

City of Hollywood Department of Public Utilities

The Lakes Tidal Flooding Evaluation April 19, 2023

The Lakes Tidal Flooding

- **The commission requested a presentation on Tidal Flooding in the Lakes (November 2, 2022 Commission Meeting)**
- **Outline**
 1. **Existing Drainage System in the Lakes**
 2. **Recent Improvements in the Lakes**
 3. **Field Observation of Tidal Flooding during King Tide**
 4. **Analysis**
 5. **Action Plan**

Outline

- 1. Existing Drainage System in the Lakes**
2. Recent Improvements in the Lakes
3. Field Observation of Tidal Flooding during King Tide
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Citywide Existing Drainage System



Legend

Storm Control Valve

◀ Wapro

- Flap Gate

Discharge Points

 Outfall

 Outlet

Pressure Pipe

Gravity Mains

Pump Station

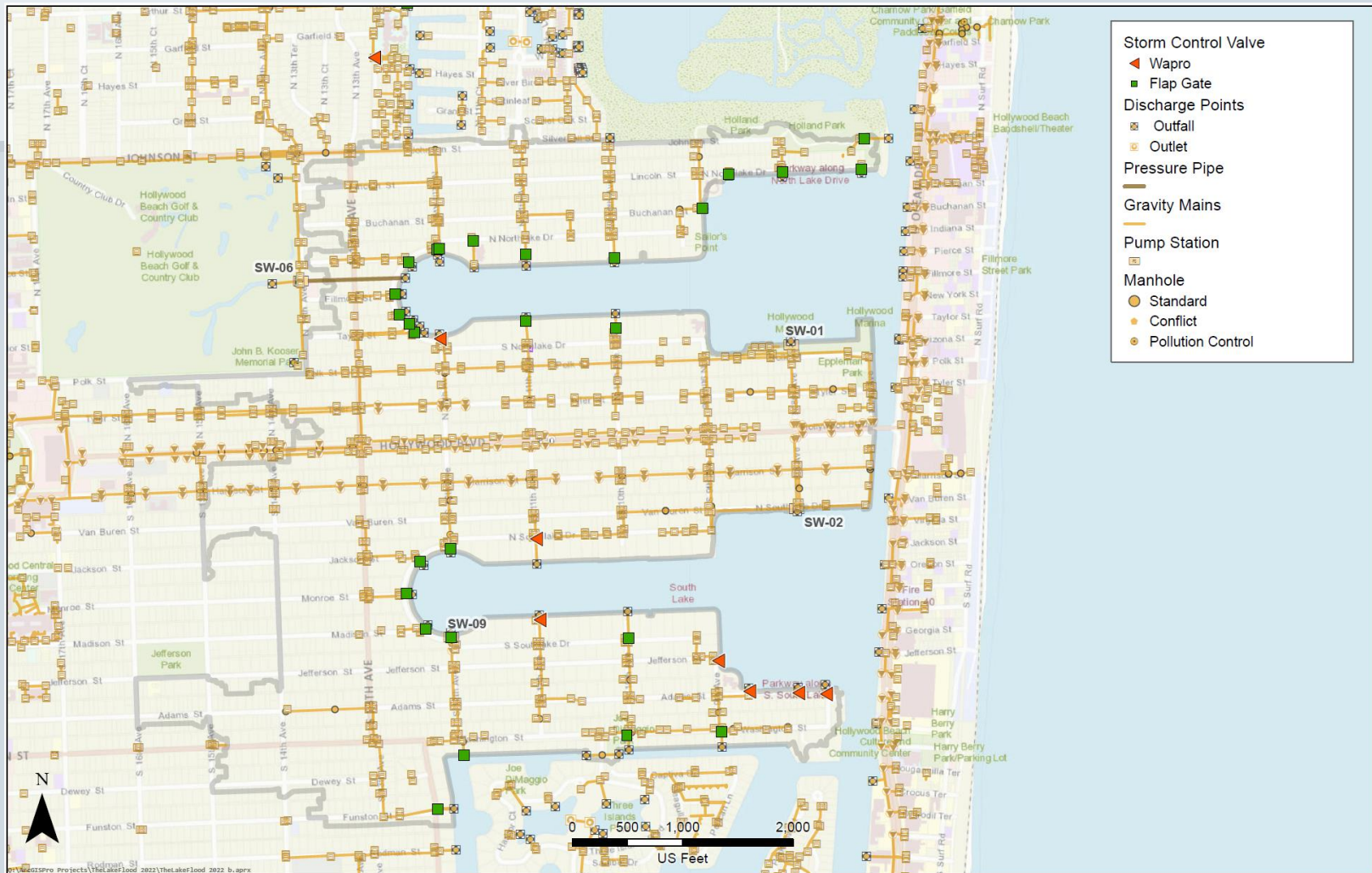
Inlets

Catchbasin

 Conflict Inlet

 Curb Inlet

The Lakes Existing Drainage System



Drainage System Statistics

Drainage Components	The Lakes	Citywide
Pump Stations	3	10
Outfalls	42	805
Flap Gates	27	31
Wapro Valves	7	10
Pipe (Linear Feet)	70,000	1,138,473
Structures	742	10,661

Outline

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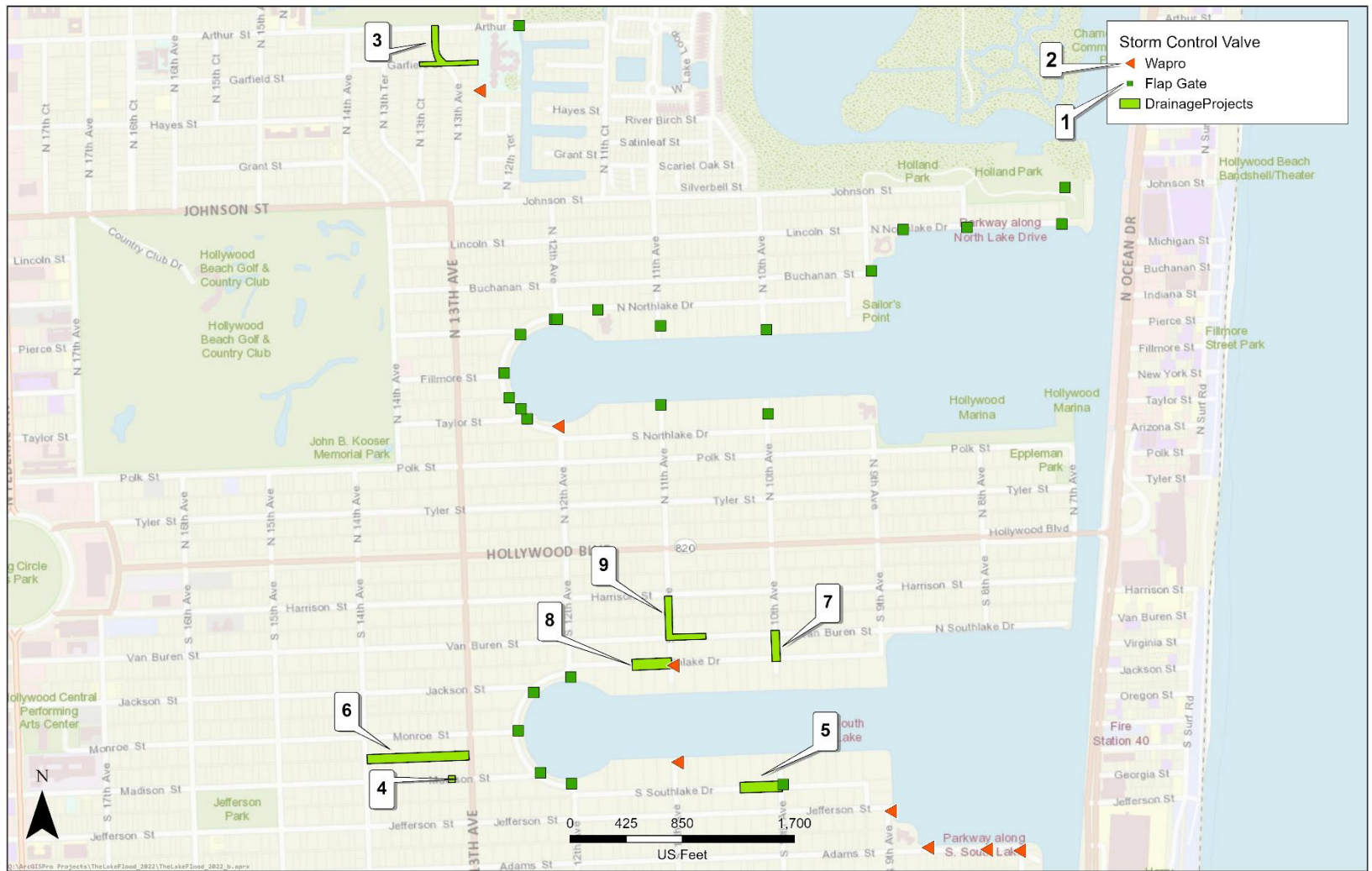
The Lakes

Drainage Improvements Completed Last 2 Years

	Projects	COST
1.	Tidal Control Valve Structures' Repairs at Multiple Sites	\$36,000.00
2.	Wapro Valves Installation/Replacement at Multiple Sites	\$273,000.00
3.	N 13 th Ave from Garfield ST to Arthur ST	\$250,000.00
4.	1311 Madison ST Drainage Improvement	\$150,000.00
5.	1021 S Southlake DR to N 10 th Ave Regrading	\$ 50,000.00
6.	S Monroe Street Partial Alley Regrading	\$120,000.00
7.	S 10 th Ave between Van Buren ST and N Southlake DR	\$100,000.00
8.	1120 N Southlake Dr Regrading to N 11 th Ave	\$ 80,000.00
9.	S 11 th Ave from Harrison ST to Van Buren ST Intersection and East to 1043 Van Buren ST Drainage System	\$350,000.00

The Lakes

Drainage Improvements Completed Last 2 Years



Outline

1. Existing Drainage System in the Lakes
2. Recent Improvements in the Lakes
- 3. Field Observation of Tidal Flooding**
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Tidal Flooding Field Evaluation

- **Evaluation on November 7, 2022**
 - King Tide, from 7:50 AM – 10:30 AM
 - Dry Day
 - Tide Elevation 2.9 feet
 - Field inspection conducted by Public Utilities staff
- **Evaluation on March 22, 2023**
 - High Tide, Dry Day, from 10: 15 AM – 11:30 AM
 - Tide Elevation 2.5 feet
 - Field inspection conducted by Public Utilities staff
 - Confirmed findings and analysis from November 7, 2022 evaluation

Tidal Flooding Field Evaluation

- **Tidal Flooding Levels – Criteria used for this evaluation only**
 - Severe Tidal Flooding Level
 - Moderate Tidal Flooding Level
 - Light Tidal Flooding Level

Tidal Flooding Field Evaluation

November 7, 2022

- **Tidal Flooding Level – Severe**
 - Flooding both traffic lanes or significant flowrate - 11 locations



Tidal Flooding Field Evaluation

November 7, 2022

- **Tidal Flooding Level – Moderate**
 - Approximate 1 traffic lane remaining or moderate flowrate - 5 locations



