

Public Works Department

**Stormwater Management
Moving Toward a Resilient Future
One Year Update**

Discussion Item

June 4, 2024

Presentation Outline

- Background
- Stormwater Program Updates
 - Orlo Vista Status
 - Task Updates
 - Strategic Initiatives
- Next Steps
- Summary





Presentation Outline

- **Background**
- **Stormwater Program Updates**
 - Orlo Vista Status
 - Task Updates
 - Strategic Initiatives
- **Next Steps**
- **Summary**



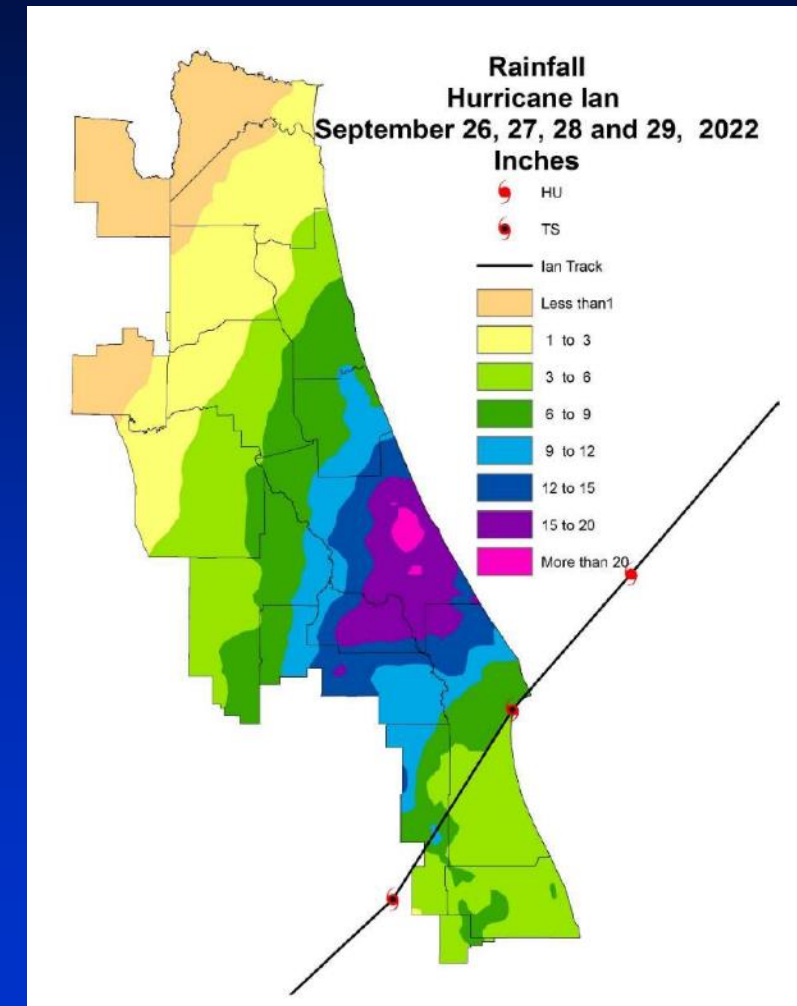
Background

- **Discussion at the October 25, 2022 Board meeting regarding stormwater management:**
 - Intensity of future rainfall events
 - Sufficiency of existing design standards
 - Current maintenance standards
- **May 2 and 23, 2023 presentations**
 - Identified opportunities
 - Developed strategies
 - Task list
 - Short
 - Medium
 - Long



Background

- How will climate change affect the rainfall intensity/frequency of storms in the future?
- Are our standard design storm intensities still accurate for future conditions?
- Are we able to still meet our stormwater level of service (LOS) criteria in the future using the existing data?



Background

- Managing stormwater is critically important to preventing flooding and water quality issues
- 2022 flooding from historic rainfall well beyond traditional design storm
- Existing maintenance operations are extensive
- Rainfall intensity data that we currently use for our design standards may be changing
- Stormwater systems are an important part of our SORAP
- Private systems maintenance important
- Innovative ideas are being evaluated





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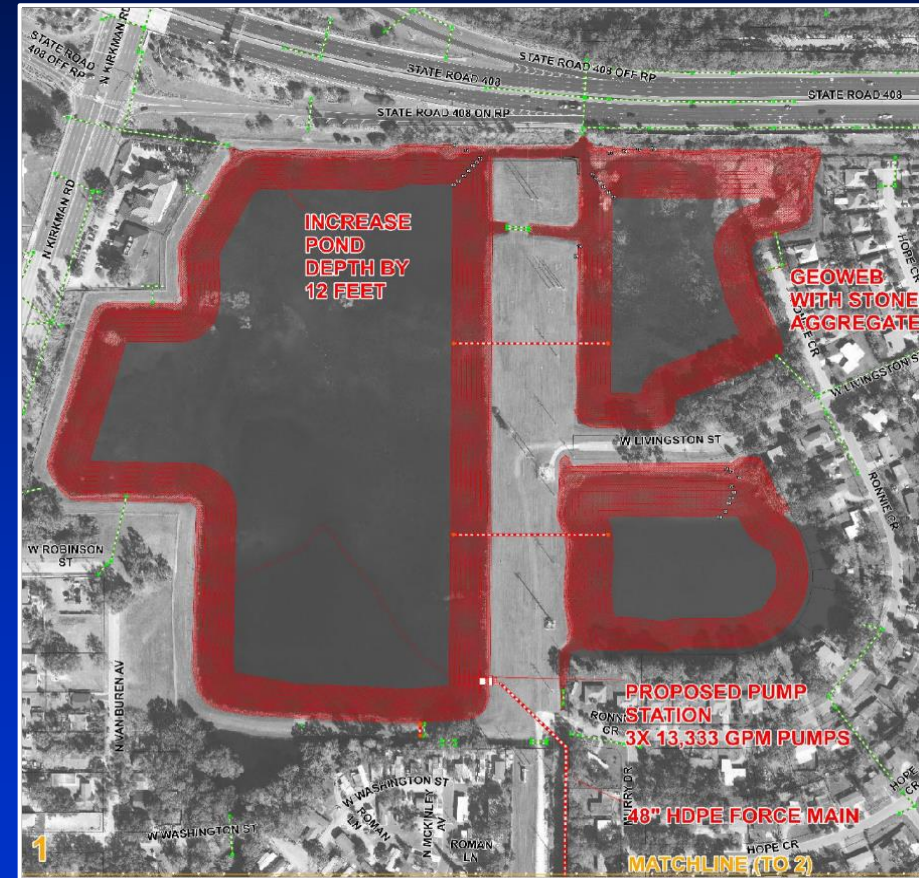




