

Florida's Total Maximum Daily Load (TMDL) Program: *protecting and restoring water quality in the Peace River Basin*

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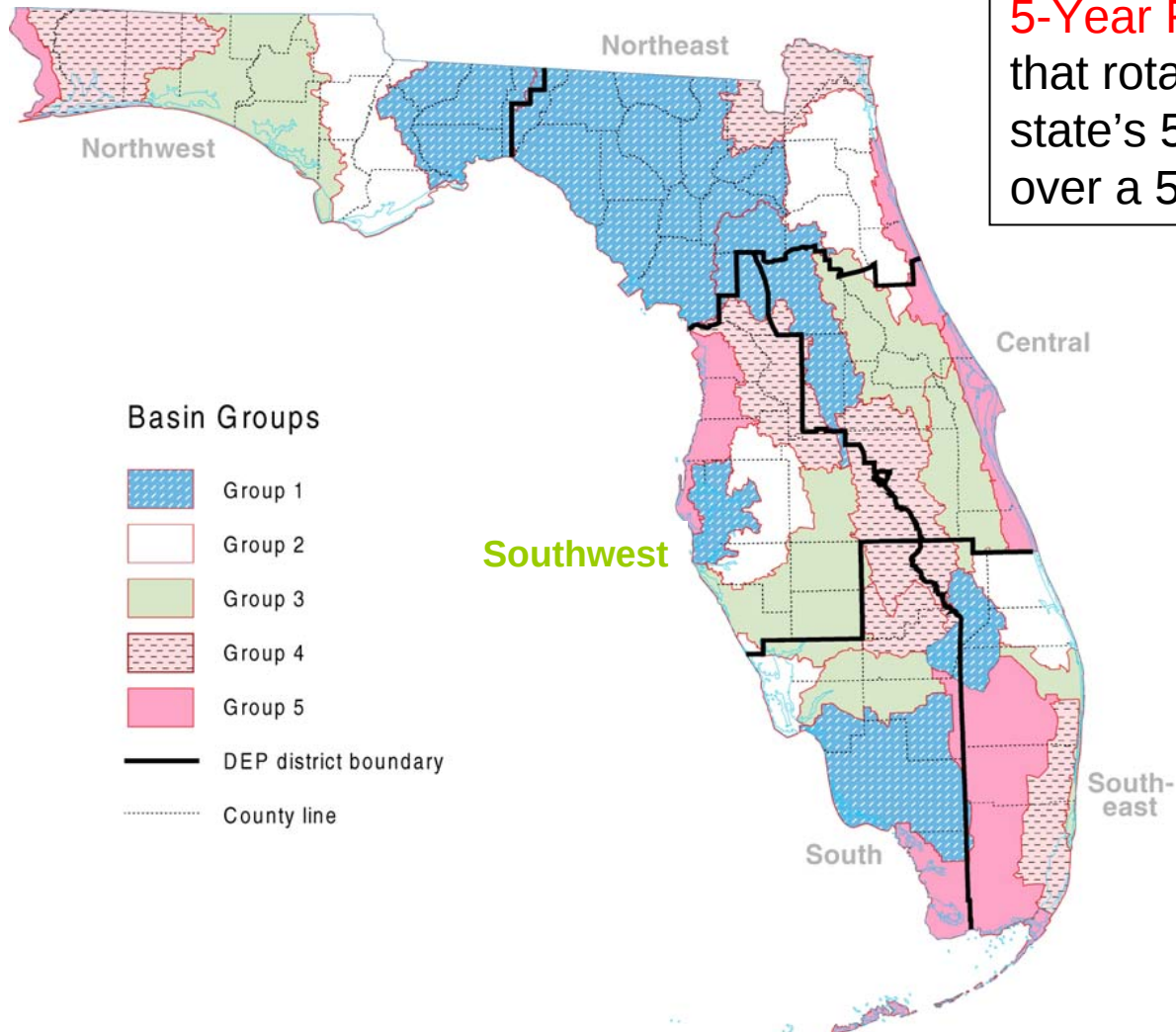
Presentation: *overview*

- Total Maximum Daily Loads (TMDLs)
 - What is a TMDL?
 - How are TMDLs developed?
 - Where are we in the TMDL process?
- Implementing TMDLs
 - Examples of water quality restoration activities

What is a TMDL?