Tidal Flooding Field Evaluation November 7, 2022

- **Tidal Flooding Level – Light**

- Observed no significant flowrate and no impact to traffic - 18



King Tide Field Evaluation - November 7, 2022

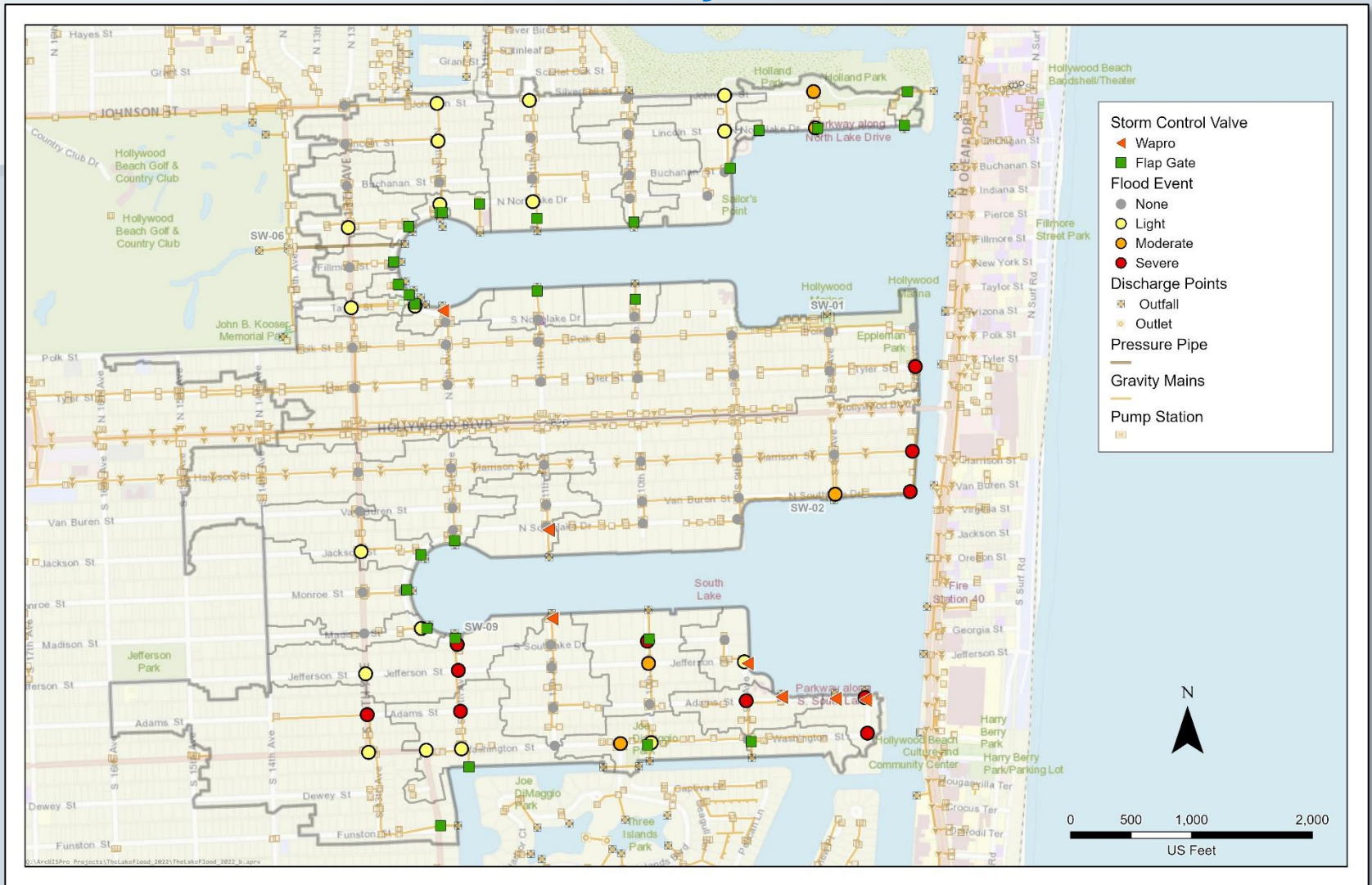
Tidal Flooding Levels / 34 Locations



Outline

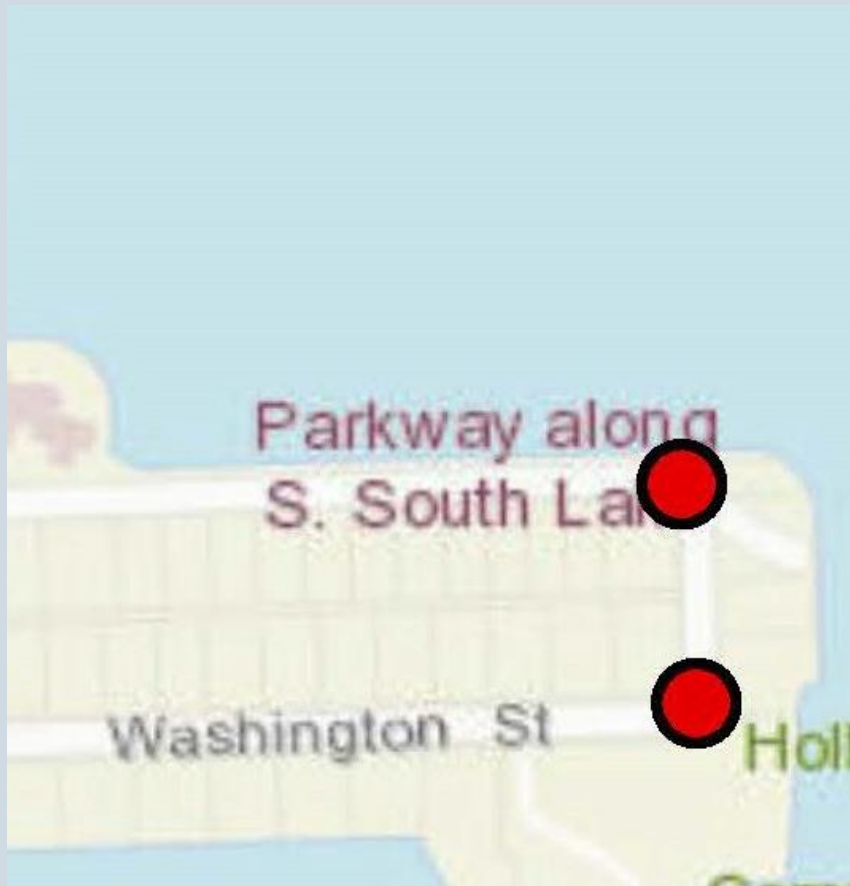
1. Existing Drainage System in the Lakes
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- 4. Analysis**
5. Action Plan

November 7 King Tide Field Evaluation Analysis



Example No.1 - November 7 King Tide Field Evaluation Observed

- S. South Lake Dr & S. 7th Ave



S. Southlake Dr (Looking East)



S. Southlake Dr (Looking North)



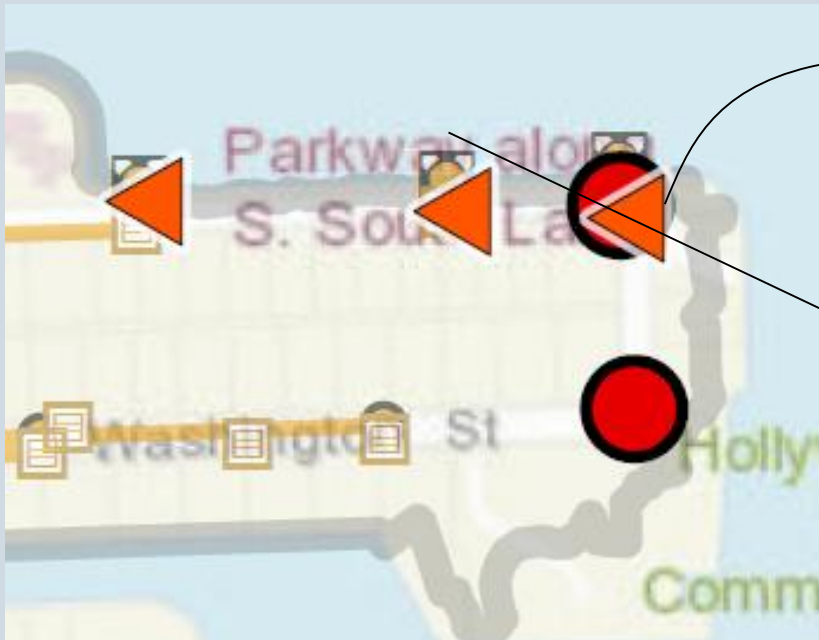
S. Southlake Dr (Looking North)



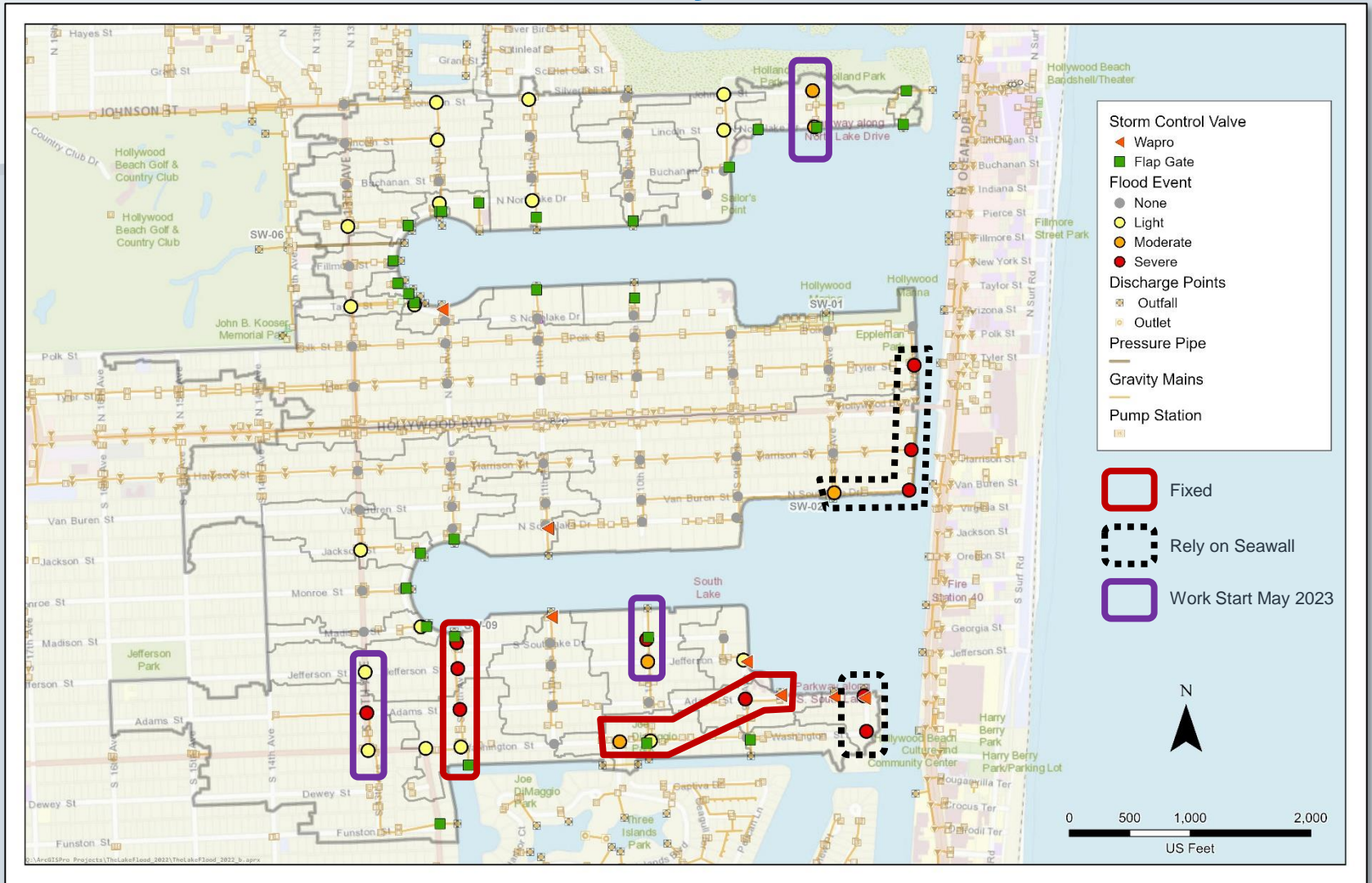
Washington St (Looking East)

