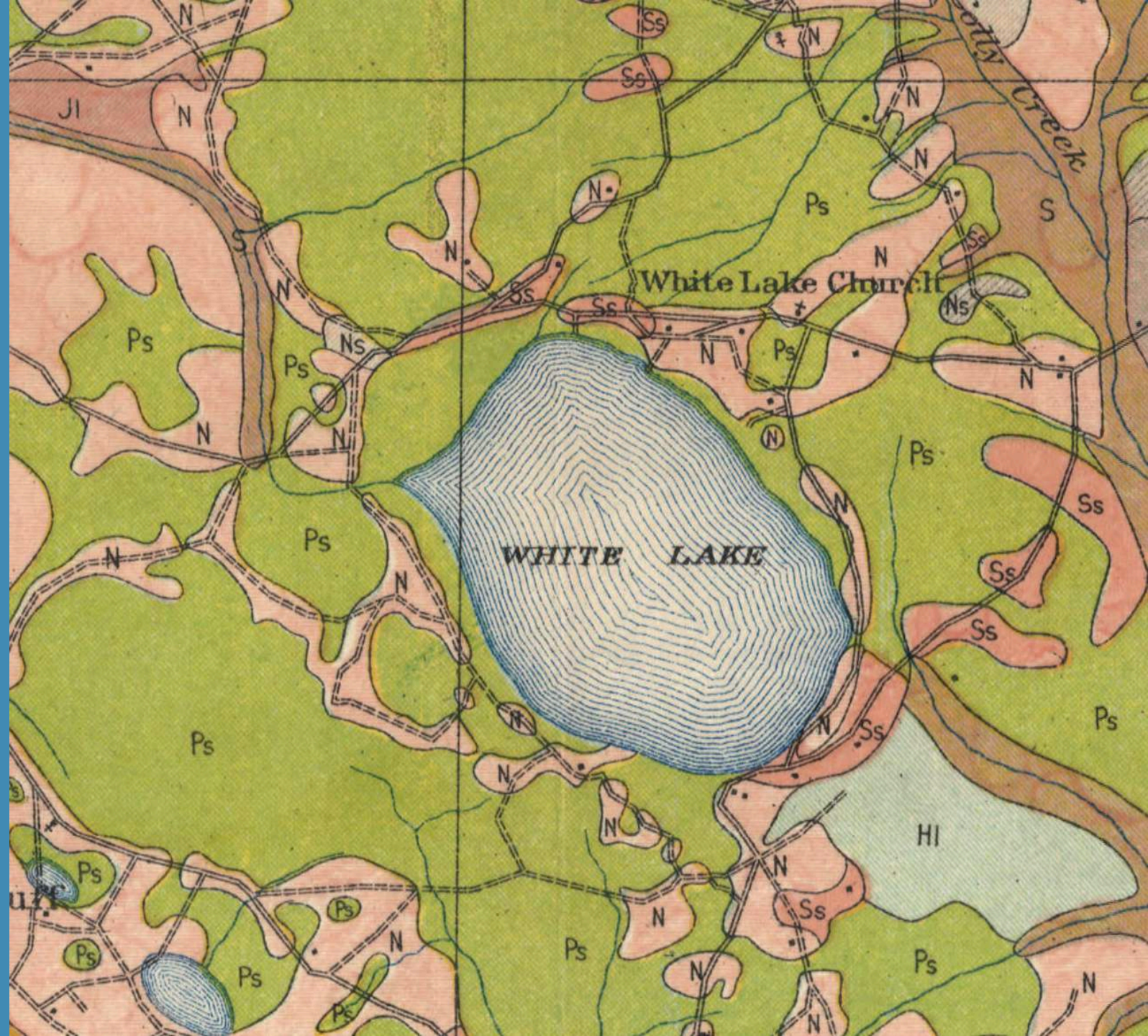


WHITE LAKE:
PUTTING THE PUZZLE PIECES TOGETHER

Workshop #3
November 19, 2019

WHITE LAKE

1914
USDA SOILS
MAP



WHITE LAKE
1938
USDA AERIAL
PHOTO

Bay Lake morphology:

Elevated sand rim

Connection to wetlands

“Oriented lakes”, wind and
scour created them

Clear water, low pH (< 5)

Average depth 6.4 ft.

No inlet



WHY CLEAR
WATER?
UNLIKE OTHER
BAY LAKES

Source water:

Rainfall and groundwater

Springs—GW inflow—
along eastern side of lake

Recent seepage meter
measure: 1 L/hr



WHITE LAKE
2018

GOOGLE EARTH

Impacts of
Urbanization

vs.

