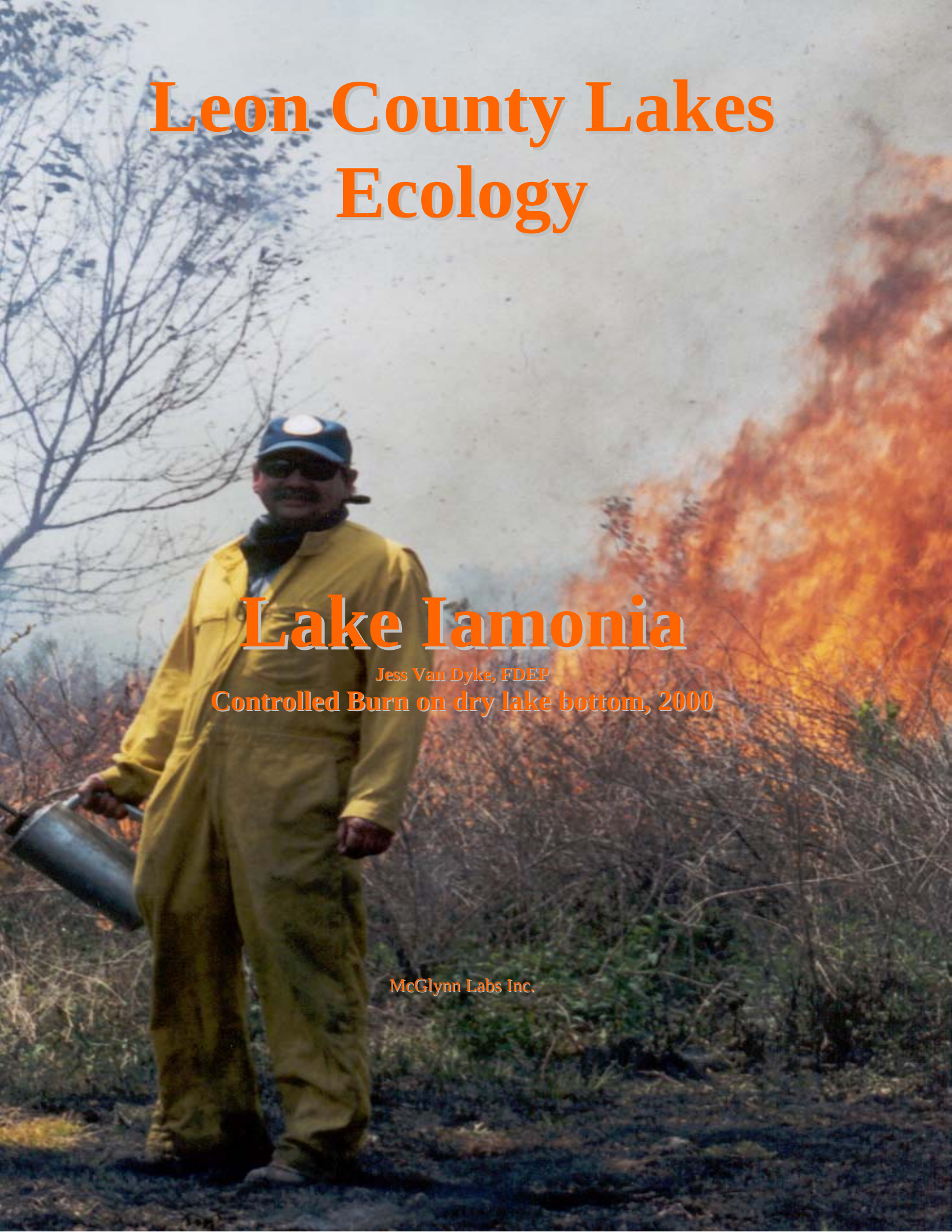
Leon County Lakes Ecology



Lake Iamonia

Jess Van Dyke, FDEP

Controlled Burn on dry lake bottom, 2000

McGlynn Labs Inc.

4.3: Lake Iamonia

Surface Area: 5757 Acres (Young and Crew, 1978)
Drainage basin: 101 square miles (Wagner and Musgrove, 1983)
Classification: Oligotrophic to Mesotrophic
Location: Tallahassee Hills
Number of Stations: 7
Duration of Monitoring: 07/98-09/04