Example No.1 - November 7 King Tide Field Evaluation Analysis

- **S. Southlake Dr & S. 7th Ave**
- Two Wapro Valves Functioning
- Dock Entrance – Lower than berm
- Leaking Berm
- Private Drainage Outfall without BFP



The Lakes – Tidal Flooding Analysis



Outline

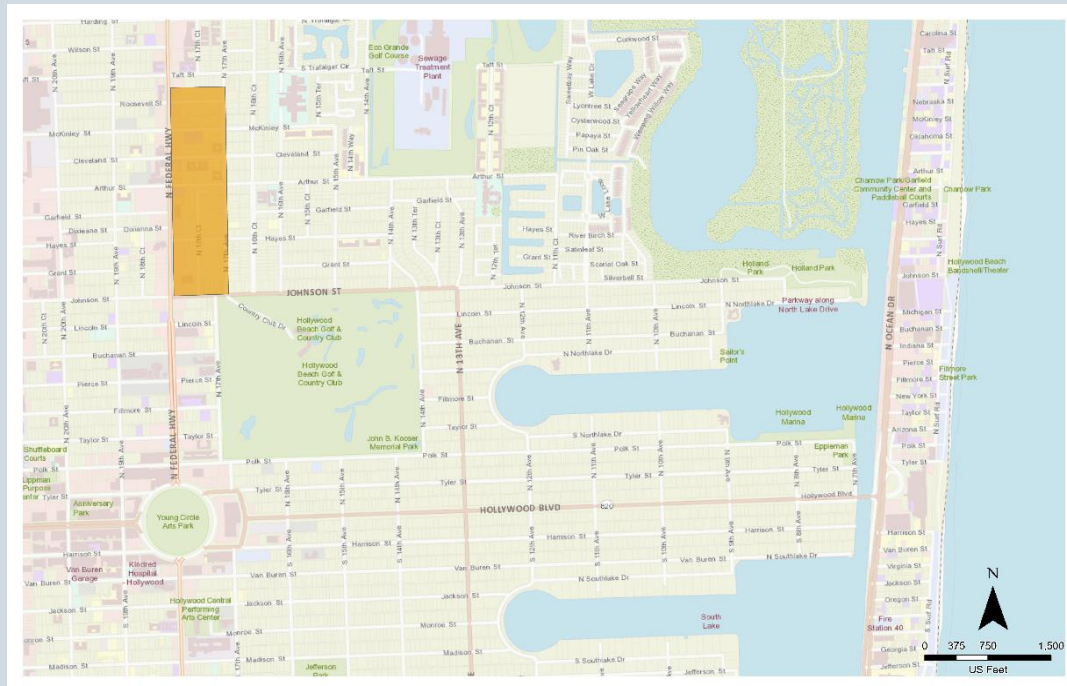
1. Existing Drainage System in the Lakes
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The Lakes – Tidal Flooding Action Plan

Root Causes of Tidal Flood	Locations	Entity	Action/Timelines
Need Flap Gate	1	DPU	Fixed in Feb. 2023
Repair Structure Leak	1	DPU	Fixed in April 2023
Replace Wapro Valve	1	DPU	Start repair in May 2023
Private Outfall Pipe	1	DPU	Start repair in May 2023
Inspection, Cleaning and Repair	2	DPU	Start repair in May 2023
Leaking Seawall	2	DCM	Complete Dec 2025
Leaking Berm	2	DCM	Complete June 2025
Dock Entrance	1	DCM	Complete June 2025

Action Plan Construction

- A drainage project will start in May to correct deficiencies
- The Lakes Exfiltration Phase 1 - \$6,500,000 (Ranks No. 27 from 198 statewide Resilient Florida Program Grant applications)



Action Plan

Proactive Maintenance

- **Proactive Maintenance and Repair of Drainage System**
 - Procuring 1 vacuum truck and 1 CCTV Truck
 - Yearly Inspection
 - Piggyback contracts for inspections and cleaning

- **Cost Estimate**

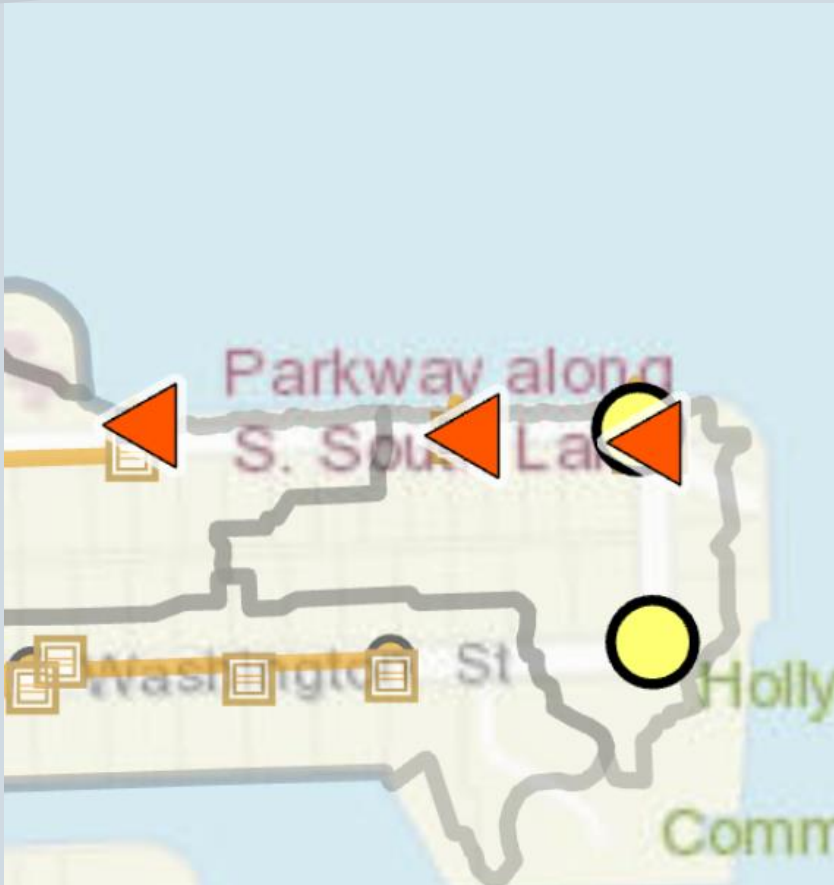
Maintenance Tasks	Cost Estimate
Inspection/Cleaning/Repair of BPD	\$300,000 -\$500,000
Inspection/Cleaning/Repair of Severe Flooded Pipe & Structures	\$100,000

- **Next Field Evaluation – October 30, 2023 (King Tide at 3.2’)**

Questions?

March 22 High Tide Field Evaluation – Example No.1 Analysis

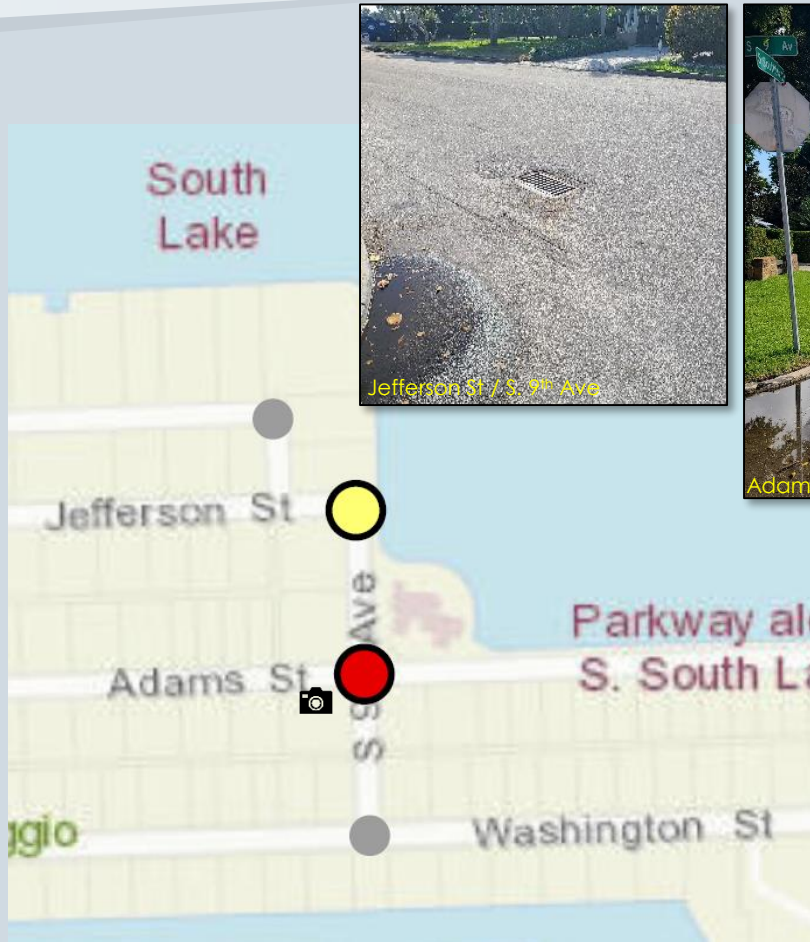
- S. Southlake Dr & S. 7th Ave



South Lake – Example No.2

Observed Tidal Flooding Levels

- S. 9th Ave & Jefferson St & Adams St



South Lake – Example No.2 Analysis

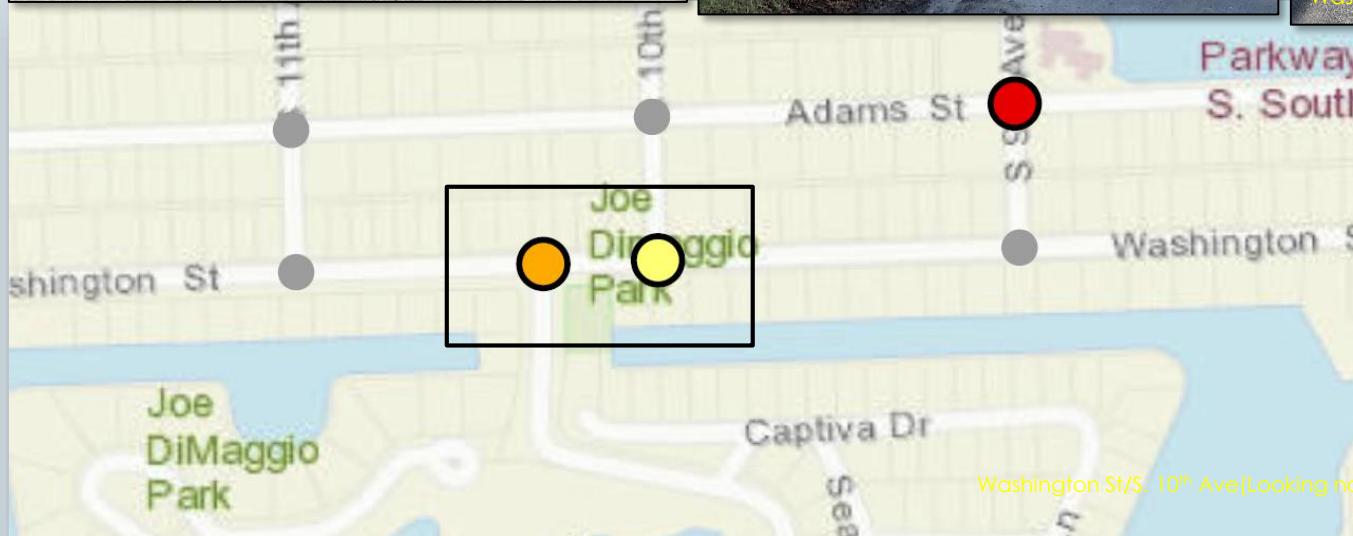
- **S. 9th Ave & Jefferson St & S. Southlake Dr**
 - Structure Leaking
 - Wapro Valve (Jefferson St/S. 9th Ave): Minor Leaking



