



November 2025

Lake Okeechobee Watershed

Lower Kissimmee Subwatershed

Assessment

The purpose of this assessment is to pinpoint the most significant nutrient loading sources, determine remaining water quality improvement needs, and recommend strategic actions. Targeted reductions are needed because the Lake Okeechobee Watershed (LOW) received approximately 250 (t) of total phosphorus (TP) above the TMDL based on the 5-year rolling average for the period of WY2020-WY2024. The Lower Kissimmee Subwatershed discharges at the S65E structure into Lake Okeechobee.

WY2020 – WY2024	
5-yr Average Flow Range	292,000 – 366,000 ac-ft
Current and Planned Static Storage	6,415 ac-ft
Storage Planning Target	Unknown ac-ft
Remaining Storage Needed	Unknown ac-ft
5-yr Average Total Phosphorus (TP) Load Range	82-92 t
Planned TP Reductions ¹	2.4 t
TP Planning Target	22.1 t
Remaining TP Reduction Range Needed	57.5 – 67.5 t

¹ Estimations based on recently completed and future planned projects

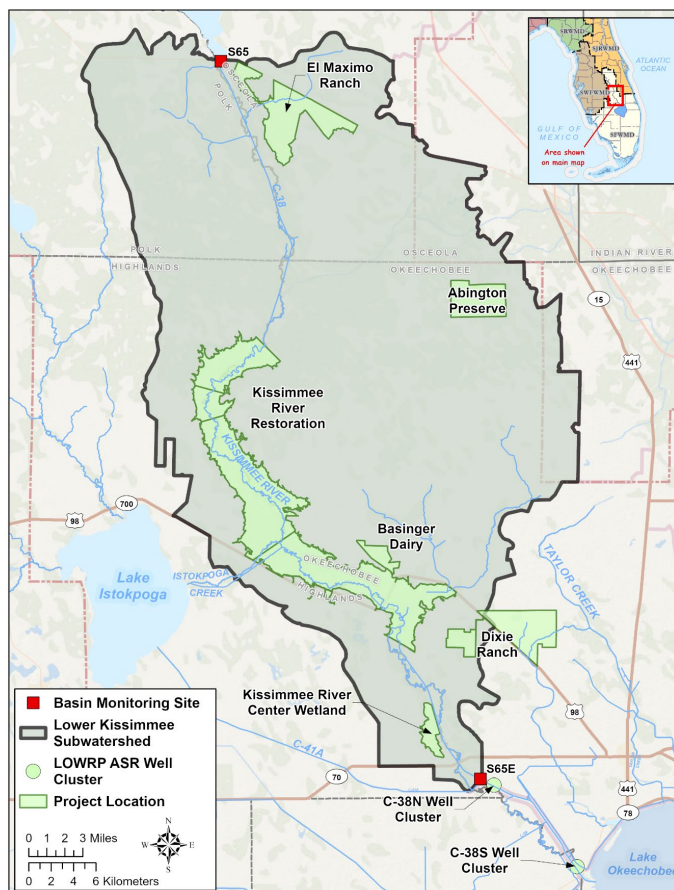


Figure 1. Locations of current and future LOW Protection Plan projects within the Lower Kissimmee Subwatershed.

Planned Project Operational Milestones to Reduce 5-yr Avg Nutrient Loads



2029

2.4 t

Reduction

El Maximo project

It is expected to take 5 years of operations to realize project reductions



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Long-term Basin Characteristics & Analysis

- ❖ Nutrients and flow are both a concern for this subwatershed as it has the second highest unit area load (UAL) in the Lake Okeechobee Watershed and the 4th highest runoff. This means that retention, treatment, and source control are all important management measures.
- ❖ The $\text{OPO}_4\text{-P}$ as a percentage of TP is low indicating that there is a mix of phosphorus forms at the basin outlet, suggesting the need for a balanced approach to address the various forms through BMPs and projects. However, within the subwatershed the southern end had sites with higher $\text{OPO}_4\text{-P}$ percentages indicating the presence of soluble forms of phosphorus.
- ❖ There were no significant trends at the basin level monitoring site, but 5 upstream sites had increasing TP trends for the period WY1991-WY2023, although only two of those had 5-year average annual concentrations greater than the 120 $\mu\text{g/L}$ TP BMAP numeric nutrient criteria (NNC).
- ❖ Flow volumes coming from extreme events may be better captured using the 95th percentile of flows, but water availability and downstream water uses also need to be considered.

