

Town of Loxahatchee Groves Surface Water Management System

An Informational Presentation for

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- Mayor
- Vice Mayor
- Councilmember
- Councilmember
- Councilmember



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Summary of Topics

1. An Overview of the Existing System

What is it?

2. A Brief History

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Where did it come from?

3. Some of the Challenges

Did something change?

4. Actions and Plans

What's being done?



2017 LiDAR data elevations, NAVD 1988 Town of Loxahatchee Groves

1. An Overview of the Existing System

Functions

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- Collects and conveys drainage runoff from properties
- Collects drainage from along
 Okeechobee Blvd
 - Provides irrigation distribution
- Connects to the SWFMD C-51 Canal along Southern Blvd.

<u>Features</u>

- Includes 7 Main Canals Flowing from North to South
- Includes 3 Main Canals Flowing East and West
- Has 3 outfall structures to the C-51 along Southern Blvd
- Has one inflow pump station which draws from the C-51

1	1. An Overview of the Existing System							
4	Drainage Canals	UIVEY 30	*Field + mil	Results s es	till pr	eliminary and subject to revisior		
		55 mi	les publ	ic	4	miles private		
	Direct Pipe Conn	nections		605	sur	veyed pipes		
	16	pipess	smaller	han 12	" dic	ameter (small)		
	589 pipes 1 foot (12") to 8-1/2 feet (102") diameter							
		482	inflow	pipes (f	rom	lateral ditch or property)		
		123	Main f	low cho	anne	el culverts (18''-102'')		
			67	bened	ath r	named roads		
			56	bened	ath c	driveways <mark>.</mark>		
M	Bridges			20 inc	divid	ual span (unpiped) crossings		
	Catch basins and	d structure	es	104	СС	atch basins & manholes		



Roadway System Map Bridges and Assets

Drainage System Map Town Canals and Culverts



2017 LiDAR Data Elevations NAVD 1988 and Outfall Control Structures at Southern Blvd



1. An Overview of the Existing System

Control Structures

- Regulate the release of water to the C-51 Canal
- Located along Southern Blvd
- Primary at D Road, paired with inflow pump
- Secondaries at A & Folsom Roads
- Drainage flows from North Road to Southern Blvd to reach outfalls



- The Palm Beach Loxahatchee Company dug about 30 miles of canals, and created the Loxahatchee Groves
 Drainage District after completion of the West Palm Beach Canal in 1917
- Severe damage was caused by the 1928 Okeechobee hurricane
- The first pump station at D Road was built during revitalization in the 1930's
- Palm Beach Loxahatchee Company sold Loxahatchee Groves to Loxahatchee Investments in 1958
- Incorporated as a Town in 2006

- Agricultural uses were the most common, and undeveloped area far exceeded cleared area
- Horse-drawn carts or carriages were probably the largest form of transportation
- Canals were dredged for agricultural drainage and irrigation
- Original road beds were likely created by depositing excavated material as digging progressed
- Roads and canals were maintained together by the Water Control District

 The current recorded Plat is dated June 4th of 1925 and shows 60' wide corridors for road and drainage

 A wider corridor along D Rd from Southern Blvd to Collecting Canal suggests it could have been a transportation route

In Summary

- Prior to its incorporation in 2006, the Town road and canal system was managed by the Water Control District with an emphasis on drainage
- Non-central drainage features and roadways were largely improvised, with little in the way of planning, detailed design, or consistency in construction practice
- Provisions for the roadway system have not kept pace with the prevailing social, technological, and economic developments surrounding transportation and public safety

🔅 Florida Memory



Technological growth

- Transportation
 Motor vehicles
- Utilities.....
 Pressurized water distribution, sanitary
 sewer collection and transmission
- Electricity
 Power poles and lines
- Roadway design standards......
 Sight distance, shoulders, lane widths, curbs & gutters, vehicle recovery zones, guardrails, catch basins, manholes, bike lanes, multimodal
- Materials and practices of roadway...... Asphalt payement, road base, construction
 drainage provisions

Regulatory framework, agencies, and criteria

- Water quality/ nutrient levels
- Discharge rates/ Inflow rates
- Storm events
- Maintenance, monitoring, reporting
- FEMA flood insurance
- **Resiliency**, preparation and recovery

- 1. Limited space for drainage to share with other roadside uses
- 2. Improvised grading and drainage improvements have not always followed best design practices
- 3. Limited storage space for excess runoff and limited water quality treatment within Town's system
- 4. Lack of maintenance and unclear responsibilities for privately created swales and ditches
- 5. Aging facilities

Some issues experienced by residents

- Flooding or washouts
- Limited property access for residents and services
- Roadway failures or canal bank collapse
- Recurring maintenance, repair, and replacement costs
- Unregulated water withdrawals from canal system
- Groundwater impacts for wells and septic systems
- Flood Insurance requirements
- Disputes over ownership, costs, and maintenance responsibility