Blueberry Farms



Urbanization Impacts:

Less infiltration to groundwater

Rainfall intercepted by impervious surfaces: streets, roads, roofs, which becomes runoff (picks up contaminants, including nutrients)

Less natural drainage, so canals dug, fill material added to building sites—little to no retention of rainfall on site, as with rain gardens, natural areas

Sea walls and lawns rather than natural shoreline

Warmer temperatures (surfaces radiating heat)

URBANIZATION = HIGH DENSITY
MORE INFRASTRUCTURE FOR ROADS, UTILITIES,
STORMWATER

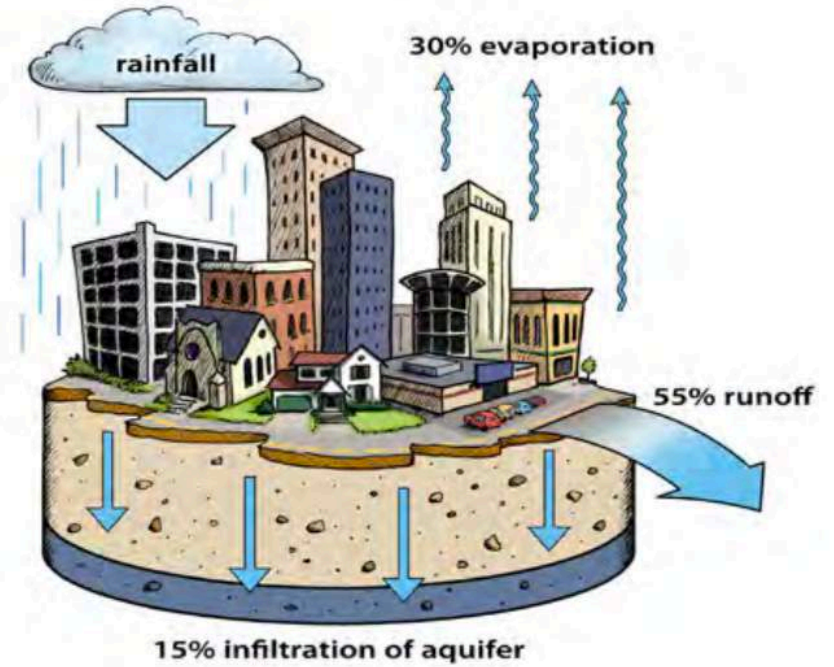
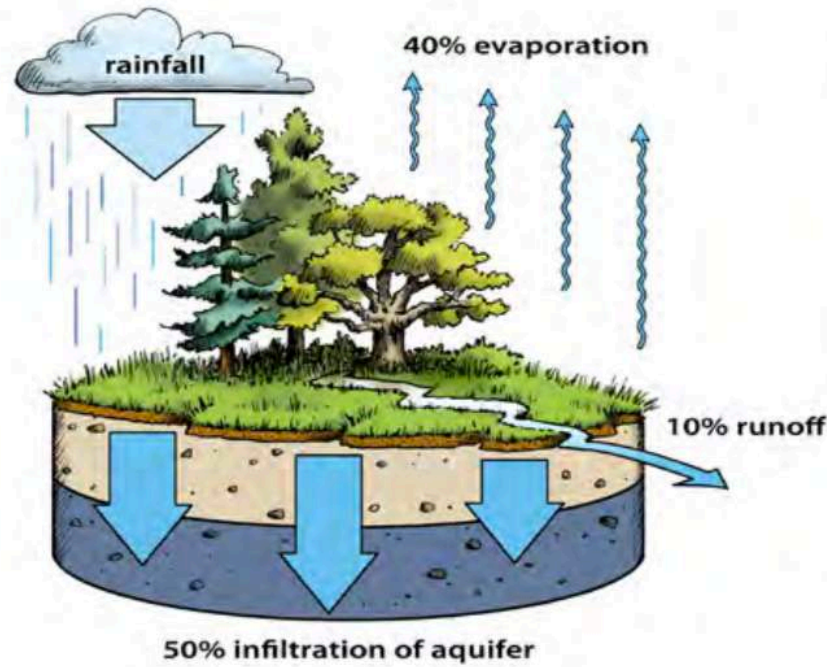


LEGEND

- Roads
- ▭ Town Limits
- ▭ ETJ
- ▭ TaxParcels
- Zoning
 - ▭ B: Business
 - ▭ R1: Permanent Residential
 - ▭ R1A: Permanent Residential
 - ▭ R2: Recreational Residential
 - ▭ RA: Residential Agricultural
 - ▭ Lake

Protecting Michigan's Inland Lakes:

