

Big Econlockhatchee and Little Econlockhatchee Drainage Basin Study

Board of County Commissioners Workshop Meeting
March 14, 2023



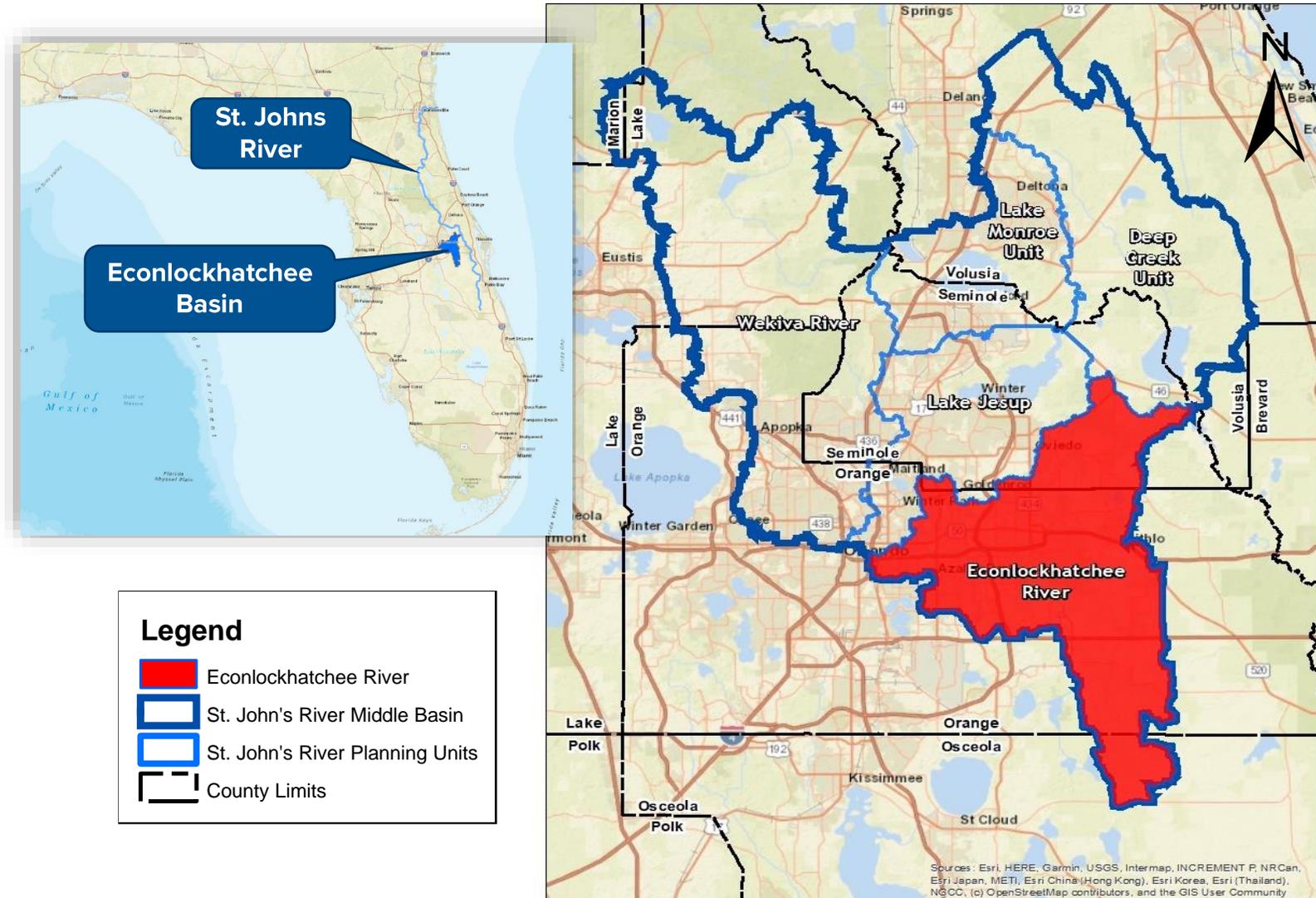
Goals

- Project Overview
- Model Development
- Level of Service (LOS) Analysis
- Flood Improvement Project Areas
- Next Steps
- **Solicit Input from the Commission**

Project Overview

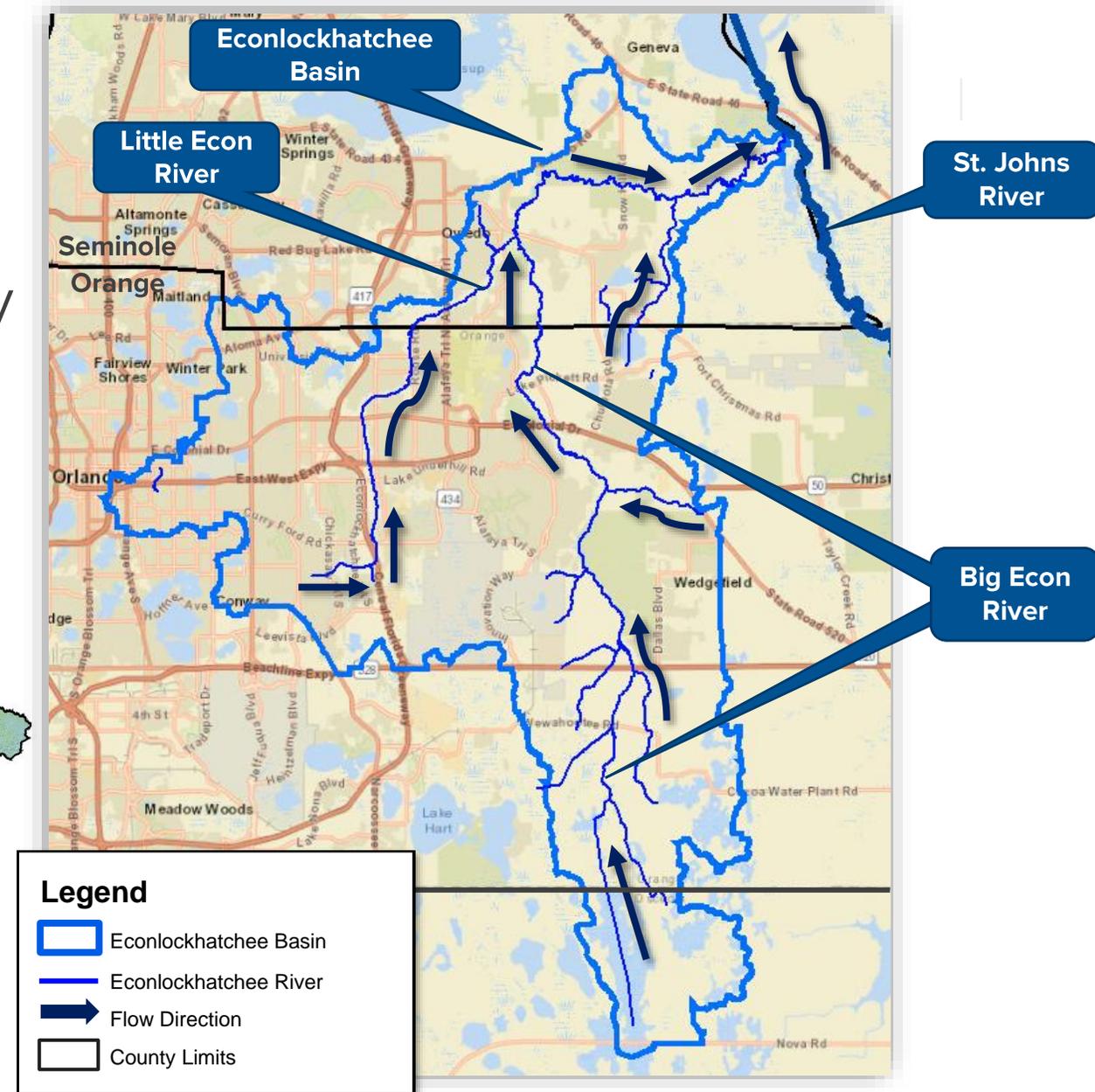
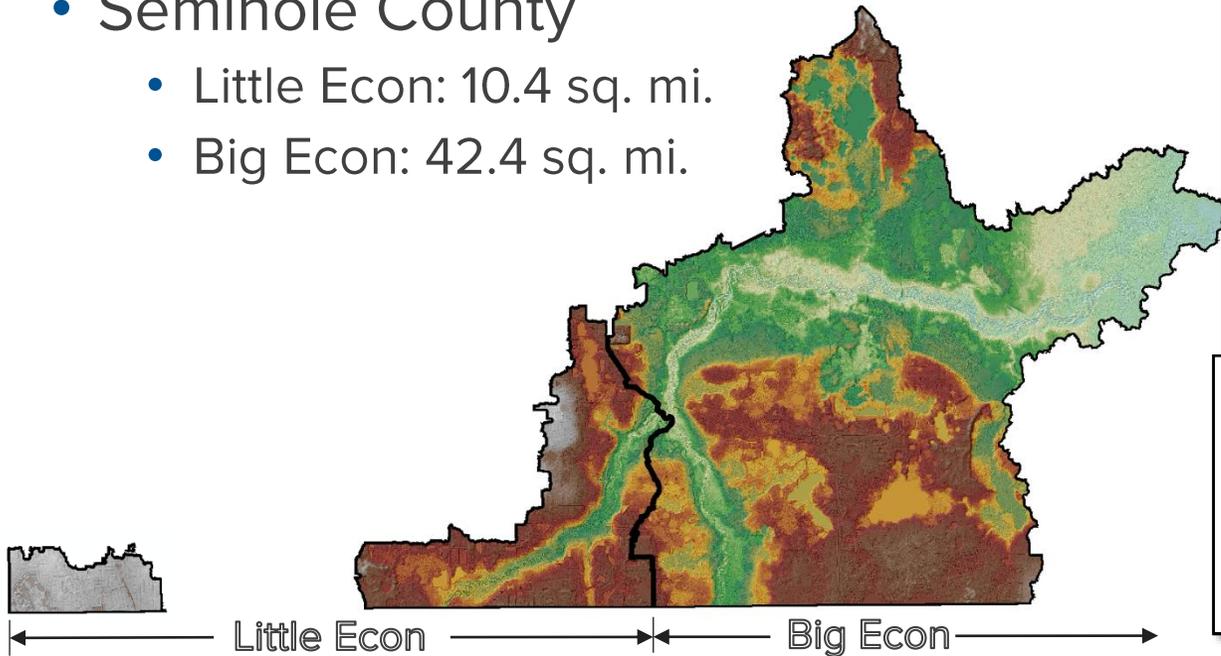
St. John's River Middle Basin / Econlockhatchee River Basin

- Highly urbanized
- Econ includes parts of:
 - Osceola County
 - Orange County
 - Lake County
 - Marion County
 - Volusia County
 - Seminole County
- Outfall to St. Johns River



Econ Basin Location

- Econ Basins originate in Orange County
- Converge in City of Oviedo
- Outfall to St. Johns River
- Seminole County
 - Little Econ: 10.4 sq. mi.
 - Big Econ: 42.4 sq. mi.



Econ Basin Flooding Impacts

Hurricane Ian (Morning after photos – 9/28/2022)



Project Goals

- Identify and assess flooding problems
 - County staff input
 - Resident input
 - Field investigation
 - Detailed watershed hydrologic and hydraulic model
- Develop conceptual improvements to reduce flooding
 - Project areas are for **County maintained systems only**
 - Evaluate potential benefits
 - Assess feasibility
 - Estimate costs
- Update 100-year floodplains for FEMA mapping



Scope of Work

1. Project Initiation (Completed)
2. Assembly and Evaluation (Completed)
3. **Stormwater Model Development** (Substantially Complete)
4. **Level of Service Improvement Alternatives Analysis** (Ongoing)
5. Floodplain Mapping (Ongoing)
 FEMA Permitting [Only Upon BCC Approval] (Not Started)
6. **Public Meetings** (Ongoing, 1 of 3 Meetings Completed)
7. Basin Engineering Study Report (Not Started)
8. **Project Quality Management and Meetings** (Ongoing)

Public Meetings

- Public Presentations

- Meeting #1

- Held March 9th, 2022
- Main Discussion Topics:
 - Development in the Watershed
 - Impervious Area / Roadway Runoff
 - Flooding / Drainage Problems
 - Water Quality

- Meeting with Commissioners

- March 14, 2023 (Current Meeting)

- Future Meetings

- Meeting #2 – Existing Conditions and Recommended Improvement Projects
- Meeting #3 – Public Input on proposed revised Floodplain (Commence upon BCC approval)
- Meeting #4 – BCC Workshop prior to submission of the Final Report

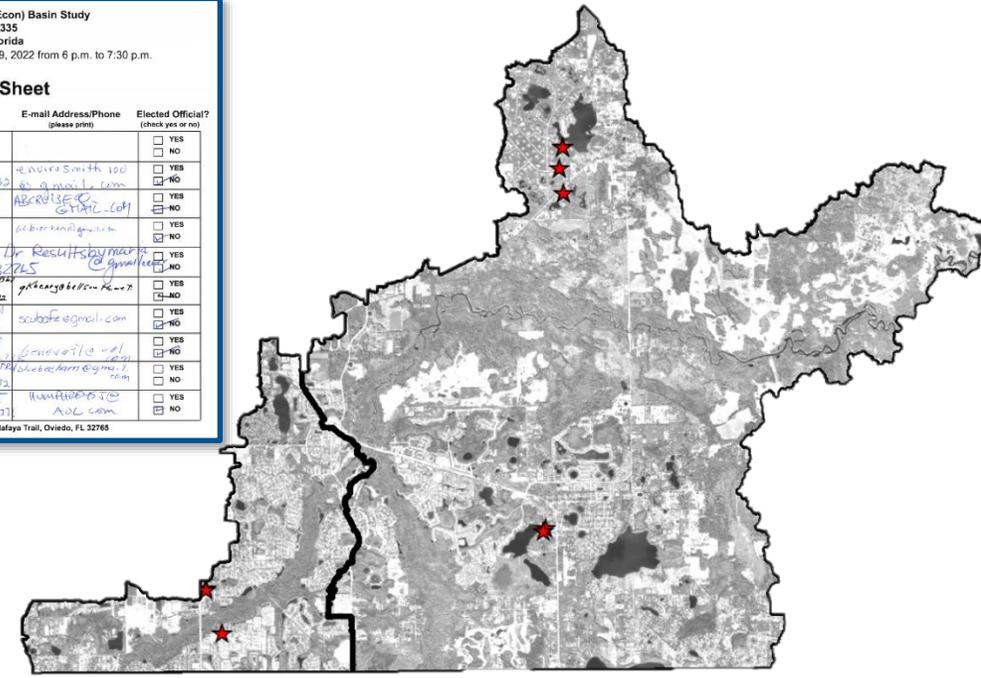


Big and Little Econlockhatchee (Econ) Basin Study
 CID Number: 01785335
 Seminole County, Florida
 Public Information Meeting - Wednesday, March 9, 2022 from 6 p.m. to 7:30 p.m.

Public Sign-In Sheet

Name (please print)	Organization (please print)	Mailing Address (please print)	E-mail Address/Phone (please print)	Elected Official? (check yes or no)
JEAN JESD	SEMI			<input type="checkbox"/> YES <input type="checkbox"/> NO
Patricia Smith	Self	PO Box 1287 Geneva, FL 32732	449415smith100@gmail.com	<input type="checkbox"/> YES <input type="checkbox"/> NO
TEMPEREL		536 Boland Pike Pt. Geneva	ABERDIE@GMAIL.COM	<input type="checkbox"/> YES <input type="checkbox"/> NO
Amy Bierken	Horseshoe Lane Road	246 W. 7th St Chuluota, FL 32726	abierken@gmail.com	<input type="checkbox"/> YES <input type="checkbox"/> NO
Maria Ramirez		2475 Boland Dr Geneva, FL 32735	Resultsbymaria@gmail.com	<input type="checkbox"/> YES <input type="checkbox"/> NO
Theresa Healy		115 Seminole Way Geneva, FL 32732	ghealy04@comcast.net	<input type="checkbox"/> YES <input type="checkbox"/> NO
Terrie Ann Andria		1386 Bobwhite Trail Chuluota, FL 32726	scubafe@gmail.com	<input type="checkbox"/> YES <input type="checkbox"/> NO
Mary Jo Pardo	Geneva	PO Box 1158 Geneva, FL 32732	genevajo1@gmail.com	<input type="checkbox"/> YES <input type="checkbox"/> NO
Maria McCona	Geneva	180 Bitter Myrtle Rd Geneva, FL 32732	lucacharm@gmail.com	<input type="checkbox"/> YES <input type="checkbox"/> NO
JOE HUMPHREYS		883 CARDINAL PT SANFORD, FL 32771	humphreysjoe@aol.com	<input type="checkbox"/> YES <input type="checkbox"/> NO

Meeting Location: Canterbury Conference Center, 1601 Alafaya Trail, Oviedo, FL 32765



Model Development

Sub-basin Delineation

- Total Sub-basins: 3,035
- Seminole County Sub-basins
 - Total: 1,371
 - Closed: 25
(no discharge for 10yr/24hr storm)

