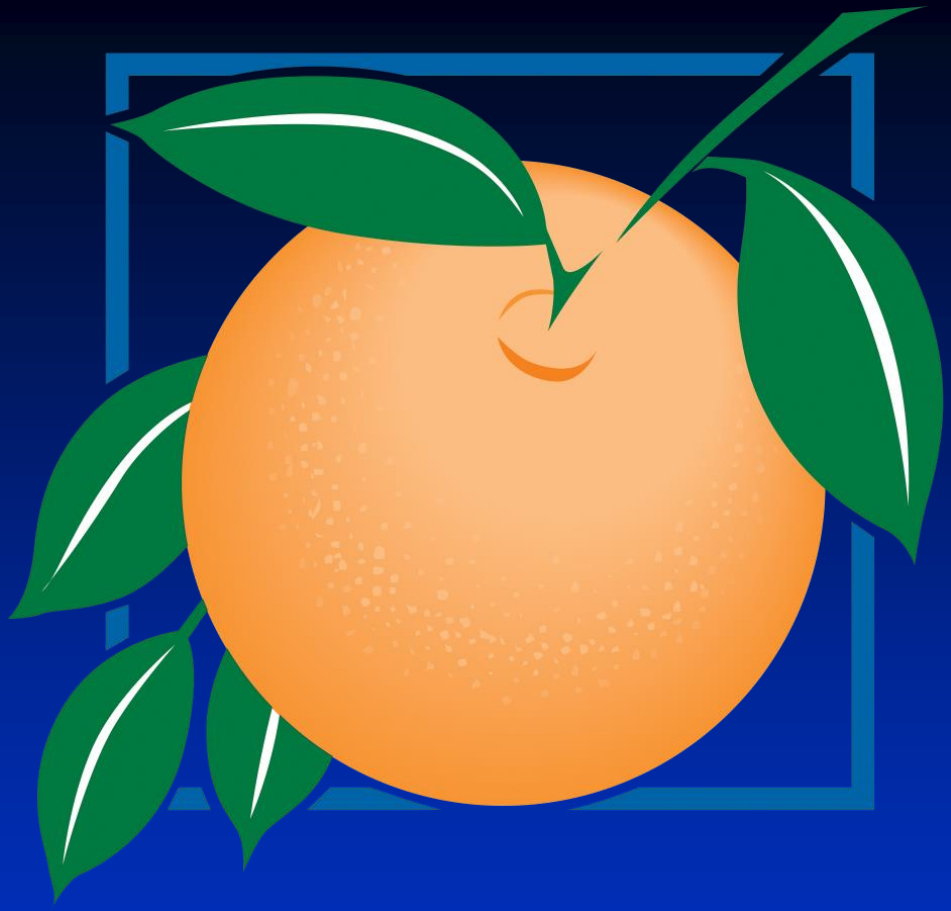


Westside Manor Drainage Work Session

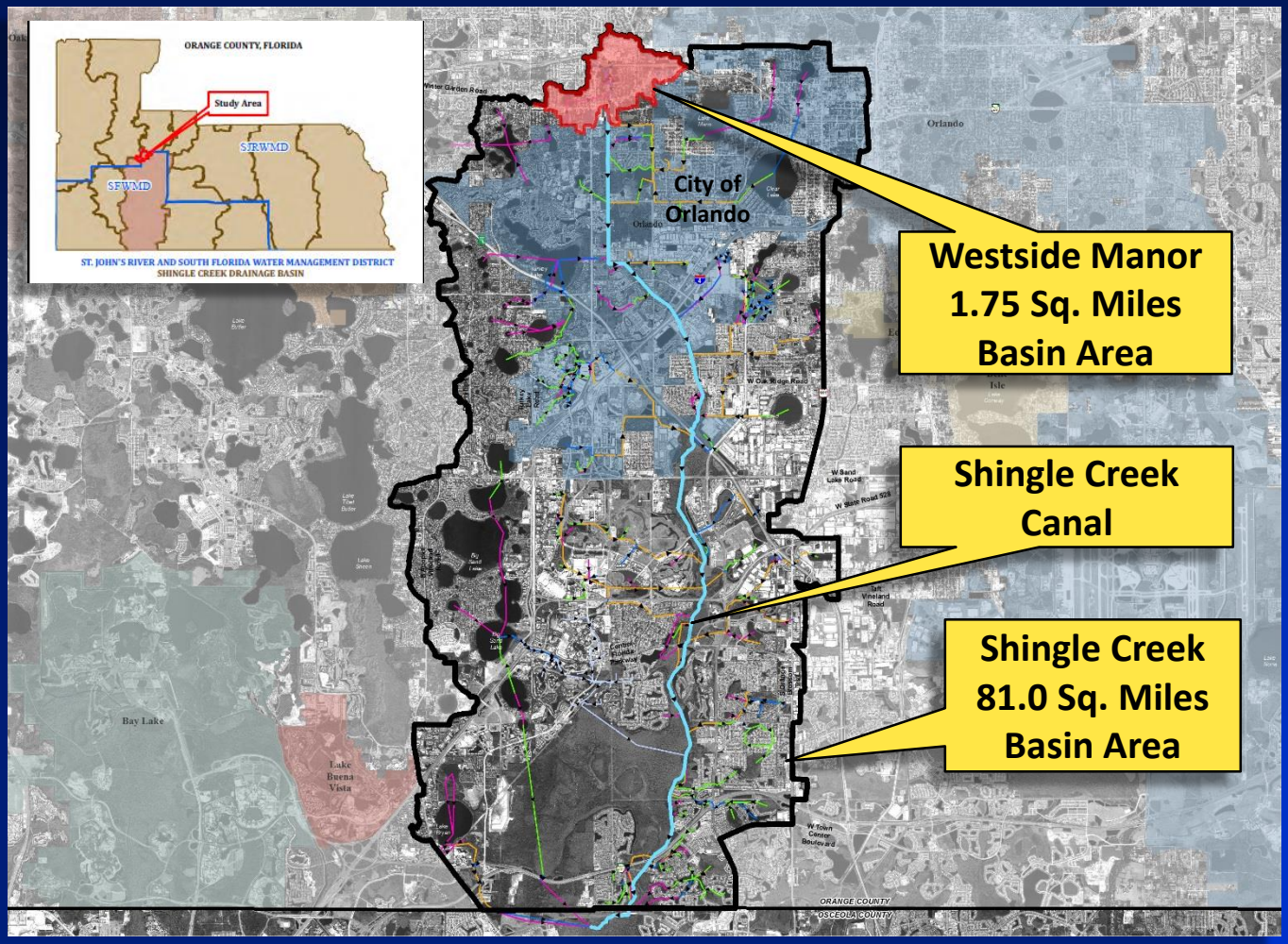
December 19, 2017

Presentation Overview

- History
- Hurricane Irma
- Pump Station Evaluation Study
- Next Steps