Drainage Concerns



Drainage System issues

- Current level of maintenance
- Areas of Concern
- Easements
- Floodplain management requirements
- Canal dredging
- Maintenance of connections from property
- Maintenance of components within private properties
- Responsibility for culverts and bridges

Drainage System strategies

- Studies and data acquisition
- Modeling and predictive analysis
- Updating standards, practices, and ordinances
- Permitting, Monitoring and Compliance
- Canal Bank Stabilization and Maintenance
- Easement acquisition/ recording





- Leveraging modern advances for cost-effect
 - Mapping

- Monitoring
- Assessment
- Lifespan and manufacturing quality of materials
- Material flow characteristics
- GIS and tracking software

Improving standards

- Permitting and development review
- Ordinances

- Special assessments
- Code enforcement and compliance
- Maintenance planning & scheduling
- Replacement budgeting
- ✓ Provides consistency
- ✓ Ensures minimum level of functionality
- Clarifies and assigns responsibilities for maintenance
- Protects existing assets and future operations

- 1. Roadside drainage improvements
- 2. Culvert ordinance
- 3. Floodplain ordinance
- 4. Culvert replacement and repairs, canal bank restoration, and maintenance clearing and dredging
- 5. State appropriations, grant funding, infrastructure improvement initiatives
- 6. Water Use policy development
- 7. Resilient Florida storm preparedness and response initiative
- 8. Updates, Upgrades and Investigation of Alternatives

1. Roadside drainage improvements

Improving collection and conveyance of runoff to protect roadways for travel and investments in roadway materials and construction

• Schedule

• Budget

Design & Permitting

2. Culvert ordinance

Protecting existing culverts, implementing standards for conveyance, connections, construction quality, record keeping, and clarifying limits and responsibilities for maintenance

- Private culverts, swales, ditches
- Maintenance
- Easement acquisition

- Compliance
- Benefit to existing system
- Impact on current users
- Funding

- Cooperation
- Future updates
- Permitting
- Culvert Access

3. Floodplain ordinance

Required for Town's inclusion in the National Flood Insurance Program, which makes flood insurance accessible and enhances usage value of real property. Protects floodplain from encroachments which might otherwise contribute to flooding of normally safe properties.

- Best management practices
 - Life and property protection
- Health and safety
 protection (septic or
 agricultural overflow)
- Certification by EOR and As-Built survey
- Mandatory record keeping

When the floodplain crosses property lines, adverse affects can be experienced some distance away from the cause.

Within the Town, the flood risk caused by any single project is small but the cumulative effect of many projects can be significant.

• Design review

3. Floodplain ordinance

Floodplain Management

Floodplain management is a community-based effort to prevent or reduce the risk of flooding, resulting in a more resilient community.



Post-Development Flood Elevation

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FSS 604.50

4. Actions and Plans 3. Floodplain ordinance **Floodplain Management** Floodplain management is a community-based effort to prevent or reduce the risk of flooding, resulting in a more resilient community. FSS 604.50 Nonresidential farm buildings; farm fences; farm signs Notwithstanding any provision of law to the contrary, any nonresidential farm building, farm fence, or farm sign that is located on lands used for bona fide agricultural purposes, not including those lands used for urban agriculture, is exempt from the Florida Building Code and any county or municipal code or fee, except for code provisions implementing local, state, or federal floodplain management regulations. A farm sign located on a public road may not be erected, used, operated, or maintained in a manner that violates any of the

standards provided in s. <u>479.11</u>(4), (5)(a), and (6)-(8).

3. Floodplain ordinance

From FEMA:

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- Especially in flat areas, the floodplain provides a valuable function by storing floodwaters.
- When fill or buildings are placed in the flood fringe, the flood storage areas are lost and flood heights will go up because there is less room for the floodwaters.
- This is particularly important in smaller watersheds which respond sooner to changes in the topography.
- Community Rating System credits are available for communities that adopt compensatory storage requirements.

3. Floodplain ordinance

From FEMA NFIP Floodplain Management Requirements Manual 480: Sanctions for Non-Participation

- Flood insurance will not be available. No resident will be able to purchase a flood insurance policy.
- If the community withdraws or is suspended, existing flood insurance policies will not be renewed.
- No Federal grants or loans for the acquisition or construction of buildings may be made in identified flood hazard area under programs administered by Federal agencies such HUD, EPA, and SBA.
- No Federal disaster assistance may be provided to repair insurable buildings located in identified flood hazard areas for damage caused by a flood
- No Federal mortgage insurance or loan guarantees may be provided in identified flood hazard areas. This includes policies written by FHA, VA, and others.
- Federally insured of regulated lending institutions, such as banks and credit unions, must notify applicants seeking home loans for insurable buildings in flood hazard areas that:
 - There is a flood hazard and
 - The property is not eligible for Federal disaster relief.

4. Culvert replacement and repairs, canal bank restoration, and maintenance clearing and dredging

Assessing condition – 20+ years of sediment that needs to be removed Scheduling preventative maintenance – Making the decision to complete in house or outsource Budget and planning for repairs and replacements – Millions will be needed for all the repairs necessary.