- Maximum amount of a given pollutant that a waterbody can assimilate and remain healthy
 - *i.e.*, maintain its designated use, *e.g.*, drinking (Class 1), shellfish harvesting (Class 2), fishing and swimming (Class 3)
- Under Section 303(d) of the Clean Water Act and the Florida Watershed Restoration Act
 - TMDLs must be developed for all waters that do not meet their designated uses (aka “impaired waters”)

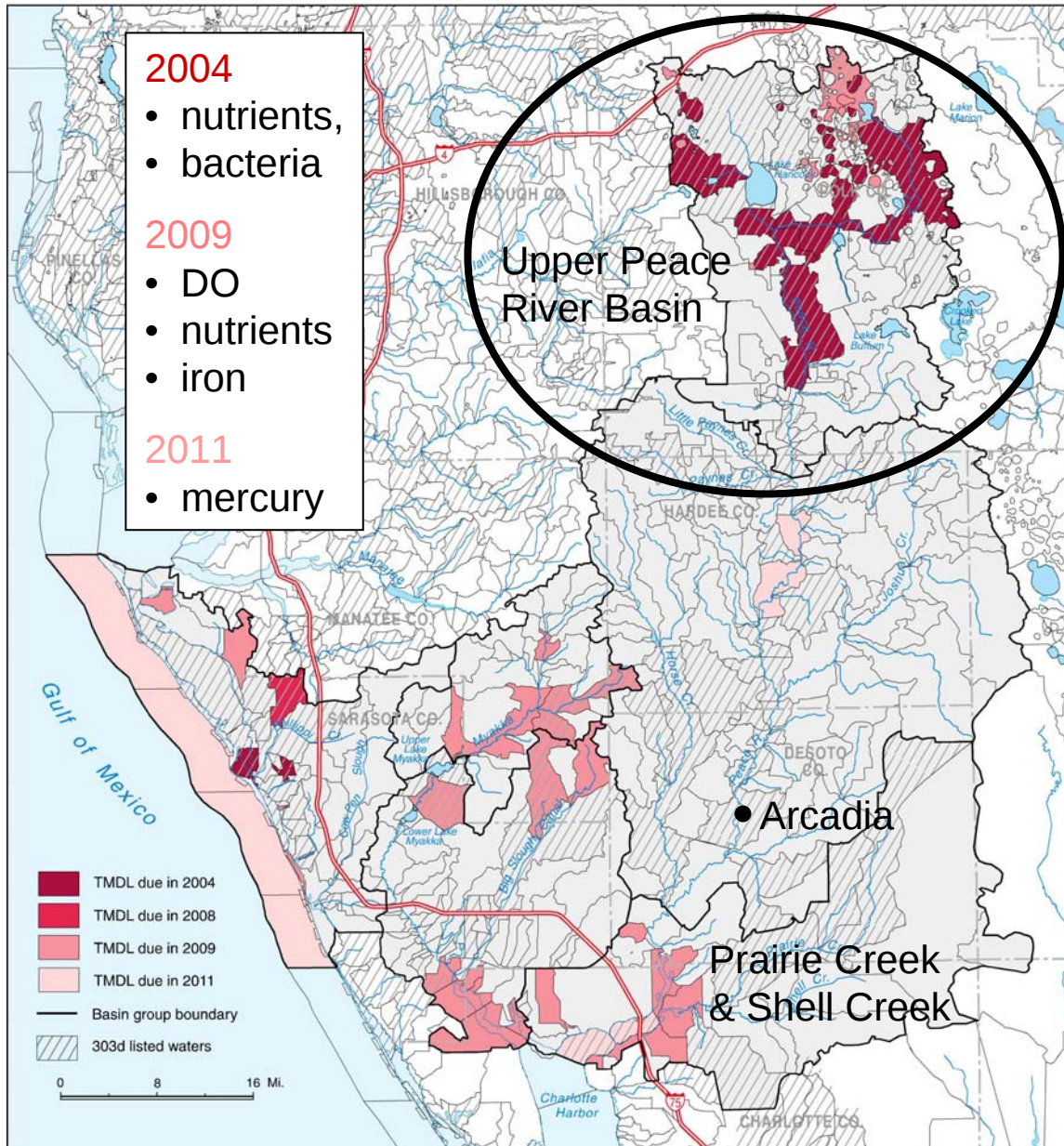
How are TMDLs developed?