Orlo Vista Flood Mitigation Project Update

▪ Flood Mitigation Project

- Excavation and slope armoring of existing stormwater ponds
- Installation of new pump station with force main to Shingle Creek
- Lowering/installation of piped pond connections to help convey water to the new pump station
- Decommission existing pump station
- Construction Cost: \$23.2 Million
- Funding sources:
 - Hazard Mitigation Grant Program (\$17.4 Million)
 - Community Development Block Grant (\$2.5 Million)
 - Orange County (\$3.3 Million)





Orlo Vista Flood Mitigation Project Update

Construction Progress

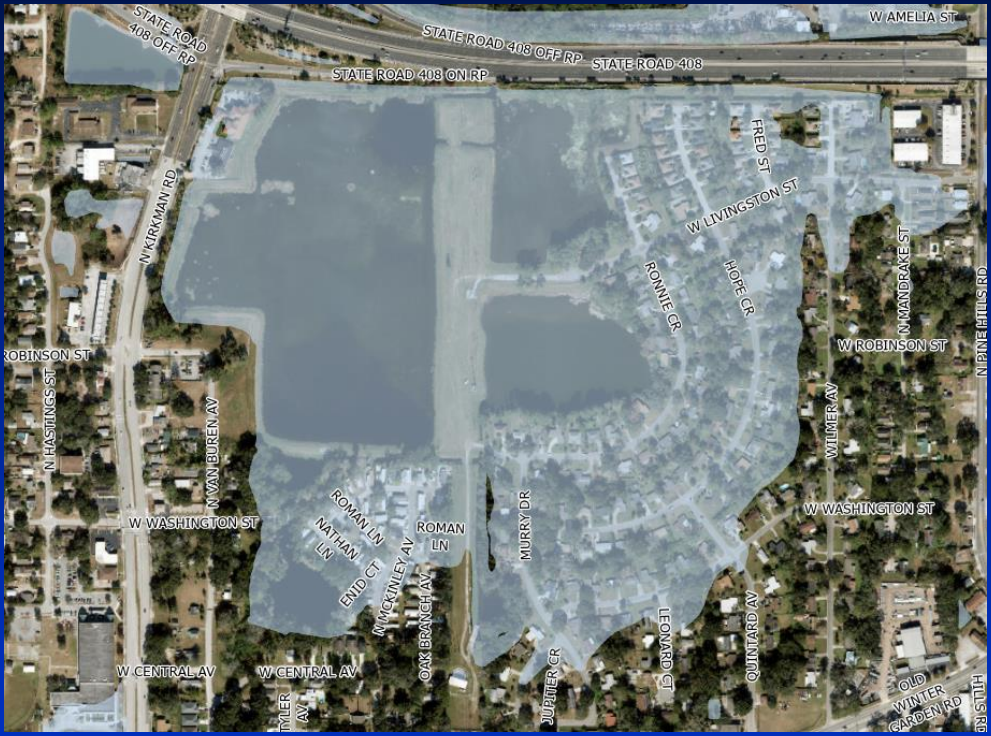
- System is ready to provide a 100yr/24hr storm event level of service
- Full flood control volume within excavated ponds is currently available
- The existing pump station and additional portable pumps will be relied on for flood control during 2024 hurricane season





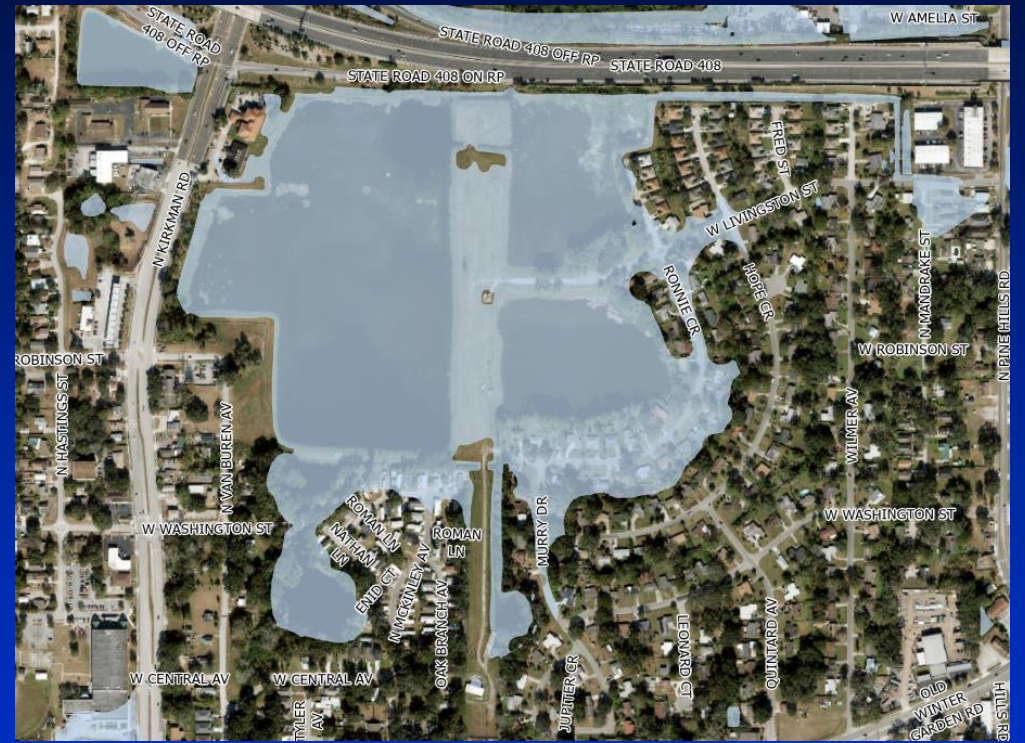
Orlo Vista Flood Mitigation Project Update