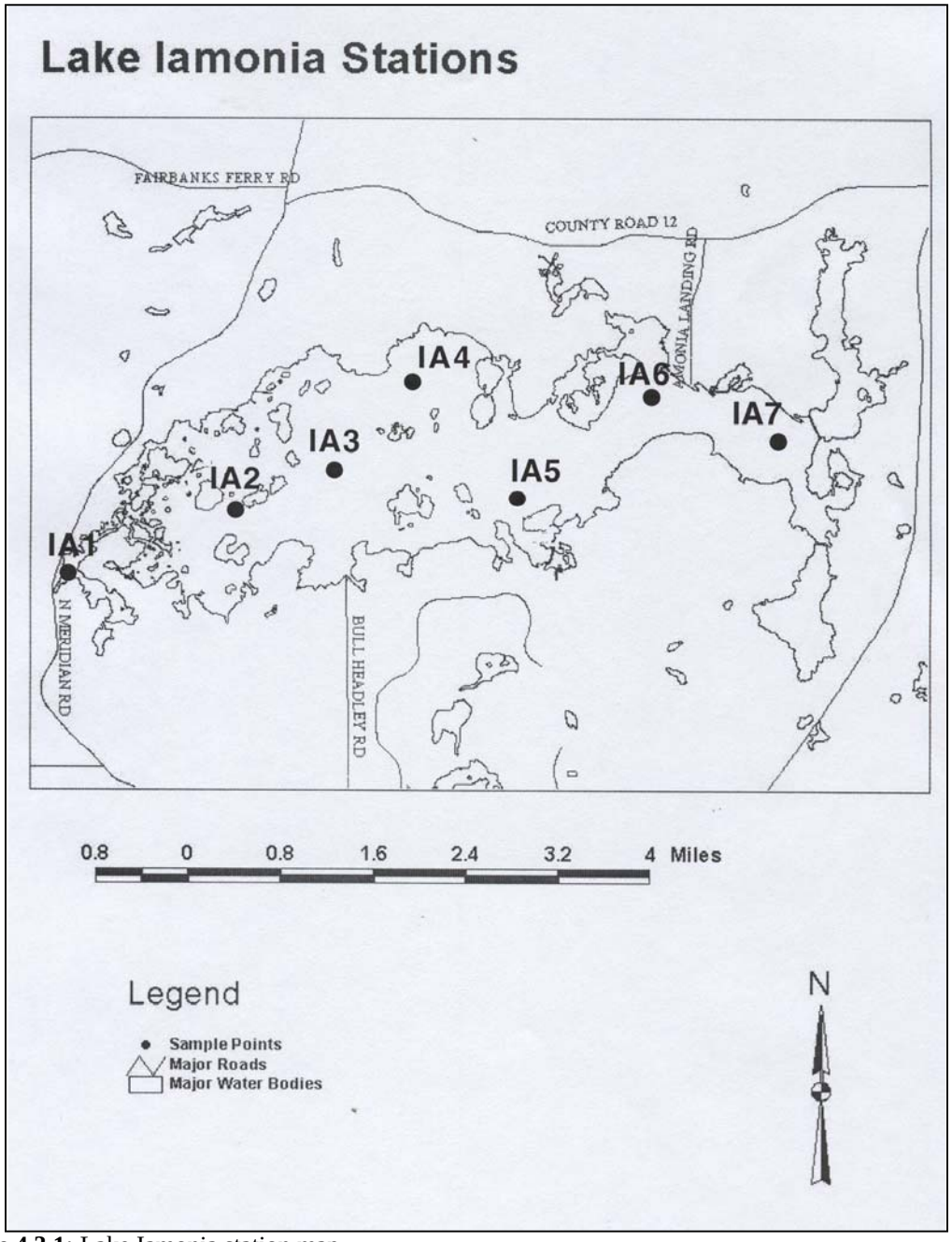


Figure 4.3.1: Lake Iamonia station map

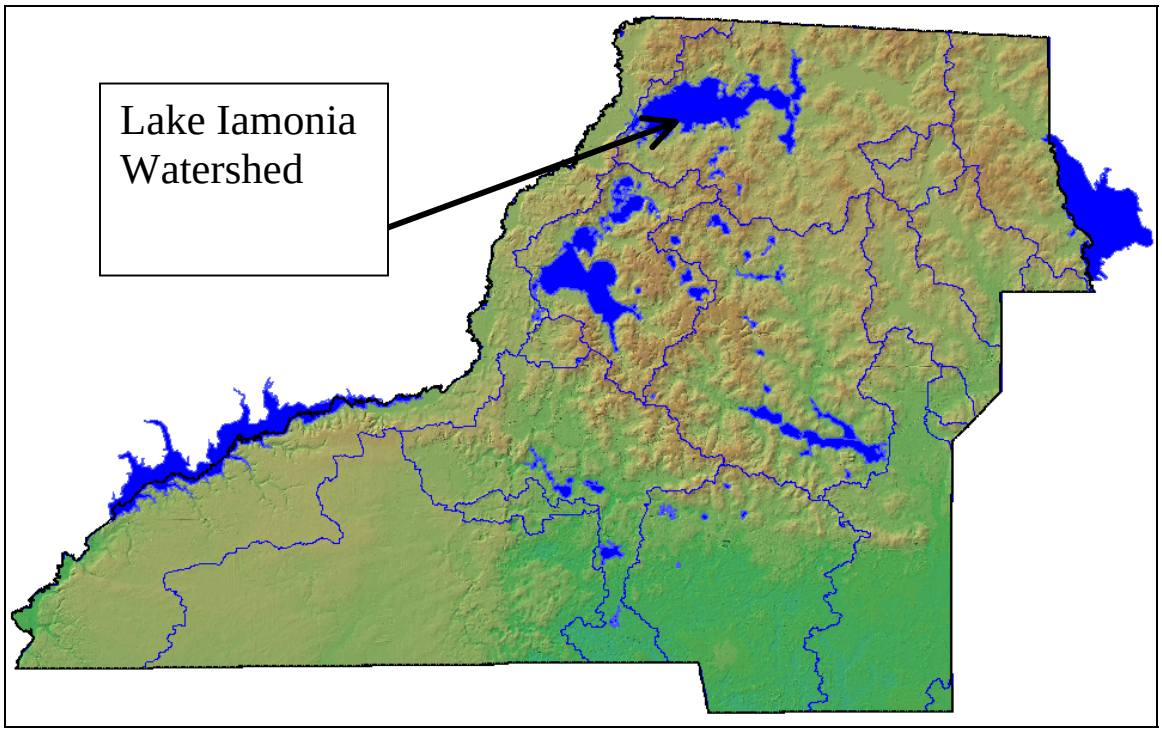


Figure 4.3.2: The Lake Iamonia Watershed is connected to the Ochlockonee River Watershed at high water through the slough system at River Ridge Plantation. Water passes under the Meridian Road Bridges and periodically fills Lake Iamonia. Map by Greg Mauldin, Tallahassee-Leon County GIS

