Minutes
Mandatory Pre-Bid Conference
Informational Meeting
For Private Public Partnership (P3)
Qualifying Project Involving the Potential
Redevelopment of the Lake Park Harbor Marina

Town of Lake Park, Florida
Thursday, July 8, 2021 11:00 a.m.
Town Hall Commission Chamber, Town Hall, 535 Park Avenue

The Mandatory Pre-Bid Conference was conducted on Thursday, July 8, 2021 at 11:00 a.m. Present were Town Manager John D'Agostino, Marina Director Stephen Bogner, Community Development Director Nadia DiTommaso, Finance Director Lourdes Cariseo, Public Works Director Roberto Travieso, Water Resource Management Associate Consultant Raul Mercado, Strategic Development Initial (SDI) Consultant Don Delaney, and Town Clerk Vivian Mendez.

Town Manager D'Agostino called the meeting to order at 11:02 a.m. and explained that the purpose of the meeting was to introduce the key departments so that the bidders would get an understanding of what was expected with this project. He explained the Town's vision for the Marina. He explained that the submittals would be kept confidential.

Mr. Don Delaney explained the terms of engagement for this project (see Exhibit "A"). He explained the difference between the Informational Sessions and the Negotiation Sessions. He referred to Florida State Statute 255.065(15)(d)1. He explained how to submit questions or public records request to the Town Clerk's Office. He explained that the offerors presentations were due in 120-days to prepare to go before the Town Commission.

Town Manager D'Agostino reviewed the Town's Commission visioning of the Marina (Exhibit "B").

Community Development Director DiTommaso explained the role of Community Development Department to this project (see Exhibit "C"). Town Manager D'Agostino explained that the Town has invested in ShotSpotter, which has assisted in reducing the crime in the Town.

Water Resource Management Associates Consultant Raul Mercado explained the Stormwater Master Plan (see Exhibit "D").

Marina Director Stephen Bogner provided his career history and the Lake Park Harbor Marina history.

Public Works Director Roberto Travieso explained the role Public Works would have as it relates to the project.

Town Manager D'Agostino invited the offerors to ask questions.

Mr. Larry Zabic, Forest Development LLC asked when the interim agreement would be available. Mr. Delaney stated that the terms and conditions part of the agreement would become available as part of the negotiation meetings. The comprehensive agreement would be created later in the process.

Mr. Chris Rombom, Creative Choice Group, when will the negotiation sessions would begin. Mr. Delaney stated that in about 15-business days. In the negotiation sessions, would be recorded and held as per the Florida State Statute. Mr. Rombom asked for clarification regarding asking for meetings with staff through the Town Clerk's Office, should the purpose of the meeting be included. Mr. Delaney stated "yes", so that staff could prepare for the meeting.

Mr. Denish Bower, Creative Choice Group commented on how well the information session was conducted. He offered suggestions of other companies that could assist the Town.

Town Manager D'Agostino explained the Town's Cone of Silence.

ADJOURNMENT:

The meeting adjourned at 12:22 p.m.

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Town Clerk Vivian Mendez, MMC

1. Rules of Engagement

2. Recorded Informational Sessions

3. Recorded Informational Sessions

Exhibit "A"

4. Questions from P3 Candidates

5. Information in public records request protocol

6. Request protocol for and meetings with Town staff such as Marina Director (formally request)

7. Offer to provide tours for Elected Officials, Manager, and the Town's P3 Negotiator (formally request)

8. Terms and conditions of Service Agreements (Section 255.065(1)

9. Marina deeds and documents affecting Service Agreement (formally request)

10. County/Town documents controlling shared surface parking parcel (formally request)

11. Specific statutory language affecting Service Agreements (Section 255.065(6)

12. Terms and conditions of Interim Agreement (Section 255.065(6)

13. Specific statutory language affecting Interim Agreements (Section 255.065(6)

14. Relationship of Interim Agreement to Comprehensive Agreement

15. Time schedule for completion of terms and conditions for both Service Agreements and Interim Agreements

16. Concurrent Negotiation Sessions with Manager, P3 Negotiator, and individual P3 Teams.

17. Concurrent Closed Workshops with Manager, P3 Negotiator and Mayor and Commission

18, Concurrent weekly briefing sessions between the Manager and P3 Negotiator

Exhibit "B"

Town of Lake Park Marina Redevelopment
The Town of Lake Park Marina and its Role in Climate Change/Sustainability Efforts

The Town of Lake Park, originally born as Kelsey City, was the first zoned municipality in Florida (1923). With an area of 2.5 square miles and a population of approximately 9,000 people, the Town of Lake Park aging drainage infrastructure lacks capacity to address flooding conditions that have been exacerbated by the ongoing effects of climate change including higher intensity rainfall and Sea Level Rise affecting high tides along 0.8 miles of the Lake Worth Lagoon (LWL) intracoastal waterfront. To address these new challenges, the Town has embarked in the development of a new Stormwater Master Plan (SWMP) applying state-of-the- art planning approaches including Green Infrastructure-based Low Impact Development Best Management Practices (GI/LID BMP's) for stormwater management and climate change abatement town-wide. GI methods include the use of Raingardens, Bioswales, Bioretention, Underground Filtration Storage Chambers.

The Town has endorsed the application of EPA's Green Streets, Green Jobs, Green Towns (G3) Initiative principles to reduce runoff through the use of GI. The Town realizes that investing in Green Streets and updating municipal-owned sites with GI will not only update the Town's stormwater infrastructure to meet 21st century standards, but will also be the catalysts through its CRA effort, to make the coastal Town more sustainable and better prepare to adapt to climate change stressors such as Sea Level Rise. The new SWMP is intended to provide the Town of Lake Park with a Long-Range stormwater management planning tool or "Road Map" that will allow for the rehabilitation of the existing drainage system infrastructure over the next 20 years and will provide the Town with a forward-looking approach and a framework through which sustainable re-development practices can be employed as the town progresses through its natural growth and re-development cycle.

Through CRA efforts and other public outreach efforts, the Town's Green Streets stormwater master plan enhancement program can attract both investment and prospective homeowners particularly millennials and waterfront users. The Town's Stormwater Masterplan provides a vehicle for a functional modern rehabilitation of the Town's drainage system while also supporting economic redevelopment in both residential, commercial and waterfront areas. These will be accomplished by integrating Best Management Practices (BMPs) in stormwater management Town-wide through new stormwater design standards, education and incentive programs for homeowners and developers who incorporate green infrastructure BMP elements into their properties and redevelopment plans. Kelsey Park and the Town of Lake Park P3 Redevelopment are examples of this Town rebranding efforts and will aide in the "Renaissance" of Lake Park.

The Town's Marina is the site of major stormwater infrastructure changes consisting of the underground replacement of a 72" CAP outfall (Southern Outfall) that will be provided with a Green infrastructure based Biodetention Facility for treatment of runoff from approximately 40% of the Town's watershed including the US Highway 1 right-of-way. The Town has also undertaken a coastal Vulnerability, Risk and Adaptation Assessment for planning and implementing new climate conscious development strategies at its waterfront along Lake Worth Lagoon. The Town Marina site is a key component to address the current vulnerability of increasing SLR levels. The Marina site (and adjacent portions of Lake Shore Drive) will be regraded above projected SLR (2060/207) levels to ensure the long-term sustainability of proposed waterfront development efforts. Unlike most of South Florida municipalities where sustainability is a theme of discussion, the Town of Lake Park has already quantified the level of efforts required to achieve sustainability along its waterfront and is committed to working with potential developers to achieve a sustainable, resilient and environmentally friendly project outcome.

The Role of Operations & Maintenance Program To Meet Sustainability Goals

the Town of Lake Park, with a population of approximately 9000 and 1.8 square mile physical area was founded in the 1920's and has an aging drainage infrastructure. Town's existing drainage system consists of approximately 10.6 miles of stormsewers and 589 hydraulic structures, with drainage pipes ranging in size from 8-inch to 72-inch in diameter. The stormsewer system database indicates that 88.4% of the network is owned and operated by the Town of Lake Park, followed by 9.6% maintained by Palm Beach County (along Old Dixie Highway, Northlake Boulevard, Tenth Street and Prosperity Farms Road). Private sewers account for 1.6% of the total pipe length.

The Town has embarked in the updating of the stormwater management and drainage infrastructure through the development of a new Stormwater Masterplan (SWMP)and the application of state-of-the- art planning approaches including Green Infrastructure-based Low Impact Development Best Management Practices (GI/LID BMP's) for stormwater management and climate change abatement town-wide. The Town is also undertaken a Vulnerability, Risk and Adaptation Assessment for planning and implementing new climate conscious development strategies.

The main goal of the SWMP update is integrating Best Management Practices (BMPs) in stormwater management Town-wide through new stormwater design standards, education and incentive programs for homeowners and developers who incorporate green infrastructure BMP elements into their properties and redevelopment plans. Example BMPs include green roofing, rainwater harvesting, infiltration systems in combination with traditional conveyance and end of pipe infrastructure. Low Impact Development (LID) is a planning and design approach that aims to mimic naturalized water balances. It combines infiltration, evaporation and transpiration while limiting runoff. The goal of LID is to reduce the frequency with which the Town's stormwater system releases runoff into the downstream end of pipe conveyance system. The Town of Lake Park Marina will include a specific application of GI/LID BMP's. A Biodetention is proposed in conjunction with the replacement of a 72" CAP outfall for treatment of runoff prior to discharging to the Lake Worth Lagoon. The Marina site redevelopment will also incorporate new seawall and finish road grades structural improvements to meet long term (20270 Sea Level Rise sustainability goals. Biofilters may be especially useful in highly urban areas, such as the Marina where land for retention or wet detention systems is scarce and soils are inappropriate for retention systems.