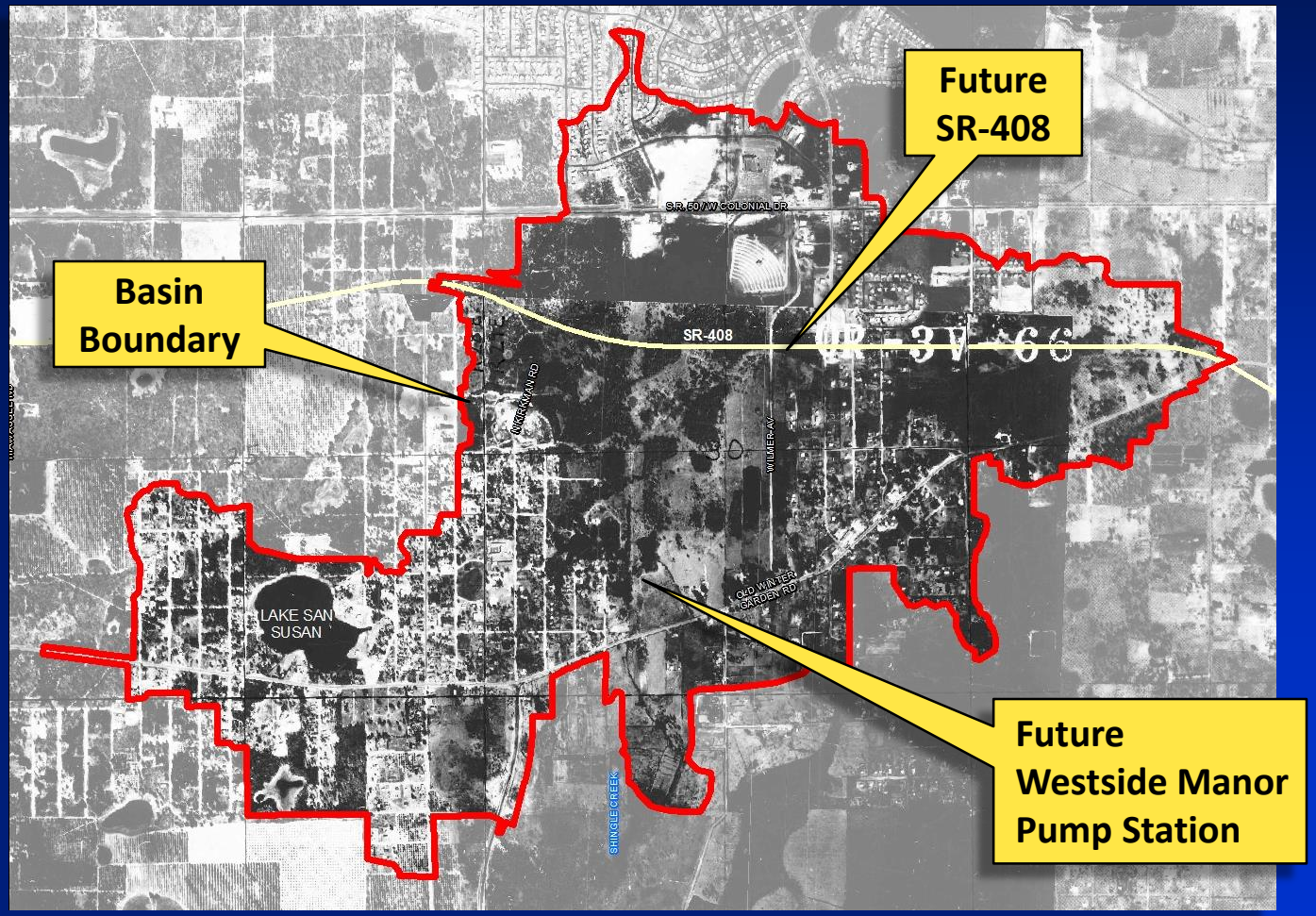
History

- Watershed



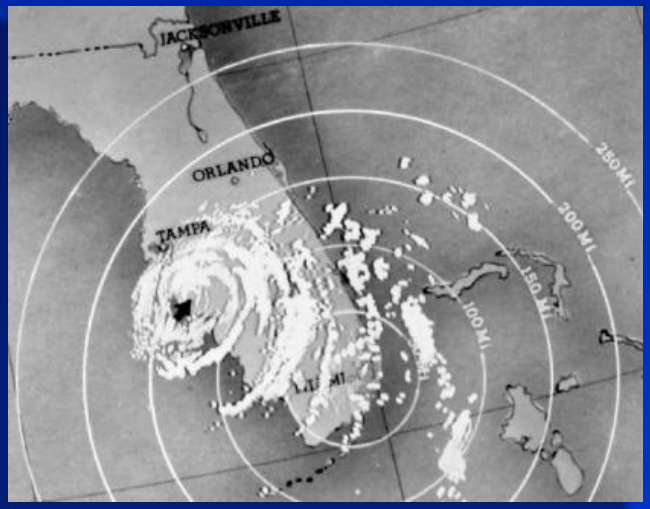
History

- 1958 Aerial



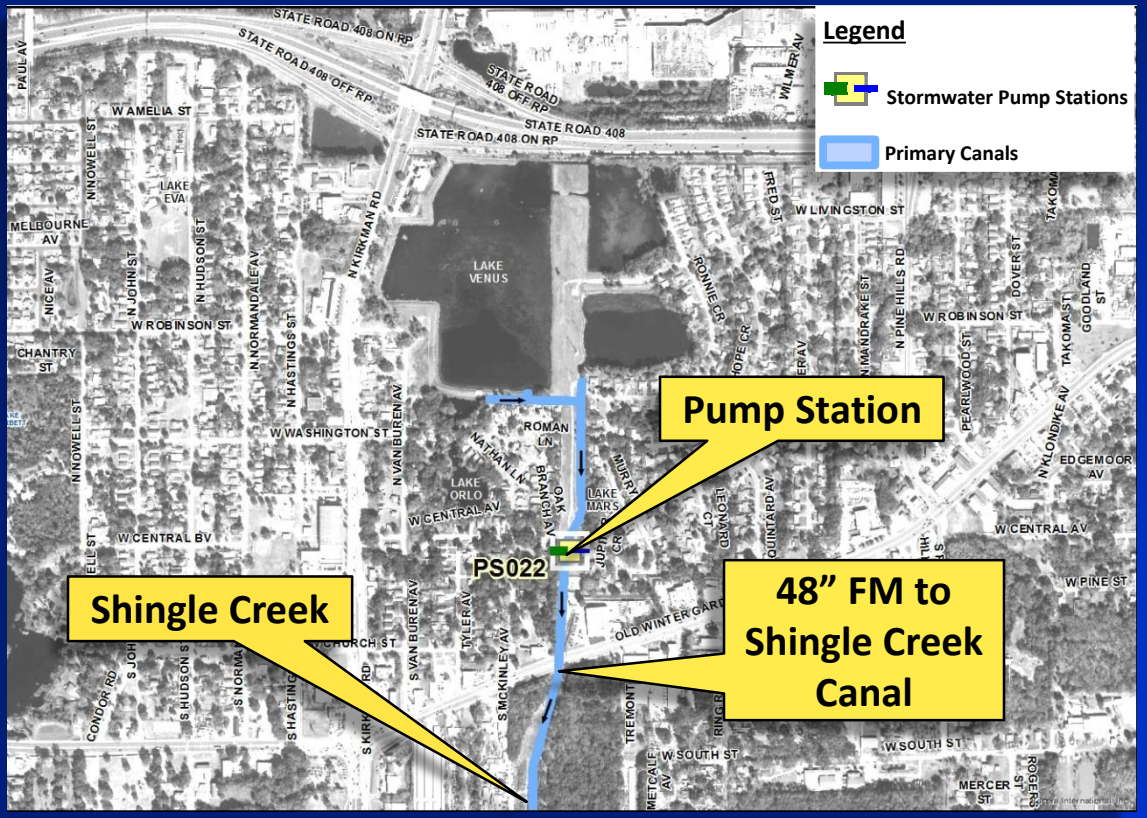
History

- **Hurricane Donna 1960**
  - **During March of 1960, and again in September, the Westside Manor area was subjected to serious flooding which resulted in extreme property damage.**



History

- In 1960, the Orange County Commission hired Michaels Engineering to conduct a drainage study of the Westside Manor area.