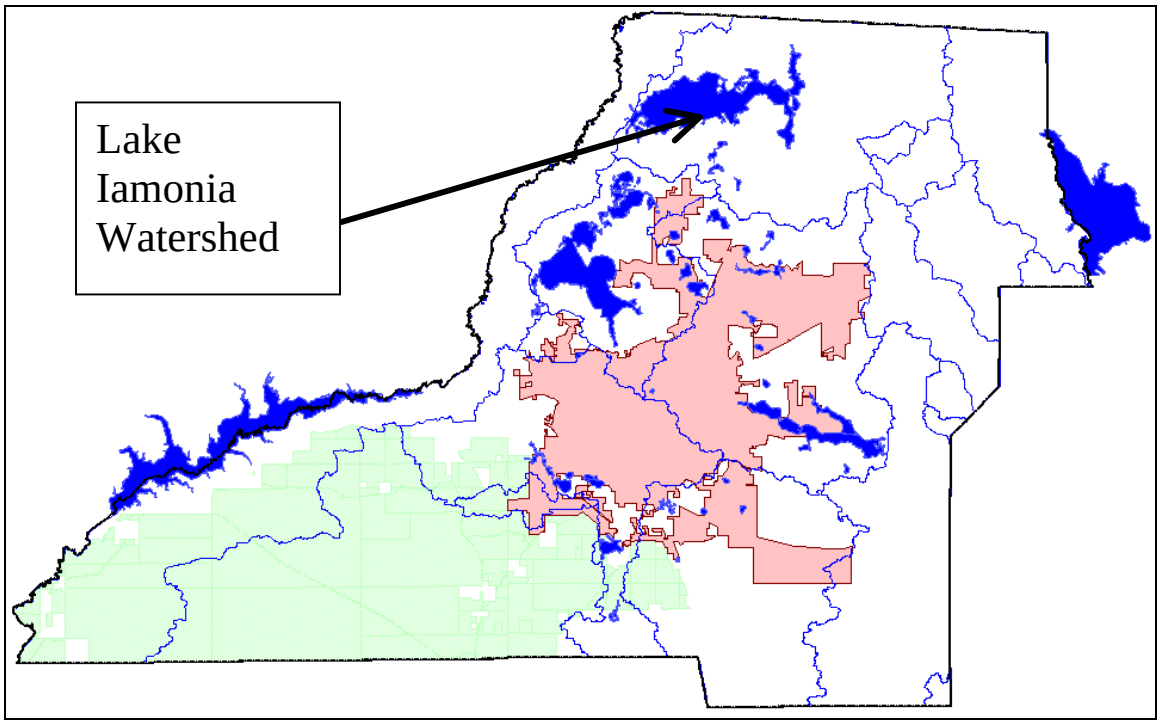


Figure 4.3.3: The Lake Iamonia Watershed is one of the few that received little stormwater from the City of Tallahassee. Map by Greg Mauldin, Tallahassee-Leon County GIS

Figure 4.3.4: View across Lake Iamonia facing north from Bull Headly to Anders Flats.

Lake Iamonia occupies 5757 acres (at 98.6 ft NGVD) in the Tallahassee Hills Region of Leon County, 12 miles north of Tallahassee and 2.5 miles south of the Georgia border. The lake is seven miles long and two miles wide. It is a shallow subtropical lake, with an average depth of less than 5 feet. When the lake is at 95 feet MGVD, 72 percent of the lake bottom is uncovered (Young and Crew, 1978). The highest elevation in the vicinity of the basin is 220 NGVD. The western end of Lake Iamonia is connected with the Ochlockonee River by a series of sloughs. The volume of water in Lake Iamonia is impacted by water from the Ochlockonee River (which is impacted by rainfall in Southwestern Georgia) and not by water in its own drainage basin.

Figure 4.3.5: Iamonia Sink as lake Iamonia is draining (2000).

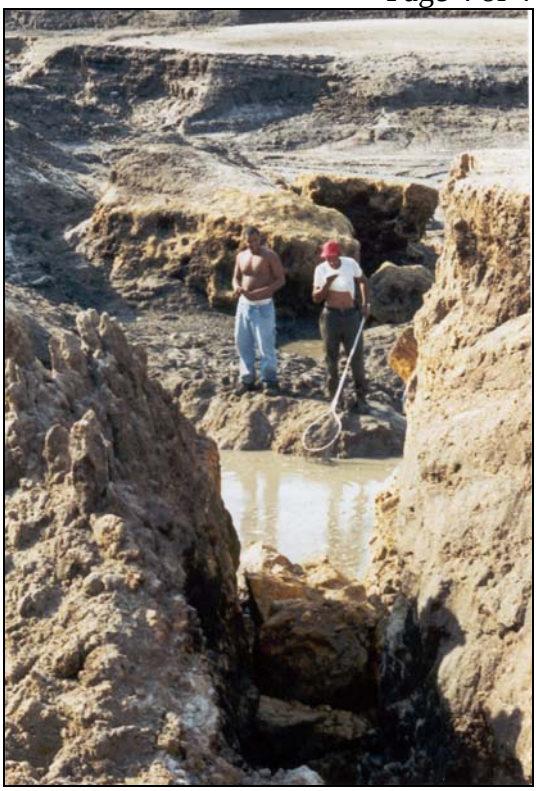


Figure 4.3.6: Iamonia Sink at the bottom (2000). Getting the last fish!

Figure 4.3.7: View of the karst depressions after Iamonia Sink went totally dry in August 2000. There were 32 different places where water was draining into the ground.

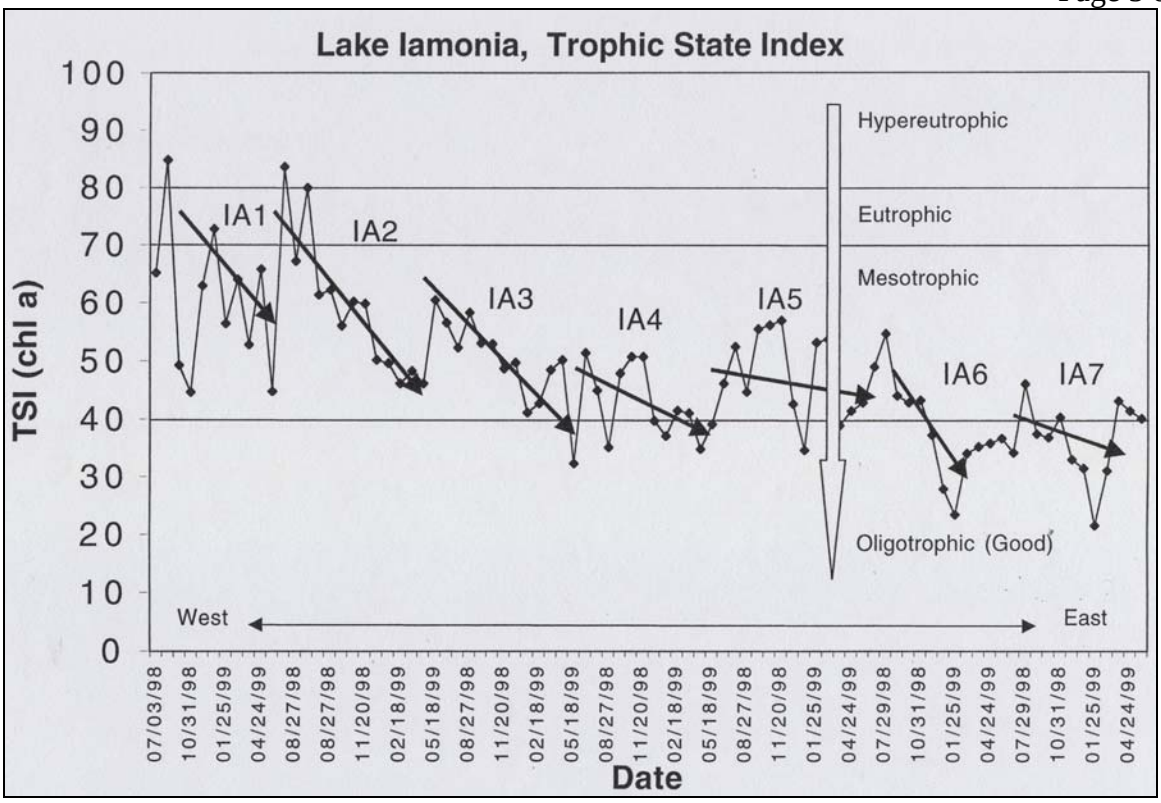


Figure 4.3.8: This graphic from before the drought shows that Lake Iamonia is quite clean on its eastern side (near Thomasville Road), with a good low trophic state index. It is borderline oligotrophic, and on that side one of the cleanest lakes in Leon County. However, the western side of Lake Iamonia, the side closest to the Ochlockonee River, is borderline Eutrophic and considered as poor water quality. This depicts the influence of the Ochlockonee River on Lake Iamonia. The Ochlockonee River normally spills into Lake Iamonia through a series of sloughs at the western end of the lake about twice a year, during tropical or later winter storms.

