1994 WATER QUALITY ASSESSMENT
FOR THE
STATE OF FLORIDA

TECHNICAL APPENDIX

Submitted in accordance with the
Federal Clean Water Act
Section 305(b)

November, 1994

Standards and Monitoring Section
Bureau of Surface Water Management
Division Of Water Facilities

TABLE OF CONTENTS

PREFACE

This report is produced to inform Floridians and the EPA about surface water quality conditions and trends in Florida. Originally produced in 1978, this report has been updated every two years since, and has gone through many changes. The items listed below identify the major format changes which distinguish this report from its predecessor.

0 Reeional Reports - The large size of the statewide report (550 pages) necessitated its subdivision into 5 regional reports which correspond roughly with Department of Environmental Protection District Office boundaries (South and Southeast District Office reports are under one cover).

0 Watersheds versus Reaches - In 1992 the State's rivers, lakes and estuaries were subdivided into 1600 'reaches' and the assessment was based on this reach structure, however much of the State's waters were not contained within the reaches. For 1994, the assessed area has been enlarged to cover the entire State by dividing the State into 4400 watersheds. The original 1600 reaches remain pretty much intact within the new watersheds, and the terminology now includes watershed and waterbody rather than reach.

* ARC/INFO Water Ouality Color Maps GIS techniques were used to produce color maps depicting water quality (designated use support) in each river basin. Watersheds were color coded based on good, threatened, fair or poor water quality designations.

0 New Nonvoint Source Oualitative Surny - A nonpoint source qualitative survey was performed in 1988 and has been updated and included in this report for 1994. The survey used the same watersheds which were used to assess the water quality data and the qualitative results were integrated into this report to both supplement the quantitative information and to provide information when no quantitative information was available.

0 Current versus Historic Data - Water quality data were examined for two time periods: current data from 1989-1993 and historic data from 1970-1988. Historic data were used to assess waterbodies only when there was no current data available.

ACKNOWLEDGMENTS

We would like to express our gratitude to all of the professionals that supplied us with water quality data and reports, responded to surveys, and answered telephone inquiries concerning the status of waterbodies in their area. The quality of this report has been greatly enhanced by their efforts.

Many individuals in the District Offices reviewed the report on their sections of the State. These individuals include Rick Bradburn, Glenn Butts, Donald Ray, and Tone Touart-Rohlke -in the Northwest District; Cathy Krestalude, Ernie Frey, Lee Banks, Angela Halfacre, and Jim Wright of the Northeast District ; Eric Pluchino and Dave Aerbster of the Central District; Paul Wierzbicki, Herb Zebuth, and John Moulton of the Southeast District; Gordon Romeis of the South District, and Pat Fricano of the Southwest District . Sid Flannery of the Southwest Florida Water Management District also reviewed the report for his area.

The Nonpoint Source Stormwater Section put in a tremendous amount of work on the 1994 Nonpoint Source Assessment Survey. This team included Kent Cain, Ellen McCarron, and Mke Scheinkman. Don Foose, recently retired from the USGS , spent four years delineating and digitizing the new watersheds. Bernadette Howe, formerly with the St. Johns River Water Management District, provided much of the foundation work on GIS techniques for handling watersheds and water quality data and mapping the information.

Several of the DEP Tallahassee staff are to be thanked for their support and review of the final document including Don Axelrad, Vivian Garfein, Mark Latch and Richard Harvey, and Machelle Jannon, who produced numerous draft copies of this text.

List of Abbreviations

AWT	advanced wastewater treatment
BAS	DEP basin water quality study
BMPs	best management practices
BOD	biochemical oxygen demand
cfs	cubic feet per second
DEP	Department of Environmental Protection
DO	dissolved oxygen
FAA	Everglades Agricultural Area
EPA	Environmental Protection Agency
FGFWFC	Florida Game and Fresh Water Fish Commission
MGD	millions of gallons per day
NPDES	National Pollutant Discharge Elimination Systern
NPS	nonpoint source
NWFWMD	Northwest Florida Water Management District
OFW	Outstanding Florida Waters
REACH	an EPA-designated waterbody or portion of a waterbody
SFWI,4D	South Florida Water Management District
SJRWMD	St. Johns River Water Management District
SRWMD	Suwannee River Water Management District

STORET	EPA's water quality data STOrage and RETrieval system
SWFWMD	Southwest Florida Water Management District
swim	Surface Water Improvement and Management
TKN	total Kjeldahl nitrogen (organic nitrogen and ammonia)
TSI	trophic state index
WLA	wasteload allocation
WMD	Water Management District
WQI	water quality index
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY/OVERVIEW

The 305(b) Technical Report provides useful surface water quality related information in a fonnat that is helpful to managers, planners, permit staff, and laymen, as well as water quality experts. For each of the 52 basins, a narrative summary, a map, and data tables identify the quality and trends of Florida's waterbodies, the causes of water quality problems, and the present regulatory activities conducted by DEP and EPA to improve the problem areas. It is the most widely circulated water quality assessment in the State, and also serves as the support document for the Surface Water Section of the 1994 305(b) Water Qualily Assessment Main Report submitted to EPA,

The assessment required analysis of the available STORET water quality data for the 1970-1993 time period (STORET is EPA!s computerized water quality database). Data from approximately 4,000 stations are assessed in this report, necessitating the extensive use of computerized assessment techniques. Water quality assessment techniques used to identify problem areas included: water quality indices, screening level exceedances, statistical trend analysis, information from special studies, and interviewing local experts. The 305(b) assessment also includes information from the 1994 DEP Nonpoint Source Assessment Survey (which is based on the responses of 50 Florida agencies).

Statewide Results From the Main Report

In the 1992 305(b) assessment report, Florida was subdivided into 1600 reaches which were based on EPA's RF2 (river reach file #2). A reach was defined as a 5 mile long section of river, or 5 square mile section of lake or estuary. Only major waterbodies were assessed in the 1992 report due to the resolution limitations imposed by the RF2 file. For 1994, Florida has been subdivided into 4400 watersheds based on EPA's RF3 and USGS watershed delineations. Many more miles of Florida waterbodies were assessed (50% more river miles, 30% more lake miles, and 20% more estuary miles) due to the increased number of watersheds available for assessment and due to efforts to collect more ambient data and store the data into STORET. Table I and Figure I show the mileages of Florida waters which were assessed in this year's report. A striking feature shown in Figure I is that 77% of river miles have unknown quality. This large percentage is due to the fact that EPA classified Florida's many ditches and canals as rivers, which were not assessed in this report.

A quantitative summary of the State's water quality was accomplished by determining the degree of designated use support for the. different waterbody types. The vast majority of assessed Florida waterbodies meet or partially meet'their designated use (92% of the river miles, 8 1 % of the lake miles, and 96% of the estuary miles). Figure 2 shows that the river and estuary results are fairly similar, however the lake results show generally worse overall quality than the rivers and estuaries with fewer miles in the "meets use" category and more miles in the "does not meet use" category.

Inter6 stingly enough, this year's lake assessment brought in many more small lakes with good overall quality, however, Florida's largest lakes (Lake Okeechobee and Lake George) still overwhelm the State average with their large mileages of fair to poor quality.

A

It is very important to address both the sources of pollution and trends in water quality. In the past, the majority of identified water quality problems in the State were caused by point sources, including both domestic and industrial sources. Recently, however, nonpoint sources accounted for the majority of Florida's water quality problems. This is due to the fact that point source treatment processes have improved while there has been an increase in acreage of agricultural and urban developed land and their associated runoff.

Water quality trend analysis was performed on waterbodies which had sufficient data for analysis (467 out of 4400 waterbodies). The majority (.70%) of these waterbodies (as seen in Figure 3) exhibited no significant trends. Five times as many waterbodies (24%) have improving. water quality trends as have degrading trends. The improved water quality trends were generally the result of wastewater treatment plant upgrades or the additions of new regional WWTPs and nonpoint source controls in Tampa, Orlando and several other cities (as seen-in Figure 4). Five percent of the waterbodies assessed for trends showed degrading trends; however, there are no regional patterns for degrading trends similar to the improving trends. The causes of degrading trends included point sources and nonpoint sources. Statewide trend detection is limited for the following reasons:

I . Only one-tenth of the waterbodies are assessed for trends.
2. The primary focus of our monitoring network is not trend assessment; most of our stations are frequently moved, and there are very few sites with long-term, monthly data.
3. Our trend assessment technique is tailored to the problem identified in #2, thus, it only identified relatively drastic changes in water quality. Subtle water quality changes due to population growth or nonpoint source treatment improvements are not picked up by this analysis.

Table 1. Mileages of Florida Waters Assessed

	Monitored 1.	Evaluated 2.	Unknown 3.	Total
River (miles)	7,025	4,855	39,9782.	51,858
Lake (sq. miles)	1,541	400	124	2,064
Estuary (sq. miles)	2,417	L290	347	4,054

1. Monitored data includes 1989-1993 STORET data.
2. Qualitative information or older STORET data (1970-1988)
3. This number includes 25,909 miles of ditches and canals which have not been assessed.

Table 2. Overall Designated Use Support Summary

RIVERS	(All size units in Miles)		
Degree of use support	Evaluated	Monitored	Total
Fully Supporting	1116	4378	5495
Supporting but Threatened	2259	0	2259
Partially Supporting	1139	2093	3232
Not Supporting	342	554	895
Total Size Assessed	4856	7025	11881

LAKES	I _size units in Sqiqare Mile!)--		
begr@e of use support	Evaluated	Monitored	Total
Fully Supporting	213	494	707
Supporting but Threatened	100	0	100
Partially Supporting	53	714	766
Not Supporting	34	332	366
Total Size Assessed	400	1541	1940

ESTUARIES	(All size units in Square Miles)		
Degree of use support	Evaluated	Monitored	Total
Fully Supporting	501	1427	1928
Supporting but Threatened	402	0	402
Partially Supporting	358	851	1209
Not Supporting	28	139	167
Total Size Assessed	1290	2417	3707

Evaluated means qualitative information or older STORET data (1970-1988).
Monitored means recent STORET data (1989-1993).

FIGURE i. MILES MONITORED, EVALUATED AND UNKNOWN

77

80

60

70

....

60 47

....

....

8MONITORED

.... 41

U. uj

13EVALUATED

IL 40 IZ

.....

.....

GUNKNOWN

....

uj -4 30. ... .

co

8

20

Lu

CL 10

RIVERS LAKES

ESTUARIES

FIGURE 2. DESIGNATED USE SUPPORT IN FLORIDA WATERBODIES

65
70-
63
60,Z
50V
42
0
39
1@-
IMYES
u.
40V
0
z
30-Z
Lu
20-z
UA
IL
10-
4
....
0-
RIVERS
LAKES
ESTUARIE S

FIGURE 3. TEN YEAR WATER QUALITY TREND ANALYSIS FOR FLORIDA WATERBODIES (1984-1993)

80-
72
68
w 70-
0 60-
50-Z
....
.... -..

....

13 RIVER

40-'Z

0 LAKE

....

U.

0

24 23

El ESTUARY

....

30-

....

z

uj

20-Z

6

....

ui

....

IL 10V

4

....

...

....

. . .

. . . .

0-   -

BETTER

NO CHANGE

WORSE

WATER QUALITY TREND

10 year water quality trend
Better
No change
Worse

Figure 7. Locations of Water Quality Trends in Florida Waters (1984-1993).

Florida's surface water quality is displayed on the map on the cover of the main report. Two important conclusions can be drawn from this figure: first, the majority of Florida's surface water has good quality; and second, the majority of problems are found in Central and South Florida.

The sparsely populated northwest and west-central sections of the State have relatively better water quality than other areas. Water quality problem areas in the State are evident around the densely populated, major urban areas including: Jacksonville, Orlando, Tampa, Pensacola, the Cape Kennedy area and the southeastern Florida coast. Other areas of poor water quality, not associated with population, are found in basins with intense agricultural usage.

Pollution sources and problems in Florida are varied. The State does not have extensive industrialization, but rather localized concentrations of heavy industry centered mostly in urban areas. Many of the problems found in surface waters in urban areas can be attributed to industrial discharges. Silviculture, agriculture and various types of animal husbandry are a large part of Florida's current and historical economy. Furthermore, Florida has undergone rapid population growth over the past two decades and this continues. This has resulted in more pollution sources associated with residential development.

Florida@s major surface water quality problems can be summarized into five general categories:

I . Urban Stormwater. Stormwater carries a wide variety of pollutants from nutrients to toxicants. Siltation and turbidity associated with construction activities can also be a major problem. Problem areas are concentrated around urban centers and mirror, quite well, the population map of the State. Current stormwater rules and growth management laws address this problem for new sources, but are difficult to monitor and enforce.

2. Agricultural Runoff. The major pollutants involved include nutrients, turbidity, BOD, bacteria and herbicides/pesticides. These pollutants generally do their worst damage in lakes and slow moving rivers and canals, and sometimes, the receiving estuary. Problems are concentrated in the central and southern portions of the State, and in several of the rivers entering the State from the north. Traditionally, agricultural operations have had far more lenient regulation than point sources; however, there is increasing recognition of the need for improved treatment of runoff water.

3.-Domestic Wastewater. This is an area that has shown significant improvement in the last decade. Most of the waterbodies with improving water quality trends can be traced to wastewater treatment plant (WWTP) upgrades. Further advancements are being encouraged with design innovations such as wastewater discharge to wetlands, water reuse and advanced treatment. Still, a problem exists in the rural areas of the State where financial and technological resources are limited. Consequently, several of these poorly operating facilities are polluting some of Florida's relatively pristine natural waterbodies. Also, septic tank leachate contributes to the degradation of many of Florida's waterbodies.

4. Industrial Wastewater. Most notable among these are the pulp and paper mills. Because of the volume and nature of their discharge, all of the pulp and paper mills operating in the State seriously degrade their receiving waters. The phosphate and fertilizer industries are

major pollution sources (both point and nonpoint) in several of Florida's surface water basins. In addition, the mining of phosphate causes surface water hydrological modifications and major land use disturbances.

5. Hydrological Modifications. This can take the form of damming running waters, channelizing slow moving waters, or dredging, draining and filling wetlands. Such modifications are not strictly pollution sources. However, in most cases where the natural hydrological regime was modified (mostly for water quantity purposes) water quality problems have ensued. Rating the effect of hydrologic modification is difficult. Dredge and fill activities result in a loss of habitat. Disruption of wetlands with a resultant net loss of area reduces the buffering and filtering capacities and biological potential of wetlands. This is a particularly important problem in estuaries. The loss of seagrasses and other marine habitats can seriously affect the maintenance of a viable fishery.

The assessment of public health and aquatic life impacts uncovered several areas of concern. Many of these problems are associated with estuaries and are of a persistent nature. Fish with Ulcerative Disease Syndrome are still present in the lower St. Johns River. This problem was first identified in the early to mid-80s. Second, major fish kills (as many as I million fish) occurred in the Pensacola Bay system over the past two years. The more massive of these kills occurred in Bayou Chico. Bacterial contamination in the water and contaminated sediments of the Miami River threaten Biscayne Bay. Many urban estuaries throughout the State have elevated levels of metals and organic contaminants in their sediments. Examples are Tampa Bay, St. Johns River Estuary and Pensacola Bay. The continued loss of fishery habitat from dredge and fill and construction activities is a threat to the maintenance of a viable fishery. The extensive die off of mangroves and seagrasses and algal blooms in Florida Bay are an important State concern. The probable cause is the extensive channelization and hydrological modification of the bay's watershed exacerbated in recent years by a lack of flushing from hurricanes, high water temperature and high salinity.

On the positive side, seagrasses have increased in area in Tampa Bay and there has been an improvement in water quality in Hillsborough Bay.

Three other problems exist which are also of a persistent nature, but largely impact fresh water systems. First, fish consumption advisories for largemouth bass continue to be issued because of elevated mercury concentrations in their tissue. Second, a no fish consumption advisory has been issued for the Fenholloway River. Elevated levels of dioxin were found in fish from this stream. This waterbody receives effluent from a pulp mill. The third problem is the coliform bacteria contamination of the Miami River. Sources of this contamination are illegal sewer connections to the stormwater pipe system, leaking or broken sewer lines, and direct discharges of raw sewage when pump stations have exceeded their capacity. During acute contamination events (direct discharge of sewage) coliform bacteria counts in the Miami River and adjoining waters of Biscayne Bay are hundreds of times higher than State criteria. Efforts are being made by the City of Miami and Dade County to correct these problems.

Northwest Region Basin-by-Basin Evaluation of Water Quality

The quality of Florida waters is graphically depicted on basin maps which follow each basin description. Areas of good, fair, and poor quality are readily discernible on these maps. The following is a summary of the status of the quality of waters in northwest Florida:

In general, rivers in this region have good water quality, with a number of near pristine waterbodies. The major pollution sources in the area include agricultural, silvicultural, and construction runoff. Additionally, several, low volume WWTPs, especially in rural areas, are overloaded and/or poorly operating. Rapid coastal development threatens bays and lagoon waters. Finally, some high volume point source discharges, particularly from pulp and paper mills, adversely affect water quality.

The Perdido Bay basin has water quality problems in two major areas: Elevenmile Creek and Bayou Marcus Creek. Champion Paper Company discharges into Elevenmile Creek. Dioxin contamination is a concern as fish taken from the creek have had tissue levels of dioxin ranging from 8.1 to 2S.7 parts-per-trillion. The EPA recommended maximum level is 7 parts-per-trillion. Bayou Marcus Creek receives urban runoff and discharge from a waste treatment facility. The bay is threatened and partially degraded due to these point and nonpoint pollution sources. Perdido River has good water quality except for the area near its mouth that is affected by poorer quality bay waters.

The Escambia, Blackwater, and Yellow Rivers all drain into Pensacola Bay. They generally have good water quality except for localized areas downstream of point sources. In the Escambia River, these areas are in the northernmost reaches, with mostly domestic dischargers, and in the southernmost reaches where there are industrial dischargers. Trammel Creek in the Yellow River basin shows degraded conditions due to domestic discharge. That WWTP has a history of discharge violations. One of the more recent resulted in a large fish kill. The WWTP discharge (from the City of Crestview) has been removed from Trammel creek and routed to an upland site. Though the general water quality of Escambia, Blackwater, Yellow, and Perdido Rivers appears to be good, all four rivers have a mercury problem. High enough concentrations of mercury were found in tissue of largemouth bass to warrant issuing limited consumption advisories. The Pensacola Bay basin has water quality problems associated with urbanization around the City of Pensacola. The western bay receives the bulk of the treated wastewater and urban runoff, while Escambia Bay has industrial discharges. Fish kills have been a persistent problem in both Pensacola and Escambia Bays and their tributary bayous. Although the Choctawhatchee River generally has good water quality, it has a moderate degree of impact from agricultural runoff (turbidity, nutrients, pesticides, etc.). Additionally, several of the tributary systems within the basin have problems associated with domestic or industrial discharge. Alligator, Holmes, and Camp Branch Creeks receive discharge from Chipley, Graceville, and Bonifay WWTPs,

respectively. West Sandy Creek and Bruce Creek, in the western basin, receive discharge from DeFuniak Springs WWTP and the Showell Farm poultry processing plant, respectively. Most of these small treatment plants have recently been upgraded or are in the process of being upgraded through Consent Orders. Choctawhatchee Bay has good water quality, but is threatened by development of its watershed. Of particular concern are spray field and/or urban runoff from developed areas at Ft. Walton Beach and Destin.

St. Andrews Bay has fairly good water quality except for an area around a paper mill discharge. Most of the rest of the basin has good water quality except Beatty Bayou. High concentrations of lead, mercury, DDT, chlordane, PCB's, and polycyclic aromatic hydrocarbons have been found in sediments in Watson Bayou. Also, Deer Point Lake, the drinking water source for Panama City, has nutrient and aquatic weed problems. Both Econfina Creek and Deer Point Lake have largemouth bass contaminated with mercury resulting in fish limited consumption advisories. St. Josephs Bay has excellent water quality except for an area around its paper mill discharge.

The Chipola River has generally good water quality. Localized threats to the river include high nitrates, BOD, and siltation from agricultural and silviculture nonpoint sources. A Basin Assessment found that the river is severely phosphorus limited due to high levels of nitrogen. A tributary to Chipola River and Dry Creek is a Superfund site because of contamination from a battery reclaiming industry and is currently undergoing a cleanup.

The Apalachicola River basin has a mix of good and problem water quality areas. Scipio Creek, at the mouth of the river, is impaired by shrimping and marina activities and historic wastewater loading. The WWTP which formerly discharged to Scipio Creek has been converted to wetlands discharge. The City of Blountstown WWTP discharges to Sutton Creek. That plant has had past problems and is presently under a Consent Order. Apalachicola Bay has very good water quality and supports Florida's largest commercial oyster fishery. Though within this basin there are localized problems due to nonpoint source pollution from fish houses and marinas. The New River basin which drains into the eastern end of Apalachicola Bay has very good water quality. Little of this basin's area has been developed. At the eastern end of Apalachicola Bay is St. George Sound. In general the Sound has good water quality with exception of the area near Carrabelle. The City previously discharged primary treated wastewater, but has recently made significant upgrades in its treatment.

The upper Ochlockonee River has turbidity and nutrient problems primarily from agricultural runoff and out-of-state point sources. Siltation has resulted in a depressed macroinvertebrate community, and as a consequence, a fishery decline. The lower river, Lake Talquin and the Sopchoppy River maintain good water quality. Fish consumption advisories that recommend limited consumption have been issued for both Lake Talquin and the Ochlockonee River and may soon be issued for the Sopchoppy River. Telogia Creek, a tributary to the Ochlockonee, has nutrient and DO problems in its upper reaches as a result of runoff from the Gretna WWTP spray. fields. Court action has been taken against the City of Gretna to remove all discharges from Telogia Creek.

The St. Marks, Wakulla, and Aucilla Rivers have excellent water quality except for a small stretch in the lower St. Marks that has oil polluted sediments from oil spills, historic Seminole Asphalt discharge and marina activities. Munson Slough and Lake Munson in Tallahassee have pollution problems from past domestic discharges (now routed to spray irrigation) and current stormwater runoff. Lake Munson has shown marked improvement in water quality since the diversion of the WWTP discharge.

INTRODUCTION AND METHODS

This section describes the water quality assessment procedures used by the Bureau of Surface Water Management to prepare the 1994 Florida Water Quality Inventory [305(b)]. The procedures are:

1. Divide State into Assessment Watersheds.
2. Inventory STORET data.
3. Calculate. Stream Water Quality Index (WQI).
4. Calculate Lake/Estuary Trophic State Index (TSI).
5. Apply Screening Levels.
6. Conduct Trend Analysis.
7. Conduct Toxic Pollutant Assessment.
8. Conduct Nonpoint Source Assessment.

Florida's 52 major river basins were subdivided into 4400 watersheds of approximately five square miles each. The predominate waterbody within each watershed was identified and classified as a lake, stream, or estuary. Each watershed and its waterbody formed an assessment unit and all water quality stations within the watershed were aggregated as if they were from the same site (the stations were screened for unwanted sites, such as, point source discharge sites). A water quality inventory was performed on EPA!s STORET database. The inventory included the years 1970 through 1993 and was classified as recent (1989-1993) or historic (1970-1988). Tables of water quality data were prepared for each of Florida's 52 basins. Three procedures were then used to assess the water quality data. A Water Quality Index was calculated to determine the overall quality of Florida streams and rivers. The Water Quality Index summarizes information from six categories including water clarity (turbidity and total suspended solids), dissolved oxygen, oxygen demanding substances (biochemical oxygen demand, chemical oxygen demand, and total organic carbon), nutrients (total nitrogen and total phosphorus), bacteria (total coliform and fecal coliform), and macroinvertebrate diversity index (based on natural substrate samples, artificial substrate samples and Beck's Biotic Index). The water quality of lakes and estuaries is described by the Trophic State Index which is a measure of the potential for algal or aquatic weed growth. The components which make up the Trophic State Index include total nitrogen, total phosphorus, chlorophyll and Secchi depth. Screening levels for 19 water quality parameters were also used to determine the quality of Florida lakes, estuaries and streams.

The water quality indices and screening levels have all been tailored to Florida's water quality by using the actual distribution of Florida data to determine the water quality criteria used by the procedures. Specific information on each of the procedures is described in the following sections.

Watershed as the Assessment Unit

In the 1992 305(b) assessment report, Florida was subdivided into 1600 reaches which were based on EPA's RF2 (river reach file #2). A reach was defined as a 5 mile long section of river, or 5 square mile section of lake or estuary. Only major waterbodies were assessed in the 1992 report due to the resolution limitations imposed by the RF2 file. For 1994, Florida has been subdivided into 4400 watersheds based on EPA's RF3 and USGS watershed delineations. The original 1600 reach delineations have been kept intact, however, many additional watersheds have been added due to the increased resolution of RF3 and the USGS watersheds which cover the entire State. USGS was contracted to develop useable, small watersheds (approximately 5 square miles) using watershed boundaries identified on USGS topological maps and ARC/INFO GIS techniques. USGS completed 75% of the State, but unfortunately they did not delineate watersheds in south Florida (USGS subregion 0309). Watersheds for South Florida were adapted from a much coarser delineation developed by the South Florida Water Management District. The resulting watersheds in this area are about 50 square miles each, ten times larger than those for the rest of the State.

The major waterbody within each watershed was identified and named. Usually each watershed encompassed one major or one minor named waterbody (similar to the 1992 reach structure). The length of each stream waterbody and the area of lake and estuary waterbodies is essential information. The length of stream waterbodies was determined by GIS measurements of the RF3 trace (or assigned a length of 5 miles if no RF3 trace was available). The area of lake and estuary waterbodies was determined with crude GIS aerial measurement techniques (if estuary waterbodies had no RF3 traces, their area was set to 5 square miles and unknown lake waterbodies were assigned an area of 1 square mile). The water quality within each waterbody is assumed to be homogenous (if data prove this assumption to be wrong, then the waterbody was subdivided). GIS techniques were used to assign STORET sites to their respective watersheds and the location of each site was visually inspected on a GIS map. If more than one named waterbody showed up in a watershed (based on the STORET data within a watershed), then the watershed was subdivided.