Prior to Construction*



- Major street & yard flooding
- Structure Finished Floors Impacted = 122

After Construction*



- Moderate street & yard flooding
- Structure Finished Floors Impacted = 0

*100 Year / 72 Hour Flood Stage = 82.74 Feet (NAVD88)



Task Updates

Short

(Nov 2023-May2024)

- New Project Manager position
- Phase 1 Stormwater Utility Fee (SUF)
- Analysis of Private systems
- Rainfall Intensity Study
- Econ Predictive Stormwater Models

Medium

(May 2024-May 2025)

- Phase 2 SUF
- Countywide Resiliency study
- Expedite Basin Master Plans
- Implement changes for private system compliance
- Integrated Water Resource Projects

Long

(May 2025 +)

- Board decision on SUF
- Countywide predictive stormwater model
- Increase budget to initiate projects identified in basin master plans
- Budget funds for LID on existing systems



Task Updates – Short-Term

Project Manager – Public Works

- **Project Manager position in Public Works**
 - Filled at the end of 2023
 - Needed to focus on projects related to sustainability and resiliency
- **Duties of the position include:**
 - Public Works liaison for the Countywide SORAP
 - Studies and initiatives proposed in the 2023 presentations
 - Research and apply for various grants
 - Code or comp plan changes related to sustainability





Task Updates – Short-Term

Stormwater Utility Fee Phase 1 Study

Stormwater Utility Fee Background

- **Stormwater Utility Fee Ordinance in place**
 - Stormwater Utility Ordinance 96-20 located in Chapter 15 Article XII, was adopted on July 23, 1996
 - The rate was set at \$0.00 and has never been modified
 - Central FL counties with a SUF: Alachua, Brevard, Lake, Marion, Pinellas, Polk, Sarasota, and Volusia
 - Orange County municipalities with a SUF: Maitland, Ocoee, Orlando, Winter Park, and Winter Garden



Task Updates – Short-Term

Stormwater Utility Fee Phase 1 Study

▪ Conduct Phase 1 of the Stormwater Utility Feasibility Study

– Tasks initiated in October 2023 (\$164,523)

- Summarize needs and analyze current funding options
- Preliminary impervious area analysis
- Preliminary revenue projection/rate model
- Stormwater Utility evaluation and report

– Estimated completion end of 2024

– Mid and Long-Term Tasks – Phase 2

– Funding Requested for FY25

- Phase 2 - \$375,000

- Impervious Surface, Finalize LOS, draft ordinance, public meetings





Task Updates – Short-Term

Stormwater Utility Fee Phase 1 Study

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▪ Conduct Phase 1 of the Stormwater Utility Feasibility Study

– Evaluate possible uses of revenue for escalating project needs

- Current service level including CIP/Operation and Maintenance

- Unfunded

- New capital projects that will be recommended based on updated basin, vulnerability and resiliency studies
- Retrofitting of older neighborhoods for both flooding mitigation and water quality improvements, including Low Impact Design (LID)
- Development of regional stormwater management systems
- More stringent inspection requirements of new NPDES permit
- Increased inspection of private stormwater systems
- Sediment Maintenance
- Integrated Water Resources Solutions