Early management of the lake basin emphasized agricultural usage. A dam was built across the sloughs connecting Lake Iamonia with the Ochlockonee River in 1910 to keep the river water out so that the lakebed would be dry (Sellards, 1914). The sloughs were also restricted to flowing beneath two small bridges (separated by 1850 feet of fill) under Meridian Road. These dams were built in order to keep the lake basin dry for agriculture.

Later management of the lake basin shifted to recreational usage such as boating, fishing, and duck hunting. In 1940 an earthen dike was built around the sink basin to keep water in Lake Iamonia. It was 1150 feet long, 150 feet broad at the base, 12 feet wide at the top, and 20 feet high. A concrete spillway was constructed as an overflow. 60-inch metal pipes with sluice gates were built into the earthen dikes at the sink. Sometime before 1950 additional earthen dams were built across Cromartie and Strickland Arms. The purpose of these dams was to keep water in Cromartie and Strickland Arms for the plantations.

Figure 4.3.9: An early view of the Iamonia Sink basin (November 1934, Herman Gunter). The sink basin still looked like this in 2000 when Lake Iamonia went dry again.

Figure 4.3.10: An early view from the Beadle House (taken between 1922 and 1927). Note the open water. Today there is a lot of vegetation in Lake Iamonia.

Water levels in Lake Iamonia became more stable, and initially there was an increase in recreational potential. Hunting and fishing became better and the lake was accessible to boats. However, the stable water levels allowed aquatic plants to proliferate. Lake Iamonia, especially Cromartie and Strickland Arms, began to fill with aquatic plants. By the 1970's, lake managers wanted the lake to empty again to decrease the number of aquatic plants covering the lake. Attempts were made to allow the lake to draw down. In 1978 the Florida Game and Fresh Water Fish constructed draw down structures under

both the Meridian Road bridges and the Sink Basin (Wagner and Musgrove, 1983). The weirs and gates built to control the flow of the Ochlockonee into Lake Iamonia failed repeatedly and were removed by 1980. Attempts to draw Lake Iamonia down failed until the recent drought, and Lake Iamonia finally went dry in August 2000. Extensive cypress growth along the dam around the sinkhole caused the Northwest Florida Water Management District to condemn the structure, which had become unstable because of the tree roots penetrating it. Regulators determined that it might collapse during high water. The two sluice gates on the control structure are now welded open. The sink now drains continuously, just as it did before all these structures were built. However, the sink basin is still surrounded by the dams and flow through the sloughs is restricted.

The Sink Basin has a surface area of 19.52 acres at 95 ft NGVD, and a maximum depth of 40 feet. The basin is located on the northern shore of Lake Iamonia. The control structure is now open all of the time. In 1999, during the drought Lake Iamonia remained full while lakes Lafayette and Jackson drained. Doubt that the sink was not taking in water and that declining lake levels were due to evapotranspiration led to an experimental closing of the gates to the Sink Basin in May 2000 by Michael Hill and Sean McGlynn. The water level in the Sink Basin rapidly declined when the gates were closed, evidence that the sink was actively taking water. The acceptance rate of the Sink was measured at 9.9 cfs. This was slightly higher than previous flow measurements made in 1981; 6.2, 7.4, 3.4 and 9.5 cfs (Wagner and Musgrove, 1983). It was concluded that if the sinkhole were the only means of drawing down the lake, it would take 2.5 years of extremely dry weather to achieve a 5.0 ft decline (Wagner and Musgrove, 1983). This represents a loss of 19.6 acre-ft/day, or 0.04 inches/day. Seepage was estimated at 1 acre-ft/day, of 0.5 cfs. Evapotranspiration was estimated at132.5 acre-ft/day (66.8 cfs or 0.276 inches/day). Evapotranspiration accounts for three times as much water loss as the sink.

Figure 4.3.11: Lake Iamonia did eventually go dry during the drought that began in 1999. The deep central valley in Lake Iamonia remained full of water due to a berm in the channel at the dam at the sinkhole. The purpose of this berm was to keep a minimal amount of water in Lake Iamonia for fish populations so that the lake would not need restocking. This berm may have also retained enough water in Lake Iamonia during the drought to allow the aquatic plants to survive as well.

Longtime resident Jim Hendrix, frustrated that Lake Iamonia was still dropping in water level, was arrested for closing the gates on the control structure in an attempt to keep water in the lake. His best friend Charlie Harrell, the colorful operator of the Fish Camp on Lake Iamonia, passed away in 2002; his lake was only half full…

A winter storm in March 2001 caused the Ochlocknee River to rise and flood into Lake Iamonia, and the lake got high enough to wet the bases of the cypress trees. Continuing drought conditions caused the lake to gradually drain again. The lake would have drained completely except that another winter storm in mid November 2002 caused the Ochlockonee River to flood into Lake Iamonia again, this time for four days. The lake rose 2.3 feet. Winter storms caused a lot of water to flow into Iamonia from the Ochlocknee River.

By the end of March 2003 several winter storms caused the Ochlockonee to flood into Lake Iamonia (2/16/03, 1.28 inches, 2/27/03, 3.45 inches, 3/01/03, 2.04 inches, 3/09/03, 3.21 inches of rain) and the lake re-filled. Fishermen returned to find the lake full of numerous juvenile fish. The influx of high nutrient river water propagated luxuriant aquatic plant growth that subsided in a few months. Tussocks, or floating islands, that

had been obstructing the western reaches of Lake Iamonia near the Ochlockonee River were washed into the open waters on the eastern side of the lake.

During these rains many of the septic tanks in the Killearn Lakes subdivision were found to be failing. Lester Creek, which drains the Killearn chain of lakes, has long been known to contribute pollutants to Lake Iamonia. Algal blooms occurred in Lester Cove.

