

An aerial photograph of a coastal landscape. The foreground and middle ground are dominated by green, textured areas that appear to be marshland or wetlands, with some darker, possibly water-filled channels or depressions. To the right, a dark blue body of water is visible, with some white foam or surf near the shore. The overall scene is a natural, somewhat rugged coastal environment.

HISTORICAL PROBLEMS NEW SOLUTIONS

**A Management Action Plan For
Newnans Lake**

What We Know About Newnans Lake

Water Quality

- Newnans Lake has shown a declining trend since about 1969 and has been hypereutrophic since at least 1999.
- More than 70% of TN compiled with 50% of the TP are from internal nutrient loading.
- The next-largest source of TN and TP are Hatchett Creek (16% TN and 13% TP) and Little Hatchett Creek (5.5% TN and 3.7% TP).

What We Know About Newnans Lake “Toxic Scum”

- Blue-green algae are the dominant phytoplankton species in Newnans Lake (92%), at a biovolume consistently twice that of Orange and Lochloosa lakes.
- Cyanobacteria are present throughout the lake. Conditions suggest that cyanobacteria may soon dominate the lake.

What We Know About Newnans Lake Watershed

- A significant portion of the Newnans Lake watershed is commercial silviculture property.
- Significant land use changes are not anticipated in the Newnans Lake watershed in the next 5-10 years.

Where it all started...



Dam built in 1966 across Prairie Creek, the only outflow stream from Newnans Lake



Dam was adjusted in 1976 by the Florida Game and Freshwater Fish Commission

What happened...

Shortly after, that the dam was completely disabled (circa 1990).

In 2000, the dam was partially removed.

WHY?

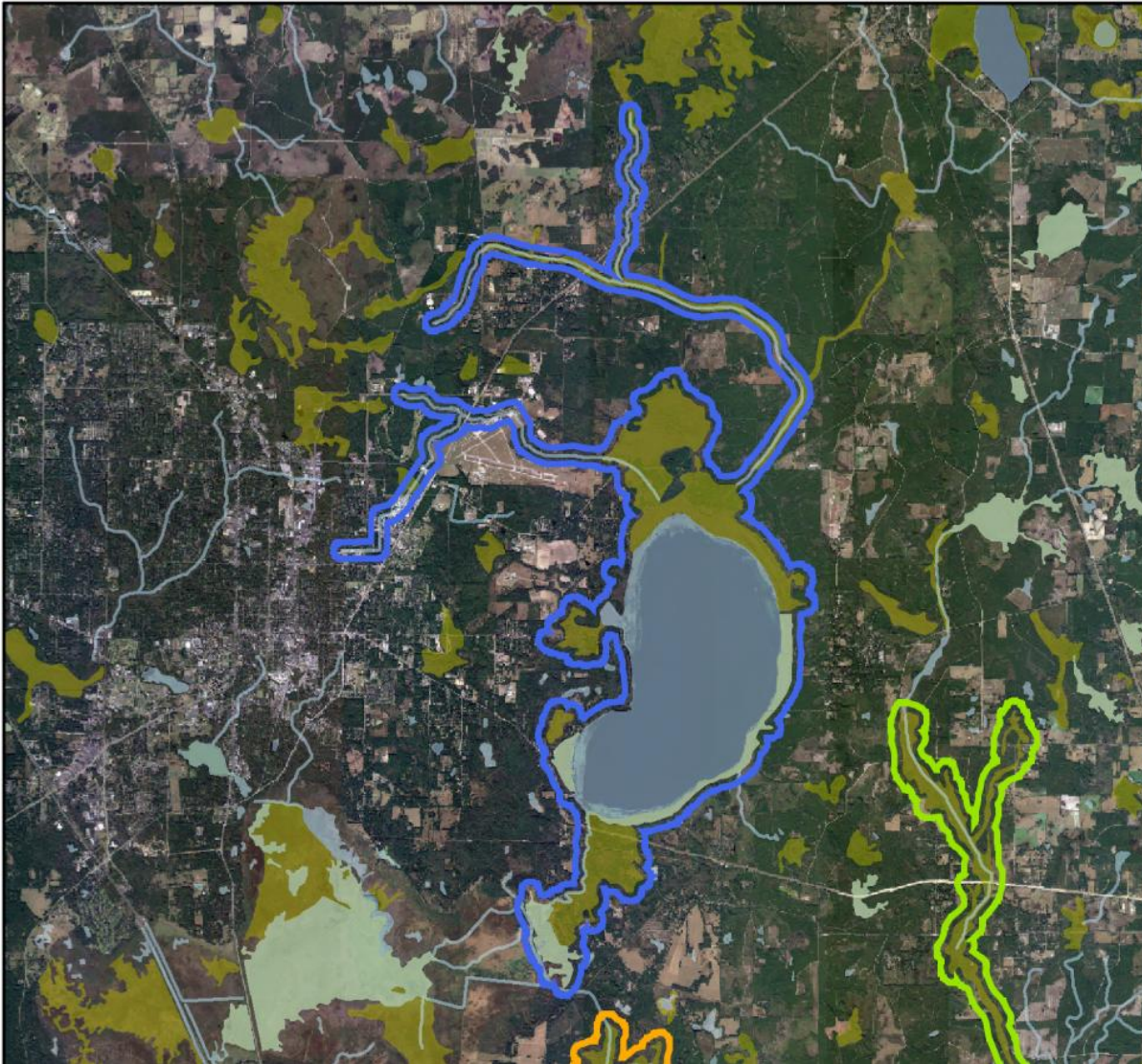
Because the dam caused the organic sediment to build up.