The Town of Lake Park will utilize green infrastructure to manage stormwater long term. Practices such as rain gardens, infiltration swales, bioretention/bioretention, underground chambers, green roofs, pervious and pavement and other Best Management Practices that keep rainwater close to the point of origin and prevent runoff. These new facilities will have to be properly maintained and the Town will institute a certified O&M program through the hiring of certified green infrastructure technicians (GI/LID Inspectors) that will be responsible for tracking these structures, maintaining the vegetation both density and variety and correcting any system problems such as erosion or clogged pipes. The CGI Inspector will be responsible for providing construction oversight (inspection and documentation) for land disturbance activities and various stormwater/wastewater and green infrastructure construction projects throughout the Town of Lake Park.

The Town of Lake Park Public Works Department is committed to supporting the 20-year SWMP goal of Green Infrastructure BMP's implementation to meet long term climate change sustainability goals. To this end the PWD will be adding additional GI/LID BMP maintenance crews to make sure that any investments in the redevelopment of the Town of Lake Park Marina is cost-effective and successfully sustained.

Notes:

- Year 2070 Projected Mean Higher High Water Elevation 3.96 NAVD88 (NOAA Intermediate High)

- Fill depths shown are relative to the existing ground up to elevation 4.50 NAVD88

- Average fill depth = 1.3 feet

- Estimated fill volume = 13,600 cubic feet

Legend

- Marina Area

Fill Depth (feet)

- < 0
- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 4.12

125 62.5 0 125 Feet

	TOWN OF LAKE PARK, FL		Lake Park Marina Fill Depths to Elevation 4.50 NAVD88	SCALE: 1 inch = 125 feet	BY: A.M.
				COUNTY: PALM BEACH	CHECKED: R.M.
				STATE: FLORIDA	REVISED: N/A

ATACHMENT 27
AREA OF DISTURBANCE DETAILS

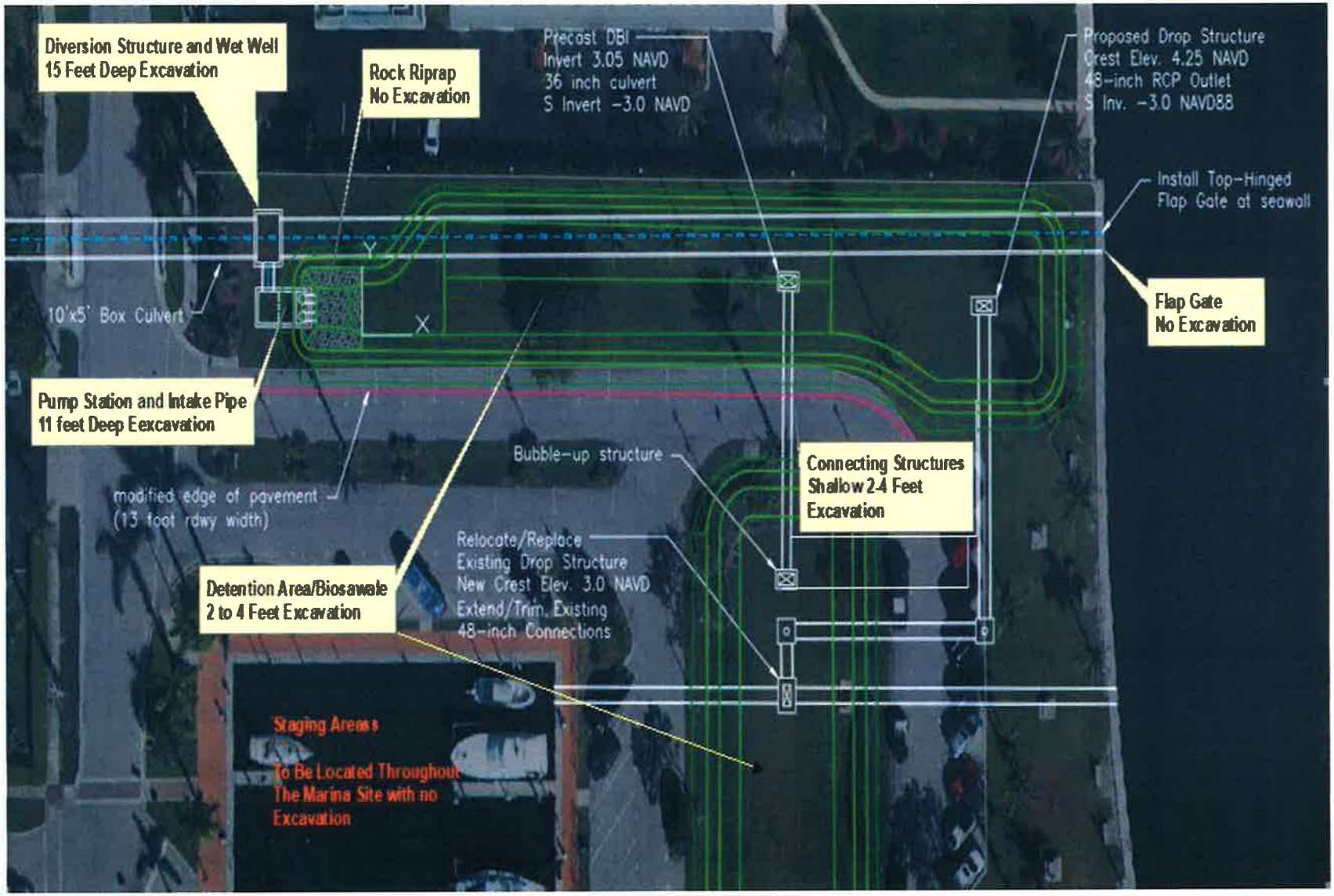

Exhibit "C"

WHY LAKE PARK AND WHY NOW?

Lake Park is positioned for successful growth and provides flexible development options. The approximate 2.5 square mile Town has a lot to offer and here are some highlights...

PROJECTS / REGULATORY BENEFITS & HIGHLIGHTS

- Enclosed is a map of the US-1 corridor that includes the **Federal Highway Mixed Use District Overlay** – this is an important area because this is an area that allows for SIGNIFICANT redevelopment intensities and densities BY RIGHT, with additional flexibilities pursuant to certain public improvement contributions. This is also an area that can be modified to include a larger boundary to promote the redevelopment of surrounding areas.

- **Kelsey/Lakeshore Park** *(soon to be renamed Kelsey Park in its entirety)*...has been workshopped for discussions on repurposing this additional waterfront gem...Staff's next step is to create a Master Plan with the help of a consultant who will hopefully be hired sometime in October 2021 so that we can move forward on the many repurposing possibilities in order to better link this open space gem to the community and the surrounding area development efforts.

- **Industrial Development(s)** - The Town has several industrial developments in the pipeline, one of which is a $17M (construction value) / approximately $60M finished value office/warehouse project (Silver Beach Industrial, 371,928 SF, between Silver Beach Road and Joule Road, 24+ acres). Additional projects include a Lake Park Innovation Center (23,940 SF, innovative, start-up business flex space in the Congress Avenue Business Park PUD), a Coston Marine Office/Warehouse (6,640 SF, south side of Watertower Road), and a Watertower Industrial Office/Warehouse project (8,363 SF, south side of Watertower Road). Why is this relevant? Manufacturing is the key to economic growth and underpins inclusive and sustainable development. It creates additional services and jobs, helps reduce poverty by increasing employment and spending, thus creating a need for housing and additional retail/service industry services and provides for an overall sustainable economic engine for a community and surrounding area that complements mixed-use growth patterns.

- **Additional Mixed-Use Area** – The **C-3 area** in the northeast corner of the Town is also being re-imagined as an area that is suitable for mixed-use development and additional residential absorption. This initiative is moving forward with comprehensive plan amendments already on track, revised land development regulations already drafted and a 250-unit residential project on the horizon.

- **Park Avenue Downtown District** – Our downtown gem is flourishing and growing! Current projects include the redevelopment of 754 Park Avenue for a Dedicated IT Corporate Office (80+ employees) and NOBO Microbrewery; the sale and soon-to-be revitalization of the 918 Park Avenue historically-designated building; and a permanent outdoor seating venue within the 700 block of Park Avenue. Staff is working on increasing density and intensity provisions and expanding the boundaries to incorporate additional block areas that include Coastal Karma Microbrewery; the soon-to-be (and renowned) Brooklyn Cupcakes (first Florida location!); train station master plan behind the existing Fire Station; and additional residential rehabilitations projects

- **Oceana Coffee** – recognized business! Purchased the property located at 1301 10th Street and will be opening their first-ever food kitchen concept through a complete redevelopment of the property. This will provide interest to this area of Town.

- **Nautilus 220** – this legacy project with a $180M construction value, will redevelop a highly underutilized block area (minus one parcel) adjacent to the P3 area with 332 luxury condos, two waterfront restaurants, retail and office, along with several streetscape improvements, inclusive of a new Bayberry Drive and innovative Lake Shore Drive improvements that will serve to complement the Marina.