Inventory of STORET Data

An inventory of data was retrieved from STORET for the 1970-1993 time period. If data within a watershed were available for the current time period (defined as 1989-1993), then historical data was not examined, except for trend analysis. If no current data were found, then historic data (defined as 1970-1988) were used for the assessment. Fifty STORET parameter codes representing 21 different water quality parameters were inventoried

(Table 3). There are about 8000 Florida stations in STORET which were sampled in 1970-1993. These stations are located in 1500 of the 4400 watersheds. Annual average (median) water quality was calculated for each of these stations and the data were stored on a local]IBM Personal computer. In order for an annual average to be calculated for a station, the station had to be sampled at least twice within each year. STORET remark

Table 3. Storet Water Quality Assessment Parameters.

Category	Storet Parameter	Name	Storet Parameter Code
Coliform	Fecal Coli	MPN-FCBR/100ml	31616
Coliform.	Fecal Coli	MPNECMED/100ml	31615
Coliform.	Total Coli	MGIMENDO/100ml	31501
Coliform.	Total Coli	MPN CONG/100ml	31505
Conductivity	Conductivity	at 25c micromho	95
Conductivity	Conductivity	Field micromho	94
Dissolved Oxygen	Dissolved Oxygen	% saturation	301
Dissolved Oxygen	Dissolved Oxygen	mg/1	300
Dissolved Oxygen	Dissolved Oxygen	Probe mg/l	299
Diversity Index	Biotic Index	BI	82256
Diversity Index	Diversity Index	Artificial substrate	82251
Diversity Index	Diversity Index	Natural substrate	82246
Flow	Stream Flow	cfs	60
Flow	Stream Flow	inst.-cfs	61
Oxygen Demand	BOD 5 day	mg/1	310
Oxygen Demand	COD Hi Level	mg/1	340
Oxygen Demand	Tot Organic Carbon C	mg/l	680

pH-Alkalinity	pH SU			400
pH-Alkalinity	pH SU		lab	403
pH-Alkalinity	Total	Alkalinity	CaC03 mg/1	410
Temperature	Temperature	Water	cent	10
Trophic Status	Chlorophyll	A	mg/1	32230
Trophic Status	Chlorophyll	A	mg/1	32217
Trophic Status	Chlorophyll	A	mg/l	32210
Trophic Status	Chlorophyll	A	mg/1 corrected	32211
Trophic Status	Chlorophyll	Total	mg/1	32234
Trophic Status	Chlorophyll		total ug/1	32216
Trophic Status	Nitrogen	ammonia	Diss-N02 mg/1	71846
Trophic Status	Nitrogen	NH3+NH4-	N Diss mg/1	608
Trophic Status	Nitrogen	NH3 NH4-	N total mg/1	610
Trophic Status	Nitrogen	Nitrate	Diss-N03 mg/l	71851
Trophic Status	Nitrogen	Nitrate	Tot-N03 mg/1	71850
Trophic Status	Nitrogen	N02&NO3	N-Diss mg/1	631
Trophic Status	Nitrogen	N02&NO3	N-Total mg/l	630
Trophic Status	Nitrogen	N03-N	Diss mg/l	618
Trophic Status	Nitrogen	N03-N	Total mg/l	620
Trophic Status	Nitrogen	Org N	N mg/l	605
Trophic Status	Nitrogen	Tot Kjel	N mg/l	625
Trophic Status	Nitrogen	Total N	As N03 mg/l	71887
Trophic Status	Nitrogen	Total N	N mg/1	600
Trophic Status	Phosphorus		OrthoPO4 mg/1	660
Trophic Status	Phosphorus Total		As P04 mg/l	71886

Table 3. Storet Water Quality Assessment Parameters (continued).

Category Storet Parameter Name Storet Parameter Code

Trophic Status	Phosphorus Total	mg/l P	665
Trophic Status	Transparency	Secchi Inches	77
Trophic Status	Transparency	Secchi Meters	78
Water Clarity	Color	PT-CO Units	80
Water Clarity	Color-AP	Pt-CO Units	81
Water Clarity	Residue Tot NFLT	mg/1	530
Water Clarity	Turbidity	JKSN JTU	70
Water Clarity	Turbidity	TRBIDMTR HACH FTU	76

codes also present a problem in data analysis when a data value is recorded as "less than" the actual value reported. In these cases the reported value was multiplied by 0.5 to adjust for the "less than" condition. Data with STORET remark codes indicating that the reported value was "greater than" the actual value were dropped from further analysis. A Water Quality Index value was calculated for each stream/river annual median and a Trophic State Index value was calculated for each lake/estuary annual median.

Florida Stream Water Quality Index Procedure

To assess Florida stream water quality, a Florida stream Water Quality Index (WQI) was developed and first used in the 1988 305(b) report. The WQ1 is based on the quality of water as measured by six water quality categories (water clarity, dissolved oxygen, oxygen demanding substances, bacteria, nutrients and biological diversity). Each category may have more than one parameter as shown in Table 4. Raw (annual average) data are converted into index values which range from 0 to 99 for the six categories. Index values correspond to the percentile distribution of stream watei quality data in Florida (Table 4). [The percentile distribution of STORET water quality data were determined in 1987 for 2,000 ambient, stream STORET locations in Florida.] For example, Table 4 shows the BOD concentrations ranged from 0.8 mg/1 (10 percentile) to 5.1 mg/ (90 percentile) with a median value of 1.5 mg/1 (50 percentile). ABOD concentration of 0 to less than 0.8 mg/1 is assigned an index value of 0 to 9, etc.

The overall WQI is the arithmetic average of the six water quality index categories. The index for each category is determined by averaging its component parameter index values. Nfissing water quality parameters and missing water quality categories are ignored in the final calculation. Therefore, the final WQI is based on an average of anywhere from I to 6 water quality index categories. Table 5 shows an example calculation of the WQI. The

WQI can be calculated from just one index category; however, it becomes more reliable as more categories are used in its calculation.

In order to determine the range of values of the WQI which correspond to good, fair and poor quality, the WQI was correlated with the EPA National Profiles Water Quality Index for Florida data. (The EPA WQI was used in the 1986 305(b)). Based on this correlation, the cutoff values for the WQ1 were determined as follows: 0 to less than 45 represents good quality, 45 to less than 60 represents fair quality, and 60 to 99 represents poor quality.

The Florida stream Water Quality Index has several advantages over indices used previously. First, the index is tailored to Florida water quality data, since it is based on the percentile distribution of Florida stream data. Second, it uses the water quality categories which are felt to be the most important measures of water quality in Florida: water clarity, dissolved oxygen, oxygen demanding substances, nutrients, bacteria and biological diversity. Third, it is simple to understand and calculate and does not require a mainframe computer or any complex data transformations or averaging schemes. Finally, the index

Table 4. Florida Stream Water Quality Index Criteria.
Percentile Distribution of STORET Data.

Parameter		Best Quality				Median Value				Worst Quality
	Unit	1096	20%	30%	40%	50%	60%	70%	80%	90%
Category: Water Clarity										
Turbidity	JTU	1.50	3.00	4.00	4.50	5.20	8.80	12.20	16.50	21.00

Total Suspended Soldis	mg/l	2.00	3.00	4.00	5.50	6.50	9.50	12.50	18.00	26.50
** Category: Dissolved Oxygen										
Dissolved Oxygen	mg/l	8.00	7.30	6.70	6.30	5.80	5.30	4.80	4.00	3.10
** Category: Oxygen Demand										
Biochemical Oxygen Demand	mg/l	0.80	1.00	1.10	1.30	1.50	1.90	2.30	3.30	5.10
Chemical Oxygen Demand	mg/l	16.00	24.00	32.00	38.00	46.00	58.00	72.00	102.00	146.00
Total Organic Carbon	mg/l	5.00	7.00	9.50	12.00	14.00	17.50	21.00	27.50	37.00
** Category: Nutrients										
Total Nitrogen	mg/l as N	0.55	0.75	0.90	1.00	1.20	1.40	1.60	2.00	2.70
Total Phosphorus	mg/l as P	0.02	0.03	0.05	0.07	0.09	0.16	0.24	0.46	0.89
** Category: Bacteria										
Total Coliform	#/100 ml	100.00	150.00	250.00	425.00	600.00	1100.00	1600.00	3700.00	7600.00
Fecal Coliform,	#/100 ml	10.00	20.00	35.00	55.00	75.00	135.00	190.00	470.00	960.00
** Category: Biological Diversity										
Diversity Index Nat. Substrate	Index	3.50	3.10	2.80	2.60	2.40	2.15	1.95	1.50	1.20
Diversity Index Art. Substrate	Index	3.55	3.35	3.20	3.05	2.90	2.65	2.40	1.95	1.35
Beck's Biotic Index	Index	32.00	28.00	23.00	18.50	14.00	11.00	8.00	5.50	3.50

Table 5. An Example Calculation of the Florida Stream Water Quality Index (WQI).

Water Quality Category'	Water Quality Parameter 2	Value'	Parameter Index Value 4	Index Average 5
Water Clarity	Turbidity	3.9 mg/1	29	40
Water Clarity	Total Suspended Solids	7.0 mg/1	52	
Dissolved Oxygen	Dissolved oxygen	5.4 mg/1	58	58
Oxygen Demanding Substances	BOD	2.8 mg/1	75	
Oxygen Demanding Substances	COD	31.0 mg/1	29	52
Oxygen Demanding Substances	TOC			
Nutrients	Total Nitrogen	1.87 mg/1	77	79
Nutrients	Total Phosphorus	0.56 mg/1	82	
Bacteria	Total Coliform	1800 MPN/100 ml	71	70
Bacteria	Fecal Coliform	1900 MPN/100 ml	70	
Macroinvertebrate Diversity	Natural Substrate	1.7	76	
Macroinvertebrate Diversity	Artificial Substrate	2.3	72	69
Macroinvertebrate Diversity	Beck's Biotic Index	11.0	60	
				WQI = 61'

1- These are the 6 water quality categories.
2_ These are the 13 water quality parameters which make up the 6 categories.
3_ These are the actual data values (1.1 indicates no measurement was taken for this parameter).
4_ The index value is based on the percentile distribution values shown in Table 4.
5_ The category average is based on an average of each of the water quality parameter values.
6_ The WQI is an average of the category index values, i.e., WQI = (40+58+52+79+70+69)/6=61.

works; it nicely identifies areas of good, fair, and poor water quality that correspond to professional and public opinion.

A toxic pollutants category would be a valuable addition to the index; however, toxic pollutants were not included in the index since there is relatively little data in Florida (compared to the amount of data for conventional pollutants). Toxic pollutants were assessed separately as discussed later in this section of the report.

Trophic State Index Procedure

The Trophic State Index procedure provides an effective method of classifying lakes based on the lake's chlorophyll, Secchi depth, nitrogen and phosphorus concentrations. The index was developed in 1982 in response to the EPA Clean Lakes Program and is documented in the Classification of Florida Lakes Report by the University of Florida, Department of Environmental Engineering Sciences. This index remains unchanged from the 1988 305(b) report.

The index is based on a trophic classification scheme developed in 1977 by R.E. Carlson. It relies on three trophic indicators to describe the trophic status of a lake. The goal was to have each indicator relate to algal biomass such that a 10 unit change in the index would represent a doubling or halving of algal biomass. Carlson developed indices based on Secchi disc transparency, chlorophyll concentration and total phosphorus concentration. The Florida Trophic State Index (TSI) is based on the same rationale, but also includes total nitrogen concentration as a fourth index. Criteria were developed for Florida lakes from a regression analysis of data on 313 Florida lakes. The desirable upper limit for the index is set at 20 ug/1 chlorophyll which corresponds to an index of 60. Doubling the chlorophyll concentration to 40 ug/1 results in an index increase to 70 which is the cutoff for undesirable (or poor) lake quality. Index values from 60 to 69 represent 'fair' water quality. The criteria for chlorophyll, Secchi depth, total phosphorus and total nitrogen concentrations are shown in Table 6.

A nutrient index is also calculated based on phosphorus and nitrogen concentrations and the limiting nutrient concept. The limiting nutrient concept identifies a lake as phosphorus limited if the nitrogen to phosphorus concentration ratio is greater than 30, as nitrogen limited if the ratio is less than 10, and balanced (depending on both nitrogen and phosphorus) if the ratio is 10-30. Thus, the nutrient TSI is based solely on phosphorus if the ratio is greater than 3 0, solely on nitrogen if less than 10, or based on both nitrogen and phosphorus if the ratio is between 10 and 30. An overall index (TSI) is calculated based on the average of the chlorophyll TSI, the Secchi depth TSI and the nutrient TSI. For this index to be calculated, both nitrogen and phosphorus measurements are required for the sample. The lake trophic state index was also applied to Florida estuaries to describe estuarine water quality. The criteria for the estuary quality ratings is 10 less than the lake ratings (i.e., good estuarine water quality is a TSI value of 0-49, fair quality is 50-59, and poor quality is a value of 60-100). Table 7 shows an example TSI calculation.

Table 6. Trophic State Index (TSI) for Lakes and Estuaries.

For Lakes: 0-59 is good, 60-69 is fair, 70-100 is poor
For Estuaries: 0-49 is good, 50-59 is fair, 60-100 is poor

Trophic State Index TSI	Chlorophyll CHIA (ug/1)	Secchi Depth SD W	Total Phosphorus TP (mgP/l)	Total Nitrogen TN (mgN/1)
0	0.3	7.4	0.003	0.06
10	0.6	5.3	0.005	0.10
20	1.3	3.8	0.009	0.16
30	2.5	2.7	0.01	0.27
40	5.0	2.0	0.02	0.45
50	10.0	1.4	0.04	0.70
60	20.0	1.0	0.07	1.2
70	40	0.7	0.12	2.0
80	80	0.5	0.20	3.4
90	160	0.4	0.34	5.6
100	320	0.3	0.58	9.3

TSI equations which generate the above criteria:

CHLATs, = 16.8 + [14.4 x LN (CHIA)] (use Natural Log)

SDTSI = 60- [30 x IN (SD)]

TNTSI = 56 + (19.8 x LN (TN)]

TPTSI = [18.6 x LN (TP x 1000)] -18.4

TSI = (CHLATs, + SDTSI + NUTRTsj.) /3

* Limiting Nutrient considerations for Calculating NUTRTsi:

If TN/TP > 30 then NUTRTSI = TPTSI

If TN/TP < 10 then NUTRTSI = TNTS1

If 10 < TN/TP <30 then NUTRTs, = (TPTSI + TNTSI) /2

Table 7. An Example Calculation of the Trophic State Index (TSI)
(See Table 6 for Formulas).

Annual Average	TSI Calculation	Average TSI

Chlorophyll	6.0 ug/l	42.6"	42.1
Secchi Depth	1.8 meters	42.3'-	42.3
Phosphorus*	0.04 mg P/1	50.2 3.	
Nitrogen*	0.67 mg N11	48.1 4.	49.2 5-
			-5 . @0-

1. CHLA = 16.8 + (14.4 x IN (6.0)) 42.1 (use Natural Log)

2. SD = 60 - [30 x LN (1.9)] = 42.3

3. TP = (18.6 x IN (0.04 x 1000H - 18.4 = 50.2

4. TN = 56 + [19.8 x LN (0.67)] = 48.1

5. TN/TP Ratio = 0.67/0.04 = 16.7 therefore, TSI NUTR = an average of TSI Phosphorus and TSI Nitrogen = (50.2 + 48.1)/2 = 49.2

6. (42.6 + 42.3 + 49.2)/3 = 45

Note: If either phosphorus or nitrogen sampling information are missing, then the index is not calculated. Chlorophyll and/or Secchi Depth may be missing and the index will be calculated.

Screening Levels

Screening levels were used to determine water quality problems caused by each of nineteen water quality parameters (Table 8). Screening levels were based on either Florida criteria or on criteria established by professional judgment when quantitative Florida criteria are absent. Different screening levels were developed for streams, lakes and estuaries to take into account the natural differences among these waterbodies. The criteria which were established by professional judgment were based on the percentile distribution of Florida data.

The eightieth percentile was chosen as the cutoff between acceptable and unacceptable water quality. This means that 80% of Florida's water quality data will have acceptable levels. Table 8 identifies the screening levels used, the typical values measured and the Florida criteria for streams, lakes and estuaries. Screening level exceedances are noted in the data tables for each watershed in each basin.

Trend Analysis

Water quality trend analysis was performed on. 12 water quality parameters (plus the overall stream water quality index and the trophic state index) for 460 watersheds. The time frame for the analysis is from 1984-1993. The analysis was quite simple; a non-parametric correlation analysis (Spearman's Ranked Correlation) was used to analyze the ten-year trend of the annual STORET station medians for each watershed. There may have been only one station analyzed within a watershed resulting in a maximum of ten years of data, or there may have been many stations sampled within the watershed resulting in the analysis of many more yearly station medians and a more meaningful trend analysis.

A separate trend assessment technique was used to analyze stream, lake, and estuary waterbodies. Stream trend analysis utilized the trend information from eight water quality parameters (bacteria, turbidity, total suspended solids, BOD, dissolved oxygen, Secchi depth, nitrogen and phosphorus) plus the overall water quality index. Lake and estuary trend analysis focused on four trophic state parameters (chlorophyll, Secchi depth, nitrogen and phosphorus) plus the trophic state index.

The overall trend of each waterbody was determined by comparing the number of improved water quality parameters to the number of degraded water quality parameters. Some waterbodies showed quite strong trends. If a waterbody showed no trends, or just one parameter showed a trend (or the number of improved trends minus the number of degraded trends is zero or one), then the trend is classified as "no change". This trend analysis must be considered preliminary due to the simplicity of the technique.

Table 8. Water Quality Assessment Parameters For Florida Streams, Lakes and Estuaries, Screening Levels-Typical Values-Florida Criteria.

Parameter	Units	Screening Level	Typical Values 10%	(Median)	90%	Florida Criteria (17-302) Class III
Water Body Type: Stream						
Alkalinity	CaC03 Mg/l		13	(75)	150	20.0 mg/l min.
Beck's Biotic Index	Index	<5.5	4	(14)	32	
BOD 5 Day	mg/l	>3.3	0.8	(1.5)	5.1	Not cause DO<5 mg/l
Chlorophyll	ug/l		1	(6)	30	

COD	Mg/l	>102	16	(46)	146	
Coliform-Fecal	#/100 ml	>470	10	(75)	960	200/100 ml
Coliform-total	#/100 ml	>3700	100	(600)	7600	1000/100 ml
Color	Platinum-Color Units		21	(71)	235	No nuisance conditions
Conductivity	micromho	>1275	100	(335)	1300	1275 or 50% abv background
Dissolved Oxygen	mg/l	<4.0	3.1	(5.8)	8.0	5. 0 mg/l
Diversity Artificial Sub	index	<1.95	1.4	(2.9)	3.6	min. 75% of DI
Diversity Natural Substr	index	<1.50	1.2	(2.4)	3.5	min. 75% of DI (marine)
DO % Saturation	%		36	(68)	90	
Fecal Strep	#/100 ml		20	(15)	1700	
Fluoride	mg/l		0.1	(0.2)	0.8	10.0 mg/l
Nitrogen-total	mg/l as N	>2.0	0.5	(1.2)	2.7	Not cause imbalance
pH	standard units		6.1	(7.1)	7.9	<6.0 >8.5
Phosphorus-total	mg/l as P	>0.46	0.02	(0.09)	0.89	Not cause imbalance
Secchi Disc Depth	meters		0.4	(0.8)	1.7	min. 90% background
Temperature	centigrade		19	(23)	28	No nuisance conditions
Total Organic Carbon	mg/l	>27.5	5	(14)	37	
Total Suspended Solids	mg/l	>18.0	2	(7)	26	
Turbidity	JTU FTU	>16.5	1.5	(5)	21	29 NTUs above background
** Waterbody Type: Lake						
Alkalinity	CaCO3 mg/l	>20.	2	(28)	116	20.0 mg/l min.
Chlorophyll	ug/l	>40.	1	(12)	70	
Nitrogen-total	mg/l as N	>2.0	0.4	(1.1)	2.5	Not cause imbalance
Phosphorus-total	mg/l as P	>0.12	0.01	(0.05)	0.29	Not cause imbalance
Secchi Disc Depth	meters	<0.7	0.4	(0.9)	2.7	Min. 90% background
** Waterbody Type: Estuary						
Chlorophyll	ug/l	>40	1	(9)	36	
Nitrogen-total	mg/l as N	>2.0	0.3	(0.8)	1.6	Not cause imbalance
Phosphorus-total	mg/l as P	>0.12	0.01	(0.07)	0.20	Not cause imbalance
Secchi Disc Depth	meters	<0.7	0.6	(1.1)	3.0	Min. 90% background

12

Toxic Pollutant Assessment

The assessment of toxic pollutants in Florida!s waters was accomplished by an inventory of 9 STORET toxic metal parameters for 1991-93 (Table 9). The Florida surface water quality standards (Chapter 17-302, Florida Administrative Code) were used to assess whether the toxic pollutant was found at an elevated level. Several standards are based on hardness levels, however, since hardness levels were, not available in all cases, a hardness value of 100 mg/I as calcium carbonate was assumed. An elevated level was defined as any exceedance of the standard for any of the nine metals. Generally, each waterbody was sampled two or three times for several of the metals during the last three years.

Nonpoint Source Assessment

An extensive assessment of nonpoint source impacts on Florida!s waters was conducted in 1988 through the use of a questionnaire sent to all major State agencies (Water Management Districts, Division of Forestry, Game and Fresh Water Fish Commission), city and county offices, U.S. Soil Conservation Service, U.S. Forestry Service, Regional Planning Councils, local Soil and Water Conservation Districts, citizen environmental groups (Sierra Clubs, Audubon Society and others) and professional outdoor guides. The respondents (approximately 150 agencies and 350-400 participants) to the questionnaire identified nonpoint sources of pollution, environmental pollution symptoms (fish kills, algal blooms, etc.) pollutants and miscellaneous comments. The assessment has been updated in 1994. The 1994 nonpoint source assessment was performed more efficiently than the 1988 version due largely to the use of GIS technology for compiling and displaying the data, and also advancements in the questionnaire methodology. Scannable forms were used eliminating the need to key punch data and integration with the 305b report was much improved.

Florida's 1994 nonpoint source assessment was performed using a qualitative, best professional judgment approach. Unlike point source pollution analysis and its readily available STORET ambient data, there is rarely any convenient database of water quality monitoring data that has been designed for analyzing impacts of nonpoint source pollution on surface waters. Therefore, the assessment procedure was designed to make use of the knowledge of experienced field personnel who had information about individual waterbodies. The 1994 survey was sent to essentially the same group of professionals as the 1988 report and approximately fifty respondents identified nonpoint sources of pollution, environmental symptoms of pollution (fish kills, algal blooms, etc.), degree of impairment (rating) of a waterbody and miscellaneous comments. A total of 1720 watersheds or about 40 % @f the total watersheds were qualitatively assessed by the respondents. Data tables summarizing the 1994 NPS survey are presented for each basin in this report. The remainder of this section describes the information presented in these tables.

Table 9. Toxic Metals in the Water Column.

Metal	Storet Parameter Number	Number of Waterbodies Sampled	Florida Criteria (ppb)	% of Waterbodies With Exceedances
Arsenic	1002	1-02	50	0%
Cadmium	1027	211	1.1	17%
Chromium	1034	155	207*	0%
Copper	1042	330	12*	10%
Iron	1045	378	1000	22%
Lead	1051	240	3.2*	30%
Mercury	71900	129	0.012	47%
Nickel	1067	130	158*	0%
Zinc	1092	253	106	10%

* actual criteria is dependent on water hardness which was -assumed to be 100 mg/l as calcium carbonate since hardness was not available in all waterbodies

The impairment rating of a waterbody was defined as status of waters within a watershed as determined by support or nonsupport of designated use. The status of a watershed was dependent on making a determination of designated use support that applied to all surface waters within the aerial extent of that watershed. Designated use refers to the classification or standards and criteria applied to all Florida waters.

Impairment rating categories used were as follows:

I . Good (meets designated use). All surface waters in the watershed are supporting their use classification with no evidence of nonpoint source problems.

2. Threatened (meets designated use). All surface waters in the watershed are attaining their use classification, but in the absence of any future management activities, it is suspected that within five years at least some of the surface waters in the watershed will not support their designated use.

3. Fair (partially meets designated use). Some, but not all, surface waters in the watershed are not supporting their designated use.

4. Poor (does not meet use). All surface waters in the watershed are not supporting their designated use.

Nonpoint source pollution is generally associated with land use activities which do not have a well-defined point of discharge, such as discharge from a pipe or smoke stack. Nonpoint contaminants are carried to waterbodies by direct runoff or percolation through the soil to groundwater. There are many different potential source areas. Some of the common activities and sources which were considered in the nonpoint source assessment include:

I Construction site runoff. This type of source can provide sediment, chemicals and debris to surface waters.

2. Urban stormwater. Runoff from buildings, streets and parking lots carries with it oil, grease, metals, fertilizers and other pollutants.

3. Land disposal. Leachate from septic tanks and landfills may pollute groundwater or local surface waters. Contamination of surface waters can be by either by direct runoff or discharge from groundwater.

4. Agricultural runoff. Runoff from fields and pastures carries with it sediments, pesticides and animal wastes (which can be a source of bacteria and viruses and nutrients).

5. Silvaculture operations. Logging activities which erode forest soils add turbidity and suspended solids to local surface waters.

6. Mining. This type of activity can cause siltation in nearby waterbodies, release of radioactive materials to groundwater, discharge of acid mine drainage and depletion of water supplies in aquifers.

7. Hydrologic modification. Dams, canals, channelization and other alternations to the flow of a waterbody result in habitat destruction and in general water quality deterioration.

Abbreviations were used for the nonpoint source categories in the NPS data tables which are found in each basin write-up on the following pages. Those abbreviations correspond to the sources as described below:

AG	Agricultural runoff
RE	Resource extraction or mining
SL	Silvaculture or for operations
LD	Land disposal
UR	Urban runoff
CN	Construction site runoff
IM	Hydrologic Modification
OT	Other nonpoint source
IND	Industrial site runoff
STP	Sewage treatment plant

Data for the last two point source categories were not obtained from the 1994 NPS assessment survey, but rather they come from the 1992 305(b) Report.

Respondents were provided with 15 choices of pollutants and 9 choices of symptoms for use in characterizing the status of a watershed. Pollutant choices or categories and their descriptions are provided below:

I Nutrients. An imbalance of nitrogen and or phosphorus which resulted in algal blooms or nuisance aquatic plant growth. Standards for Class III waterbodies are based on this criteria.