5-Year Rotating Basin Cycle
that rotates through the
state's 52 major river basins
over a 5-year cycle

Basin Cycle: *5 phases*

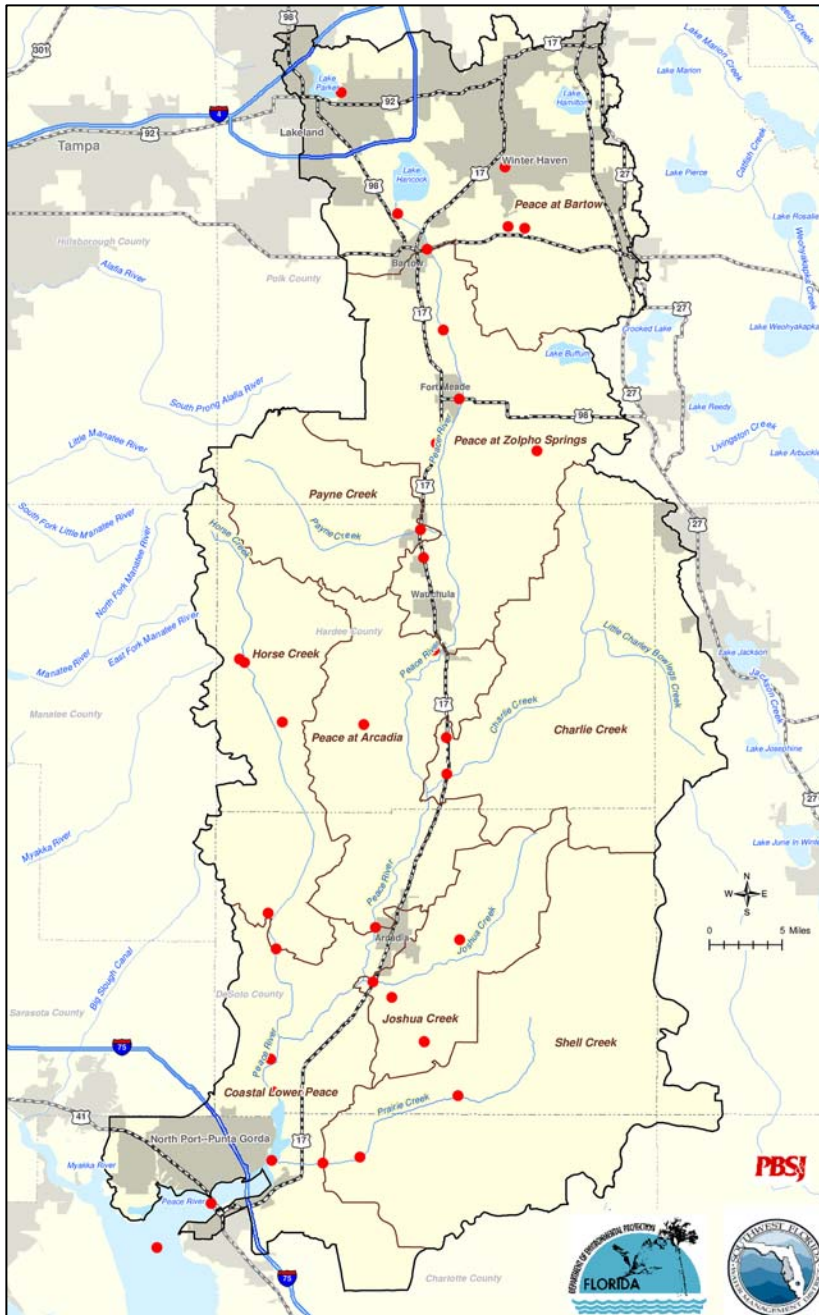
1. Preliminary evaluation of water quality;
 - Planning List of “potentially” impaired waters
2. Strategic monitoring and assessments to verify impairment;
 - Verified List of impaired waters
3. Development of TMDLs for impaired waters;
4. Development of plan for achieving pollutant load reductions required in TMDL
 - Basin Management Action Plan (B-MAP)
5. Implementation of the BMAPs



Where are we in the TMDL process?

