

Springs in the Suwannee Basin

Springs are amazing, natural works of art. They act as ground water tributaries to Florida's rivers. The Suwannee Basin is unique due to the number of springs along its shores. These springs play a critical role during periods of drought as at least 50% of the base flow of the Suwannee is provided from these groundwater tributaries. In addition to their contribution to the flow and health of the Suwannee, springs give us a window into the health of our drinking water in North Central Florida.

Springs are fed by local aquifers that are in turn fed by rainfall. If pollution sources are present and excess nutrients are allowed to "flush" into the local groundwater, our drinking water is polluted and our springs and river carry the pollution to the springs.

"The Suwannee River, important historically and recreationally, is of great interest to the State of Florida and has been designated as an "Outstanding Florida Water. Of particular interest to water-resource agencies is the increase of nitrogen in this valuable river, especially during periods of base flow. For 20 years (1971-91), nitrate concentrations in the Suwannee River near Branford, Fla., increased at a rate of 0.02 mg/L per year; the median nitrate concentration for that period was 0.5 mg/L (Ham and Hatzell, 1996). Possible sources for nitrate in ground water in the study area are septic tanks, synthetic fertilizers, and animal waste (Andrews, 1994).

The Suwannee River recharges and receives discharge from the Upper Floridan aquifer, the primary source of public and private water supply in the Suwannee River Basin and the surrounding areas.. In the northwestern part of the basin in Georgia, direct surface runoff is a significant source of inflow to the basin. In the northeastern and southern parts of the basin, inflow to the river is predominantly from numerous springs and upward diffuse leakage of ground water through the riverbed (riverbed leakage).

Base flow in rivers occurs during natural conditions when ground-water discharge to the river is the primary source of flow. Ground-water influence on water quality in the river is more pronounced during base flow and in the river reaches having the greatest number of springs and the least tributary inflow (Hull and others, 1981). The Suwannee River directly recharges ground water in the Upper Floridan aquifer when river levels are above the adjacent ground-water levels. The pattern reverses during periods of base flow, when the groundwater levels are above the river water levels and ground-water" Excerpted from USGS Water Resource Investigations Report #97-4152 (Pittman and others, 1995).

There are 187 springs identified in a 1998 survey in the Suwannee River Basin. There are 18 first magnitude, 87 second magnitude, 57 third magnitude, 34 fourth magnitude, and 1 spring which had no flow. The nitrate-nitrogen concentrations ranged from 0.01 to 19.2 mg/L. The EPA Drinking Water Standard of 10 mg/L. The springs discharge a combined total of 7,296.41 cubic feet per second or 4,669.70 million gallons per day. (SRWMD Web Page)

<u>First Magnitude Springs</u>	<u>Flow in cubic feet per second</u>
Alapaha Rise	800.4
Lafayette Blue Spring	162
Madison Blue Spring	120
Blue Hole Spring	106.2
Columbia Spring	305.97
Devil's Ear Spring	120
Falmouth Spring	125
Fanning Spring	109
Holton Creek Rise	167
Hornsby Spring	352.02
July Spring	117
Lime Sink Run Spring	173.25
Manatee Spring	142
Santa Fe Rise	442.05
Troy Spring	137.58
ALA 112971	405.96
COL 61981	149.99
GIL 1012973	370

Some second and third magnitude springs located in public use areas are the Ichetucknee Springs Group, Rum Island Spring, Poe Spring, Ginnie Spring, Blue Spring-Gilchrist, Hart Spring, Little River Spring, Peacock Spring, Ruth Spring,

Royal Spring, Charles Spring, Telford Spring, Cow Spring, Running Spring, Anderson Spring, Edwards Spring, Suwannacoochee Spring and Guaranto (Gornto) Spring.

Water quality trends in the springs have been declining steadily due in part to intensive agriculture and also from a rising trend residential growth in sensitive areas of the basin. Excessive nutrients cause native submerged aquatic vegetation to be replaced by explosive growth of nuisance and sometimes-toxic filamentous algae.

Links to Technical Documents

Florida Geological Society Bulletin 66 – Springs of Florida

<http://www.dep.state.fl.us/geology/geologictopics/springs/bulletin66.htm#alachua>

Water Quality in the Georgia-Florida Coastal Plain 1992-1996 - USGS

<http://pubs.usgs.gov/circ/circ1151/nawqa91.5.html>

Spring Contributions to Water Quantity and Nitrate Loads in the Suwannee River during Base Flow in July 1995

http://fl.water.usgs.gov/PDF_files/wri97_4152_pittman.pdf

Springs Technical Information

<http://www.srwmd.state.fl.us/water+data/springs/technical+info.htm>

Florida Springs Task Force - DEP

<http://www.floridasprings.org/protection/taskforce/>

Springs Biology

<http://www.srwmd.state.fl.us/water+data/springs/springs+biology.htm>

Exploring our Springs

<http://www.floridasprings.org>

What is a spring

<http://www.srwmd.state.fl.us/water+data/springs/what+is+a+spring.htm>

Other links:

Springs locator

<http://www.srwmd.state.fl.us/water+data/springs/enjoying+our+springs.htm>

Public Access Springs in the Suwannee River Basin

<http://www.dep.state.fl.us/springs/locator/Springmap2.htm>

Pictures and Information

<http://tfn.net/Springs/Springbook/index.html>

Springs Locator

<http://www.srwmd.state.fl.us/water+data/springs/default1.htm>

Troy Springs State Park

<http://www.floridastateparks.org/troyspring/default.cfm>

Manatee Springs State Park

<http://www.floridastateparks.org/manateesprings/default.cfm>

Lafayette Blue Springs State Park

<http://www.floridastateparks.org/lafayettebluesprings/default.cfm>

Fanning Springs State Park

<http://www.floridastateparks.org/fanningsprings/default.cfm>