2. Bacteria. This refers to the presence of high levels of coliform, strep and enteric fecal organisms which cause the closure of waters to swimming and shellfishing.
3. Sediments. Soil erosion which results in high levels of turbidity.
4. Oil and Grease. Hydrocarbon pollution resulting from highway runoff, marina, and industrial areas. Their presence is evidenced as a sheen on the water surface.
5. Pesticides. These class of chemicals can be found in runoff from agricultural lands and some urban areas.
6. Other Chemicals. General category for other chemicals besides pesticides and oil and grease, typically associated with landfills, industrial land uses and hazardous waste sites.

7. Debris. This category includes trash ranging from Styrofbam plates and cups to yard clippings and dead animals.
8. Oxygen Depletion. Low levels of dissolved oxygen in the water column resulting in odor problems (anoxic waters) and fish kills.
9. Salinity. Changes in salinity caused by too much or too little freshwater inflows. Typical results are declines in the fishery and changes in species composition.
10. pH. Change in the acidity of surface waters with resultant declines in fisheries and other changes to flora and fauna, such as reductions in diversity or abundance.
11. Metals. Anthropogenically enriched levels of trace metals commonly associated with urbanized watersheds and marinas.
12. Habitat Alteration. Landuse activities which adversely affect the resident flora and fauna. Included with habitat alteration is habitat loss.
13. Flow Alteration. Landuse activities which influence the flow characteristics of a watershed resulting in adverse affects upon flora and fauna.
14. Thermal Pollution. Activity which changes local temperature of receiving water relative to ambient temperature.
15. Other Pollutants. General category used to describe activities and impacts not described in the other 14 categories.

Responses of waterbodies to the above listed sources of pollutants were defined as symptoms. The nine symptoms used for categorization are defined as follows:

I . Fish Kills. Dead and dying fish caused by designated source of pollution.
2. Algal Blooms. Excessive growth of algae resulting from nutrient enrichment.
3. Aquatic Plants. Density of exotic and nuisance plants such that impairment of the waterbody occurs. Nutrient enrichment is usually the cause.
4. Turbidity. High suspended sediment loads in water column resulting from soil erosion. Effects on the waterbody include smothering of benthos and reduced light penetration with resultant loss of plant and algal productivity.
5. Odor. Unpleasant smells resulting from low dissolved oxygen conditions (anoxia) and or fish kills.
6. Declining Fisheries. Reduction in landings of or increases in catch per unit effort to catch game and commercial species indicating loss of productive fishery.
7. No Swimming. Closure of recreational swimming areas due to public health risks, usually caused by high coliform bacteria counts.
8. No Fishing. Closure of recreational or commercial fishing areas because of

threats to human health from elevated bacteria counts or levels of contaminants.

9. Other Symptoms. General category used for information that cannot be placed in any other category.

Making Use Support Determinations

EPA has revised its criteria for determining the status of waters as documented in Appendix B of the Guidelines for the Preparation of the 1994,State Water Quality Assessments (305(b) Report). Often, a variety of assessment techniques were available for each watershed (e.g., chemical data, biological data and NPS survey results) and in this case a use decision was made based on integrating all the information. If quantitative data were available on the water quality of a waterbody (through the Trophic State Index or Water Quality Index) then the designated use of the waterbody was determined from the quantitative information, and if no quantitative data were available, then the qualitative NPS survey results were used to estimate designated use of the waterbody. Current data was available for assessment of about 1100 watersheds, historic data was used in 400 watersheds, and qualitative data was used in 1000 watersheds. The NP S survey provided all the information on sources of pollution (e.g. urban or construction runoff) and part of the information on causes and symptoms of pollution. Integrating the information from the quantitative (STORET) analysis and the qualitative NPS survey was not easy, but many additional watersheds were assessed based on the results of the integration. In the future, the two techniques should blend together much better through increased coordination of efforts.

APALACHICOLA

)ANCENT IS AP

GULF OF MEXICO

APALACHICOLA BAY BASIN
03130014
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

APALACHICOLA BAY BASIN

Buic Facts

Drainage Area: 200 square miles
Major Land Uses: basin is mostly water
Population Density: low (Apalachicola, Eastpoint, St. George Island)
Major Pollution Sources: dredging, commercial fishing and fish processing
Best Water Quality Areas: St. George Sound
Worst Water Quality Areas: along shore marinas and/or seafood processing houses
Water Quality Trends: stable quality at one site
OFW Waterbodies:
Apalachicola River and Bay National Estuarine Research Reserve
Apalachicola Bay State Aquatic Preserve
St. Vincent National Wildlife Refuge
SWIM Waterbodies:
Apalachicola Bay/St. George Sound
Reference Reports:
Apalachicola Bay Dredged Material Disposal Plan, DEP (Tallahassee), 1986
Apalachicola Bay SWIM Plan, NWFWMD, 1992
Apalachicola Bay BAS, DEP (Pensacola), 1986
Apalachicola Bay Management Plan, DEP, 1988
Basin Water Quality Experts:
Steve Leitman, Fla. Defenders of the Environment, 904/627-3 527
Tom Savage, DEP (Tallahassee), 904/488-1344
David Heil, DEP (Tallahassee), 904/488-5471
Glenn Butts, DEP (Pensacola) 904-444-8380
Donald Ray, DEP (Pensacola) 904-444-8300

In the News

* Projects for oyster culturing are ongoing.
* See Apalachicola River Basin for other applicable news.
In November 1993 the Bay was temporarily closed after 24 people reported

illnesses after eating oysters from the Bay. Center for Disease Control and Prevention reported on 6/24/94 that routine testing for bacteria in oyster beds apparently is insufficient to prevent food poisoning after finding despite testing just days prior to oyster harvesting in Apalachicola Bay 45 people came down with food poisoning. Ten people were hospitalized for more than a day.

Ecological Characterization

The Apalachicola Bay Basin encompasses approximately 200 square imiles of estuary area including St. Vincent Sound, East Bay, Apalachicola bay and St. George Sound. The bay system is the terminus of a 20,000 square mile basin which extends to a point north of Atlanta, Georgia. The, Bay is defined by the barrier islands: St. George Island,. Cape St. George and St. Vincent Island. Communication with the Gulf of Mexico is through several natural channels: East Pass, West Pass and'Indian Pass, and through Sikes Cut, a U. S. Army Corps of Engineers (COE) maintained channel between Cape St. George and St. George Island. The major inflow into the bay is the Apalachicola River with an average flow of 25,000 cfs varying seasonally from less than 15,000 to greater than 100,000cfs. The basin is primarily the bay water, but also encompasses drainage from the City of Apalachicola and the barrier islands.

The drainage is sparsely developed. The north shore is lined by individual residences, forestry lands and three small urban areas. Apalachicola, the largest city in the basin, is near the mouth of the river. St. George Island is developed for residential use, mostly in the middle third of the island. These residences, hotels and small businesses use septic tanks. Other barrier islands are undeveloped. A bridge crosses the Bay from East Point to St. George Island.

Productivity in Apalachicola Bay is based on the large amount of detritus entering the bay via the Apalachicola River. The bay waters are generally more turbid and less saline than many of Florida's other estuaries. However, away from the mouth of the river, particularly in St. George Sound, waters are clearer and support more seagrasses. The bay system supports a very productive shrimp fishery and is famous for its oysters.

The entire bay as well as the Apalachicola River has been declared an Outstanding Florida Water. It is also the largest National Estuarine Research Reserve. The bay area is an Area of Critical State Concern which requires more intensive regulation of planning and development by the State. The Bay is a State Aquatic Preserve and a priority SWIM waterbody. UNESCO has designated the Bay as an International Biosphere Reserve. Clearly, the State and nation recognize its value.

Anthropogenic Impacts

The Bay has good water quality. The most serious threats to the water quality in the bay are associated with nonpoint sources from the more urbanized areas in the basin. In the northern part of the bay, untreated stonnwater runoff from the City of Apalachicola and nearby fish-houses have had a localized impact on the bay. The City of Apalachicola must upgrade the domestic WWTP to current standards for wetland discharge. Problems associated with fish-houses include high BOD from fishing wastes and pollutants due to boat traffic, docking and fueling. These problems are also found in Eastpoint which is covered in the New River Basin.

The Bay is often closed to shellfishing due to increased bacteria counts, usually associated with rainfall and high flows from the Apalachicola River.

In the southern Bay area, there has been rapid development of St. George Island, and there is concern over septic tank leachate into the bay. The Department of Health and Rehabilitative Services conducted a 1986 study of septic tanks on the island and found that 23% of the 724 tanks were failing, and that many of them were poorly located with respect to water tables and the required 50-foot setback. A centralized wastewater treatment facility was proposed for construction, but both its design and payment responsibility were controversial. The compromise is a requirement that all new development use aerobic treatment systems and a program to require upgrading of existing systems. There is a boat basin on the island that receives runoff from a shopping area and wastes associated with the mooring, fueling, and off-loading activities of oyster boats. A permit to build a 150 wet slip/120 dry slip marina near Sikes Cut is currently being assessed.

Other man-induced threats to the bay are over-fishing and dredging activities by the COE. Several controversies surround both issues. Maintenance channels within the bay and the river have temporary turbidity effects in the water column and have more lasting effects on the biological and sediment quality of the bay due to siltation.

Ruppi , a submersed aquatic plant that serves as a nursery area for fish and wildlife was noted returning just outside the river mouth after dredging 16 years earlier. The dredged channel between the river and Green Point (watershed #2) with shoreline seafood processing facilities experienced low dissolved oxygen concentrations and a minor fishkill last summer.

USGS HYDROLOGIC

UNIT: 03130014 APALACHICOLA BAY

INDEX GOOD FAIR POOR

SURFACE WATER Q'_-A=Y -_ATA FOR 1970-1993

----------- ----- ----- -----

MEDIAN VALUES FOR EACH WATERSHED

WQI-RIVER 0-44 45-59-60-90

CURRENT PERIOD OF RECORD (1969-1993) USED WHERE AVAILABLE

TSI-ESTUARY 0-49 50-59 60-100 -----

PERIOD PRIOR 70 1,989 IS EVALUATED AS HISTORICAL INFORMATION

TSI-LAKE 0-59 60-69 70-100 1

t

BIOLOGICAL WATER

WATERSHED WATERSHED DATA RECORD WATER

DISSOLVED OXYGEN PH TROPHIC SPECIES

QUALITY

ID NAME ---------------------- CLARITY

OXYGEN DEMAND ALKALINITY STATUS COLIFORM DIVERSITY COND FLOW INDICES

----- --------------------------------- MAX BEG END DATA ---------------------------- --------

-- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------

#OBS YR YR PERIOD TURB SD COLOR ISE DO

DOSAT BOD COD TOO PH ALK NITRO PHOS CHLA TOTAL FECL NAT ART BECK COND FLOW WQI

TSI

WATER BODY TYPE: --S7:ARY

I APALACIH:001A BAY 25 89 93 Current 15.0 0.6 40 20 8.0

89 1.1 4 7.6 72 0.67 0.05 10 38 5 16850 58

2 APALACHIC-0:A BAY 7 92 92 Current 24.0 0.5 50 36 7.2

86 6 8.0 71 0.68 0.03 26 100 1 28300 64

3 ST. GEORG-- SOUND 17 92 93 Current 4.2 0.8 95 6 5.7

64 15 7.7 59 0.60 0.02 1 151 26400 40

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L
MAX OOBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALK&LINITY 'C-/! CHLA-CHLOROPHYLL UG/L DOSAT-DO I SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L 14OI-WATER QUALITY INDEX
ART-ARTIFICIAL DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG11, TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNNG SAM@?'_:NG YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML
PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECY,y B:O-:c :\-,r-x COND-CONDUCTIVITY UNHOS FLOW-FLOW CPS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS M/L

```
        SURFACE WATER QUALITY DATA SCREENING REPORT                          USGS HYDROLOGIC     UNIT: 03130014
APALACHICOLA RAY
        MEDIAN VALUES FOR EACH WATERSHED SCREE14ED

              'X'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES    AND CRITERIA
              '0'=WITHIN SCREENING CRITERIA
              '.'=MISSING DATA
                                             I RANK DATA RECORDI      IN    I STREAM  I LAKE      I    PH    I   ALK
I TURB &   I COND     I OXYGEN    I   DO     ]COLIFORM  I BIOL       I CHIA     I SECCHI
                                             I------------------  I         I   TP    I    TP    I
I  TSS     I          I DEMAND    I          I BACTI    I   DIV      I          I  DISC
                                             I WQI     CURRENT I           I         I          I
I          I          I           I          I          I            I          I
        WATERS14ED                           I OR        OR       )TN>2.0   I TP>.46  I TP>.12   IPH>8.8    I ALK<20
ITURB>16.51COND>12751   BOD>3.3   I DO,<4    ITOT>3700  IDIART<1.951  CHLA>40   I  SD<.7
        ID     NAME                          I TSI   HISTORICAL   I         I         I          IPH<5.2    I
I TSS>18   I          I COD>102   I          IFECAL>4701DINAT<1.5 I            I
        -----   ------------------------------------------      I         I         I          I          I
I                     I TOC>27.5t            I          I BECK<5.5 t

          WATER BODY TYPE: ESTUARY
          I   APALACHICOLA BAY               I FAIR Current       1   0     1         1    0     1     0    1     0
1    x          x    1     0     1    0     1     0    1           1     0    1     x
          2   APALACHICOLA BAY               I UNKN Current       1   0     1         1    0     1     0    1     0
1    x          x    1     0     1    0     1     0    1           1     0    1     x
          3   ST. GEORGE SOUND               I GOOD Current       1   0     1         1    0     1     0    1     0
1    0          x    1     0     1    0     1     0    1           1     0    1     0
```

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS
BECK-BECK'S BIOTIC INDEX CEJRRENT-1989 TO 1993 OXYGEN DEMAND-BOD,.CoD,TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT USGS HYDROLOGIC UNIT:
03130014 APALACHICOLA BAY
TRENDS-SOURCES-CLEANUP

'x'-DEGRADING TREND 1 1984 - 1993 TRENDS
I

'0'=STABLE TREND ---
-
'+'-IMPROVING TREND 1W TJ T T C 51 P Al T TI B T1 D DI
T F1 T F l<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'=MISSING DATA IQUALITY RANK IOVER-IQ or Sl N P H D1 H Ll U Sl 0 01 0 01
C Cl E L I
I------------- I ALL 11 11 L I KI R SlD Cl Sl
0 01 M 0 1
1 WQI ITRENDI I A I I B I I Al
L Ll P W I
WATERSHED I MEETS OR I I I I I I I Tj
I Il I
ID NAME IUSE ? TSI I
I I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I-------------

WATER BODY TYPE: ESTUARY
I APALACHICOLA BAY IPARTIAL FAIRI 0 1 0 1 0 0 0 01 0 1 0 01 + I x X1
0 01 0 1
2 APALACHICOLA BAY INO UNKNI I I I
3 ST. GEORGE SOUND IYES GOOD] I I I

LEGEND: DOSAT-DO SATURATION TOOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
AIK-ALKALINITY FL40W-FLOW TN-NITROGEN
WQI-WATER QUIAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHL,OROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

LAKE SEMINOLE IN GEORGIA

OCHEESEE POND 0 MOSQUITO CREEK

FLAT CREEK

STAFFORD C

SUTTON CREEK

HICOLA RIVER

OUTH BRAN
CH

APALACH, RIVER

EEK

APALACHICOLA BAY

APALACHICOLA RIVER BASIN
03130011
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

APALACFHCOLA RIVER BASIN

Basic Eacts

Drainage Area: 2,000 square miles (in Florida)
Major Land Uses: silviculture, agriculture and wetlands
Population Density: low (Chattahoochee, Blountstown, Apalachicola)
Major Pollution Sources: dredging and boat/barge traffic
Best Water Quality Areas: most of Apalachicola River, seepage tributaries

Worst Water Quality Areas: Hog Branch, Kennedy Creek
Water Quality Trends: stable quality at three sites
OFW Waterbodies:
  Apalachicola River
  Apalachicola River and Bay National Estuarine Research Reserve
SWIM Waterbodies: Apalachichola River
Reference Reports:
  Apalachicola River Dredged Material Disposal Plan, DEP,

(Tallahassee), 1984
Apalachicola Bay SWIM Plan, NWFWMD, 1992
Apalachicola Bay BAS, DEP (Pensacola), 1986
Florida Rivers Assessment, DEP/FREAC/NPS, 1989

Basin Water Quality Experts:
Don Ray, DEP (Pensacola), 904/444-8300
Steve Leitman, Fla. Defenders of the Environment, 904/627-3527
Tom Savage, DEP (Tallahassee), 904/488-1344
Homer Royals, FGFWFC, 904/3 57-6631
Ted Hoehn, DEP (Tallahassee), 904/488-0784
Ken Jones, NWFWMD, 904/539-5999
Glenn Butts, DEP (Pensacola) 904-444-8380

In the News

The SWIM Plan for the Apalachicola Bay and River System has been approved.

A controversial plan by the Corps of Engineers to divert more water from the upper basin for Atlanta and a water control plan for the reservoir

system has been dropped. In exchange, the states of Florida and Alabama have agreed to suspend a year-old lawsuit over water supply and the water control plan. The Corps of Engineers and the states have started a multi-million dollar, 3-year study of the water resource needs and demands of the tri-river system. Florida, Georgia and Alabama will each contribute $250,000 per year to the study.

Ecological Characterization

The Apalachicola River is formed by the confluence of the Flint and Chattahoochee Rivers at Lake Seminole. In Florida, the Apalachicola River flows 107 miles southward from the Jim Woodruff Dam (near the City of Chattahoochee) to the Apalachicola Bay at Apalachicola. The entire Apalachicola-Chattahoochee-Flint drainage area encompasses over 20,000 square miles with only 12% in Florida. The Apalachicola, with an average flow of about 25,000 cfs, has a greater flow than any other Florida river.

Flow varies considerably with the season, ranging from about 12,000 cfs in the fall to over 100,000 cfs in the winter and early spring. Flow variability is important to the ecological function of the river. During high flows, the river overflows its banks into its extensive floodplain (1-5 miles wide). The detritus carried by the river, particularly during flooding, provides the primary food source for Apalachicola Bay. The bay supports major fishing and shellfishing industries.

The Apalachicola basin is unique in Florida since it is the only river that has its headwaters in the Appalachian Piedmont outside the coastal plain. Consequently, the area contains numerous Appalachian-originated species found nowhere else in Florida. Additionally, the high bluffs, deep ravines and seepage streams (steepheads) provide the basin with both beautiful scenery and special habitat. This area has the highest floral and faunal diversity in the State.

Florida's portion of the basin is sparsely populated, and much of the adjacent land is in public ownership. Land use in the upper Apalachicola (above the Chipola River confluence) consists primarily of forestry and agriculture. In the lower Apalachicola, land is mostly forested or wetlands. The largest cities in this basin are Chattahoochee and Apalachicola.

Anthropogenic Impacts

Water quality in the majority of the Apalachicola River Basin is very good. The River is, together with the Bay, an Outstanding Florida Water and a National Estuarine Research Reserve. In fact, biological samples from some of the tributaries to the river indicate near pristine conditions. These tributaries are Rock Creek, Flat Creek, Crooked Creek (and Sweetwater Creek, not shown on map). One tributary in the upper basin (Lower Ocheesee Creek) had severe erosion/siltation problems from unpaved roads and farm run-off.

The river and bay are dredged and maintained for barge navigation by the U.S. Army Corps of Engineers. It is one of the Corps'most expensive (per ton-mile) projects in the country. In addition to the sporadic disruption by the dredges, the tug and barge traffic also stirs up the sediments. Barge cargo primarily consists of gravel, fertilizer, and oil. Prior to entering Florida, the river system receives numerous discharges ftom Atlanta and other urbanized areas (textile mills, wastewater treatment plants, steam power plants, and a nuclear power plant) and extensive runoff from the agricultural areas of Alabama and Georgia. Sediment and water quality pollution are somewhat contained at the Jim Woodruff Dam.

In addition to upstream point sources, Florida has a few dischargers. Both Florida State Hospital and the City of Chattahoochee WWTP discharge to Mosquito Creek. Fifth year bioassessment for City of Chattahoochee WWTP was conducted in December 1993. Results did not find biological impairment in Mosquito Creek due to the City WWTP discharge. The findings did suggest nutrient enrichment is occurring in Mosquito Creek from point source discharges. Algal growth potential results from the Florida State Hospital WWTP and the Chattahoochee WW'1? are a cause for concern. Florida State Hospital will be evaluated in October 1994. South Mosquito Creek at C-379 B has severe stream habitation alteration due to impounding resulting in cattail replacing native vegetation. The Scholtz Steam Power Plant lies below Sneads and discharges into the Apalachicola River. The City of Blountstown WWTP discharges to Sutton Creek which has had problems in the past. The City of Blountstown has been informed that alternatives to the current method of effluent disposal are necessary. They must either upgrade to AWT or go to upland disposal. DEP awaits their decision on which direction they will proceed. Finally, the Apalachicola City WWTP, which previously discharged to Scipio Creek has been upgraded and now discharges to wetlands, however the current discharge to wetlands is not adequate. They are currently operating under a Final Order to either further upgrade the facility or remove their discharge from their present location. Scipio Creek is also subject to pollution from considerable shrimp and fishing boat traffic and a marina. The marina is currently making renovations including a pump-out facility. These upgrades should help to improve the conditions in this creek.

An Executive Coordinating Committee for the Apalachicola-Chattahoochee-Flint (ACF) Basin was formed by a 1992 Memorandum of Agreement signed by the states of Florida, Alabama and Georgia and the U.S. Army Corps of Engineers. Its purpose is the oversight of the comprehensive study for the ACF and Alabama-Coosa-Tallapoosa (ACT) river basins, the development of basinwide management plans and to discuss and attempt to resolve interstate disputes until a permanent coordination mechanism is in place.

UNIT: 03130011 APALACHICOLA RIVER

```
INDEX       GOOD FAIR POOR
               SURFACE WATER QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
               MEDIAN VALUES FOR EACH WATERSHED
WQI-RIVER      0-44 4@-59-60-90
               CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY    0-49 50-59 60-100     -----
               PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE       0-59 60-69 70-100        1


BIOLOGICAL                         WATER
               WATERSHED                                    WATERSHED DATA RECORD                 WATER
DISSOLVED        OXYGEN           PH            TROPHIC                         SPECIES                          QUALITY
               ID  NAME                                 ----------------------                    CLARITY
OXYGEN          DEMAND        ALKALINITY       STATUS         COLIFORM      DIVERSITY        COND FLOW           INDICES
               ----- -------------------------------- MAX    BEG  END     DATA -------------------------     -- ------
---- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------
                                                        #OBS    YR   YR      PERIOD        TURB   SD COLOR      TSS  DO
DOSAT BOD COD         TOC    PH    ALk   NITRO PHOS CHIA    TOTAL FECL NAT ART BECK       COND FLOW       WQ I      TSI

               � WATER BODY TYPE: ESTUARY
```

```
                9   HORSESHOE CREEK                              6  92   92   Current          2.2  0.5      200   1  4.6
48               32    5.9      1  0.81 0.03         1500  140                           49                   61

                � WATER BODY TYPE: LAKE
                1   CAMEL LAKE REC AREA                          20 85   86   Historical       1.8           4
4.5      0  0.08 0.01                                   26                            10
                24  AMMONIA LAKE SLOUGH                          8  85   86   Historical      34.2   0.6       .     .  7.4
80                     7.0         0.72 0.13                                         118                        63
                35  OCHEESEE POND OUTLET                         57 77   80   Historical       1.2  3.2      10       7.5
75                     5.9      3  0.41 0.03      1                                  17                         25

                �WATER BODY TYPE: STREAM
                2   EQUILOXIC CREEK                              4  92   92   Current          2.6  1.0      120   1  3.6
39                  9   6.0      8  0.38 0.02                   20                       40                   30
                3   HUCKLEBERRY CREEK                            8  86   86   Historical         .  1.0        .    5  5.0
57  0.6               6.4         0.12 0.02     10   165      13                       2100                 26
                4   APALACHICOLA RIVER                           11 92   92   Current         12.7   0.6      78    5  6.5
70                  8   6.9      37 0.65 0.03      4   400      79                       1500                 33
                5   APALACHICOLA RIVER                           30 73   80   Historical      15.3   0.6      54    24 7.0
76  0.9               7.2      35 0.67 0.04         240       .                        100                  36
                6   SAUL CREEK                                   7  92   92   Current          7.4  0.2      60    2  7.7
79                  5   6.4      31 0.40 0.01           .   750                          73                   30
                7   CYPRESS CREEK                                17 73   73   Historical      13.5   0.1      150   6  2.3
26  0.6               6.1      27 1.22 0.05         240       .                   5    155                  54
                8   JACKSON RIVER                                5  92   92   Current          9.4  0.9      60    7  6.8
68                  5   6.9      32 0.61 0.02         700     4                        126                  27
                10  APALACHICOLA RIVER                           574 89  93   current         16.8   0.6      40    12 6.9
75  0.6             3   7.1      36 0.72 0.05      3   165      39                       116  17200           36
                11  FORT GADSDEN CREEK                           4  92   92   Current          3.3  0.8      200   1  1.7
43               23    4.3      1  0.67 0.01         620      26                       35                   44
                12  CYPRESS CREEK                                5  86   86   Historical       6.0  1.0      40    9  5.4
66  4.3               7.2      .  0.41 0.02      7   120      20                       670                  45
                13  APALACHICOLA RIVER                           12 76   83   Historical      21.0   0.7      60    20 8.0
82  1.0               7.0      41 0.68 0.07         230      48       3.3           95                   44
                14  HOG BRANCH                                   3  79   79   Historical      26.0    .       120
6.3         1.00 0.01                                   25                   56
                15  APALACHICOLA RIVER                           53 79   86   Historical      31.0   0.5       .     .  7.6
83                  5   7.0         0.64 0. 0*7                                      100  35000           39
                16  BLACK CREEK                                  109 79  84   Historical       1.6    .       150   3
4.7      60 0.65 0.01                                   38                     12
                17  KENNEDY CREEK                                8  85   86   Historical      41.2   0.5                5.0
54                    6.3         0.75 0.09                                          71                   62
                18  River of Styx                                3  86   86   Historical      49.0   0.4                6.5
67                    6.3         0.58 0.14                                          75                   53
                19  GREGORY MILL CREEK                           8  92   93   Current         21.1   0.3      145   8  4.5
47               IS    6.2      3  0.92 0.04                   34                       1323                 45
```

