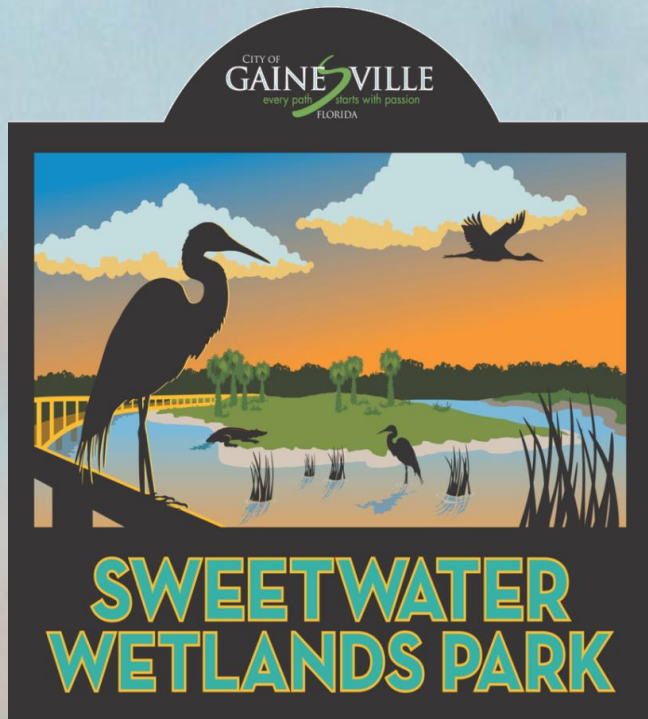


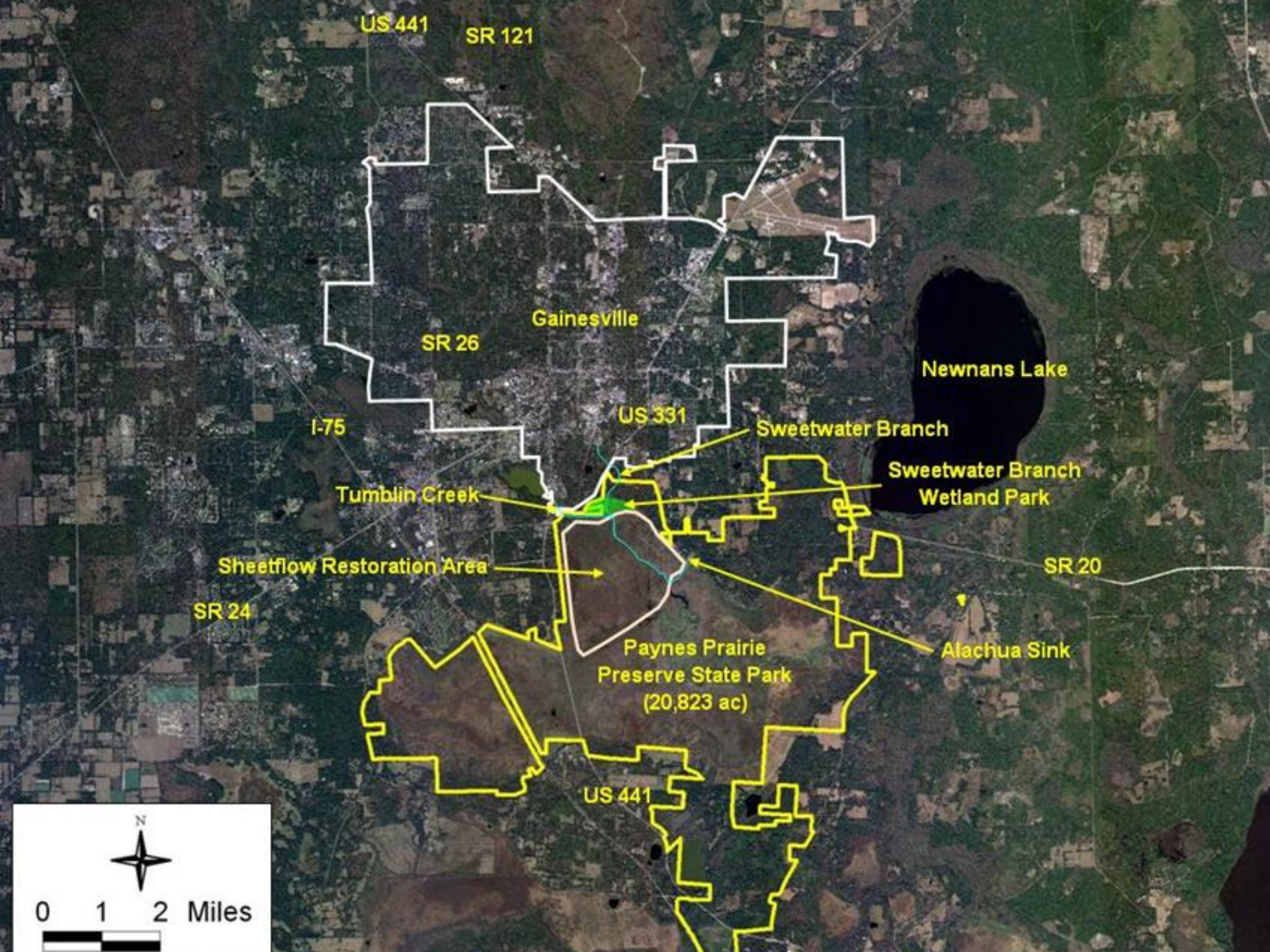
Update on Sweetwater Wetlands & GRU Main Street WRF Upgrade



