal. Crossing South Patrick Drive from west to east.



South Patrick Drive. East area of site looking south.



Pond near Riverside Park Drive. East area of site looking west.



Pond near Riverside Park Drive. West area of site looking east.

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## APPENDIX D. DETAILED CLEAN WATER COST ESTIMATES

Engineers Opinion of Probable Cost Model  
 Brevard County South Patrick  
 So Patrick/Riverside Dr 30" Parallel FM - HDD  
 11/20/2025



BASIS FOR ESTIMATE: [ ] CONCEPTUAL [ ] 30% [ ] 75% [X] 90% [ ] FINAL

Item No	Description	Quantity	Unit	Unit Cost	Extension
	<b>Cost of Work</b>				<b>\$ 14,674,318.20</b>
1	Mobilization/Demobilization (3%)	1	EA	\$ 3,023,318.32	\$ 3,023,318.32
2	Insurance and Bonds	1	LS	\$ 1,007,772.77	\$ 1,007,772.77
3	Preconstruction Video	1	LS	\$ 11,613.00	\$ 11,613.00
4	Survey Layout, Project Documentation, & As-builts	1	LS	\$ 50,000.00	\$ 50,000.00
5	Maintenance of Traffic (5%)	1	LS	\$ 503,886.39	\$ 503,886.39
6	<b>30" Ductile Iron pipe *</b>	<b>1</b>	<b>LS</b>	<b>\$ 1,513,680.00</b>	<b>\$ 1,513,680.00</b>
	30" Ductile Iron pipe	1,082	LF	\$ 1,000.00	\$ 1,082,000.00
	30" Cap/plug	1	EA	\$ 7,000.00	\$ 7,000.00
	30" DIP 90 fitting	2	EA	\$ 20,280.00	\$ 40,560.00
	30" DIP 45 fitting	9	EA	\$ 16,800.00	\$ 151,200.00
	30" DIP 22.5 fitting	1	EA	\$ 16,800.00	\$ 16,800.00
	30" DIP 11.25 fitting	11	EA	\$ 16,920.00	\$ 186,120.00
	30" DIP tee	1	EA	\$ 30,000.00	\$ 30,000.00
7	<b>30" HDPE HDD</b>	<b>1</b>	<b>LS</b>	<b>\$ 7,758,750.00</b>	<b>\$ 7,758,750.00</b>
	30" HDPE HDD	6,203	LF	\$ 1,250.00	\$ 7,753,750.00
	30"x24" HDPE/DIP flange adapter	10	EA	\$ 500.00	\$ 5,000.00
8	<b>30" Valves &amp; box</b>	<b>8</b>	<b>EA</b>	<b>\$ 30,000.00</b>	<b>\$ 240,000.00</b>
9	<b>4" ARV assembly w/vault</b>	<b>5</b>	<b>EA</b>	<b>\$ 12,000.00</b>	<b>\$ 60,000.00</b>
10	<b>Connection to 30" FM - Cut-in Tee</b>	<b>1</b>	<b>EA</b>	<b>\$ 50,000.00</b>	<b>\$ 50,000.00</b>
11	<b>Bypass Pumping/ including Linestop</b>	<b>1</b>	<b>LS</b>	<b>\$ 50,000.00</b>	<b>\$ 50,000.00</b>
	<b>Roadway Restoration</b>	<b>1</b>	<b>LS</b>	<b>\$ 89,250.00</b>	<b>\$ 89,250.00</b>
12	1.5" Milling	435	SY	\$ 25.00	\$ 10,875.00
13	1.5" Asphalt Concrete Friction Course	435	SY	\$ 90.00	\$ 39,150.00
14	Superpave Asphaltic Concrete Structural Course	435	SY	\$ 55.00	\$ 23,925.00
15	4" Concrete Sidewalk	100	SY	\$ 55.00	\$ 5,500.00
16	Concrete Driveways	40	SY	\$ 70.00	\$ 2,800.00
	Permit Fees (FDOT, ROW, FDEP)	1	LS	\$ 7,000.00	\$ 7,000.00
17	<b>Landscape Restoration</b>	<b>1</b>	<b>LS</b>	<b>\$ 55,047.72</b>	<b>\$ 55,047.72</b>
	Sodding/Grassing	5,505	SY	\$ 10.00	\$ 55,047.72
	<b>Easment Acquisitions</b>	<b>1</b>	<b>LS</b>	<b>\$ 261,000.00</b>	<b>\$ 261,000.00</b>
	15' Easement	261	SY	\$ 1,000.00	\$ 261,000.00
	<b>Third Party Testing Allowance</b>	<b>1</b>	<b>LS</b>	<b>\$ 15,000.00</b>	<b>\$ 15,000.00</b>
	<b>Contractor Overhead and Profit</b>				<b>\$ 2,025,055.91</b>
	<b>ESTIMATED CONSTRUCTION COST</b>				<b>\$ 16,720,000.00</b>
	<b>CONTINGENCY</b>				<b>10% \$ 1,672,000.00</b>
	<b>TECHNICAL SERVICES DURING CONSTRUCTION</b>				<b>5% \$ 840,000.00</b>
	<b>TOTAL ESTIMATED COST</b>				<b>\$ 19,232,000.00</b>