20 FLORIDA RIVER 6 86 86 Historical 46.0 0.4 . . 5.6
57 6.2 0.48 0.09 69 56
21 SOUTH BRANCH 10 78 78 Historical 10.0 . 280
6.3 .0.01 34 34
22 BIG GOLLY CREEK 16 78 86 Historical 5.0 0.8 285 3 8.2
74 6.3 1 0.52 0.02 39 27
23 LITTLE GULLY CREEK 9 92 93 Current 9.9 0.6 160 4 7.2
75 22 5.5 1 0.58 0.01 30 28 33
25 APALACHICOLA RIVER 12 89 91 Current 16.0 0.8 . . 7.8
89 7.0 33 0.92 0.06 100 41
27 COON CREEK 7 92 92 Current 3.3 0.7 85 3 4.2
43 8 6.0 7 0.82 0.01 49 37 34
28 @UTTON CREEK 6 92 92 current 3.2 0.8 85 1 6.8
73 8 6.4 5 0.39 0.01 1000 255 39 27
29 LITTLE SWEETWATER CR 16 79 80 Historical 2.0 . . 8.2
88 4 5.3 . 0.28 0.01 16 9 8
n STAFFORD CREEK 5 92 92 Current 4.1 0: 8 100 2 7.0
73 9 6.4 12 0.90 0.02 240 58 33
31 APALACHICOLA RIVER 923 76 87 Historical 10.3 0.8 79 12 7.6
86 0.4 6 7.1 37 0.66 0.08 6 1278 23 3.1 3.6 12 Ill 49
32 CROOKED CREEK 8 92 93 Current 7.2 0.4 35 6 9.4
90 1 6.4 3 Oi2� 0.15 600 18 35
33 FLAT CREEK 5 92 92 Current 16.0 0.3 60 14 8.6
92 3 7.1 12 0.64 0.13 760 540 41 39
34 SOUTH MOSQUITO CREEK 7 92 92 Current 11.0 0.4 60 6 8.8
89 5 6.7 12 0.98 0.15 4000 450 48 41
36 MOSQUITO CREEK 12 73 83 Historical 21.0 0.7 75 8.6
65 0.7 6.7 6 1.47 0.16 920 . 6i 52
37 APALACHICOLA RIVER 574 89 93 Current 9.4 0.9 . 8.4
92 7.2 4i 0.67 0.05 27 108 30350 31

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L
MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALKALINITY MG/L CHLA-CHLOROPHYLL UG/L DOSAT-DO I SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WQI-WATER QUALITY INDEX
ART-ARTIPICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L tOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFOP14 MPN/100ML
PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
B M -BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FDOW-FLOW CPS
PHOS-TOTAL PHOSPHORUS Mb/L TSS-TOTAL SUSPENDED SOLIDS MG/L

m m m m m m m m m m m M m m m m m m m

```
       SURFACE WATER QUALITY DATA SCREENING REPORT                         USGS HYDROLOGIC    UNIT: 03130011
APALACHICOLA RIVER
       MEDIAN VALUES FOP, EACH WATERSHED SCREENED

             'x'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES   AND CRITERIA
             '0'=WITHIN SCREENING CRITERIA                     I
             '.'=MISSING DATA                                  I         I         I         I          I           I
I          I
                                            I RANK DATA RECORDI     IN    ISTREAM   I LAKE    I    PH    i   ALK     I
TURB &   I COND     I OXYGEN   I    DO    ICOLIFORM   I BIOL      I CHLA     I SECC@'I
                                            ------------------  I         I    TP   I    TP   I          I           I
TSS     I          I DEMAND   I          I BACTI     I   DIV     I          I DIS,@
                                            I WQI    CURRENT I             I         I         I          I           I
I          I          I          I          I          I                    t
       WATERSHED                            I OR        OR      ITN>2.0   ITP>.46   I TP>.12  I PH>8.8   I ALK<20
TURB>16.51COND>12751    BOD>3.3  I  DO<4    ITOT>3700   IDIART<1.951 CHLA>40   I  SD<.7
       ID      NAME                         I TSI  HISTORICAL   I         I         I         I PH<5.2   I
ITSS>18    I          I COD>102  I          IFECAL>4701DINAT<1.5    I          I         I
       -----   --------------------------------------------
I TOC>27.51           I          I BECK<5.5  I          I

         WATER BODY TYPE: ESTUARY
         9   HORSESHOE CREEK                IUNKN  Current      1   0     1         1    0    1     0    1     x     1
0    1                         0    1     0     1                        1     x

         WATER BODY TYPE: LAKE
         1   CAMEL LAKE REC AREA            IGOOD  Historical   1   0     1         1    0    1     x    I     x     1
0    1          1
       24    AMMONIA LAKE SLOUGH            IFAIR  Historical   1   0     1         1    x    1     0    1           1
x    1                         0    1           1                        1     x
       35    OCHEESEE POND OUTLET           IGOOD  Historical   1   0     1         1    0    1     0    1     x     1
0    1                         0    1           1           1     0    1     0

         WATER BODY TYPE: STREAM
         2   EQUILOXIC CREEK                IGOOD  Current      1   0     1     0   1         1     0    1     x     1
0    1              0    1     x    1     0     1                              0
         3   HUCKLEBERRY CREEK              IGOOD  Historical   1   0     1     0   1         1     0    1           1
0    1     x    1    0         0    1     0     1           1     0    1     0
         4   APALACHICOLA RIVER             IGOOD  Current      1   0     1     0   1         1     0    1     0     1
0    1     x    1    0    1    0    1     0     1           1     0    1     x
         5   APALACHICOLA RIVER             IGOOD  Historical   1   0     1     0   1         1     0    1     0     1
x    I          1    0    1    0    1     0     1                        1     x
```

```
          6   SAUL CREEK                    IGOOD  Current      1   0    1     0   1        1     0    1     0     1
0    1          1     0    1     0    1     x     I                     I     x
          7   CYPRESS CREEK                 IFAIR  Historical   1   0    1     0   1        1     0    1     0     1
0    1     0    1     0    1     x    1     0     1      x    I          I     x
          8   JACKSON RIVER                 IGOOD  Current      1   0    1     0   1        1     0    1     0     1
0    1          1     0    1     0    1     0     1           1          1     0
         10    APALACHICOLA RIVER           IGOOD  Current      1   0    1     0   1        1     0    1     0     1
x    1     0    1     0    1     0    1     0     1           1     0    1     x
         11    FORT GADSDEN CREEK           IGOOD  Current      1   0    1     0   1        1     x    I     x     1
0    1          1     0    1     x    1     0     1                      1     0
         12    CYPRESS CREEK                IFAIR  Historical   1   0    1     0   1        1     0    1           1
0    1     0    1     x    1     0    1     0     1                 0    1     0
         13    APALACHICOLA RIVER           IGOOD  Historical   1   0    1     0   1        1     0    1     0     1
x    I          1     0    1     0    1     0     1      0    1          1     x
         14    HOG BRANCH                   IFAIR  Historical   1   0    1     0   1        1     0    1           1
x    I          I          I          I           I             I          I     .   i
         15    APALACHICOLA RIVER           IGOOD  Historical   1   0    1     0   1        1     0    1           1
x    I          1     0    1     0    1           1                        1     x
         16    BLACK CREEK                  IGOOD  Historical   1   0    1     0   1        1     x    1     0     1
0    1
         17    KENNEDY CREEK                IUNKN  Historical   1   0    1     0   1        1     0    1           1
x    I                     1     0    1           1                        1     x
         18    River of Styx                IFAIR  Historical   1   0    1     0   1        1     0    1           1
x    I                     1     0    1           1                        1     x
         19    GREGORY MILL CREEK           IFAIR  Current      1   0    1     0   1        1     0    1     x     I
x    I     x    1     0    1     0    1     0     1                              x
         20    FLORIDA RIVER                IFAIR  Historical   1   0    1     0   1        1     0    1           1
x    1                           0    1           1                              x
         21    SOUTH BRANCH                 IGOOD  Historical   I   .    1     0   1        1     0    1           1
0    1                                1           1                              .   ;
         22    BIG GOLLY CREEK              IGOOD  Historical   1   0    1     0   1        1     0    1     x     1
0    1          1          1     0    1           1                              0
         23    LITTLE GULLY CREEK           IGOOD  Current      1   0    1     0   1        1     0    1     X     1
0    1          1     0    1     0    1     0     1                              x
         25    APALACHICOLA RIVER           IGOOD  Current      1   0    1     0   1        1     0    1     0     1
0    1                     1     0    1           1                              0
         27    COON CREEK                   IGOOD  Current      1   0    1     0   1        1     0    1     x     1
0    1                0    1     0    1     0     1                              0
         28    SUTTON CREEK                 IGOOD  Current      1   0    1     0   1        1     0    1     x     1
0    1          1     0    1     0    1     0     1                              0
         29    LITTLE SWEETWATER CR         IGOOD  Historical   1   0    1     0   1        1     0    1           1
0    1          1     0    1     0    1           1                        1     .   1
         30    STAFFORD CREEK               IGOOD  Current      1   0    1     0   1        1     0    1     x     1
0    1          1     0    1     0    1     0     1                        1     0
         31    APALACHICOLA RIVER           IFAIR  Historical   1   0    1     0   1        1     0    1     0     1
0    1          1     0    1     0    1     0     1      0    1     0    1     0
```

```
      32    CROOKED CREEK                IGOOD  Current      1   0     1     0   1          1     0    1     x     1
0    1         1     0    1     0    1     x     I                            x
      33    FLAT CREEK                   IGOOD  Current      1   0     1     0   1          1     0    1     x     1
0    1         1     0    1     0    1     x     I                            X   !
      34    SOUTH MOSQUITO CREEK         IGOOD  Current      1   0     1     0   1          1     0    1     x     1
0    1         1     0    1     0    1     x     I                            x
      36    MOSQUITO CREEK               IFAIR  Historical   1   0     1     0   1          1     0    1     x     I
x    I         1     0    1     0    1     0     1                      1     x
      37    APALACHICOLA RIVER           IGOOD  Current      1   0     1     0   1          1     0    1     0     1
0    1                          0    1     0     1                      1     0

      LEGEND:                       COND-CONDUCTIVITY                           FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS                 WQI OR TSI-WATER QUALITY INDEX RATING
      ALK-ALKALINITY                DO-DISSOLVED OXYGEN                         HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA         WHICH INDEX USED, WI OR TSI, IS
      BECK-BECK'S BIOTIC INDEX      CURRENT-1989 TO 1993                        OXYGEN DEMAND-BOD,COD,TOC
TSS-TOTAL SUSPENDED SOLIDS          BASED ON WATERBODY TYPE
      BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
      CHLA-CHLOROPHYLL              DINAT-NATURkL SUBSTRATE DIVERSITY           TN-NITROGEN
SD-SECCHI DISC METERS
```

t1j
0C

```
                SURFACE WATER QUALITY ASSESSMENT REPORT                                              - USGS
HYDROLOGIC UNIT: 03130011 APALACHICOLA RIVER
                      TRENDS-S,-URCES-CLEANUP

                      lxl-DEGRAD'NG TREND                                                1984 - 1993 TRENDS
                      '0'=STAB--- TREND                               --------------------------------------------
---------
```

'+'=IMPROVING TREND I 1W TI T T C Sl P Al T TI
B Tj DDI T Fl T F l<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'-MISS'.';G DATA IQUALITY RANK IOVER-IQ or Sl N P H DI H Ll U Sl
0 01 001 C Cl E L I
I------------- I ALL 11 11 L I KI R Sl
D Cl Sl 0 01 M 0 1
1 KI ITRENDI I A I I BI
I Al L Ll P W I
WATERSHED I MEETS OR I I I I I I
I TI I Il I
ID NAME IUSE ? TSI I I I I I
I I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I-------------

� WATER BODY TY?E: ESTUARY
9 HORSESHOE CREEK INO UNKNI I I I

� WATER BODY 7Y?--: LAKE
1 CAMEL REC AREA IYES GOODI I I I
24 AMMONIA LAKE SLOUGH IPARTIAL FAIRI I I I
35 OCHEES_--_ ?OND OUTLET IYES GOODI I I I I I
I I I I

�WATER BODY 7Y?E: STREAM
2 EQUILOX:-- CREEK IYES GOOD] I I I
3 HUCKLEBERRY CREEK IYES GOODI I I I
4 APALkCH:COLA RIVER IYES GOODI I I I
5 APALACl.:COLA RIVER IYES GOODI I I I I I
I I 1 1
6 SAUL C.:L:--K IYES GOODI I I 1 .1 .1
.1 .1
7 CYPRESS CREEK IPARTIAL FAIRI I I I I I
I I
8 JACKSON R:VER IYES GOODI I I . . . .1 .1 .1
.1 .1
10 APALAC@i:=:.A RIVER IYES GOODI 0 1 + 1 00 0 X1 + .1 001
0 .1 001 0 01 0 1
11 FORT GADSDEN CREEK IYES GOODI I [. . 1 .1 .1
.1 .1
12 CYPRESS C?_TEK IPARTIAL FAIRI I I . . . .1 .1 .1
.1 .1
13 APAIACH:CO:.A RIVER IYES GOODI I I I I I
I I 1 1
14 HOG BRANCH [PARTIAL FAIR[I f I I I
I I f I
15 APALACF.-.--O:.A RIVER IYES GOODI I I I

```
                16    BLACK CREEK                       IYES       GOODI          I        I      . . . .I
                17    KENNEDY CREEK                     No         UNKNI          I        I      . . . .I
                18    River of 5--yx                    IPARTIAL   FAIRI          I        I      . . . .I
                19    GREGORY M:LL CREEK                IPARTIAL   FAIRI          I        I      . . . .I
                20    FLORfDA RIVER                     IPARTIAL   FAIRI          I        I      . . . .I
                21    SOUTH BRANCH                      IYES       GOODI          I        I            I    I      I
I     I      1          1
                22    BIG GOLLY CREEK                   IYES       GOOD]          I        I      . . . .I
                23    LITTLE T_-_LY CREEK               IYES       GOODI          I        I      . . . .I
                25    APALACH:COLA RIVER                IYES       GOODI      0   1   0    1      00 .  01 0 .1     0.1
1    001     1  0     1
                27    COON C.R-_EK                      @YES       GOODI          I        I      . . . .I
                28    SUTTON CREEK                      IYES       GOOD]          I        I      . . . .I
                29    LITTLE -17,r.7-TWATER CR          IYES       GOODI          I        I            I    I      I
I     I      1          1
                30    STAFFORD CREEK                    IYES       GOODI          I        I      . . . .I
                31    APALACH:COLA RIVER                IPARTIAL   FAIRI          I        I      . . . .I
                32    CROOKED CREEK                     [YES       GOODI          I        I      . . . .I
                33    FLAT CR:---K                      IYES       GOODI          I        I      . . . .I
                34    SOUTH MOSQUITO CREEK              [YES       GOODI          I        I      . . . .I
                36    MOSQUI:O CREEK                    IPARTIAL   FAIRI          I        I            I    I      I
I     I      I          I
```

LEGEND:
DOSAT-DO SATURATION
TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM
TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY
FDOW-FLOW
TN-NITROGEN
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND
MEETS USE-MEETS DESIGNATED USE
TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLIL
PH-PH
TP-PHOSPHORUS
DO-DISSOLVED OXYGEN
SD-SECCHI DISC METERS
TSS-TOTAL SUSPENDED SOLIDS

t_j

m m m m m m m m m w m m m m m m @ w m

```
        SURFACE WATER QUALITY ASSESSMENT REPORT                                          USGS HYDROLOGIC UNIT. 03130011
APALACHICOLA RIVER
              TRENDS-SOURCES-CLEANUP

              'x'=DEGRADING TREND                                              1984 - 1993 TRENDS
              '()'=STABLE TREND
              '+'=IMPROVING TREND                              I      (W      T1 T T C Sl  P Al  T T1 B Tj  D  DI  T  Fl T
F  I IC--- PLEASE READ THESE COLUMNS VERTICALLY
              '.'-MISSING DATA               IQUALITY RANK  IOVER-JQ or Si   N P H DI   H Ll  U Sl 0 01  0  01  C  Cl E
L  I
                                             I------------- I ALL II       il     L   I    KI R Sl D Cl     sl  0  01 M
0  1
                                                       WQI 7END@                A            B             A@  L  L@ P
W
        WATERSHED                            MEETS     OR                                                  T   I  I
       ID      NAME                          I USE ?   TSI  I      I       I                                      I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
        -----   -------------------------    I------------- I      I       I                                      I
I-----------------------------------------------------------------------------------------------------

        37    APALACHICOLA RIVER             IYES      GOODI   0   1   0   1 0 0 - 01   x 01  0 .1      10 01   . 01 0
0   1
```

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM TURB-TURBIDITY

FCOLI-FECAL COLIFORM TEMP-TEMPERATURE TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES

ALK-ALKALINITY FLOW-FLOW TN-NITROGEN WQI-`KATER OULAITY INDEX FOR STREW AND SPRINGS

BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON

CHLA-CHLOROPHYLL PH-PH TP-PHOSPHORUS

DO-DissoLvED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

R RIVE

ER CREEK

A':

!44--

en. .

RIVER

BLACKWATER RIVER BASIN
03140104
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

BLACKWATER RIVER BASIN

Basic Fact

Drainage Area: 950 square miles (about 860 square miles in Florida)
Major Land Uses: silviculture, agriculture
Population Density: very low (Milton, "ting Field NAS)
Major Pollution Sources: locally around road construction areas, clay/sand roads
Best Water Quality Areas: most of the basin
Worst Water Quality Areas: areas assessed by nonpoint source survey
Water Quality Trends: stable quality at two sites, improving quality on upper Blackwater River
OFW Waterbodies:
Blackwater River/Juniper Creek (within State Forest)
SWIM Waterbodies: part of Pensacola Bay System SWIM watershed
Reference Reports:
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Pensacola SWIM plan
Basin Water Quality Experts:
Don Ray, DEP (Pensacola), 904/444-8300
Homer Royals, FGFWFC, 904/357-6631
Gray Bass, FGFWFC, 904/957-4172
Glenn Butts, DEP (Pensacola) 904-444-8380

In thr, h1my

� Fish stocking project ongoing in hopes of improving striped bass population.
* Recent severe flooding has apparently improved condition of fish habitat.
� Health advisories recommending limited consumption of largemouth bass due to mercury contamination have been issued for the Blackwater River.

Ecological Characterization

The Blackwater River originates north of Bradley, Alabama, and flows approximately 58 miles prior to entering Blackwater Bay in northwestern Florida. The basin drains about 860 square miles, mostly in Santa Rosa and Okaloosa Counties. Average discharge of the Blackwater River is approximately 400 cfs at a location 35 miles upstream of the mouth. Major tributaries of the Blackwater River include Juniper Creek, Big Coldwater Creek, and Pond Creek. The basin's rivers are of the blackwater type, stained reddish-brown by tannic acids from swamp and forest drainage. The rivers also receive considerable groundwater flow from the sand and gravel aquifer. In general, the rivers are swift and shallow and characterized by beautiful white sand bars. The Blackwater River flows through Blackwater State Forest and is a favorite of canoeists.

Land use in the basin is primarily state forest land, silviculture and some agriculture. There are no major urban areas in the basin.

Anthropogenic Impacts

Overall water quality in this basin is excellent, and the Blackwater River is designated an Outstanding Florida Water.

The US Navy Whiting Field WWTP was issued a no discharge wasteload allocation in March, 1994 due to water quality violations in Clear Creek discovered during the 5th year survey conducted in October 1993. The Navy is currently studying methods for upland disposal. A 5th year survey for the City of Milton WWTP is scheduled for August 1994.

Ongoing gas pipeline construction across the District is causing turbidity, sedimentation, and habitat destruction at crossing locations in the basin. Many subdivisions have been constructed in the Pond Creek watershed between Pace and Chumuckla in the past couple of years with resuiting nonpoint source problems creating flooding, erosion, and sedimentation. The University of Florida Agricultural Research Center located in Pond Creek headwaters had dumped waste pesticides in the past and sludge from Pensacola wastewater treatment facilities was experimentally land applied without DEP monitoring.

USGS HYDROLOGIC UNIT: 03140104 BLACKWATER RIVER

INDEX G002 FAIR POOR
SURFACE WATER QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
MEDIAN VALUES FOR EACH WATERSHED
WQI-RIVER 0-44 45-59-60-90
CURRENT PERIOD OF RECORD (1989-1993@ USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100 -----
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE 0-@q 60-69 70-100

BIOLOGICAL WATER
WATERSHED WATERSHED DATA RECORD
WATER DISSOLVED OXYGEN PH TROPHIC
SPECIES QUALITY
ID NAME -----------------------
CLARITY OXYGEN DEMAND ALKALINITY STATUS COLIFORM
DIVERSITY COND FLOW INDICES
----- --------------------------------- MAX BEG END DATA ------------------
---------- ---------- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------
#OBS YR YR PERIOD TURB
SD COLOR TSS DO DOSAT BOD COD TOC PH ALK NITRO PHOS CHLA TOTAL FECL NAT
ART BECK COND FLOW WQI Tsi

WATER BODY TYPE: STREAM

1 PELICAN BAYOU 3 88 88 Historical 4 . 0
20 3 6.5 73 0.2 7.1 0.79 0.01 2 50000
5i9o 32

3 BLACKWATER RIVER 8 80 80 Historical 5.0
1.2 30 9 6.7 81 0.8 5.5 0.28 0.02 3 230 23
16 25

4 BLACKWATER RIVER 29 89 93 Current 9.0
1.3 40 7 7.6 86 0.4 2 5.9 7 0.62 0.03 2 160 75
-140 30

9 BLACKWATER RIVER 26 89 93 Current 13.0
0.8 50 4 8.0 89 4 5.0 5 0.43 0.02 200 51
20 30

17 CLEAR CREEK 17 92 93 Current 3.8
0.6 21 1 8.0 85 1 5.8 2 0.63 0.01 35
22 14

24 POND CREEK 45 90 93 Current 4.7
1.3 35 3 7.7 79 0.3 3 - 5.8 4 0.59 0.02 731 110
42 23

30 BLACKWATER RIVER 36 70 80 Historical 9.5
45 17 8.1 89 0.5 4 5.6 2 0.39 0.02
22 248 28

37 BIG JUNIPER CREEK 6 76 76 Historical 13.0
. 8.4 93 6.0 . 0.01
20 28

41 WEST FORK 14 91 92 Current 27.3
0.6 43 14 8.0 87 0.3 1 5.8 2 1.72 0.04 750 473
39 36

52 EAST FORK 16 90 92 Current 5.0
0.4 35 8 7.8 83 0.2 2 5.6 1 0.36 0.04 360 35
20 22

58 MANNING CREEK 6 92 92 Current 12.0
0.3 70 7 7.4 78 5 5.8 2 0.87 0.02 20000 2800
22 40

59 SWEETWATER CREEK 6 92 92 Current 4.8
1.0 60 2 8.1 88 5 5.4 1 0.21 0.01 1000 60
16 21

73 PANTHER CREEK 6 92 92 Current 9.8
0.5 60 6 8.2 91 5 5.5 1 0.27 0.01 900 44
20 25

74 BLACKWATER RIVER 39 89 93 Current 3.0
0.7 50 3 7.9 84 0.2 6 4.9 1 0.48 0.02 2 400 40
32 1240 19

78 MARE CREEK 8 92 93 Current 5.3
0.4 30 3 7.2 73 3 6.1 4 0.15 0.01 . 103
25 24

83 BIG JUNIPER CREEK 10 90 92 current 6.9
0.6 45 11 '1 .'1 S5 0.5 a 6.2 1 0 . E,? 0.05 1204 68
21 26
92 ROCK CREEK 6 92 92 Current 2.5
0.5 30 1 7.8 74 4 5.0 1 0.39 0.01 Soo 50
20 16
95 BIG COLDWATER CREEK 16 91 92 Current 10.3
38 7 8.3 87 0.3 1 5.7 . 1.16 0.04 735 141
40 28
97 BOGGY HOLLOW CREEK 4 75 75 Historical 1.0
75 8.0 80 0. 9 5.5 0 0.42 0.02 1260
20

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALKALINITY MG/L CHLA.-CHLOROPHYLL UG/L DOSAT-DO I SATURATION NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WQI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/jOOML PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLOW-FL40W CFS PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

4@

```
                SURFACE WATER QUALITY DATA SCREENING REPORT                        USGS HYDROLOGIC    UNIT: 03140104
BLACKWATER RIVER
                MEDIAN VALUES FOR EACH WATERSHED SCREENED

                    'x'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES    AND CRITERIA
                    '0'=WITHIN SCREENING CRITERIA                    I
                    '.'=MISSING DATA                                 I         I         I          I          I
I          I          I           I          I
                                                I RANK DATA RECORDI       TN   I STREAM  I  LAKE    I    PH    I   ALK
I TURB &   I  COND    I OXYGEN    I    DO    ICOLIFORM   I BIOL      I CHLA      ISECCHI   I
                                                I------------------  I         I    TP   I   TP     I          I
I   TSS    I          I DEMAND    I          I BACTI     I  DIV      I          I DISC    I
                                                I WQI     CURRENT I            I         I          I          I
I          I          I           I          I           I           I          I         I
                WATERSHED                       I OR        OR       ITN>2.0   I TP>.46  I TP>.12   IPH>8.8    I
ALK<20    ITURB>16.51COND>12751   BOD>3.3   I  DO<4    ITOT>3700   IDIART<1.951  CHLA>40   I  SD<.7  I
                ID  NAME                        I TSI   HISTORICAL   I         I         I          IPH<5.2    I
ITSS>18    I          I COD>102   I          IFECAL>4701DINAT<1.5    I          I         I
                ----- --------------------------------------------     I         I         I          I          I
I          I          I TOC>27.51            I           IBECK<5.5   I          I

                WATER BODY TYPE: STREAM
                I   PELICAN BAYOU               IGOOD   Historical   1    0    1     0    1         1     0    1
1     0    1     x    1     0     1     0    1     x     I            1    0     1
                3   BLACKWATER RIVER            IGOOD   Historical   1    0    1     0    1         1     0    1
1     0    1          1     0     1     0    1     0     1            1    0     1     0    1
                4   BLACKWATER RIVER            IGOOD   Current      1    0    1     0    1         1     0    1    x
1     0    1     0    1     0     1     0    1     0     1            1    0     1     0    1
```