Agricultural water usage in Georgia consumes a lot of water in the Ochlocknee River Drainage Basin during the growing season. There is also evidence that the slough system connecting Lake Iamonia with the Ochlocknee River may be altered by an access road for the pipeline. There are only three small culverts under this road allowing exchange of water at moderate flows on the Ochlocknee River. The diameter of the slough is still constricted at the Meridian Road bridges.

Lake Iamonia is a valuable Leon County aquatic resource. It has suffered decades of abnormally high levels of plant growth due to nutrient enrichment from the Ochlockonee River and other nutrient sources. Future efforts need to be taken to protect this lake from pollutants from the Ochlockonee River, residential developments whose stormwater facilities function inadequately, and wastewater spray fields. The hydrological connection between Lake Iamonia and the Ochlockonee River is necessary to maintain water levels in Lake Iamonia. Therefore, Leon County needs to protect the slough system and ensure that there is adequate flow of good quality water in the Ochlockonee River to keep Lake Iamonia full.

Figure 4.3.12: An algal bloom in Lester Creek inlet in Lake Iamonia (photo by Michael Hill, 11/03)

Figure 4.3.13: The same algal bloom further into lake Iamonia in Lester Cove (photo by Michael Hill, 11/03)

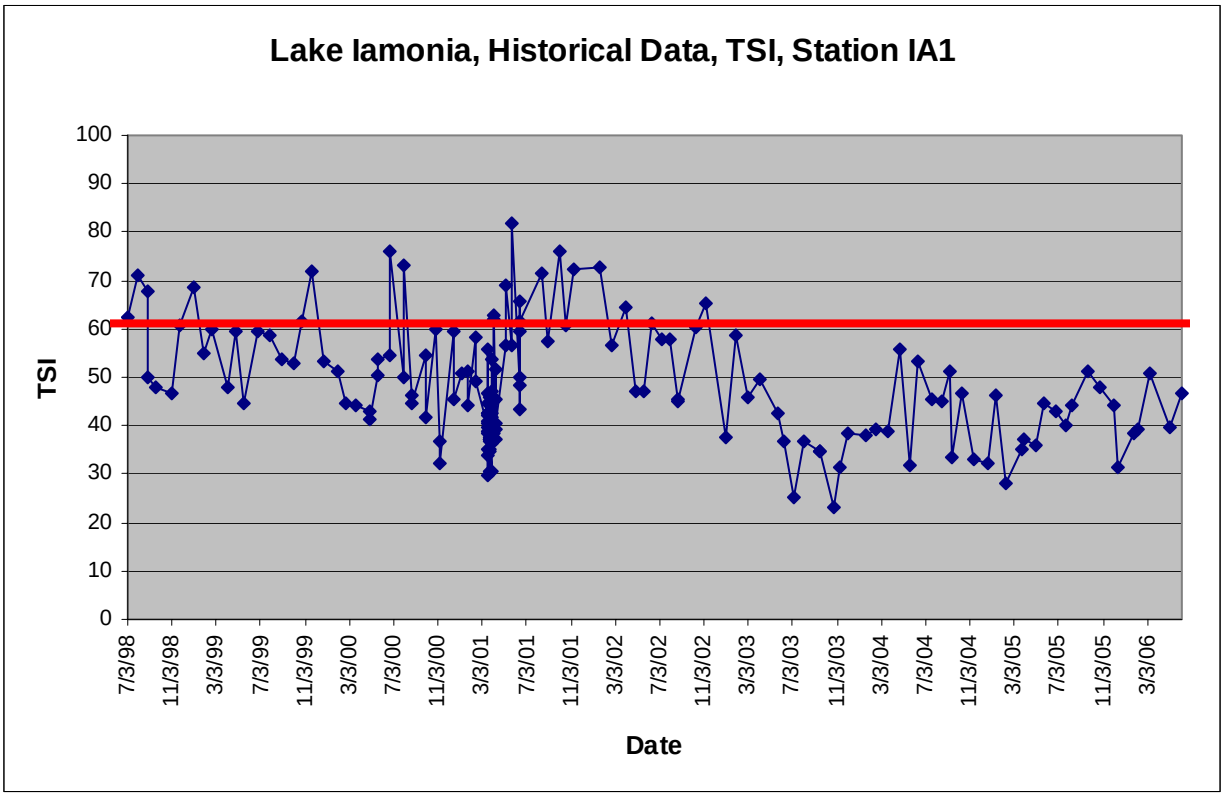


Figure 4.3.14: Lake Iamonia, Station IA1, at the slough connecting the lake to the Ochlockonee River,
Tannic lake,
According to FDEP criteria this lake would be impaired at TSIs greater than 60 units,
Data source LCL Data (McGlynn Laboratories Inc).
Data duration: 07/98-09/04