South Lake - No.3

Observed Tidal Flooding Levels

- Washington St (at Three Island Blvd & S. 10th)

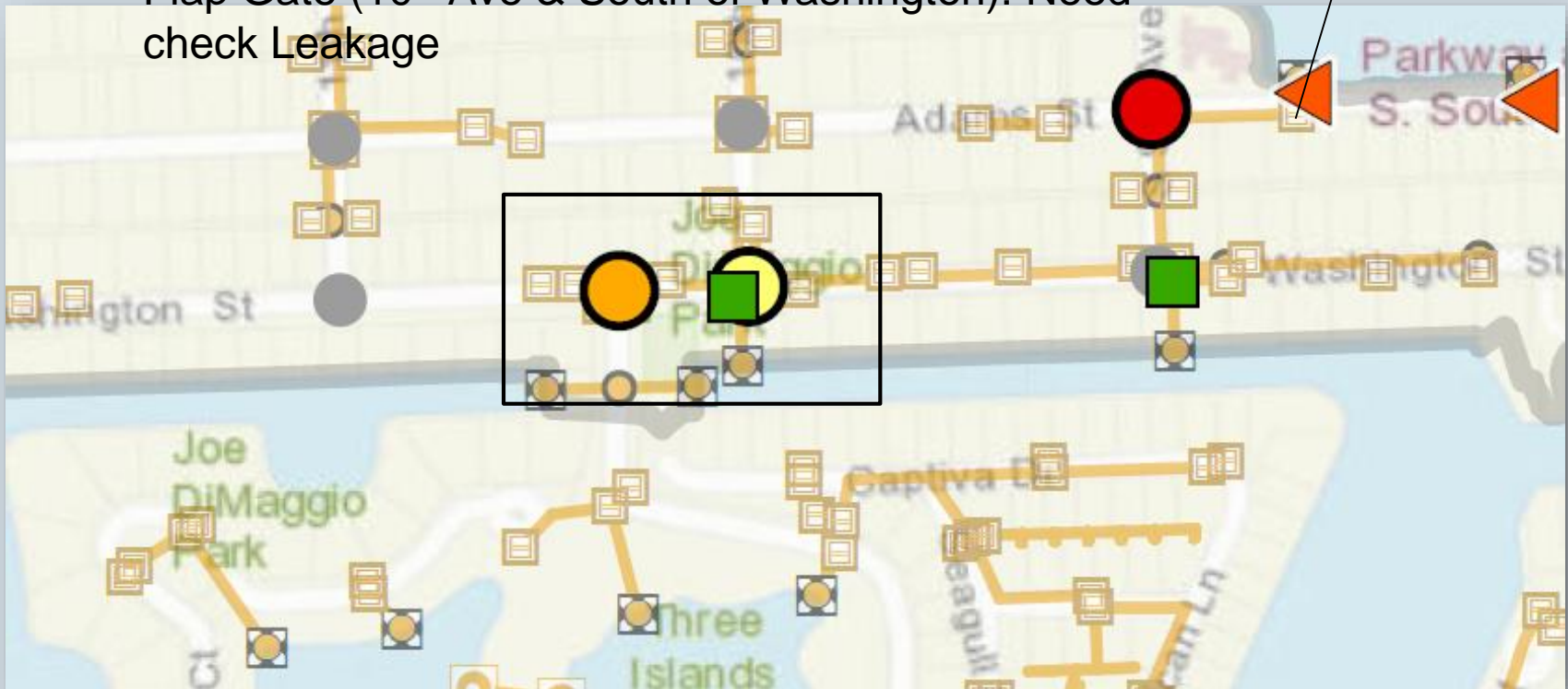


South Lake - No.3 Analysis

- **Washington St (Three Island Blvd & S. 10th Ave):**

- Leak from structure in Area No.2
- Flap Gate (10th Ave & South of Washington): Need check Leakage

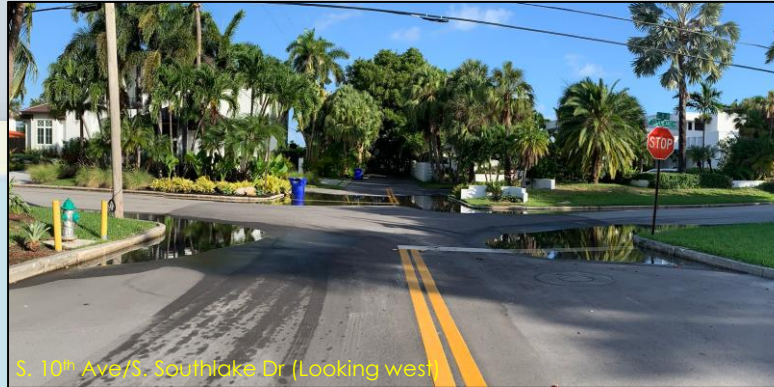
Structure
requires
sealing



South Lake - No.4

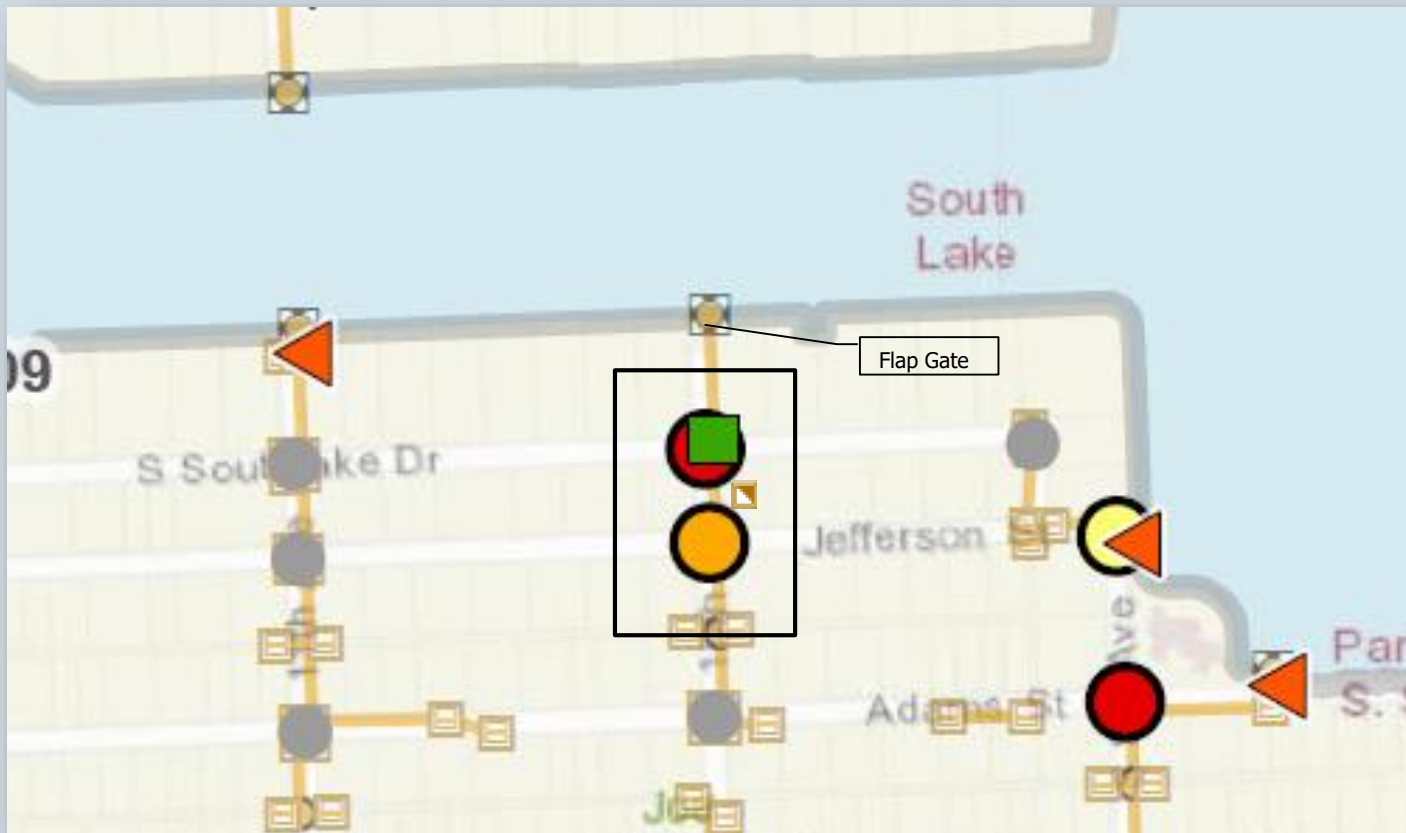
Observed Tidal Flooding Levels

- S. 10th Ave & S. Southlake Dr & Jefferson St



South Lake - No.4 Analysis

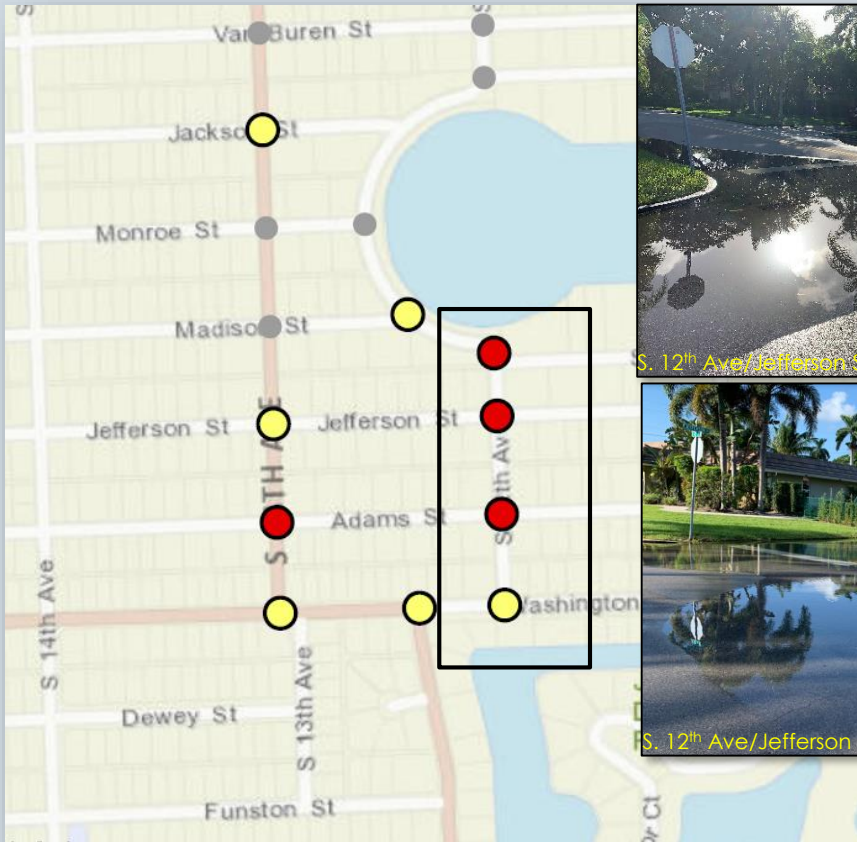
- **S. 10th Ave & S. Southlake Dr & Jefferson St**
 - Leaking Flap Gate: needs replacement