ADDITIONAL ECONOMIC BENEFITS AND FUNDING OPPORTUNITIES

- Expedited Permitting; Grant Contributions towards drainage and other initiatives (we have a Grants Writer on Staff); Expedited Site Plan review (our largest project, Nautilus 220 took 5 months from initial submittal to Town Commission approval); ability to interact with Staff directly and schedule meetings as needed with Staff and outside agencies; Support from Staff, appointed bodies and elected officials; additional opportunities for funding public improvements through development dollars received


PALMETTO DR
E KALMIA DR
E JASMINE DR
E ILEX DR
HAWTHORNE DR
GREENBRIAR DR
PARK AVE
Connection to "Arts District"
FORESTERIA DR
EVERGREEN DR
DATEPALM DR
CYPRESS DR
BAYBERRY DR
SILVERBEACH DR
KELSEY PARK
INTRACOASTAL
FEDERAL HIGHWAY/ US1
LAKE SHORE DR
2ND ST
LAKE PARK HARBOR MARINA
DISTRICT BOUNDARY
NORTH

Exhibit A

TOWN OF LAKE PARK
STORMWATER MASTER PLAN UPDATE

ACHIEVING RESILIENCY THROUGH SUSTAINABLE GREEN INFRASTRUCTURE BEST MANAGEMENT PRACTICES

Raul Mercado, PE, CFM

February 26, 2021

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TOWN OF LAKE PARK (SOUTH FLORIDA FIRST ZONED MUNICIPALITY IN 1923)

- 2.5 square miles
- Approximately 9,000 residents
- Fully developed by 1980's
- Drainage system of grassed swales for runoff conveyance to catch basins and 11 miles of underground pipes.
- 14 major outfalls to the Lake Worth Lagoon and the C-17 Canal.
- Aging drainage infrastructure is failing at a faster rate.
- Climate change stressors pose a major challenge to the drainage system capacity.

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STORMWATER MASTER PLAN UPDATE

USEPA GREEN STREETS - GREEN INFRASTRUCTURE FOR CLIMATE CHANGE ABATEMENT

- ❖ **Promote Sustainability Through The Implementation Of Green Infrastructure/Low Intensity Development (GI/LID)**
- ❖ **Apply Best Management Practices For Interception And Treatment Of Stormwater Runoff Prior To Discharge To The LWL**

"SMALL SCALE PRACTICES CLOSE TO THE RUNOFF SOURCE"

Public ROW's

- Bioretention Bioswales
- Pervious Pavement
- Water Harvesting Tree Pits

Private Property

- Rainscapes
- Rain Barrels
- Rain Gardens
- Conservation
- Landscapes
- Urban Trees

Buildings

- Green Roof Vegetated Roof Systems
- Bioplanters

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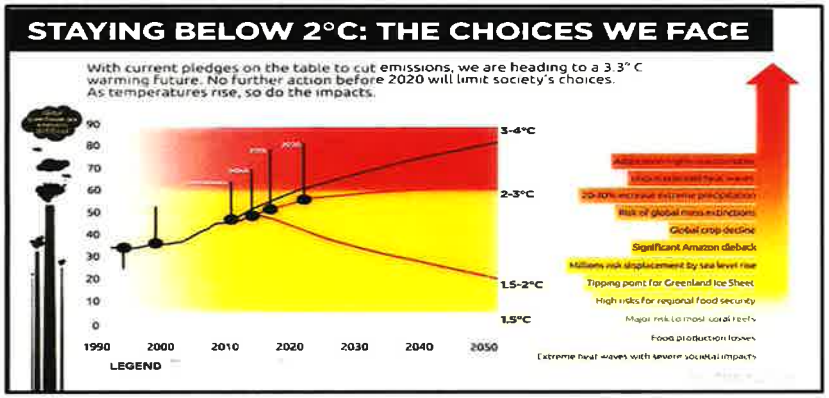
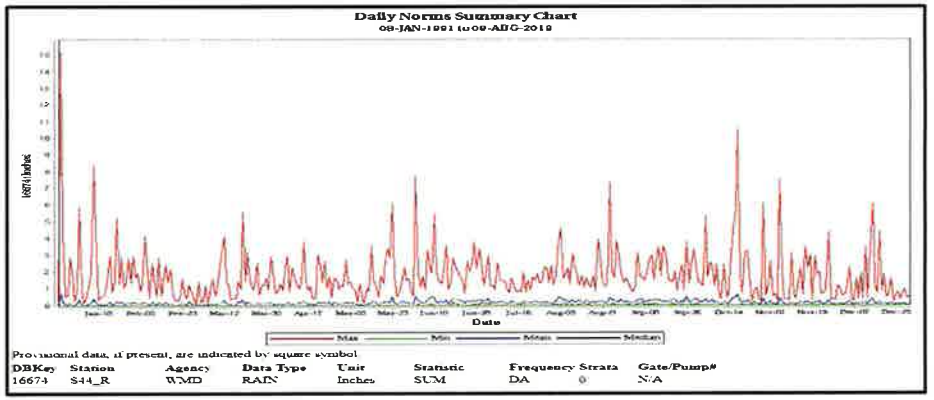
CLIMATE CHANGE STRESSORS/EARTH WARMING

Higher Temperatures, Higher Rainfall Intensities, More Frequent Flooding





4th Street & Evergreen Drive

Ilex Drive

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STORMWATER MASTERPLAN OUTREACH & COMMUNICATION

DEVELOPED THROUGH A COLLABORATIVE, STAKEHOLDER-INCLUSIVE PROCESS

SURVEY PARTICIPANTS NEEDED!

THE TOWN OF LAKE PARK DEPARTMENT OF PUBLIC WORKS WANT TO KNOW...

ARE YOU PREPARED FOR A FLOOD?

ARE YOU PREPARED FOR THE IMPACTS OF CLIMATE CHANGE?

The Town of Lake Park Public Works Department has begun an update of the Floodplain Management Plan for the Town of Lake Park. Collecting data on public perception of flood risks and climate change is a vital component of this process. By taking this survey you are helping to improve the management of floodplains!

PLEASE TAKE OUR SURVEY!

SURVEY LINK

www.surveymonkey.com/....

The survey should take 10-15 minutes to complete. Thank you for participating!

THE SURVEY WILL ASK ABOUT:

- ✓ **Your perception of flood risks in the Town of Lake Park.**
- ✓ **Flooding in home, neighborhood, or at work.**
- ✓ **Your experience with flood insurance.**
- ✓ **Your perception of climate change and how it affects flooding.**

FOR MORE INFORMATION ABOUT THE FLOODPLAIN MANAGEMENT PLAN, VISIT THE WEBSITE AT:

SURVEY PARTICIPANTS NEEDED!

THE TOWN OF LAKE PARK DEPARTMENT OF PUBLIC WORKS WANT TO KNOW...

1. Climate Change (or Global Warming) is the idea that the Earths average temperature has been on the rise for the past 150 years and the worlds climate may change as a result: Do you think that Climate Change is happening?
   - Yes
   - No
   - Don't know
2. Do you think the severity of recent hurricanes like Harvey and Irma is most likely the result of global climate change, or is it just the kind of severe weather events that happen from time to time?
   - Result of climate change
   - Just happens from time to time
3. How much do you trust scientists as a source of information about climate change?
   - Strongly trust
   - Somewhat trust
   - Somewhat distrust
   - Strongly distrust
4. How worried are you about climate change?
   - Very worried
   - Somewhat worried
   - Not very worried

FOR MORE INFORMATION ABOUT THE FLOODPLAIN MANAGEMENT PLAN, VISIT THE WEBSITE AT:

A 5-MEMBER STEERING COMMITTEE (SC) WAS FORMED

- ❖ **Policy & Technical Advisory Members**
  - **Town Manager**
  - **Public Works Director**
  - **WRMA Sr. Staff (PE, CFM)**
- ❖ **Town Resident Members**
  - **One Representing Commerce**
  - **One Representing Homeowners**

Meetings were held throughout the course of the SWMP

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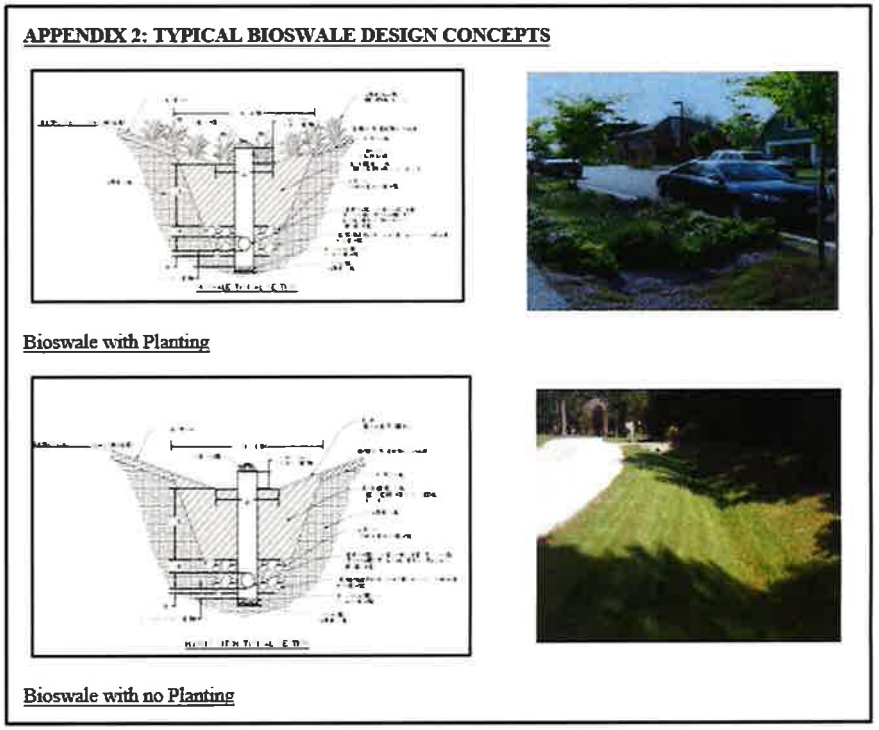
STORMWATER MASTER PLAN GOAL FOR CLIMATE CHANGE ADAPTATION