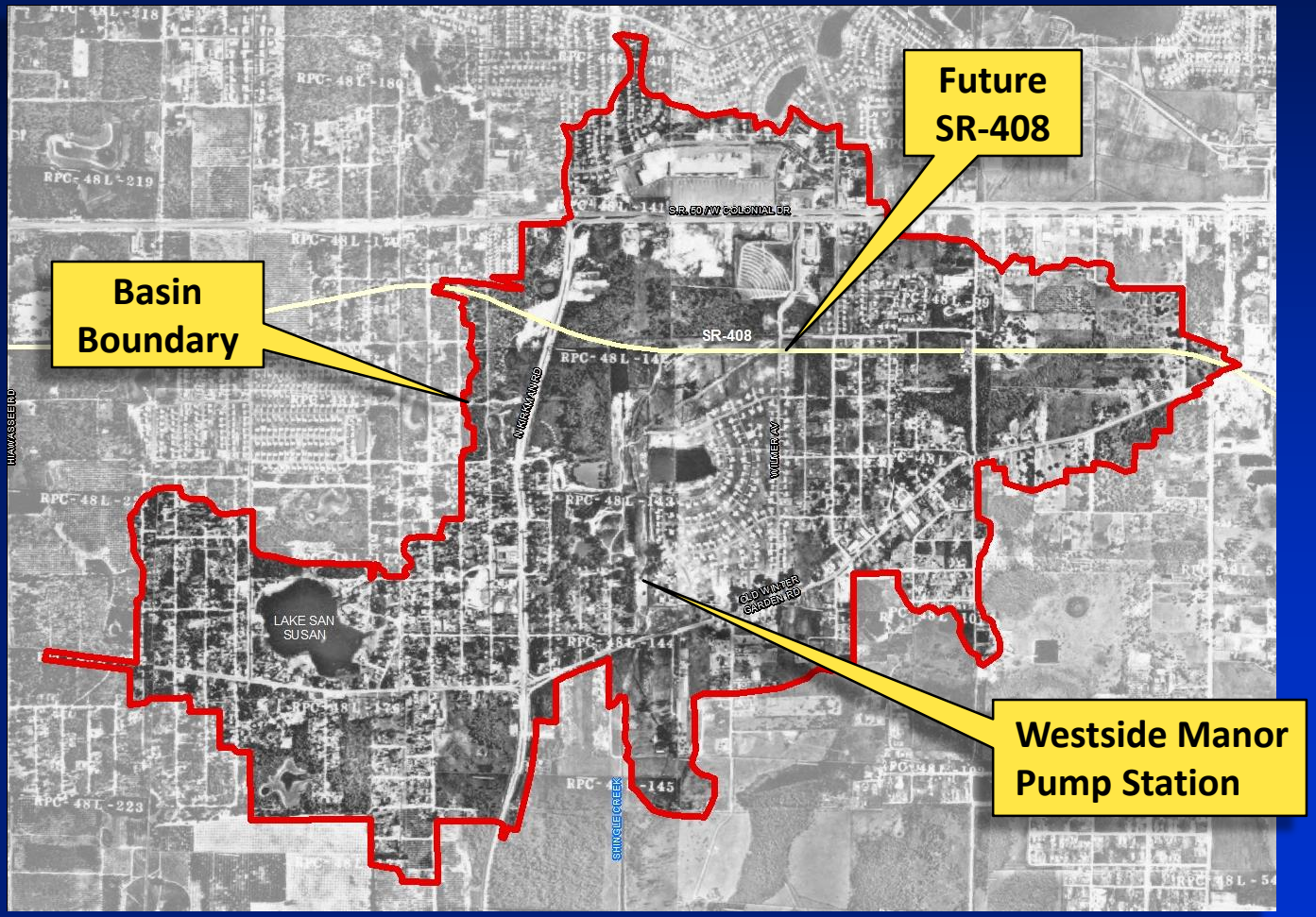
History

- The study predicted that these facilities would render the Westside Manor development safe from serious flood damage for storms up to a 25-year recurrence interval.

- Provided that
  1. Full 20 acre storage area was constructed
  2. The outfall canal & intake canals are continually cleaned & maintained.

History

- 1963 Aerial



History

- Since 1963
  - Pond areas have been constructed (20 acres)
  - Pumps, force main, and outfall canals have been maintained
  - Upgrades in the last 15 years include:

    - (2) 20,000 gpm electric pumps replaced original diesel pumps
    - Back-up generator
    - Added telemetry monitoring
    - 48” force main leaks were repaired by slip lining the pipe