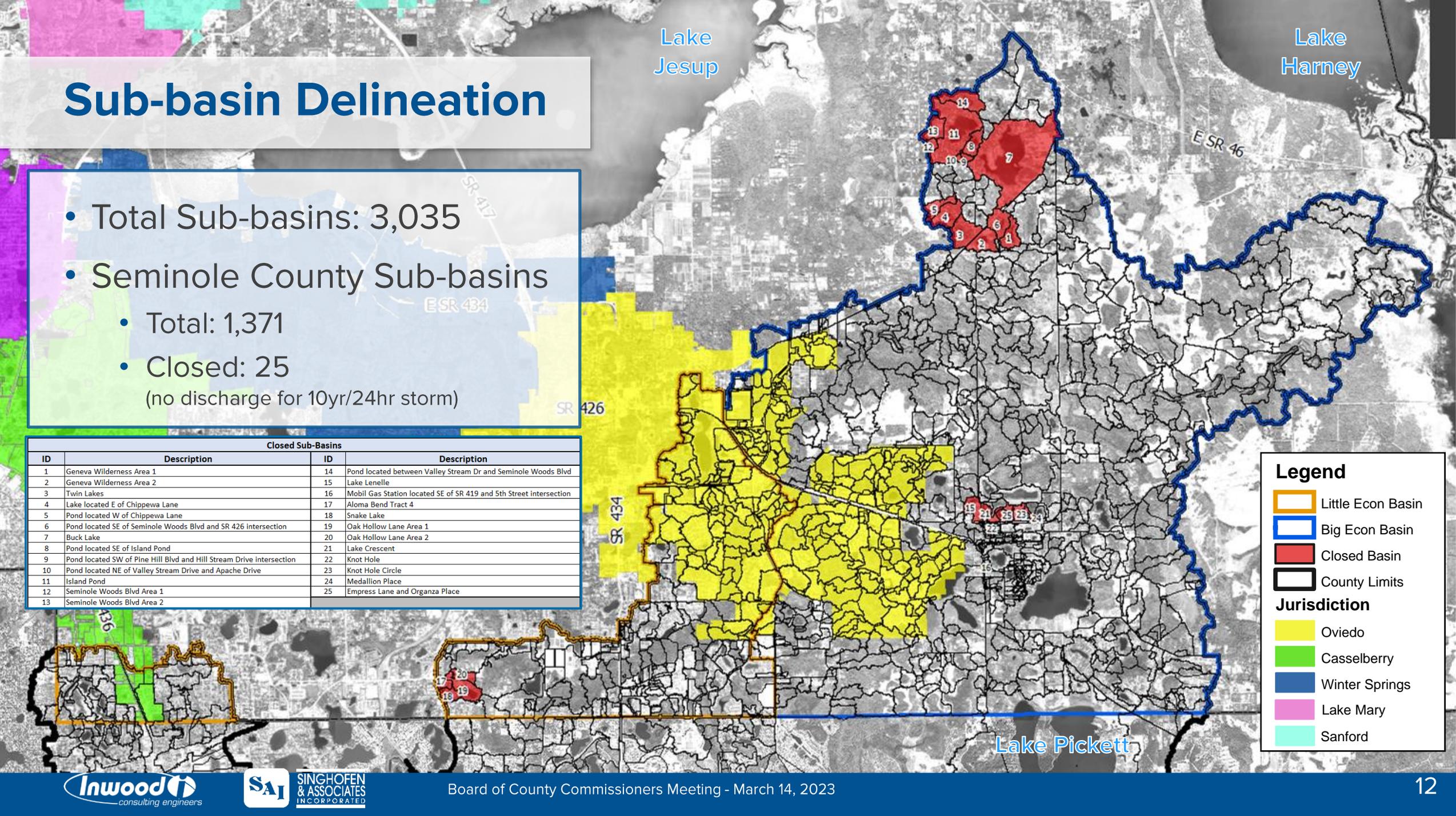
Closed Sub-Basins			
ID	Description	ID	Description
1	Geneva Wilderness Area 1	14	Pond located between Valley Stream Dr and Seminole Woods Blvd
2	Geneva Wilderness Area 2	15	Lake Lenelle
3	Twin Lakes	16	Mobil Gas Station located SE of SR 419 and 5th Street intersection
4	Lake located E of Chippewa Lane	17	Aloma Bend Tract 4
5	Pond located W of Chippewa Lane	18	Snake Lake
6	Pond located SE of Seminole Woods Blvd and SR 426 intersection	19	Oak Hollow Lane Area 1
7	Buck Lake	20	Oak Hollow Lane Area 2
8	Pond located SE of Island Pond	21	Lake Crescent
9	Pond located SW of Pine Hill Blvd and Hill Stream Drive intersection	22	Knot Hole
10	Pond located NE of Valley Stream Drive and Apache Drive	23	Knot Hole Circle
11	Island Pond	24	Medallion Place
12	Seminole Woods Blvd Area 1	25	Empress Lane and Organza Place
13	Seminole Woods Blvd Area 2		

Legend

- Little Econ Basin
- Big Econ Basin
- Closed Basin
- County Limits

Jurisdiction

- Oviedo
- Casselberry
- Winter Springs
- Lake Mary
- Sanford

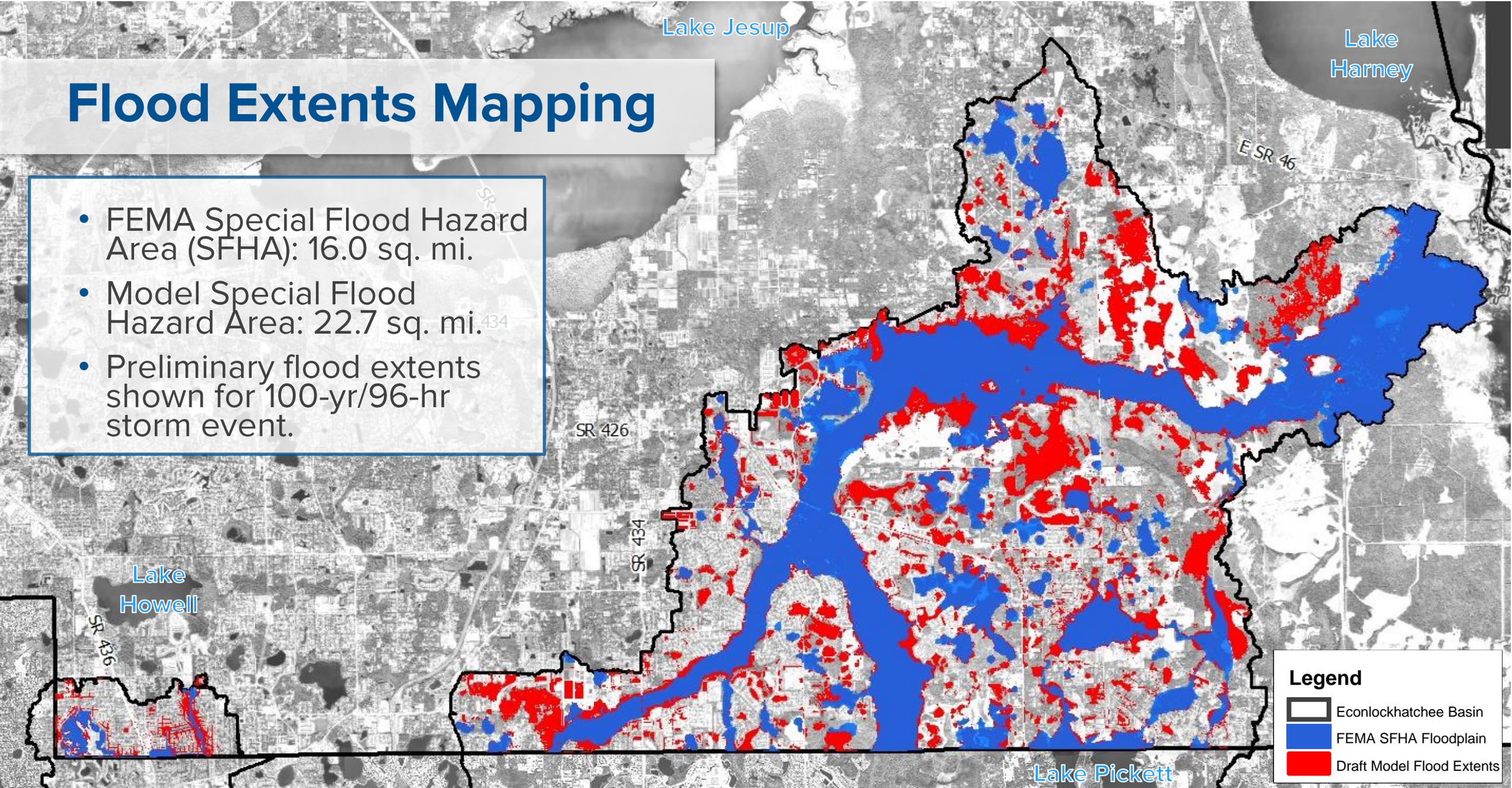


Lake Jesup

Lake Harney

Flood Extents Mapping

- FEMA Special Flood Hazard Area (SFHA): 16.0 sq. mi.
- Model Special Flood Hazard Area: 22.7 sq. mi.⁴³⁴
- Preliminary flood extents shown for 100-yr/96-hr storm event.



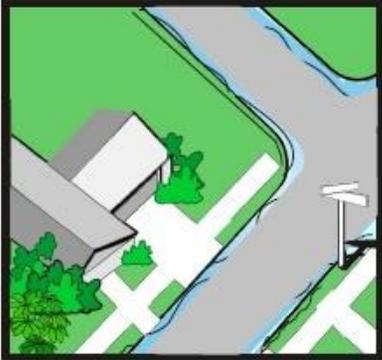
Legend

- Econlockhatchee Basin
- FEMA SFHA Floodplain
- Draft Model Flood Extents

Level of Service Analysis

Level-of-Service (LOS) Analysis

Rating System Used to Evaluate Design Performance of Drainage Infrastructure



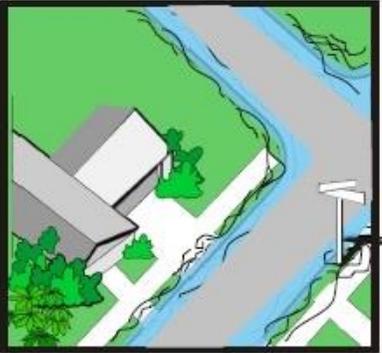
Service Level A

Roads: Flow contained within the storm drain systems OR below EOP.
Ponds / Canals: Flood within TOB.



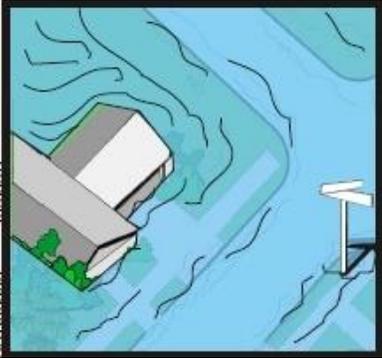
Service Level C

Roads: Flood above road EOP AND/OR outside R/W
Ponds / Canals : Flood above TOB AND/OR outside R/W.



Service Level B

Roads: Flow above EOP AND within R/W.
Ponds / Canals: Flood above TOB but within R/W.



Service Level D

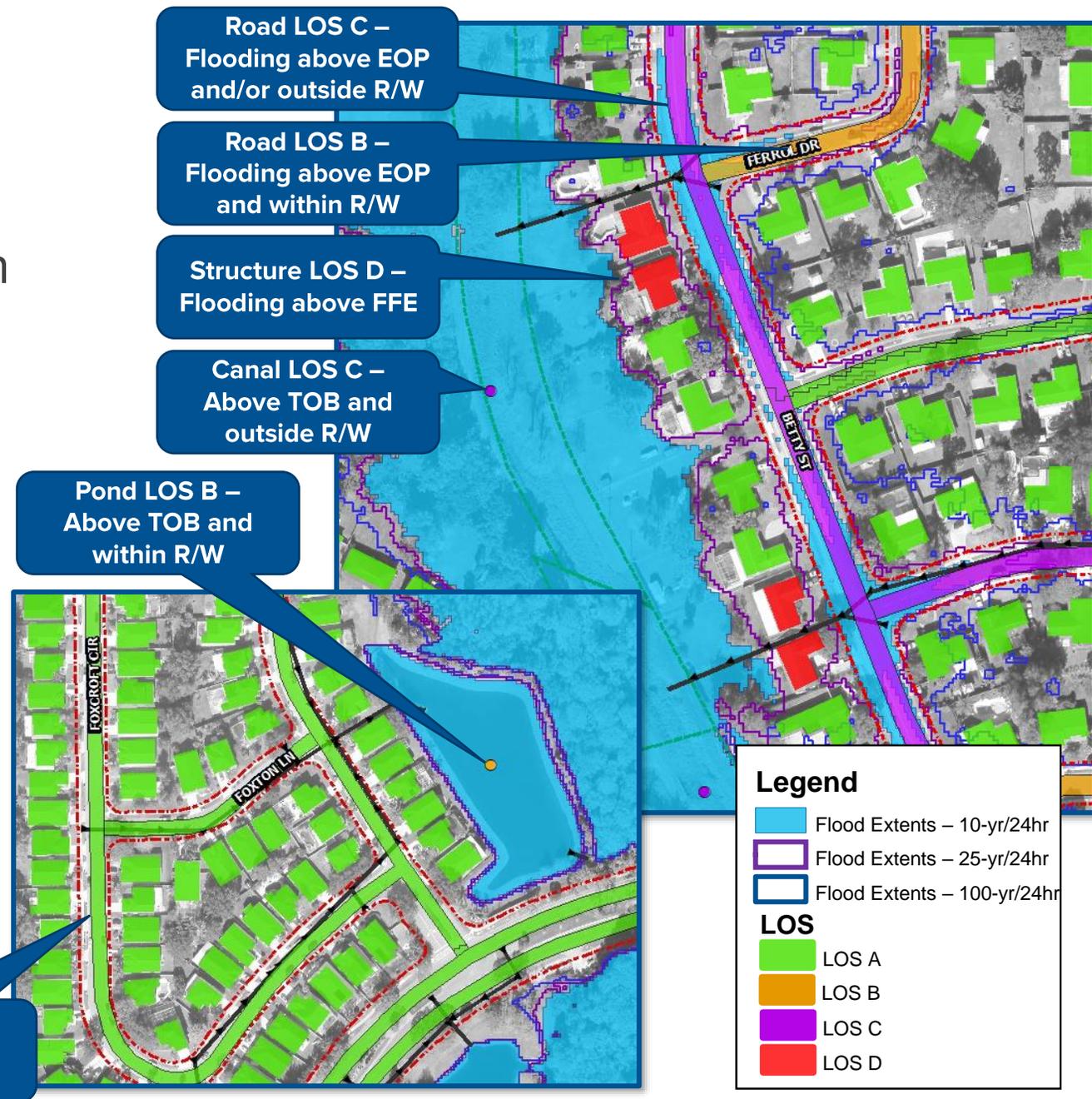
Structure Flooding

Legend

EOP: Edge of Pavement
R/W: Right of Way
TOB : Top of Bank

LOS Analysis

- All major infrastructure are included in the model, but LOS analysis focused on COUNTY maintained systems.
- LOS Analysis Includes:
 - Roadways [all roads]
 - Local, Collector, or Arterial (10-yr storm)
 - Evacuation (100-yr storm)
 - Ponds (25-yr storm) [County only]
 - Canals (25-yr storm) [all modeled]
 - Bridges (50-yr & 100-yr storm) [all major]
 - Structures (100-yr storm) [all]



LOS Structure Results

- Summary

- LOS A: 19,904
- LOS B & C: N/A
- LOS D: 69 (All River/Canal Flooding)



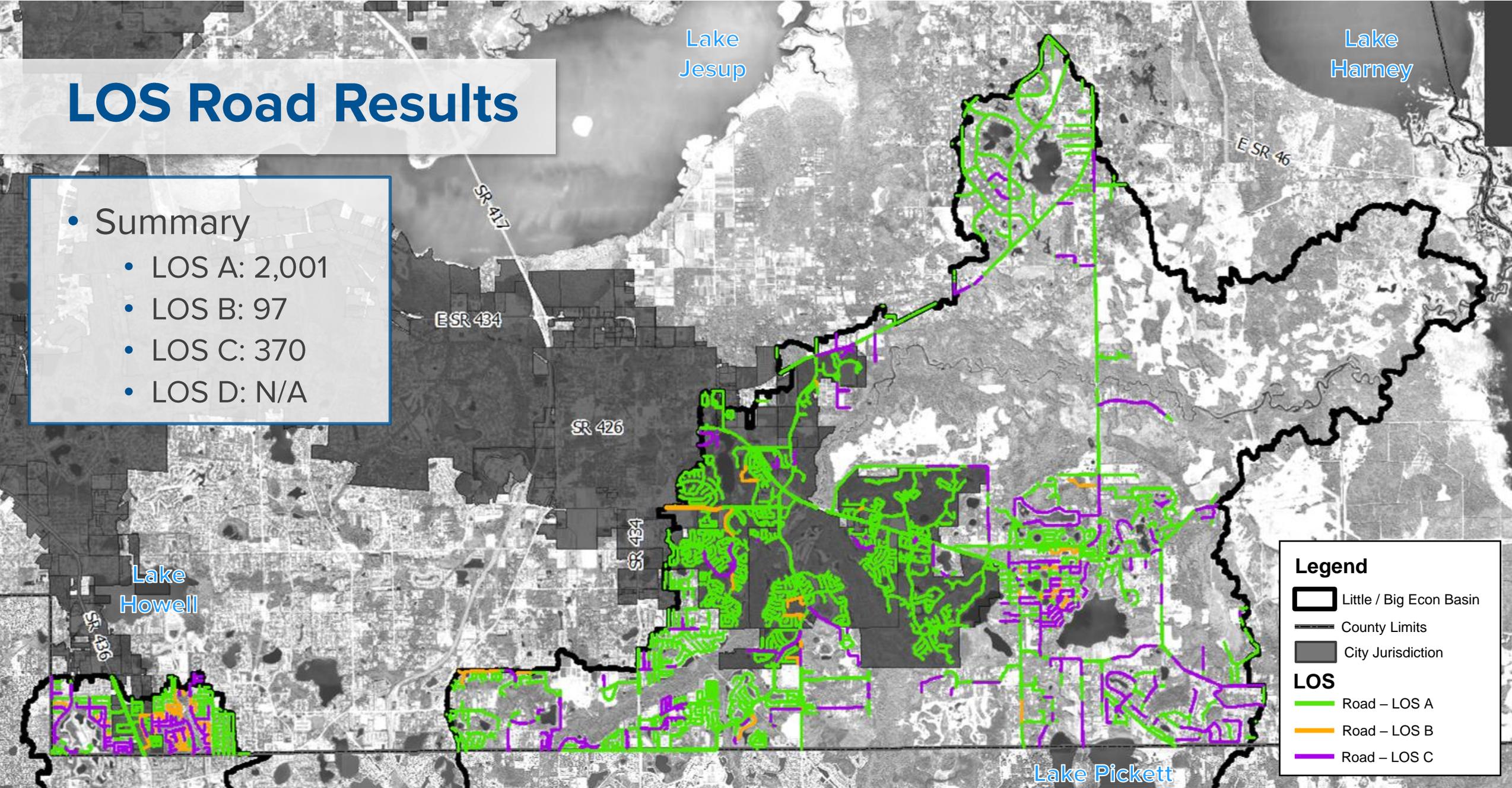
Legend

- Little / Big Econ Basin
- County Limits
- City Jurisdiction
- LOS**
- Structure – LOS A
- Structure – LOS D