And where we are now?...

**Prairie Creek bed
completely filled in with
sand**

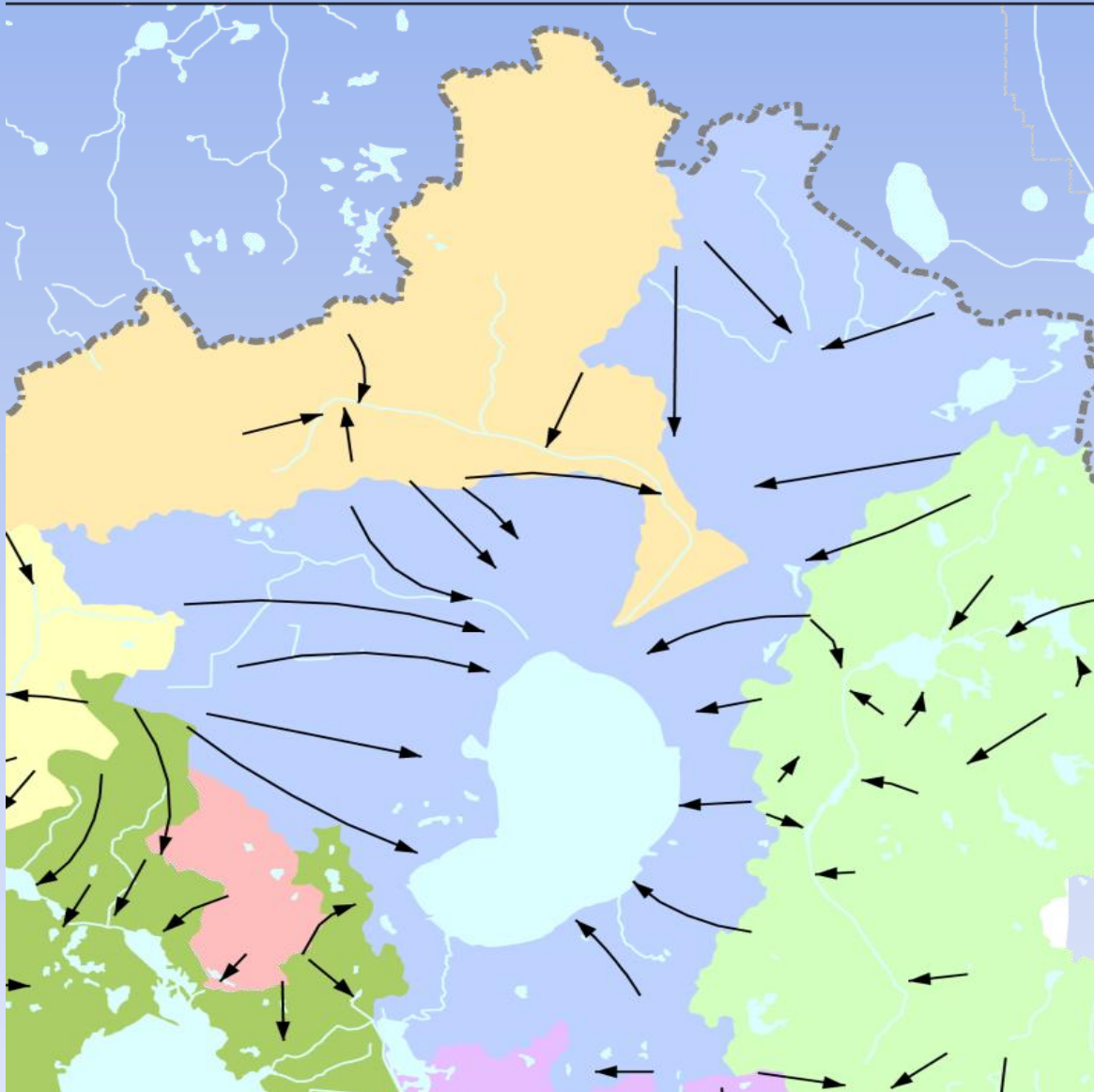


Surface Flow



Newnans Lake Basin is 100% rain fed, but within the basin most