Presentation Overview

- History
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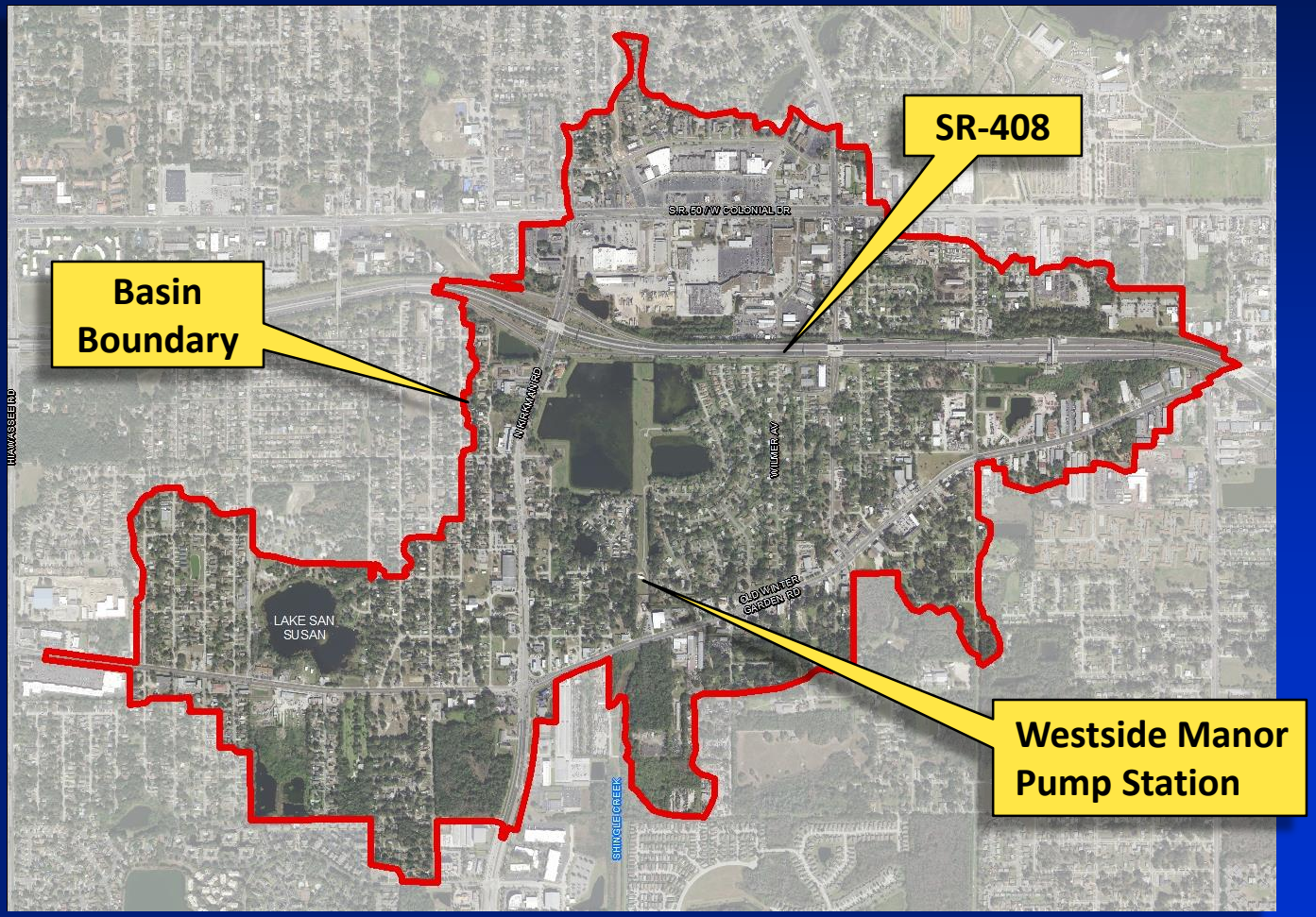
Hurricane Irma

- 2017 Aerial



Hurricane Irma

- **Hurricane Irma**
- **Excessive runoff from 9.1 inches of rainfall in 28 hours exceeded the capacity of the pumps.**
- **Observed flooding was very similar to the floodplain predicted from the ongoing drainage study.**

Hurricane Irma

- Primary Factors for flooding:
  - Extreme Rainfall
  - Limited available storage
  - Increase in impervious area within the watershed

Hurricane Irma

- County Response
  - Pre-Storm
  - During Storm
  - Post Storm

Hurricane Irma

- Pre-Storm
  - Checked pump station, generator, fuel supply
  - Pumped pond water level down its lowest point to maximize storage
  - Checked telemetry system communications

Hurricane Irma

- During Storm
  - Monitored the pump station remotely with our telemetry system
  - Staff visited area to confirm that the pumps were operating
  - Staff reported widespread flooding and reported to the Emergency Operation Center

Hurricane Irma

- Post Storm
  - Pumped for (4) days @ ave. rate of 44 MGD = 176 MG
  - Drawdown approx. 1”/hr
  - By the 4th day, water levels were back to normal