Rick Hutton, PE
Gainesville Regional Utilities

Presentation Outline

- Review Sweetwater Wetlands Project Concept and Outcomes
- Describe Proposed Numeric Nutrient Criteria
- Update on Main Street Water Reclamation Facility Upgrade Plan



Pre-Project



Kelly Generating Station

Main Street WRF

Sweetwater Branch

Alachua Sink

Man-made canal

Paynes Prairie Preserve State Park

Prairie Creek Control Structure

Newnans Lake

Historical Impacts

- Urbanization of Watershed (1800s-)
 - Stormwater runoff
 - Trash & sediment
 - WW Effluent
 - Septic Tanks
- Sweetwater Branch channeled directly to Alachua Sink (1930s)
 - 1,300 acres of wetlands impacted.
 - Direct flow path from Gainesville to Alachua Sink
- Portion of Prairie Creek flow diverted away from Paynes Prairie
 - Water balance to Paynes Prairie impacted



Alachua Sink TMDL



- **2006 TMDL Adopted by FDEP**
 - 55% N Reduction in Point Sources
 - GRU Main Street WRF and JR Kelly Generating Station (KGS)
 - 45% N Reduction in Non-Point Sources
 - City of Gainesville MS4
 - FDOT & Alachua County
 - Other Non-point