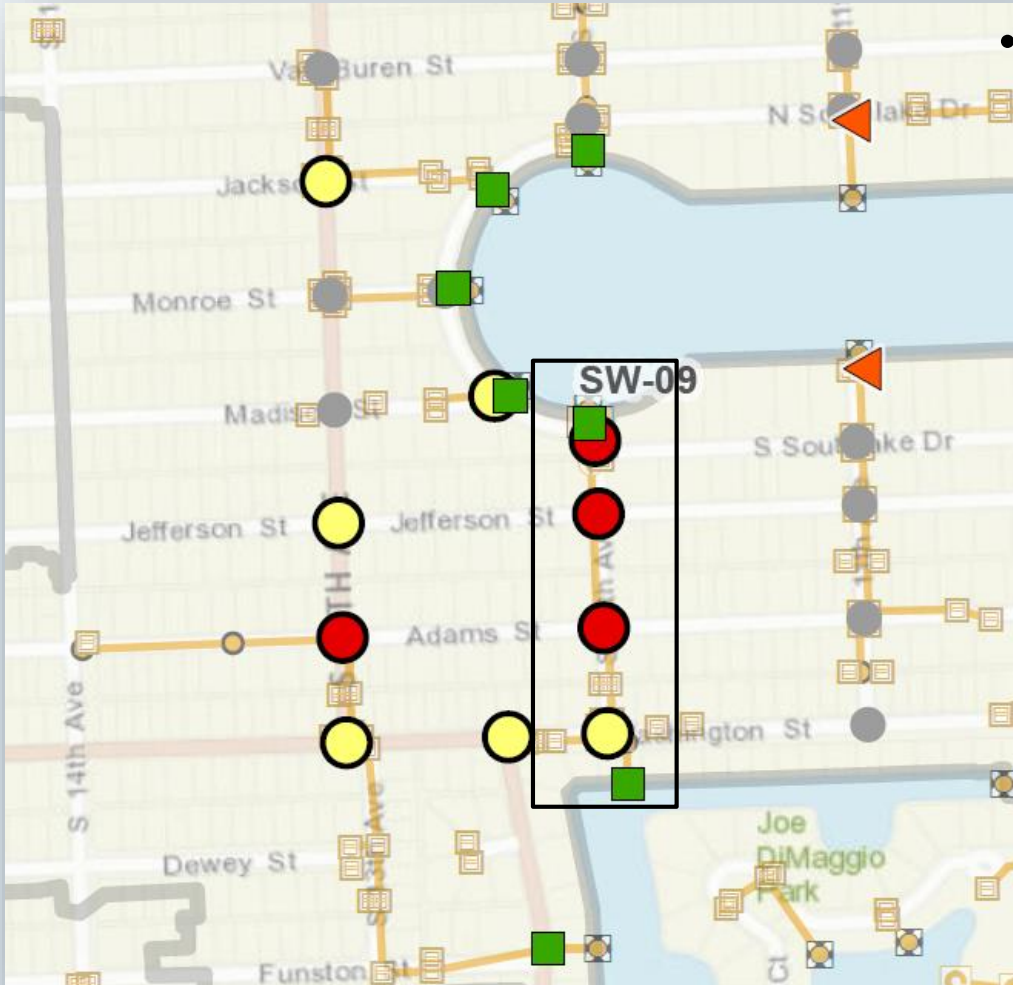
South Lake - No.5

Observed Tidal Flooding Levels

- S. 12th Ave (Stormwater Pump Station SW-09 – Washington St)



South Lake - No.5 Analysis

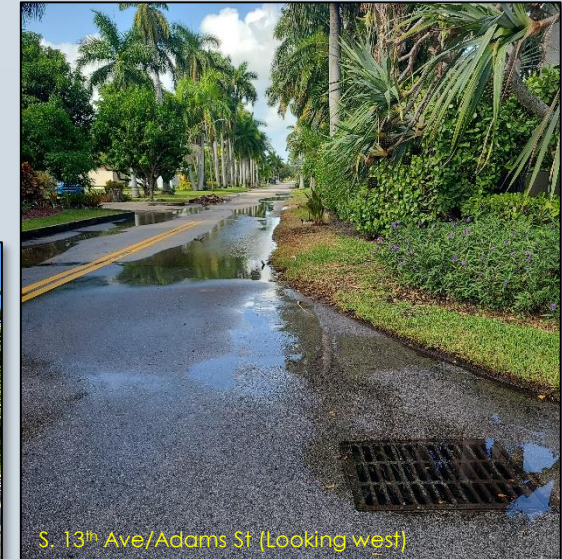
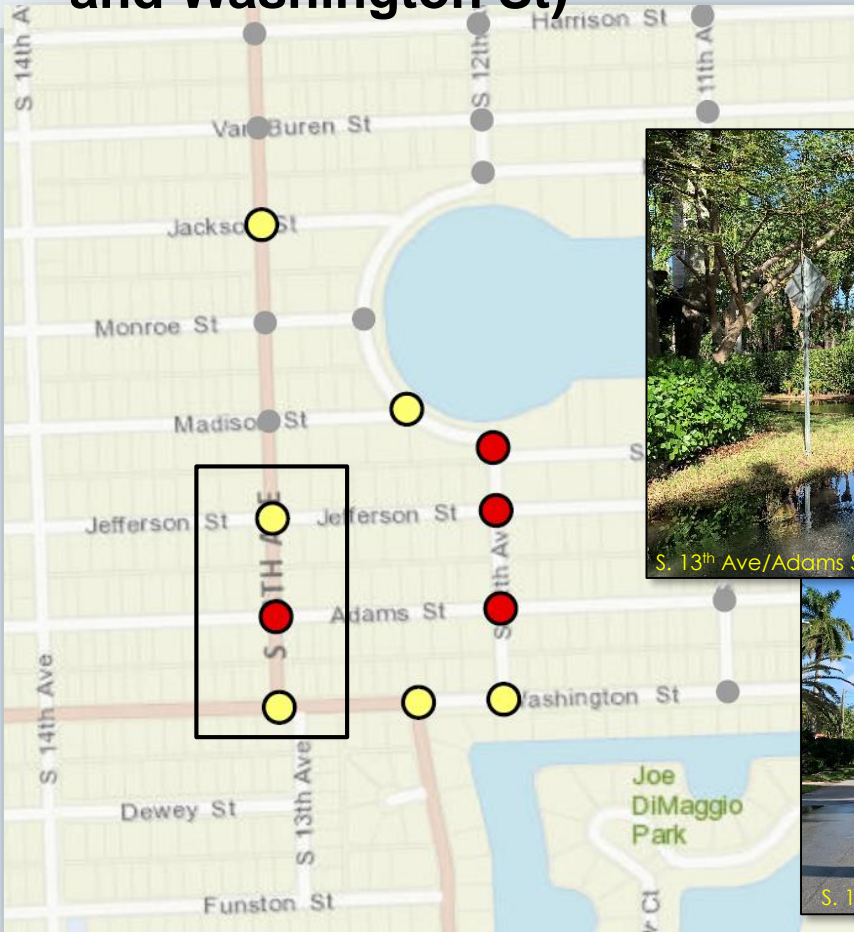


- **S. 12th Ave (Stormwater Pump Station SW-09 – Washington St)**
 - Missing Flap Gate (Installed in February 2023)

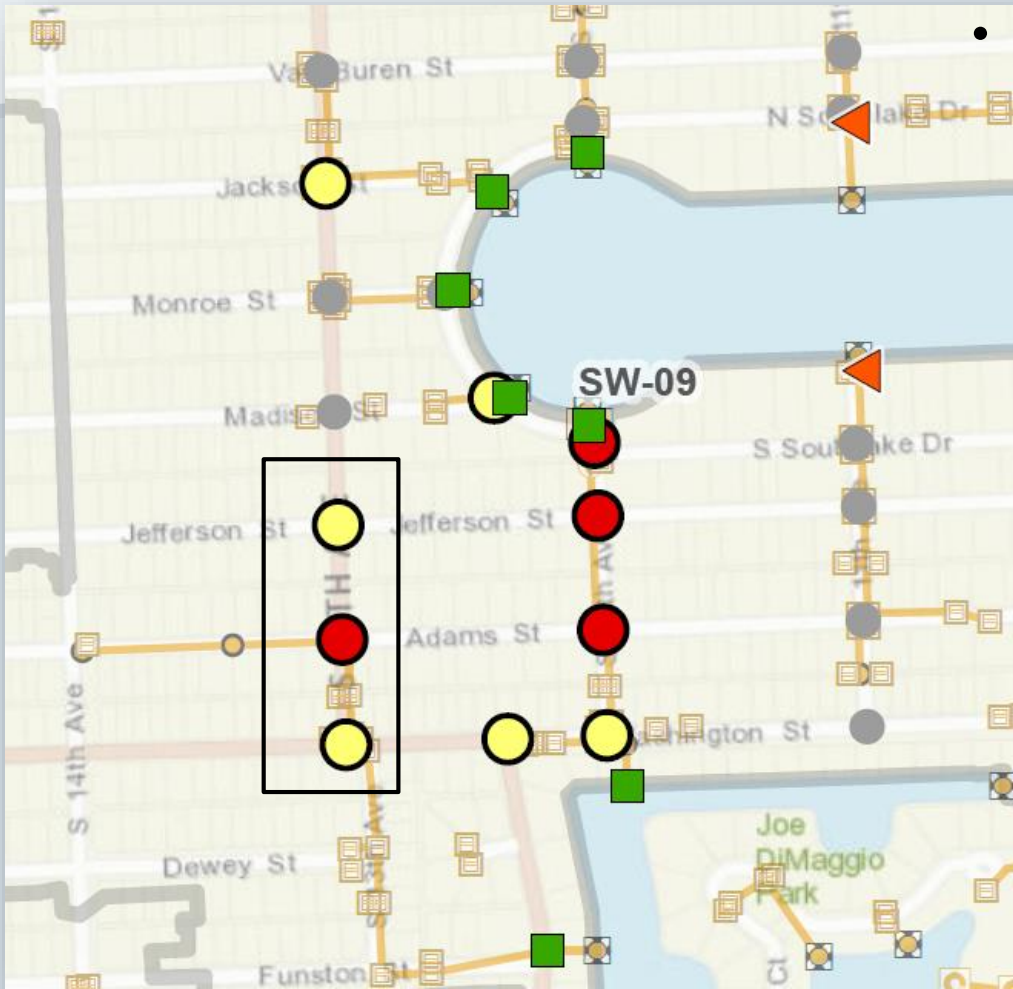
South Lake - No.6

Observed Tidal Flooding Levels

- S. 13th Ave (Adams St, Jefferson St and Washington St)



