CITY OF LAKE CITY
Florida's Gateway Est. 1859

GWEN LAKE Project Progress Update

October 6, 2025

FOUR WATERS ENGINEERING

PROJECT OVERVIEW

- Gwen Lake Restoration
  - 7.4 Acres
  - Sedimentation and Overgrown Vegetation
  - Failed Outfall Control Structure
- Proposed Improvements
  - Control Stormwater Runoff Sedimentation
  - Increase Pond Depth to Natural Condition
  - Remove Excess Vegetation
  - Replace Failed Outfall Control Structure

Project Status

COMPLETED

- Data Collection
  - Wetland Delineation
  - Survey – upland and survey
  - Geotechnical Soil Exploration
  - Sediment Sampling
- Permitting Pre-App Meetings
- Conceptual Design (30%)
- Proposed Permanent Easement Figures
- Conceptual H&H Modeling
- Grant Submittal

IN-PROGRESS

- Detailed 90% Design
- SRWMD Permit Application
- Final H&H Modeling
- Dam Analysis
- Final Drainage Report

H&H Modeling SIMULATIONS

Comparison of Various Weir Configurations

Weir Design Option	Weir Length (ft)	Side Slopes (ft/ft)	NWL Elevation (ft)	Proposed – 100 yr. 24 hr Gwen Lake Stage Elevation (ft)	FEMA BFE (ft)	BFE Difference (ft)	Weir Section Area (SF)
1	***50***	***N/A***	***123.00***	***126.2***	***125.9***	***0.3***	***200***
2	75	N/A	123.50	126.2	125.9	0.3	262.5
3	30	4:1	124.50	126.7	125.9	**0.8**	100
4	30	N/A	122.00	126.3	125.9	0.4	150

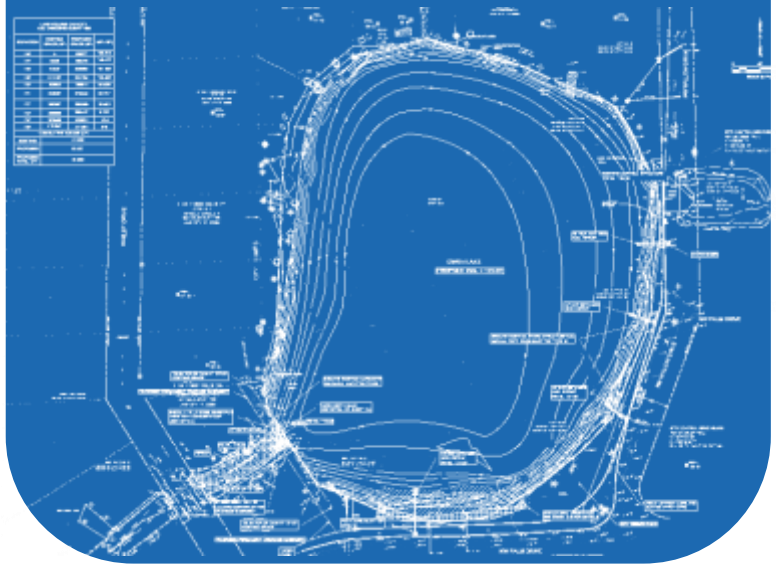
Option #1 configuration

- Allows for a higher normal water level (NWL) for a deeper lake
- Minimizes the downstream flow area and permanent drainage easements
- Controls the maximum stage elevations within the FEMA Base