TO CONVERT 10% OF IMPERVIOUS AREAS TO GI IN THE NEXT 20 YEARS TO OFFSET WARMING TRENDS

Nuisance Flooding Hazard Relief Through Bioswales & Biodetention Along 5% of Town ROW's



Green Infrastructure Design for Climate Change Abatement

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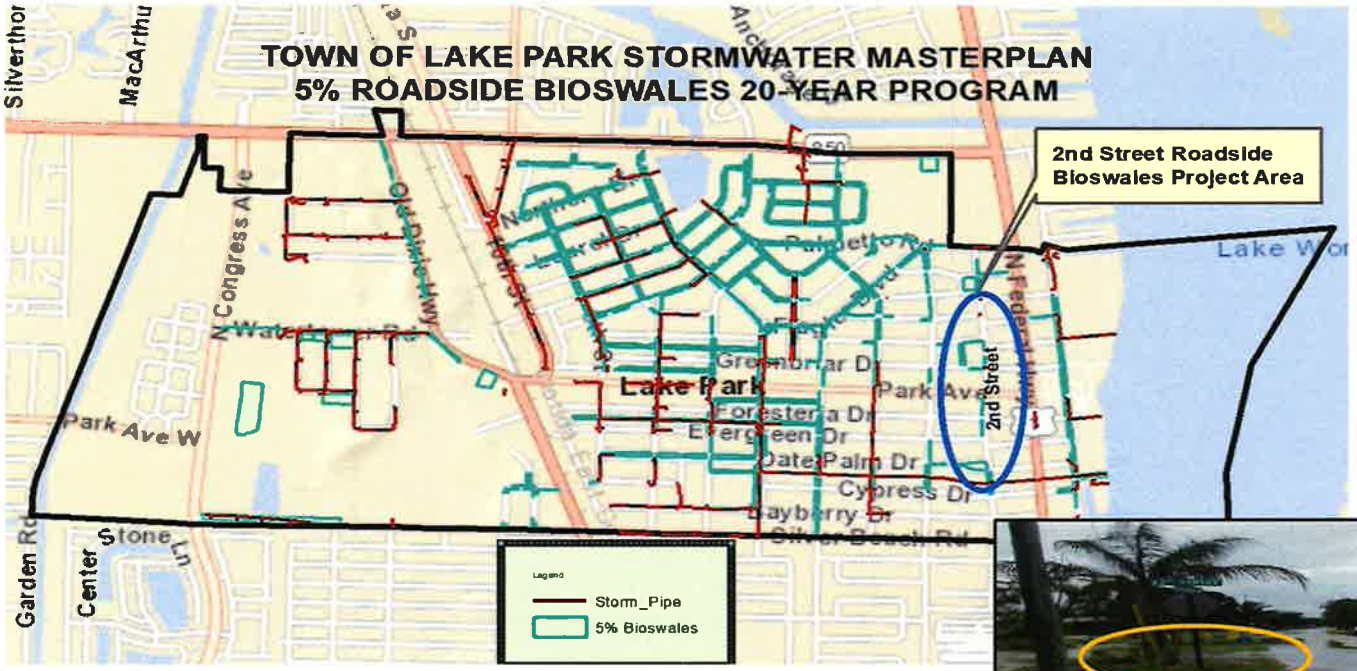
GREEN INFRASTRUCTURE FOR CLIMATE CHANGE

BIOSWALES ALONG 2ND STREET ROW



Higher Intensity Rainfall is Causing More Frequent Nuisance Flooding Along 2nd Street Intersections

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GREEN INFRASTRUCTURE FOR CLIMATE CHANGE

MUNICIPAL COMPLEX WATER QUALITY RETROFIT USING BIODETENTION

Typical Green Infrastructure Learning Display Plaque & Observation Area for Elementary and Middle Schools

Biodetention Facility along Park Avenue Right-of-Way

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GREEN INFRASTRUCTURE FOR CLIMATE CHANGE

RAIN BARRELL AND RAIN GARDEN PILOT PROJECT DEMONSTRATION

TOWN OF LAKE PARK TOWN HALL

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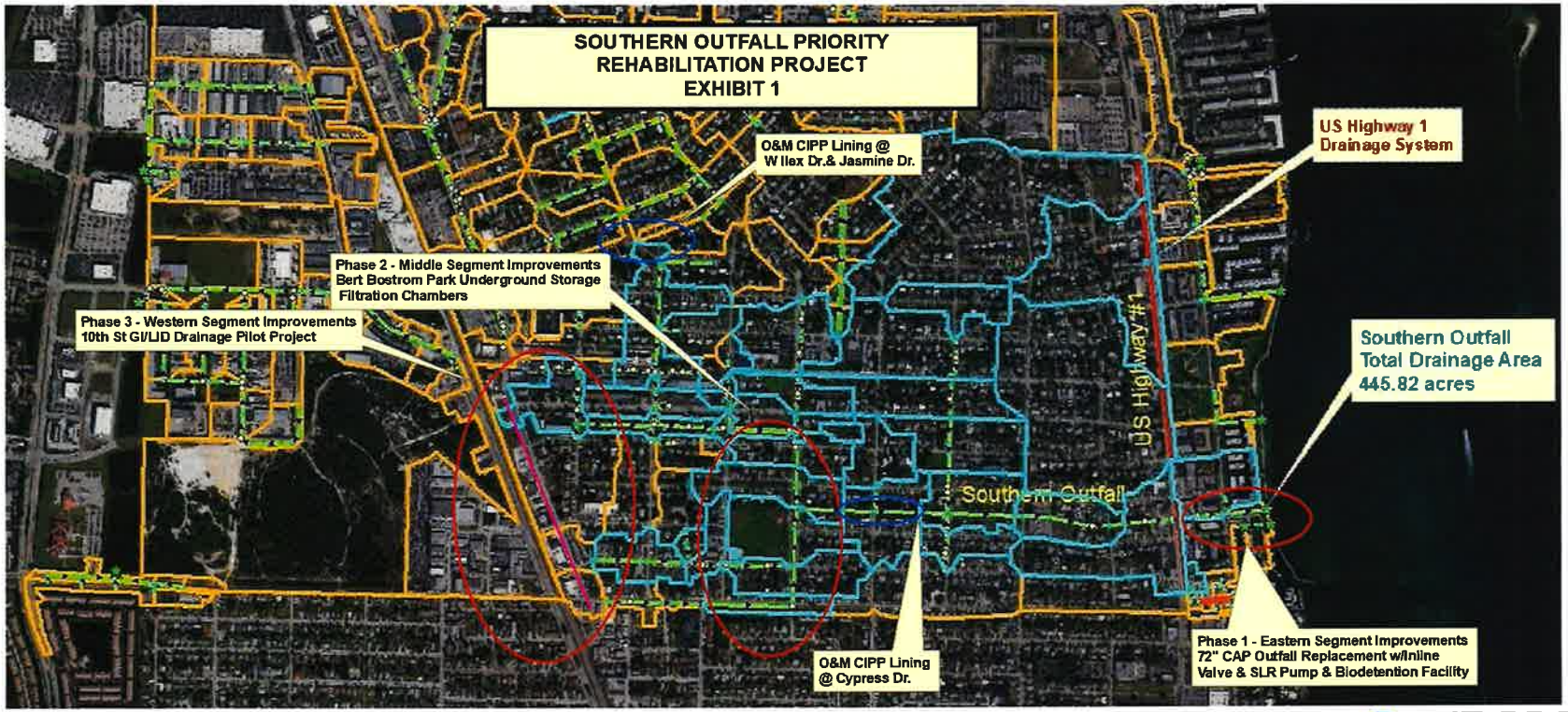
GREEN INFRASTRUCTURE FOR CLIMATE CHANGE

WATERSHED-BASED FLOODING HAZARD ADAPTATION

SOUTHERN OUTFALL GI/LID-BASED PRIORITY REHABILITATION PROJECT



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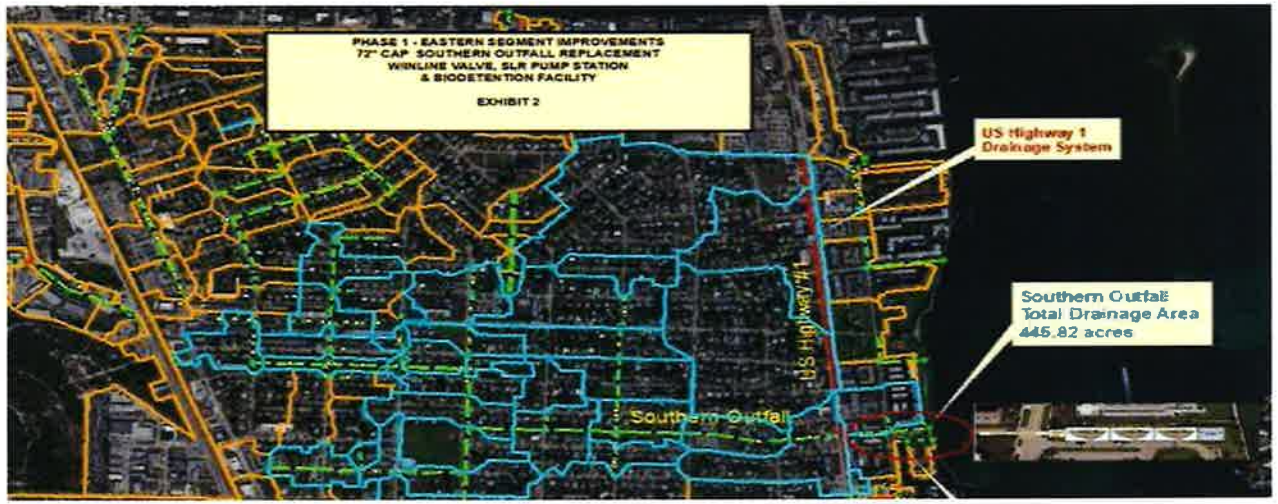
GREEN INFRASTRUCTURE FOR CLIMATE CHANGE