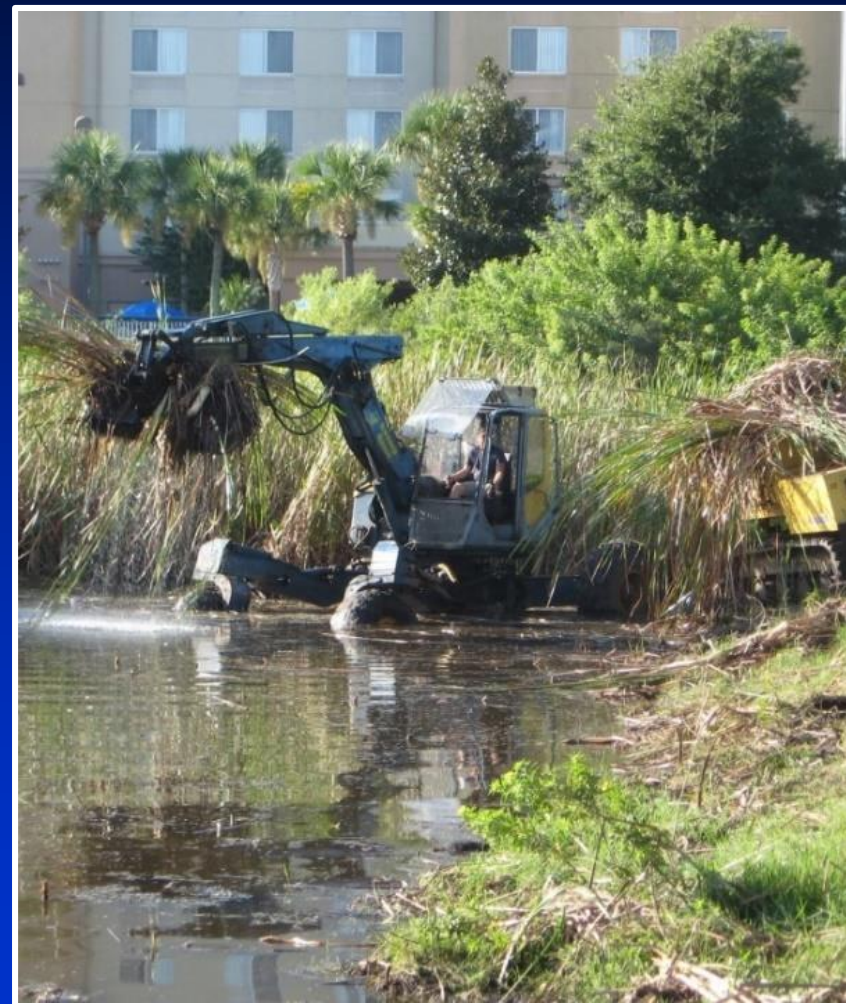
Task Updates – Short-Term

Private Stormwater Management Systems

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▪ Internal Coordination:

- New position approved and filled to assist in inspections and compliance
- On-going development of Comprehensive Structural Inventory Program (CSIP)
 - Data will be used to create GIS based inventory of private systems
- Internal education to raise awareness of potential stormwater concerns
- New Municipal Separate Storm Sewer System (MS4) permit will be issued to County within next few months





Task Updates – Short-Term

Private Stormwater Management Systems

- **External Coordination:**
 - Public outreach campaign
 - Developing Operation and Maintenance website
 - Outreach to HOAs, commercial and industrial properties
 - County now requires submittal of an Operation and Maintenance Plan
 - New Statewide Stormwater Rule

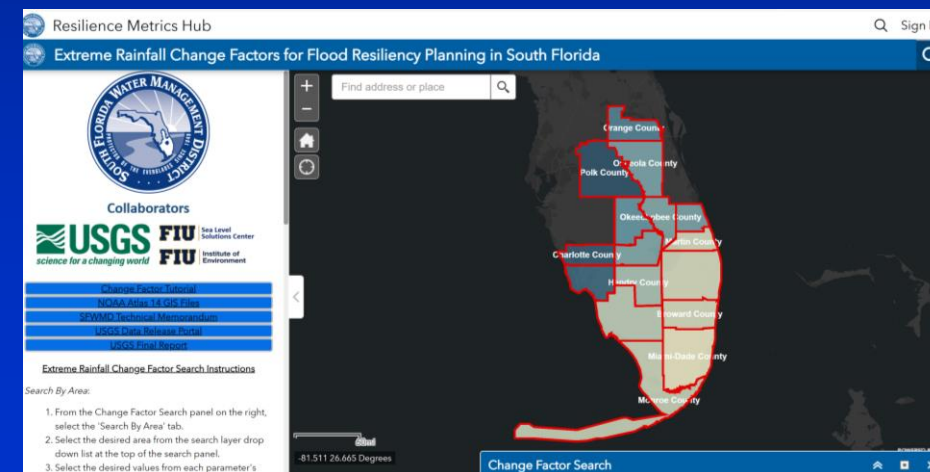




Task Updates – Short-Term Rainfall Intensity Study

▪ Rainfall Intensity Study

- Start Date: September 22, 2023
- Anticipated Completion Date: July 31, 2024
- Purpose: Evaluate rainfall records to determine spatial variability in both depth and frequency and compare to County’s current design criteria
- Status: In progress
 - Analyzing Orange County, Water Management Districts and NOAA rainfall datasets, and performing frequency analysis
 - Coordination with other agencies on rainfall studies (SFWMD Future Extreme Rainfall Change Factors Analysis, NOAA Atlas 15, USGS/ECFRPC)



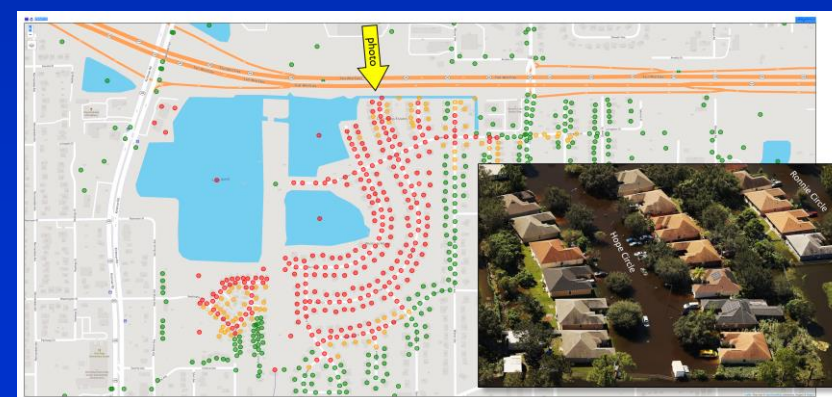


Task Updates – Short-Term Realtime Flood Forecasting (RTFF)

- **Predictive stormwater modeling**
 - Predict flooding up to 72 hours in advance of major storm events
 - Determine areas for evacuation orders ahead of major storms
 - Protect or relocate assets 2-3 days ahead of major storm
 - Plan emergency response priorities during a major storm, including prioritization of staff resources
 - Support proactive analysis and resiliency planning for a variety of types of storm events