Conceptual Design

1

Increase the depth of the lake

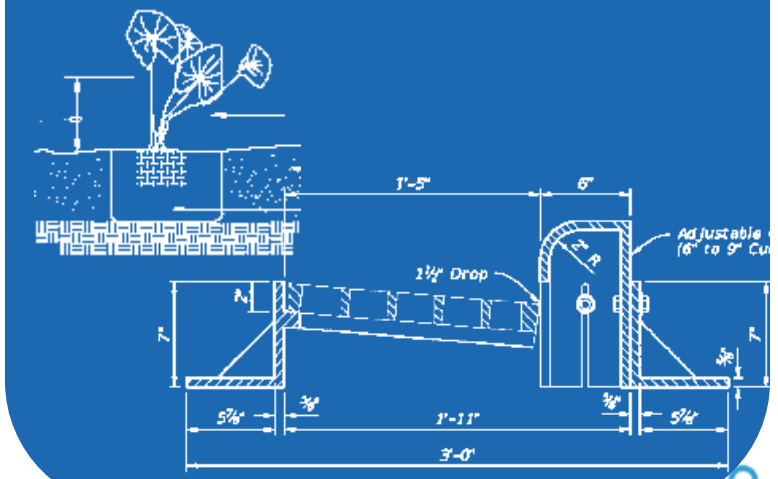


2

Remove and replace the existing outfall structure

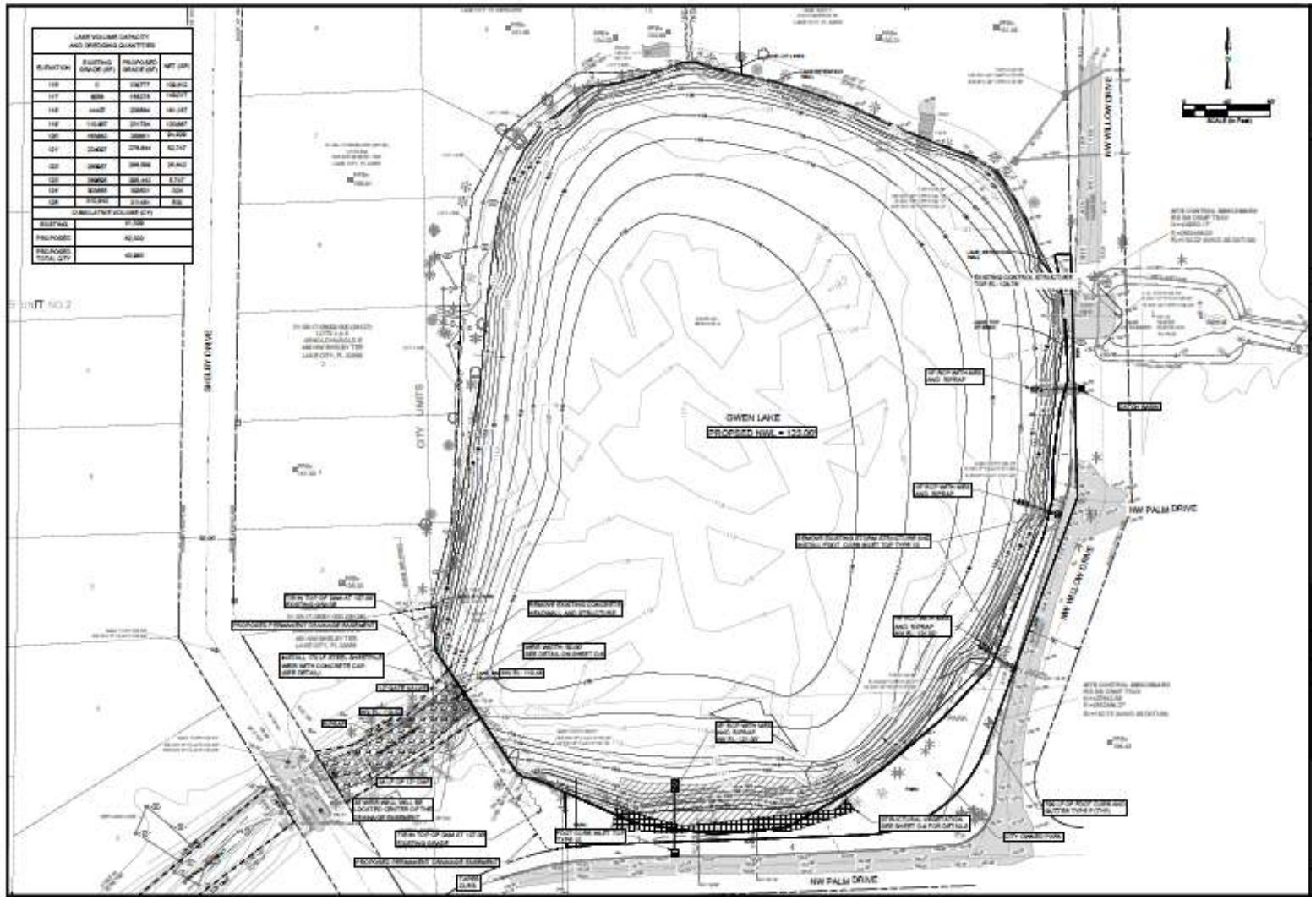
3

Limit sediment & erosion to the lake



CONCEPTUAL DESIGN

1 - PROPOSED LAKE RESTORATION

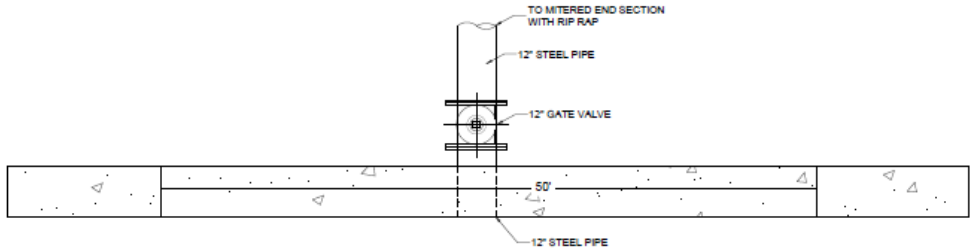


- Dredging
  - Increase of 41,000 CY water volume, double current condition
  - Soil samples indicate no signs of contamination
  - NWL at 123.0’; Bottom Depth of 116.0’ = 7-foot depth