LOS Road Results

- Summary

- LOS A: 2,001
- LOS B: 97
- LOS C: 370
- LOS D: N/A



Legend

- Little / Big Econ Basin
- County Limits
- City Jurisdiction
- LOS**
- Road – LOS A
- Road – LOS B
- Road – LOS C

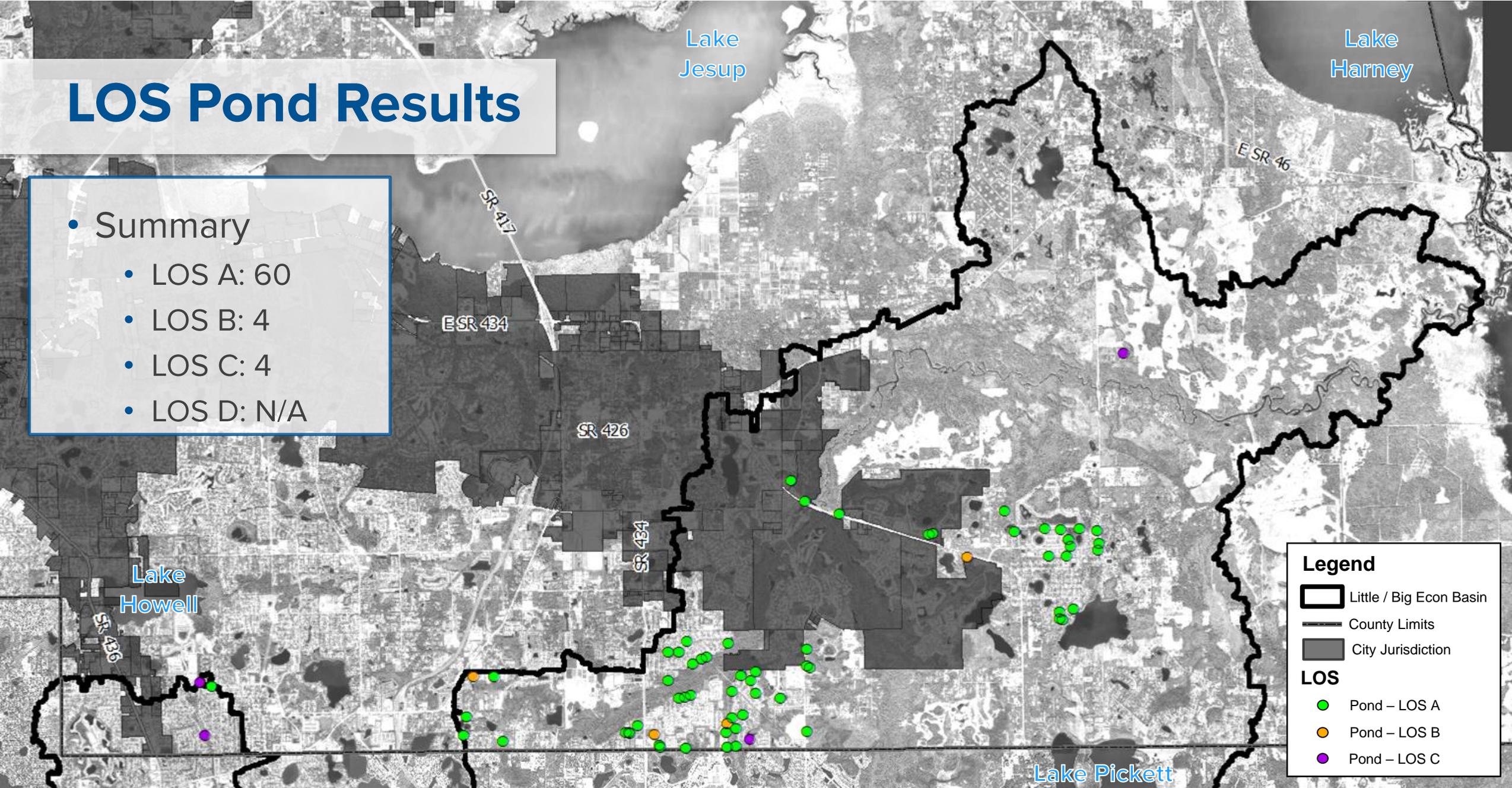
LOS Pond Results

Lake Jesup

Lake Harney

- Summary

- LOS A: 60
- LOS B: 4
- LOS C: 4
- LOS D: N/A



Legend

- Little / Big Econ Basin
- County Limits
- City Jurisdiction

LOS

- Pond – LOS A
- Pond – LOS B
- Pond – LOS C

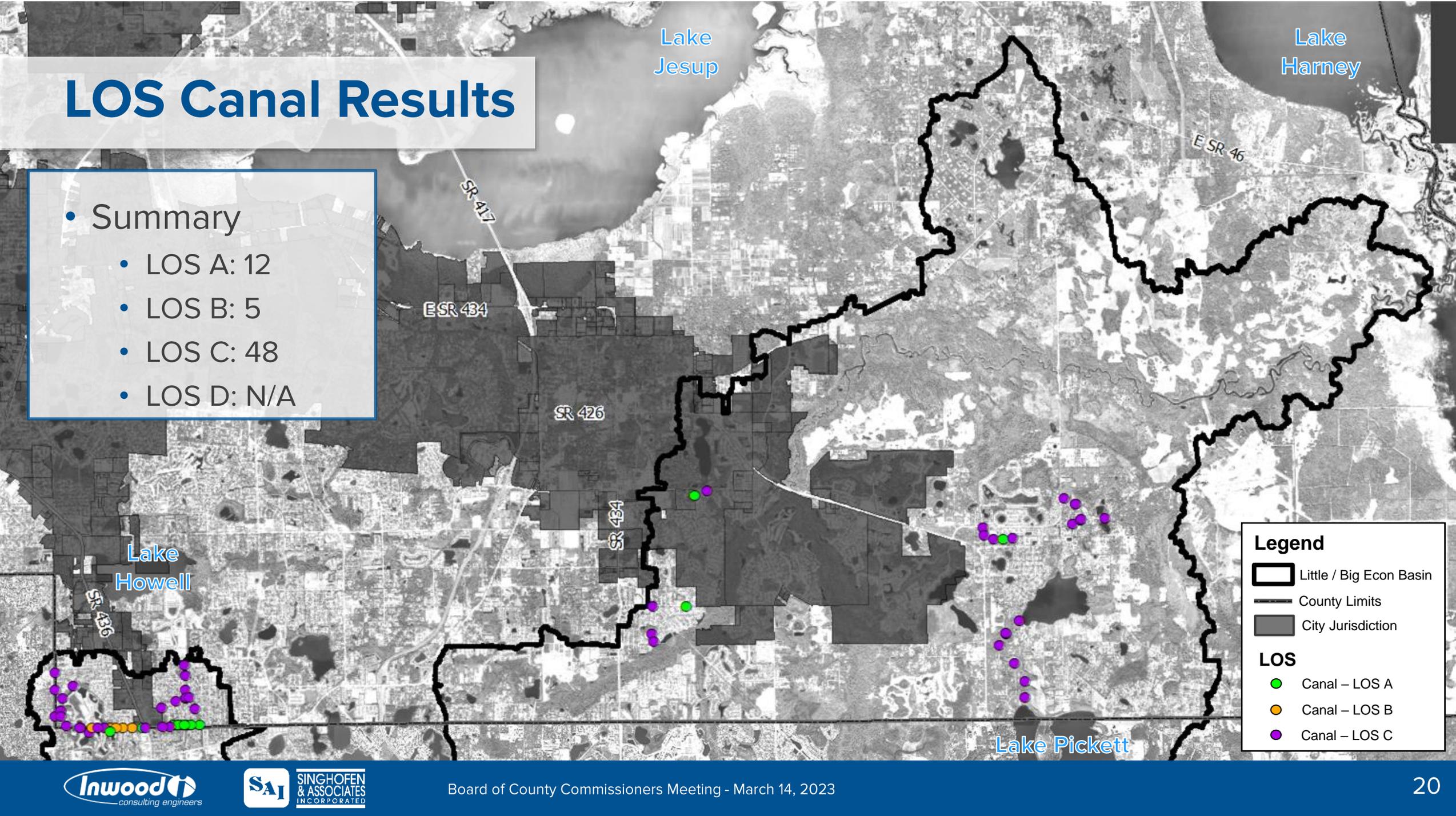
LOS Canal Results

Lake
Jesup

Lake
Harney

- Summary

- LOS A: 12
- LOS B: 5
- LOS C: 48
- LOS D: N/A



Legend

Little / Big Econ Basin

County Limits

City Jurisdiction

LOS

Canal – LOS A

Canal – LOS B

Canal – LOS C

Lake Pickett

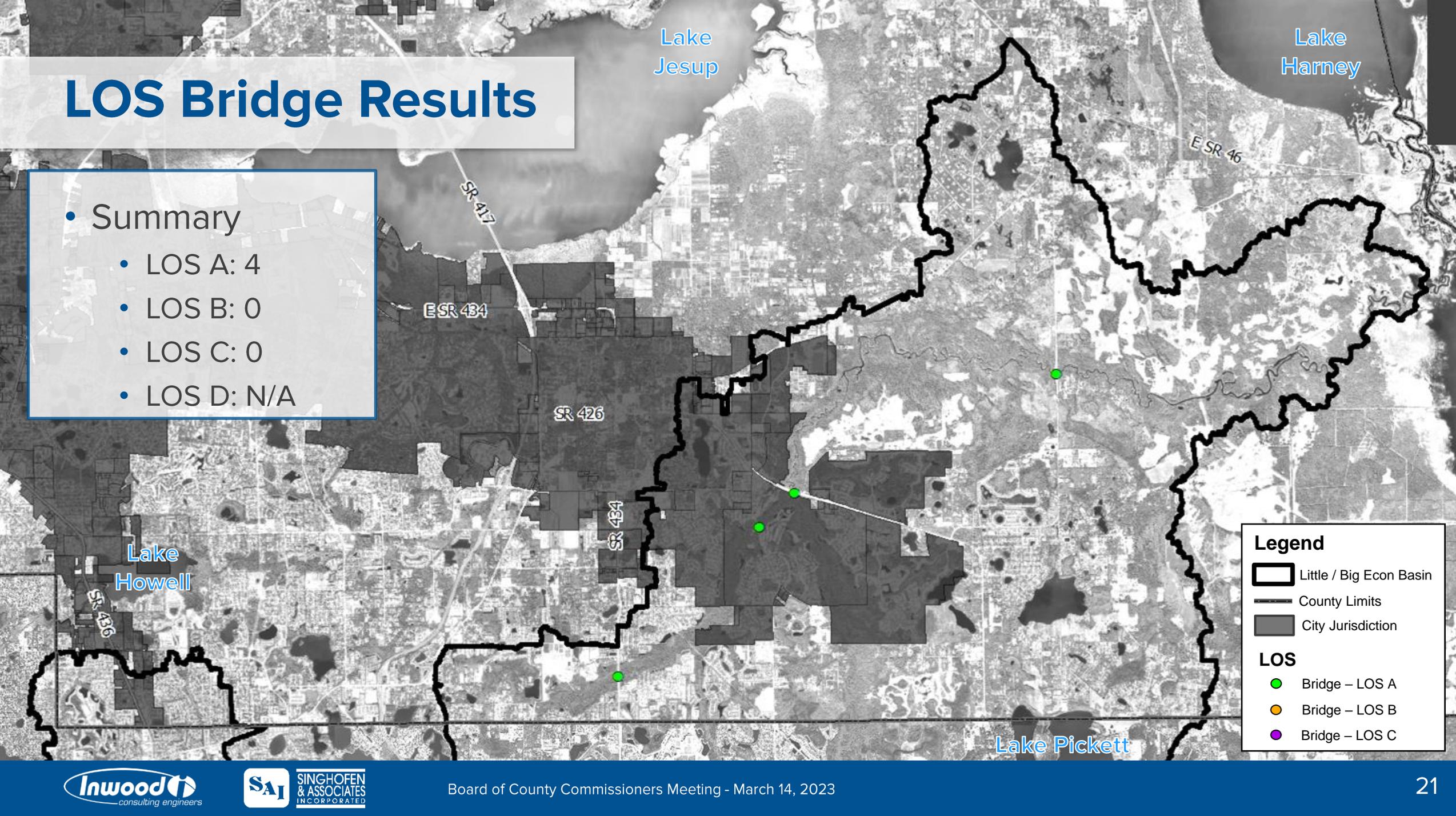
LOS Bridge Results

Lake
Jesup

Lake
Harney

- Summary

- LOS A: 4
- LOS B: 0
- LOS C: 0
- LOS D: N/A



Legend

- Little / Big Econ Basin
- County Limits
- City Jurisdiction

LOS

- Bridge - LOS A
- Bridge - LOS B
- Bridge - LOS C

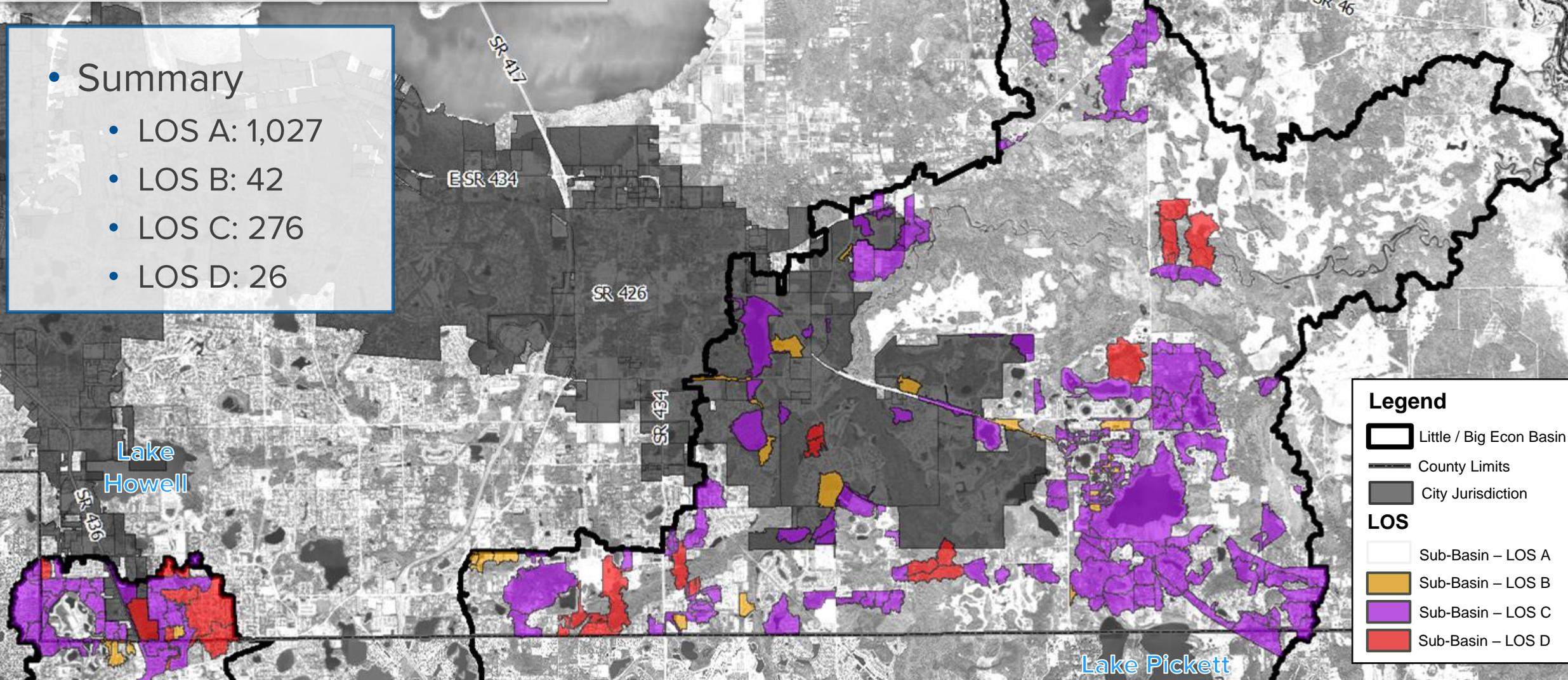
LOS Sub-Basin Results

Lake Jesup

Lake Harney

- Summary

- LOS A: 1,027
- LOS B: 42
- LOS C: 276
- LOS D: 26



Legend

- Little / Big Econ Basin
- County Limits
- City Jurisdiction
- LOS**
- Sub-Basin – LOS A
- Sub-Basin – LOS B
- Sub-Basin – LOS C
- Sub-Basin – LOS D