9	BLACKWATER RIVER	IGOOD	Current	1	0	1	0	1	1	x	I	x	1	0	1		1	0	1	0	1	0	1			1	0	1
17	CLEAR CREEK	IGOOD	Current	I	a	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1				x	1
24	POND CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1				0	1
30	BLACKWATER RIVER	IGOOD	Historical	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1		1	1				
37	BIG JUNIPER CREEK	IGOOD	Historical	I	.	1	0	1	1	0	1		1	0	1		1		1	0	1		1	1				
41	WEST FORK	IGOOD	Current	1	0	1	0	1	1	0	1	x	I	x	I		1	0	1	0	1	x	I	I			x	1
52	EAST FORK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1				x	1
58	MANNING CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	x	I				x	1
59	SWEETWATER CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1			1	0	1
'73	PANTHER CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1	1		1	x	1
74	BLACKWATER RIVER	IGOOD	Current	1	0	1	0	1	1	x	I	x	1	0	1	0	1	0	1	0	1	0	1	1	0	1	0	1
78	MARE CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1				x	1
83	BIG JUNIPER CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1				x	(
92	ROCK CREEK	IGOOD	Current	1	0	1	0	1	1	x	I	x	1	0	1		1	0	1	0	1	0	1	1			x	1
95	BIG COLDWATER CREEK	IGOOD	Current	1	0	1	0	1	1	0	1		1	0	1		1	0	1	0	1	0	1	1			.	1
97	BOGGY HOLLOW CREEK	IGOOD	Historical	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1	1		1		

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1%88
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS
BECK-BECK'S BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,.COD,,T0C
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERB06Y @YPE.
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHIA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE 61VERSITY TN-NITROGEN
SD-SECCHI DISC METERS,

m m m m m m m m m M m m m m m m m m m

SURFACE WATER QUALITY ASSESSMENT REPORT - USGS HYDROLOGIC UNIT:
03140104 BLACKWATER RIVER
TRENDS-SOURCES-CLEANUP

'x'-DEGRADING TREND 1 1984 - 1993 TRENDS
'0'=STABLE*TREND I--

'+'=IMPROVING TREND I 1W TI T T C Sl P Al T T1 B TI
D DI T Fl T F j<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'=MISSING DATA]QUALITY RANK 10VER-IQ or Sl N P H D1 H Ll U Sl 0 01
0 01 C Cl E L I
I------------- I ALL 11 11 L I KI R Sl D Cl
Sl 0 01 M 0 1
1 %QI ITRENDI I A I I B I I
Al L Ll P W I
WATERSHED I MEETS OR I I I I I I I
TI I Il I
ID NAME IUSE ? TSI I I I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------- I-------------

WATER BODY TYPE: STREAM

1 PELICAN BAYOU IYES GOODI . I . I I

3 BLACKWATER RIVER IYES GOODI I I I I

4 BLACKWATER RIVER IYES GOODI 0 1 0 1 a 0 .1 0 .1 0 .1 .1

x X1 .1 0

9 BLALCKWATER RIVER IYES GOODI 0 1 0 1 0 + .1 0 .1 0 .1 .1

0 01 .1 0

17 CLEAR CREEK IYES GOODI I I I

24 POND CREEK IYES GOOD I I I I

30 BLACKWATER RIVER IYES GOODI I I I I I

37 BIG JUNIPER CREEK IYES GOODI I I I I I I

I I

41 WEST FORK (YES GOOD I t I I

52 EAST FORK IYES GOODI I I I

58 MANNING CREEK IYES GOODI I I I

59 SWEETWATER CREEK IYES GOOD I I I I

73 PANTHER CREEK IYES GOOD] I I I

74 BLACKWATER RIVER IYES GOODI + I + 1 0 0 0 01 x .1 + +1 + .1

0 01 0 +1 0

78 MARE CREEK]YES GOODI I I I

83 BIG JUNIPER CREEK IYES GOODI I I I

92 ROCK CREEK IYES GOOD I I I I

95 BIG COLDWATER CREEK IYES GOOD I I I I

97 BOGGY HOLLOW CREEK IYES GOODI I I I

LEGEND: DOSAT-DO SATURATION TOOLI-TOTAL COLIFORM
TURB-TURBIDITY
FOOLI-FECAL COLIFORM TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FDOW TN-NITROGEN
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHIA-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

w
011

NPS
QUALITATIVE SURVEY RESULTS
AN "K" INDICATES
A PROBLEM WITH POLLUTANT OR SOURCE
THE - ON MAPID INDICATES NO
STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE
11 FOR LEGEND FOR THIS TABLE-

CATNAME=BLACKWATER RIVER HUC-03140104 ---

N B S P 0
S 0 F T F 0
U A E E T A H T T I U I T

```
                                                                                               T C D               S H D 0 L
A H H S                                                       R         S N N, H-
                  A                B                                    W           W           R   T     I           T   E
E   X    I       M    B        E    E    H    A        B           H    0    0       E
                  p         W        A                                  0           Q           I E M               I R B Y N
E I F R R K L W 1 0 D S F R
                            B        S                                  3           N           E R E 0 C C R G I
T.T L M P I G E D D E W I S I S
                                                                                    P           N I N I I H I E T P A A 0 A 0
L A E 1 0 C I S Y N T A R S L U C H 0
                  D         D        N                                  5           S           I   A     T   L     D   E
S    N    Y   H     L    T    W    L    L    L    L   D      T   R,   L    M   H      M  D    P    G     E    L    D   R'
N    M    T

                   i      481     PELICAN BAYOU               GOOD        FAIR        x   x     x   x     x
x    x        x    x                K    x   K     x         x                x                              x     x
x    x
                   2-     383     LONG BRANCH                             FAIR        x   x     x         x   x
x                    x                                x     x         x           K         x         x       x
x    x    x
                   3      24B     BLACKWATER Rl'@-ER          GOOD        FAIR        x   x     x   x     x   x
x   x    x       x    x   x            x        x     x         x              x          x    x    x   x   x
x    x    x
                   4      24A     BLACKWATER R:V-.-R          GOOD        FAIR        x   x     x   x     x   x
x   x    x       x    x   x            x        x     x         x              x          x    x    x   x   x
x    x    x
                   5@     354     HURRICANE BRANCH                        FAIR:       x   x     x         x   x
x                               x         x             K            x         x           x    x    x
                   6*     352     TARKILN HEAD                            FAIR        x   x     x         x
x                               x         x             x            x         x           x    x    x
                   7.     356     BUCKET BRANCH                           POOR        x         x         x   x
x                     x    x    x         x             x            x         x           x    x    x
                   8-     276     READER CREEK                            FAIR        x   x     x         x
x                    x                                  x         x               x          x         x   x
x    x    K
                   9      24      BLACKWATER R:V-zR           GOOD        FAIR        x   x     x   x     x   x
x   x    x       x    x   x            x        x     x         x              x          x    x    x   x   x
x    x    x
                 '0*      334     HURRICANE BRANCH                        FAIR:       x   x     x         x   x
x                               x         x             x            x         x           x    x    x
                 -        322     ADAMS MILL CREEK                        FAIR
x         x                x    x
                 '21      312     SNOWDEN CREEK                           FAIR        x   x     x         x
x                               x         x             x            x         x           x    x    x
                 '3-
x         x           x    x    x
```

325 ADAMS SPRING BRANCH FAIR x x x x
x x x K

x x x x
.4, 313 CHICKEN HEAD THREAT x x x x
x x x x
314 COON CAMP FAIR K
x x x x x x x
'6- 303 GREEN BRANCH FAIR x
x x x x x x x x
260 CLEAR CREEK GOOD FAIR x x x x x x
x x K x x x x x x x x x
i8- 299 WOLFTRAP BRANCH FAIR x
x x x x x x K x
.9* 286 DRY BRANCH FAIR x x K x x
x K x x x x x x x
20* 295 HYNOTE BRANCH FAIR x x x x
x K x x x x K x x
21- 296 SHINGLE BRJANCH FAIR x
x x x K x x x K
22* 294 BONE CREEK FAIR x x x x x
x x x x x x x x K x x
K x x
23- 292 MASH BRANCH FAIR x x x x x
x x x x x x x x x
24 i76 POND CREEK GOOD FAIR x
x x x x
x
25, 287 MILL CREEK FAIR x x x x
x x x K x x x x x
26* 271 ATES CREEK FAIR x x x x x
x x x x x x x x x x x x
x x
27- 284 RATTLESNAKE S?RING FAIR x
x x x x x x x
28* 225 PENNY CREEK FAIR x x x x x
x x x x x x x x x x x x x x x
x x x
29- 250 EARNEST MILL CREEK FAIR x x x x
x x x K x x x x x
30 24C BLACKWATER RIVER GOOD FAIR x x x x x x
x x x K x x x x x x x x x x x x
x x x
31* 257 HORNS CREEK FAIR x x x
x x x x x x x x x
32- 242 THREE HOLLOW HEAD FAIR x x x x x
x x x x x x K x x x x x

33* 248 POPLAR HEAD FAIR x x x x
x x x x x x x x x
34* 229 ALLIGATOR CREEK FAIR x x x x
x x x K x x x x x
35* 247 LIGHTER KNOT CREEK FAIR x x x x
x x x x x x x x x
36* 236 BASS BRINKS CRZEK FAIR x x x x
x x x x K x
x x x
37 241 BIG JUNIPER CREEK GOOD FAIR x x x K
x x x x K x x x x
x x
38* 221 WOLFE CREEK FAIR x x
x x x x x x
x x x
39* 220 MIDDLE CREEK PAIR x
x x x x x x x x
40* 214 PITTMAN CREEK FAI R x x
x x x x x x x x
41 11A WEST FORK GOOD FAIi x x x x x
x x x x x x x x x
x x K
42@ 218 RED WASH BRANCH PAIR x x x x
x x x x x x x x x x x
x x
43- 213 MARE BRANCH THREAT x x x x
x x x K x x x
x x x
44, 215 BIG BRANCH FAlk x x x x
x x x x x K x x
45- 211 MASON BRANCH FAIR x x x
x x x x x K x x
46* 193 BLUE CREEK FAIR x x x x
x x x x x K x x
47- 196 PYRO14 SPRING 3RANCH FAIR x x x x
x x x x x x x x x x x x
x x
48* -94 DUNN BRANCH FAIR x
x x x x x x x
49@ 166 BEAVER CREEK FAIR x x x x
x x K x x x K x x

NPS QUALITATIVE SURVEY RESULTS

AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE

THE - ON MAPID INDICATES No STORET INFORMATION AVAILABLE FOR THIS WATERSHED

-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

--- CATNAME=BLACKWATER RIVER HUC=03140104 ---

(continued)

N B S p 0 S
0 F T F 0
U A E E I A H T
T I U I T
M T C D S H D 0 L A H H S
R S N N H
A B W W R T I T E E X I
M B E E H A B H 0 0 E
P W A Q 0 1 E M I R B Y N
E I F R R K L W 1 0 D S F R
s 3 N E R E 0 C C R G I
T T L M P I G E D D E W 1 5 1 S
1 0 P N I N I I H I E T P A A 0 A 0 L A E 1 0 C
I S Y N T A R S L U C H 0
D D N 5 S I A T L D E S N Y H
L T W L L L L D T R L M H M D P G E L D R N M I

50- 186 LONG BRANCH FAIR X X X X
X X X X X X X X X
51. 188 CLARK BRANCH FAIR X
X X X X X X X
52 18A EAST FORK GOOD FAIR X X X X X X
X X X X X X X X X X X X X
53* 184 MUDDY BRANCH FAIR X
X X X X X X X X
54* 179 BEAR CREEK FAIR X X X X X X X
X X X X X X X X X X

```
             55*    173      NARROWS CREEK                         FAIR       X   X    X        X           X    X
X                    X   X    X        X            X           X         X           X   X    X
             56*    171      HOG PEN BRANCH                        FAIR                X
X                             X        X            X                     X           X   X    X
             57*    181      GUNSTOCK BRANCH                       FAIR                X
X                             X        X            X                     X           X   X    X
             58     127      MANNING CREEK              GOOD       FAIR       X   X    X        X
X                             X        X            X           X         X           X   X    X
             59     21       SWEETWATER CREEK           GOOD       FAIR       X   X    X        X
X                             X        X            X           X         X           X   X    X
             60*    154      WOLF CREEK                            FAIR       X   X    X        X
X                             X        X                        X                X    X   X    X
             61*    153      SURVEYORS CREEK                       FAIR       X   X    X        X       X
X                             X   X    X                        X         X           X   X    X
             62*    155      BLACKJACK CREEK                       FAIR       X   X    X  X     X   X   X
X   X            X                X                                 X   X     X           X   X    X
             63*    152      THOMPSON SPRING BRANCH                FAIR                X
X                             X        X                                  X           X   X    X
             64-    158      MINCY BRANCH                          FAIR                X
X                             X        X            X                     X           X   X    X
             65-    156      BARREL BRANCH                         FAIR                X
X                             X        X                                  X           X   X    X
             66-    132      BULL PEN BRANCH                       FAIR
X           X   X    X
             67*    129      DANLEY BRANCH                         FAIR                X
X                             X        X                                  X           X   X    X
             68*    104      TURKEY CREEK                          FAIR       X   X    X        X           X    X
X                        X    X        X                        X         X           X   X    X
             69*    90       COBB BRANCH                           FAIR       X   X    X  X     X   X
X   X                             X        X                        X   X     X           X   X    X
             70-    114      CEDAR CREEK                           FAIR       X   X    X        x
X                             X        X            X           X         X           X   X    X
             71*    62       JUNIPER CREEK                         FAIR       X   X    X        X       X
X                             X        X            X           X   X     X           X   X    X
             72-    122      PRINGLE BRANCH                        FAIR       X   X    X        X   X       X    X
X                        X    X        X            X           X         X           X   X    X
             73     27       PANTHER CREEK              GOOD       FAIR       X   X    X        X   X   X   X    X
X                    X   X    X        X            X           X         X           X   X    X
             74     24D      BLACKWATER RIVER           GOOD       FAIR       X   X    X  X     X   X   X   X    X
X   X   X            X       X    X        K            X           X   X     X  X   X    X   X    X
             75*    98       BEAR BRANCH                           FAIR                X
X                             X        X            X                     X           X   X    X
             76@    11       BIG COLDWATER CREEK                   FAIR       X   X    X        X   X   X
X                    X        X        X            X           X   X     X           X   X    X
             77-    116      DOGWOOD BRANCH                        FAIR                X
X                             X        X            X                     X           X   X    X
```

78 88 MARE CREEK GOOD FAIR X X X X X X X X
X X X X X X X X X X X
79* 99 LEWIS BRANCH FAIR X X X X
X X X X X X X X X
80- 82 MALLOY BRANCH FAIR X X X X X X X
X X X X X X X X X X X X
81* 93 CLEAR CREEK FAIR X X X X X
X X X X X X X X X
82* 96 CRANE BRANCH FAIR X
X X X X X X
83 19 BIG JUNIPER CREEK GOOD FAIR X X X X
x X X X X X X X X
84* 64 WOLF CREEK FAIR X X X x X X
X X X X X X X X X X
85- 75 BUCK CREEK FAIR X
X X X X X X X X
86* 83 HURRICANE CREEK FAIR X X X X
X X X X X X X X X
87* 13 DIXON BRANCH FAIR X x X X
X X X X X X X X K
88* 70 BISHOP BRANCH FAIR X X X x
X X X X X X X X X
69* 22 LONG BRANCH THREAT X X
X X X X X X X
90* 50 OAK CREEK FAIR x X X X X X X X
X X X X X X X X X X X
91* 65 UNNAMED CREEK FAIR X X X X X
X X X X X X X X
92 23 ROCK CREEK GOOD FAIR X X X X
X X X X X X X X X
93* 37 LONG BRANCH THREAT x X X X X X
X X X X X X X X X
94* 31 GOODSON BRANCH FAIR x x X x X
x X X X X X X X X
95 18 BIG COLDWATER CREEK GOOD FAIR X X X X X X
X X X X X X X X X X X X X
96- 20 REEDY CREEK FAIR X X X X
X X X X X X X X
97 26 BOGGY HOLLOW CREEK GOOD FAIR X X X X X X X X
X X X X X X X X X X X

00

NPS
QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A
PROBLEM WITH POLLUTANT OR SOURCE
THE - ON MAPID INDICATES NO STORET
INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR
LEGEND FOR THIS TABLE-

CATNAME=BLACKWATER RIVER HUC-03140104

(continued)

```
                                                                                 N    B    S         P   0
S                          0   F           T         F            0
                                                                                 U A E               E I
A H T T I                                  U         I            T
                 M                                                               T C D               S H D 0 L A H H S
R         S N N H
                 A               B                           W         W         R    T    I         T   E   E   X
I      M   B       E     E   H   A         B         H   0   0    E
                 P       W       A                           0         Q         I E M               I R 8 Y N
E I F R R K L W 1 0 D S F R
                         B       S                           3         N         E R E 0 C C R G I
T T L M P I G E D D E W I S I S
                         I       1                           0         P         N I N I I H I E T P A A 0 A 0 L A E
1 0 C I S Y N T A R S L U C H 0
                 D       D       N                           5         S         T A T L D E S N Y H L T W L L L L D
T R L M H M D P G E L D R N M I

                 98-     16      COBB CREEK                            FAIR      x    x    x  x     x   x
x   x             x               x         x            x                x    x              x    x    x
                 99.     17      YELLOW WATER CREEK                    THREAT                x
x                              x         x            x                 x            x    x    x
```

100@ 15 REEDY BRANCH THREAT x
x x x x x x x x
101. 12 HAWKINS CREEK FAIR x x x x x
x x x x x x x x x

ALABAMA

Chaftahoochee River

....

IF P

....

POOR

inole

CHATTAHOCHEE RIVER BASIN
03130004
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

CHATTAHOOCHEE RIVER BASIN

Basir, Fads

Drainage Area: 1,300 square miles (about 15% in Florida)
Major Land Uses: agriculture, silviculture
Population Density: low (in Florida, Sneads)
Major Pollution Sources: upstream sources, agriculture
Best Water Quality Areas: Chattahoochee River
Worst Water Quality Areas: Thompson Pond
Water Quality Trends: stable quality at one site
OFW Waterbodies: Three Rivers State Recreation Area
SWIM Waterbodies: part of Apalachicola River and Bay SWIM watershed
Reference Reports:
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Apalachicola Bay System SWIM Plan, NWFWMD, Revised 1992
Basin Water Quality Experts:
Gray Bass, FGFWFC, 904/957-4172
Homer Royals, FGFWFC, 904/3 57-6631
Don Ray, DEP (Pensacola), 904/444-8300
Glenn Butts, DEP (Pensacola), 904-444-83 80

--------------------------------- - -------------------

In the NMS

See Apalachicola River "In the News" for applicable items.

Ecological Characterization

The Chattahoochee River Basin in Florida consists of a short stem of the Chattahoochee River itself and Lake Seminole which is an impoundment at the confluence of the Chattahoochee and Flint Rivers. Both rivers have extensive drainages in the coastal plains and are considered alluvial in nature. Intense agricultural usage in these basins contribute heavily to the sediment load delivered to Lake Seminole and give these rivers a cloudy, reddish-brown look, atypical of most Florida streams.

41

Lake Seminole is about 40-45 square miles in surface area of which 18 are in Florida. Typical of many impoundments, the lake has a dendritic pattern with hundreds of coves. It is heavily fished and supports several marinas and fish camps. There is also a state park on the lake that is very active in summer months. There are no urban areas draining to the lake, but there are several small developments and houses along some of the banks. However, most of the shoreline has not been cleared.

Anthropogenic Impacts

The major impacts to the water quality of the Chattahoochee River are from upstream discharges and agricultural runoff. Heavy "red clay" siltation is very apparent in the Florida reach of the river, especially after rains. This is one of the few rivers in Florida that experiences the sediment/fami/chemical type of agricultural nonpoint pollution typical of most of the southeastern states.

The U.S. Army Corps of Engineers maintains a dredged channel and locks for passage of commercial barge traffic through the Chattahoochee River, Jim Woodruff Dam and the Apalachicola River. The Corps manages lake levels and water delivery throughout the system.

The Jim Woodruff Dam was built to provide hydroelectric power and some degree of water regulation. However, it is basically a "run of the river" dam with little storage capacity, especially at high flows. The sediment and organic detritus, located in the deeper portions of the lake near the dam, have a poor macroinvertebrate community, probably due to low oxygen and perhaps some metals in the sediments. The lake had some aquatic weed problems, and the Corps annually treated certain areas with herbicides (commonly Rodeo, Sonar, and Aquatol K).

Lake Seminole now has a serious aquatic weed problem and a proposed water quality monitoring for the lake is to be funded by EPA and coordinated by DER

USGS

14YDROLOGIC UNIT: 03130004 CHATTAHOOCHEE RIVER
SURFACE WATER QUALITY DATA FOP, 1970-1993

INDEX	GOOD	FAIR	POOR

```
                 MEDIAN VALUES FOR EACH WATERSHED
W01-RIVER      0-44
                 CU?,IkFNI PSRIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 SO-SS @D_100      -----
                 PERIOD PRIOW 70 1989 15 EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE       0-59 60-69 7q-10S

             WATERSHED
BIOLOGICAL                           WATER
                                                           WATERSHED DATA RECORD                   WATER
DISSOLVIVD       OXYGEN          PH          TROPHIC                           SPECIES                          QUALITY
               ID    NAME                                 ----------------------                   CLARITY
OXYGEN          DEMAND       ALYALINITY       STATUS        COLIFORM       DIVERSITY       COND FLOW          INDICES
             ----- ---------------------------------      MAX    BOG END       DATA ---------------------------- ------
---- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------
                                                          #OBS   YA  YR      PERIOD        TURB SD COLOR TSS         DO
DOS,%T SOD COD        TOC   PH   ALK    NITRO PROS CHLA    TOTAL PECL RAT ART BECK        COVD FLOW       wQ1       TSI
                 WATER BODY TYPE,. LAKE
                 I   THOMPSON POND                           3  93  93   Currei@t
110.0                8.5       33.5534.50                                        1180                     100
                 2   POND DRAIN                              4  93  93   Cucr--nt
4,b    55   3.5                6.6        0.85 0,07                 200                     66
56
                 3   Lake Seminole                           2  89  89   Current         17.0 0.7
9.6    9b                      6.6        0.95 0.06                                         9q
63
                 WATER BODY TY@Z,. SIRMAM
                 4   Chattahoochas River                    15  89  92   Current         17.0 0.7      20     1
8.8    93                 2    6.9    25 0.99 0.0s                   66                     84               40
```

```
            LEGEND:                             BOD-SIOCREMICAL OXYGEN DEMAND MG/L       DO-DISSOLVED OXYGEN KGIL
MAX 4OSS-MIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS                       7URB-TURSIDITY MG/L
            ALK-ALKALINITY MGIL                 CHLA-CHLOROPHYLL UG/L                    DOSAT-DO I SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY         TOC-TOTAL ORGANIC CAR130M MG/L      WQI-WATER QUALITY INDEX
            ART-ARTIFICIAL SUBSTRATE Z31        COD-CHEMICAL OXYGEN DEMAND MG/L          END YR-ENDING YEAR'
NITRO-TOTAL NITROGEN M/L                TOTAL-TOTAL COLIFORM MPN/100ML
            BEG YR-BEGINNING SAMPLING YEAR      COLOR-COLOR PCU                          FECL-PECAL COLIFORM 14PNIIODML
PH-PH STANDARD UNITS                    TSI-TROPHIC STATE INDEX
            RECK-BECK'S BIOTIC INDEX            -OND-CONDUCTIVITY UMHOS                  FLOW-FLOW CFS
PNOS-TOTAL PHOSPHORUS MGIL              TSS-TOTAL SUSPENDED SOLIDS XG/L


        SURFACE WATER QUALITY DATA SCREENING REPORT                        USGS HYDROLOGIC    UNIT: 03130004
CHATTAHOOCHEE RIVER
        MEDIAN VALUES FOR EACH WATERSHED SCREENED

              'x'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES    AND CRITERIA
              '0'-WITHIN SCREENING CRITERIA
              '.'=YISSING DATA
                                            I RANK DATA RECORDI       TN   I STREAM   I LAKE    I    PH     I  ALK
I TURB &   I COND      IOXYGEN    I    DO    ICOLIFORM   I BIOL      I CHIA     I SECCHI   I
                                            I-------------------  I        i   TP     I    T?   I           I
I   TSS    I           IDEMAND    I          I BACTI     I   DIV     I          I  DISC    I
                                            I WQI      CURRENT I          I         I         I           I
I          I           I          I          I           I           I          I          I
        WATERSHED                           I OR          OR      I TN>2.0  I TP>.46   I TP>.12  I PR>8.8    IALK<20
ITURB>16.51COND>12751   BOD>3.3   I  DO<4    ITOT>3700   IDIART<1.951  CHLA>40  I  SD<.7   I
        ID     NAME                         I TSI   HISTORICAL   I         I         I         I PH<5.2    I
I TSS>18   I           ICOD>102   I          IFECAL>4701DINAT<1.5    I          I          I
        -----   --------------------------------------------
ITOC>27.51            I           I BECK<5.5  I          I          I
```

� WATER BODY TYPE: LAKE

1 THOMPSON POND I POOR Current I x I I x 1 0 1
x I

2 POND DRAIN I GOOD Current 1 0 1 1 0 1 0 t
x 1 0 1 0 1

3 Lake Seminole I FAIR Current 1 0 1 1 0 1 0 1
1 0 1 0 1

� WATER BODY TYPE: STREAM

4 Chattahoochee River I GOOD Current 1 0 1 0 1 1 0 1 0
1 x I 1 0 1 0 1 0 1 0 1

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS %VI OR Tk-WATER QUALITY INDEX RATING
AIX-ALKALINITY DO-DISSOLVED OXYGW HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, KI OR TSI, IS