A Guide for Local Governments

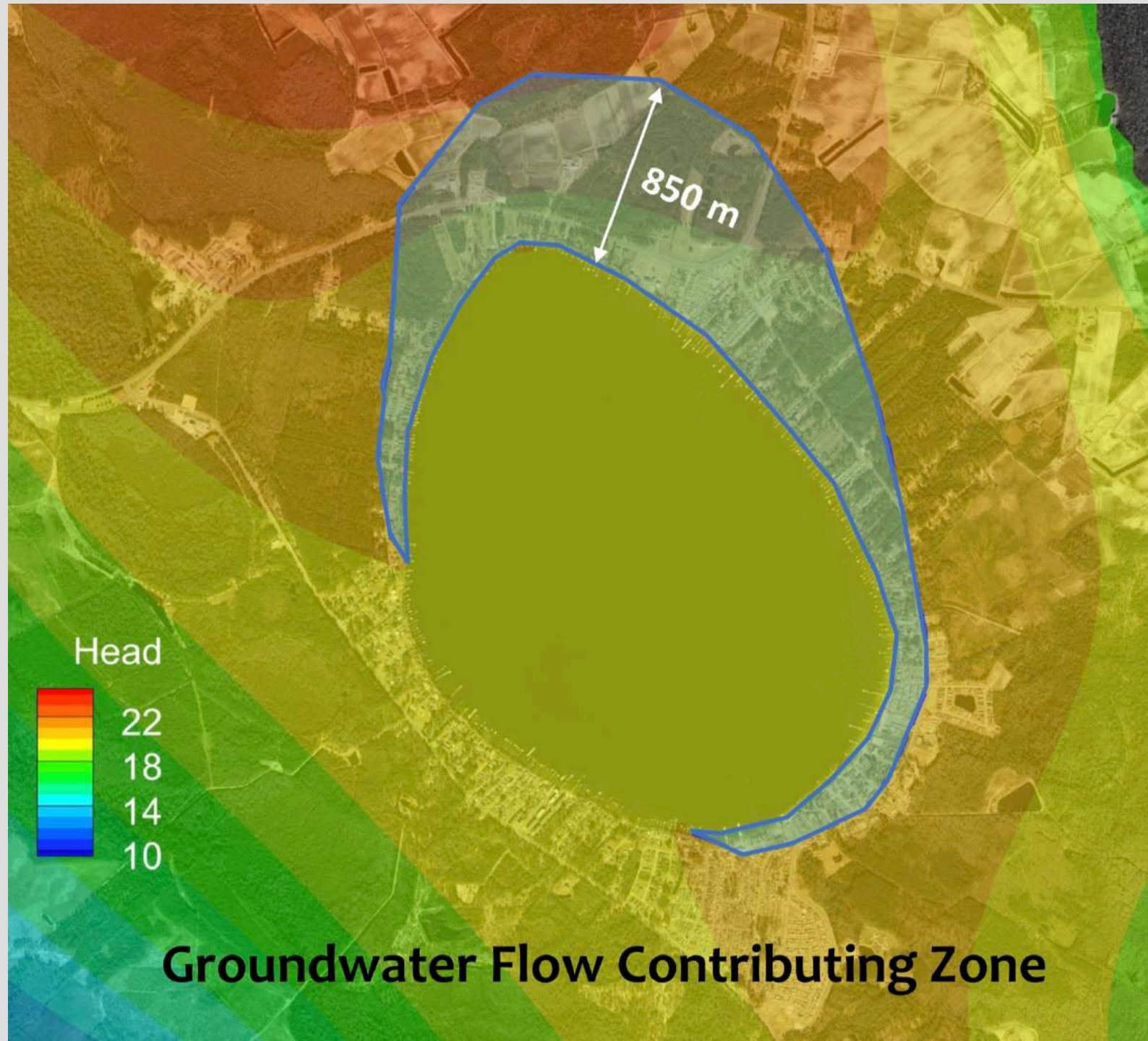


Graphic by Amelia Hansen

FOCUS ON
GROUNDWATER
FLOW
CONTRIBUTING
ZONE

With so much impervious
surface already, look at
options for increasing
infiltration within this area

Lake surface area roughly
2x larger



THE CHALLENGE

Atmospheric and climate-related changes: rainfall pH +1 std. unit, extreme rainfall events, droughts, higher temperatures

Hydrological changes due to changing land use, reduction in wetlands, increase in impervious surfaces





THE DESIRED OUTCOME

What is the common ground?

What is realistic and sustainable?