5. State appropriations, grant funding, infrastructure improvement initiatives

Seeking assistance under existing programs that recognize the net benefits of improving public infrastructure

- \$750K this year available
 Local Mitigation Strategy from State
- Resilient Florida grant (current) FDEP
- (LMS) PBC
- Other funding sources investigation and pursuit

6. Water Use policy development

Cost analysis and ordinance needed to standardize conditions for connections to and withdrawals from the Town's surface water system to reduce waste and safeguard system functionality

 Best management practices

- Ordinances and requirements for users
- Implications of conversion
 for current users

- Conservation and water shortage policy
- Health and safety

- Fees and costsPermitting, review,
 - compliance

4. Ac	tions	and	Plans
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7. Resilient Florida storm preparedness and response initiative

		Task	Note
	1.	Kick Off Meeting	Completed
	2.	Conduct Steering Committee Meetings	Meeting 1 Completed
	3.	Public Outreach Meeting #1	Meeting Agenda in Draft
	4.	Acquire Background Data	90%, under final review
/	5.	Exposure Analysis	FUTURE
	6.	Sensitivity Analysis	FUTURE
	7.	Public Outreach Meeting #2	FUTURE
	8.	Final Report	FUTURE

- 7. Resilient Florida storm preparedness and response initiative
 - Evaluate pipes and conveyance channels for geometric deficiencies
 - ✓ In-field condition assessment to document needed repairs
 - Targeted risk assessment of Focus Areas and Critical Assets

Other Benefits

- System Inventory and Condition Assessment
- o GIS Data

- Stormwater management routing model
- Maintenance schedule and recommendations for repair
- Budgetary decision making and Capital Improvement planning
- Access to additional funding sources and opportunities

8. Updates, Upgrades and Investigation of Alternatives

Updates to outdated critical equipment To maintain minimum system operation

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Conduct a structural and operational assessment of existing control structures at A Rd, D Rd, and Folsom Rd

Replace telemetric monitoring and remote control systems at all three existing control structures

8. Updates, Upgrades and Investigation of Alternatives

Storm hardening and resiliency upgrades

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To prepare for emergency conditions, protect public services during emergency operations, reduce potential for major losses, and improve response and recovery efforts

- Replace public works pavilion with storm-resistant structure
- Procure stand-by auxiliary generator system with transfer switches and ancillary items for emergency operation of Town Hall and Public Works
- Design and construct area-wide drainage system improvements along Citrus Dr, Tangerine Dr, East Citrus Dr, and Orange Ave

8. Updates, Upgrades and Investigation of Alternatives

Investigation of alternative improvements

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To allocate a fraction of the cost of major activities to determining the best and most feasible courses of action from among several alternatives in support of budgetary and planning decisions

Investigate retaining wall installation for canal banks

- Investigate reinstatement of operable control structures on the north side of Okeechobee Blvd.
- Investigate hydraulic and operational benefits of adding pumps to the system for improved control within drainage district canals
- Investigate maintenance contract options for ongoing clearing, dredging, and debris removal services within canal system

- 8. Updates, Upgrades and Investigation of Alternatives
 - Flashboard risers were previously in use along the north side of Okeechobee Blvd at all lettered roads
 - Risers have not functioned since prior to the Town's incorporation
 *NOTE: SAMPLE PHOTO VISUAL AID ONLY





Conclusion

The Town of Loxahatchee Groves has inherited a 100 yearold agricultural roadway and drainage system.

The roadway and drainage systems are indispensable and inseparable assets that support and sustain each other, as well as every resident, business, and visitor.

Standards have improved in the interim, and uses have diversified.

Conclusion

In order to provide satisfactory living conditions in the present, and be a desirable place to live under projected conditions, planning strategies should be endorsed to support the improvement of the infrastructure.

Conclusion

Some challenges have been inherited with the system's history, and some opportunities have emerged to address those challenges.

We are working to overcome issues that were here before the Town, and prevent the kinds of issues that may occur if these concerns are not promptly addressed.

A great place to live doesn't happen by accident.

Local Mitigation Strategy (LMS) Grant Submissions

The Local Mitiaation Strateav (LMS) serves as a foundation for solicitina and utilizina various fundina sources, includina local, state, federal, and other available resources. The strateav provides a compellina rationale for securina financial support for hazard mitiaation projects and initiatives. By alianina with broader emeraency manaaement frameworks, such as Palm Beach County Emeraency Management, the Town enhances its eligibility for funding opportunities.

The Town submitted 7 projects to be scored and added to the PPL list. This is the first time since 2018 that any submission was made by the Town.

- Town wide canal stabilization \$79,000,000
- Collecting canal stabilization \$1,020,020
- Gates and pumps \$300,000
- SCADA and Telemetry \$300,000
- Pumps and Weirs \$400,000

- Public Works Building \$750,000
- Town Hall generator and conversion \$75,000