Level of Service Results

LOS Type	Total	LOS Classification Results				Notes
		A	B	C	D	
Structures	19,973	19,904	-	-	69	All from River/Canal
Roads	2,468	2,001	97	370	-	Number of street segments within basins
Ponds	68	60	4	4	-	Includes County and Functional Type Ponds
Canals	65	12	5	48	-	Number of canal points (confluence nodes)
Bridges	4	4	0	0	-	
Sub-Basins	1,371	1,027	42	276	26	

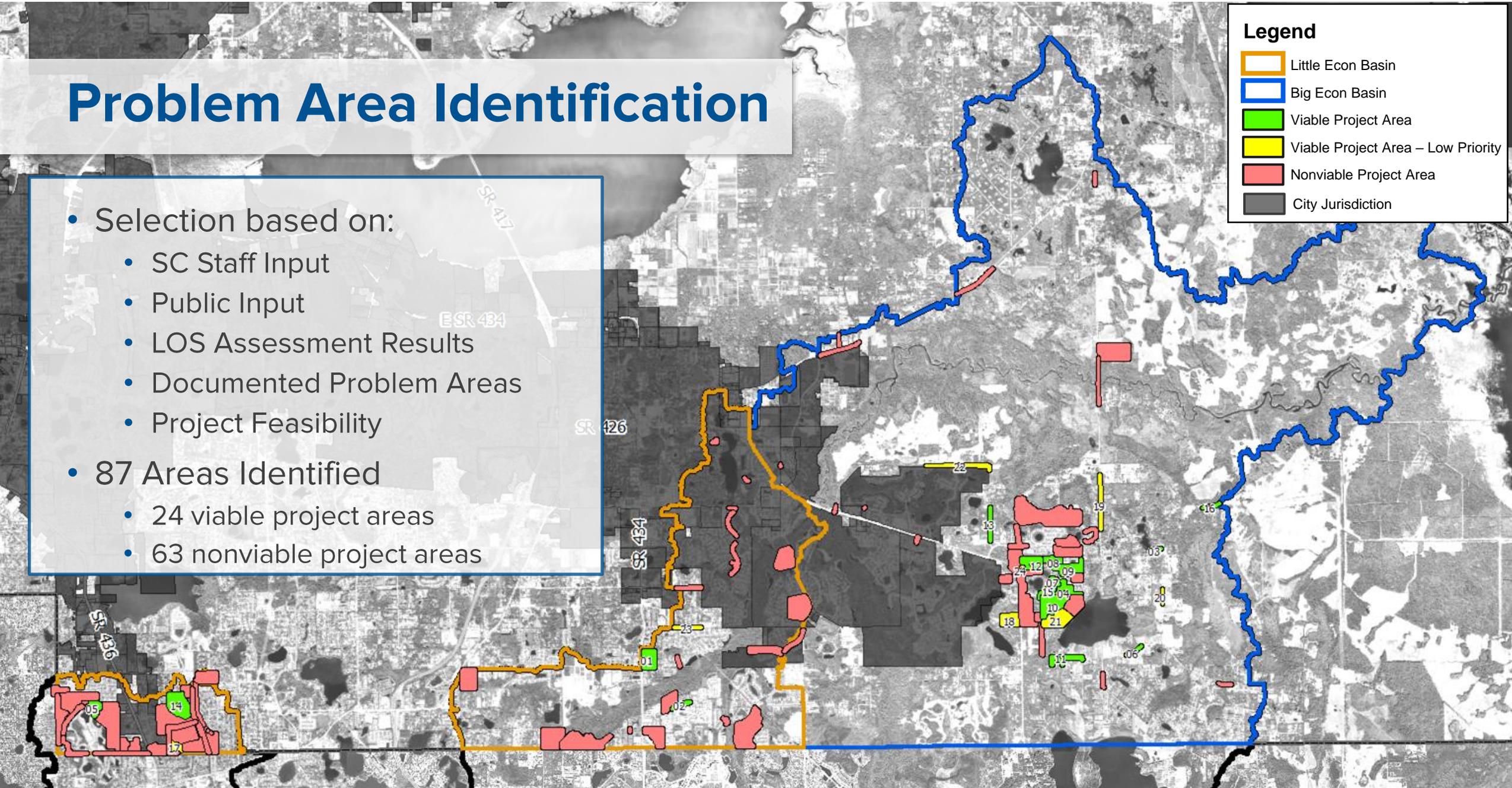
Flood Improvement Project Areas

Problem Area Identification

- Selection based on:
 - SC Staff Input
 - Public Input
 - LOS Assessment Results
 - Documented Problem Areas
 - Project Feasibility
- 87 Areas Identified
 - 24 viable project areas
 - 63 nonviable project areas

Legend

-  Little Econ Basin
-  Big Econ Basin
-  Viable Project Area
-  Viable Project Area – Low Priority
-  Nonviable Project Area
-  City Jurisdiction



Viable Flood Project Areas (High Priority)

1	Seminole Terrace Subdivision (Boland Drive)
2	Park Road
3	Brumley Road (West of Lake Mills Road)
4	Chuluota Subdivision (Center Street, E 6th St, & Avenue F)
5	Winter Woods Subdivision (Poinciana Road)
6	Lake Mills Road (West of Curryville Road)
7	Chuluota Subdivision (E 5th St west of Avenue F)
8	Chuluota Subdivision (E 1st St and Avenue E)
9	Chuluota Subdivision (E 2nd St, E 3rd St, & Avenue H)
10	Lake Mills Avenue at Poinsettia Drive in Chuluota
11	Lake Mills Road (East of Mills Branch)
12	Chuluota Subdivision (Avenue C and E 2nd St)
13	Willingham Road (North of Old Chuluota Road)
14	Chuluota Subdivision (E 6th St at Lake Drive)
15	Brumley Road at White Tail Trail
16	Eastbrook (Eastbrook Boulevard)

Viable Flood Project Areas (Low Priority)

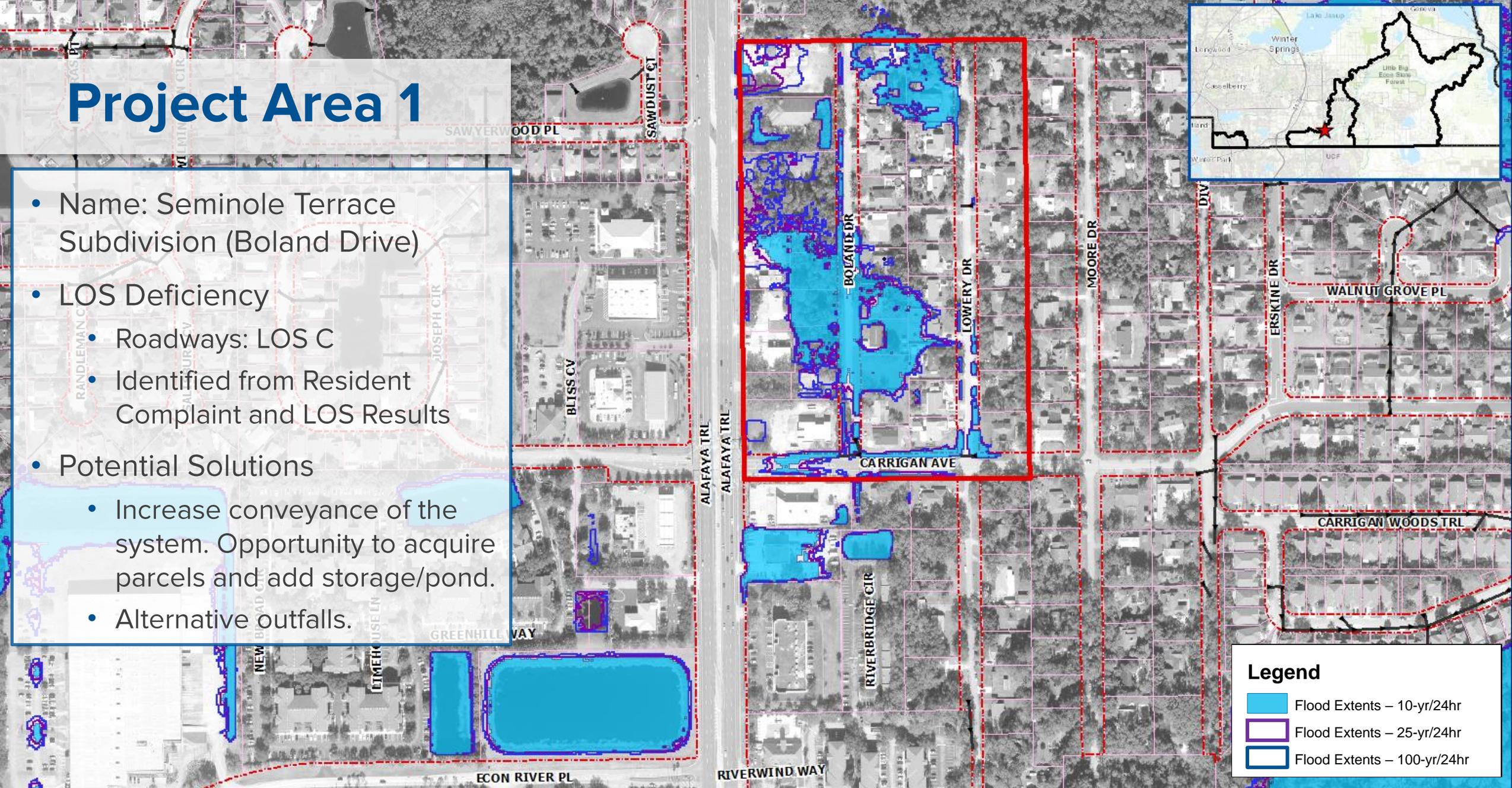
17	Eastbrook (Brazilian Lane and Puritan Avenue)
18	Chuluota Subdivision (West 11th Street)
19	Snow Hill Road (South of Vista Cove)
20	Lake Mills Road (North of Mills Creek)
21	Lake Mills Road (Magnolia Drive and Millshore Drive)
22	Willingham Road (North of Heirloom Rose Place)
23	Lake Hayes Road / Canal
24	Chuluota Subdivision (Jacobs Trail)

Ranking Approach

- Viable high & low priority project areas were ranked independently
- First ranked based on LOS (D, C, B)
- Second ranked based on LOS class (road, canal, pond)
- Third ranked on flood depth (high to low)

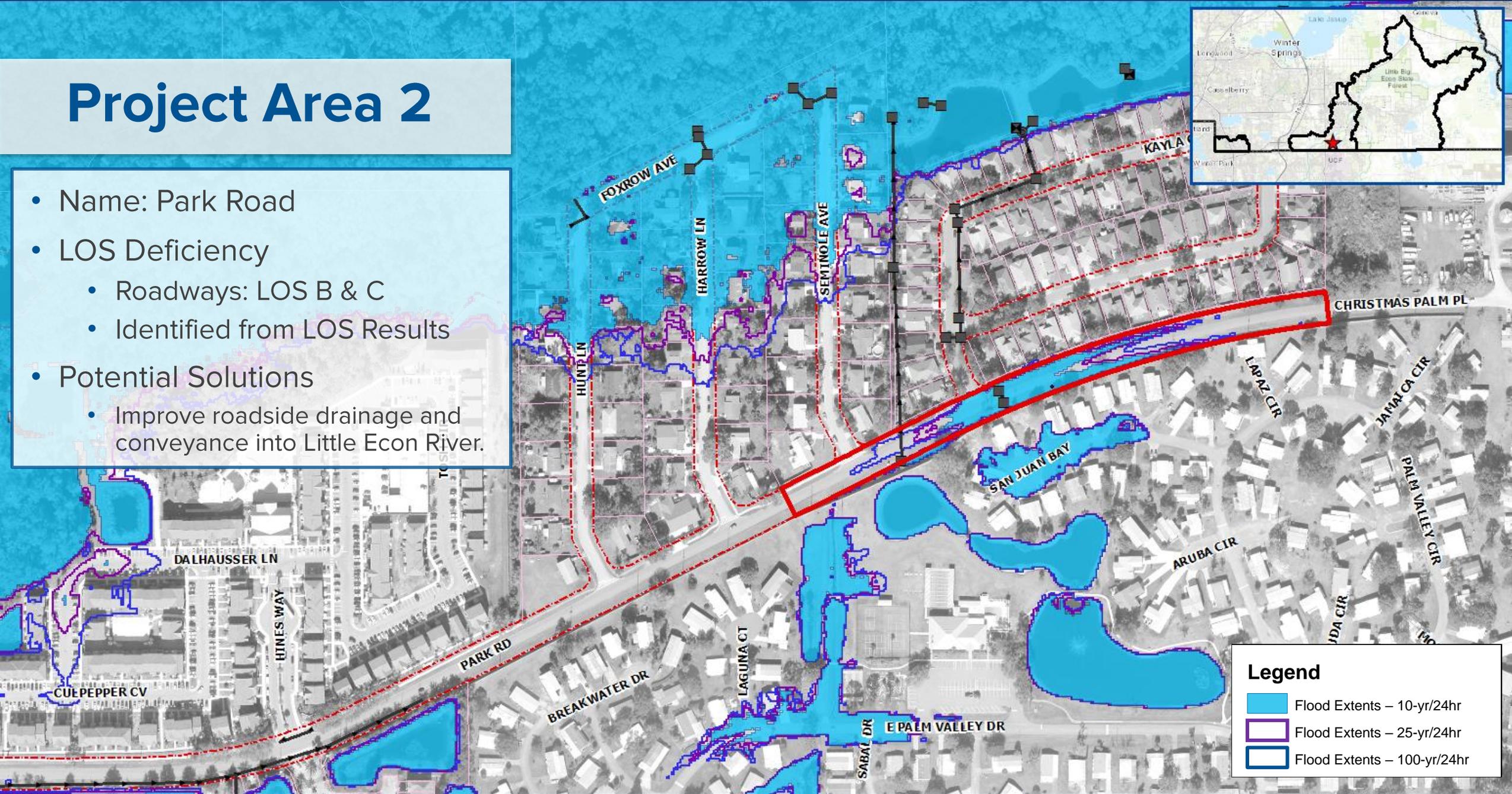
Project Area 1

- Name: Seminole Terrace Subdivision (Boland Drive)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Resident Complaint and LOS Results
- Potential Solutions
 - Increase conveyance of the system. Opportunity to acquire parcels and add storage/pond.
 - Alternative outfalls.



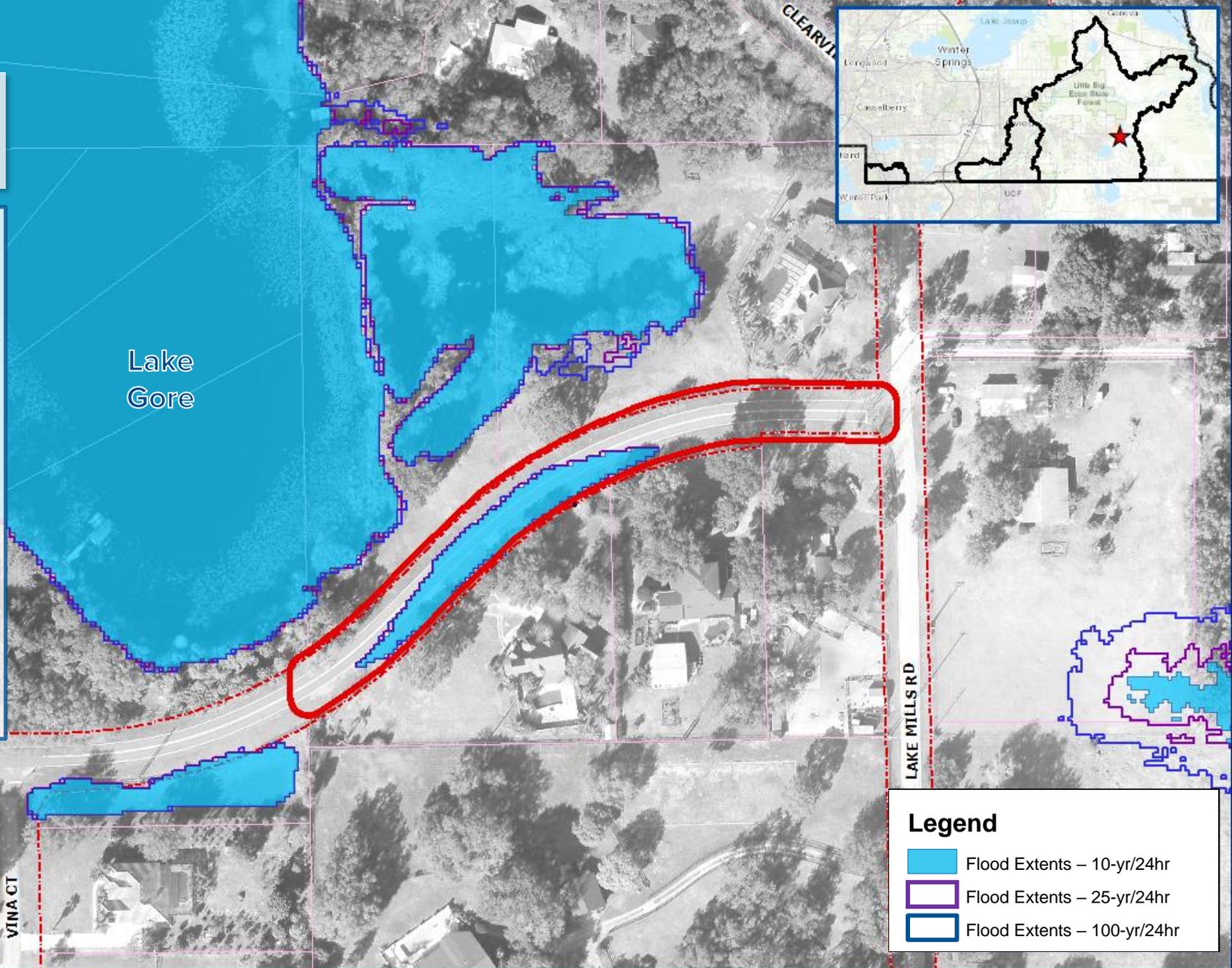
Project Area 2

- Name: Park Road
- LOS Deficiency
 - Roadways: LOS B & C
 - Identified from LOS Results
- Potential Solutions
 - Improve roadside drainage and conveyance into Little Econ River.