Basin Management Action Plan

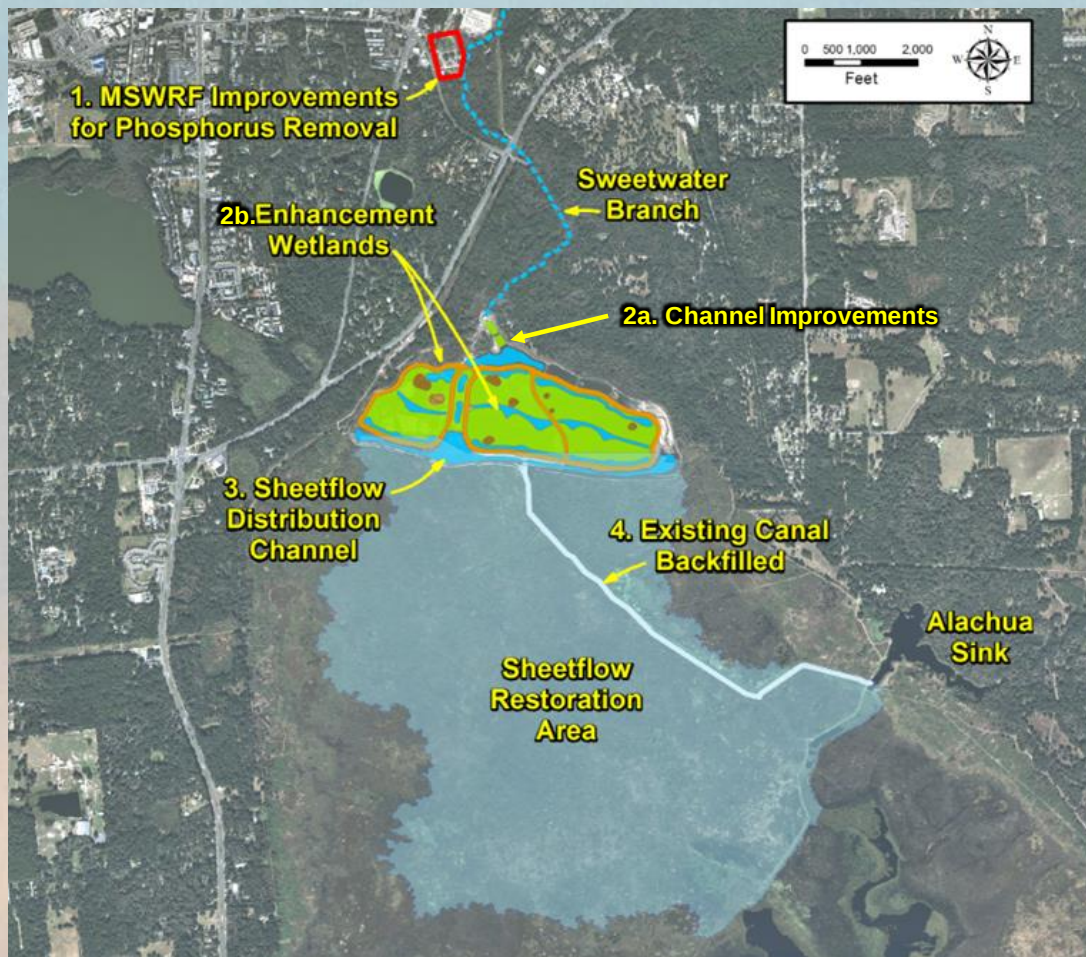
Orange Creek Basin

- **Stakeholder Group Developing BMAP:**

- 
- Gainesville Public Works
 - Alachua County Public Works
 - Marion County
 - DEP (DWRM, NE District, Parks, Aquatic Plant Management)
 - DOH
 - FWCC
 - Sierra Club
 - Sustainable Alachua County
 - City Water Management Committee
 - DACS Agriculture
 - Forestry Industry
 - GRU
 - Alachua County EPD
 - Town of McIntosh
 - FDOT
 - DCA
 - UF
 - Women for Wise Growth
 - Alachua County EPAC
 - SJRWMD
 - DACS Forestry
 - Private Sector
 - Town of Micanopy