South Lake - No.6 Analysis

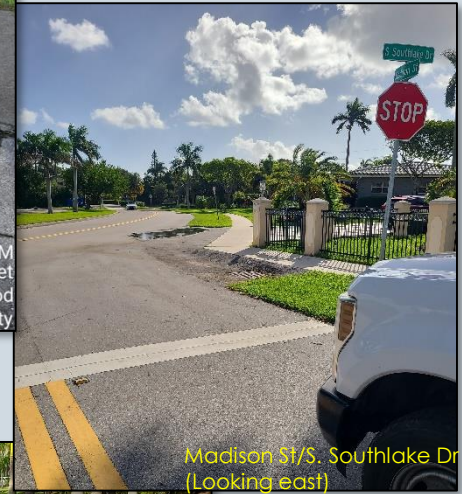
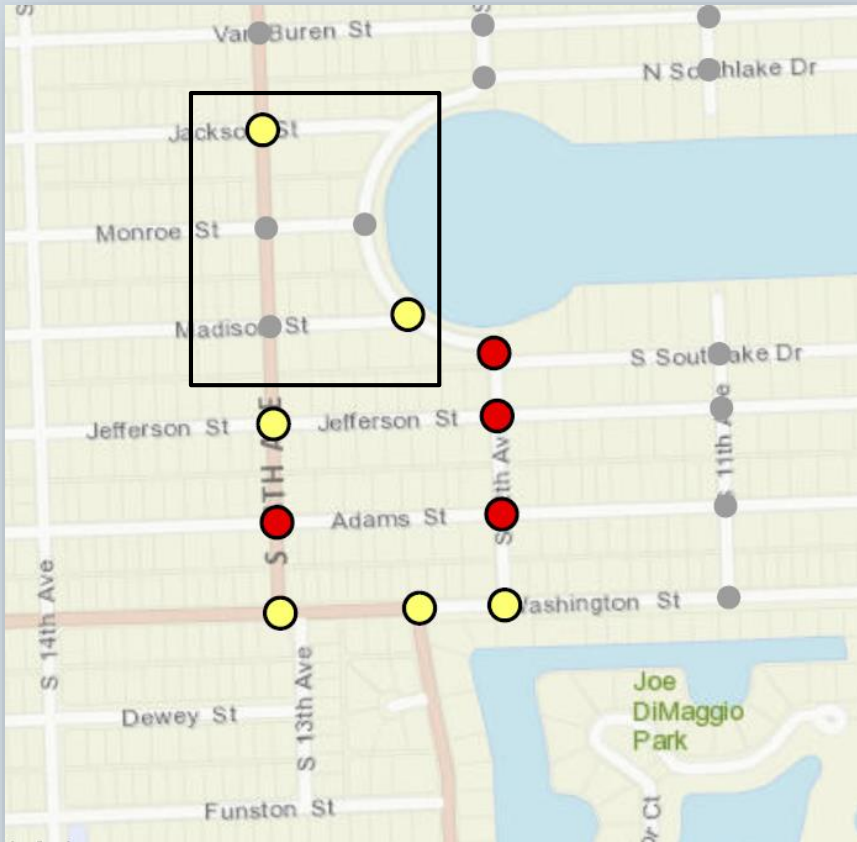


- **S. 13th Ave (Adams St, Jefferson St and Washington St)**
- Needs check BFP east Funston Street after coordination for access (Project pending award)

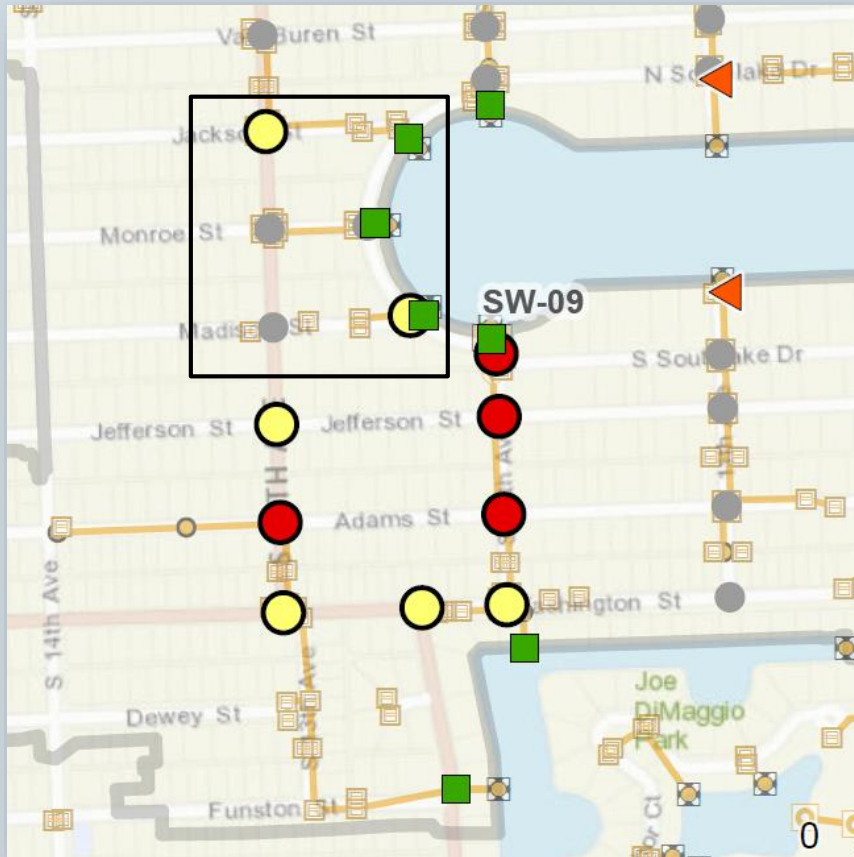
South Lake - No.7

Observed Tidal Flooding Levels

- S. 13th Ave & Jackson St
- S. Southlake Dr & Madison St



South Lake - No.7 Analysis

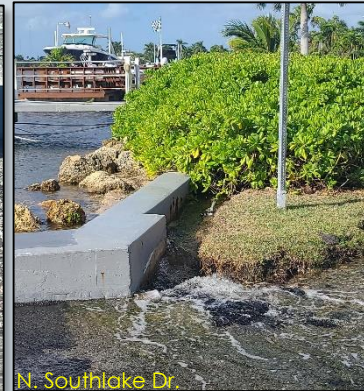
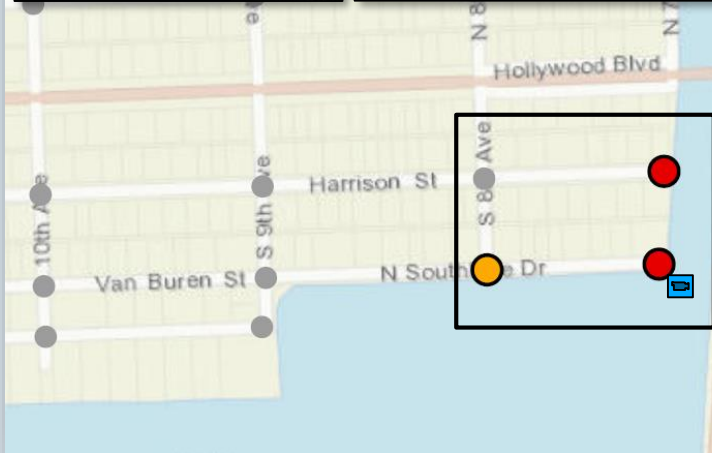
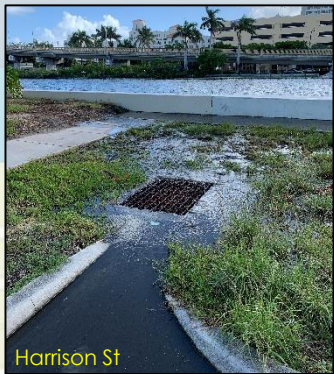


- **S. 13th Ave & Jackson St**
- **S. Southlake Dr & Madison St)**
 - Investigate BFPs east of S. 13th Ave

South Lake - No.8

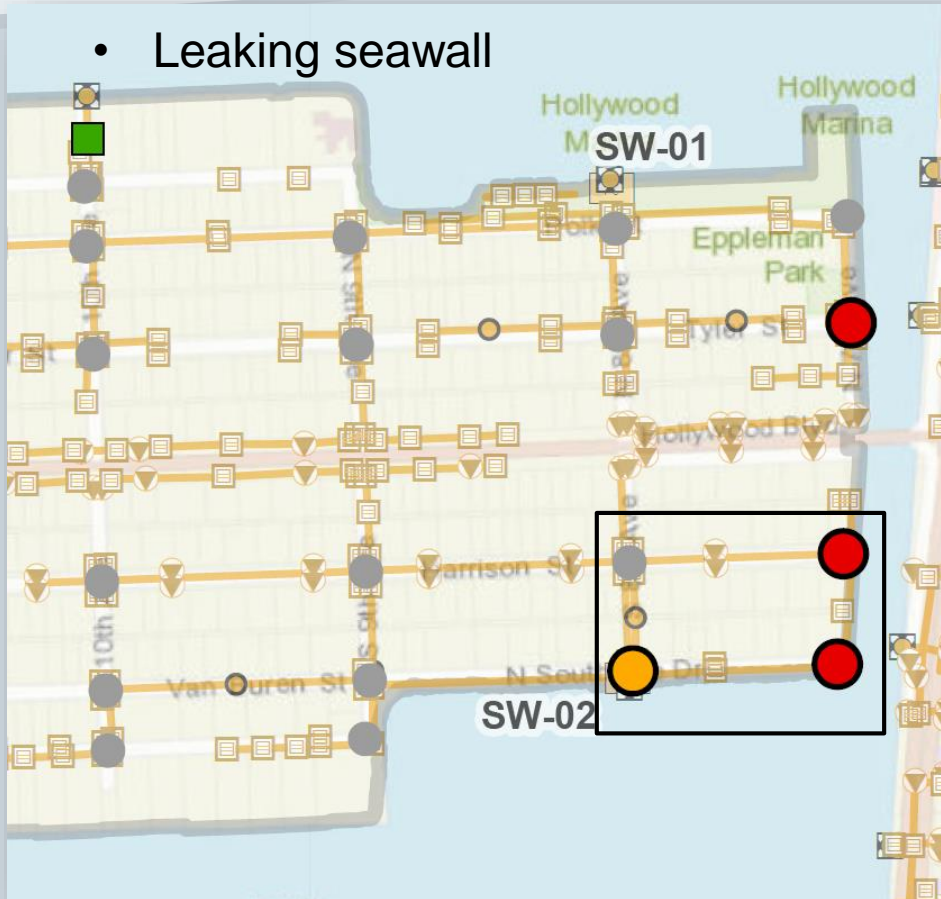
Observed Tidal Flooding Levels

- N. Southlake Dr and Harrison St Seawall:



South Lake - No.8 Analysis

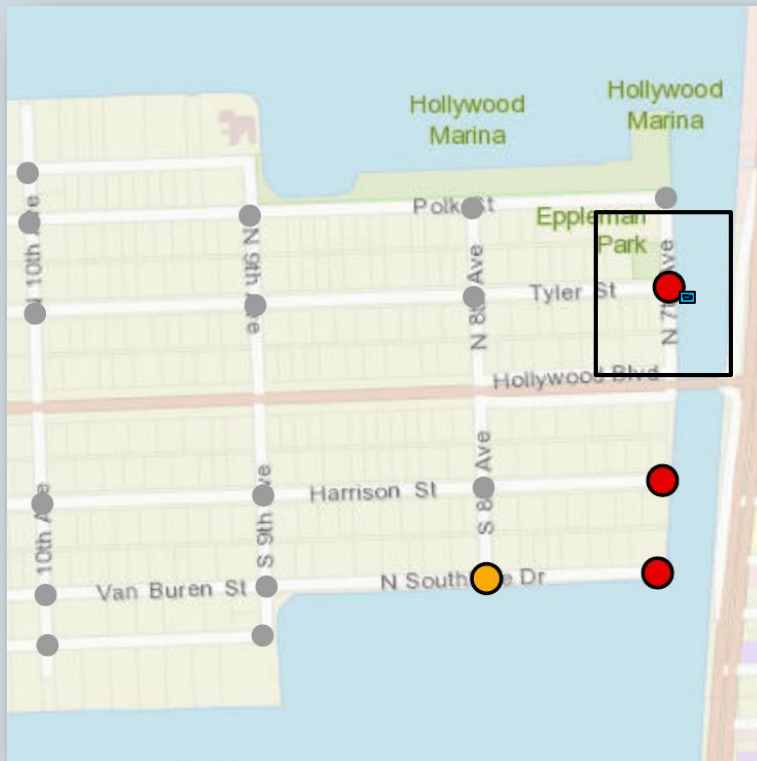
- **N. Southlake Dr and Harrison St Seawall**