Project Area 3

- Name: Brumley Road (West of Lake Mills Road)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - Add additional roadside storage.
 - Add control structure / cross drain across Brumley Road.

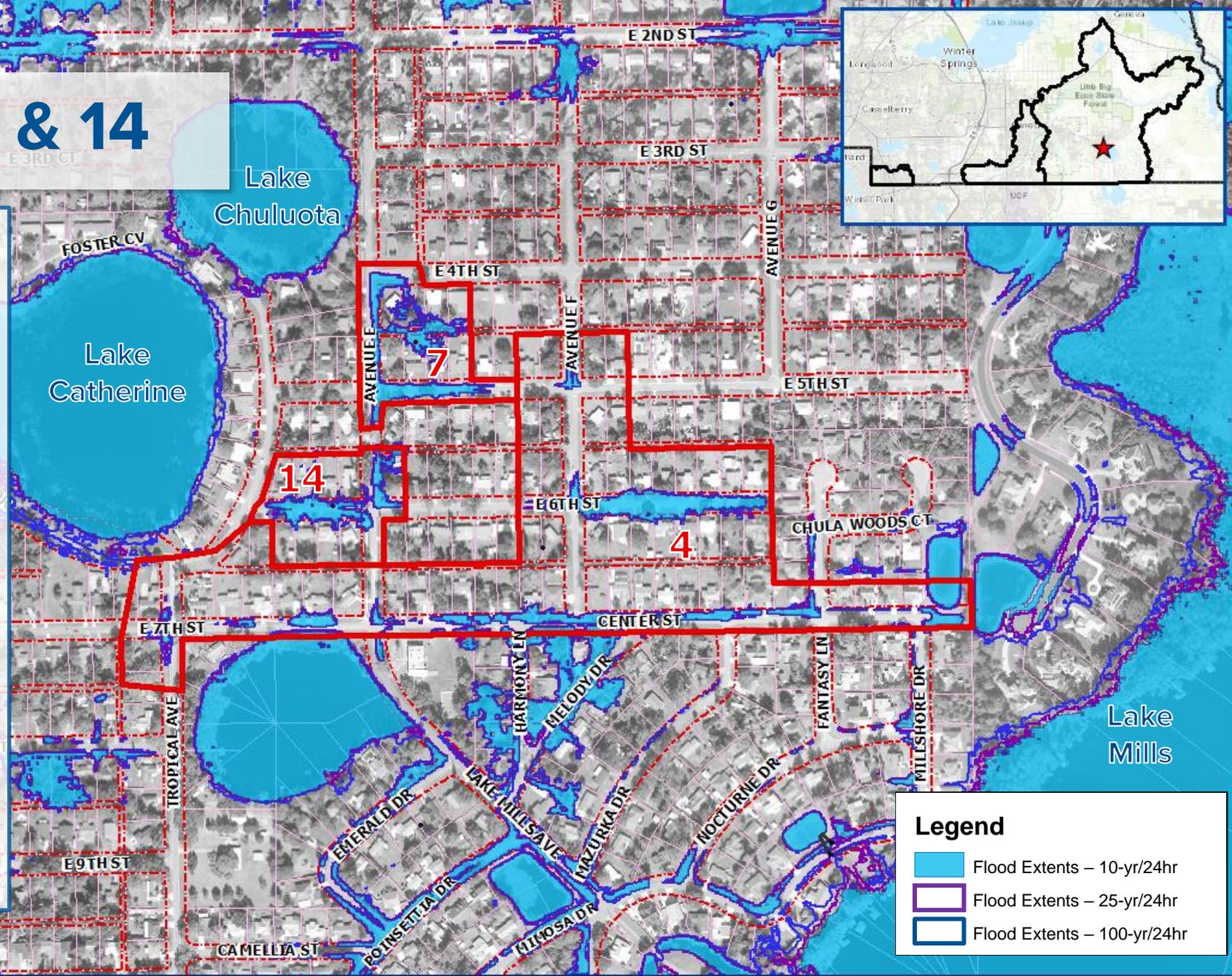


Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

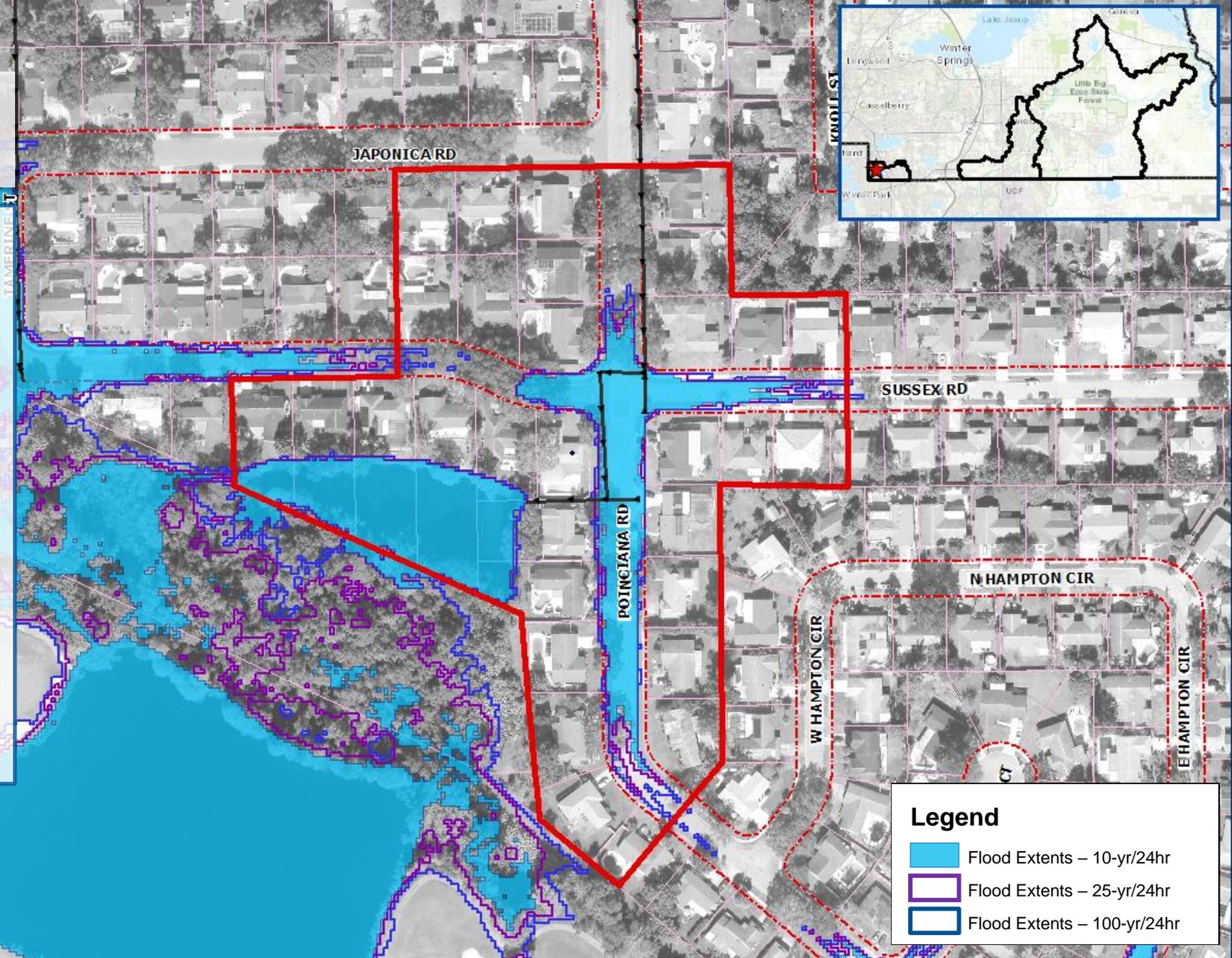
Project Area 4, 7, & 14

- Name: Chuluota Subdivision
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - #4 and #7: Increase conveyance of the system. Opportunity to add storage by acquiring undeveloped parcels. Alternative outfall paths possible.
 - #14: Increase conveyance of the system. Alternative outfall paths possible.



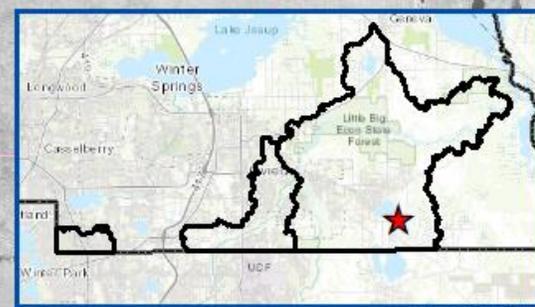
Project Area 5

- Name: Winter Woods Subdivision (Poinciana Road)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - Increase conveyance of the system to the existing pond.



Project Area 5

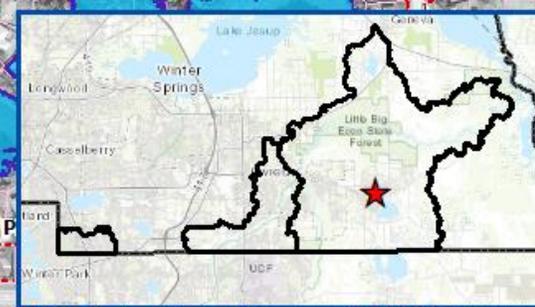
- Name: Lake Mills Road (West of Curryville Road)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - Add additional roadside storage.
 - Add control structure / cross drain across Lake Mills Road.



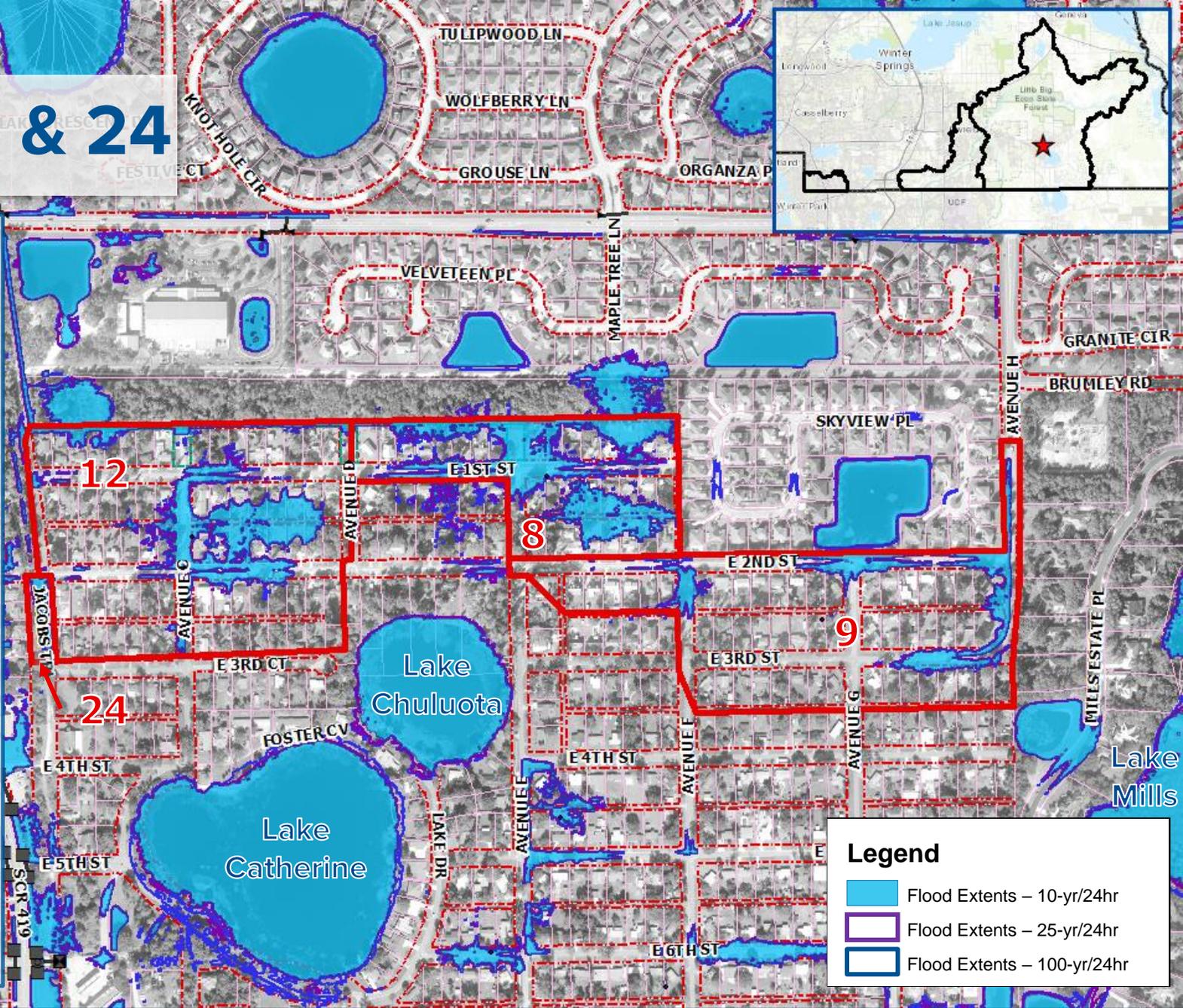
Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

Project Area 8, 9, 12 & 24

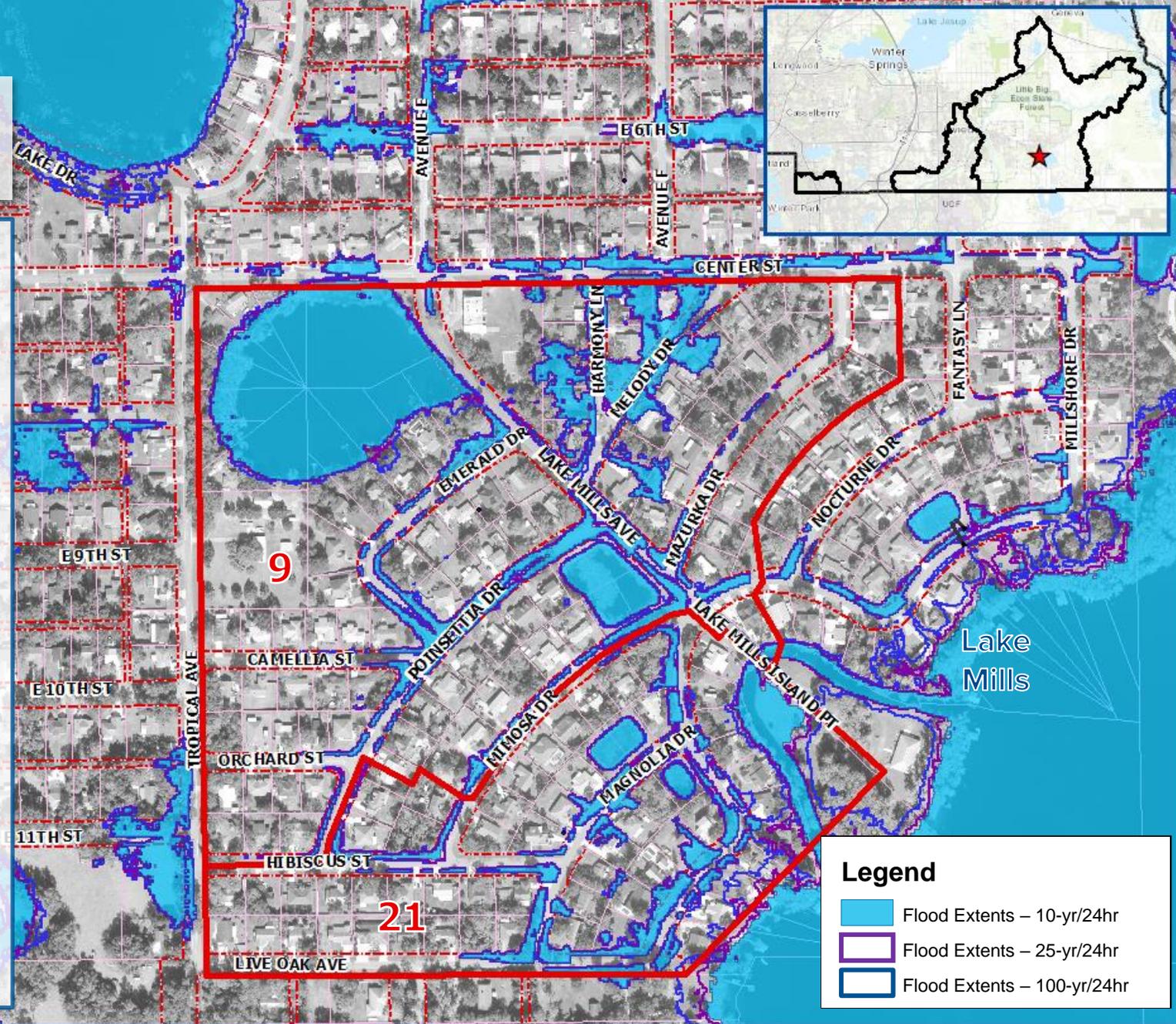


- Name: Chuluota Subdivision
- LOS Deficiency
 - Roadways: LOS B (#24 only) & LOS C
 - Canals: LOS C (#8 & #12 only)
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - Increase conveyance of the system.
 - #8, #12: Opportunity to add storage by acquiring undeveloped parcel to the north or within R/W to the west.
 - #8, #9, #12: Add swale conveyance along back of property R/W.
 - #24: Add storage along Jacobs Trail.