**NOTE - The Estimated Construction Cost and the Technical Services During Construction Totals have been rounded to the nearest \$10,000 to match the submitted RFI document.**

Engineers Opinion of Probable Cost Model  
 Brevard County South Patrick  
 So Patrick/Riverside Dr 30" Parallel FM - Open Cut  
 January 2026



BASIS FOR ESTIMATE:  CONCEPTUAL  30%  75%  90%  FINAL

Item No	Description	Quantity	Unit	Unit Cost	Extension
	<b>Cost of Work</b>				<b>\$ 26,441,354.50</b>
1	Mobilization/Demobilization (3%)	1	EA	\$ 5,216,643.00	\$ 5,216,643.00
2	Insurance and Bonds	1	LS	\$ 1,738,881.00	\$ 1,738,881.00
3	Preconstruction Video	1	LS	\$ 35,330.00	\$ 35,330.00
4	Survey Layout, Project Documentation, & As-builts	1	LS	\$ 200,000.00	\$ 200,000.00
5	Maintenance of Traffic (.5%)	1	LS	\$ 871,690.50	\$ 871,690.50
6	<b>30" Ductile Iron pipe *</b>	<b>1</b>	<b>LS</b>	<b>\$ 12,409,000.00</b>	<b>\$ 12,409,000.00</b>
	30" Ductile Iron pipe	7,026	LF	\$ 1,000.00	\$ 7,026,000.00
	30" Cap/plug	1	EA	\$ 7,000.00	\$ 7,000.00
	30" DIP 90 fitting	-	EA	\$ 20,280.00	\$ -
	30" DIP 45 fitting	320	EA	\$ 16,800.00	\$ 5,376,000.00
	30" DIP 22.5 fitting	-	EA	\$ 16,800.00	\$ -
	30" DIP 11.25 fitting	-	EA	\$ 16,920.00	\$ -
	30" DIP tee	-	EA	\$ 30,000.00	\$ -
7	<b>30" JACK AND BORE</b>	<b>1</b>	<b>LS</b>	<b>\$ 800,000.00</b>	<b>\$ 800,000.00</b>
	30" DIP w/ 42" Steel Casing	200	LF	\$ 4,000.00	\$ 800,000.00
		-	EA	\$ 500.00	\$ -
8	<b>30" Valves &amp; box</b>	<b>10</b>	<b>EA</b>	<b>\$ 45,000.00</b>	<b>\$ 450,000.00</b>
9	<b>4" ARV assembly w/vault</b>	<b>10</b>	<b>EA</b>	<b>\$ 60,000.00</b>	<b>\$ 600,000.00</b>
10	Connection to 30" FM - Cut-in Tee	1	EA	\$ 50,000.00	\$ 50,000.00
11	Connection to 30" FM - Tapping Sleeve & Valve	1	EA	\$ 45,000.00	\$ 45,000.00
12	<b>Roadway Restoration</b>	<b>1</b>	<b>LS</b>	<b>\$ 3,828,150.00</b>	<b>\$ 3,828,150.00</b>
	1.5" Milling	19,500	SY	\$ 25.00	\$ 487,500.00
	Base Course and Type B Stabilized subbase	6,222	SY	\$ 75.00	\$ 466,650.00
	1.5" Asphalt Concrete Friction Course	19,500	SY	\$ 85.00	\$ 1,657,500.00
	Superpave Asphaltic Concrete Structural Course	19,500	SY	\$ 50.00	\$ 975,000.00
	pavement markings	1	LS	\$ 200,000.00	\$ 200,000.00
	4" Concrete Sidewalk	500	SY	\$ 55.00	\$ 27,500.00
	Concrete Driveways	100	SY	\$ 70.00	\$ 7,000.00
	Permit Fees (FDOT, ROW, FDEP)	1	LS	\$ 7,000.00	\$ 7,000.00
13	<b>Landscape Restoration</b>	<b>1</b>	<b>LS</b>	<b>\$ 26,660.00</b>	<b>\$ 26,660.00</b>
	Sodding/Grassing	2,666	SY	\$ 10.00	\$ 26,660.00
14	<b>Easment Acquisitions</b>	<b>1</b>	<b>LS</b>	<b>\$ 170,000.00</b>	<b>\$ 170,000.00</b>
	15' Easement	170	SY	\$ 1,000.00	\$ 170,000.00
	<b>Third Party Testing Allowance</b>	<b>1</b>	<b>LS</b>	<b>\$ 150,000.00</b>	<b>\$ 150,000.00</b>
	<b>Contractor Overhead and Profit</b>			<b>12%</b>	<b>\$ 3,172,962.54</b>
	<b>ESTIMATED CONSTRUCTION COST</b>				<b>\$ 29,770,000.00</b>
	<b>CONTINGENCY</b>				<b>10% \$ 2,977,000.00</b>
	<b>TECHNICAL SERVICES DURING CONSTRUCTION</b>				<b>5% \$ 1,490,000.00</b>
	<b>TOTAL ESTIMATED COST</b>				<b>\$ 34,237,000.00</b>
<b>NOTE - The Estimated Construction Cost and the Technical Services During Construction Totals have been rounded to the nearest \$10,000.</b>					