North Lake - No.1

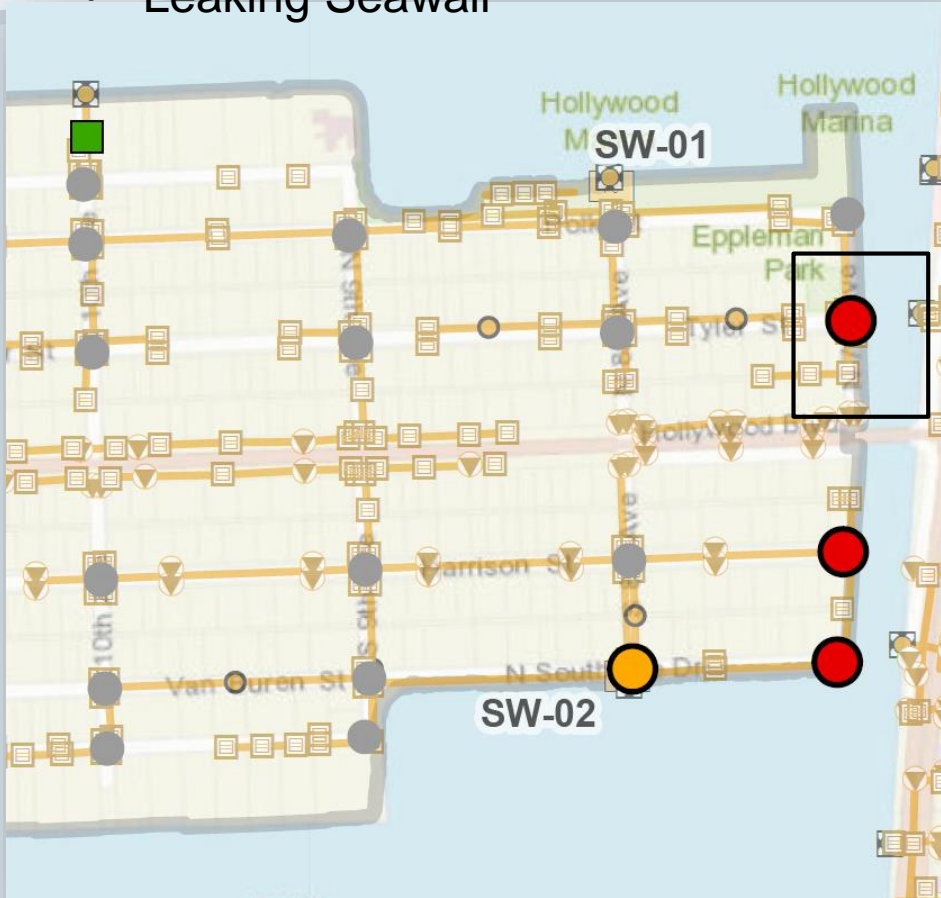
Observed Tidal Flooding Levels

- Tyler St / N. 7th Ave:



North Lake - No.1 Analysis

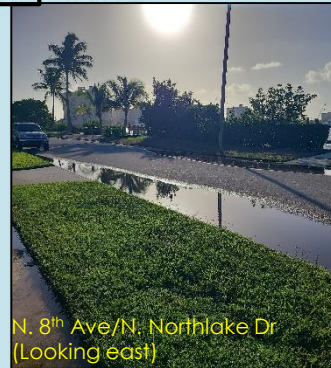
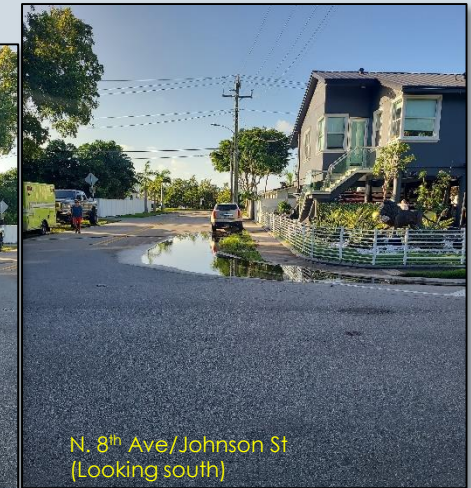
- **Tyler St / N. 7th Ave:**
 - Leaking Seawall



North Lake - No.2

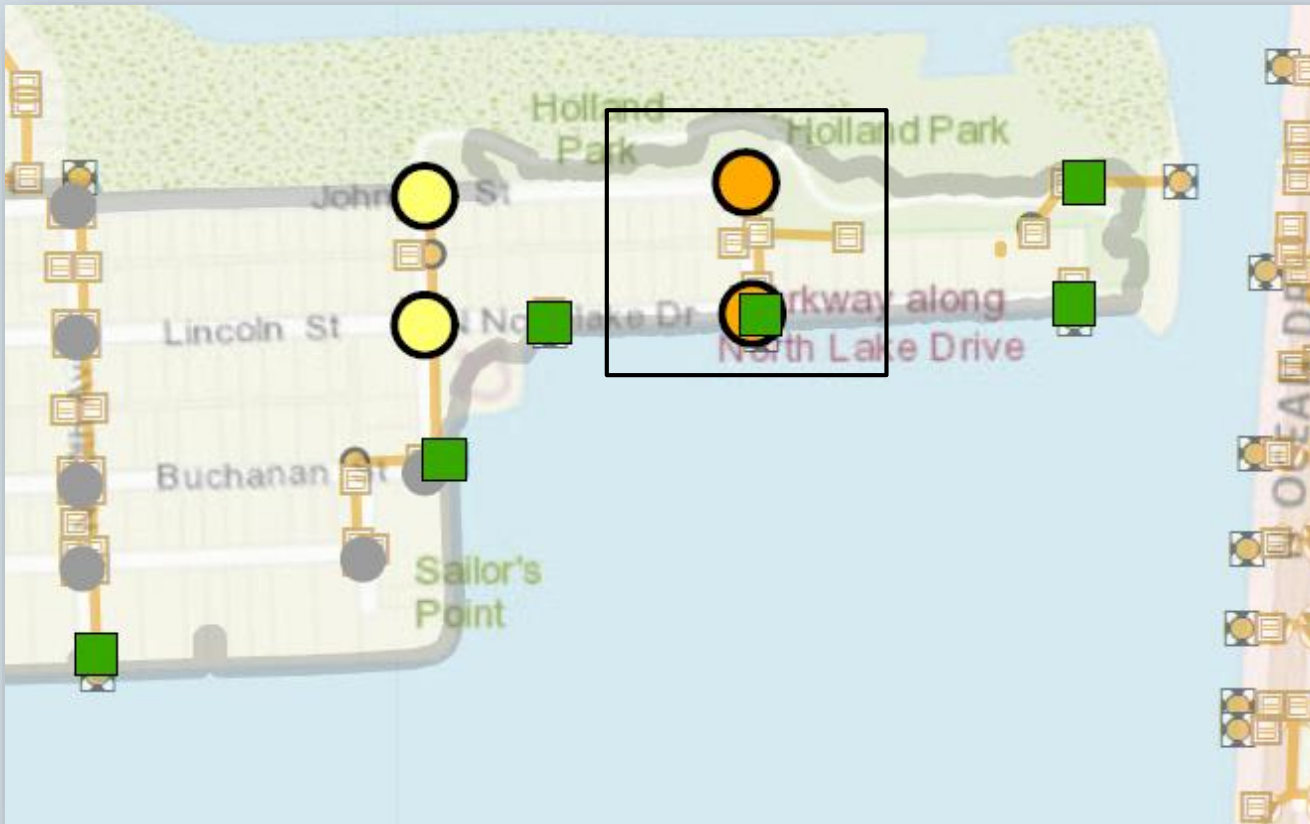
Observed Tidal Flooding Levels

- **N. 8th Ave (Johnson Street & N. North Lake Dr.):**



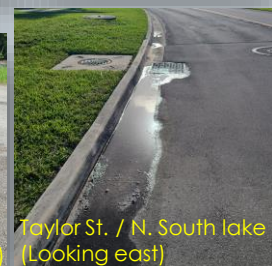
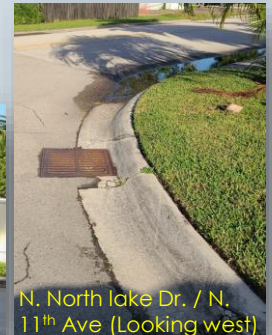
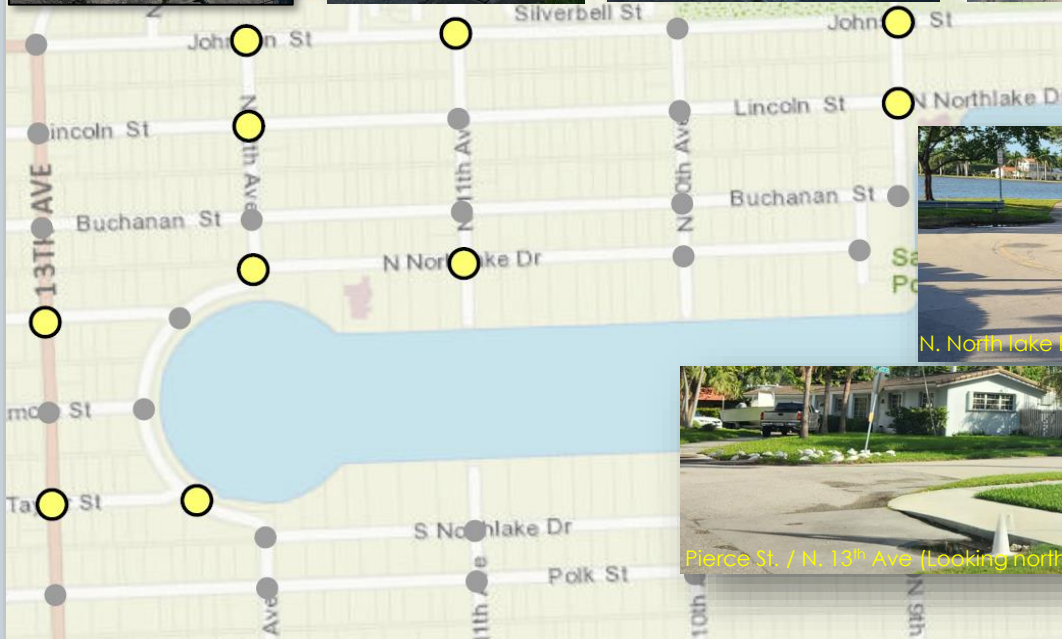
North Lake - No.2 Analysis

- **N. 8th Ave (Johnson Street & N. North Lake Dr.):**
 - Flap Gates need to be checked
 - Leaking Berm