- **Verified list** of impaired waters adopted by FDEP
- **Draft TMDLs** for high priority waters in UPR developed by FDEP
- B-MAPs for UPR will be developed once TMDLs are adopted
- **Shell Creek & Prairie Creek Watersheds Management Plan** approved by FDEP

Water Quality Monitoring Stations: *overview of water quality trends*



Relative Changes in Selected Water Quality Characteristics							
Location	Conduct- ivity	TDS	Chloride	Sulfate	Fluoride	Nitrite + Nitrate	Ortho- phosphorus
Peace River at Bartow	▼	▼	▲	▼	▼	—	▼
Payne Creek near Bowling Green	▲	▲	—	▲	—	▼	▼
Charlie Creek near Gardner	▲	▲	▲	▲		▲	
Peace River at Arcadia	—	—	—	—	▼	▼	▼
Joshua Creek at Nocatee	▲	▲	▲	▲	—	▲	▼
Shell Creek near Punta Gorda	▲		▲			▲	—



Large Change



Intermediate Change



Small Change



No Change

Blank = No Data

Summary of Water Quality

- Upper Peace River

- *relative* improvement in water quality in the River
- historically received direct discharges from both phosphate mining/beneficiation and urban sewage
- declines in ortho-phosphate, fluoride, & sulfate associated with changes in mining & wastewater treatment practices
- increase in water color, reflecting declines in spring flow & reduced mining discharges; loss of eel grass in spring runs

- Lower Peace River

- significant decline in surface water quality associated with overpumping of ground water associated for agricultural irrigation
- impairments are addressed in the Shell Creek and Prairie Creek Watershed Management Plan

Implementing TMDLs: *examples of water quality restoration activities*

- Shell Creek & Prairie Creek Watersheds Management Plan
- Winter Haven Chain of Lakes
- Peace Creek Drainage Canal Watershed Management plan
 - water supply, flooding, water quality, & natural systems
- Lake Hancock
 - outfall treatment & raise lake levels
 - regional impacts on water quality & quantity

Shell Creek & Prairie Creek Watershed Management Plan

- Developed to address water quality impairments to the public drinking water supply of Punta Gorda
 - impaired for chloride, total dissolved solids (TDS), & specific conductance
 - impairment related to over pumping of groundwater for agricultural irrigation
- Cooperative effort with +40 public & private partners
- Key financial & technical support from DACS & SWFWMD
 - back-plugging of irrigation wells to draw from shallower aquifers
 - on-site surface water storage
 - implementation of agricultural BMPs (citrus and others)
 - water use permitting restrictions
- One of the most successful water quality restoration projects in the state!
 - all sources of impairment will be removed by 2014

Shell & Prairie Creek: *agricultural benefits*



Citrus tree impacted by high salinity irrigation water:

- small canopy
- twig dieback
- low fruit yield

Photograph taken 1/03.



Same citrus tree after back-plugging of irrigation well:

- increase in tree canopy
- increase in twig growth
- increase in fruit yield

Photograph taken 9/04.