BECK-BECKIS BIOTIC INDEX   CURRENT-1989 TO 1993   OXYGEN DEMAND-BOD,COD,TOC
TSS-TOTAL SUSPENDED SOLIDS   BASED ON WATERBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY   DIART-ARTIFICIAL SUBSTRATE DIVERSITY   PH-p
TURB-TURBIDITY
CHLA-CHLOROPHYLL   DINAT-NATURAL SUBSTRATE DIVERSITY   TN-NITROGEN
SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT   - USGS HYDROLOGIC UNIT:
03130004 CHATTAHOOCHEE RIVER
TRENDS-SOURCES-CLEANUP

'x'=DEGRADING TREND   1984 - 1993 TRENDS
'0'=S'AB'--E TREND   --
-
'+'-IMPROVING TREND   I   1W   TI T T C Sl P Al   T TI   B TI   DDI
TFl   T P l<--- PLEASE READ THESE COLUMNS   VERTICALLY
'.'=MISS:NG DATA   IQUALITY RANK   IOVER-IQ or Sl   N P H   Di H Ll   U Sl   001   001
CCl   E L I
I------------- I ALL II   Il   L   1@   KI   R Sl   D Cl   sl
001   M 0 1
1   WQI ITRENDI   I   A   I   I B I   I   Al
LLl   P W I
WATERSHED   I MEETS   OR I   I   I   I   I   I   I   TI
IIl   I
ID   NAME   IUSE ?   TSI   I   I   I   I   I   I   I   I
I   I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------   I------------- I   I   I   I
----

*'WATER BODY TYPE; LAKE
1   THOMPSON POND   No   POORI   I   I I
2   POND DRAIN   IYES   GOODI   I   I . .   I . .1   . .1 . .1   .1
.1   1
3   Lake Seminole   IPARTIAL FAIRI   I   I I

* WATER BODY TYPE: STREAM

4 Chattahoochee River IYES GOODI 0 1 0 1 0 + 01 0 .1 0 .1 1 0 01 .1 0 1

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM TURB-TURBIDITY
FCOLI-FECAL COLIFOP34 TEMP-TEMPERATURE TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLOW TN-NITROGEN WQI-VATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

```
                                                                                                NPS QUALITATIVE
SURVEY RESULTS
                                                                                    AN "X" INDICATES A PROBLEM WITH
POLLUTANT   OR SOURCE
                                                                        THE - ON MAPID INDICATES NO STORET INFORMATION
AVAILABLE FOR THIS WATERSHED
                                                                                         -SEE PAGE 11 FOP. LEGEND
FOR THIS TABLE-

        --------------------------------------------------------------------------------   CATNAME=CHATTAHOOCHEE RIVER
HUC=03130004   --------------------------------------------------------------------------------

                                                                           N   B    S       P   0           s
0   F           T      F            0
                                                                           U A E E T A H T I I U I T
           M                                                               T C D            S H D 0 L A H H S
R      S N N H
           A               B                         W          W          R T I            T E E X I M B E E H A
B      H 0 0 E
           P        W      A                         Q                     I   E    M       I   R    B  Y    N       E
I   F   R    R   K  L    W    1  0   D    S   F   R
                    B      s                         3                     E   R    E  0    C   C    R  G    I       T
T   L   M    P   I  G    E    D  D   E    W   I   S   I    S
           T        I      1                         0          P          N   I    N  I    I   H    I  E    T  P    A
A   0   A    0   L  A    E    1  0   C    I   S   Y   N    T  A   R    S  L   U    C   H   0
           D        D      N                         5          S          T A T L D E S N Y H L T W L L L L D T R L M
H M D P G F L D R N M T

              1     272    THOMPSON POND             POOR       THREAT     x        x       x       x               x
x    x    x      x                        x        x  x   x            x
              2     170    POND DRAIN                GOOD       THREAT     x                x   x
x    x           x                        x        x  x                x
              3     60     Lake Seminole             FAIR       THREAT     x   x    x
x         x                               x               x
              4     60A    Chattahoochee River       GOOD       THREAT     x   x    x
x         x                               x               x
```

51 85 BRENSON POND OUTLET THREAT x x x
x x x x x x x

6- 85A Irwin Mill Creek THREAT x x x
x x x x x x x

ALABAMA

OWARTS CREEK

SPRING B

CREEK

FOUR MILE CRE

JUNIPER CREE

SWEETWATER CR

LAKES

CHIPOLA RIVER

APALACHICOLA RIVER JUNCTION

CHIPOLA RIVER BASIN
03130012
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

CHIPOLA RIVER BASIN

Basic Facts

Drainage Area: 1,025 square miles (about 85% in Florida)
Major Land Uses: silviculture, agriculture, rangeland
Population Density: low (Wewahitchka, Marianna)
Major Pollution Sources: Marianna WWTP, cattle access to river, farm runoff
Best Water Quality Areas: most of basin
Worst Water Quality Areas: Otter Creek
Water Quality Trends: stable quality at eight sites
OFW Waterbodies: Chipola River
SWIM Waterbodies: part of Apalachicola River and Bay SWIM watershed
Reference Reports:
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Apalachicola SWIM plan
Basin Water Quality Experts:
Gray Bass, FGFWFC, 904/957-4172
Homer Royals, FGFWFC, 904/3 57-6631
Don Ray, DEP (Pensacola), 904/444-8300
Glenn Butts, DEP (Pensacola), 904-444-8380

-------------- --
In the N=s

* Dead Lakes dam removed in 1988.
* Stone Container Corporation clear-cut bottomland hardwood forests causing turbidity violations in Marshall and Cowarts Creeks. A Consent Order was signed with an $11,000 settlement.

Ecological Characterization

The Chipola River is one of Florida!s most unusual and diverse waterways and has an

Outstanding Florida Water designation. From its spring-fed sources in southern Alabama,

it flows about 110 miles and is the major tributary of the Apalachicola River. The drainage basin is about 1,025 square miles, and the average flow is 1,500 cfs.

The river originates in the Marianna Highlands from several springs and the confluence, of Marshall and Cowarts Creeks. Typical of many spring-fed rivers, it carries a small sediment load, is low in color, and has a relatively steady flow. The upper portion of the basin has a diverse terrain with bluffs, sand hills, swamps, sinks, and both terrestrial and underwater caves. The river goes underground for a short distance near Marianna.

Several spring-runs and some surface drainage tributaries join the Chipola after it emerges. However, several miles below Fourmile Creek the river flows out of the limestone highlands and empties into a low swampy area. Here, the tributary inflow is mostly blackwater.

Old levees of the Apalachicola River naturally impound the lower Chipola forming Dead Lake. A dam built in the 1960s to enhance the natural impoundment was recently removed. At the lower end of the lake, the U.S. Army Corps of Engineers maintains the Chipola Cut-off, a once natural diversion, that now captures about one-fourth of the Apalachicola River's flow. From here, the two rivers follow a roughly parallel course until they meet about eight map-miles downstream.

Exceptional water quality and habitat diversity support rich wildlife communities. The river is heavily used for canoeing, boating, tubing and fishing. There are several recreation areas and fish camps.

There are only two urban areas in the basin (Marianna and Wewahitchka), both small. However, because most of the basin lies in the highland area, there is more intensive.land use than the more typical swampland drainage of North Florida rivers. The upper basin has agricultural rangeland and silviculture areas. The lower basin is mostly wetlands and silviculture.

Anthropogenic Impacts

Water quality in the Chipola River basin generally appears to be good; however, only about one-half of the stream reach mileage has been sampled for water quality. A Basin Assessment of the Chipola River was performed by Northwest District DEP, and two WLA studies of point sources have been performed. The upper reaches have some localized areas of relatively high nitrates, BOD and siltation predominantly from agricultural and silviculture nonpoint sources, but the river retains its "good" WQI rating. The river tends to have relatively high levels of nitrogen compared to surrounding waterbodies, but low phosphorus levels. A recent algal assay also indicates the river is severely phosphorus limited. Any increase in phosphorus loading could greatly enhance algal growth of the river and downstream lake.

The middle reaches have several small WWTPs. The basin assessment found high coliform counts below the Marianna WWTP, and reported a trend of increasing nitrate levels in the river over the last ten years. These reaches also have seasonally high nutrient and chlorophyll values, and are considered to have fair to good water quality. The Basin Assessment also indicates there have been aquatic weed and eutrophication problems in Dead Lake due to agricultural runoff. Macroinvertebrate diversity is reported to be seasonally low downstream of the lake. The Dead Lake dam has recently been opened to allow natural stream flow. The water level of Dead Lake naturally fluctuates depending on flow in the Apalachicola River. The river water level has been high since the removal of the dam, so little difference in the lake levels has been noted. It is not certain how the change will affect the lower Chipola and Apalachicola Rivers. The Dry Creek, area has heavy metal contamination from a battery salvage operation. This contamination is now being cleaned up through the use of Federal funds. The Basin Assessment also found high mercury levels below Marianna.

Fifth year bioassessments for Arrowhead Campground V;WTP and City of Marianna WWTP are scheduled for September and November 1994. The Holiday Inn of Marianna WWTP, traditionally a problem source, has been connected to the City V;WTP.

The Spring Creek (watershed #27, south of Campbellton) stream channel was moved and culverted (habitat destruction) along with other dredge and fill impacts from construction on US Highway 23 1.

Bridge Creek at SR 71 within a mile of 1-10 had to be abandoned as an ecoregion monitoring site because of clear cutting of the stream side climax forest and a newly permitted industrial site on the north bank.

USGS

HYDROLOGIC UNIT: 03130012 CHIPOLA RIVER

INDEX GOOD FAIR POOR

```
                 SURFACE WATER QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
                 MEDIAN VALUES -OR EACH WATERSHED
WQI-RIVER       0-44 45-59-60-90
                 CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100           -----
                 PERIOD PR70.R 70 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-IAkE        0-59 60-69 70-100          1

1

BIOLOGICAL                            WATER
                 WATERSHED                                      WATERSHED DATA RECORD                        WATER
DISSOLVED         OXYGEN             PH            TROPHIC                             SPECIES
QUALITY
                 ID  NAME                                      ----------------------                        CLARITY
OXYGEN          DEMAND         ALKALINITY         STATUS         COLIFORM        DIVERSITY        COND FLOW
INDICES
                 ----- ---------------------------------    MAX     BEG  END      DATA  ---------------------------- -
--------- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------
                                                               #OBS    YR   YR      PERIOD          TURB    SD COLOR
TSS     DO  DOSAT BOD COD          TOC   PH         ALK  NITRO PHOS    CHIA TOTAL FECL NAT ART BECK          COND FLOW
W01       TS!

                 � WATER BODY :YPE: LAKE
                 1   MERRITTS MILL POND                             44 91   93    Current           1.0   1.0      3
3   11.7    118                  1   7.9       100  1.64 0.02      0            12                      223
38
                 2   CHIPOLA. RIVER                                 75 89   93    current         14.5    0.9      40
2    7.0    91                   5   6.6       56   0.80 0.04                   13                      123
58
                 27  MUDDY BRANCH                                   3  93   93    Current
140.0               7.3       .  205.630.50              10000                          2520
100

                 �WATER BODY TYPE: STREAM
                 3   CHIPOLA RIVER                                  18 89   93    Current         12.5    1.0
7.2    79                       6.7       77   0.88 0.04                                          165
43
                 4   SWEETWATER CREEK                               5  92   92    Current           2.0   1.0      25
1    8.4    90                   1   6.3       3    0.13 0.02                      1                      21
5
                 5   CHIPOLA RIVER                                  13 92   93    Current           3.7   0.8      20
3    7.4    81                   2   7.2       82   1.03 0.01                   60                      194
23
```

6 Crooked Creek 18 89 93 Current 12.0 1.6 .
. 6.8 75 4.8 9 0.47 0.03 20
33
7 CLEARWATER BRANCH 8 92 93 Current 1.6 0.4 18
1 7.2 75 3 6.2 4 0.15 0.01 52 19
15
8 CHIPOLA RIVER 54 89 93 Current 4.2 1.4 23
8 7.7 85 0.5 6 7.6 94 1.05 0.03 925 88 197 1263
32
9 JUNIPER CREEK 4 92 92 Current 1.7 0.8 50
1 8. 0 85 3 6.2 1 0.16 0.02 26 15
11
10 WILDCAT CREEK 6 93 93 Current 2.5 0.4 50
1 7.8 86 5 5.0 1 0.78 0.01 255 23
24
11 OTTER CREEK 8 93 93 Current 4.3 0.4 70
4 7.0 79 9 6.0 2 1.25 0.20 7100 35
47
12 FOUR M:IE CREEK 5 92 92 Current 2.6 0.7 40
2 8.7 93 3 5.8 1 0.23 0.01 62 16
16
13 WHITEWA CREEK 7 93 93 Current 3.4 0.5 60
2 7.6 68 5 5.1 1 0.42 0.01 310 22
24
14 TENMILE CREEK 6 92 92 Current 2.9 0.4 100
2 8.0 88 6 5.1 1 0.45 0.02 154 is
23
15 CHIPOLA RIVER 2 84 84 Historical 15.0 0.8 50
6 10.7 93 0.9 17.6 35 0.83 0.03 2 93
27
16 PUM?K:.\ CREEK 6 92 92 Current 3.0 0.5 60
1 7.6 80 6 5.0 1 0.20 0.02 106 17
20
17 FOXWOR- MILL CREEK 5 92 92 Current 1.5 0.8 120
1 8.2 82 9 5.0 1 0.37 0.02 48 20
18
SHORES
6.3 5 0.17 0.01 1 25 3
18 _ M:LL CREEK 3 80 80 Historical 4.6 0
19 S:NK CREEK 5 93 93 Current 4.5 0.5 60
3 7.5 81 7 7.2 56 0.65 0.01 252 127
30
20 ROCKY CREEK 4 92 92 Current 4.6 0.8 15
3 7.9 88 2 7.0 91 1.33 0.02 2?0 102
30

21 DRY CR.:T_K 8 92 92 Current 8.4 0.7 115
3 6.0 62 0.6 11 6.7 1 0-*58 0.02 250 763 62
@8
24 SPRING R:EK 3 92 92 Current 3.0 5
3 8.1 93 0.2 2 8.1 2.02 0.02 70 8 205
V?
25 RUSS M:*-', CREEK 24 87 87 Historical
20 3.5 37 5.0 6.4 2.17 0.82 120
79
26 CHIPOLA RIVER 37 89 93 Current 4.1 1.0 25
5 6.9 74 0.5 3 7.6 91 1.36 0.02 1355 123 218
28
28 WADDELLS @ILL CREEK 4 92 92 Current 9.5 . 55
5 5.2 55 0.3 5 7.6 . 0.80 0.03 2000 1515 213
44
29 SPRING BIANCH 2 92 92 Current 6.5 0.3 65
4 6.9 77 5 7.0 69 0.55 0.02 75 141
27
30 Marsha-'- Creek 9 89 92 Current 8.0 . 45
9 6.8 73 0.3 6 7.6 . 0.70 0.03 1040 190 155
h
31 COWARTS CREEK 15 89 92 Current 8.0 1.2 30
6 7.0 76 0.2 4 7.6 93 1.52 0.02 .1100 215 188
36

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN
MG/L MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALKALIN17,Y MGIL CHLA-CHLOROPHYLL UG/L DOSAT-DO % SATURATION
NAT-NATURAL SUBSTRATE DIVER@ITY TOC-TOTAL ORGANIC CARBON MG/L WQI-WATER QUALITY INDEX
ART-ARTIFICIA:. SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPfi/160ML
BEG YR-BEGIN.%':','G SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM
MPN/100ML PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S B:OTIC INDEX COND-CONDUCTIVITY UMHOS FLOW-FLOW CFS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAIL SUSPENDED SOLIDS MG/L

m m m m m m m m m M M m m M m m M M M

```
         SURFACE WATER QUALITY DATA SCREENING REPORT                           USGS HYDROLOGIC     UNIT: 03130012
CHIPOLA RIVER
         MEDIAN VALUES FOR EACH WATERSHED SCREENED

               'x'=EXCEEDS SCREENING CRITERIA                      I
SCREENING VARIABLES    AND CRITERIA
               '0'--WITHIN SCREENING CRITERIA
               '.'=MISSING DATA
                                             I RANK DATA RECORDI      IN   I STREAM   I LAKE     I    PH    I   ALK
I  7URB &   I COND     I  OXYGEN   I    DO    ICOLIFORM   I BIOL       I CHLA     I SECCHI
                                             I------------------ I         I    TP    I    TP    I          I
I   TSS     I          I  DEMAND   I          I BACTI     I   DIV      I          I  DISC
                                             I WQI    CURRENT I            I          I          t          t
I           I          I                      I           I            I          I
         WATERSHED                           I OR        OR       I TX>2.0  I TP>.46   I TP>.12   IPH>8.8    I ALK<20
ITURB>16.51COND>12751     BOD>3.3  I  DO<4    ITOT>3700   IDIART<l. 951 CHLA>40   I  SIX. 7  1
         ID     NAME                         I TSI  HISTORICAL   I         I                    IPH<5.2    I
I TSS>18    I          I  COD>102  I          IFECAL>4701DINAT<1.5     I          I          I
         -----  ------------------------------------------       I
I          I  TOC>27.51           I           IBECK<5.5    I          I          I

           WATER BODY TYPE: LAKE
           I   MERRITTS MILL POND                I GOOD  Current      1    0    1          1    0     1     0    1     0
1     0     1          1     0     1     0    1    0     1            1     0    1     0    1
           2   CHIPOLA RIVER                     IGOOD  Current           a                    a           a          0
0                      0           0    1     0    1            1                0    1
         27    MUDDY BRANCH                      IUNKN  Current           x                    x           0    1
x     I     x     I                x     I          I

           WATER BODY TYPE: STREAM
           3   CHIPOLA RIVER                     IGOOD  Current      1    0    1       0   1               0    1     0
1     0     1                      1     0    1                              0    1
           4   SWEETWATER CREEK                  IGOOD  Current      1    0    1       0   1          1     0    1     x
1     0     1                0     1     0    1    0     1                   0    1
           5   CHIPOLA RIVER                     IGOOD  Current      1    0    1       0   1          1     0    1     0
1     0     1                0     1     0    1    0     1                   0    1
           6   Crooked Creek                     IGOOD  Current      1    0            0   t                V.         Y.
0     k                      k     0                      1                0    1
           7   CLEARWATER BRANCH                 IGOOD  Current      1    0    1       0   1          1     0    1     x
1     0     1                0     1     0    1    0                          x    1
```

8 CHIPOLA RIVER IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 0 1 0 1 0 1 1 0 1
9 JUNIPER CREEK IGOOD Current 1 0 1 0 1 0 1 x
1 0 1 0 1 0 1 0 1 0 1
10 WILDCAT CREEK IGOOD Current 1 0 1 0 1 x I x
1 0 0 1 0 1 0 1 x
11 OTTER CREEK IFAIR Current 1 0 1 0 1 0 1 x
1 0 0 1 0 1 x I x
12 FOUR MILE CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 0 1 0 1 1 x
13 WHITEWATER CREEK IGOOD Current a 0 x x
0 0 0 0 t I x 1
14 TENMILE CREEK IGOOD Current 1 0 1 a I x x
1 0 1 0 1 0 1 0 1 1 x I
15 CHIPOLA RIVER IGOOD Historical 1 0 1 0 1 x 1 0
1 0 1 1 0 1 0 1 1 1 0 1 0 1
16 PUMPKIN CREEK IGOOD Current 1 0 1 0 1 x I x
1 0 1 1 0 1 0 1 0 1 x 1
17 FOXWORTH MILL CREEK IGOOD Current 1 0 1 0 1 1 x I x
1 0 1 1 0 1 0 1 0 1 0 1
18 SHORES MILL CREEK IGOOD Historical 1 0 1 0 1 1 0 1 x
I I I I I I 1 0 1 0 1
19 SINK CREEK IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 1 0 1 0 1 0 1 x 1
20 ROCKY CREEK tGOOD Current q (3 0 0
0 0 1 a 1 0 1 0 1
21 DRY CREEK IGOOD Current 1 0 1 0 1 1 0 x
1 0 1 1 0 1 0 1 x 1 0 1
24 SPRING CREEK IGOOD Current I x 1 0 1 1 0
1 0 1 1 0 1 0 1 0 1
25 RUSS MILL CREEK IUNKN Historical I x I x I 1 0 1
1 x I I x I x I I I
26 CHIPOLA RIVER IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 1 0 1 0 1 0 1 0 1
28 WADDELLS MILL CREEK IGOOD Current 1 0 1 0 1 1 0 1
1 0 1 1 0 1 0 1 x I
29 SPRING BRANCH IGOOD Current 1 0 0 1 1 0 1 0
1 0 1 1 0 1 0 1 0 1
30 Marshall Creek IGOOD Current t a 0 0
f) 1 0 0 1 0 1
31 COWARTS CREEK IGOOD Current 1 0 1 0 1 0 1 0
1 0 1 1 0 1 0 1 0 1 0 1

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
AIX-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQ1 OR TSI, IS
BECK-BECK'S BIOTIC INDEX CURRM-1989 TO 1993 OXYGEN DEMAND-BOD,COD,TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATBRBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

f-h
t_j

SURFACE WATER QUALITY ASSESSMENT REPORT USGS
HYDROLOGIC UNIT: 03130012 CHIPOLA RIVER
TRENDS-SOURCES-CLEANUP

'x'=DEGRADING TREND 1984 - 1993 TRENDS
I
'0'=STABLE TREND --

'+'=IMPROVING TREND I W TI T T C S1 P Al T TI B
T1 D D1 T F1 T F 1<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'=MISSING DATA IQUALITY RANK IOVER-IQ or S1 N P H DI H Ll U S1 0
01 001 C C1 E L I

```
                                                    I-------------     I ALL II        il      L  I    KI   R S1   D
C1    S1   0 01  M  0  1
                                                    I          WQI ITRENDI             I       A  I      I  B  I
I    A@   L Ll  P  W  I
                 WATERSHED                          IMEETS     OR      I      I        I          I      I     I
I    TI   I Il       I
                 ID   NAME                          IUSE ?     TSI     I      I        I          I            I
I      I     I       I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
                 ----- -----------------------      I-------------
-----------------------------------------------------------------------------------------------

                 � WATER BODY TYPE: LAKE
                 I    MERRITTS MILL POND            IYES       GOOD 1     0   1    0   1  0 +          .1   0 .1
1    ..1    .1       1
                 2    CHIPOLA RIVER                 IYES       GOOD 1     0   1    0   1  0 0     X1  x.1   0 .I
1    001    .1  0    1
                 27   MUDDY BRANCH                  INO        UNIN I     -   I    .   I . . . . I

                 �WATER BODY TYPE: STREAM
                 3    CHIPOLA RIVER                 IYES       GOODI      0   1    0   1  0 0  .  01  0.1   0 .1
.1    KX1    .1  0     1
                 4    SWEETWATER CREEK              IYES       GOODI          I        I  . . . . I
                 5    CHIPOLA RIVER                 IYES       GOODI          I        I  . . . . I
                 6    Crooked Creek                 IYES       GOODI      0   1    0   1  0 0  .  01  x.1   0 .1
1    001    .1  +    1
                 7    CLEARWATER BRANCH             [YES       GOOD I     .   I        I . . . . I    ..1   . .1
1    ..1    .1  -    I
                 8    CHIPOLA RIVER                 IYES       GOOD 1     0   1        1  0 o     01  001   0 xi   0
1    001  0 01  0  0  1
                 9    JUNIPER CREEK                 IYES       GOOD I     .   I        I  . .     I   ..1   . .1   .
I    1.1  . ..1  .  .  I
                 10   WILDCAT CREEK                 IYES       GOOD I         I        I  . . . . I
                 11   OTTER CREEK                   ]PARTIAL   FAIRI          I        I  . . . . I
                 12   FOUR MILE CREEK               IYES       GOODI          I        I  . . . . I
                 13   WHITEWATER CREEK              IYES       GOODI          I        I  . . . . I
                 14   TLNMILE CREEK                 IYES       GOODI          I        I  . . . . I
                 15   CHIPOLA RIVER                 IYES       GOODI          I        I  . . . . I
                 16   PUMPKIN CREEK                 IYES       GOOD I         I        I  . . . . I
                 17   FOKWURTH MILL    CREEK        (YES       GOOD f         ?        t  . .
                 18   SHORES MILL CREEK             IYES       GOOD I         I        I          I    I      I
I            I
                 19   SINK CREEK                    IYES       GOODI          I        I  . . . . I
                 20   ROCKY CREEK                   IYES       GOOD I         I        I  . . . . I
                 21   DRY CREEK                     IYES       GOODI
                 24   SPRING CREEK                  IYES       GOODI          I        I  . . . . I
                 25   RUSS MILL CREEK               IND        UNIN I         I        I  . . . . I
```

26 CHIPOLA RIVER IYES GOOD 1 0 1 0 1 0 + .1 0.1 0 01 0
1 xX1 + +1 x
2B WADDELLS MILL CREEK IYES GOOD I . I . i . . I ..1 . .1 .
I -.1 - .1 -
29 SPRING BRANCH IYES GOOD I . I . I . . . . I ..1 . .1 .
.1 -.1 . .1 .
30 Marshall Creek IYES GOOD 1 0 1 0 1 0 0 .1 x.1 0 01 +
1 001 0 01 0
31 COWARTS CREEK IYES GOODI 0 1 0 1 0 0 .1 0.1 0 01 0
1 001 0 01 0 1

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLOW TN-NITROGEN
WQI-WATER QULhITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