## APPENDIX E. REQUEST FOR INCLUSION



# Florida Department of Environmental Protection

## REQUEST FOR INCLUSION ON THE CLEAN WATER PRIORITY LIST

Clean Water State Revolving Fund Program  
3900 Commonwealth Blvd., MS 3505, Tallahassee, FL 32399-3000

Process to receive a State Revolving Fund (SRF) Loan. This Request for Inclusion (RFI) form, Form RFI 1 per subsection 62-503.200(33), F.A.C., lets us know that you are interested in obtaining an SRF loan. Each RFI will be assigned a project engineer to assist you throughout the SRF funding process. The information contained in the RFI is used to determine a priority score for your project; and the priority score is used to rank projects on the SRF priority list. Only projects ranked on the fundable portion of the priority list will receive consideration for a loan. Your project engineer will assist you in understanding all program requirements necessary before you are asked to submit a loan application, Form Application 1 or Form Application 2 per paragraph 62-503.430(1)(a), F.A.C. Please note that costs incurred before the adoption of the project on the fundable or waiting portion of the priority list are ineligible for reimbursement.

**Type of Loan Requested in this Application.** Select only one loan category and project type.

**Loan Category:** Planning  Design  Inflow/Infiltration Rehabilitation  Construction   
**Project Type:** Design/Bid/Build  Design/Build (D/B)  Construction Manager at Risk (CMR)

Note: Procurement of professional services must meet the requirements of the Consultants' Competitive Negotiation Act, Section 287.055, F.S.

**1. Applicant's Name and Address.**

Project Sponsor: Brevard County Utility Services Department Contact Person: Edward Fontanin, PE Title: Utility Services Director  
2725 Judge Fran Jamieson Way, Building A, Suite 213 Viera Brevard FL 32940  
(street address) (city) (county) (state) (zip code)  
321.633.2091 utility.development@brevardfl.gov  
(telephone) (ext.) (email address)  
Contact Person Address (if different): \_\_\_\_\_  
(street address) (city) (state) (zip code)

**2. Name and Address of Applicant's Consultant (if any).**

Firm: Wade Trim Contact Person: Kyle Scott Title: Senior Project Manager  
3790 Dixie Highway NE, Suite D Palm Bay Brevard FL 32905  
(street address) (city) (county) (state) (zip code)  
321-244-7389 kscott@wadetrim.com  
(telephone) (ext.) (email address)

**3. Certification by Authorized Representative.** I certify that this form and attachments have been completed by me or at my direction and that the information presented herein is, to the best of my knowledge, accurate.

edward.fontanin@brevardfl.gov 12/22/25  
(email address) (date)  
Edward Fontanin, PE Utility Services Director  
(name, typed) (title)