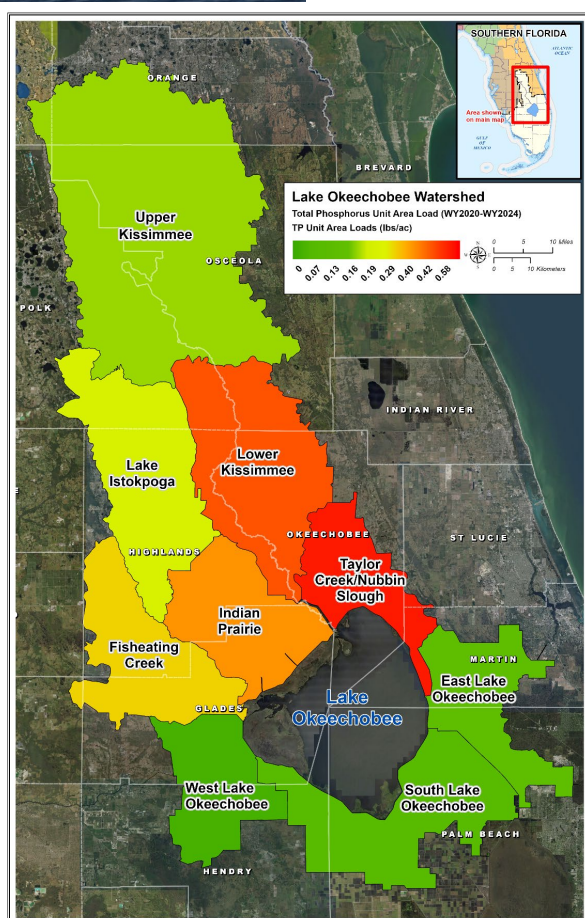


Figure 2. TP Unit Area Loads (lb/ac) in LOW

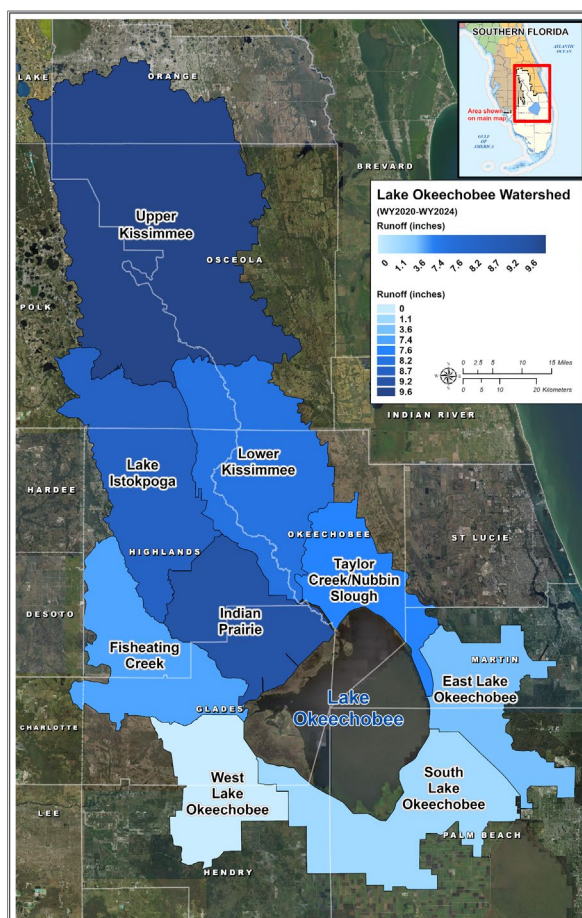


Figure 3. Runoff in LOW.