SOUTHERN OUTFALL PHASE 1 (72" CAP OUTFALL REPLACEMENT)



Future Sea Level Rise Pump Station

Water Quality Treatment Biodetention Facility

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SWMP 20-YEAR IMPLEMENTATION COST

GI/LID ITEM		COST
BioSwales	$	3,801,600.00
BioDetention	$	2,613,600.00
Subsurface Storm Chambers	$	7,000,000.00
Raintrees	$	80,000.00
Pervious Pavement	$	100,000.00
Subtotal 1	$	13,595,200.00
Design (10% of Subtotal Cost)	$	1,359,520.00
Permitting (7% of Subtotal Cost)	$	951,664.00
Design & Permitting Subtotal	$	2,311,184.00
Mobilization (5% of Total Cost)	$	679,760.00
MOT (3% of Total Cost)	$	407,856.00
Contractor OH, Profit & Risk (25% of Total)	$	3,398,800.00
Construction Subtotal	$	4,486,416.00
Subtotal 2 (Design, Construction)	$	20,392,800.00
Contingency (5% of Subtotal 2 Cost)	$	1,019,640.00
Owners Reserve/Allowance (5% of Subtotal 2 Cost)	$	1,019,640.00
Total Cost (Over a 20 Year Period)	$	22,432,080.00

The annual estimated cost of the SWMP GI/LID program implementation is approximately $1.1 million per year over the next 20 years.

- Design and Construction to be funded by State and Federal GI/LID Grants
- The Town has already acquired $3.5 million FEMA HMGP grant
- The Town has applied for $10 million of GI/LID grants for the FY2020-2025 period

- The total current stormwater system rehabilitation cost would be $1,805,819 over the 20-year SWMP update planning period. This translates into a $90,291.00 per year expenditure beginning in FY2021.
- To be funded solely through Stormwater Utility

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GREEN INFRASTRUCTURE FOR CLIMATE CHANGE

SOUTHERN OUTFALL PHASE 2 –BERT BOSTROM PARK UNDERGROUND FILTRATION CHAMBERS

Upstream Peak Discharge Diversion, Attenuation And Water Quality Treatment Using GI/LID-based Underground Chamber Filtration @ Bert Bostrom Park

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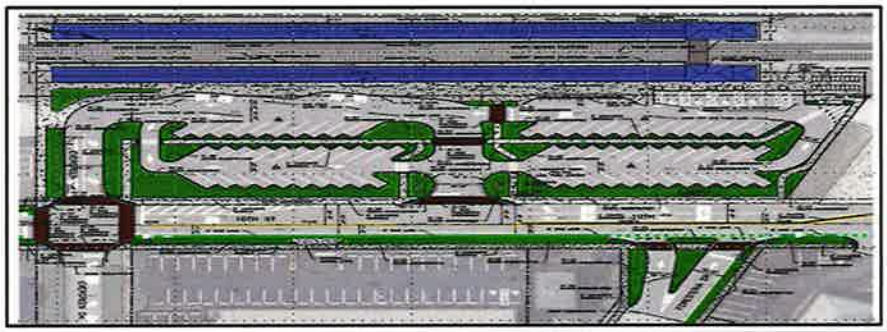
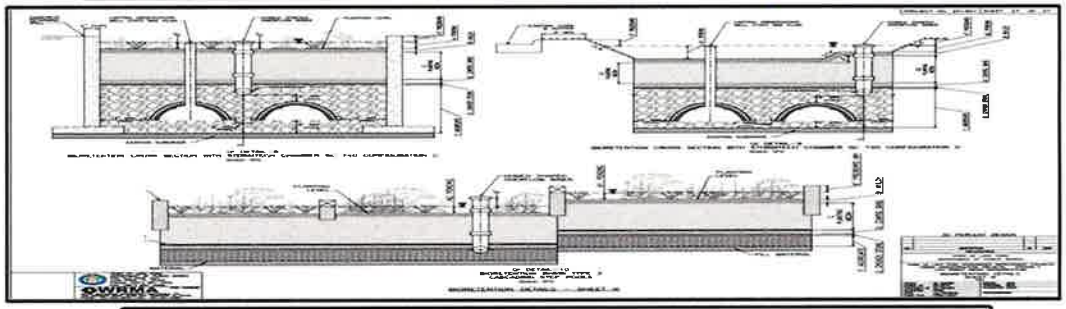
GREEN INFRASTRUCTURE FOR CLIMATE CHANGE

SOUTHERN OUTFALL PHASE 3 - 10TH STREET ROW GI/LID PILOT PROJECT

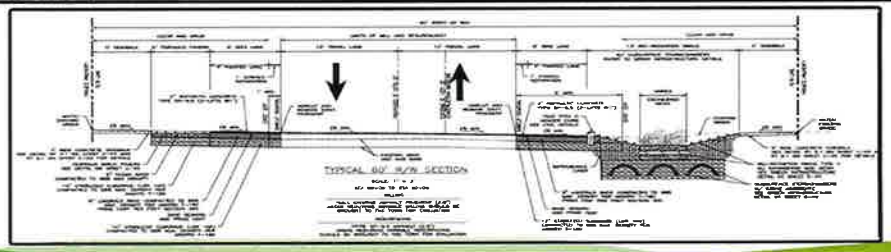
10th Street
Right-Of-Way Corridor
Green Infrastructure-Based
Drainage Implementation





Treatment Train

- **Bioswales**
- **Pervious Pavement**
- **Underground Filtration Chambers**



GREEN INFRASTRUCTURE FOR CLIMATE CHANGE

FDOT MOBILITY AND SUSTAINABILITY UPDATE (2020-2025)

US HIGHWAY1 AT TOWN OF LAKE PARK

Center Island Bioswales W/Native Planting

Sidewalk Bioplanters

WRMA

CLIMATE CHANGE STRESSORS – SEA LEVEL RISE (SLR)

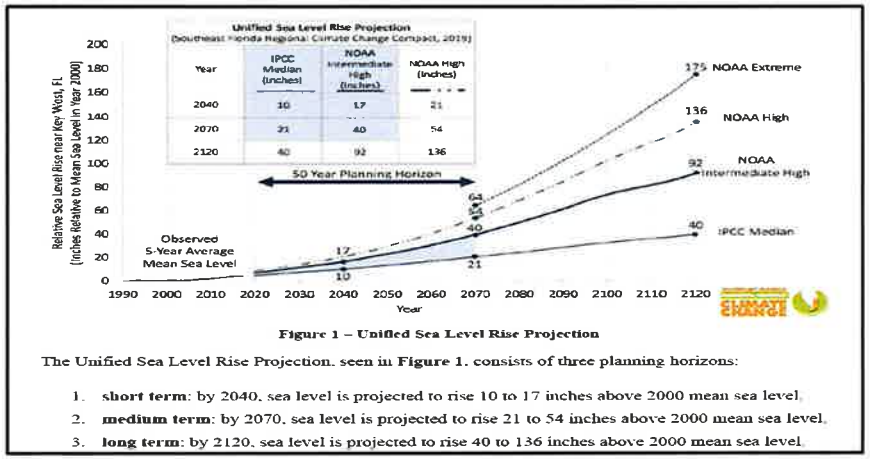


Figure 1 – Unified Sea Level Rise Projection

The Unified Sea Level Rise Projection, seen in **Figure 1**, consists of three planning horizons:

1. **short term**: by 2040, sea level is projected to rise 10 to 17 inches above 2000 mean sea level.
2. **medium term**: by 2070, sea level is projected to rise 21 to 54 inches above 2000 mean sea level.
3. **long term**: by 2120, sea level is projected to rise 40 to 136 inches above 2000 mean sea level.

NOAA has predicted 36 to 40 inches of sea level rise by 2070.

"Sunny day" flooding is already experienced during "king" fall tides along lake shore drive.