(signature)

# REQUEST FOR INCLUSION ON THE CLEAN WATER PRIORITY LIST

## 4. Eligible Projects.

- a. Stormwater management facilities, such as detention/retention facilities, treatment facilities, etc. sponsored by a local government (eligible under Section 212 of the amended Clean Water Act).
- b. Wastewater management facilities, such as sewers, pump stations, treatment plants, reuse facilities, sludge facilities, etc. sponsored by a local government (eligible under Section 212 of the amended Clean Water Act).**
- c. Nonpoint source pollution control best management practices for agriculture, silviculture, on-site treatment and disposal, wetlands, mining, marinas, brownfields or groundwater protection sponsored by any entity (eligible under Section 319 or 320 of the amended Clean Water Act).

## 5. Project Information (Please attach).

- a. Describe the project, its location, the scope, why it's needed and the environmental benefit.
- b. Attach maps showing system boundaries, existing and proposed service area, and project area.

## 6. Estimated Costs (Clean Water Act Section 212, 319, and 320).

a. Planning and/or SSES including geotechnical studies and surveying	N/A
b. Design	
c. Special Studies including feasibility studies	N/A
d. Eligible Land (necessary land divided by total land times purchase price)	N/A
e. Construction, Equipment, Materials, Demolition and Related Procurement	\$ 16,720,000
f. Construction Contingency (10% of Item e)	\$ 1,672,000
g. Technical Services during Construction	\$ 840,000
h. Sum of Items a. through g.	\$ 19,232,000

## 7. Project Schedule.

(Month and Year)

a. Submit the planning or SSES documentation	3/2026
b. Submit the design documents, obtain permits, and acquire sites (as necessary)	6/2026
c. Start activity (such as construction or non-structural best management practice)	11/2026
d. Complete activity (such as construction or non-structural best management practice)	11/2027

## 8. Population

a. Population served by the system	58,260
b. Population to be served by the project	29,610

## 9. Project Priority

- a. Baseline Priority Categorization.

In the Table below, identify each of the project components for which the project qualifies and provide the component's construction cost. The baseline priority score (BPS) will be determined by prorating each component. The project sponsor must provide documentation that supports the selection of a base priority score of 350 points or greater.

# REQUEST FOR INCLUSION ON THE CLEAN WATER PRIORITY LIST

<u>Project Component</u>	<u>Priority Points</u>	<u>Component Construction Cost</u>
1. Eliminate a documented acute or chronic public health hazard. Examples include elimination of failing septic tanks, failing package plants, or elimination of sanitary sewer overflows.	500 points	\$ 19,232,000
2. Implement a project included in, or to be implemented as a direct result of, an adopted Basin Management Action Plan or a Reasonable Assurance Plan approved pursuant to section 403.067, F.S.	450 points	\$ 0
3a. Protect surface or ground water by preventing or reducing a documented source of pollution, pollution reductions necessary to meet regulatory requirements; or		
3b. Projects or activities by local governments or on-site system management entities, under section 319 of the Act, that correct septic tank failures in springsheds of first magnitude springs; or correct septic tank contributions to nutrient impaired spring systems.	400 points	\$ 0
4. Address a compliance problem documented in an enforcement action where the Department has issued a notice of violation or entered a consent order with the project sponsor.	375 points	\$ 0
5. Meet the criteria for a Green Project; correct excessive inflow/infiltration or other issues within the collection and transmission system that cause sanitary sewer overflows; scheduled rehabilitation; replacement; repair described in an approved asset management plan; or reuse that replaces an existing or proposed demand on a water supply.	350 points	\$ 0
6. Planning and design loans; projects for the installation of wastewater transmission facilities to be constructed concurrently with other construction projects occurring within or along a transportation facility right-of-way; or for rehabilitation, replacement or repair not included in an approved asset management plan.	340 points	\$ 0
7. Projects that construct other reclaimed water systems or residuals reuse systems that do not meet the criteria of component 5. above.	300 points	\$ 0
8. Ensure compliance with other enforceable standards or requirements.	200 points	\$ 0
9. Timely submitted projects that otherwise meet the requirements of the Act (including land or wastewater system acquisition projects).	100 points	\$ 0

**b. Restoration and Protection of Special Water Bodies.**

In order to qualify for a base score multiplier, identify which of the water bodies listed below that the project will assist in restoring or protecting; and reference the location in existing documentation where substantiating information may be found or attach other such substantiating information. If none are selected, the multiplier equals 1.0. If one or more are selected, the multiplier is 1.2. Supporting documentation must be provided for items selected.