NPS QUALITATIVE
SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH
POLLUTANT OR SOURCE
THE - ON MAPID INDICATES NO STORET
INFORMATION AVAILABLE FOR THIS WATERSHED

```
                                                                                                      -SEE PAGE 11 FOR LEGEND
FOR THIS TABLE-

       ------------------------------------------------------------------------------------      CATNAME=CHIPOLA RIVER
HUC=03130012  ------------------------------------------------------------------------------------

                                                                                N    B    S        P  0            s
0    F          T         F          0
                                                                                U A E E T A H T T I U I T
            M                                                                   T C D              S H D 0 L
A H H S                     A         S N N H
            A               B                          W          W          R.   T    I        T  E   E   X    I      M
B      E    E    H  A       B         H  0    0  E
            p         W     A                          Q          Q          I E M              I R B Y N              E
I F R R K L W 1 0 D S F R
                      B     S                          3          N          E    R    E  0     C  C   R   G    I      T
T   L   M    P    I  G   E  D   D     E  W    I  S   I   S
                      I     1                          0          p          N I N I I H I E T P A A 0 A 0 L A E 1 0 C I
S Y N T A R S L U C H 0
            D         D     N                          5          S          T    A    T  L     D  E   S   N    Y  H   L
T   W   L    L    L  L   D  T   R.    L  M    H  M   D    P   G    E   L   D    R    N   M    T

                  I     180A   MERRITTS MILL POND      GOOD       THREAT    x    x    x              x
x                     x   x    x   x              x                           x    x    x        x
                  2     51A    CHIPOLA RIVER           GOOD       THREAT    x    x    x  x    x  x   x   x    x  x   x
x   x   x        x  x   x    x         x  x                   x   x   x     x         x   x    x
                  3     51B    CHIPOLA RIVER           GOOD       THREAT    x    x    x  x    x  x   x   x    x  x   x
x   x   x        x  x   x    x         x  x                   x   x   x     x         x   x    x
                  5     sic    CHIPOLA RIVER           GOOD       THREAT    x    x    x  x    x  x   x   x    x  x   x
x   x   x        x  x   x    x         x  x                   x   x   x     x         x   x    x
                  8     51D    CHIPOLA RIVER           GOOD       THREAT    x    x    x  x    x  K   x   x    x  x   x
x   x   x        X  X   K    X         x  x                   x   x   x     x         x   x    x
                15      51     CHIPOLA RIVER           GOOD       THREAT    x    x    x  x    x  x   x   x    x  x   x
x   x   x        x  x   x    x         x  x                   x   x   x     x         x   x    x
                20      309    ROCKY CREEK             GOOD       THREAT    x         x       x  x
x       x                              x   x         x
                21      279    DRY CREEK               GOOD       THREAT    x         x              x
x                              x                              x       x          x             x
                22-     320    BRIDGE CREEK                       THREAT    x         x       x      x
x                                                                           x    x    x        x
                23-     267    LITTLE ROCKY CREEK                 THREAT    x         x       x
x                 x
                24      180    SPRING CREEK            GOOD       THREAT    x    x    x              x
K                     K   X    X   X              K                           x    x    x        x
                26      51E    CHIPOLA RIVER           GOOD       T14REAT   x    x    x  x    x  x   x   x    x  x   x
x   x   x        X  X   K    X         x  x                   x   x   x     x         x   x    x
```

28 174 WADDELLS MILL CREEK GOOD THREAT x x x
x x x x x x
31 52 COWARTS CREEK GOOD THREAT x x x
x x x x x

LNEOAK Br,'

ROCKYC

IERS MLL CREEK

:As

CREEK

GARNIER

E BAYOU

GLLF OF MD=

INDIAN BAYOU

J-4

CHOCTAWHATCHEE BAY BASIN
03140102
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD -
THREATENED
FAIR
POOR
UNKNOWN

. 7.r, - 8;

1

CROCTAWHATCHEE BAY BASIN

Basic Fact

Drainage Area: 699 square miles
Major Land Uses: silviculture, urban development
Population Density: concentrated in 2 urban areas (Ft. Walton Beach, Destin)
Major Pollution Sources: urban and WWTP sprayfield runoff
Best Water Quality Areas: most of the basin
Worst Water Quality Areas: Joe!s BAYOU
Water Quality Trends: stable quality at I site, Magnolia Creek improving
OFW Waterbodies: Basin Bayou State Recreation Area
SWIM Waterbodies: none
Reference Reports:
  Choctawhatchee Bay Report, Livingston, NWFWMD, 1988
  Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Basin Water Quality Experts:
  David Heil, DEP (Tallahassee), 904/488-5471
  Don Ray, DEP (Pensacola), 904/444-8300
  Glenn Butts, DEP (Pensacola), 904-444-8380

Ecoloizical Characterization

Choctawhatchee Bay basin encompasses 699 square miles with the bay itself covering 129 square miles. The bay has little communication with the Gulf of Mexico, with only one inlet, East Pass, on the western end of the bay. Freshwater inputs are the Choctawhatchee River, at 7,000 cfs, entering at the easterrunost end of the bay, and several small creeks entering the bayous along the northern shore of the bay.

Development along the north and west is sparse, with Eglin Air Force Base occupying most of the northern drainage. The City of Ft. Walton Beach is on the eastern shore, and

Destin is situated at East Pass. Residential, hotel and condominium development is occurring rapidly all along the peninsula that forms the southern boundary of the bay. An endangered fish species, the Okaloosa Darter, is found in the streams draining into Boggy and Rocky Bayous.

Anthropogenic Impacts

Historically water quality in this basin has been good. However, there have been several problem areas associated with rapid development occurring along the coast. In the 1970s,

treated wastewater effluents caused eutrophication, fish kills and grass bed die-offs in portions'ofthe-bay. The WV*7TPs have since been converted wspray irrigation discharge. A basin assessment conducted by the DEP Northwest District in 1984 indicated that water quality did improve once the WWTPs were upgraded.

Recently, however, water quality in the bay ig again being degraded due to the continuing development of the watershed area. The nonpoint pollution sources associated with this development include highway runoff, ditching and draining of wetlands and surficial water table seepage from package plant perc-ponds and WWTP spayfields. In particular, the poorly circulating water of Old Pass Lagoon at Destin, Florida has shown high levels,of eutrophication and fish kills in the past. Local education programs and ordinances along with increased emphasis on stormwater treatment appear to be:-reversing. the pollution trend. Fish kills have not been reported in recent years. A Gulf-*to-Lagoon pipeline and pump has been partially constructed by the Northwest Florida Water Management District to facilitate lagoon flushing. In April 1994, Dissolved oxygen violations were found during flush, pump operations in Old Pass Lagoon (Destin Harbor) and'Holiday Isle canals. Several bayous that discharge into the Bay have had and continue to have water quality problems. Also, Dons Bayou near Ft. Walton has experienced a low grade, chronic fish kill from unknown sources. Recent studies indicate localized metals contamination in. sediments near urban areas. The NOAA National Status and Trends Program, which monitors trends of chemical contamination, found high concentrations of lead, silver, DDT, chlordane, PCB, and polycyclic aromatic hydrocarbons in sediment at Shirk Point, near the mouth of Boggy Bayou. Fish kills have also been reported in Jose Bayou in Destin, Jolly Bay at Black Creek and in LaGrange Bayou. The latter has a small shipyard located near Freeport.

Another major area of concern for the basin was a proposed bridge from White Point across the bay to Piney Point which- had been permitted. Potential sources of ecological damage include: destruction of grass beds, decreased circulation of bay waters, destruction of wetlands from Piney Point to the connecting highway, and construction associated turbidity. The bridge will also promote even faster growth in the area, further stressing the existing infrastructure.

An existing bridge across the bay is in service however, mitigation of seagrass nursery beds destroyed during construction has not yet suceeded.

Commercial fisherman report crab kills in the vicinity of Peach Creek at the mouth of the Intracoastal Waterway. Monitoring found low dissolved oxygen concentrations in Peach Creek and the stream had been historically channelized in a mistaken attempt at mosquito control. A new WWTP (Point Washington WWTP) near Peach Creek has been permitted for construction because of the area's increased development.

Turkey Creek below Niceville WV*fTP sprayfield had it's total nitrogen increased from <0. I mg/l upstream to >24 mg/I downstream.

```
USGS HYDROLOGIC UNIT: 03140102 CHOCTAWHATCHEE BAY

INDEX          GOOD FAIR POOR
                  SURFACE WA--_R Q@'A!:-,Y DATA FOR 1970-1993
----------- ----- ----- -----
                  MEDIAN VAL@:SS FOR EACH WATERSHED
WQI-RIVER         0-44 45-59-60-90
                    CURRENT,              OFF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100                -----
                    PERIOD           70 '989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE          0-59 60-69 70-100             1

1

BIOLOGICAL                               WATER
                WATERSHED                                          WATERSHED DATA RECORD
WATER               DISSOLVED           OXYGEN              PH            TROPHIC
SPECIES                                 QUALITY
                ID       ';A-:                                    ----------------------
CLARITY                 OXYGEN          DEMAND          ALKALINITY          STATUS          COLIFORM
DIVERSITY          COND FLOW               INDICES
                ----- ---------------------------------           MAX       BEG END       DATA  --------------------
--------- ---------- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------
                                                                  #OBS      YR  YR        PERIOD          TURB
SD COLOR        TSS    DO    DOSAT    BOD     COD     TOC    PH      ALK    NITRO PHOS CHLA       TOTAL FECL NAT ART
BECK               COND FLOW            V10I         TSI

                � WATER BO:@Y -.Y?7-: 7-S-,:ARY
                  14     1,DA; BAYOU                                  5    85  85    Historical
1.5             12     7.7      88    2.3                   7.5        .   0.48  0.06       12
27875                                47
```

17 CHOC7'_WA7.C:-.*_--_7 BAY AS C 50 92 93 Current 3.7
1.0 33 9 6.0 65 4 7.4 67 0.42 0.01 3 8
21288 38

18 JIOES BAYOU 2 87 87 Historical 7.0
. 30 8 7.7 85 2.6 . 1.U 0.20 9 1200 100
52

21 CHOC-0%`A7C@-.'-_E_ BAY AB C 83 71 87 Historical 5.5
1.5 10 8 8.1 94 0.9 1 8.0 70 0.37 0.01 2 41 7
27150 30

23 BAY AB C 70 72 82 Historical 1.3
1.4 20 4 6.6 74 0.8 3 7.9 77 0.32 0.02 6 3 5
36000 35

24 C:N@110 BAYOU 34 70 73 Historical 6.5
. 6 . 9.0 98 1.0 8.0 78 0.91 D.01 33 .
28000 25

25 CHOC-OWATCHEE BAY AS C 21 89 93 Current 2.0
2.2 15 13 8.2 go 0.2 3 7.6 . 6.34 0.02 3 5 5
25700 36

27 GAR.1;:ER BAYOU 8 92 92 Current 1.6
1.7 15 14 6.7 74 4 6.6 32 0.63 0.01 4 200 40
21515 37

35 BAY-,U 9 72 72 Historical 5.0
. 9 . 10.8 113 1.5 8.0 57 0.86 0.01 97
12

37 ALAQUA CR-SE-K OU:--T-T 7 92 92 Current 4.7
0.8 50 1B 7.3 87 5 7.0 30 0.33 0.01 5 300 20
10200 46

41 A:AQr.A 3AY--,,: 8 92 92 Current 10.0
0.6 60 19 6.6 72 6 6.7 17 0.38 0.01 8 780 100
6500 so

43 BOGGY BAY-^'- 8 92 92 Current 1.6
1.2 20 9 6.7 78 4 6.5 26 0.49 0.01 3 100 4
23475 38

44 BAS"* B-AY07, 8 92 92 Current 2.8
0.8 70 8 7.2 79 5 6.2 8 0.29 0.01 4 900 160
1700 45

48 ROC'<Y BAY^,,: 7 92 92 Current 2.4
0.8 40 6 6.7 83 4 6.6 11 0.28 0.01 2 500 120
7272 42

� WATER BOLY :Y?--: =z

10 OYSTER 3 80 80 Historical
0.7 200 6.4 15 0.58 0.03 4
2200 51

� WATER BO@Y 7Y?-7: STPEAM

```
                 28     LAG;Lkl;Gr- BAYOU                                    12     92  93    Current                5.0
0.9     50     10     5.4     58                     6    7.1        46  0.52  0.01        5           103
18900                   33
                 49     TOYS CREEK                                           13     ?2  74    Historical            10.0
10       7    9.0      85    0.4               2    6.9        5   0.36  0.02             340        45
34       35            23
                 50     L:G'H7WOOD 'i-NOT CREEK                              38     72  79    Historical             8.3
23            10.2     94    0.4        1      0    5.6        24  0.38  0.01             487
20       57            10
                 51     GARN:Z3, CR_--_K                                     32     78  79    Historical             1.0
30            8.0      79    0.5        3      0    5.6        5   0.60  0.01
27       24            10
                 52     LA:AY_-:7z_ CREEK                                    10     92  92    Current                3.2
1.5     50       2    7.3     82                     5    5.1        2   0.52  0.01              1000     200
38                     24
                        K-kQr..k C        _.
                 53                31 K                                       8    92  93    Current                4.0
1.4     35       2    7.8     83                     3    6.0        1   0.15  0.01                          85
370                    20
                 58     TURKEY "RZEK                                          3    78  78    Historical             2.5
.     30       .    7.8      82    0.6       10      5    4.8        1   0.20  0.01
15      390            10
                 67     Sw:" _?1ZFK'                                          5    92  92    Current                1.5
0.8     20       1    7.7     94                     2    6.0        2   0.25  0.02              420         84
21                     16
                 68                CREEK                                      7    92  92    Current                2.0
1.0     18       1    8.9     87                     1    6.0        1   0.16  0.02              250         86
12                     13
                 70     YA_'-N0!:A CREEK                                      8    89  91    Current
48       .    7.7      90                         5.7              0.58  0.01
33       37            11
                 74     WA7ER:N@ CREEK                                        5    92  92    Current                2.2
0.4     50       1    7.9     89                     5    6.1        1   0.14  0.01              500    120
18                     17
                 75     ALAQr.A CREEK                                         7    92  92    Current                8.0
0.9     50       7    7.2     82                     3    5.6        1   0.17  0.01             9000     255
18                     34
                 79     @*k@7:y C-1:7K                                        6    92  92    Current                1.1
1.2     10       1    8.9     94                     1    6.2        1   0.22  0.01              153         68
12                     11
                 66     @;CKI' CREEK                                          5    92  92    Current                4.9
0.9     50       1    7.7     86                     3    5.5        2   0.14  0.01              800    300
13                     23
                 89     L"-11 AIAQUA CREEK                                    5    92  92    Current                2.8
0.6     56       2    7.9     86                     4    5.7        1   0.16  0.01             1300     700
14                     22
```

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC 14ETERS TURB-TURBIDITY MG/L
ALK-ALKA.L.N:-Y YG/_ CHLA-CHLOROPHYLL UG/L DOSAT-DO % SATURATION NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MGIL WQI-WATER QUALITY INDEX
ART-ART-_-:=k@ S@:BS7RA7Z DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG SA-?'--';G YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S 3-:0::C 21@DZX COND-CONDUCTIVITY UMHOS FL.OW-FLCW CFS PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

mmmm mmmm m m m m

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT: 03140102 CHOCTAWHATCHEE BAY
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'X'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
'0'--WITHIN SCREENING CRITERIA
'.'=MISSING DATA

```
                                I RANK DATA RECORDI     IN    ISTREAM   I LAKE     I   PH     I   ALK
I TURB &   I COND      I OXYGEN   I    DO    ICOLIFORM   I BIOL      I CHIA      ISECCHI   I
                                I------------------                  TP   I    TP    I          I
I   TSS    I           I DEMAND   I          I BACTI     I   DIV     I          I DISC    I
                                I WQI   CURRENT                                        k
k          t                              t                          I
        WATERSHED                       I OR        OR     I TN>2.0   ITP>.46   I TP>.12   IPH>8.8    IALK<20
ITURB>16.51COND>12751    BOD>3.3  I  DD<4    ITOT>3700   IDIART<1.951  CHLA>40   I SD<.7   I
        ID   NAME                       I TSI HISTORICAL   I         I         I          IPH<5.2    I
I TSS>18   I           I COD>102  I          IFECAL>4701DINAT<1.5    I          I         I
```

```
      -----  -------------------------------------------                                    I
I          I          I TOC>27.51          I          I BECK<5.5  I          I        I

      WATER BODY TYPE-. ESTUARY
      14  INDIAN BAYOU                   IGOOD Historical   1    0     1        1    0     1    0     1
1     0    1     x     1     0    1     0    1                       1     0     1     0   1
      17  CHOCTOWATCHEE BAY AB    C      IGOOD Current      I    a     I        1    0     1    a     1     0
1     0    1     x     1     0    1     0    1     0                 1     0     1     0   i
      18  JOES BAYOU                     IFAIR Historical   1    0     1        1    x     I          I
1     0    1     0     1     0    1     0    1     0    1            1     0     1     .   i
      21  CHOCTOWATCHEE BAY AB    C      IGOOD Historical   1    0     1        1    0     1    0     1     0
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0   1
      23  CHOTOWATCHEE BAY AB c          IGOOD Historical   1    0     1        1    0     1    0     1     0
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0   1
      24  CINCO BAYOU                    IGOOD Historical   1    0     1        1    0     1    0     1     0
1     0    1     x           0    1     0    1     0    1            1           1     .
      25  CHOCTOWATCHEE BAY AB C         IGOOD Current      1    0     1        1    0     1    a     I
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0   1
      27  GARNIER BAYOU                  IGOOD Current      1    0     1        1    0     1    0     1     0
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0   1
      35  POQUITO BAYOU                  (GOOD Historical   1    0     1        1    0     1    0     1     0
1     0    1           1     0    1     0    1     0    1            1           1     .   1
      37  ALAQUA CREEK OUTLET            IGOOD Current      1    0     1        1    0     1    0     1     0
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0   1
      41  ALAQUA BAYOU                   IFAIR Current      1    0     1        1    0     1    0     1     x
I     x    I     x     1     0    1     0    1     0    1            1     0     1     x   1
      43  BOGGY BAYOU                    IGOOD Current      1    0     1        1    0     1    0     1     0
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0
      44  BASIN BAYOU                    IGOOD Current      1    0     1        1    0     1    a     I     x
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0   1
      48  ROCKY BAYOU                    IGOOD Current      1    0     1        1    0     1    0     1     x
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0   1

      WATER BODY TYPE- LAKE
      10  LAKE OYSTER                    IGOOD Historical   1    0     1        1    0     1    0     1     x
I          I     x     1                                                   0     1     0   1

      WATER BODY TYPE: STREAM
      28  LAGRANGE BAYOU                 IGOOD Current      1    0     1     0  1          1    0     1     0
1     0    1     x     1     0    1     0    1     0    1            1     0     1     0   i
      49  TOMS CREEK                     IGOOD Historical   1    0     1     0  1          1    0     1     x
1     0    1           1     0    1     0    1     0    1
      50  LIGHTWOOD KNOT CREEK           IGOOD Historical   1    0     1     0  1          1    0     1     0
1     0    1           1     0    1     0    1     0    1
      51  GAANIEFL CREEK                 IGOOD Historical   1    0     1     0  1          1    0     1     x
1     0    1           1     0    1     0    1          1            1           1
```

52	LAFAYETTE CREEK	IGOOD	Current	1	0	1	0	1	1	x	I	x	1	0	1		1	0	1	0	1	0	1	1	0	1
53	ALAQUA CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1	0	1	0	1	0	1	0	1	1	0	1
58	TURKEY CREEK	IGOOD	Historical	1	0	1	0	1	1	x	I	x	1	0	1		1	0	1	0	1		1	1	.	i
67	SWIFT CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	a	1	0	1	0	1	1	0	1
68	JUNIPER CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1	1	0	1
70	MAGNOLIA CREEK	IGOOD	Current	1	0	1	0	1	1	0	1		1		1		1		1	0	1		1	1	.	1
74	WATERING CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1		x	1
75	ALAQUA CREEK	IGOOD	Current	1	0	1	0	1	1	0	1	x	1	0	1		1	0	1	0	1	x	1		0	1
79	TURKEY CREEK	IGOOD	Current	1	0		0	1	1	0	1	x	1	0	1		1	0	1	0	1	0	1		0	1
86	ROCKY CREEK	IGOOD	Current	1	0	1	0	1		0	1	x	1	0	1		1	0	1	0	1	0	1		0	1
89	LITTLE ALAQUA CREEK	IGOOD	Current	1	0	1	0	1		0	1	x	1	0	1		1	0	1	0	1	x	I		x	

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, KI OR TSI, IS
BECK-BECK'S BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,COD,TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATMODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
C14LA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

```
                SURFACE WATER QUALITY ASSESSMENT REPORT                                             - USGS HYDROLOGIC
UNIT: 03140102 CHOCTAWHATCHRE BAY
                      TRENDS -SOURCES - CLEANUP

                      'x'=DEGRADING TREND                                                       1984     1993 TRENDS
                      '0'=STABLE TREND                                      ----------------------------------------------
------
                      '+'-IMPROVING TREND                                   I      iW      TI    T T C Sl   P Al  T TI   B
TI  D D1   T Fl  T F   j<--- PLEASE READ THESE COLUMNS VERTICALLY
                      '.'=MISSING DATA                   IQUALITY RANK      CIVER-IQ or Sl       N P  H   D1 H Ll U Si   0
01  0 01   C Cl  E  L  I
                                                         I-------------     I ALL II       il        L   I   KI  R Sl   D
Cl    Sl   0 01  M  0  1
                                                         1          WQI ITRENDI            I         A   I     I B   I
I    Al   L Ll  P  W  I
                WATERSHED                                i MEETS    OR I          I        I             I
I    Tj   I Il       I
                ID    NAME                               IUSE ?     TSI    I      I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
                ----- ------------------------          I-------------
-----------------------------------------------------------------------------------------------


                � WATER BODY TYPE: ESTUARY
                14    INDIAN BAYOU                       IYES       GOOD I        I        I   . . . . .  i
                I I   CHOCTOWATCHEE BAY AS C             IYES       GOOD I        I        I   . . . . .  I
                18    JOSS BAYOU                         IPARTIAL   FAIRI         I        I   . . . . .  I
                21    CHOCTOWATCHEE BAY AS C             IYES       GOOD 1        1        1   . . . . .  I
                23    CHOTOWATCHEE BAY AS C              @YES       GOOD I        i                   I   i     i      i
I      1        1
                24    CINCO BAYOU                        IYES       GOOD I        I        I             I   I     I      I
I      1        1
                25    CHOCTOWATCHEE BAY AS C             IYES       GOOD 1    0   1    0   1   0 0  x   010 . 1 0 01   +
.1  0 01   0 01  0      1
                27    GARNIER BAYOU                      IYES       GOOD I        I        I   . . . . .  I . .1  - .1   .
.1  . .1   . .1  .      1
                35    POQUITO BAYOU                      IYES       GOOD I        I        I             I   I     I      I
I      1        1
                37    AL.AQUA CREEK OUTLET               IYES       GOOD I        I        I   . . . . .  I
                41    ALAQUA BAYOU                       IPARTIAL   FAIRI         I        I   . . . . .  I
                43    BOGGY BAYOU                        @YES       GOOD)         I        i   .          I). .)  . .1   .
.1  .   j    .1         1
                44    BASIN BAYOU                        IYES       GOODI         I        I   . . . . .  I
                48    ROCKY BAYOU                        YES        GOODI         I        I   . . . . .  I
```

� WATER BODY TYPE: LAKE

10 LAKE OYSTER @YES GOOD I I I I I I I
I I I

� WATER BODY TYPE: STREAM

28 LAGRANGE BAYOU IYES GOOD I I I I
49 TOMS CREEK IYES GOODI I I I I I I
I 1 1
50 LIGHTWOOD KNOT CREEK IYES GOOD I I I I I I I
I I I
51 GARNIER CREEK IYES GOOD I I I I I I I
I 1 1
52 LAFAYETTE CREEK iYES GOODI I I . . . . I . .1 . .1 .
.1 . .1 .1 1
53 ALAQUA CREEK IYES GOOD I I 1 .1 .1 .1
.1 .1
58 TURKEY CREEK (YES GOOD I f t t
I
67 SWIFT CREEK IYES GOODI I I . . . .
68 JUNIPER CREEK IYES GOODI I I . . . .
70 MAGNOLIA CREEK IYES GOODI I I + 0 . .10 .1 .1
.1 0 01 .1 0 0 1
74 WATERING CREEK IYES GOOD I I I 1
.1
75 ALAQUA CREEK IYES I GOOD I I I . . 1
.1
79 TURKEY CREEK IYES GOOD I I I . . . .
86 ROCKY CREEK (YES GO= j
89 LITTLE ALAQUA CREEK IYES GOOD I

LEGEND:

DOSAT-DO SATURATION
TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM
TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY
FLOW-FLOW
TN-NITROGEN
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND
MEETS USE-MEETS DESIGNATED USE
TCC-T.ORGANIC CARBON
CHIA- CHLOROPHYLL
PH-PH
TP-PHOSPHORUS
DD-DISSOLVED OXYGEN
SD-SECCHI DISC METERS
TSS-TOTAL SUSPENDED SOLIDS

NPS QUALITATIVE
SURVEY RESULTS
AN "X" INDICATES A PROBLEM
WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET
INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR
LEGEND FOR THIS TABLE-

CATNAME=CHOCTAWHATCHEE BAY HUC=03140102 --

N B S P 0 S
0 F T F 0
U A E E T A H T T I U I T
M T C D S H D 0 L
A H H S R S N N H
A B W W R I I T E E x I M B E E H A
B H 0 0 E
P W A Q Q I E M I R B Y N
E I F R R K L W 1 0 D S F R
B S 3 N E R E 0 C C R G I
T I L M P I G E D D E W I S I S
T I 1 0 P N I N I I H I E T P A A 0 A 0 L A E 1 0
C I S Y N T A R S T U C H 0
D D N 5 S T A T L D E S N Y
H L T W L L L L D T R L M H M D P G E L D R N M T

1- 1029 DIRECT RUNOFF TO GULF THREAT x x x
x x K x x x x x x x
2* 980 MCQUAGE BAYOU FAIR x x x x x x
x x x x x x x x x x x x
3- 972 BOWMAN BAYOU FAIR x x x x x x
x x x x x x x x x x x x x
4* 981 DIRECT RUNOFF TO BAY FAIR x x x x x x
x x x x x x x x x x x x x
5* 978 LITTLE BAYOU FAIR x x X x x x x
x x x x x x x x x x x x x x x x