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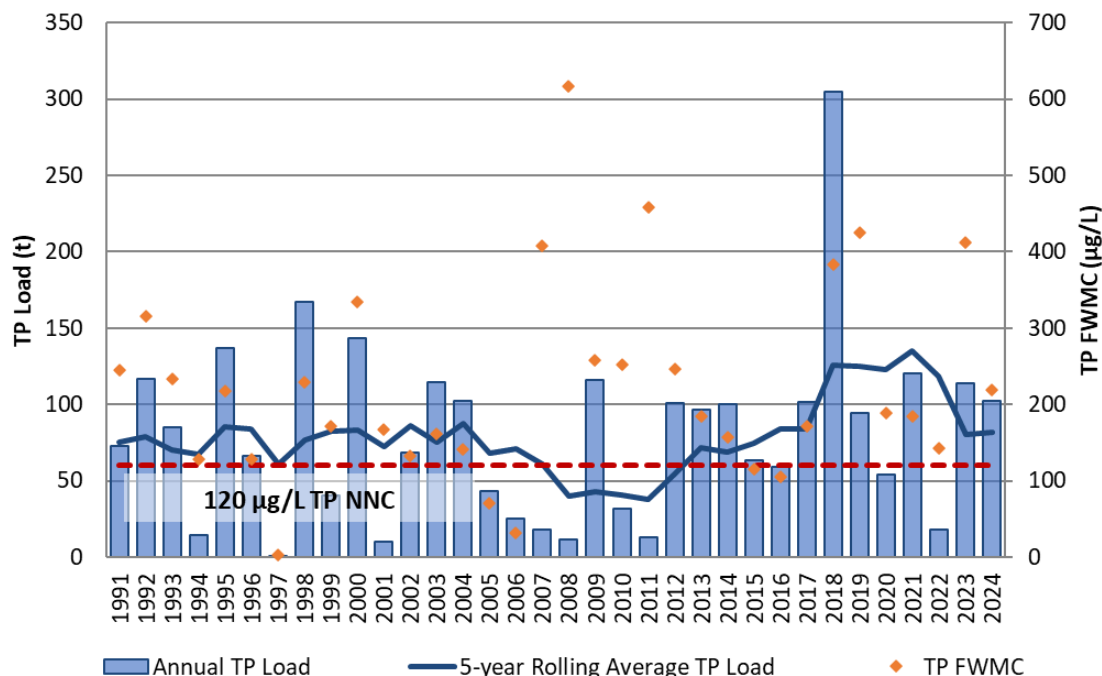


Figure 4. TP load and FWMC data for WY1991-WY2024 with the 5-year rolling average for the Lower Kissimmee Subwatershed.

Upstream Analysis

- ❖ Eighteen of the twenty-nine upstream monitoring sites had 5-year average annual TP concentrations greater than FDEP's NNC of 120 µg/L (**Figure 5**).
- ❖ Seventeen of the twenty-nine upstream sites have TN concentrations greater than FDEP's NNC of 1.54 mg/L.