THE TOWN OF LAKE PARK JUST COMPLETED A SEAWALL TOPOGRAPHIC SURVEY, STRUCTURAL ASSESSMENT AND SEA LEVEL RISE INUNDATION MAPPING STUDY TO ADDRESS IMPACTS OF 2070-FORECASTED SEA LEVEL RISE

($75,000 FDEP COASTAL RESILIENCY GRANT)

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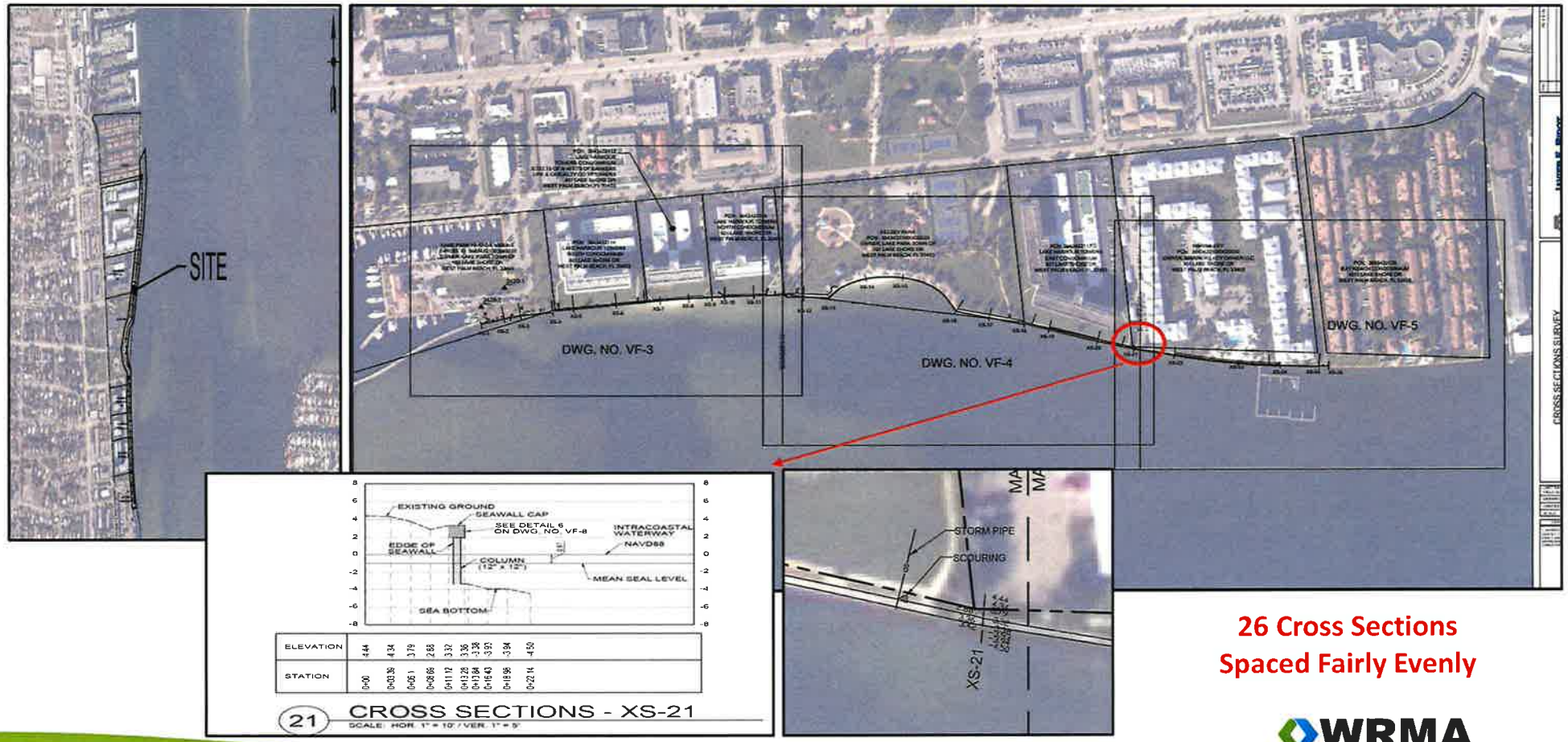
SEAWALL TOPOGRAPHIC SURVEYING



26 Cross Sections
Spaced Fairly Evenly

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STRUCTURAL CONDITION ASSESSMENT – FIELD INVESTIGATION

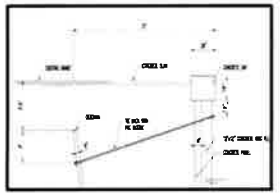
Exhibit 1 – Lake Park Marina
Exhibit 2 – Lake Harbour Towers
Exhibit 3 – Kelsey Park
Exhibit 4 – Lake Harbour Towers East
Exhibit 5 – Marina Key
Exhibit 6 – Bay Reach

Structural Assessment

A team of two engineers used snorkel equipment and completed the above- and below-water inspection.

Exploratory Excavation

Four (4) locations were selected to perform exploratory excavations to reveal the condition of the tie-back systems.



Probing, Coring, Testing

Ten (10) concrete core samples were obtained from the concrete cap and concrete panel of the existing seawall and sent to a laboratory for compressive strength and chloride content testing.

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CONDITION ASSESSMENT RATINGS, REMAINING USEFUL LIFE, RECOMMENDATIONS & COSTS

Location	*Rating	Initial Repair/Replacement Urgency	Remaining Useful Life after Performing the Repairs
Exhibit 1 – Section 1 (Pier 7)	Fair	Repair within 6 months	20 years w/periodic maintenance
Exhibit 1 – Section 1 (Pier 6)	Fair	Repair within 6 months	20 years w/periodic maintenance
Exhibit 1 – Section 2 (Bulkhead)	Satisfactory	-	30 years w/periodic maintenance
Exhibit 2	Serious	Replacement within 6 months	Design life ended
Exhibit 3	**Serious	Repair within 6 months	25 years w/periodic maintenance
Exhibit 4	Fair	Repair within 6 months	15 years w/periodic maintenance
Exhibit 5 – Section 1	Fair	Repair of piles and replacement of cap within 5 years	15 years w/periodic maintenance
Exhibit 5 – Section 2 (Easement)	Serious	Replacement within 6 months	Design life ended
Exhibit 6	Good	-	40 years w/periodic maintenance – recently replaced

Description	Quantity	Unit	Unit Cost	Extended Cost
Exhibit 1				
Pier 7 – Crack Repairs	135	LF	$ 360.00	$ 48,600
Pier 6 – Crack Repairs	523	LF	$ 360.00	$ 18,280
Exhibit 2				
Complete Bulkhead Replacement	775	LF	$ 3,500.00	$ 2,712,500
Exhibit 3				
Cap – Crack Repair	866	LF	$ 120.00	$ 103,920
Piles and Panels – Gap Repair	16	EA	$ 1,500.00	$ 24,000
Exhibit 4				
Batter Piles – Major Repair	41	EA	$ 1,200.00	$ 49,200
King Piles - Repair	9	EA	$ 800.00	$ 7,200
Cap – Crack Repair	370	LF	$ 120.00	$ 44,400
Exhibit 5				
Batter Piles – Repair	25	EA	$ 800.00	$ 20,000
King Piles – Repair	8	EA	$ 800.00	$ 6,400
Cap – Replacement	624	LF	$ 50.00	$ 156,000
Exhibit 5 Easement				
Complete Bulkhead Replacement	32	LF	$ 3,500.00	$ 112,000
Sub-Total				$ 3,472,500
General Conditions (10%)				$ 374,250
Mobilization (5%)				$ 173,625
Bond and Insurance (5%)				$ 173,625
Contractor Overhead and Profit (10%)				$ 347,250
Contingency (10%				$ 347,250
Total Probable Construction Cost				**$ 4,861,500**

INITIAL REPAIR REPLACEMENT COST

Description	Quantity	Unit	Unit Cost	Extended Cost
Exhibit 1				
Raising the Bulkhead Cap	242	LF	$ 250.00	$ 60,500
Additional Tieback Anchors	40	EA	$ 3,000.00	$ 120,000
Exhibit 3				
Raising the Bulkhead Cap	866	LF	$ 250.00	$ 216,500
Additional Tieback Anchors	110	EA	$ 3,000.00	$ 330,000
Exhibit 4				
Raising the Bulkhead Cap	370	LF	$ 250.00	$ 92,500
Additional Tieback Anchors	50	EA	$ 3,000.00	$ 150,000
Exhibit 5				
Raising the Bulkhead Cap	624	LF	$ 250.00	$ 156,000
Additional Tieback Anchors	80	EA	$ 3,000.00	$ 240,000
Sub-Total				$1,365,500
General Conditions (10%)				$ 136,550
Mobilization (5%)				$ 68,275
Bond and Insurance (5%)				$ 68,275
Contractor Overhead and Profit (10%)				$ 136,550
Contingency (10%				$ 136,550
Total Probable Construction Cost				**$1,911,700**

SEA LEVEL RISE ADJUSTMENT COST

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REPLACEMENT OPTIONS

STRUCTURAL

Steel Sheet Piles Bulkhead

Concrete Pile and Panel

Truline Bulkhead

SUSTAINABLE

Living Shoreline (Currie Park)