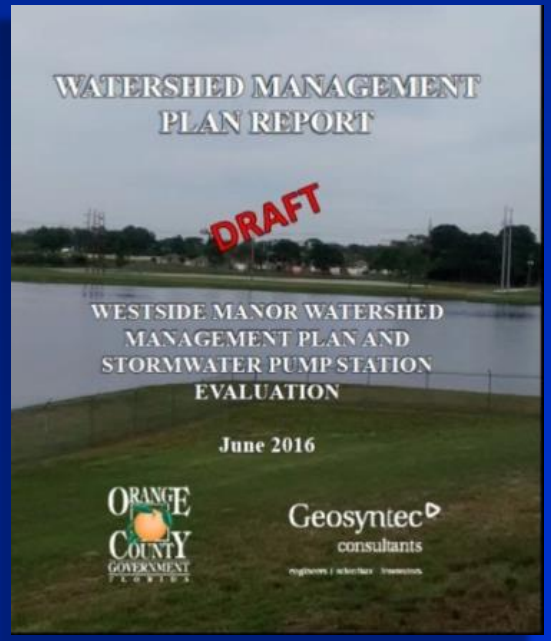
Presentation Overview

- History
- Hurricane Irma
- **Pump Station Evaluation Study**
- Next Steps

Pump Station Evaluation Study

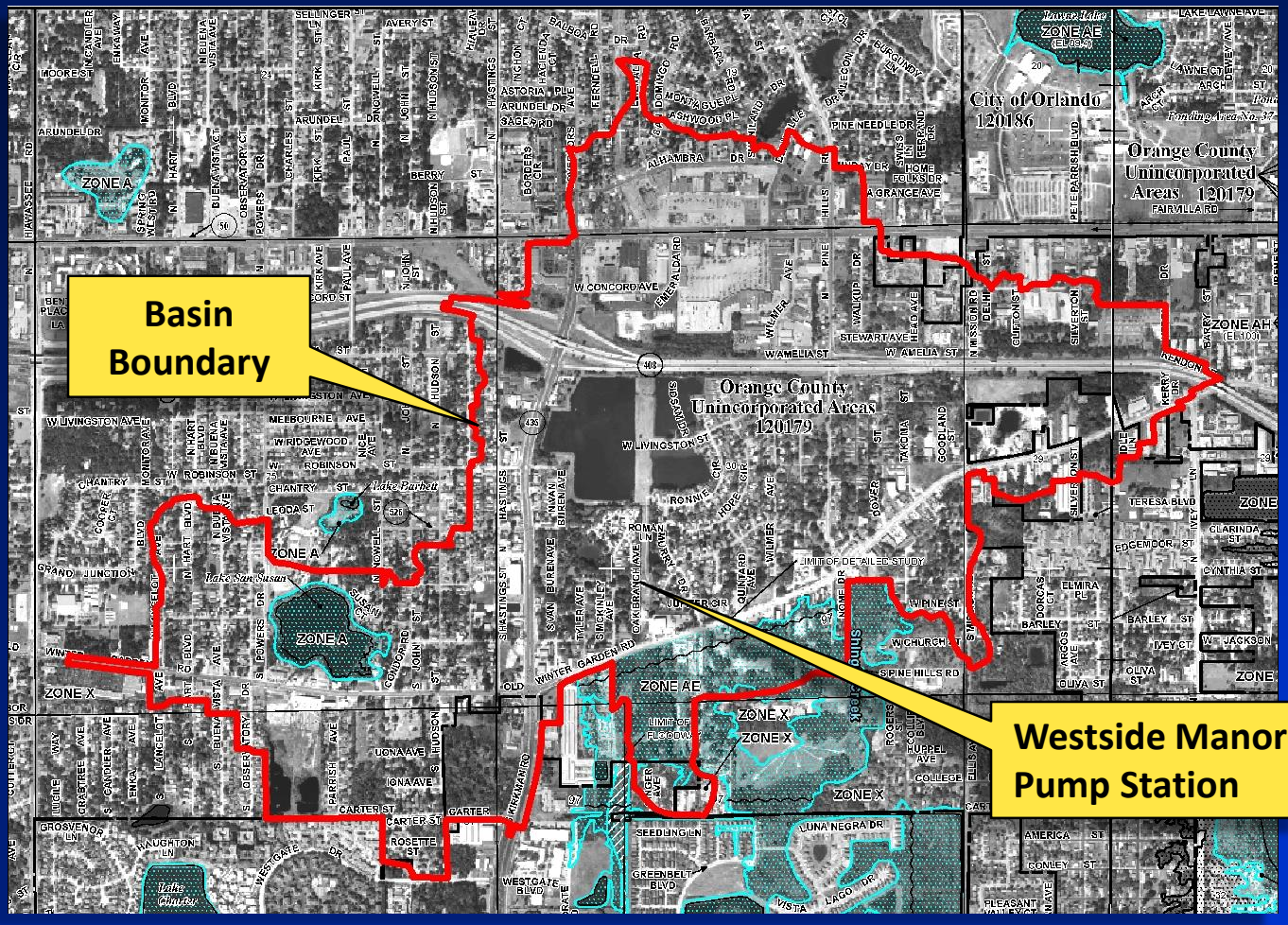
- In 2014, County initiated a detailed Watershed Management and Pump Station Evaluation Study

- Scope of Work
  - Assess the condition of pumps, controls, and force main
  - Determine the 10, 25, and 100 year storm elevations
  - Estimate the floodplain limits