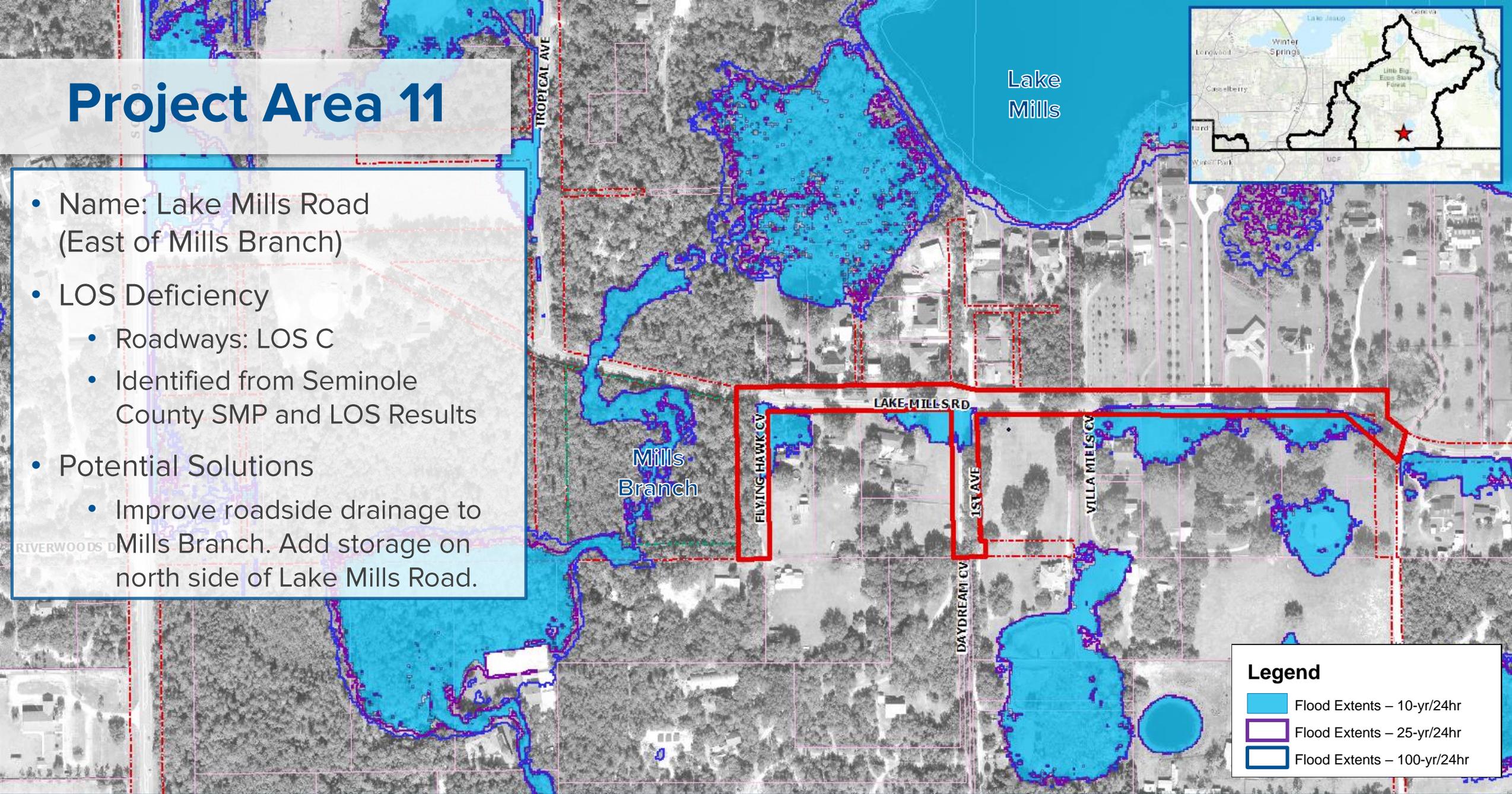
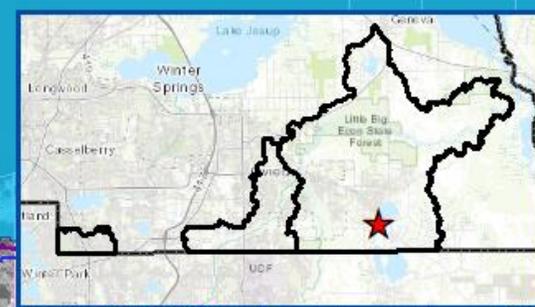
Project Area 10 & 21

- Name:
 - Lake Mills Avenue at Poinsettia Drive in Chuluota (#10)
 - Lake Mills Shores (Magnolia Drive and Millshore Drive) (#21)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - Increase conveyance of the system to the ponds. Opportunity to add storage by acquiring undeveloped parcels.
 - Alternative outfall paths possible. (#21 only)



Project Area 11

- Name: Lake Mills Road (East of Mills Branch)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - Improve roadside drainage to Mills Branch. Add storage on north side of Lake Mills Road.

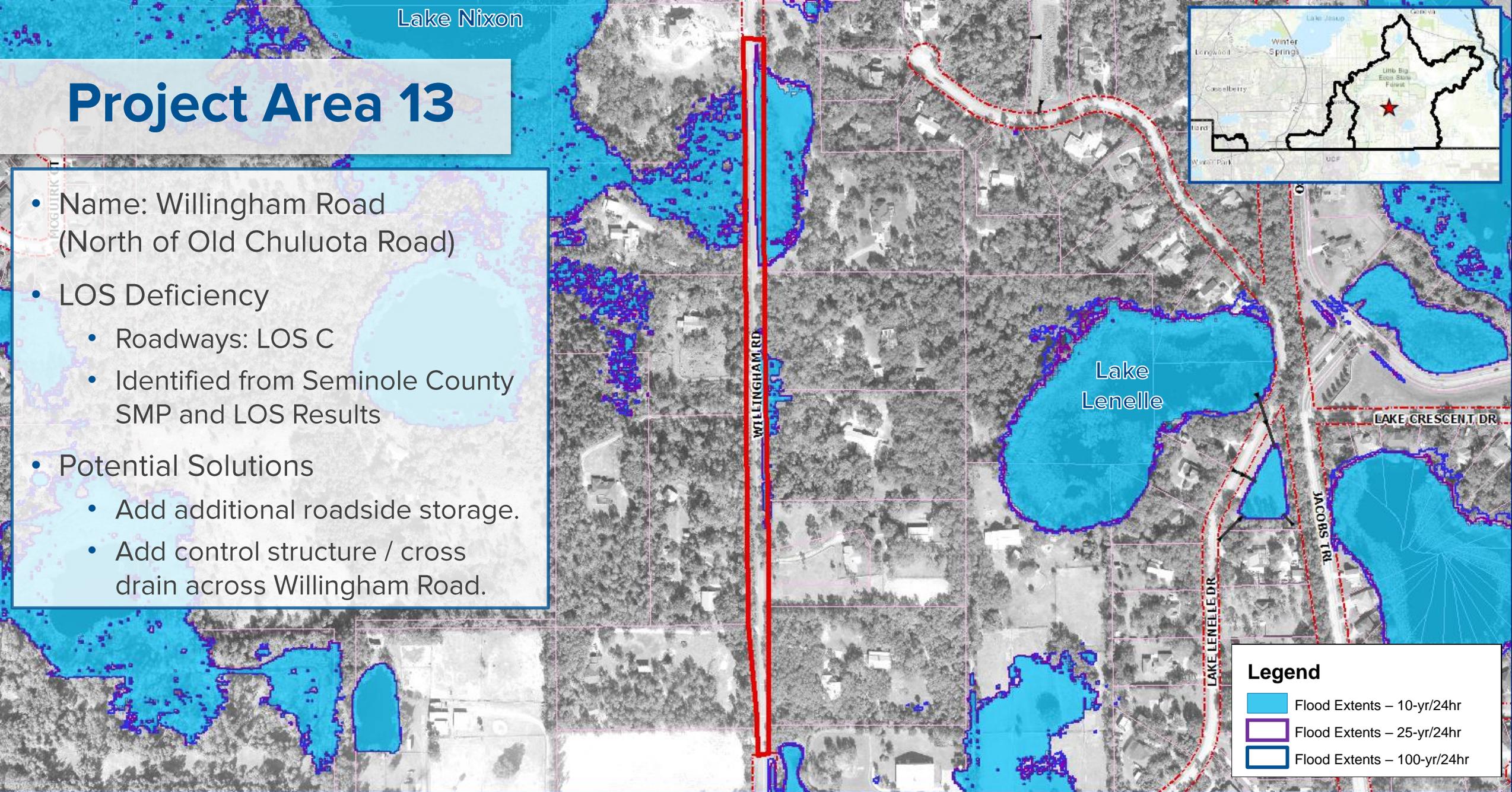
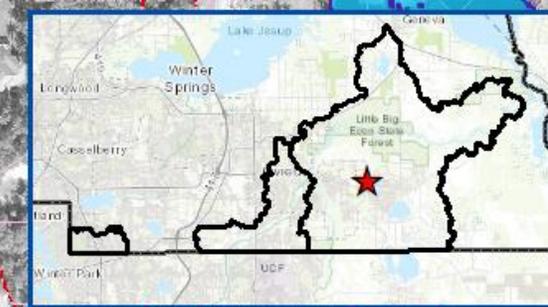


Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

Project Area 13

- Name: Willingham Road (North of Old Chuluota Road)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - Add additional roadside storage.
 - Add control structure / cross drain across Willingham Road.

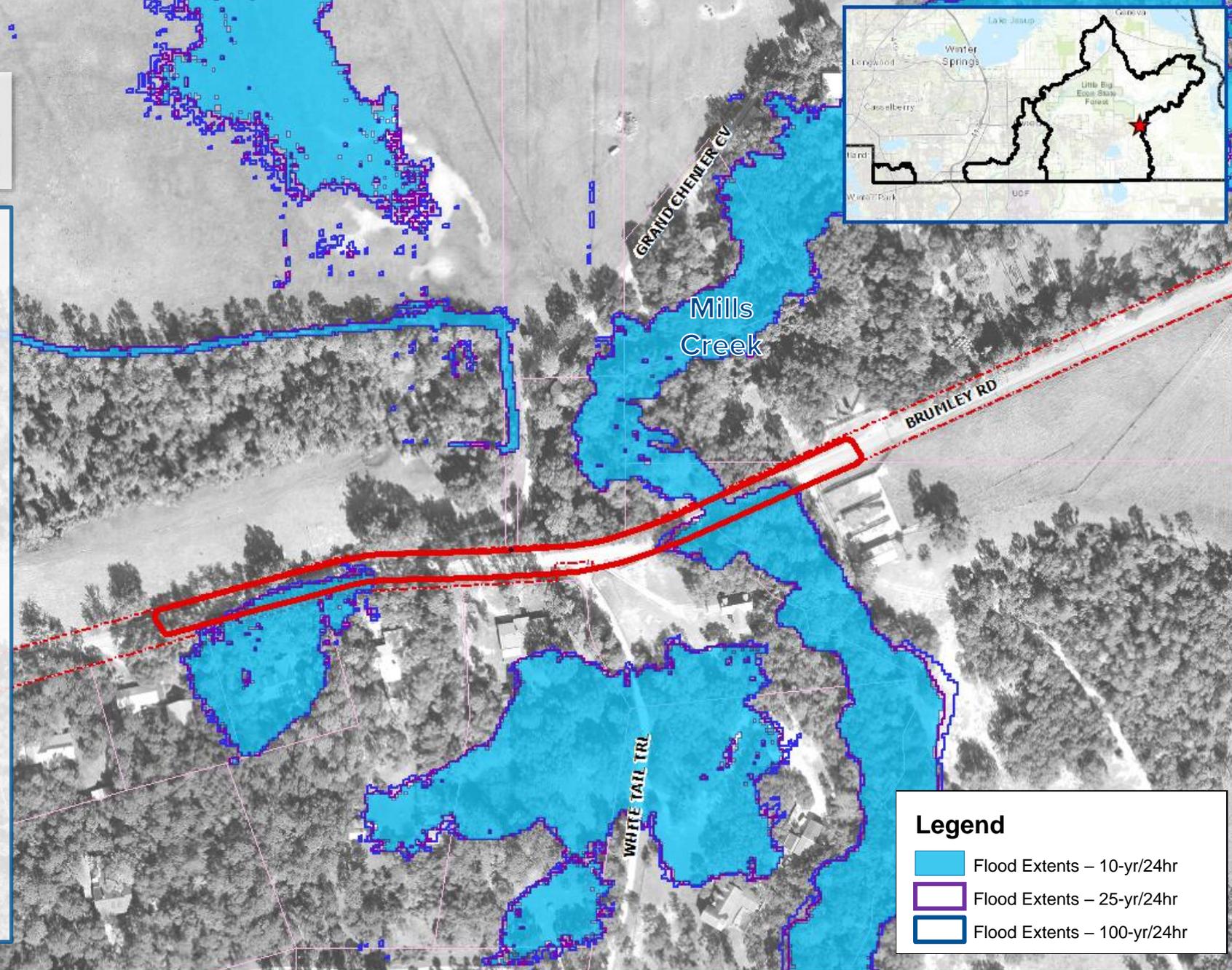


Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

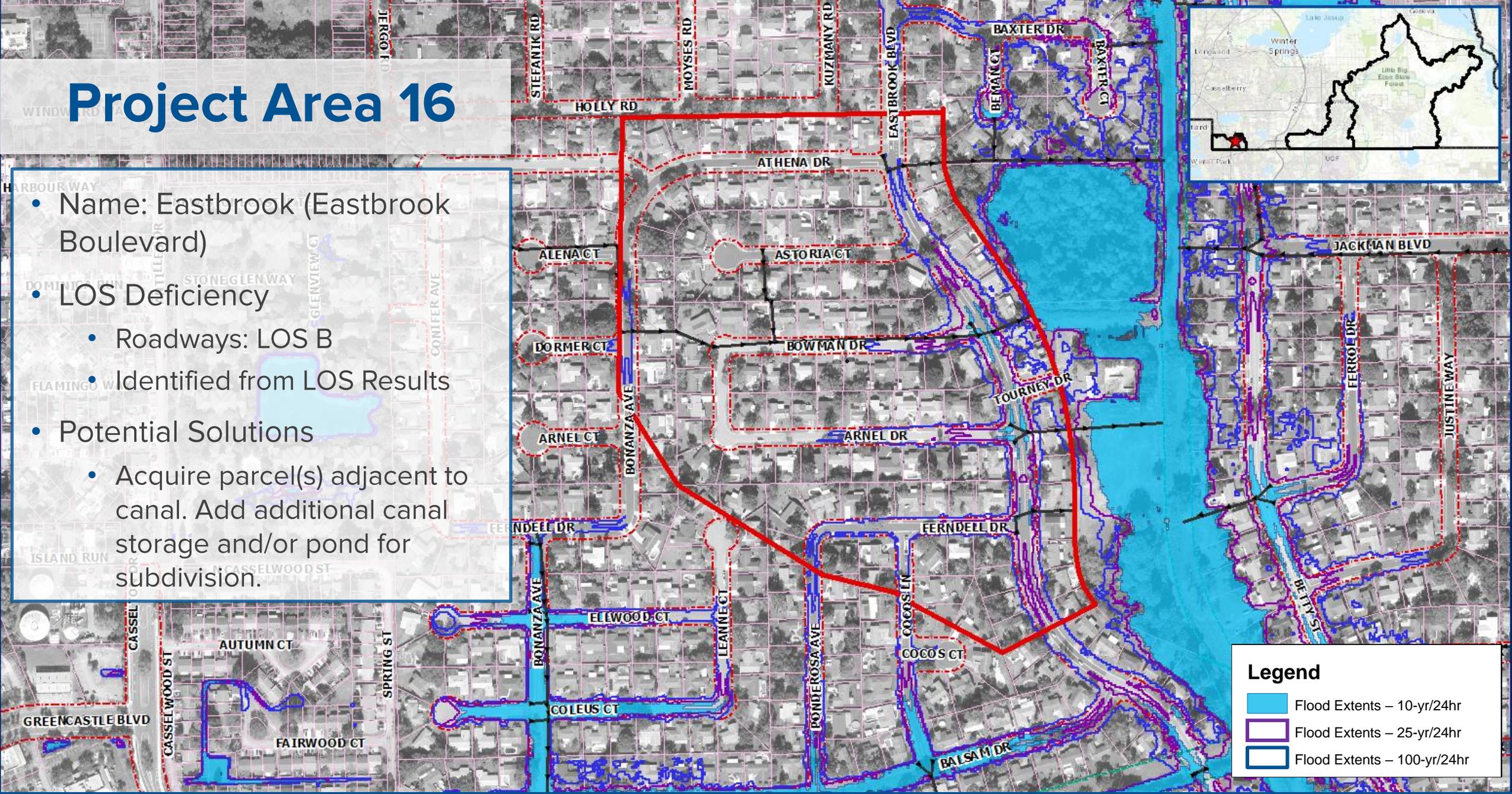
Project Area 15

- Name: Brumley Road at White Tail Trail
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Resident Complaints and LOS Results
- Potential Solutions
 - Improve roadside drainage to Mills Creek.
 - Acquire parcel / easement for pond on ranch property to the north.
 - Cross drain under Brumley Road appears to be undersized. Increase conveyance of cross drain.