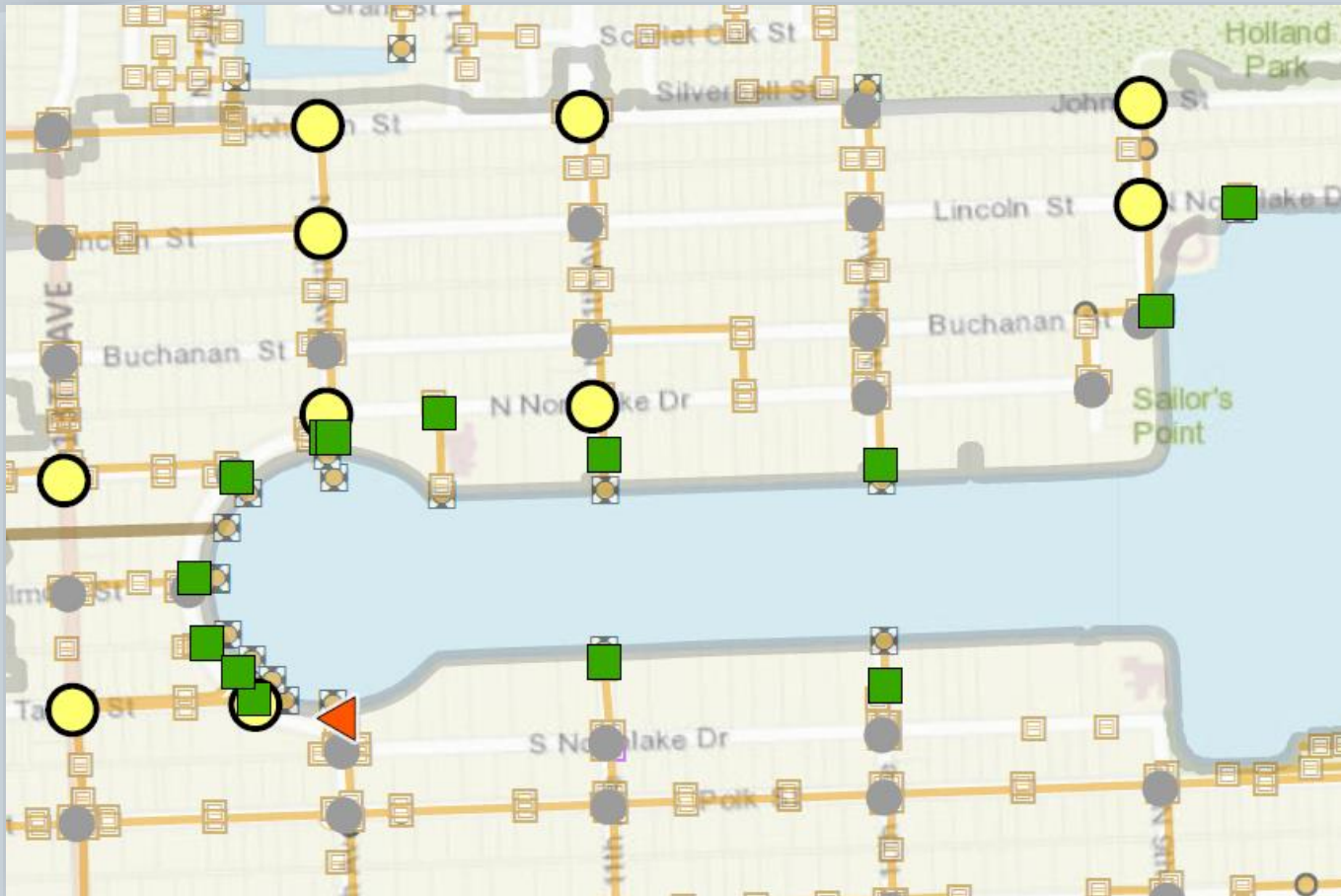
Other North Lake Observed Tidal Flooding Levels

- N. 9th Ave, N. 11th Ave, N. 12th Ave, N. 13th Ave, S. Northlake Dr:



Other North Lake Analysis

- N. 9th Ave, N. 11th Ave, N. 12th Ave, N. 13th Ave, S. Northlake Dr:
 - Need Progressive Maintenance



Action Plan

Future Projects

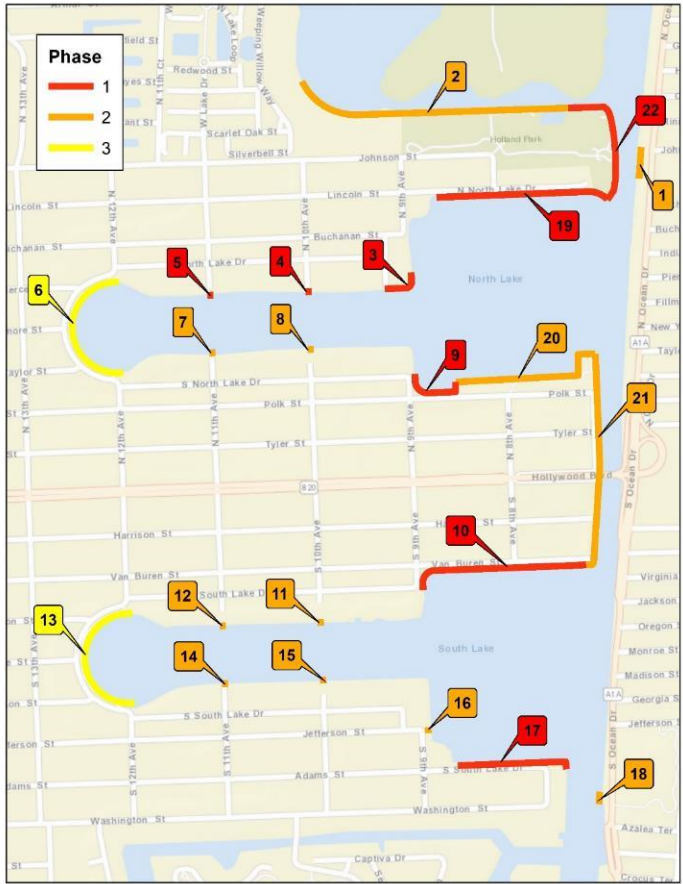
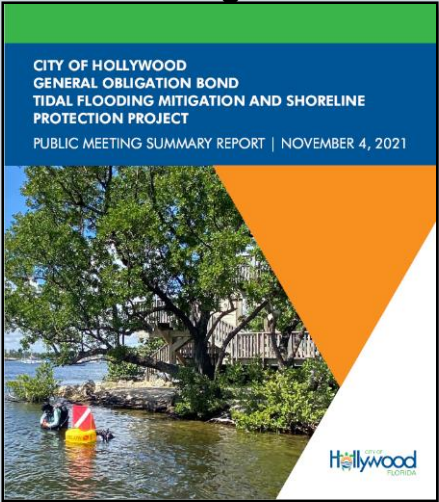
	Preliminary list of projects
1	1179 Johnson Street - Outfall Replacement
2	12 Ave and N Southlake Drive - 60" Flap Gate Replacement
3	1000 Washington Street - 24" Flap Gate Replacement
4	SW-09 Wet Well Retaining Wall Repair/Replacement
5	5130 Mc Kinley Street and Emerson Drive - Swale Restoration
6	724 Park Court - Drainage System Installation
7	2034 Thomas Street - Drainage System Installation
8	1200 Van Buren Street - Regrading
9	Swale Restoration at Polk and N 14 Court
10	2722 Scott Street - Drainage and connection to an existing outfall
11	3621 N 52 Avenue - Drainage and connection to an existing outfall
12	3110 N 52 Avenue - Drainage and connection to an existing outfall
13	Connection from Liberty Street Lake through Rotary Part to the C-10 Canal
14	Hollywood Hills - Polk St Drainage Improvements - Phase I
15	Sheridan Street Drainage Improvements Phase I - Detention Storage
16	Sunset Park Drainage Improvements Phase I - West Ditch Improvements and Johnson Street Culvert
17	6333 Fillmore Street - Swale Regrade
18	5805 Plunket Street - Drainage Improvements
19	747 N Northlake Drive - Drainage Improvements

TIDAL FLOODING

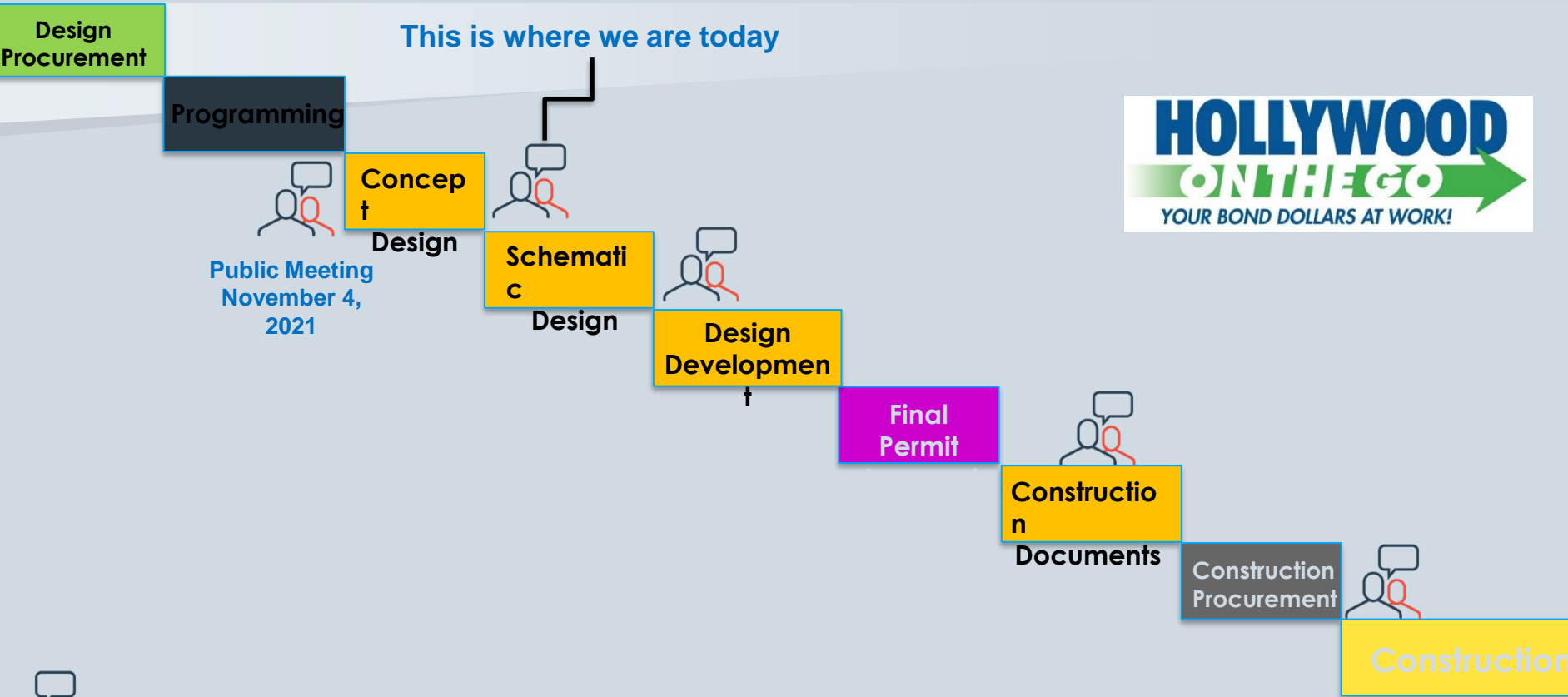
Current Status

- Conceptual Design 100% Complete
- Currently in Schematic Design
- Finalizing Project Schedule / Phasing Plan

Public Meeting



PROJECT DESIGN PROCESS



 **Community Updates**

TIDAL FLOODING PRELIMINARY PROJECT TIMELINE

Area	Start	Finish
Area 1	11-14-22	08-21-24
Area 2	11-14-22	10-30-24
Area 3	05-01-23	01-03-25
Area 4	01-02-23	04-19-24
Area 5	01-02-23	04-19-24
Area 6	01-18-23	07-25-25
Area 7	01-18-23	03-20-25
Area 8	01-18-23	03-20-25
Area 9	02-01-23	01-28-25
Area 10	01-02-23	06-17-25

Area	Start	Finish
Area 11	01-18-23	10-21-24
Area 12	01-18-23	10-21-24
Area 13	01-18-23	07-25-25
Area 14	01-18-23	03-20-25
Area 15	01-18-23	03-20-25
Area 16	01-18-23	03-20-25
Area 17	02-01-23	06-17-25
Area 18	01-18-23	08-21-24
Area 19	11-14-22	06-17-25
Area 20	01-18-23	03-28-25
Area 21	01-18-23	12-19-25
Area 22	11-14-22	10-30-24

Preliminary Schedule to be confirmed and adjusted after permitting agencies and contractor's input.