Gabion Bulkhead

Combination Gabion Bulkhead & Living Shoreline

Preferred Town Option for Kelsey Park Seawall Replacement

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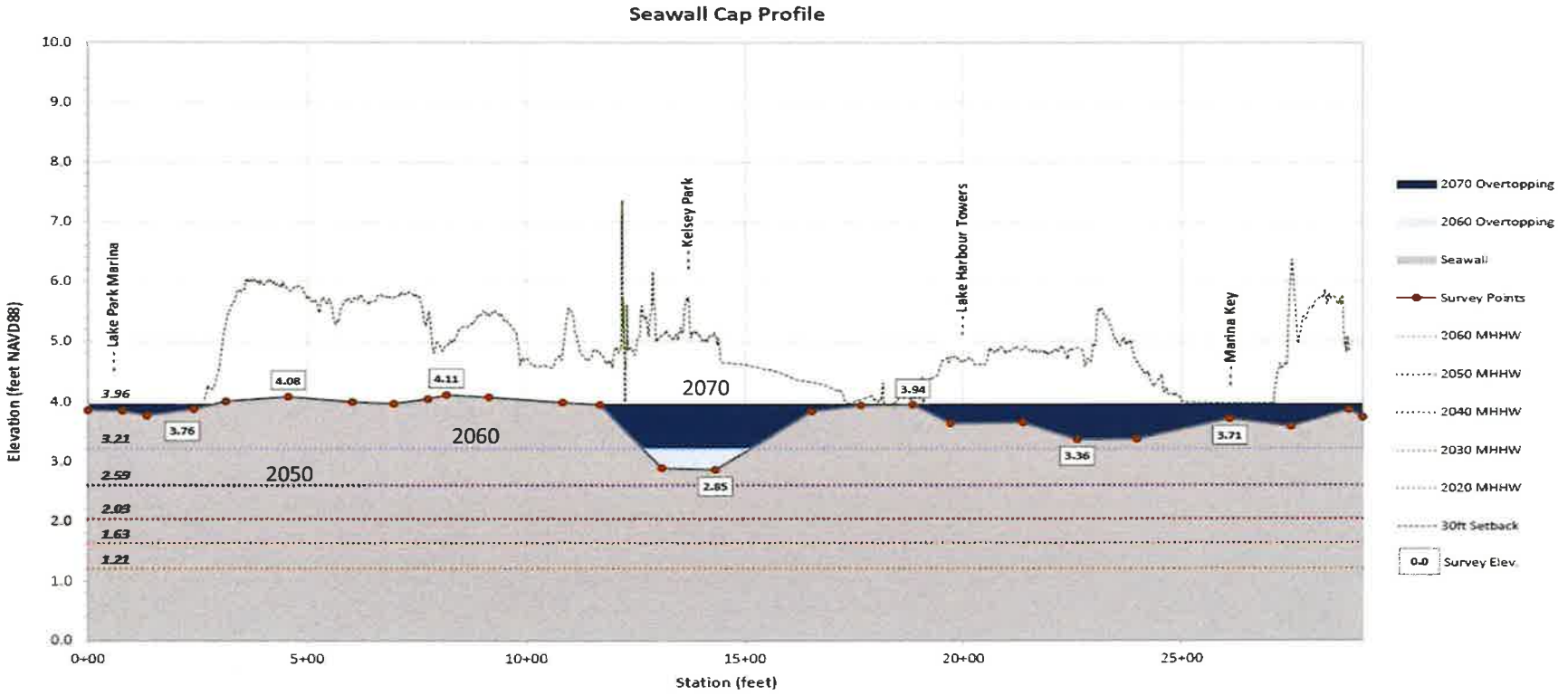
TIDAL INUNDATION BY DECADES



(Gray fill) – profile of the seawall cap
(Small dotted lines and blue fill) – elevations of the decadal MHHW
(Green dashed line) – ground elevation profile set back 30 feet westward from the seawall face

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SEA LEVEL RISE INUNDATION MAPPING (2070 ENHANCED)

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TIDAL INUNDATION DAMAGES & RISK ASSESSMENT

Scenario Year	Buildings Inundated	Buildings Blocked	Parcel Units (PLOF)	PLOF Costs	Risks	Overall Risk Assessment
2020	0	0	0	-	-	Low
2030	0	0	0	-	King Tides	Low
2040	0	0	0	-	King Tides	Low
2050	0	0	0	-	Drainage + King Tides	Moderate
2060	3	31	433	$105,362,000	Drainage + King Tides	High
2070	15	107	692	$154,675,000	Drainage + Overtopping	Severe

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COASTAL SURGE PLUS SEA LEVEL RISE INUNDATION MAPPING

EFFECTIVE 2017 FEMA 100-YEAR (1%) FLOODING (2019 DFIRM'S UNDER FINAL REVIEW)

Blue: 100-Year Flood Boundaries
Yellow: 500-Year Flood Boundaries

More substantial flooding in 2070 around South Lake and west of US Highway 1 between Date Palm Drive and Foresteria Drive.

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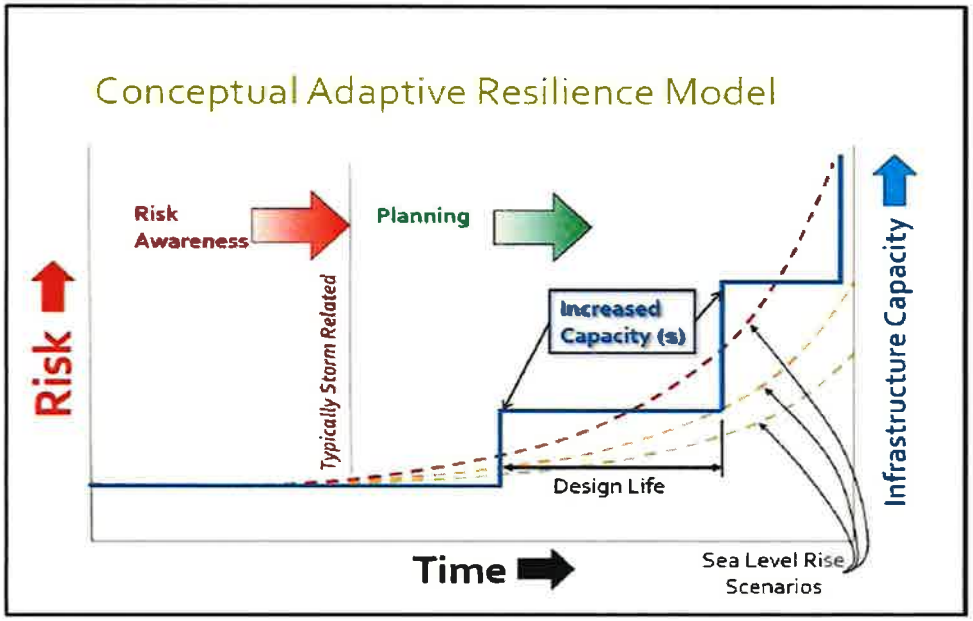
ADAPTATION PATHWAYS & OPTIONS



THE TOWN HAS 20 TO 30 YEARS OF ADAPTATION PLANNING TIME AVAILABLE BUT MUST START AT ONCE

DRY FLOOD-PROOFING

- ✓ **If ceiling heights permit, raising the first-floor elevation may be practical for facilities near the fringe of the floodplain**
- ✓ **A quick estimation for the future BFE is to take the current FEMA BFE and add an amount of sea level appropriate for the expected useful life of the facility**

WET FLOOD-PROOFING

- ✓ **Not occupying the first floor (still usable for storage and access purposes)**
- ✓ **Raising vulnerable utilities and infrastructure within the first floor above the future BFE**

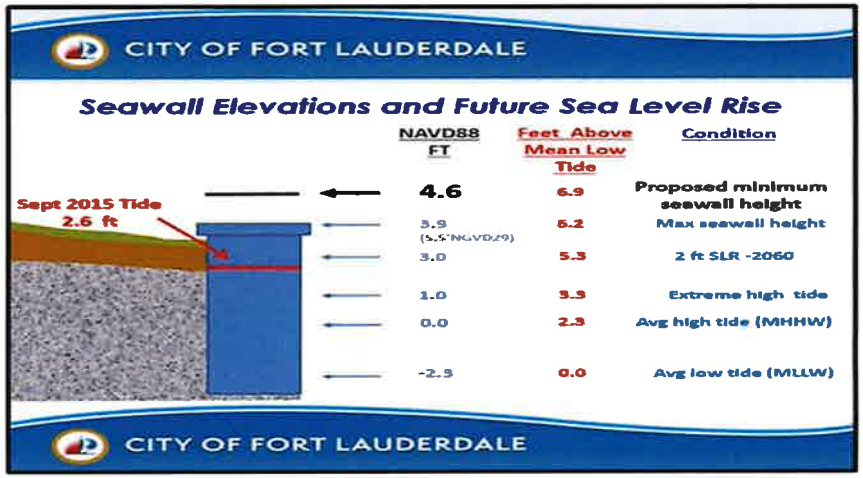
ADAPTATION PATHWAYS & OPTIONS

RAISING ROADS

- ✓ Build road base to accommodate additional wearing surface layers later
- ✓ Elevate culverts or provide in-line valves

RAISING SEAWALLS (CAPS)

- ✓ Place caps on existing seawalls (if structurally adequate)
- ✓ Regulate new seawalls height by ordinance



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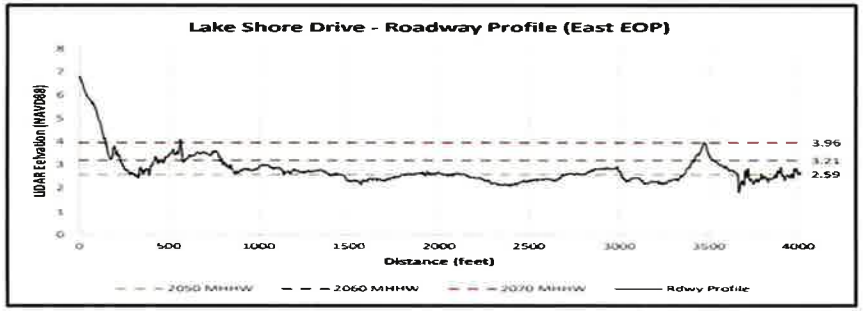
ADAPTATION PATHWAYS & OPTIONS