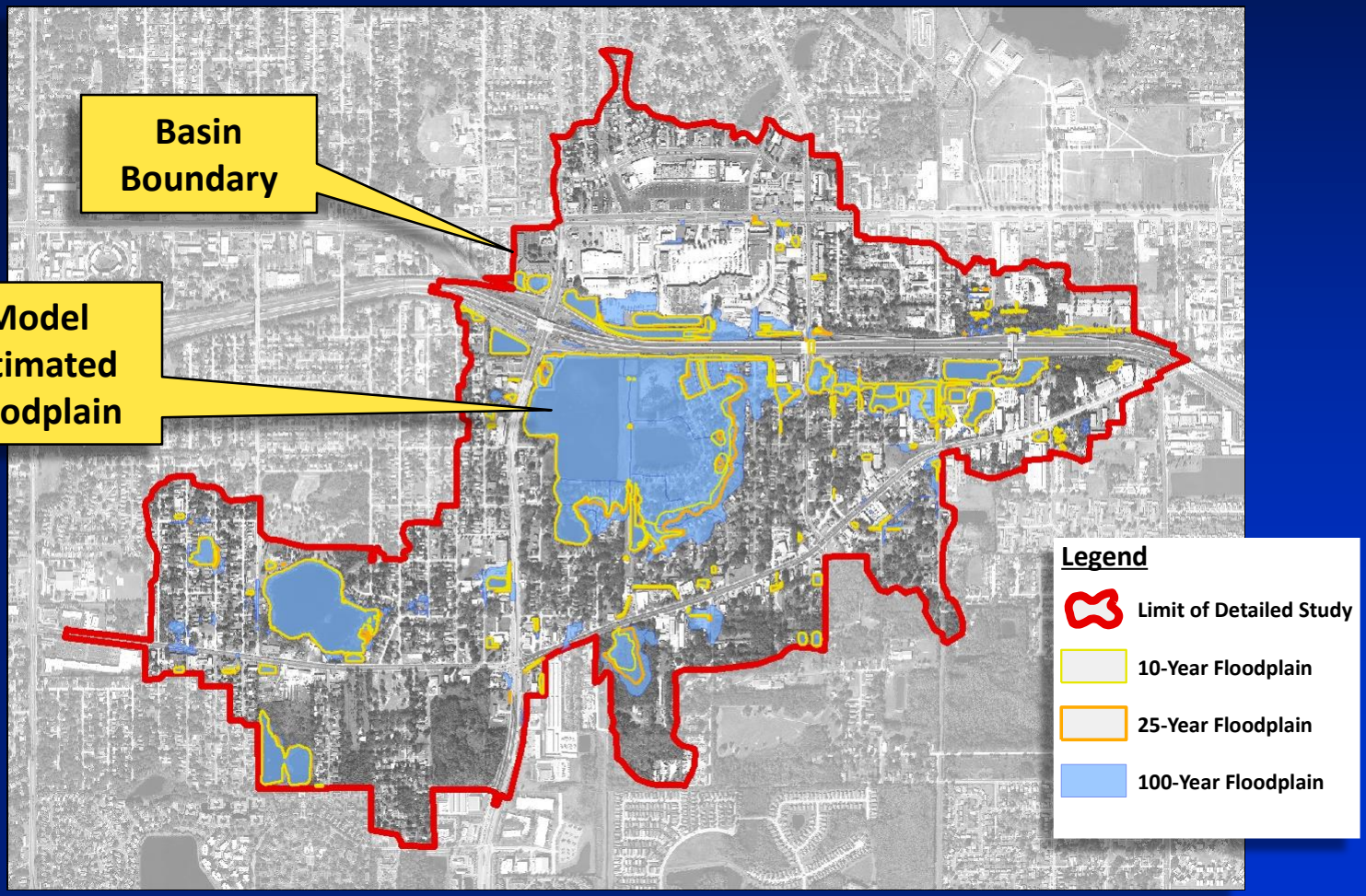
Pump Station Evaluation Study

- FEMA Flood Insurance Rate Map (FIRM)



Pump Station Evaluation Study

- Existing Conditions



Pump Station Evaluation Study

- Objectives
  - Improve flood protection
  - Minimize the number of parcels for flood mitigation
  - Optimize Benefit/Cost

- Alternatives
  1. Optimize the pump float controls
  2. Outfall force main upgrades
  3. Selective pond expansion/creation

Pump Station Evaluation Study

- Costs

Alt. #1 - Optimize pump float controls

Total Cost = Nominal

Alt. #2 - Outfall force main upgrades

Total Cost = $908,000

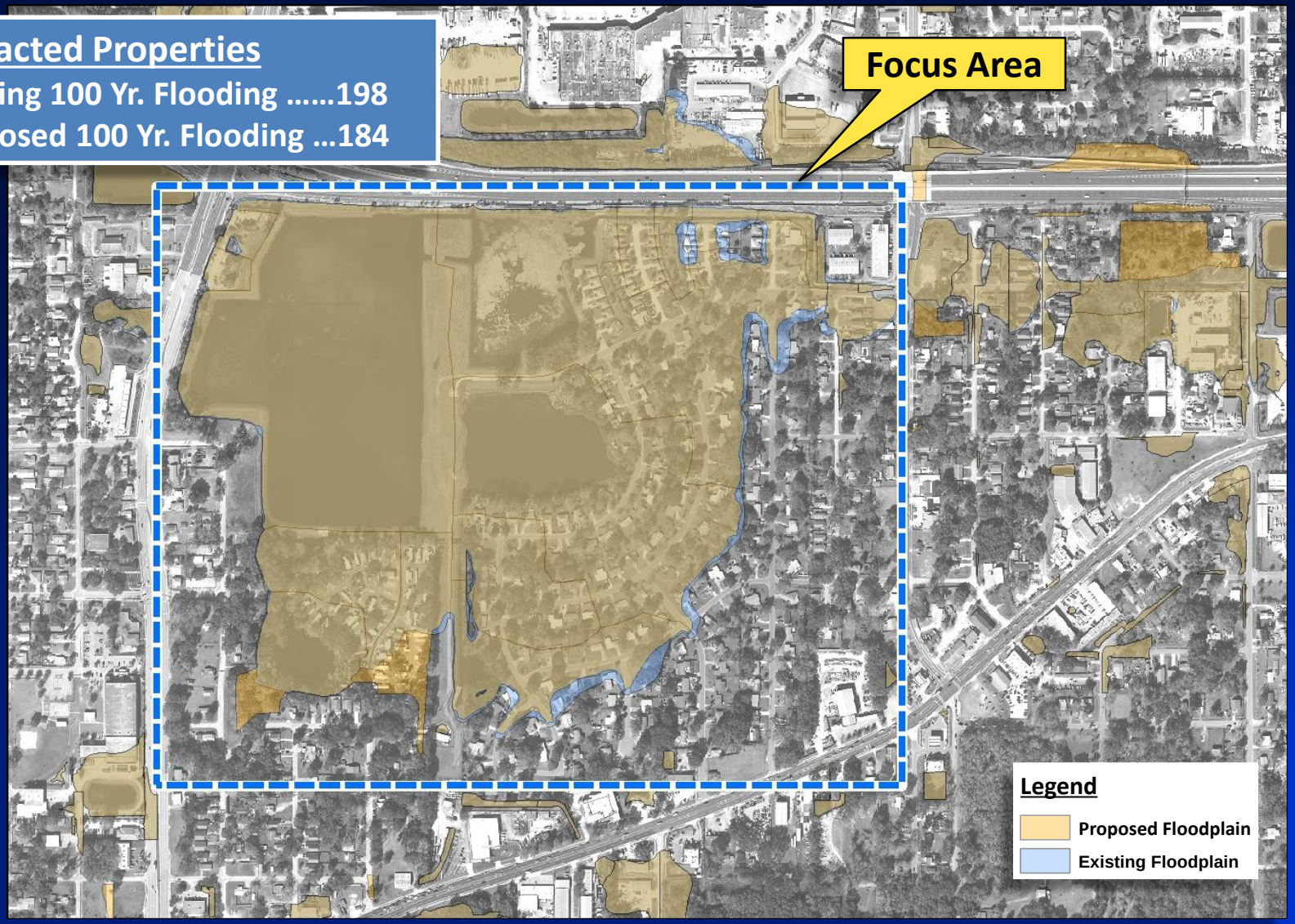
Alt. #3 -Selective pond expansion/creation