- Proposed Depth will allow for longer duration of settling time:
  - Increases removal of TN and TP – to prevent algae and aquatic plant life

CONCEPTUAL DESIGN

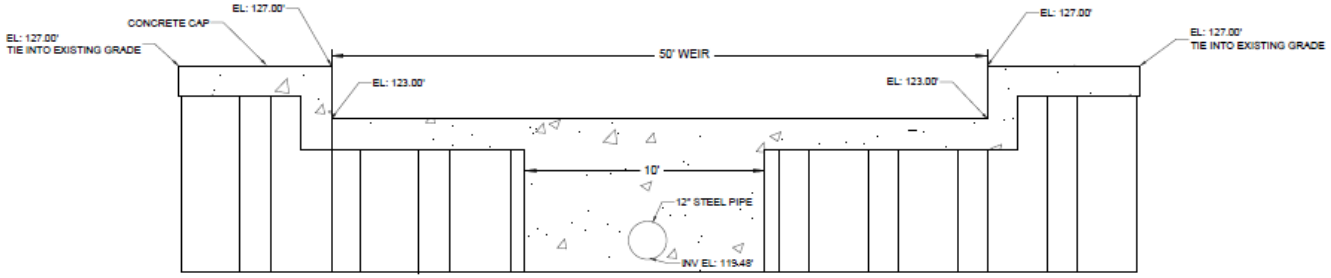
2 - PROPOSED DAM AND OUTFALL IMPROVEMENTS

- Open weir is 50 ft wide at an elevation of 123.0 ft, which increases to an elevation of 127.0 ft at the ends of the weir
- NWL set at 123.0 ft.
- Dam/outfall structure tie-in is above 500-year 24-hour storm event stage elevation
- Outfall structure includes 12-inch steel pipe with gate valve to allow for