TOWN OF LAKE PARK COASTAL ADAPTATION ALONG LAKE SHORE DRIVE

- ✓ Consolidation of outfalls to Lake Worth Lagoon and Valve Placement
- ✓ Installation of Sea Level Rise Pump Stations to offset high tides
  - ➢ Transitional (2020-2050) SLR Impact Efforts
  - ➢ Will address local drainage deficiency for tide-impacted outfalls
  - ➢ Will address "Sunny Day" flooding from King Tides



BEGINNING IN 2050 SEWALLS WILL BE OVERTOPPED AND PUMP STATION EFFICIENCY WILL DECREASE SUBSTANTIALLY

LAKE SHORE DRIVE DRAINAGE IMPROVEMENT PROJECT

SOUTHERN OUTFALL PRIORITY RETROFIT PROJECT

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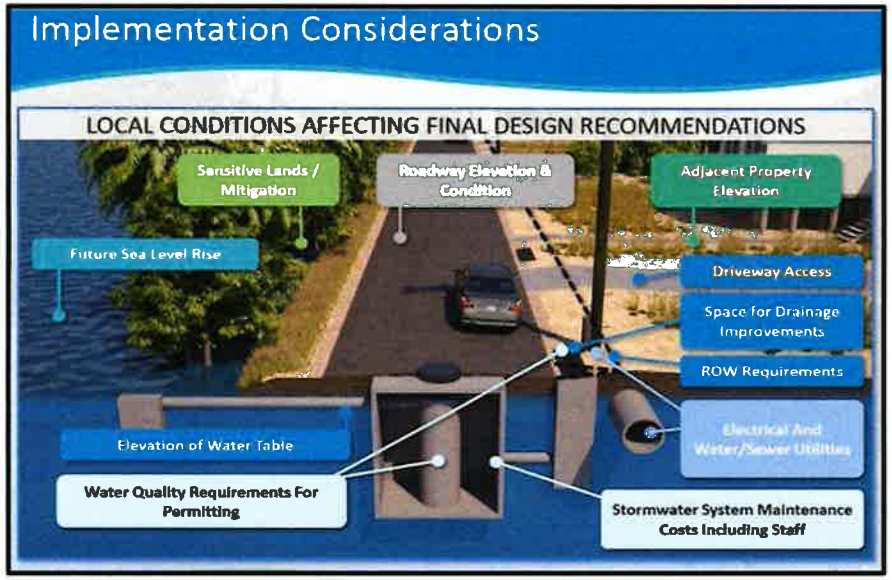
ADAPTATION PATHWAYS & OPTIONS

IMPLEMENTATION CONSIDERATIONS AND COST FOR 2050-2070

✓ **Utilities, Property/Building Elevation, Driveways, Environmental Factors**



Initial Results – Conceptual Cost Estimates for Design Scenarios

	Twin Lakes – Key Largo		Sands Community – Big Pine	
Elevation	Length of Roadway Elevated	Total Roadway and Drainage Cost	Length of Roadway Elevated	Total Roadway and Drainage Cost
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12"	0.7 miles	$4 million	0.35 miles	$2.63 million
18"	0.8 miles	$5.8 million	1.3 miles	$8.9 million
28"	0.9 miles	$7.3 million	1.5 miles	$10.5 million

Costs factored in: Maintenance of traffic, mobilization, design, construction, 15% of costs for construction engineering and inspection, 25% contingency and stormwater features.

Costs not factored in: right-of-way ("12" is threshold), driveway improvements

MORE WILL HAVE TO BE DONE BEFORE 2050 BY THE TOWN OF LAKE PARK

Cost of Raising 0.8 miles of Lake Shore Drive by 1.5 feet = Approximately $5.5 Million

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Thank You

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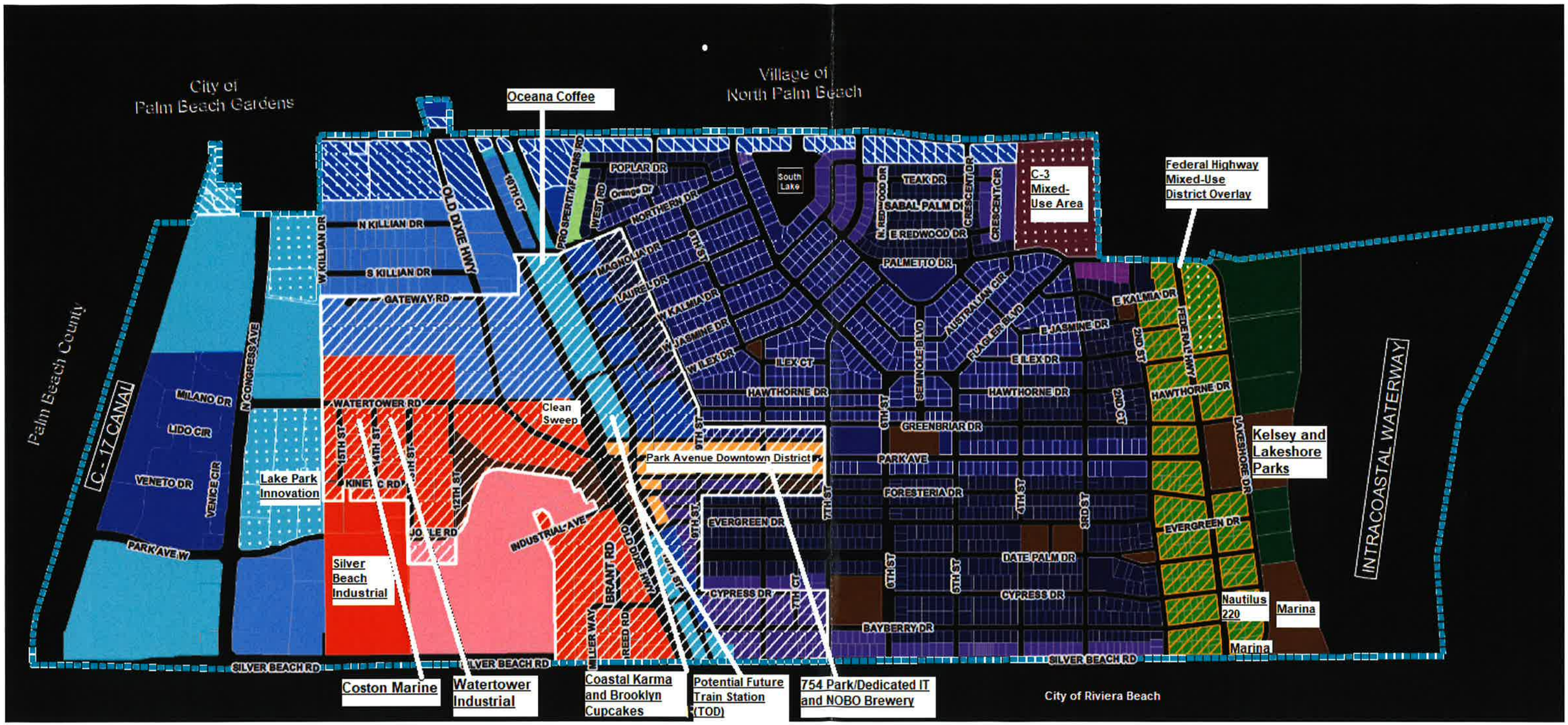
City of
Palm Beach Gardens
Oceana Coffee
Village of
North Palm Beach
Palm Beach County
C-17 CANAL
N CONGRESS AVE
MILANO DR
LIDO CIR
VENETO DR
VENICE CIR
PARK AVE W
Lake Park
Innovation
N KILLIAN DR
S KILLIAN DR
W KILLIAN DR
OLD DIXIE HWY
40TH CT
PROSPERITY FARMS RD
WEST RD
GATEWAY RD
WATERTOWER RD
KINETIC RD
15TH ST
14TH ST
13TH ST
12TH ST
11TH ST
JOLLE RD
INDUSTRIAL AVE
Silver
Beach
Industrial
SILVER BEACH RD
Coston Marine
Watertower
Industrial
Clean
Sweep
POPLAR DR
Orange Dr
NORTHERN DR
MAGNOLIA DR
LAUREL DR
W KALMIA DR
W JASMINE DR
W ILEX DR
ILEX CT
HAWTHORNE DR
9TH ST
Park Avenue Downtown District
EVERGREEN DR
CYPRESS DR
BRANT RD
REED RD
MILLER WAY
Coastal Karma
and Brooklyn
Cupcakes
Potential Future
Train Station
(TOD)
South
Lake
TEAK DR
SABAL PALM DR
E REDWOOD DR
N REDWOOD DR
CRESCENT DR
PALMETTO DR
AUSTRALIAN CIR
FLAGLER BLVD
OLD DIXIE BLVD
C-3
Mixed-
Use Area
Federal Highway
Mixed-Use
District Overlay
E KALMIA DR
E JASMINE DR
E ILEX DR
2ND ST
FEDERAL HWY
HAWTHORNE DR
LAKESHORE DR
GREENBRIAR DR
PARK AVE
FORESTERIA DR
DATE PALM DR
BAYBERRY DR
6TH ST
5TH ST
4TH ST
3RD ST
754 Park/Dedicated IT
and NOBO Brewery
Kelsey and
Lakeshore
Parks
Nautilus
220
Marina
Marina
INTRACOASTAL WATERWAY
City of Riviera Beach