of rainfall soaks into the ground and enters the lake as groundwater flow.

Groundwater Flow



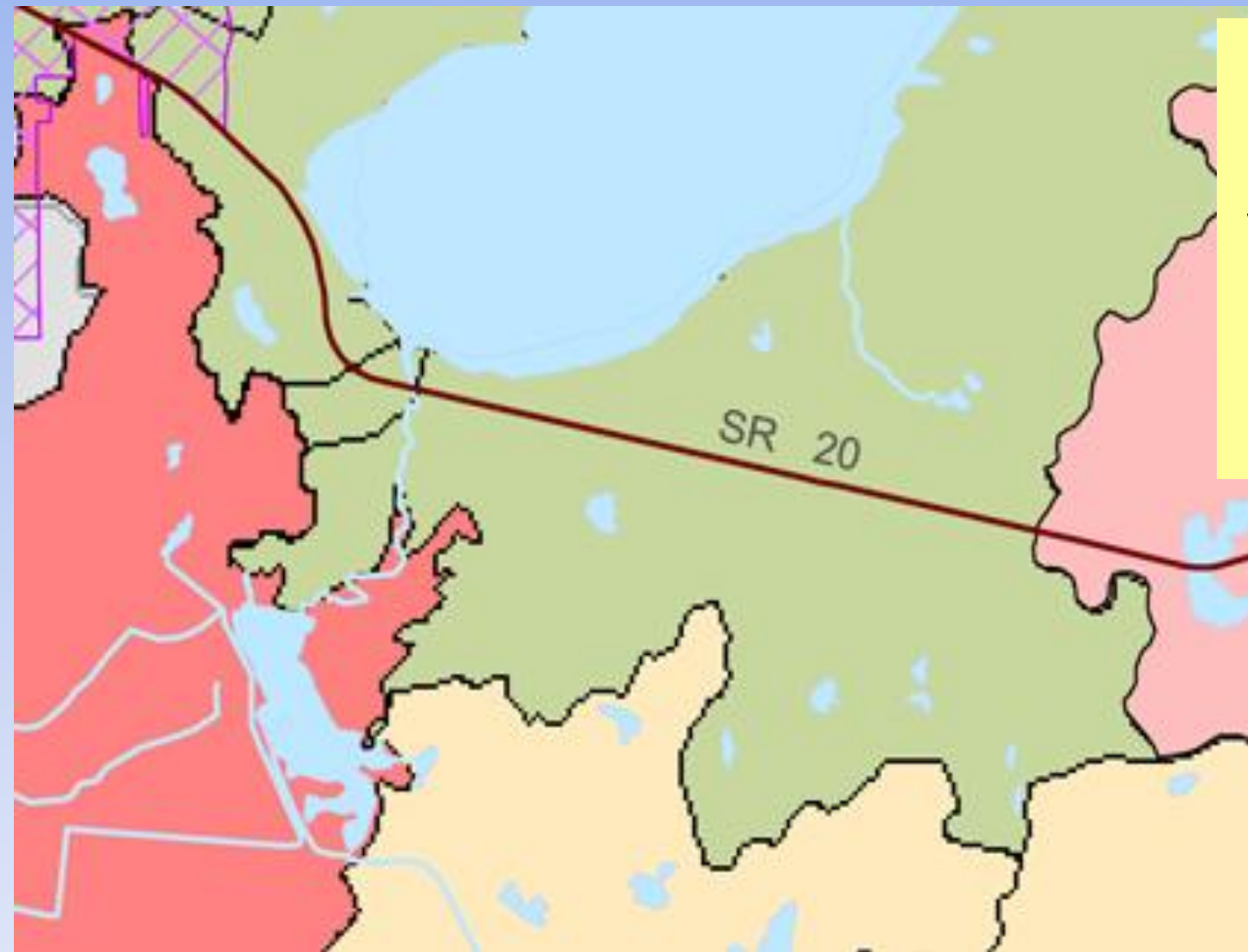
Newnans Lake
represents
groundwater levels
within that basin.