2022:9:29:13.001 : 685.00

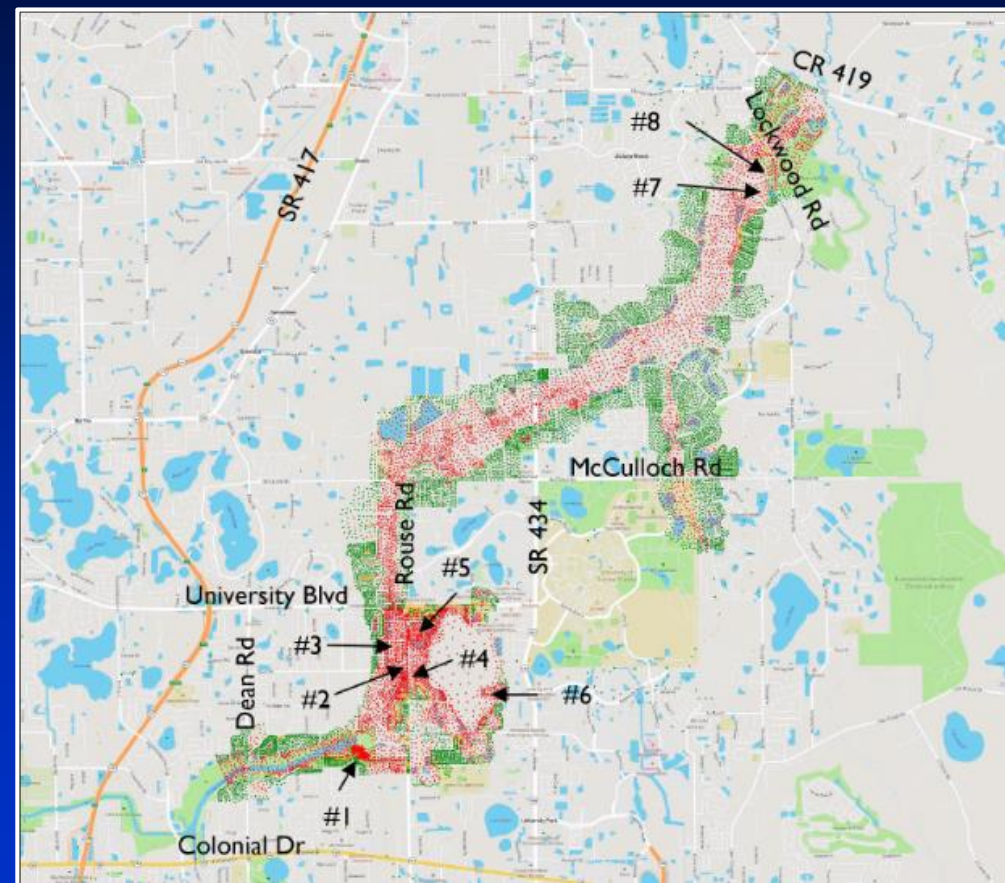




Task Updates – Short-Term

Realtime Flood Forecasting (RTFF)

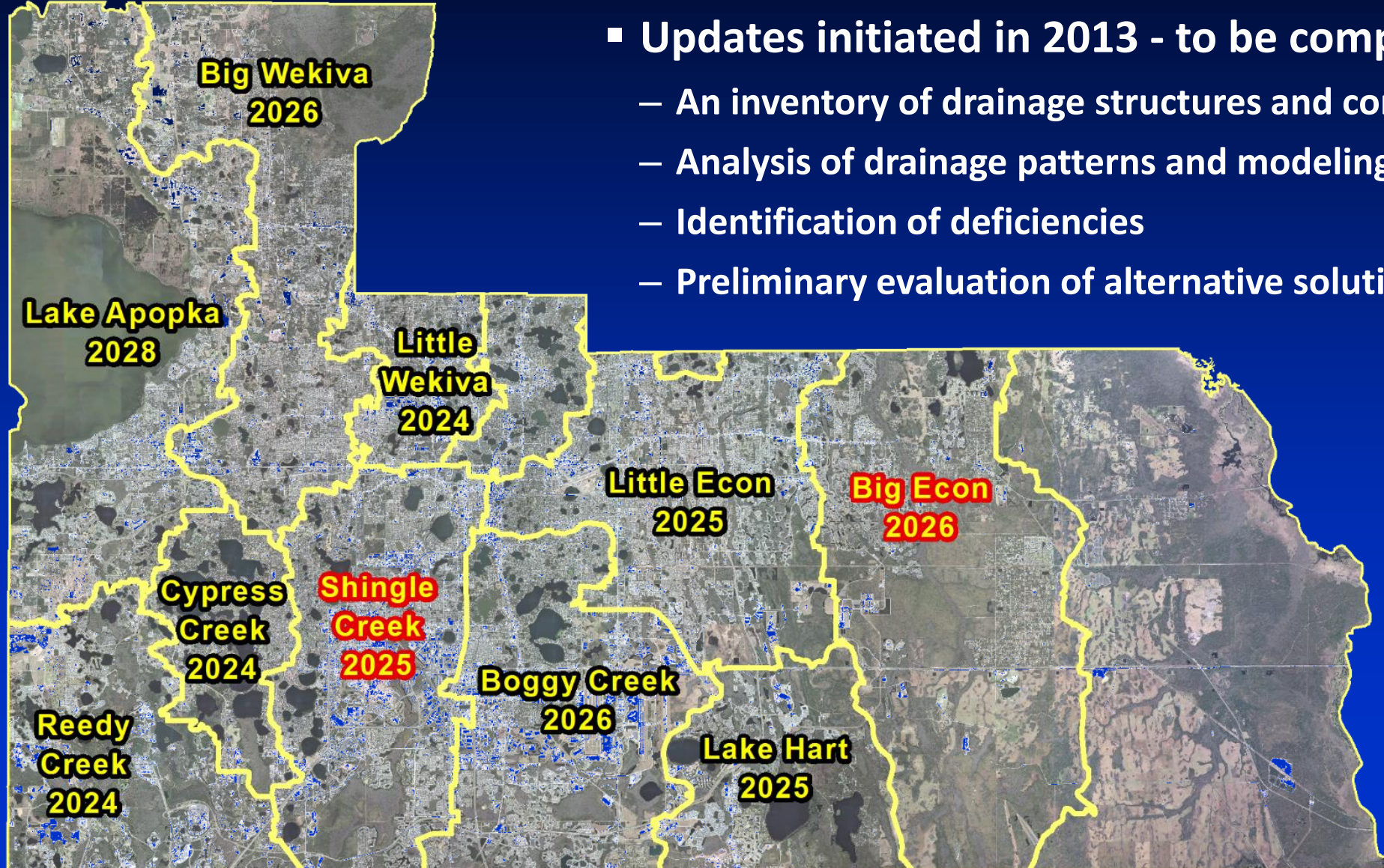
- Stormwater RTFF models complete for
 - Orlo Vista
 - Little Econlockhatchee (existing model)
 - Big Econlockhatchee (existing model)
- Countywide model
 - Estimated at \$1M
 - USDOT FHA PROTECT funding
 - Long-Term Task accelerated with grant funding