1. A priority water body identified in an adopted Surface Water Improvement and Management (SWIM) Plan.
2. A water body classified as Outstanding Florida Waters or Wild and Scenic Rivers.

**c. Projects that document any of the following shall have bonus points added to the priority score after the adjustment under paragraph (b) above, as indicated. Items 3, 4 and 5 below are only applicable to financially disadvantaged small communities.**

1. Elimination of Ocean Outfalls. 15 points
2. Consistency with an Integrated Water Resource Management (One Water) plan. 15 points
3. Population of 10,000 or less as of most recent decennial census, and affordability index less than or equal to 100.  
1000 divided by the affordability Index = \_\_\_\_\_ points.
4. Negative population trend as defined in 62-505.300(2)(c)2. F.A.C. 25 points
5. End of useful life as defined in 62-505.300(2)(c)3., F.A.C. 25 points

Return the completed form to the State Revolving Fund Program, 3900 Commonwealth Blvd., MS 3505, Tallahassee, Florida, 32399-3000. The form may be scanned and emailed to [SRFRFI@FloridaDEP.gov](mailto:SRFRFI@FloridaDEP.gov).

## **Request for Inclusion Attachment List**

The following attachments are provided to support the Request for Inclusion (RFI) on the Clean Water Priority List and to substantiate the project description, priority scoring, and environmental benefit.

### **Attachment Name and Purpose**

#### **Attachment 5a – Project Description, Location, and Scope**

Provides a narrative description of the proposed project, including the project location, scope of improvements, and justification for the project need and environmental benefit, as required under Section 5 of the RFI.

#### **Attachment 5b – Project Location and Mapping**

Includes maps depicting the South Beaches Wastewater Service Area, the proposed force main alignment, and the relationship of the project to surrounding communities and receiving waters, as required under Section 5 of the RFI.

#### **Attachment 9a – Hydraulic Modeling Technical Memorandum**

Documents the hydraulic modeling assessment performed for the South Beaches collection system, including evaluation of existing and future wet-weather conditions and demonstration of the effectiveness of the proposed improvements in reducing surcharge and SSO risk, as required for Section 9 of the RFI.

#### **Attachment 9b – Special Water Body Documentation (Indian River Lagoon)**

Provides supporting documentation demonstrating that the project protects the Indian River Lagoon, a priority water body with an adopted SWIM Plan and Basin Management Action Plan (BMAP), supporting eligibility for priority score multipliers, as required for Section 9 of the RFI.

**Florida Department of Environmental Protection  
Request for Inclusion on the Clean Water Priority List**

**Section 5**

**Project description, location, scope, and why its needed for the environmental benefit.**

**Project Description**

The project consists of capacity and reliability improvements to the South Beaches Wastewater Collection System, which serves the barrier island communities in Brevard County, Florida, adjacent to the Atlantic Ocean and the Banana River. The service area is geographically constrained, environmentally sensitive and subject to intense wet-weather flow conditions.

The installation of a new 30-inch diameter parallel force main along the barrier island corridor shall increase wastewater conveyance capacity from the South Beaches service area to the South Beaches Water Reclamation Facility. This force main will provide hydraulic relief, redundancy and improve system resiliency to the existing conveyance infrastructure, which currently experiences SSO conditions during peak wet-weather events.

A comprehensive hydraulic modeling assessment of the South Beaches collection system was performed to evaluate existing and future conditions under dry-weather and wet-weather scenarios. The modeling demonstrated that the proposed force main improvement significantly reduce hydraulic exceedances, decrease the probability of sanitary sewer overflows (SSOs), and improve operational reliability within the barrier island system. The project supports the County's long-term wastewater master planning objectives and aligns with ongoing efforts to protect adjacent surface waters and environmentally sensitive coastal resources.

**Location**

The project is located within the South Beaches Service Area on the barrier island of Brevard County, Florida, serving the communities of Satellite Beach, Indian Harbour Beach, and adjacent unincorporated areas. The improvements are situated within a coastal, environmentally sensitive corridor adjacent to the Indian River Lagoon, which is subject to a Basin Management Action Plan (BMAP) due to nutrient impairment. The project improves wastewater conveyance within this constrained barrier island system and supports protection of downstream surface waters.