Groundwater flows
play a larger role
than surface water
when addressing the
lake's water budget.

Outlet Flow of Newnans Lake

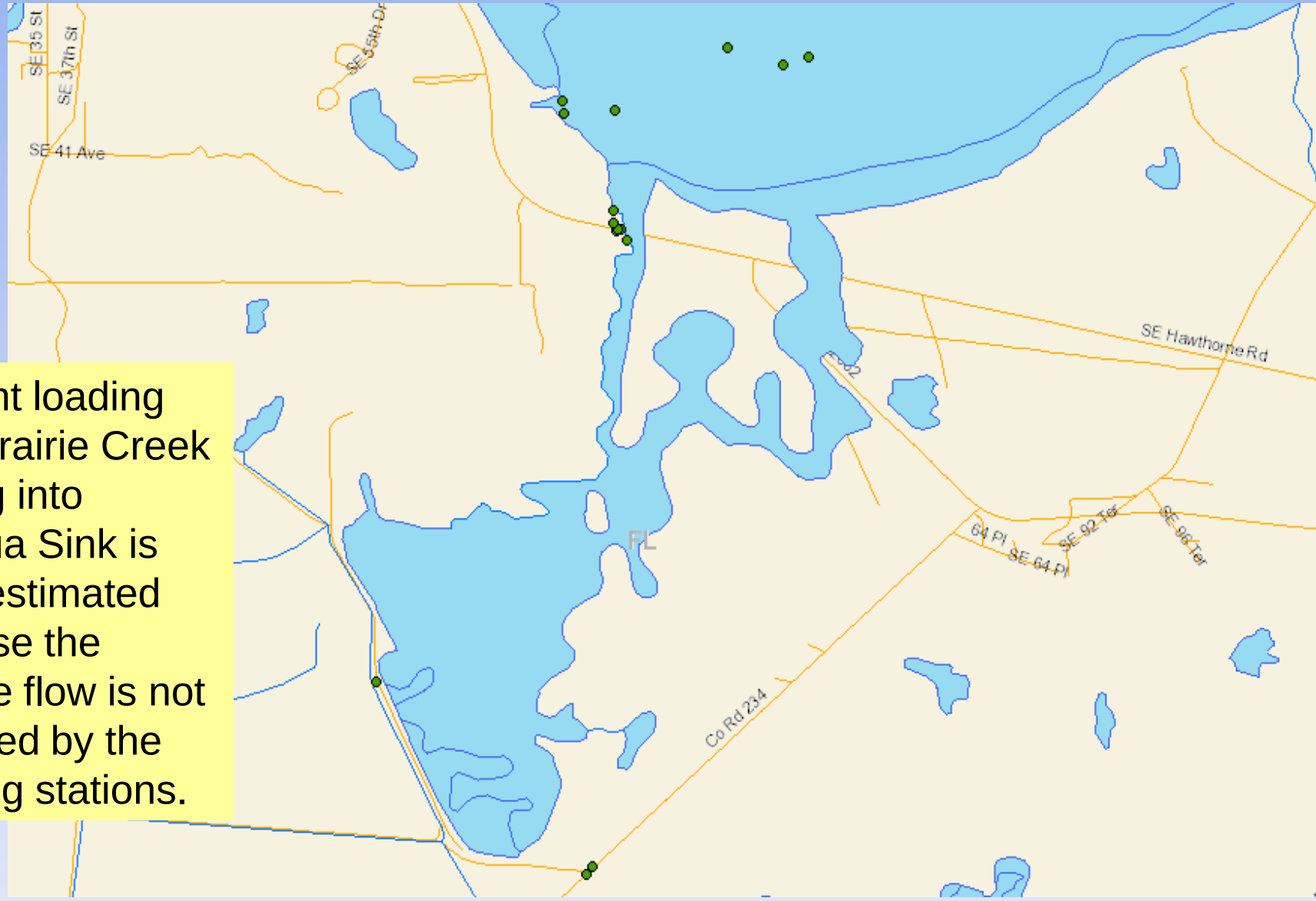
Sub-basins Defined

Area south of SR 20 does not contribute any water to Newnans Lake Basin, rather this water goes to Paynes Prairie or Orange Lake