THE CALL TO ACTION

“We can put purpose behind our passion for this lake when we understand that individual actions can collectively make a big difference. What we can do as property owners, what the Town can do to better manage its wastewater assets, how stormwater might be better managed to keep nutrients from entering the lake—these things should all be components of a management plan that we can all support.”

Mayor H. Goldston Womble, Jr.

WHITE LAKE PLAN OUTLINE

Hydrology

Stormwater

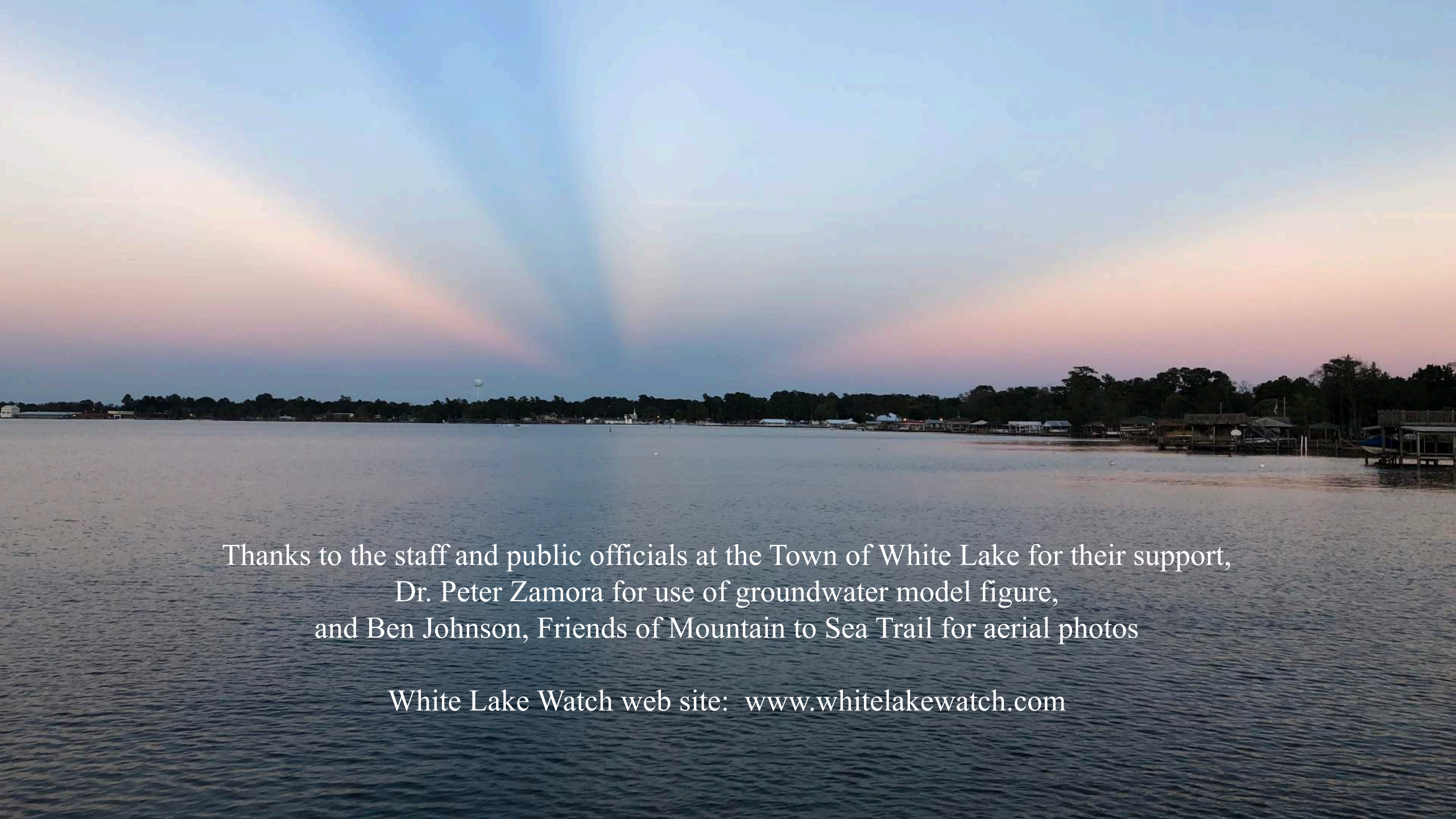
Wastewater Asset Management

Land Use

Boating Impacts

Water Quality Monitoring and Management

Aquatic Vegetation Monitoring and Management



Thanks to the staff and public officials at the Town of White Lake for their support,
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and Ben Johnson, Friends of Mountain to Sea Trail for aerial photos

White Lake Watch web site: www.whitelakewatch.com