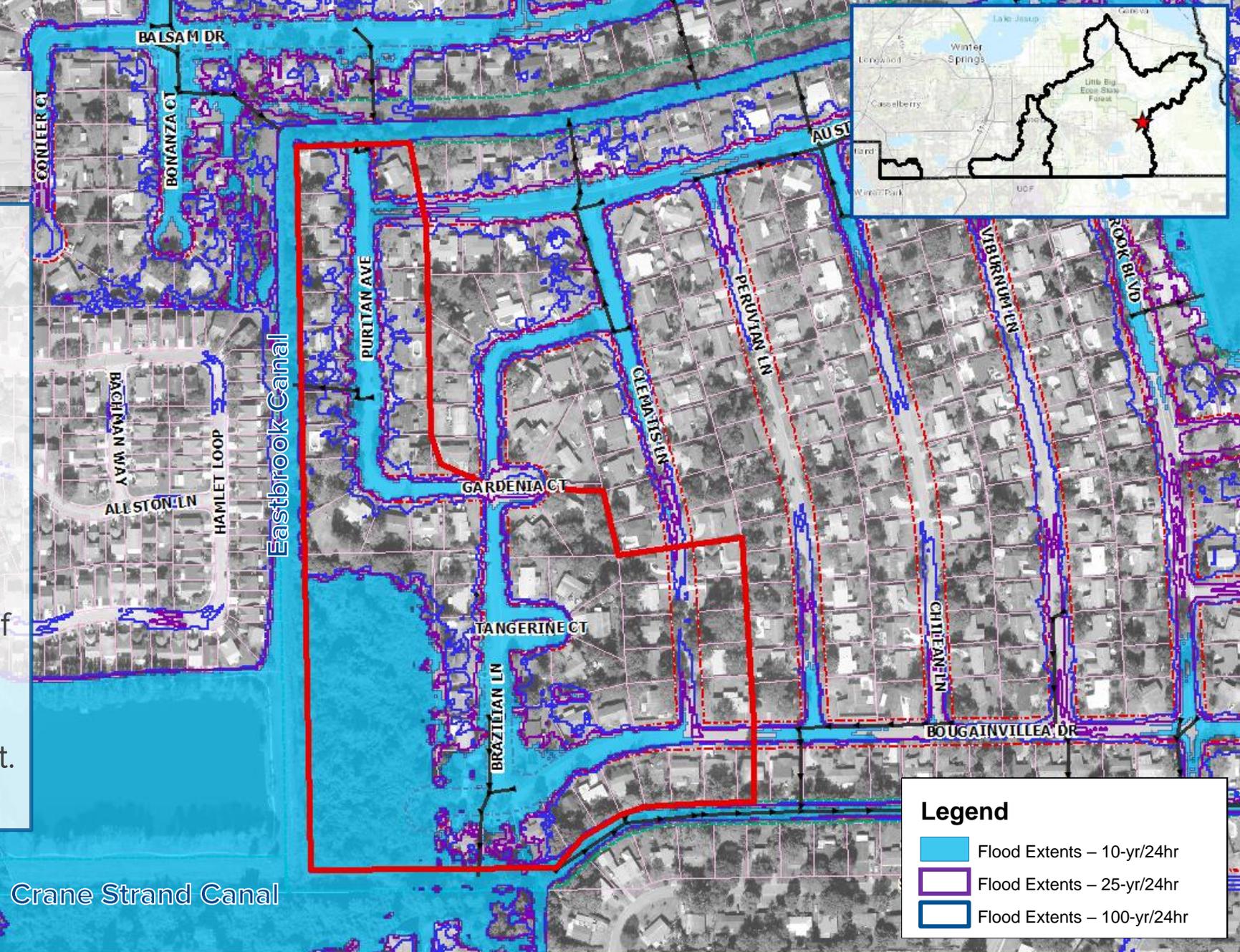
Project Area 16

- Name: Eastbrook (Eastbrook Boulevard)
- LOS Deficiency
 - Roadways: LOS B
 - Identified from LOS Results
- Potential Solutions
 - Acquire parcel(s) adjacent to canal. Add additional canal storage and/or pond for subdivision.



Project Area 17

- Name: Eastbrook (Brazilian Lane and Puritan Avenue)
- LOS Deficiency
 - Roadways: LOS C
 - Structures: LOS D
 - Identified from LOS Results
- Potential Solutions
 - Acquire parcel in SW corner of project area.
 - Add additional storage or create conservation easement.

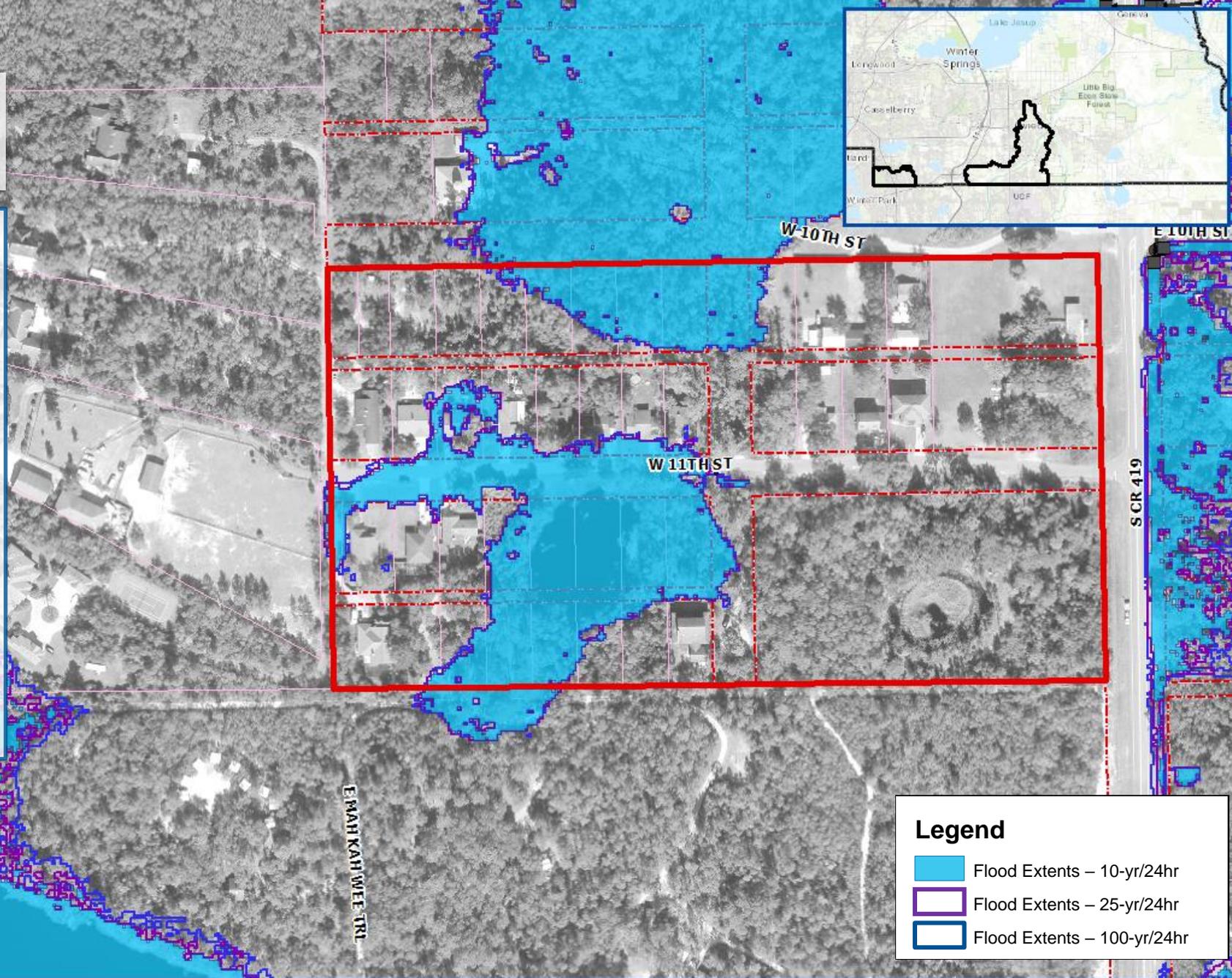
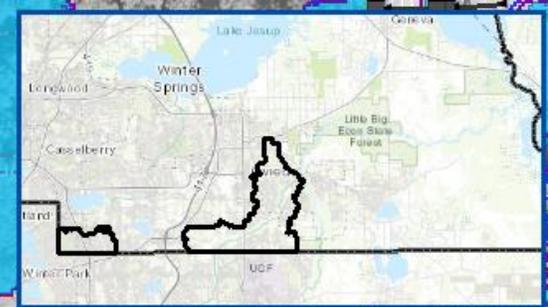


Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

Project Area 18

- Name: Chuluota Subdivision (West 11th Street)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Resident Complaints and LOS Results
- Potential Solutions
 - Acquire parcels in SE corner of project area and construct stormwater pond.

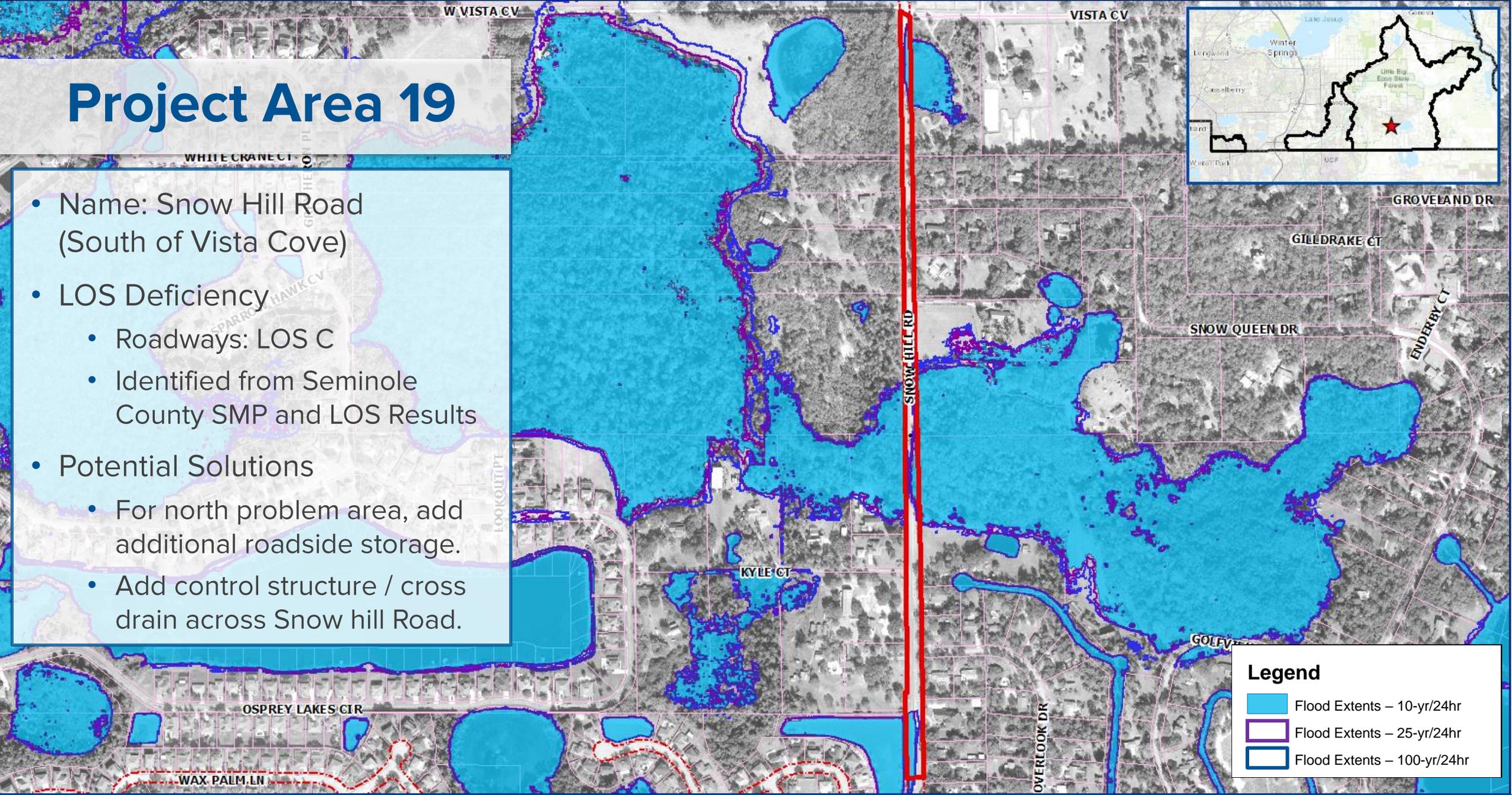


Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

Project Area 19

- Name: Snow Hill Road (South of Vista Cove)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - For north problem area, add additional roadside storage.
 - Add control structure / cross drain across Snow hill Road.

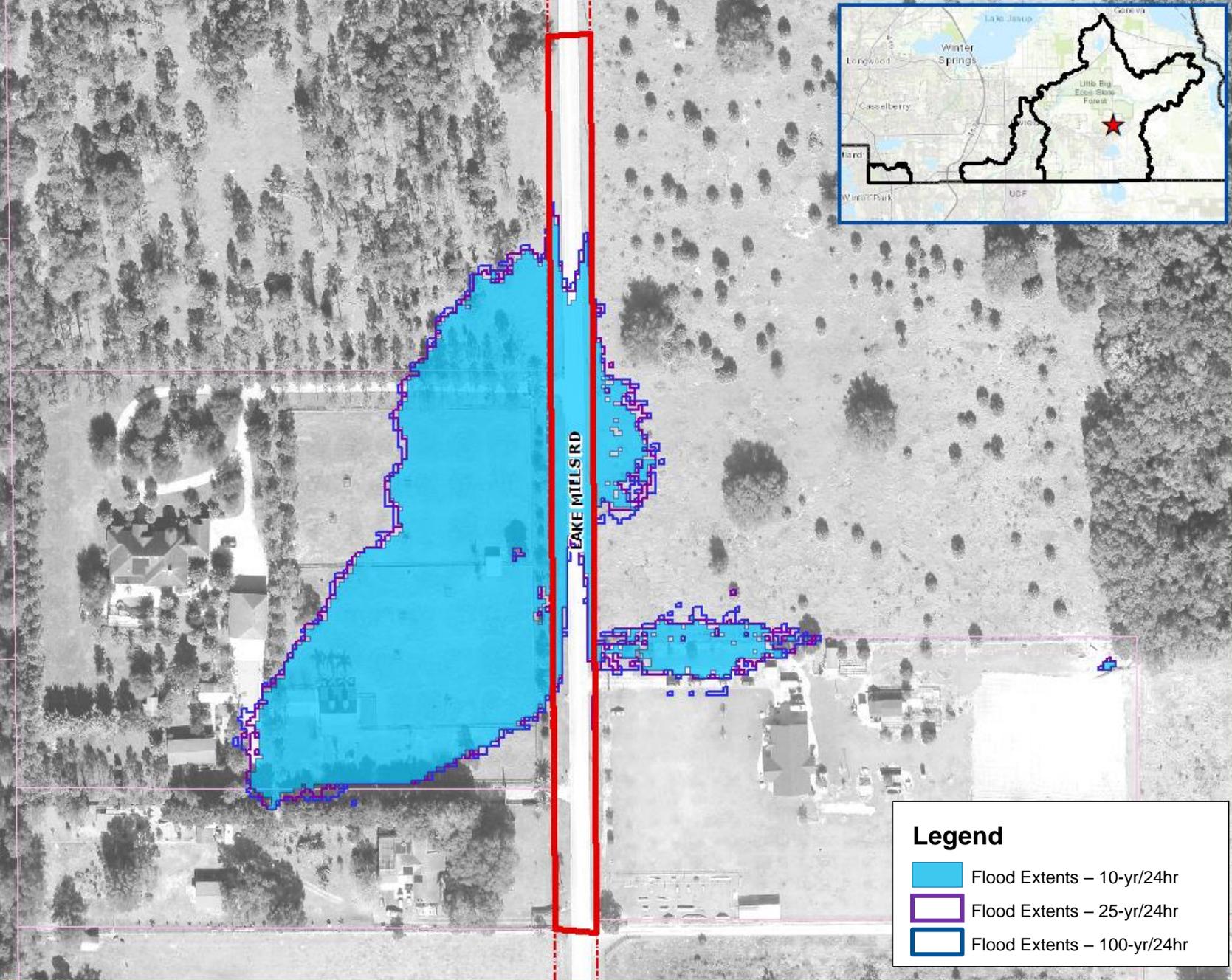
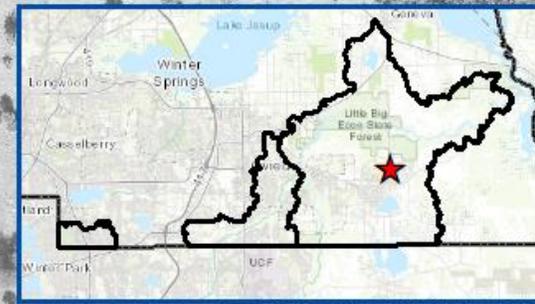


Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

Project Area 20

- Name: Lake Mills Road (North of Mills Creek)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - Add roadside drainage to south and/or acquire land and build retention pond.