- **BMAP Adopted by FDEP Secretarial Order**

Project Concept



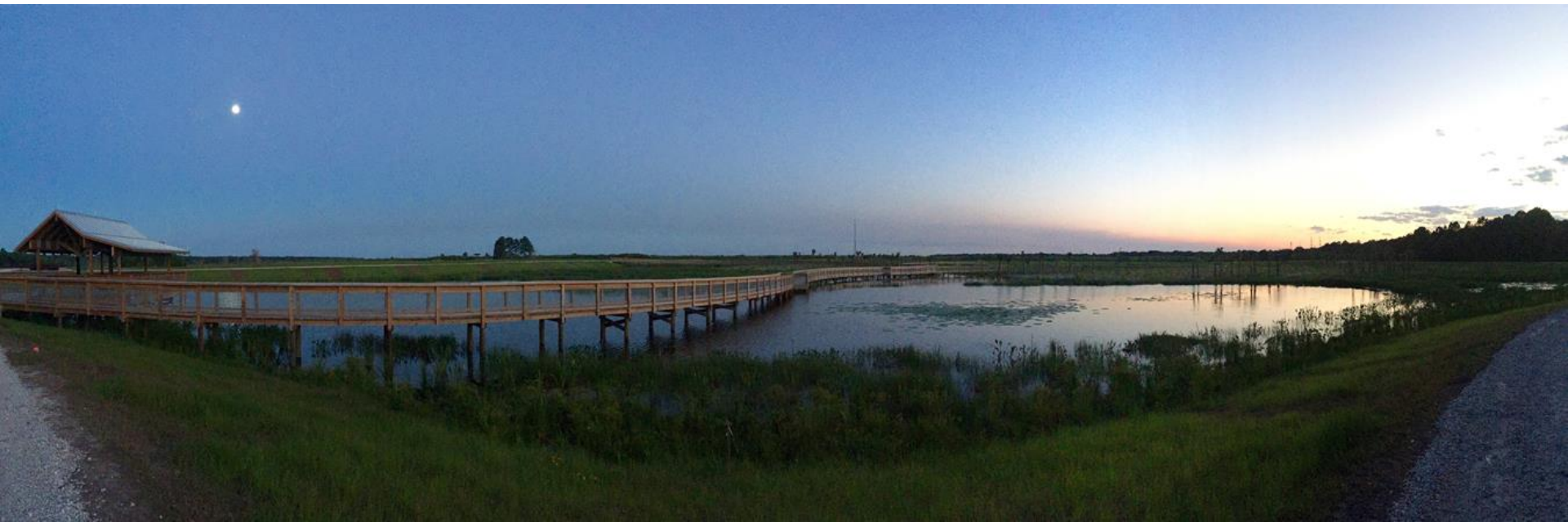
- **Upgrade Main Street WRF for P Removal**
 - $TP < 0.3 \text{ mg/l}$
- **Enhancement Wetland**
 - Reduce TN from all sources in SWB
 - $TN < 3.0 \text{ mg/l}$
- **Re-establish Natural Flow Regime**
 - Sheetflow Dist Channel
 - Backfill Sweetwater Canal
- **Additional Nutrient Attenuation on Paynes Prairie**
 - $TP < 0.09 \text{ mg/l}$
 - $TN < 1.42 \text{ mg/l}$

Sweetwater Wetlands Project Goals

- Reduce N&P and meet TMDL for all sources in Sweetwater Branch (SWB) watershed
- Provide N & P removal to meet current & future needs of MS4, MSWRF & Kelly GS
- Improve water quality in Alachua Sink
- Remove trash & sediment
- Restore wetlands & water budget in Paynes Prairie Preserve State Park
- Create nature park

Sweetwater Wetlands Park

- GRU & Gainesville Public Works Joint project
- Completed 2015
- \$27.5 Million
- Operated as City park by Gainesville Parks Dept



Project Partners

- **FDEP: \$3.2 M**
 - Legislative, Section 319, TMDL & RTP
- **SJRWMD: \$1.4 M**
 - SWIM & Land Acquisition Programs
- **FDOT: \$0.6 M**
 - NPDES Cost Share
- **FWC: \$0.5 M**
 - AHRES Cost Share
- **Alachua County: \$0.5 M**
 - Land Conservation Program