Task Updates – Mid-Term

Master Stormwater Basin Studies



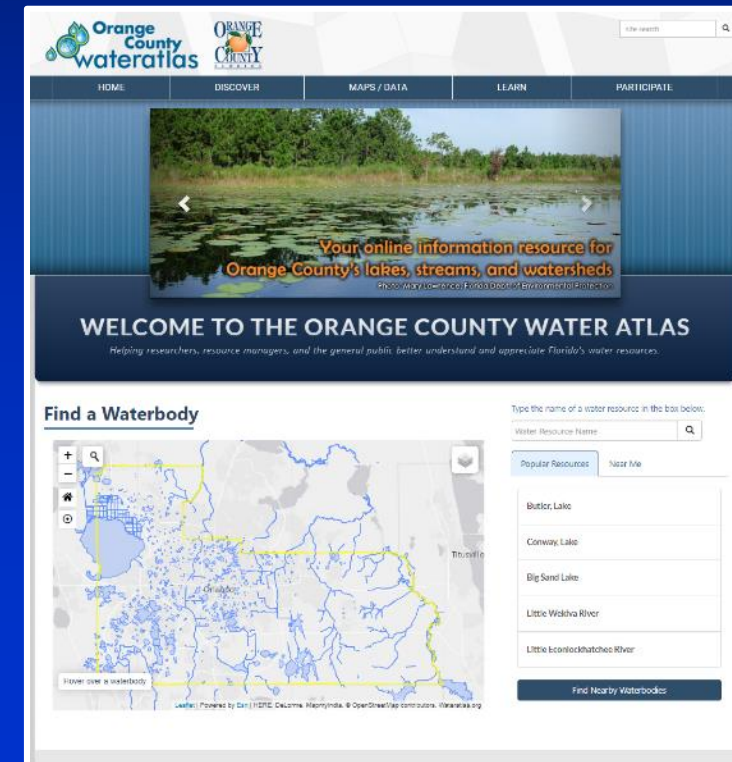
- Updates initiated in 2013 - to be completed by 2028
 - An inventory of drainage structures and conveyance systems
 - Analysis of drainage patterns and modeling of storm events
 - Identification of deficiencies
 - Preliminary evaluation of alternative solutions



Task Updates – Mid-Term

Master Stormwater Basin Studies

- The updated plans will be important tools for:
 - Planning of capital improvement projects designed to alleviate flooding
 - Updating the FEMA floodplain delineations
 - Evaluation of proposed development impacts
- Solutions and projects generated may include:
 - Regional, combined or enlarged stormwater ponds
 - Incorporation of water quality components where ponds and systems outfall to impaired waterbodies
 - Formalization of outfalls and canals including acquisition of maintenance corridors for historic natural systems
 - Expanded maintenance programs