Outlet Flow of Newnans Lake

Gauging Stations

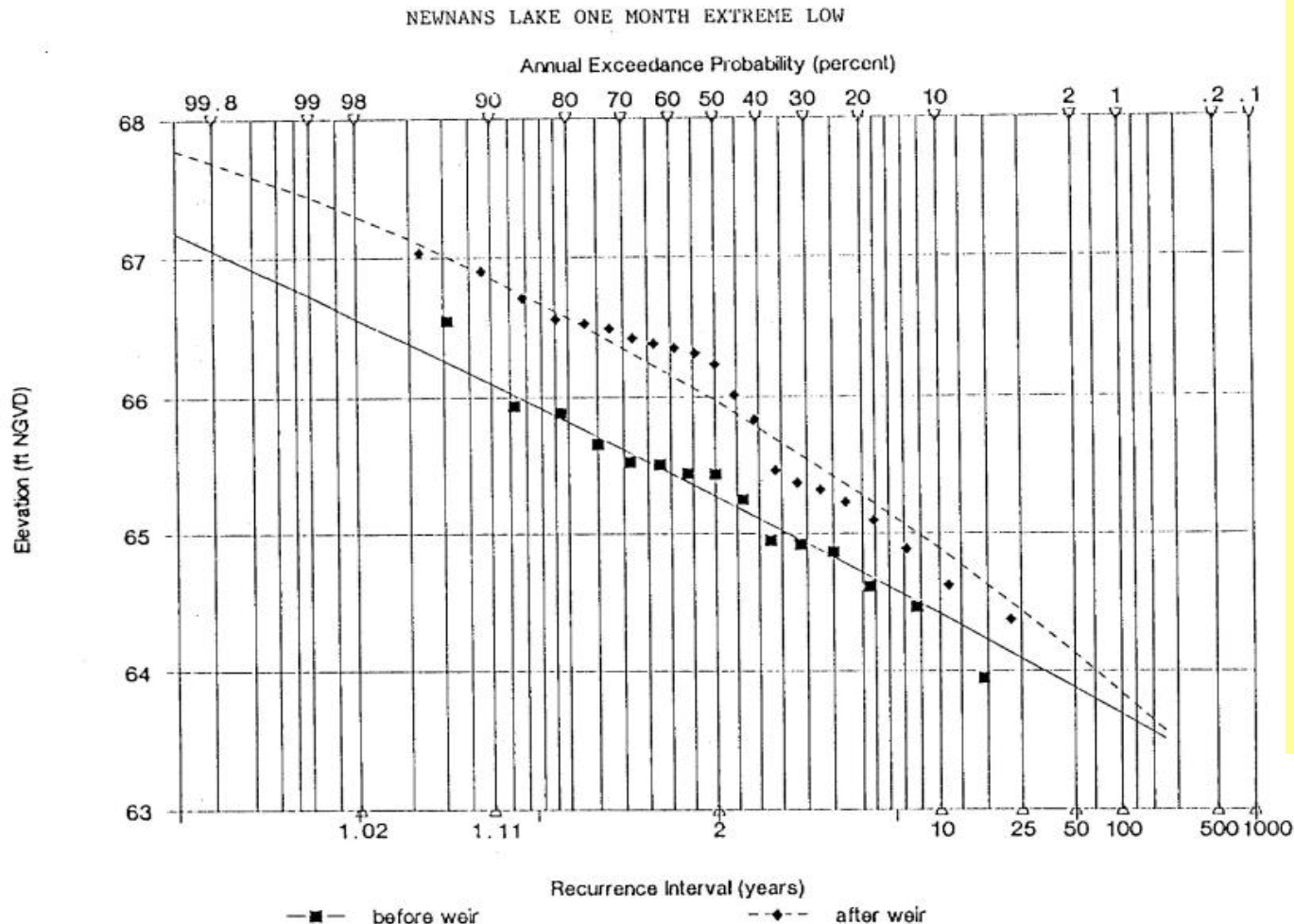


Nutrient loading from Prairie Creek flowing into Alachua Sink is underestimated because the surface flow is not recorded by the gauging stations.