**Scope**

The project consists of constructing a new 30-inch diameter parallel force main along South Patrick Drive to increase wastewater transmission capacity within the South Beaches Service Area. The scope includes:

- Installation of approximately 7,300 linear feet of 30-inch force main.
- Connection of the new force main to the existing upstream lift station and upstream and downstream system.
- Installation of valves, air release assemblies, and appurtenances required for safe and reliable operation.
- Restoration of roadway and affected utilities following construction.
- Pressure testing, disinfection, and commissioning of the new force main.

This project does not include additional planning or design activities under this RFI. The RFI is solely for the construction phase of the new 30-inch parallel transmission main.

**Florida Department of Environmental Protection  
Request for Inclusion on the Clean Water Priority List**

**Section 5**

**Project description, location, scope, and why its needed for the environmental benefit.**

**Why it's needed for the environmental benefit?**

The South Beaches wastewater system experiences high pump operating levels, reduced conveyance capacity, and increased risk of SSOs during wet-weather events. Existing force mains and lift stations operate near or at their hydraulic limits, where surcharging and reduced pump capacity are documented during storm events.

The new 30-inch parallel force main and associated system improvements will:

- Reduce the probability of SSOs that could impact surface waters and the Indian River Lagoon, one of Florida's most environmentally sensitive water bodies.
- Support reliable wastewater service for current and future residents within the barrier island communities.
- Improve system resiliency during storm events and emergency operations.
- Reduce surcharging and hydraulic bottlenecks in the transmission system.

This project directly supports the County's environmental goals by protecting water quality, minimizing pollutant loading, and improving wastewater infrastructure within the Indian River Lagoon watershed.



B20

S28





S15

Banana River Dr


Proposed Parallel  
30-inch Force Main

S Patrick Dr

E Eau Gallie Blvd

-  Lift Station
-  Existing Force Main
-  Proposed Project
-  Project Area

Note: Not to Scale





 Information provided on this map is accurate to the best of our knowledge and is subject to change on a regular basis and without notice. While Wade Tim makes every effort to provide useful and accurate information, we do not warrant the information to be authoritative, complete, factual, or timely. Information is provided on an "as is" and an "as available" basis.

Pineda Cswy

E Eau Gallie Blvd

5th Ave

Proposed Parallel  
30-inch Force Main

-  Existing Service Area
-  Proposed Service Area
-  Proposed Project
-  SBWRF

Note: Not to Scale



Information provided on this map is accurate to the best of our knowledge and is subject to change on a regular basis and without notice. While Wade Trim makes every effort to provide useful and accurate information, we do not warrant the information to be authoritative, complete, factual, or timely. Information is provided on an "as is" and an "as available" basis.



**South Beaches Service Area Hydraulic Model Expansion  
and Improvement Study**

**DATA REVIEW AND MODEL SCENARIOS  
TECHNICAL MEMORANDUM**

November 7, 2025



## EXECUTIVE SUMMARY

The South Beaches Service Area Hydraulic Model Expansion and Improvement Study was completed to identify cost-effective projects that reduce the probability of sanitary sewer overflow occurrences and improve long-term system reliability for Brevard County Utility Services Department (BCUSD).

Building on prior regional work, the team expanded the hydraulic network to include all 15 lift stations manifolded to the primary force main, integrated updated GIS, SCADA, pressure monitoring, rainfall, and as-built information, and produced a validated and calibrated SewerGEMS model suitable for planning and design support.

The model was used to evaluate existing and future conditions, including Average Annual Daily Flow (AADF), and a Future (Year 2045) 24-hour, 25-year wet weather flow (WWF) event selected to be consistent with state agency and BCUSD objectives. Results indicate that lift stations in the northern portion of the service area exhibit the greatest sensitivity to surcharge and elevated SSO risk under the 2045 WWF scenario, while stations south of SBWWTF generally retain available capacity. These findings focused the improvement concepts on relieving head, upsizing pumping capacity, and adding targeted storage where it is most effective.

An optimization framework then tested thousands of project combinations, balancing capital cost against performance penalties for SSOs, high/low velocities, and high pressures. A preferred scenario was selected as the optimized solution because it achieves the targeted hydraulic performance and reliability with lower complexity and greater cost efficiency compared to the alternatives.