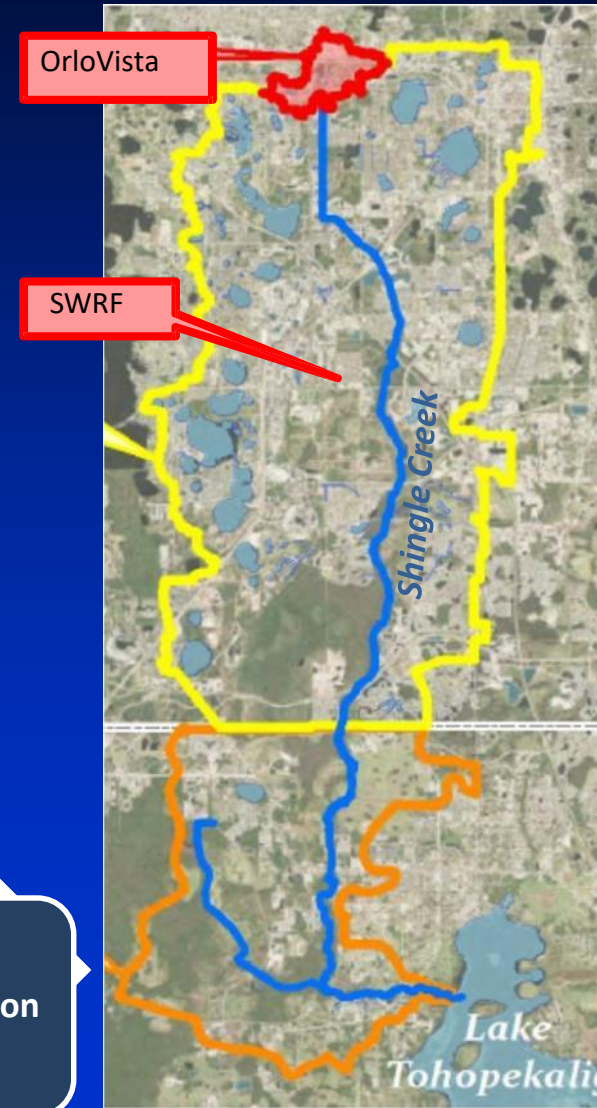




Task Updates – Mid-Term

Innovative Ideas - Orlo Vista Integrated Water Resource Project

- Lowering normal water level in ponds by pumping baseflow throughout the year to Shingle Creek
- Provides additional pond flood attenuation volume
- Flows are recovered 7 miles downstream at the South Water Reclamation Facility (SWRF) prior to reaching Osceola County, mitigating downstream flood concerns, treated to meet reclaimed water standards and used for irrigation and aquifer recharge
- Potential reduction in nutrient load to enhance water quality within Shingle Creek
- Potential eligibility for CDBG-DR funding for the project





Task Updates – Mid-Term

Countywide Resiliency Study

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- To follow the countywide **Vulnerability Assessment**
 - Identify potential stormwater improvements
 - Protect critical assets identified in the **Vulnerability Study**
 - Determine risks posed to flood-vulnerable populations
 - Request funding for FY26 or CDBG-DR

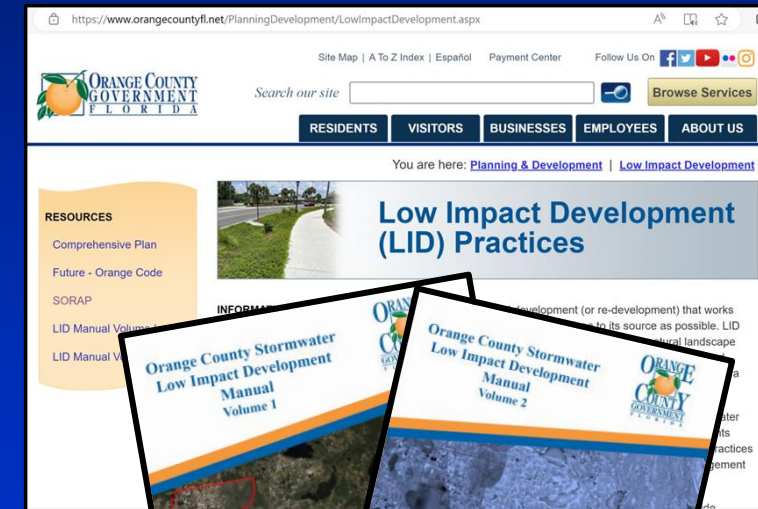




Strategic Initiatives

Low Impact Development (LID) Design Manual

- Low Impact Development (LID) is an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible
- Provides flexibility to help meet requirements of the new statewide stormwater rule update
- Collaboration on SORAP – Goal 7 projects
- LID Manual completed Dec 2023
- Peer reviewed by stakeholders
- Manual on Consent 6/4/2024





Strategic Initiatives

Low Impact Development (LID) Design Manual

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- **Implementation/Training**
- **Funding requests FY25 (~\$900,000)**
 - Add practices to manual
 - Interceptor Trees pilot project
 - Implement practices on current infrastructure to improve water quality
- **Long-Term – implement retrofit projects**
 - Older areas with no treatment
 - Road projects with appropriate soils
- **Drainage Manual – parallel effort with Orange Code**





Strategic Initiatives

Low Impact Development (LID) Design Manual

▪ Florida Stormwater Rule

- Senate Bill 712 (Chapter 2020-150, Laws of Florida) was ratified in the 2024 Legislative Session
- Specific water quality treatment targets for pollutants
- Increased costs for implementation (\$TBD)
- Additional inspection requirements (\$TBD)



All Sites Not Impaired	OFWs	Impaired Waters	Impaired OFWs	Redevelopment
Post \leq Pre, or TP: 80% & TN 55%	Post \leq Pre, or TP: 90% & TN 80%	Post \leq Pre, or TP: 80% & TN 80% and Post < Pre (Impaired parameters)	Post \leq Pre, or TP: 95% & TN 95% and Post < Pre (Impaired parameters)	TP: 80% & TN 45% (and Post \leq Pre for Impaired parameters) or TP: 95% & TN: 60% (for OFWs)
Total Suspended Solids (TSS): 80%	TSS: 95%	TSS: 80%	TSS: 95%	TSS: 80% or 95% for OFW