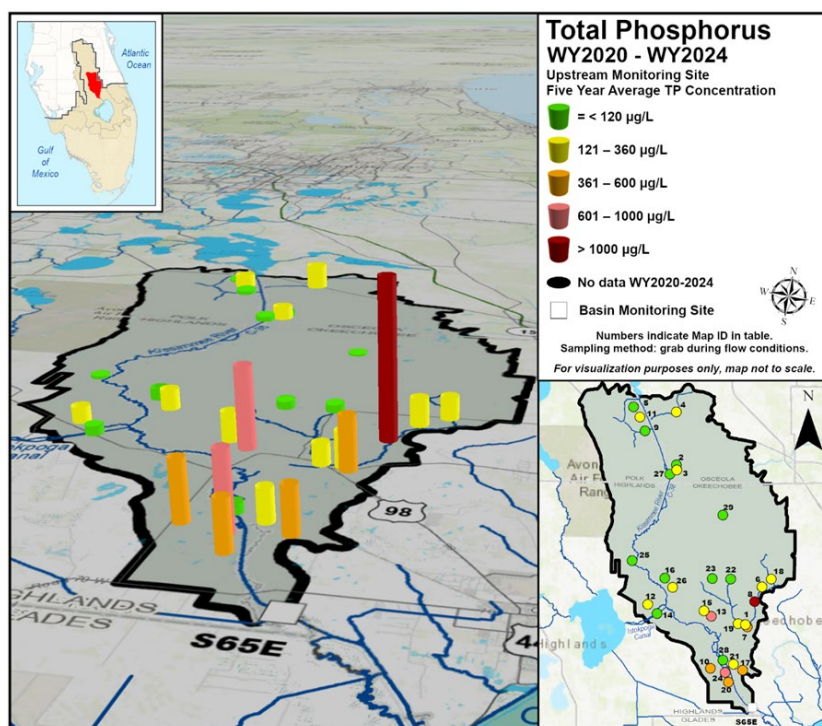


Figure 5. Lower Kissimmee Subwatershed Upstream TP concentrations



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Project Focus

- ❖ Water quality improvement projects and projects that capture or reducing peak rain event runoff are needed. It should be understood that the storage projects may only be able to store water at certain times due to water supply and ecological constraints. This means at times these projects might not have any water stored in them.
- ❖ Stormwater detention and wetland restoration projects are recommended.

Request for Proposals Suggested Criteria

Project characteristics to prioritize in project evaluations:

- ❖ Operational discharge structures and flexible operation plans able to consider operations of downstream waterbodies
- ❖ Connection to regional system in basins with demonstrated water availability
- ❖ Maximized runoff volume storage and nutrient removal, attenuating flow to downstream waterbodies, while demonstrating nearby restoration projects will not be impacted
- ❖ Water retention or treatment in areas with demonstrated higher TP concentrations
- ❖ Located at lower elevations and close to downstream receiving water
- ❖ Effective water retention

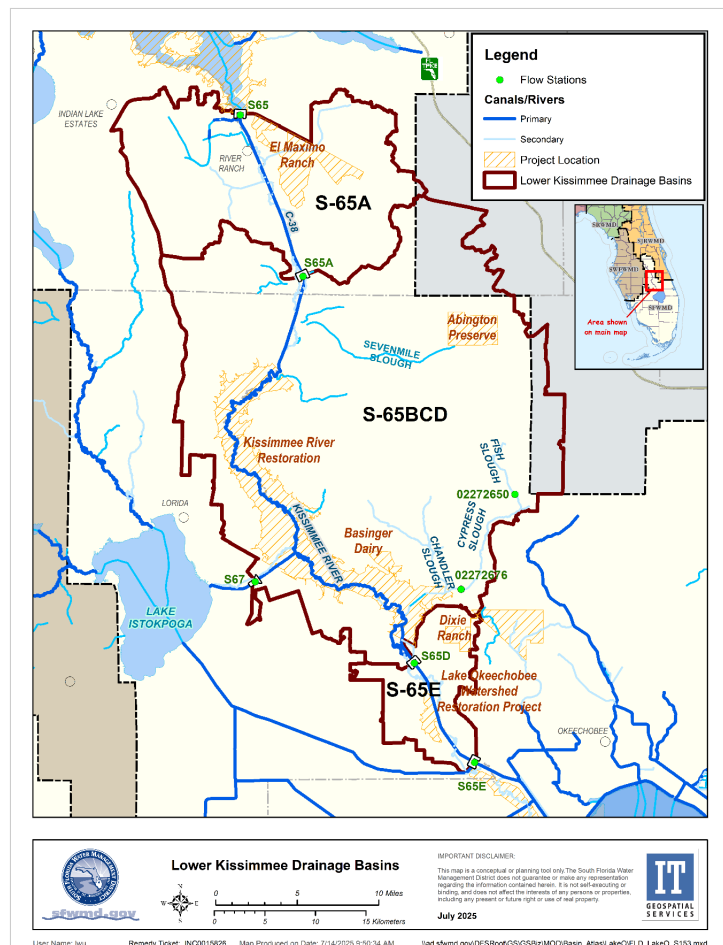


Figure 6. Lower Kissimmee Subwatershed Hydrology and existing projects