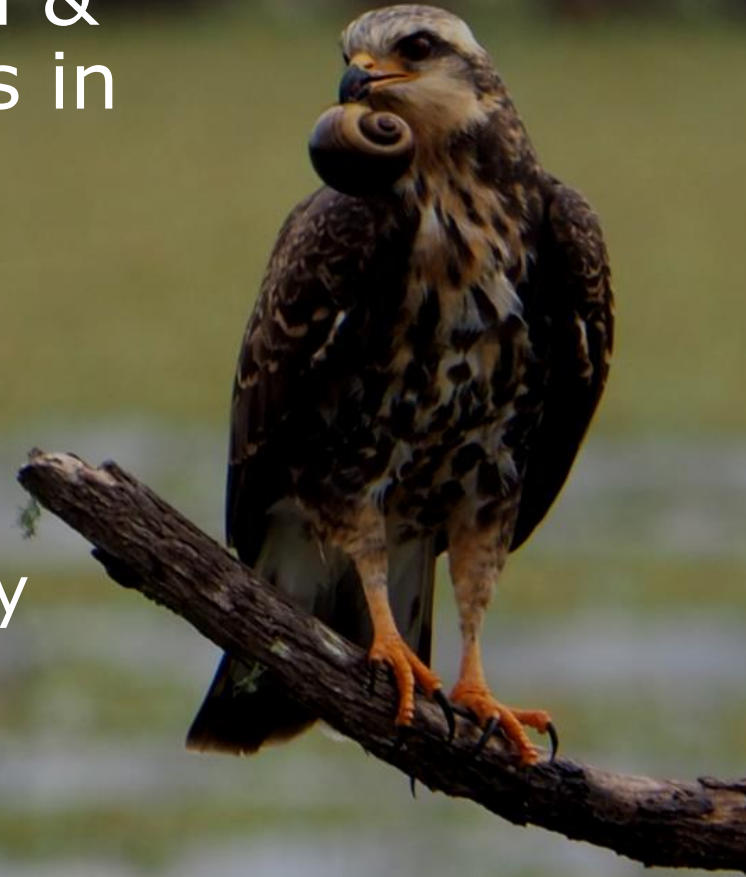


Sweetwater Wetlands Park— Gainesville, FL



Sweetwater Wetlands Park

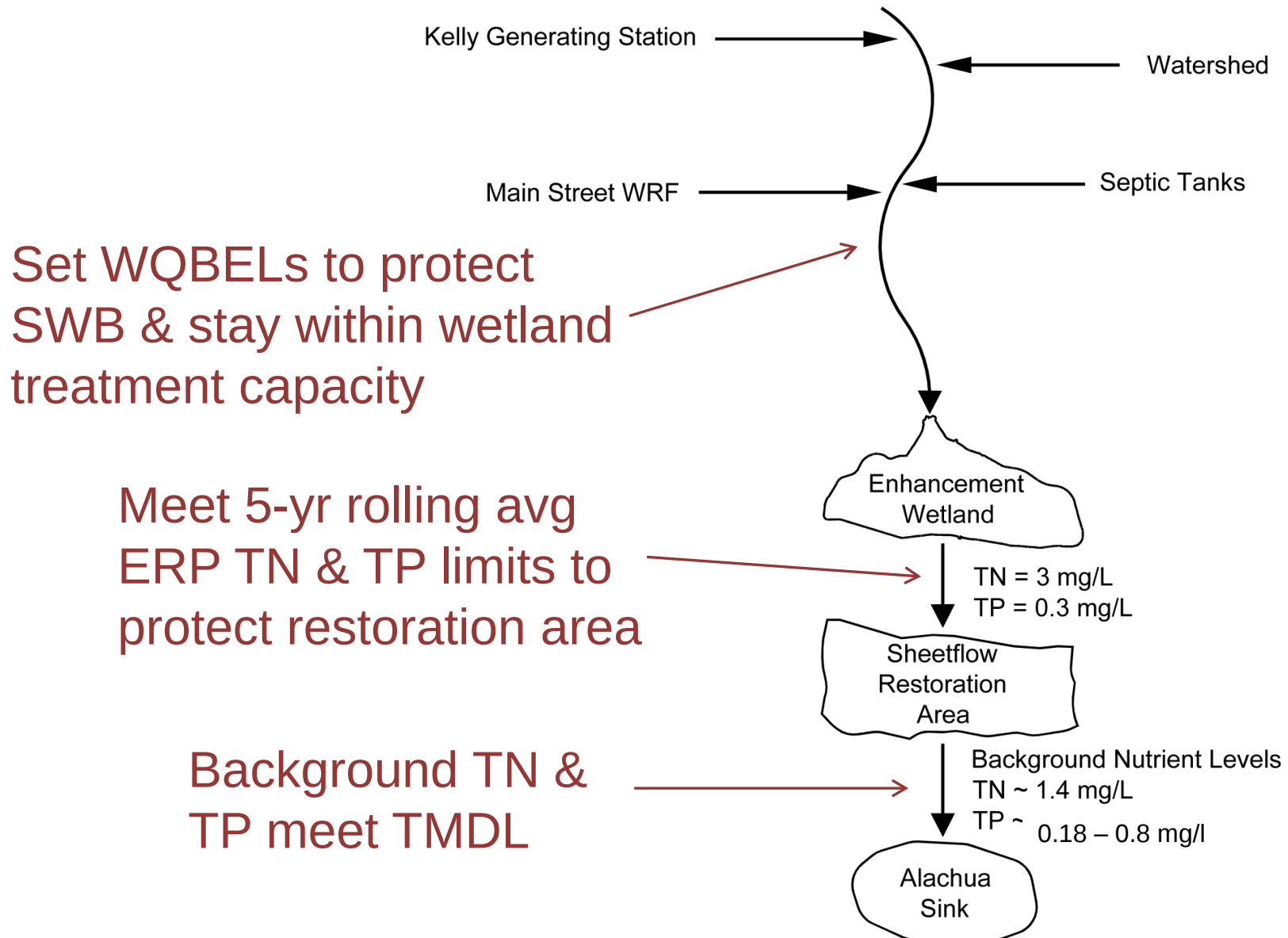
- One of most popular bird & wildlife observation spots in Florida
 - 250 Bird species documented
 - >6,000 Ebird entries
 - 80,000 visitors/yr
 - Ranger led tours & weekly Audubon bird walks