STEEL SHEET PILE/CONCRETE PLAN VIEW

NOT TO SCALE

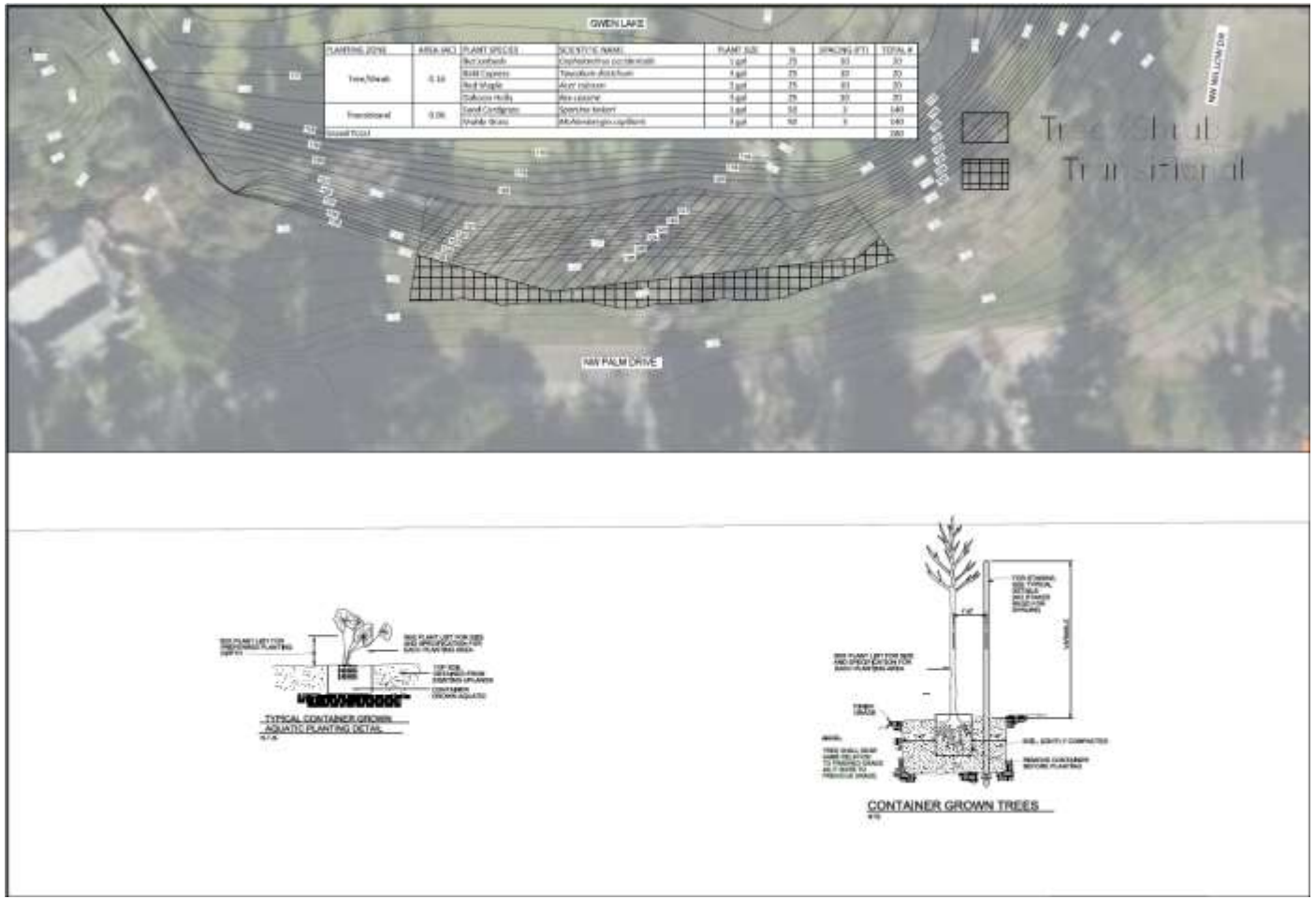


STEEL SHEET PILE/CONCRETE PROFILE VIEW

NOT TO SCALE

CONCEPTUAL DESIGN

3 - Structural vegetation & stormwater conveyance improvements



- Structural vegetation on South bank to mitigate sediment and control erosion
- Improvements to NW Willow Drive and NW Palm Drive including curb and gutter and curb inlets
- Curb inlets have 2-foot sumps to allow collection of sediment deposits
- Outfalls into pond

GRANT SUBMITTAL

- Grant Name: Hazard Mitigation Grant Program (HMGP)
- Administered By: Columbia County (funds from FEMA)
- Application Submittal Date: July 2025
- Grant Amount: $4 million
- City Match: 25%
- Anticipated Award Determination: TBD
- Estimated Cost: ~$4.1 million

FEMA

schedule

	2025						2026		
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Data Collection	Completed								
Conceptual Design	Completed Completed								
City 30% design Review Meeting									
Permit Submittal & Review									
90% Design									
City Review Meeting									

questions

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