BRIEF HISTORY

- 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
- The current recorded Plat is dated June 4th of 1925 and shows 60' wide corridors for road and drainage
- A wider corridor (136') along D Rd from Southern Blvd to Collecting Canal suggests this may have been a navigable transportation route
- Canals were dredged for agricultural drainage and irrigation
- Original road beds were likely created by depositing excavated material as digging progressed
- The only pump station at D Road was built during in the 1930's
- Prior to its incorporation in 2006, the Town roadways and canals were maintained and managed together 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

OVERVIEW OF THE EXISTING SYSTEM

Drainage Canals	**30+** miles
Roadways	90% Town-maintained: **50+** miles public **4-1/4** miles private
Direct Pipe Connections	**605** surveyed pipes: • 16 pipes smaller than 12" diameter (small) • 589 pipes 1 foot (12") to 8-1/2 feet (102") diameter - 482 inflow pipes (from lateral ditch or property) - 123 Main flow channel culverts (18"-102") · 68 beneath named roads (public) · 56 beneath driveways (private)
Bridges	**20** individual span (unpiped) crossings
Catch Basins & Structures	**104** catch basins & manholes
Flashboard Risers	**7** 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 • Risers could perform up to three functions if restored: - Impound additional runoff above control elevation in northern portion after rainfalls - Allow pre-storm drawdown of southern portion to increase storage, flood protection, and some relief for lower lying septic systems - Maintain an elevated water table in the north portion (pump, well, or additional water source required)

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.

CHALLENGES AND THE CURRENT ENVIRONMENT

Challenges to Overcome	Conditions to Resolve	Regulatory Framework
- Limited space for drainage to share with other roadside uses - Improvised grading and drainage improvements have not always followed best design practices - Limited storage space for excess runoff and limited water quality treatment within Town's system - Lack of maintenance and unclear responsibilities for privately created swales and ditches - Aging facilities	- 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	- Water quality/ nutrient levels - Discharge rates/ Inflow rates - Storm events - Maintenance, monitoring, reporting - FEMA flood insurance - Resiliency, preparation and recovery

Improved Standards provide consistency, ensure minimum level of functionality, clarify/assign responsibilities for maintenance, and protect existing assets and future operations

IMPROVING STANDARDS AND BUILDING AN ACTION PLAN

Areas to Address	Strategies	Actions/Improved Standards
- 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	- 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	- Permitting and development review - Ordinances - Special assessments - Code enforcement and compliance - Maintenance planning & scheduling - Replacement budgeting

Action plans build the baseline information for budgeting, maintenance scheduling and management

ACTIONS & PLANS

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 - Award of Contract - NTP
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 - Compliance - Benefit to existing system - Impact on current users - Funding - Cooperation - Future updates
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. *(note: 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.)*	- Best management practices - Life and property protection - Health and safety protection (septic or agricultural overflow) - Design review - Certification by EOR and As-Built survey - Mandatory record keeping
Culvert replacement and repairs, canal bank restoration, and maintenance clearing and dredging	Assessing condition, scheduling preventative maintenance and budgetary planning for repairs and replacements	
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 from State - Resilient Florida grant (current) FDEP - Local Mitigation Strategy (LMS) PBC

		- Other funding sources investigation and pursuit
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 - Conservation and water shortage policy - Health and safety - Ordinances and requirements for users - Fees and costs - Permitting, review, compliance - Implications of conversion for current users
Resilient Florida storm preparedness and response initiative	- Collaborative effort from local through state level - Inventory & Mapping of Assets - Evaluate pipes and conveyance channels for deficiencies - In-field condition assessment to document needed repairs - Targeted risk assessment - Modeling of System Response - Present day and projected scenarios - Updates, Upgrades and Investigation of Alternatives	- System Inventory and Condition Assessment - 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

Updates, Upgrades and Investigation of Alternatives

Updates to outdated critical equipment to	Modernize to effectively and efficiently maintain minimum system operation	- 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 -
Storm hardening and resiliency upgrades	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
Investigation of alternative improvements	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

SUMMARY

The Town of Loxahatchee Groves has inherited a 100 year-old 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 and uses have diversified since the initial infrastructure installed yet limited changes, enhancements and/or modernization has occurred.

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.

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