Alachua Sink
(1909)



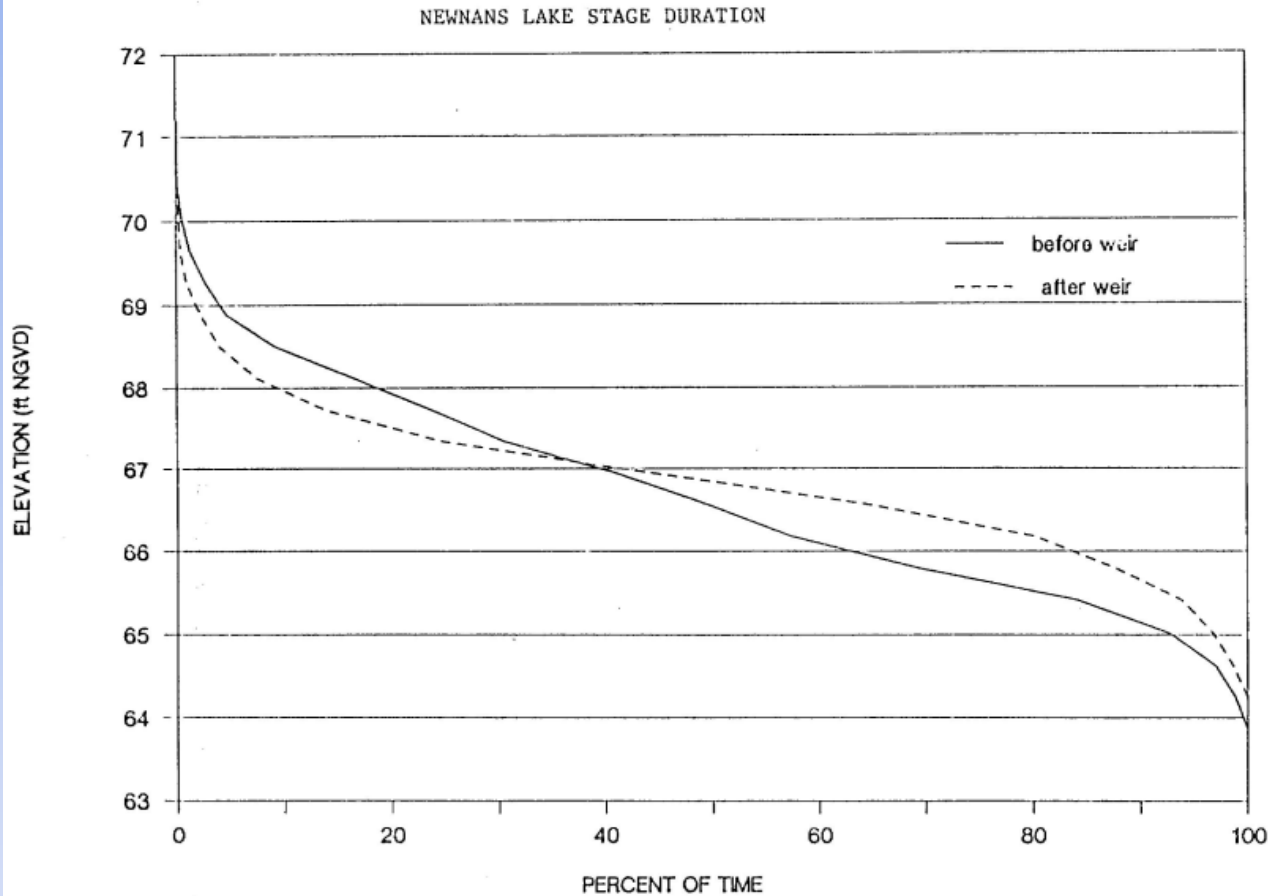
Before Weir/After Weir



Suction dredging the bottom of Prairie Creek, and removing the remainder of the dam to a level consistent with pre-damming elevations, would have minimal effect on water levels;

--but would have a major affect on the quality of the habitat for fish and wildlife.