Winter Haven Chain of Lakes: *selected water quality restoration projects*

- Lake Smart (Lake Conine restoration)
 - 1 of 2 lakes in the Northern Chain of Lakes with a DRAFT nutrient TMDL
 - downstream benefits of upstream restoration efforts
- Lake Howard restoration
 - 1 of 8 lakes in the Southern Chain of Lakes with a DRAFT nutrient TMDL
 - multiple projects & long-term commitment (+25 years)

Winter Haven Chain of Lakes: *flow patterns & draft TMDLs*

***Draft nutrient TMDLs** in the Northern Chain of Lakes, including:

- Haines
- **Smart**

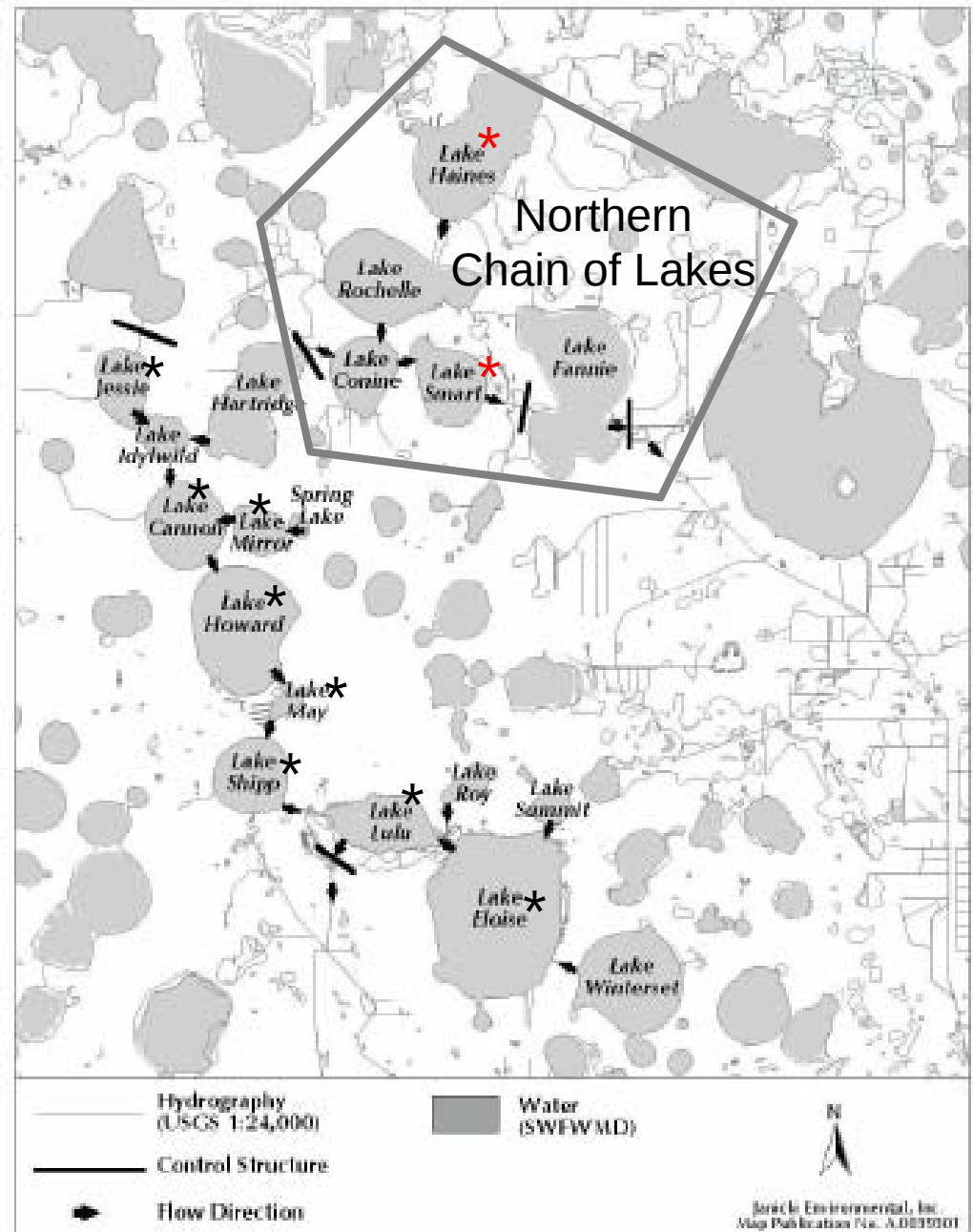
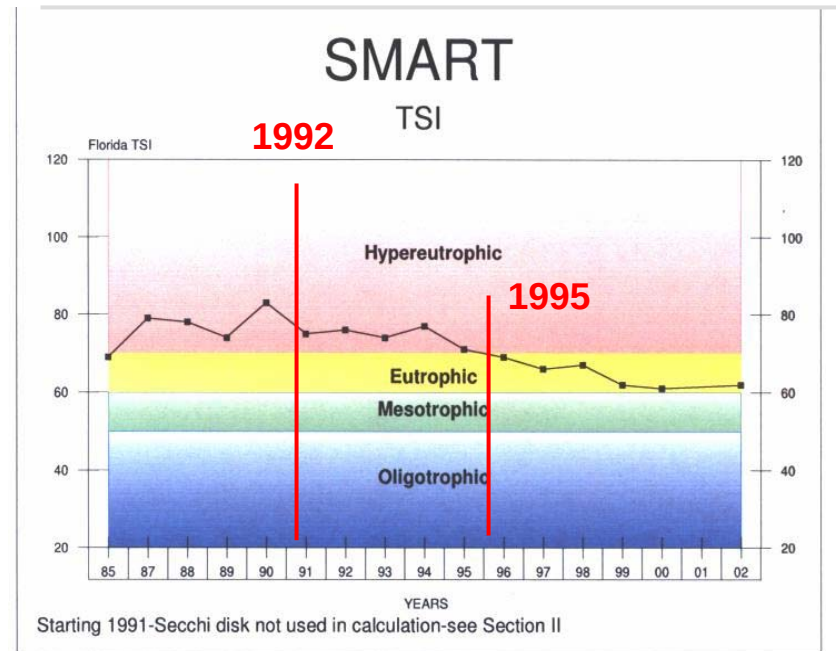
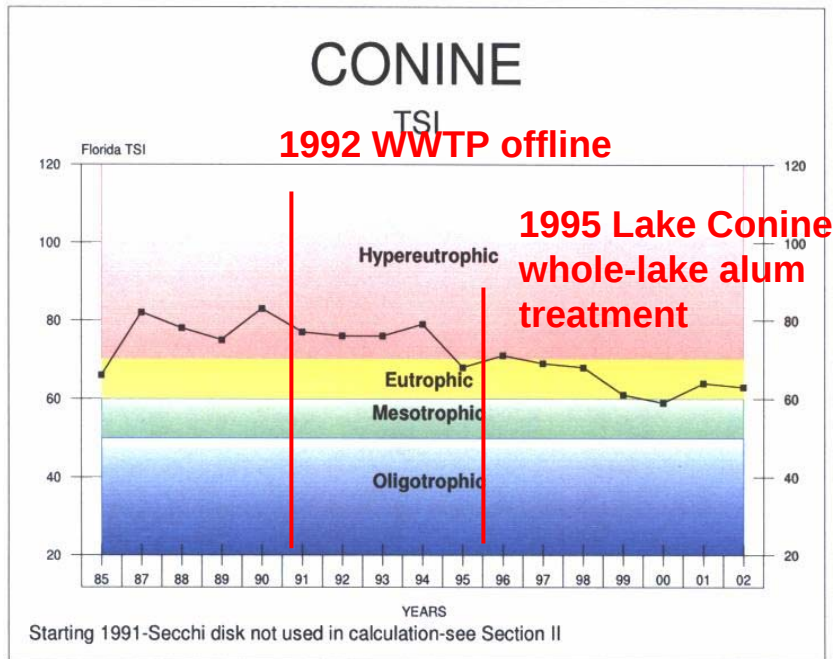