*** Result: not impaired and stable.**

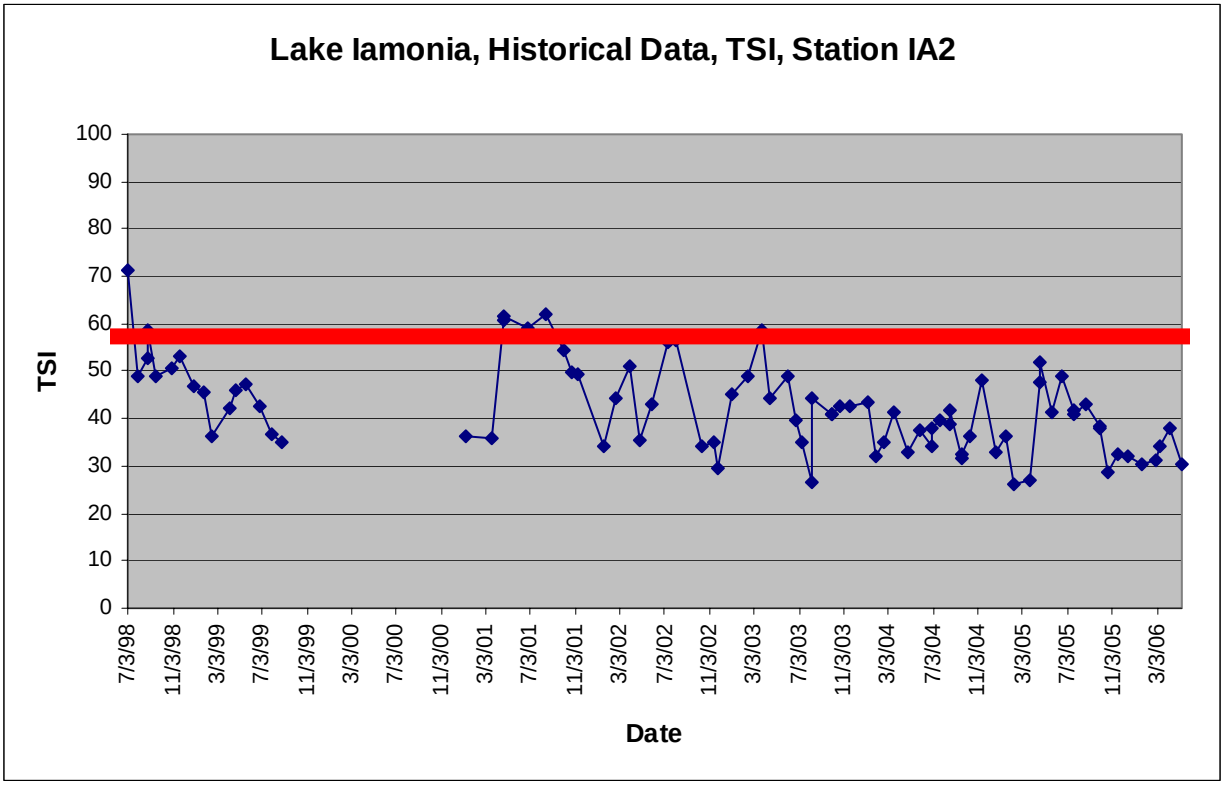


Figure 4.3.15: Lake Iamonia, Station IA2
Tannic lake,
According to FDEP this lake would be impaired at TSIs greater than 60 units,
Data source LCL Data (McGlynn Laboratories Inc).
Data duration: 07/98-09/04

*** Result: not impaired and improving.**

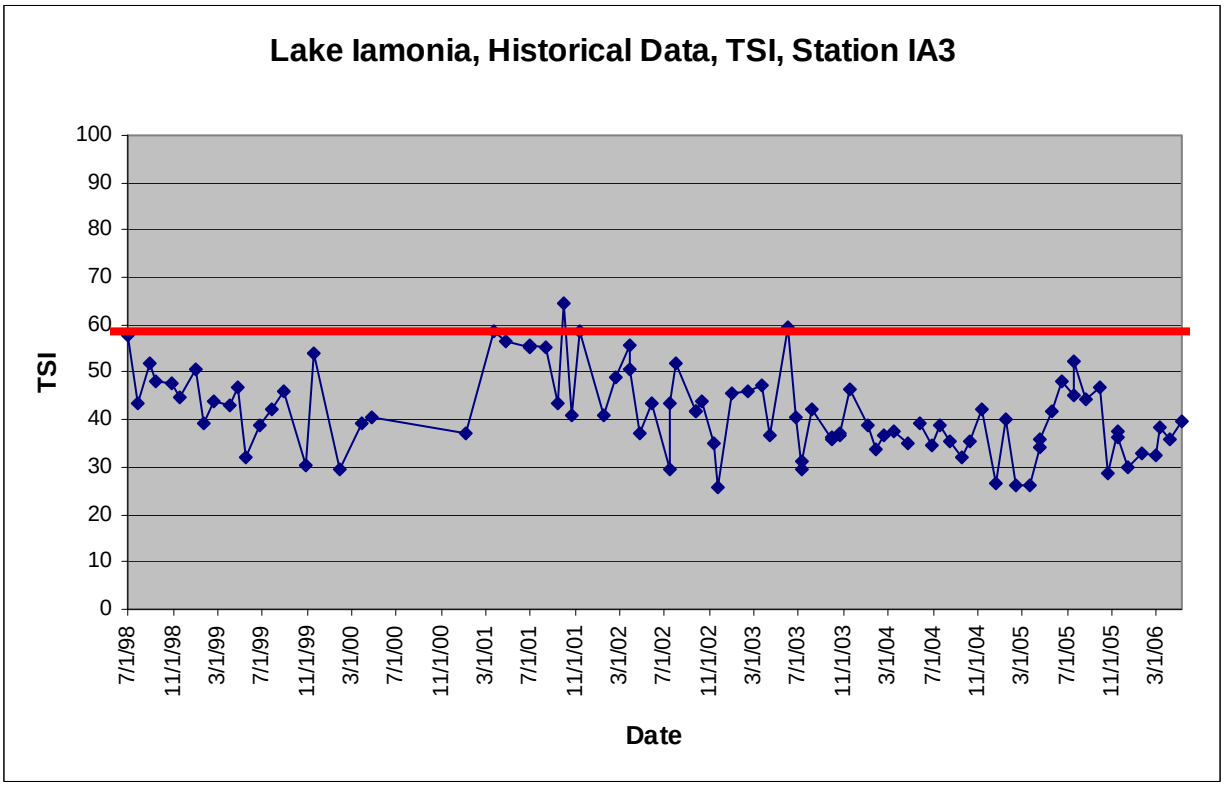


Figure 4.3.16: Lake Iamonia, Station IA3, near Bull Headly
Tannic lake,
According to FDEP criteria this lake would be impaired at TSIs greater than 60 units,
Data source LCL Data (McGlynn Laboratories Inc).
Data duration:07/98-09/04