Numeric Nutrient Criteria

- Narrative Criteria - Nutrient levels cannot cause imbalance in flora and fauna
- Numeric Nutrient Criteria (NNC) – nutrient levels set for individual water body based on assuring narrative criteria are met
- GRU/City has been working with FDEP & EPA to develop Water Quality Based Effluent Limits (WQBEL) to meet NNC in Sweetwater Branch

Project Nutrient Removal Concept



WQBEL Objectives

- Set TN & TP Criteria for Sweetwater Branch & discharge limits for MSWRF & Kelly
 - Provide allowance for stormwater and non-point source loads
- Ensure that:
 - Sweetwater Branch protected
 - TN & TP not impact flora & fauna
 - Paynes Prairie & Alachua Sink Protected
 - Meet Sweetwater Wetland discharge TN & TP limits
 - Meet TMDL for Alachua Sink
 - Meet Outstanding Florida Water rule for Prairie

Proposed WQBELs

	<u>TN (lb/yr)</u>	<u>TP (lb/yr)</u>
MSWRF WQBELs	182,646	11,644
JR Kelly (KGS)	3,060	843
<u>Stormwater Loads</u>	<u>29,910</u>	<u>3,551</u>
SWB NNC	215,616	16,038
In-stream TP annual geo mean of 0.3 mg/l		
In-stream Chl <i>a</i> of 1.9 ug/l		

WQBEL Evaluation Overview

- **Stream Characterization & Stressor ID**

- Physical, chemical, and biological data compiled, collected, and analyzed
- SWB impaired due to channelization & smothering
- Current nutrient levels not causing imbalance of flora or fauna in Sweetwater Branch



- **Sweetwater Branch Modeling**



- Modeling (QUAL2K) to test future conditions
- Proposed WQBELs and NNC for TN and TP will not cause imbalance of flora or fauna in SWB

WQBEL Evaluation Overview



- **Wetland Modeling**

- Modeling of nutrient removal through enhancement wetland & restoration area
- Original wetland project design provided capacity for future needs
- Wetland models run w/ proposed WQBEL conditions to verify:
 - Meet Sweetwater Wetland discharge TN & TP limits
 - Meet TMDL for Alachua Sink
 - Meet Outstanding Florida Water rule for Prairie

WQBEL Status

- Final Report Submitted to FDEP August 25,2021
 - Revisions to address FDEP & EPA review comments on previous submittals
- Next Steps
 - FDEP final review
 - Public workshop & adoption hearing (45-day notice)
 - Final adoption

Main Street WRF Upgrade Project



Project Drivers

- Aging Infrastructure
 - Equipment approaching end of useful life
 - Plant site since 1920s
 - Last major upgrade in 1993
- Capacity
 - Current capacity 7.5 mgd
 - Upgrade to 10 mgd to accommodate growth



Project Plan

- ~\$80 Million
- Upgrade in phases over next 6-10 years
- Biological Nitrogen & Phosphorus removal via BarDenPho process
 - Reliably meet TN 6 mg/l & TP 0.3 mg/l
- Increase reliability & resilience
- Reduce O&M costs
- Currently in Initial Design/Planning

Questions?