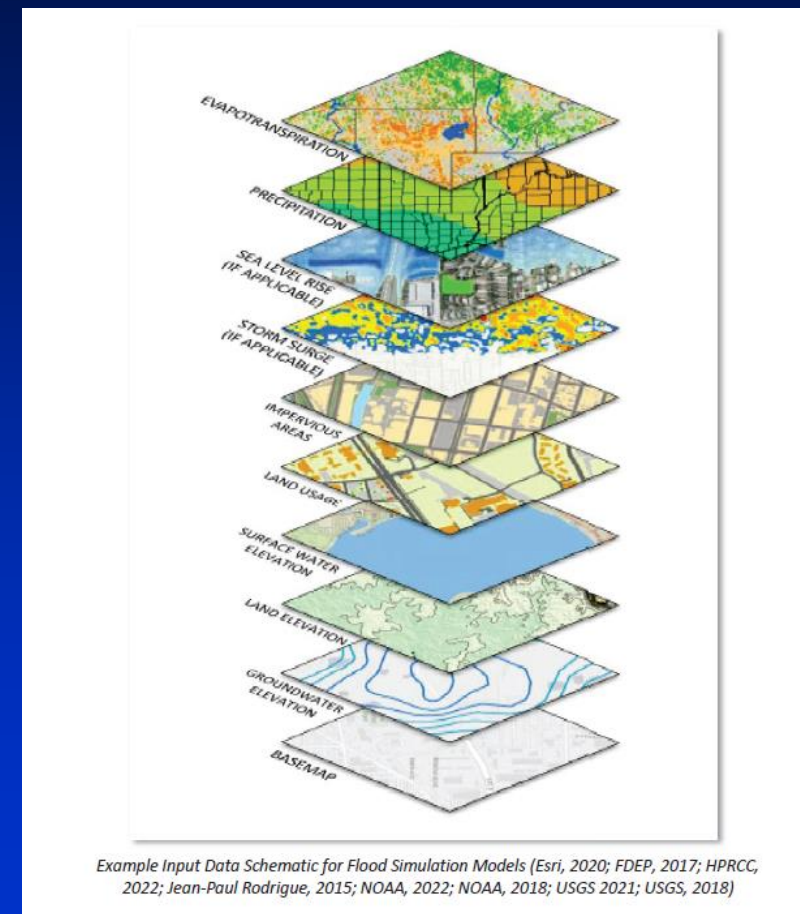
Strategic Initiatives

Vulnerability Study

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▪ Vulnerability Study

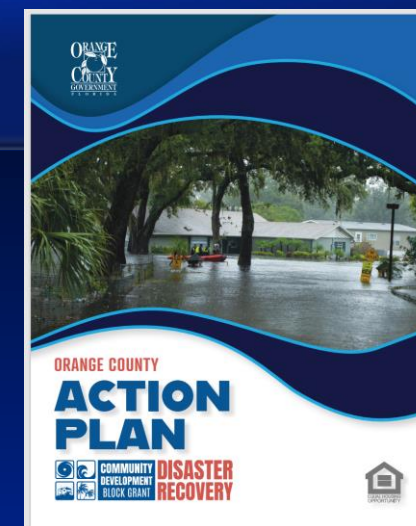
- Resilient Florida Planning Grant \$420,000
- Objective: Conduct countywide exposure analysis for critical assets by calculating depth of water caused by multiple flood scenarios
- Timeline: Start: Mid-2024
Finish: Fall-2025
- Cities participating
 - Eatonville, Edgewood, Maitland, Oakland, Ocoee, Windermere, Winter Garden





Strategic Initiatives

Flood related projects



▪ CDBG-DR

– Total funding for Orange County \$219,712,000

- Housing allocation \$108,746,160
- Infrastructure allocation \$59,322,240
- Mitigation allocation \$28,658,000
- Other allocations \$22,985,600

– Project selection timeline

- Summer/fall - project selection
- Late 2024 - Begin procurement process

▪ Public works 5-year CIP

– 17 drainage improvement projects ~\$45M

Category	Program Allocation	% Program Funds
Housing	\$108,746,160	49.5%
Infrastructure and Public Facilities	\$59,322,240	27%
Mitigation	\$28,658,000	13%
Public Services	\$7,000,000	3.2%
Administration	\$10,985,600	5%
Planning	\$5,000,000	2.3%
Total	\$219,712,000	100%



Strategic Initiatives

Ordinance Updates

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▪ Wetland Ordinance

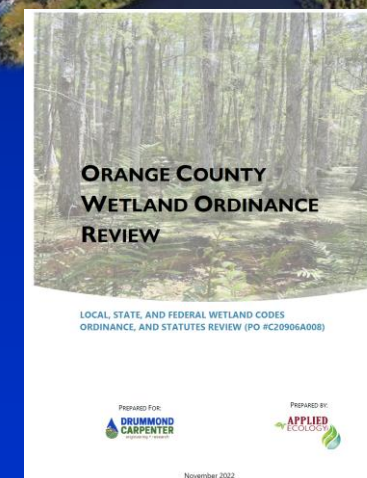
- Pre-development water storage in wetlands proposed for impact must be accounted for in project design
- Detailed flow map required to show that existing hydrologic patterns will be mimicked after construction
- High pollutant reduction designs get a wetland impact review modifier (positive incentive) that could reduce review and approval timelines

▪ Tree Ordinance

- Stormwater Benefits
 - Native soils remain, controls erosion, root uptake



Image from Google Earth





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Next Steps

- Continue to prepare for hurricane season
- Complete remaining Short-Term Tasks
- Share the results of the Rainfall Intensity Study late 2024
- Bring Phase 1 of the SUF to the Board to discuss future action by early 2025
- Ongoing work with private system operators
- Budget /Implement remaining Medium/Long-Term Tasks





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Summary

<p>✓ Completed</p> <p>Planned</p>	<p>■ Started</p> <p>⊗</p>
<p>Short</p> <p>(Nov 2023-May2024)</p>	<ul style="list-style-type: none"> ✓ New Project Manager position ■ Phase 1 Stormwater Utility Fee (SUF) ■ Analysis of Private systems ■ Rainfall Intensity Study ✓ Econ Predictive Stormwater Models
<p>Medium</p> <p>(May 2024-May 2025)</p>	<ul style="list-style-type: none"> ⊗ Phase 2 SUF ⊗ Countywide Resiliency study ■ Expedite Basin Master Plans ■ Implement changes for private system compliance ■ Integrated Water Resource Projects
<p>Long</p> <p>(May 2025 +)</p>	<ul style="list-style-type: none"> ⊗ Board decision on SUF ⊗ Countywide predictive stormwater model ⊗ Increase budget to initiate projects identified in basin master plans ■ Budget funds for LID on existing systems

- Orlo Vista regional facility volume and capacity ready for 2024 hurricane season
- Short-Term Projects are completed or will be complete at the close of 2024
- Econlockhatchee basins covered by real-time flood forecasting tool and ready for use
- PROTECT funding will accelerate Countywide real-time flood forecasting
- Projects identified to prevent/mitigate future flooding impacts