*** Result: not impaired and stable.**

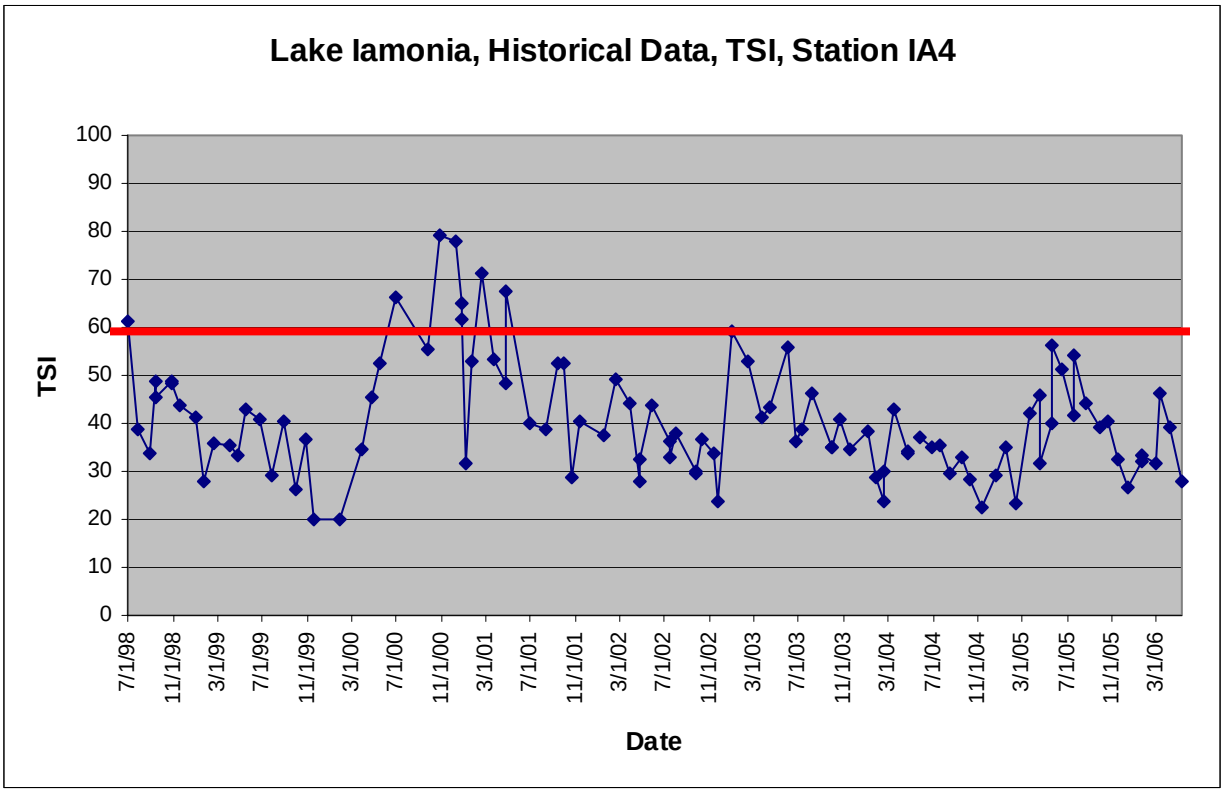


Figure 4.3.17: Lake Iamonia, Station IA4, Anders Flat,Tannic lake,
According to FDEP criteria this lake would be impaired at TSIs greater than 60 units,
Data source LCL Data (McGlynn Laboratories Inc).
Data duration: 07/98-09/04

*** Result: not impaired and improving (note drought effects, 2000-2001).**

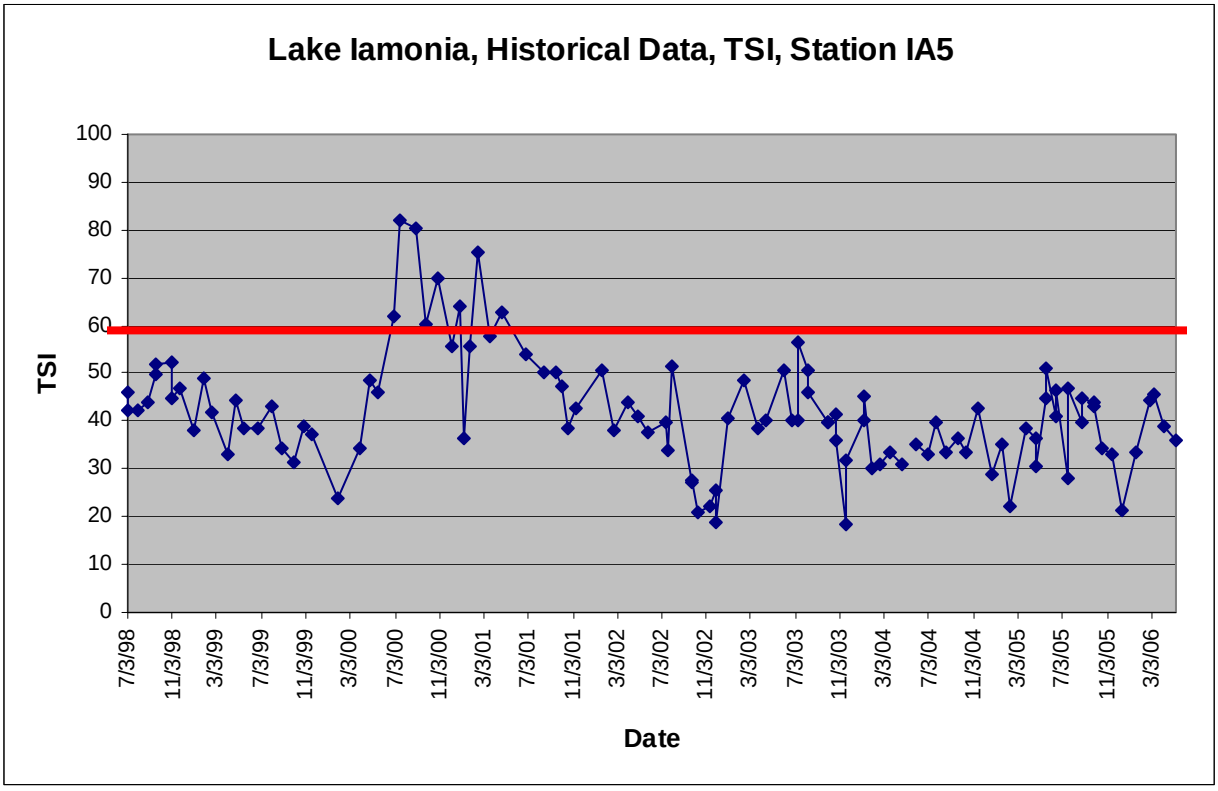


Figure 4.3.18: Lake Iamonia, Station IA6,
Tannic lake,
According to FDEP criteria this lake would be impaired at TSIs greater than 60 units,
Data source LCL Data (McGlynn Laboratories Inc).
Data duration: 07/98-09/04