Figure 1-1. Winter Haven Chain of Lakes.

Evidence of water quality improvements in Lakes Conine & Smart over the last 15 years



Downstream benefits of
upstream restoration

Winter Haven Chain of Lakes: *flow patterns & draft TMDLs*

* Draft nutrient TMDLs in the
Southern Chain of Lakes, including:

- Jessie
- Idylwild
- Mirror
- Cannon
- **Howard**
- May
- Shipp
- Eloise (actually not impaired)
- Lulu

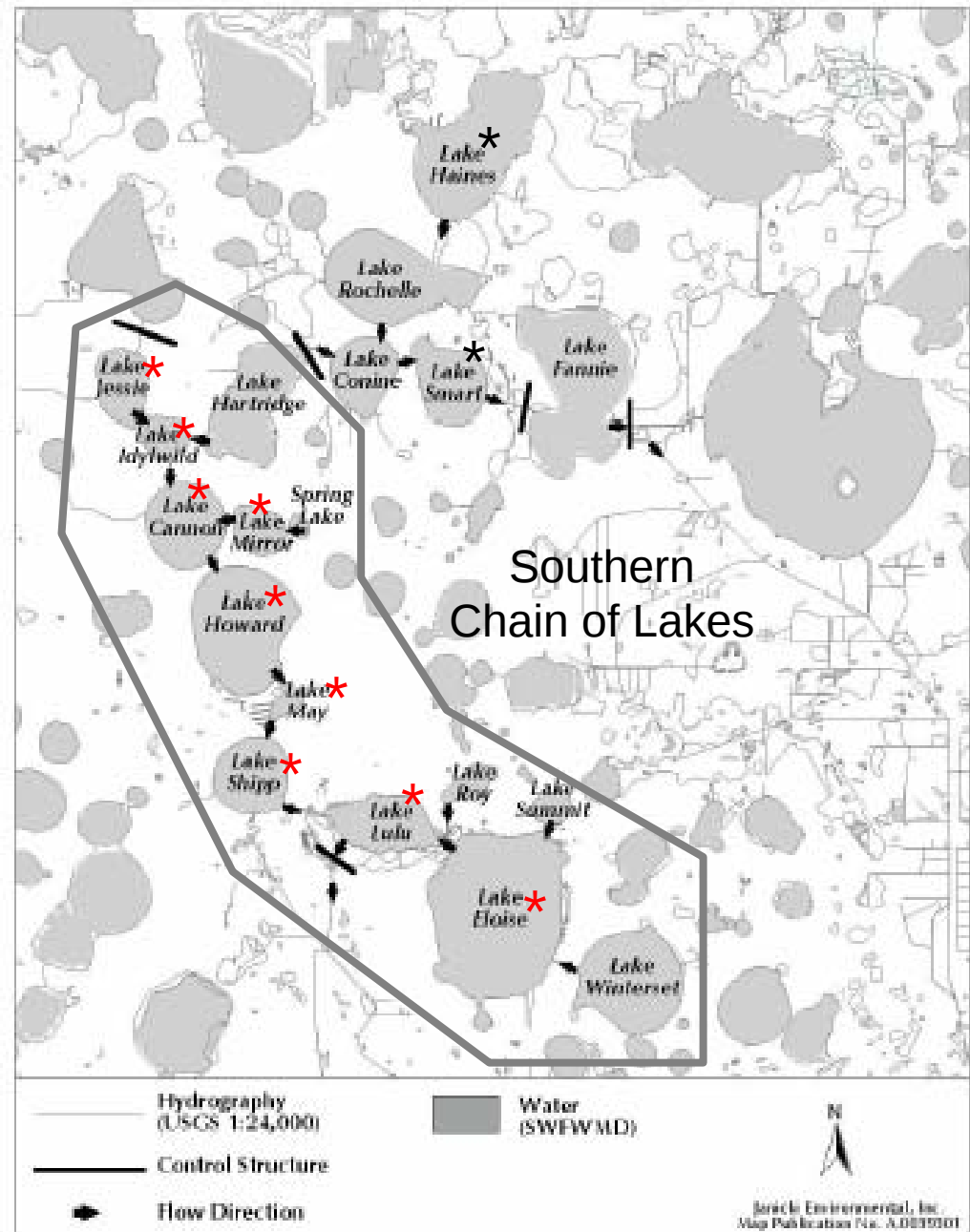