The selected scenario comprises a coordinated set of projects that address the primary constraints: B06 replacement (capacity and reliability gains), a parallel force main along South Patrick (30-in corridor) to increase conveyance and redundancy, a 24-in interconnect on Riverside Drive to provide a relief pathway and operational flexibility, and major upgrades at B20 to manage both base and peak flows. The B20 work includes a 20-in force main re-route from the northern service area to B20's wet well, a new dry-weather triplex station with 200 HP pumps, a wet-weather duplex station with 330 HP pumps, and a 0.70 MG equalization basin. Collectively, these projects reduce SSO probability, improve operability, and strengthen system resiliency in the areas of greatest need.

A construction sequencing plan prioritizes early conveyance relief and redundancy, completing the Riverside interconnect, South Patrick parallel force main, and B06 replacement in parallel, followed by the B20 dry-weather, wet-weather, and equalization facilities, and then the hydraulic isolation north of B20. The recommended program equips BCUSD with a clear, defensible path to reduce the probability of SSO occurrences under future wet-weather conditions, enhance operational flexibility, and invest capital where it most improves reliability. The study provides a calibrated planning tool, prioritized projects, transparent cost assumptions, and an implementation roadmap to guide near-term decisions and long-term resilience.

**9b. Restoration and Protection of Special Water Bodies.**

In order to qualify for a base score multiplier, identify which of the water bodies listed below that the project will assist in restoring or protecting; and reference the location in existing documentation where substantiating information may be found or attach other such substantiating information. If none are selected, the multiplier equals 1.0. If one or more are selected, the multiplier is 1.2. Supporting documentation must be provided for items selected.

1. A priority water body identified in an adopted Surface Water Improvement and Management (SWIM) Plan.
2. A water body classified as Outstanding Florida Waters or Wild and Scenic Rivers.

**SWIM Plan Documentation**

The Indian River Lagoon has a formally adopted **SWIM Plan** through the St. Johns River Water Management District and the South Florida Water Management District. Indian River Lagoon Aquatic Preserves System Management Plan, fully approved December 13, 2017 includes:

- Banana River Aquatic Preserve
- Indian River-Malabar to Vero Beach Aquatic Preserve
- Indian River-Vero Beach to Ft. Pierce Aquatic Preserve
- Jensen Beach to Jupiter Inlet Aquatic Preserve

See attachment and link.

Management Plan Link:

<https://floridadep.gov/rcp/aquatic-preserve/documents/indian-river-lagoon-aquatic-preserves-system-management-plan?utm.com>

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November 2016



# Indian River Lagoon Aquatic Preserves System Management Plan

Including Banana River, Indian River – Malabar to Vero Beach, Indian River – Vero Beach to Ft. Pierce, and Jensen Beach to Jupiter Inlet Aquatic Preserves



**Florida Department of Environmental Protection  
Florida Coastal Office**

3900 Commonwealth Blvd., MS #235, Tallahassee, FL 32399  
[www.aquaticpreserves.org](http://www.aquaticpreserves.org)



## Mission Statement

The Florida Coastal Office's mission statement is: Conserving and restoring Florida's coastal and aquatic resources for the benefit of people and the environment.

The four long-term goals of the Florida Coastal Office's Aquatic Preserve Program are to:

1. protect and enhance the ecological integrity of the aquatic preserves;
2. restore areas to their natural condition;
3. encourage sustainable use and foster active stewardship by engaging local communities in the protection of aquatic preserves; and
4. improve management effectiveness through a process based on sound science, consistent evaluation, and continual reassessment.



Cover Photo: [www.indianriverbyair.com](http://www.indianriverbyair.com)