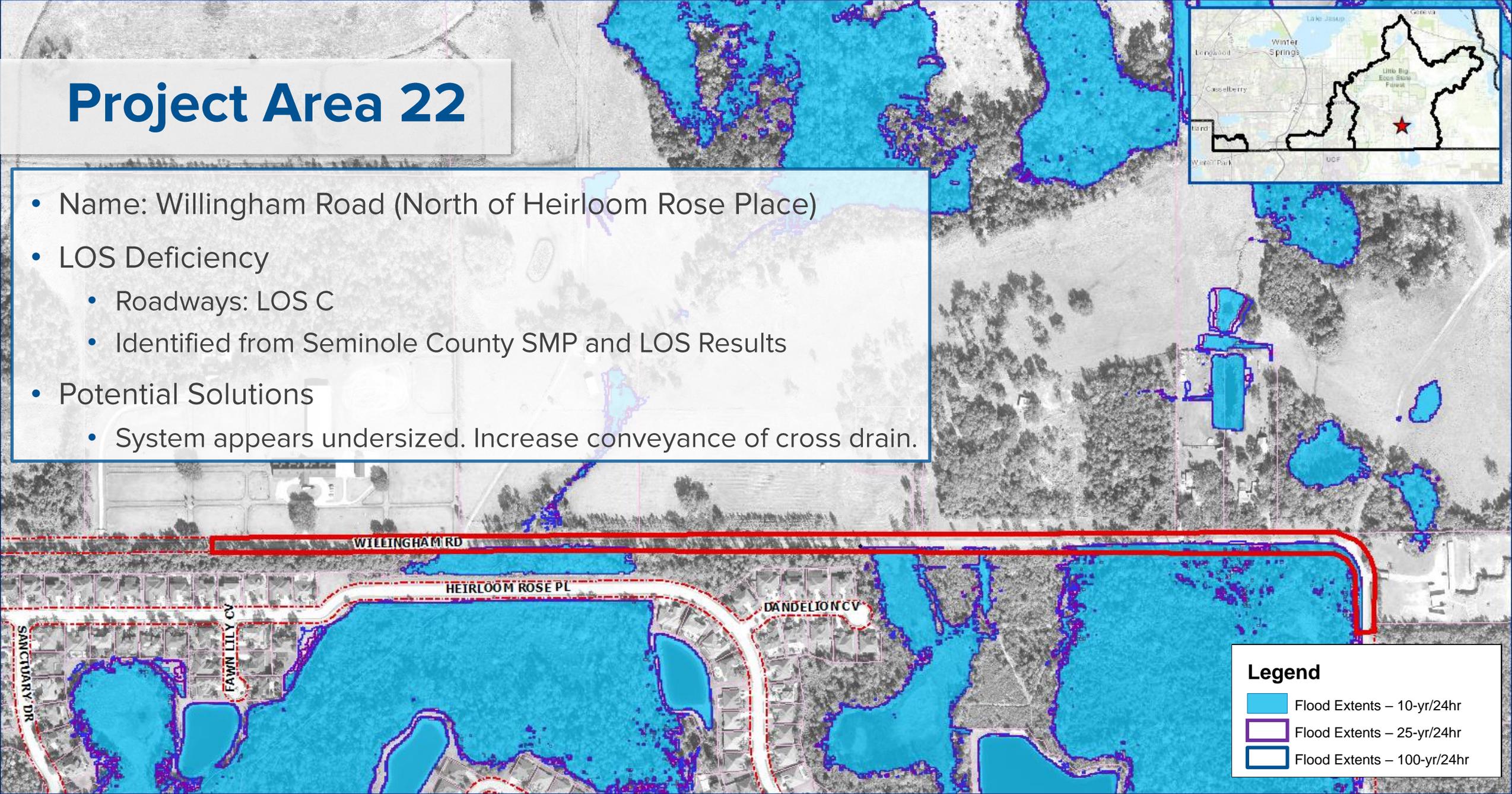
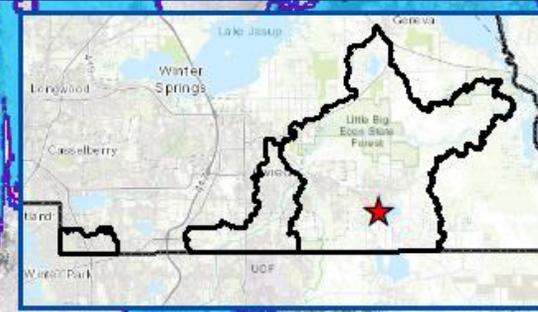


Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

Project Area 22

- Name: Willingham Road (North of Heirloom Rose Place)
- LOS Deficiency
 - Roadways: LOS C
 - Identified from Seminole County SMP and LOS Results
- Potential Solutions
 - System appears undersized. Increase conveyance of cross drain.

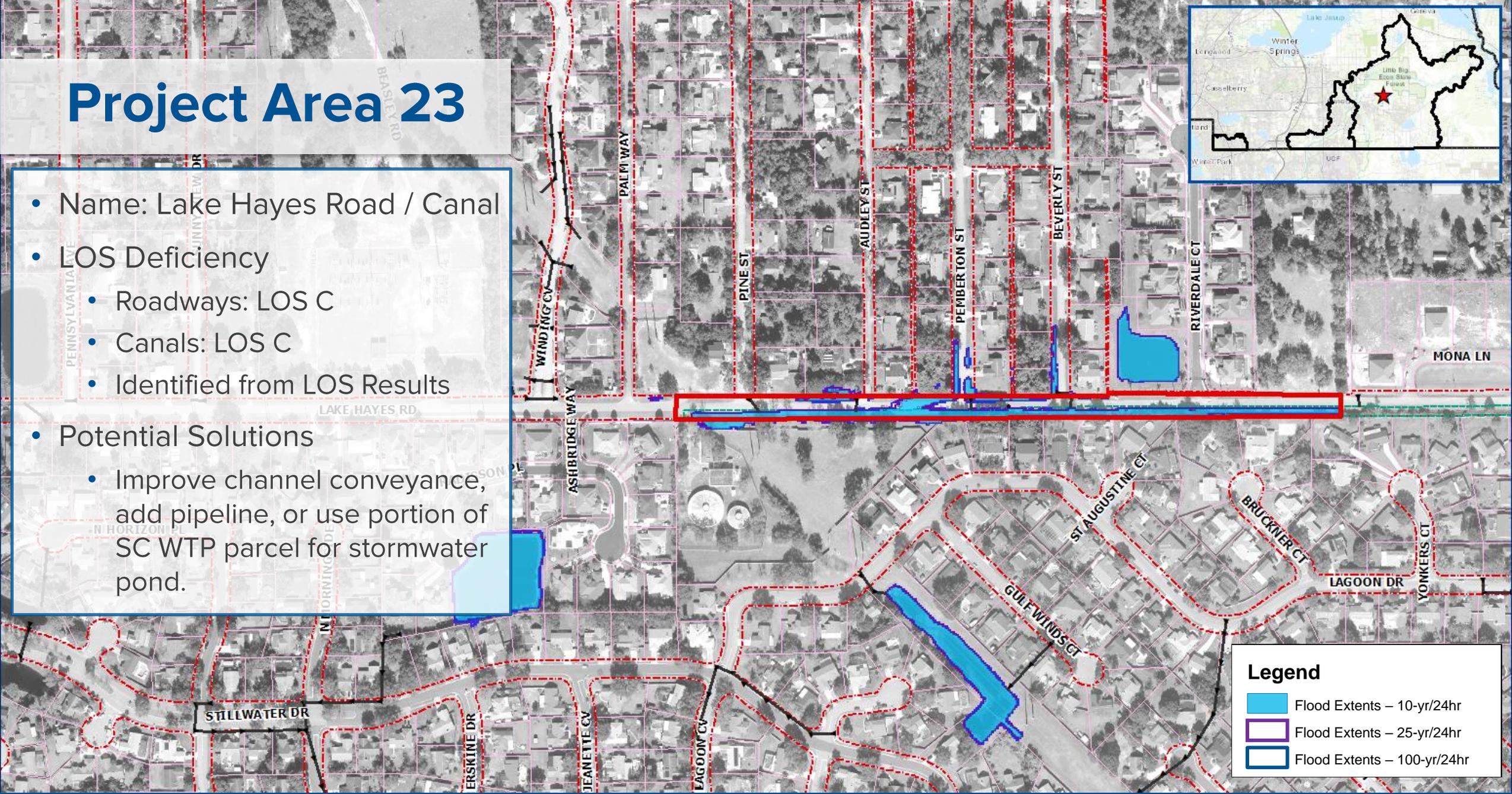
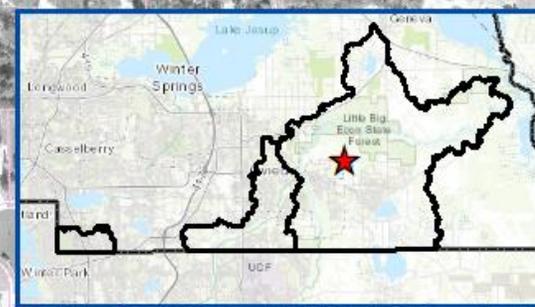


Legend

-  Flood Extents – 10-yr/24hr
-  Flood Extents – 25-yr/24hr
-  Flood Extents – 100-yr/24hr

Project Area 23

- Name: Lake Hayes Road / Canal
- LOS Deficiency
 - Roadways: LOS C
 - Canals: LOS C
 - Identified from LOS Results
- Potential Solutions
 - Improve channel conveyance, add pipeline, or use portion of SC WTP parcel for stormwater pond.



Legend

- Flood Extents – 10-yr/24hr
- Flood Extents – 25-yr/24hr
- Flood Extents – 100-yr/24hr

Next Steps

Project Status

✓ Completed Tasks

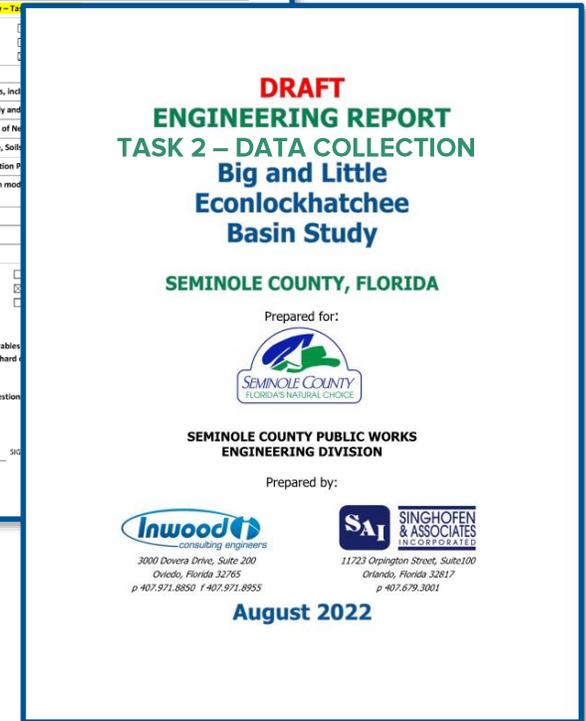
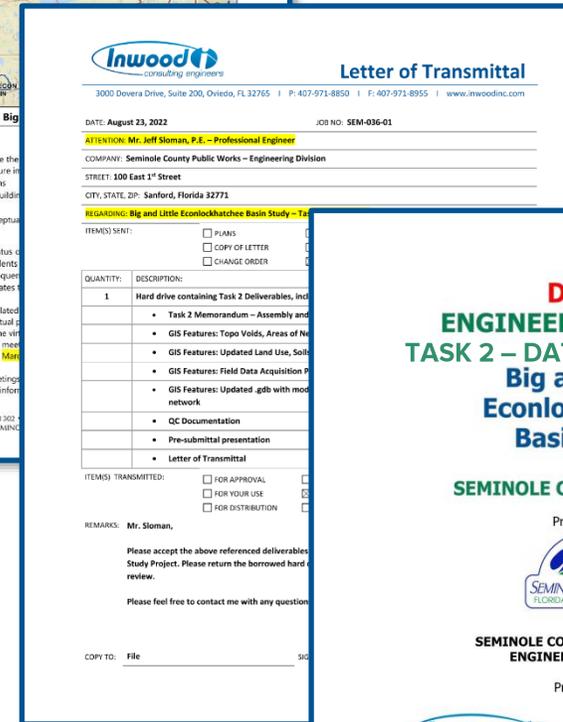
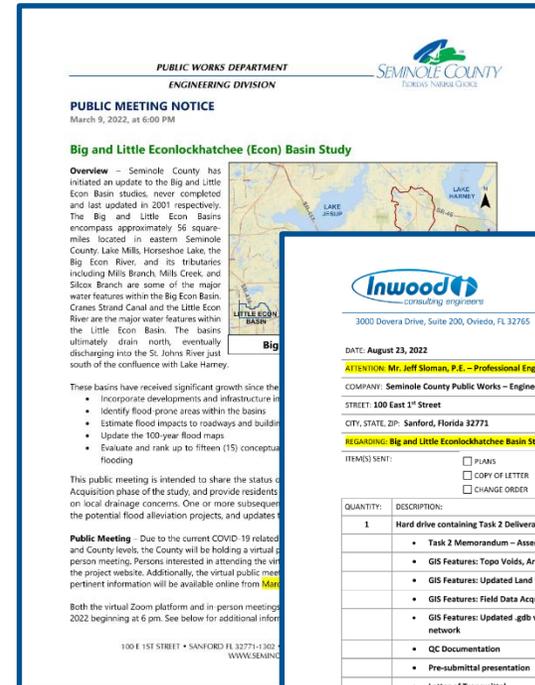
- Kickoff Meeting (11/17/21)
- 1st Public Meeting (03/09/22)
- Task 2 (Data Collection) Memorandum (8/23/22)

⋮ Current Tasks

- Task 3 Deliverables (Substantially Complete)
 - Model, Level Pool Floodplains, & Memorandum
- Task 4 Deliverables
 - LOS Analysis, CIP Analysis, & Memorandum

□ Future Tasks:

- Public Meeting #2 – Existing Conditions and Projects
- Commence Upon BCC Approval:
 - Task 5 - Floodplain Mapping and FEMA Permitting
 - Public Meeting #3 – Revised Floodplains
- Meeting #4 - BCC Workshop (Prior to Final Report)
- Basin Engineering Study Report



Schedule

Watershed Evaluation

ERP data, land use and soils, historical water levels, survey

Storm Model Development

Development

Network, parameterization, run models

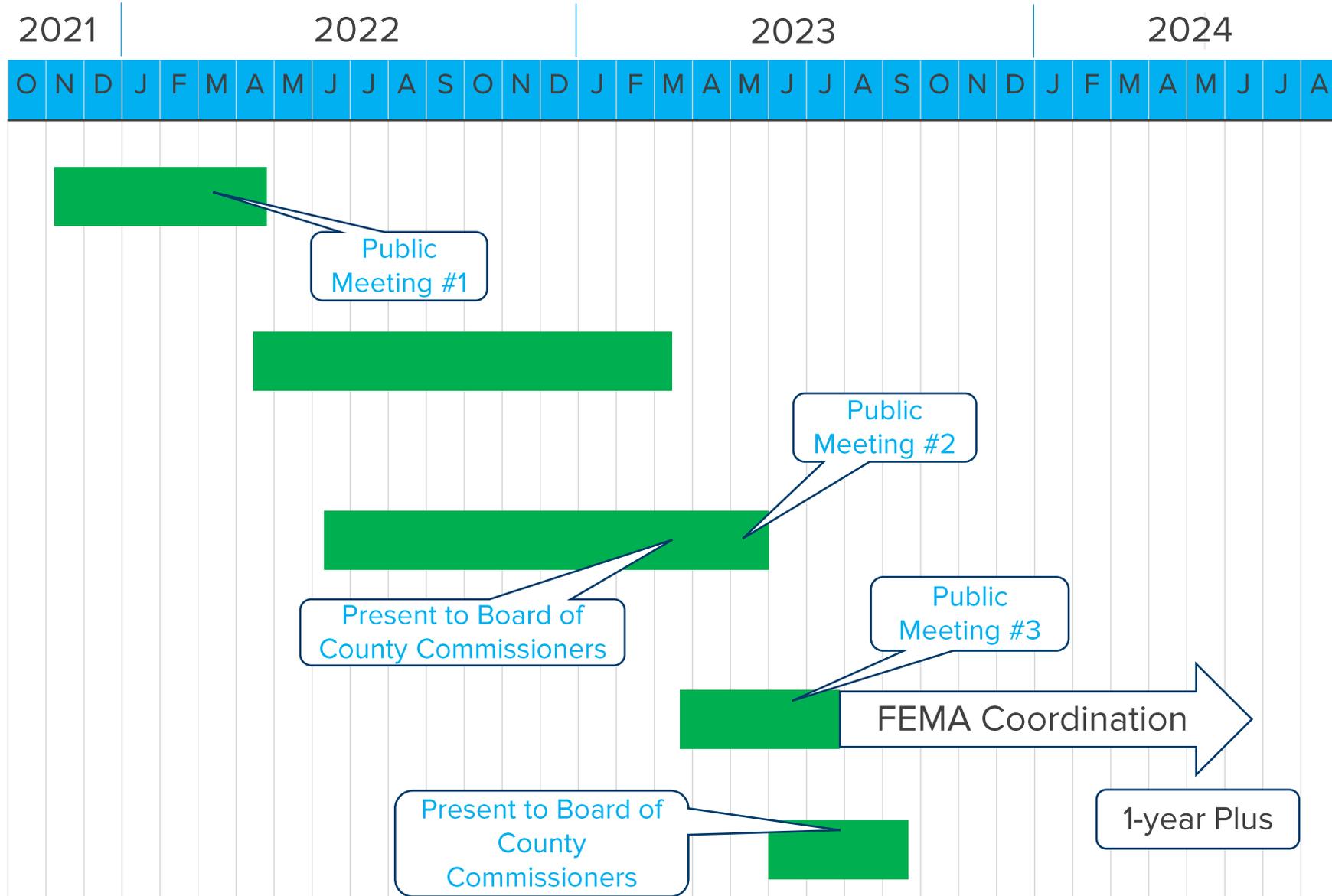
Level of Service Analysis

Identify project, evaluate, project ranking

Floodplain Mapping

Floodplain delineation, update maps (Commence upon BCC Approval)

Final Watershed Report



Feedback and Discussion

Project Contacts

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Thank you!