* **Result: not impaired and improving (note drought effects, 2000-2001).**

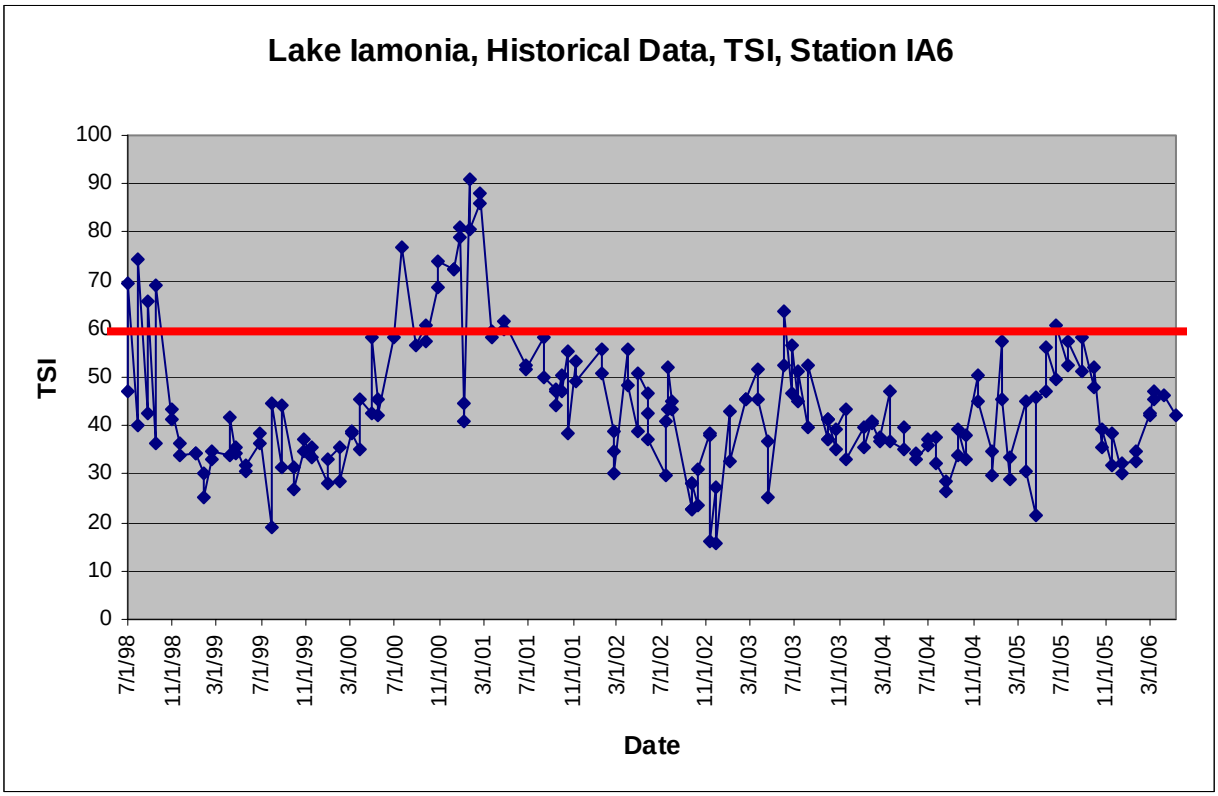


Figure 4.3.19: Lake Iamonia Station IA6, near Tall Timbers Research Station, Tannic lake,
According to FDEP this lake would be impaired at TSIs greater than 60 units,
Data source LCL Data (McGlynn Laboratories Inc).
Data duration: 07/98-09/04

*** Result: not impaired and improving (note drought effects, 2000-2001).**

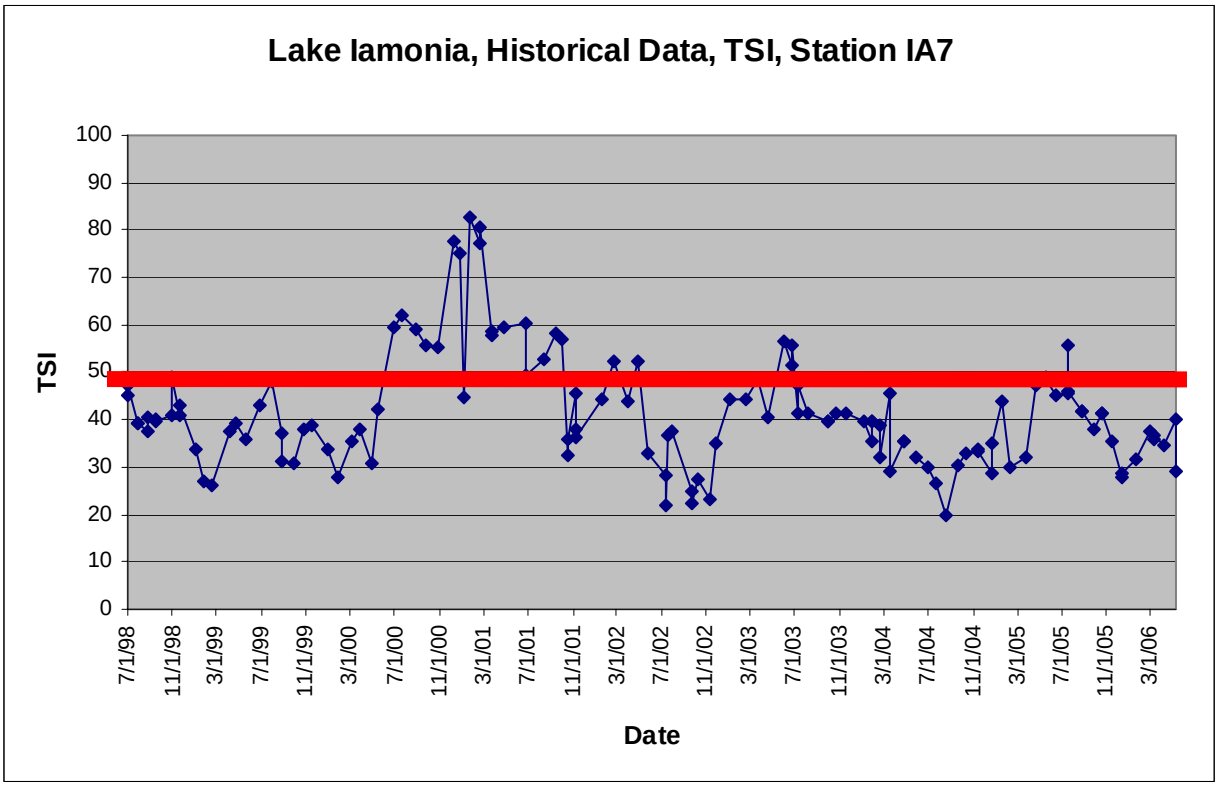


Figure 4.3.20: Eastern Lake Iamonia, Station IA7, at the eastern end Tannic lake, According to FDEP criteria this lake would be impaired at TSIs greater than 60 units, Data source LCL Data (McGlynn Laboratories Inc).
Data duration: 07/98-09/04

*** Result: not impaired and improving (note drought effects, 2000-2001).**