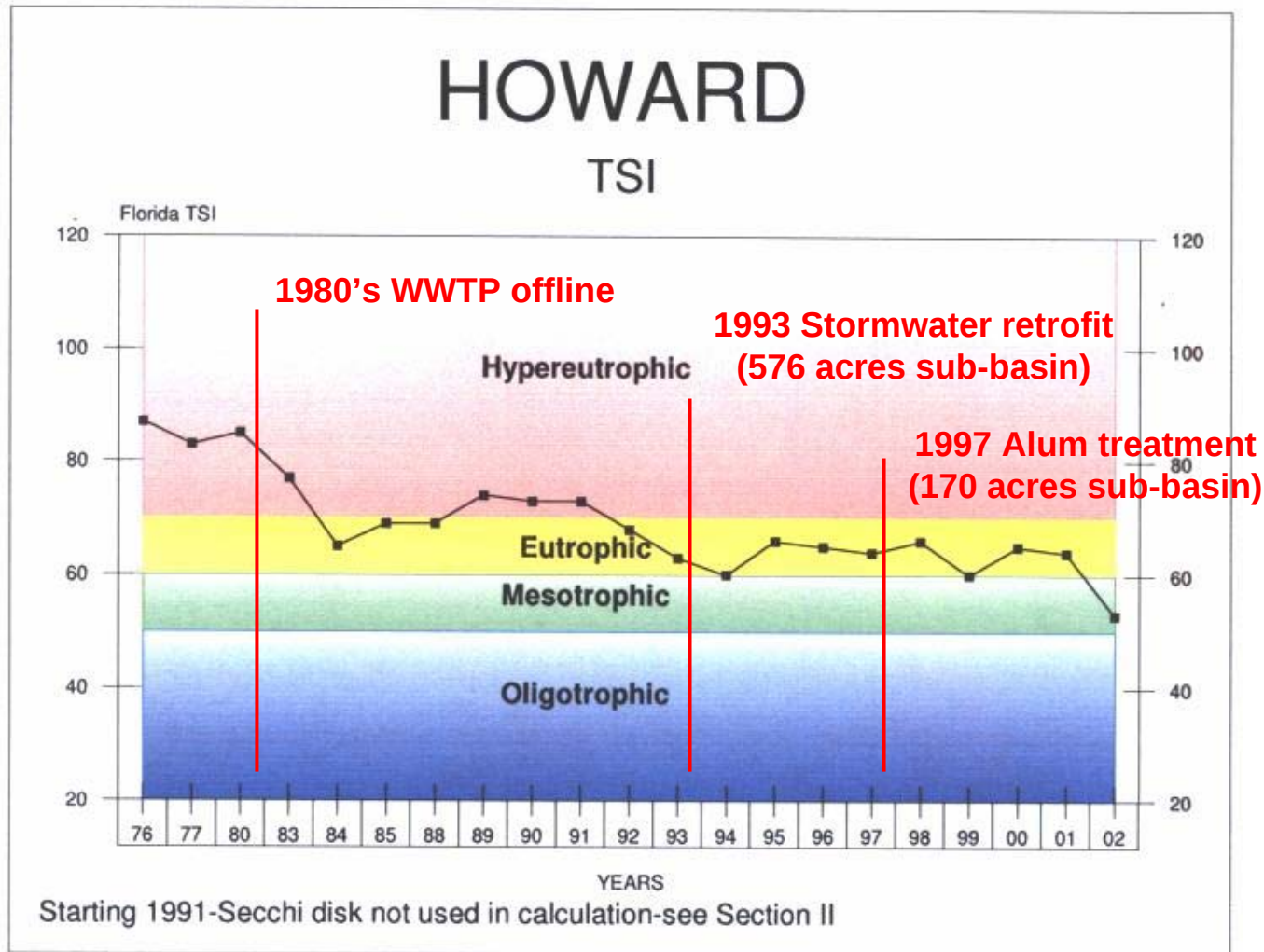


Figure 1-1. Winter Haven Chain of Lakes.

Evidence of water quality improvement in Lake Howard over the last 25 years



Links to referenced documents

- Verified List of Impaired Waters:
 - http://www.dep.state.fl.us/water/tmdl/adopted_gp3.htm
- Draft TMDL Documents:
 - http://www.dep.state.fl.us/water/tmdl/draft_tmdl.htm
- Shell Creek & Prairie Creek Watersheds Management Plan:
 - <http://www.swfwmd.state.fl.us/documents/>