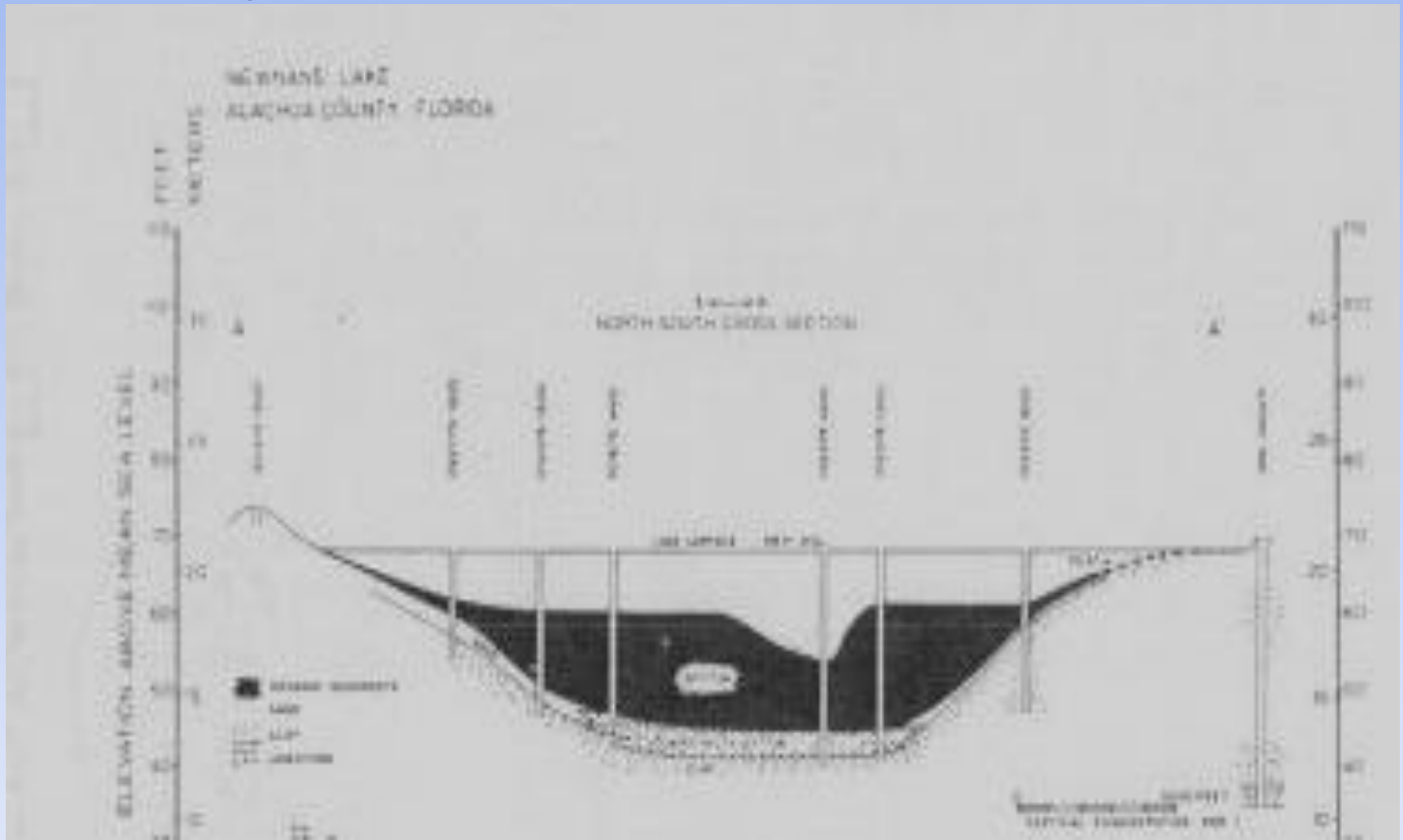
Before Weir/After Weir



Restoring the lake to a more normal hydroperiod (more fluctuation) would help to restore and enhance rooted emergent vegetation in the littoral zone, which will improve water quality.

Sediment Levels

With a volume of approx. 55 million cubic yards of accumulated organics and an avg. depth of 8 feet, the sediment has a pudding like constancy that takes up and maintains over 70% of the lake's volume at low water



Summary of the Problems from last 40 Years

- ❑ Dam broken off at the top of the sandbar
- ❑ Diminished seasonal outflows
- ❑ Reduced seasonal lake level fluctuations
- ❑ Obstruction to the natural flow
- ❑ Increased resident time within the lake
- ❑ Slowing of groundwater inflow
- ❑ Stagnation effect



Remedies

- Lake Sediment Removal
- Remove Flow Blockage
- Introduce Predator Species