Total Cost = $6.2 M

Total Cost = $7.1 M

Pump Station Evaluation Study

Impacted Properties
Existing 100 Yr. Flooding ……198
Proposed 100 Yr. Flooding …184



Presentation Overview

- History
- Hurricane Irma
- Pump Station Evaluation Study
- **Next Steps**

Next Steps Overview

- **Finalize Initial Study**
- **Authorize Supplemental Report & Field Survey**
- **Explore the Hazard Mitigation Grant Program (HMGP) from FEMA**

Next Steps

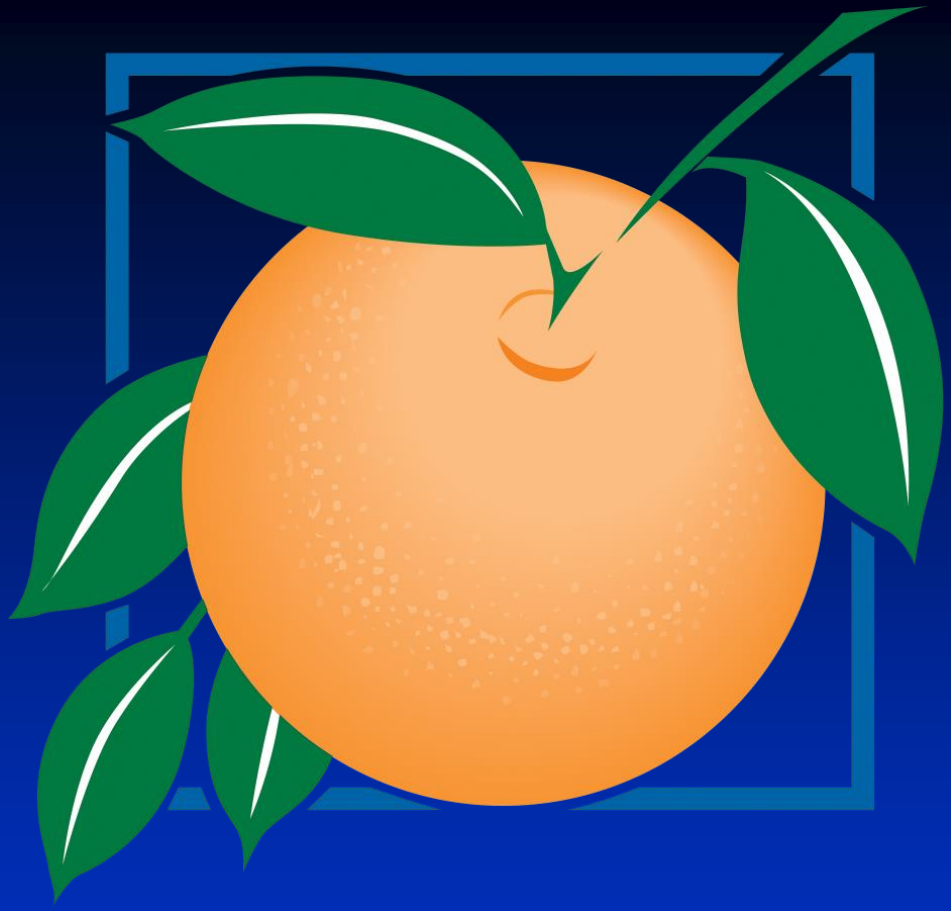
- **Supplemental Report & Field Survey**
  - Increasing pond storage
  - Upgrading the pumps to higher capacity
  - Confirm at risk properties
  - Report findings to the BCC

Next Steps

- Finalize Initial Study
- Authorize Supplemental Report & Field Survey
- **Explore the Hazard Mitigation Grant Program (HMGP) from FEMA**

Next Steps

- **Explore the Hazard Mitigation Grant Program (HMGP) from FEMA**
  - Determine grant feasibility for alternatives
  - Modify the HMGP application based on Supplemental Report alternatives (if needed)



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