# Executive Summary

<b>Indian River Lagoon Aquatic Preserves System Management Plan, including Banana River, Indian River – Malabar to Vero Beach, Indian River – Vero Beach to Ft. Pierce, and Jensen to Jupiter Inlet aquatic preserves.</b>	
Lead Agency:	Florida Department of Environmental Protection's (DEP) Florida Coastal Office (FCO)
Common Name of Property:	Banana River, Indian River – Malabar to Vero Beach, Indian River – Vero Beach to Ft. Pierce, and Jensen to Jupiter Inlet Aquatic Preserves
Location:	Brevard, Indian River, St. Lucie, Martin and Palm Beach counties, Florida
Acreage Total:	91,000 Acres
<b>Acreage Breakdown for FCO Management Units According to Florida Natural Areas Inventory (FNAI) Natural Community Types</b>	
FNAI Natural Communities	Acreage according to GIS
Seagrass Bed	35,898 acres
Tidal Marsh	60 acres
Tidal Swamp	1,857 acres
Freshwater Tidal Swamp	59 acres
Consolidated Substrate	Unknown
Unconsolidated Substrate	Unknown
Composite Substrate	Unknown
Algal Bed	Unknown
Management Agency:	DEP's FCO
Unique Features:	In addition to its environmental importance, the Indian River Lagoon is attributed to providing more than \$3.7 billion in benefits annually to citizens and visitors of counties bordering the lagoon.
Archaeological/ Historical Sites:	The Florida Department of State's Division of Historical Resources Master Site File indicates there are scores of historical sites adjacent to the Indian River Lagoon Aquatic Preserves System. Archaeological sites date from 10,000 BC to 1700 AD and include Spanish Fleet Survivors and Salvors Camp, Jungle Trail, and Mount Elizabeth. Historical sites include architectural, military, social, transportation, commerce and conservation sites.
<b>Management Needs</b>	
Ecosystem Science:	There is a very large and committed group of research institutions and agencies that conduct extensive monitoring, research, and modelling in the Indian River Lagoon. The aquatic preserve fosters strong working partnerships with these research institutions and agencies, and assists with equipment and staff as needed to support research and monitoring projects. These programs provide the basis for making sound resource management decisions.
Resource Management:	Continue to focus on protecting natural resources by restoring altered areas that contribute to reduced water quality and implementing management practices that maintain or improve viable habitats and populations within the aquatic preserve.
Education & Outreach:	Continue volunteer island enhancement work days, Eagle scout projects, Adopt-A-Spoil Island Program, volunteer shoreline planting and oyster reef deployment events. Improve signage at boat ramps. Continue participation in the Indian River Lagoon Envirothon for middle and high school classrooms and Adopt-A-Mangrove workshops.
Public Use:	Rapid population growth is expected to return to coastal areas of Florida. Information and data contained within this Plan is intended to assist aquatic preserve managers, working closely with other state entities and local governments, to make decisions that will assure a balance between sustainable resource protection and waterway management.

Public Involvement:

Public support is vital to the success of conservation programs. The goal is to foster understanding of the problems facing these fragile ecosystems and the steps needed to adequately manage this important habitat. Indian River Lagoon Aquatic Preserves System staff held three public meetings (September 22-25, 2014) and an advisory committee meeting (September 26, 2014) at locations near the aquatic preserves to receive input on the draft management plan. An additional public meeting was held in Tallahassee June 17, 2016, when the Acquisition and Restoration Council reviewed the management plan.

**Coastal Zone Management Issues**

The State of Florida has more than 16 million residents and more than 76 million visitors annually. Florida has the second longest state coastline, and nowhere else in the country are so many people so close to such an extensive and economically valuable coastline. Within these coastal communities, recreational activities such as boating and fishing shape community culture and provide positive economic growth. However, rapid coastal development, increasing public access, and changing land use patterns are complicating regulation and management efforts within valuable aquatic systems. To protect and enhance the unique coastal resources throughout Florida, a variety of issues that affect water quality, quantity, and growth management must be addressed. Challenges facing the Indian River Lagoon Aquatic Preserves System include low water quality that is further degraded by unnatural water management practices, the need for hands-on resource management, rapid conversion of agricultural lands to urban developments deemed to have significant regional impact, little understanding of public use trends, and the impacts of public use on the protected resources.

**Goals**

The management goals and associated strategies outlined in this document provide an action plan that will be used to address these challenges over the next decade. Because of limited resources and the overlap of jurisdictional boundaries, success will depend on partnerships formed with private, local, regional, state, and federal organizations and agencies. Partnerships will be formed to promote the maintenance or improvement of the quality of water reaching the preserve to meet the needs of the natural resources. Routine assessment of water quality status is required to document change over time. Resource management goals that will improve water quality include hydrologic restoration, muck removal, and creation of oyster reef habitat. Documentation of natural resource location and extent will allow managers to evaluate the success of large-scale watershed restoration projects. Maintenance of a safe environment for fish, wildlife, and user groups, and the promotion of low-impact recreational opportunities are also important goals that will be addressed by preserve staff.

**FCO/Trustees Approval**

**FCO Approval:** 3/29/16      **ARC approval date:** 6/17/16      **Trustees approval date:** 12/13/17  
**Comments:**