6* 881 DIRECT RUNOFF TO RAY FAIR x x x x x x
x x x x x x x x x x x x x x x
7* 976 DIRECT RUNOFF TO BAY FAIR x x x x x x
x x K x x x x x x x x x
8- 957 MUSSETT BAYOU FAIR x x x x x x
x x x x x x x x x x x
9* 944 HEWETT BAYOU FAIR x x x x x x
x x x x x x x x x x x x
10 959 LAKE OYSTER GOOD THREAT x x x x x x
x x x x x x x x
11* 897 DIRECT RUNOFF TO BAY FAIR x x x x x
x x x x x x x x x x
12* 943 DIRECT RUNOFF TO BAY FAIR x x x x
x x x x x x x x x x
13* 937 MACK BAYOU FAIR x x x x x x x x
x x x x x x x x x x x x x
14 917 INDIAN BAYOU GOOD FAIR x x x x x x x x x
x x x x x x x x x x x x x x x x
15. 938 DIRECT RUNOFF TO BAY FAIR x x x x x x
x x x x x x x x x x
16* 936 DIRECT RUNOFF TO BAY FAIR x x x x x x x x x
x x x x x x x x x x x
17 778D CHOCTOWATCHEE BAY AB C GOOD FAIR x x x x x x x x x
x x x x x x x x x x x x x x x x x x x x
le 906 JOES BAYOU FAIR FAIR x x x x x x x x x
x x x x x x x x x x x x x x
19. 905 DIRECT RUNOFF TO BAY FAIR
x x
20* 874 DIRECT RUNOFF TO BAY FAIR x x x x
x x x x x x x x x
21 778A CHOCTOWATCHEE BAY AB C GOOD FAIR x x x x x x x x x
x x x x x x x x x x x x x x x x x x x x
22* 851 DIRECT RUNOFF TO BAY FAIR x x x x x x x x
x x x x x x x x x x x x x
23 778C CHOTOWATCHEE BAY AB C GOOD FAIR x x x x x x x x x
x x x x x x x x x x x x x x x x x x x x
24 843 CINCO BAYOU GOOD FAIR x x x x x
x x x x x x x x x x
25 778B CHOCTOWATCHEE RAY AB C GOOD FAIR x x x x x x x x x
x x x x x x x x x x x x x x x x x x x x
26* 803C Choctawhatchee Bay ab THREAT x x
x x x x
27 786 GARNIER BAYOU GOOD THREAT x x x x x
x x x x x x x x x x
28 789 LAGRANGE BAYOU GOOD FAIR x x x x x x x x
x x x x x x x x x x x x x x x

```
                 29*  803     DIRECT RUNOFF TO BAY                   THREAT     x        x
x                    x         x                                                   x
                 30*  772     LITTLE TROUT CREEK                     FAIR       x        x
x                    x    x    x       x             x                             x     x   x   x
                 31-  761     DIRECT RUNOFF TO BAY                   FAIR       x        x    x   x    x
x    x    x               x         x       x             x                         x   x     x   x   x
                 32*  774     BEAR CREEK                             THREAT              x
x                              x       x             x                    x              x   x   x
                 33-  778     CHOCTAWHATCHEB BAY                     FAIR       x    x   x    x   x    x   x    x   x
x    x    x  x         x  x         x   x   x             x           x    x   x    x   x     x   x   x
                 34*  759     DIRECT RUNOFF TO RAY                   FAIR       x        x    x   x    x
x    x                    x         x       x             x                              x     x   x   x
                 35   754     POQUITO BAYOU             GOOD         FAIR       x        x        x    x
x                    x    x    x       x             x                             x     x   x   x
                 36-  762     DIRECT RUNOFF TO BAY                   THREAT     x        x        x    x
x                    x    x    x       x             x                             x     x   x   x
                 37   770     ALAQUA CREEK OUTLET       GOOD         THREAT     x        x
x                    x         x                                                   x
                 38*  760     AIRPORT DRAIN                          FAIR                x    x   x    x
x    x    x        x                x   x   x             x                         x   x     x   x   x
                 39*  751     EAGLE CREEK                            THREAT     x        x        x    x
x                              x       x             x                    x        x     x   x   x
                 40-  773     DIRECT RUNOFF TO BAY                   THREAT     x        x        x    x
x                    x    x    x       x             x                             x     x   x   x
                 41   731     ALAQUA BAYOU              FAIR         THREAT     x        x    x            x
x    x               x         x   x   x                                       x   x     x       x
                 42*  768     DIRECT RUNOFF TO BAY                   THREAT     x        x        x
x                    x         x       x             x                             x     x   x   x
                 43   692     BOGGY BAYOU               GOOD         FAIR       x    x   x    x   x    x   x
x    x             x      x         x   x   x             x                         x   x     x   x   x
                 44   742     BASIN BAYOU               GOOD         THREAT              x        x    x
x    x                         x    x       x             x                    x                  x   x
                 45*  717     TROUT CREEK                            THREAT     x        x        x    x
x                              x       x             x                    x        x     x   x   x
                 46*  712     MULLET CREEK                           THREAT     x        x        x    x
x    x                              x       x             x                    x        x     x   x   x
                 41*  124     LINTON SPRING BRANCH                   THREAT              x        x    x
x    x                              x       x             x                    x              x   x   x
                 48   722     ROCKY BAYOU               GOOD         FAIR       x    x   x    x   x    x        x   x
x    x                    x         x       x             x                              x     x   x   x
                 50   650     LIGHTWOOD KNOT CREEK      GOOD         THREAT                   x   x    x
x                              x       x             x                    x                      x
```

C\
tlj

NPS QUALITATIVE SURVEY RESULTS

AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE

THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED

-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

-- CATNAME-

CHOCTAWHATCHEE BAY HUC=03140102 --

(continued)

```
                                                                          N  B     S       p   0          S
0   F           T        F          0
                                                                          U  A     E       E   T          A
H         T   I   I           U        I          T
              M                                                           T C D            S H D 0 L
A         H H S               R        S N N H
              A               B                    W         W            R I I            T E E X I M B
E E H A            B        H 0 0 E
              P      W        A                    Q         Q            I E M            I R B Y N
E I F R R K L W 1 0 D S F k
                     B        S                    3         N            E  R.    E  0    C   C    R  G    I
I T   L     M   P   I  G    E    D  D    E  W   1   5   1   S
                     I        1                    0         P            N I N I I H I E T P A A 0 A 0 L A E 1
0 C I S Y N T A R S L U C H 0
              D      D        N                    5         S            T A T L D B S N Y H L T W L L L L D T
R L M H M D P G E L D R X M T

              51     655      GARNIER CREEK        GOOD      FAIR         x        x       x   x
x                        x   x      x         x                  x   x        x       x
```

52	646	LAFAYETTE CREEK	GOOD	FAIR	x		x		x	x				x					x			x		x			x		x		x	x			x		x		x		x	
53	351A	ALAQUA CREEK	GOOD	THREAT	x		x				x			x		x				x				x		x	x							x							x	
54-	673	SANDERS BRANCH		FAIR	x		x		x	x				x		x				x		x		x			x		x						x		x		x		x	
55*	584	BASIN CREEK		THREAT			x		x	x				x	x										x			x		x			x									x
56-	664	LONG CREEK		THREAT			x		x	x				x	x										x			x		x			x							x		x
57-	658	SHAW STILL BRANCH		FAIR	x		x							x						x		x		x			x		x						x		x		x		x	
58	495A	TURKEY CREEK	GOOD	THREAT	x	x								x		x																										
59-	567	FOURMILE CREEK		THREAT	x	x	x		x	x				x						x		x		x			x		x			x			x		x		x		x	
60*	645	HICKORY BRANCH		THREAT			x		x	x				x										x			x		x			x									x	
61*	590	LITTLE BASIN CREEK		THREAT			x		x	x				x										x			x		x			x									x	
62*	622	BEE BRANCH		THREAT			x		x					x	x										x			x		x			x									x
63*	620	TURKEY CREEK		THREAT	x		x			x				K						x		x		x			x		x			x		x							x	
64*	644	MILL CREEK		FAIR	x		x	x	x	x				x	x		x				x		x		x			x		x						x		x		x		x
65*	612	LONG CREEK		THREAT			x							x										x			x		x			x									x	
66*	621	WOLF CREEK		THREAT	x		x		x					x										x			x		x		x						x				x	
67	568	SWIFT CREEK	GOOD	FAIR	x		x	x	x	x		x	x	x						x		x		x			x		x			x			x		x		x		x	
66	468A	JUNIPER CREEK	GOOD	THREAT	x	x								x		x																										
69*	580	MIDDLE CREEK		THREAT			x		x	x				x													x					x									x	
70	557	MAGNOLIA CREEK	GOOD	THREAT	x		x		x					x					x					x			x		x		x	x							x		x	
71*	619	ANDERSON BRANCH		THREAT			x		x	x				x										x			x		x			x							x		x	
72*	606	SCHOOLHOUSE CREEK		T14REAT			x		x	x				x				x		x								x			x											
@3*	587	ROGUE CREEK		THREAT			x		x	x				x										x			x		x			x									x	
14	520	WATERING CREEK	GOOD	THREAT			x		x	x				x										x			x		x			x									x	

75 351 ALAQUA CREEK GOOD THREAT x x x
x x x x x x x x
76* 514 BEAR BRANCH THREAT x x x
x x x x x x
77* 573 LONG BRANCH THREAT x x x
x x x x x x
78- 544 WHITE BRANCH THREAT x x x x
x x x x x x x x x
79 495 TURKEY CREEK GOOD THREAT x x
x x
80* 515 NINE14ILE CREEK THREAT x x x x x
x x x x x x x x x x
81* 532 BULLY HORSELOT BRANCH THREAT x x x
x x x x x x
82* 491 ALICE CREEK THREAT
x x x x
83* 476 LITTLE ROCKY CREEK THREAT x x x
x x x x x x x
84* 507 PAINTER HEAD CREEK THREAT x x x
x x x x x x
85* 471 TENMILE CREEK THREAT x x x
x x x x x x
e6 361 ROCKY CREEK GOOD THREAT x x x
x x x x x x x x x
87* 468 ANDERSON BRANCH THREAT x x
x x
88* 483 MIDDLE ROCKY CREEK THREAT x x x
x x x x x x x x x
89 432 LITTLE ALAQUA CREEK GOOD THREAT x x x
x x x x x x K
90* 472 PARRISH CREEK THREAT x x
x x
91* 492 PINELOG CREEK THREAT x x x
x x x x x x
92* 500 MATTRESS HEAD BRANCH THREAT x x x
x x x x x x
93* 470 BLOUNT MILL CREEK THREAT x x x
x x x x x x
94* 478 DAVIS BRANCH THREAT x x x
x x x x x x
95* 448 EAST ROCKY CREEK THREAT x x x
x x x x x x x
96* 445 OPEN BRANCH THREAT x x x
x x x x x x
97* 436 BLOUNT CREEK THREAT x x x x x
x x x x x x x x

98* 413 EXLINE CREEK THREAT x x x
x x x x x x

CN

mm

NPS QUALITATIVE
SURVEY RESULTS
AN "X" INDICATES A PROBLEM
WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET
INFORMATION AVAILABLE FOR THIS 'WATERSHED
-SEE PAGE 11 FOR
LEGEND FOR THIS TABLE-

CATNAME=CHOCTAWHATCHEE BAY HUC=03140102

(continued)

N B S P 0 S
0 F T F 0
U A E E T A
H T T I U I T
M
T C D S H D 0 L
A H H S R S N N H
A B w w R T I T E E X I
M B E E H A B H 0 0 E

P w A Q Q I B M. I R s Y N
E I T lk B. K L W 1 0 D S P R
B S 3 N E A E 0 C C R G I
T T L M P I G E D D E W I s I S
y I 1 0 P N I N I I H I E T P A A 0 A 0 L A E 1 0
c I S Y N T A R S L U C H 0
D D N 5 S T A T L D E S N Y
H L T W L L L L D T R L M H M D p G E L D R N M 7

99.	446	FISHPOND BRANCH	THREAT	x x x	x x x x x x
1001	425	BURNOUT CREEK	THREAT	x x x	x x x x x x
101-	438	CAKIE CREEK	THREAT	x x x	x x x x x x
102*	394	SANDY MOUNTAIN BRANCH	THREAT	x x x	x x x x x x
103*	387	MT SINAI BRANCH	THREAT	x x x x	x x x x x x x x x
104-	369	SCONIERS MILL CREEK	THREAT	x x x x	x x x x x x x x x x x x
105*	351B	ALAQUA CREEK	THREAT	x x x	x x x x x x x x
106*	377	WILDCAT CREEK	THREAT	x x	x x x x x x
107-	368	BEAR BAY BRANCH	THREAT	x x x	x x x x x x
108*	339	LOOKOUT CREEK	THREAT	x x x	x x x x x x
109*	332	COSSON MILL CREEK	FAIR	x	x x
110*	340	KISER BRANCH	THREAT	x	x x
111*	323	BEAR CREEK	THREAT	x	x x
112*	318	BULLHIDE CREEK	THREAT	x x x	x x x x x x x
113*	305	LIVEOAK BRANCH	THREAT	x x x	x x x x x x x
114*	307	BUCK BRANCH	THREAT	x x x	x x x x x

C H 0 CTAW @JAC HE E,.R WE R ALABAMA WRIGHTS CREEK

ITTLE CREEK

@2

W

h

LLI ATOR CREEK

Q

DY CREE

If

W4

BR

LABOR CREEK

CHOC WHATCH VER

%

PINE LOG CREEK

Cl CHEE BAY

CHOCTAWHATCHEE RIVER BASIN
03140203
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

CHOCTAWHATCBEE RIVER BASIN

Basic Facts

Drainage Area: 4,646 square miles (about 7 1 % in Florida)
Major Land Uses: agriculture, silviculture
Population Density: low (DeFuniak Springs, Bonifay, Chipley)
Major Pollution Sources: WWTPs
Best Water Quality Areas: spring areas, Pine Log Creek
Worst Water Quality Areas: Alligator Creek, Fish Branch

Water Quality Trends: stable quality at 3 sites
OFW Waterbodies: Choctawhatchee River
SWIM Waterbodies: none
Reference Reports:
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Choctawhatchee River Study, NWFWMD and R. Livingston, 1989
Basin Water Quality Experts:
Don Ray, DEP (Pensacola), 904/444-8300
Gray Bass, FGFWFC, 904/957-4172
Homer Royals, FGFWFC, 904/357-6631
Glenn Butts, DEP (Pensacola) 904-444-8380

In lu Ems

A 100 year flood occurred on the Choctawhatchee River in the spring of 1990.

Ecological Characterization

The Choctawhatchee River originates in northern Alabama, entering Florida near the town of New Hope, and flows approximately 89 miles from the Florida-Alabama line to Choctawhatchee Bay. The Choctawhatchee River basin drains roughly 3,300 square miles of northwest Florida. The remainder of the 4,646 square miles of total drainage area is located in Alabama. The average flow of the Choctawhatchee River (21 miles upstream from the mouth) is estimated as 7,000 cfs.

The Choctawhatchee River is basically alluvial in nature, and carries a relatively high sediment load. It does, however, flow through limestone areas and has considerable spring input. Holmes Creek, with an average discharge of about 1,000 cfs, is mostly spring flow. Below Holmes Creek, near Ebro, spring flow can make up as much as a third of the main river's flow. There are also several acidic, blackwater creeks that drain into the river and its major tributaries. Therefore, the basin has all three major river types. The basin also has several lakes, mostly solution or sink depressions.

The basin is used mostly for agriculture and some silviculture. The lowerportion also has extensive wetlands. The upper portions of the river flow through steep banks and deposit large sand bars, while the lower river flattens out into a fairly wide (up to a mile) swampy floodplain. There are some developments along the river (mostly upper river and near the bay) but little urbanization. The major cities in the basin are located on the tributa nies. Much of the actual river corridor is in public ownership by the Northwest Florida Water Management District, the Nature Conservancy, and the Division of Forestry.

Anthropogenic Impacts

The Choctawhatchee River basin exhibits more water quality problem areas than other low population density, northwest Florida basins. Overall water quality ranking is good; however, several small tributaries exhibit fair to poor quality. Sampling of the upper Choctawhatchee River in the early seventies showed only fair water quality due to Alabama domestic and industrial discharges as well as agricultural runoff in Florida. A lack of recent data makes it difficult to determine water quality, but local water quality managers indicate that agricultural, logging and dirt road runoff is still a problem. Tenmile and Wrights Creeks, also in the upper basin, are subject to similar nonpoint pollution. In addition, the City of Noma WWTP, discharges to Wright's Creek, and has been experiencing periodic operational/maintenance problems.

Upper Holmes Creek and its tributaries also have water quality problems, primarily due to WWTP point sources and agricultural runoff. Four small municipalities (Graceville, Vernon, Chipley and Bonifay) have historically had problems with their wastewater treatment systems which have lead to the degradation of the receiving waters and, ultimately, Holmes Creek. The 1988 Nonpoint Source Assessment reports odor, oxygen depletion, algal growth and some fish kills in the upper Holmes Creek basin. All of the treatment plants have been under enforcement. Although they have made upgrades, problems still exist. Of particular concern are the Chipley and Bonifay plants, the latter of which has increased its discharge to Camp Branch Creek to accommodate a new federal prison. The City of Bonifay constructed a new facility with treatment requirements of

8-.8:5:3 In 1991 and appears to have improved greatly since it was placed into operation. The City of Chipley remains under a Consent Order until corrective measures are completed. The City of Vernon remains a problem source. They were recently notified of a no discharge WLA and requested to apply for a TOP to eliminate the discharge to the tributary to Holmes Creek and to construct an upland disposal site. Currently they remain under a Final Order. The City of Graceville was issued a TOP in April, 1994. The TOP requires upgrading to AWT or elimination of the discharge to surface waters by January 1997. In addition to these WWT`Ps, Holmes Creek receives runoff from agricultural areas and hog farms that occasionally spill waste from their highly eutrophic impoundments. Water quality in lower Holmes Creek improves, partially, due to the input of several springs near Vernon. Finally, Reedy Branch, which empties into Holmes Creek, was only sampled in 1971, but showed poor water quality then, perhaps due to heavy agricultural runoff. Problems in the southwestern portion of the basin center around West Sandy Creek and Bruce Creek. The City of Defuniak Springs discharges 0.75 MGD domestic wastewater into West Sandy Creek. A bioassessment conducted in June, 1990 revealed almost exclusive dominance by blood-worm midges, Chironomus V below the outfall and this facility has had a history of sludge spills into the creek, thus a no discharge wasteload allocation was issued in September 1992. The City has found an upland site and a subsurface discharge investigation was scheduled for March, 1994. The Consent Order requires the elimination of their discharge to West Sandy Creek and disposal of the effluent to an upland site by March, 1996. Bruce Creek received effluent from a chicken processing plant (Showell Farms) which has also improved treatment. Showell Farms is now discharging their 1.25 MGD wastewater on an approved upland site. Finally, Bruce Creek receives sediment loads from the local county roads.

There is little STORET data on the main stem of the Choctawhatchee River below Interstate Highway 10, but there is little development and few pollution sources. However, there are some disturbing trends reported concerning the river, and there is a general perception that the biological resources are in poorer condition than expected. Certain fish populations have severely declined, notably striped bass. The lower reach of the river near the bay shows biological degradation with low numbers of species found.

The Northwest Florida Water Management District has conducted a study of the river, including water quality sampling. As a part of the study, pesticide and herbicide sampling found atrazine, a herbicide, in 17 out of 18 samples in 1987. Otherwise the report generally indicates "good" water quality index measures for the river.

Otter Creek (in Holmes County) had ammonia odors from livestock in the creek and algal blooms upstream and was channelized for cattle grazing downstream. Parrot and West Pittman Creeks had altered benthic community structures with many clean water species

missing and turbid waters with an accumulation of sediment from predominantly agricultural watersheds. Lighter Snag Creeles channel was filled with agricultural sediment leaving pools of stagnant water. Wrights. Creek above Noma had cattle in the stream with resulting turbidity and animal waste. Upper Camp Branch receives run-off from dairy farms with documented colifon-n bacteria violations. Gum Creek had historical fishkills from cattle using the stream and the same livestock management practices exist at this time. Flat Creek below Chipley is severely impacted by agriculture and at some locations cattle use the stream with resulting bare earth, erosion, and sedimentation eliminating native fish and wildlife.

USGS
HYDROLOGIC UNIT: 03140203 CHOCTAWHATCHEE RIVER INDEX GOOD
?OOR
SURFACE WATER QUALITY DATA FOR 1970-1993
--------- - ----- ----- -----
MEDIAN VALUES FOR EACH WATERSHED
WQI-RIVER 0-44 45-59-60-90
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100
PERIOD PRIOR To 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE 0-59 610-69 70-100

BIOLOGICAL WATER
WATERSHED WATERSHED DATA RECORD WATER
DISSOLVED OXYGEN PH TROPHIC SPECIES
QUALITY
ID NAME ---------------------- CLARITY
OXYGEN DEMAND ALKALINITY STATUS COLIFORM DIVERSITY COND FLOW
'INDICES

```
      ----- --------------------------------       MAX    BEG END       DATA  ---------------------------- --------
-- --------------- ---------- --------------- ---------- --------------- ----- ----- --
                                                    JOBS   YR   YR      PERIOD         TUBB SD COLOR TSS
Do DOSAT BOD COD          TOC    PH    ALK    NITRO PHOS CHLA     TOTAL FECL NAT ART BECK          COND FLOW       ,,Q_
TSI
         � WATER BODY TYPE: ESTUARY
37
           4    DISMAL CREEK                               8  72   73   Historical          1.5     1.4
6.9    74                                    0.28 0.02
         � WATER BODY TYPE: LAKE
6                                      13                        36
          19     LAKE JUNIPER                              3  80   80   Historical                  2.6  15
5.5       2   0.37 0.02

         � WATER BODY TYPE: STREAM
4@
           1    CHOCTAWHATCHEE RIVER                       12 74   79   Historical         11.5     0.9
5.5    65                    6   6.9         0.25 0.04       5
           2    CHOCTAWHATCHEE RIVER.                      26 89   93   Current            12.0     0.7  60       8
6.8    76                    3   7.2      42  0.53 0.04                  62                         82   6235
36
           3    BLACK CREEK                                4  81   81   Historical          1.0     1.2  80       2
5.2    50    0.6                 6.0      .   0.53 0.02      3    40     30                       7200
21
           5    PATE BRANCH                                14 70   71   Historical          3.0      .     5      .
7.5    80                        6.2      2   1.41 0.01                                             46      -7
25
           6    PINE LOG CREEK                             8  92   93   Current             1.8     0.9  80       1
7.9    82                    7   5.8      8   0.27 0.01                 205                         54
22
           7    SEVEN RUNS                                 4  92   92   Current             4.1     0.8  80       3
7.8    85                    5   6.0      1   0.56 0.02                 310                         24
27
           8    HARD LABOR CREEK                           5  92   92   Current             5.2     0.6  120      4
7.2    78                 10     5.2      1   0.48 0.04                  87                         18
32
           9    HOLMES CREEK                               38 90   93   Current             9.9     1.0  49       4
5.9    65    0.4             5   7.1      66  0.52 0.05          705    114                         141
33
          10     PANTHER CREEK                             8  92   93   Current             6.7     0.5  50       4
7.7    78                    6   5.9      2   0.32 0.03                 118                         23
3:
          11     GULLY CREEK                               3  72   72   Historical                       is       .
4.5    48                        8.0      94                                                        200     75
74
```

12	BAY BRANCH	9	92	93	Current	5.7	0.9	93	2	4.0	36		6	5.7	4	0.31	0.02		40	29	29
13	BRUCE CREEK	24	91	93	Current	6.7	0.9	60	5	6.5	69	0.5	4	6.5	9	0.50	0.02	408	82	64	30
14	GUM CREEK	3	92	92	Current	3.2	0.6	140	2	6.1	68		15	5.4	1	0.61	0.02		90	25	35
15	CHOCTAWHATCREE RIVER	13	90	92	Current	33.0	0.5	78	26	7.1	77	0.7	5	7.0	33	0.65	0.04	1250	90	70	36
16	OPEN CREEK	5	93	93	Current	5.7	0.7	80	4	7.7	82		12	6.5	17	0.54	0.06	.	570	68	39
17	WEST SANDY CREEK	7	92	93	Current	4.7	0.3	53	2	8.2	88		4	6.6	5	0.71	0.04	440	137	39	24
18	REEDY CREEK	7	93	93	Current	3.1	0.9	20	3	6.4	71		2	6.9	93	0.35	0.01	.	290	182	28
20	SANDY CREEK	27	91	93	Current	7.7	0.6	60	7	7.7	84	0.3	4	6.8	3	0.43	0.02	735	105	36	28
21	CAMP BRANCH	9	93	93	Current	11.0	0.4	80	3	6.6	80		9	6.9	54	0.58	0.13	.	280	189	42
22	CHOCTAWHATCEEE RIVER	5	92	92	Current	52.0	0.4	165	39	8.2	80		6	7.2	19	0.75	0.10	6000	660	61	47
23	GUM BRANCH	8	79	80	Historical	29.0				0.06								60			
24	WRIGHTS CREEK	11	90	92	Current	9.0	0.5	48	5	7.1	75	0.5	3	7.0	65	0.55	0.04	990	343	102	33
25	ALLIGATOR CREEK	7	93	93	Current	11.0	0.5	80	7	3.4	40		9	6.8	44	0.77	0.24		176	188	56
26	SIXES CREEK	5	93	93	Current	20.0	0.6	90	36	6.1	62		10	6.4	19	0.62	0.03		210	81	50
27	FISH BRANCH	3	92	92	Current	21.0	0.6	150	11	3.8	44		8	6.7	9	0.87	0.08		210	52	58
28	GINHOUSE BRANCH	3	93	93	Current	13.0	0.7	80	7	6.8	67		6	6.7	12	0.52	0.01		120	40	34

29 TENM1LE CREEK 14 90 92 Current 6.5 0.8 40 5
6.5 67 0.5 4 7.3 39 0.42 0.03 1700 125 123
3 3

30 LITTLE CREEK 7 93 93 Current 1.7 0.3 20 1
7.1 84 1 7.5 109 1.60 0.01 . 410 235
30

31 EAST PITTRkN CREEK 11 92 93 Current 13.0 0.5 70 8
7.7 82 0.5 4 6.8 16 0.72 0.03 3475 185 64
33

32 PARROT CREEK 3 92 92 Current 5.3 0.2 70 3
7.1 75 5 6.7 11 0.38 0.02 64 49
24

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MGjL DO-DISSOLVED OXYGEN MG/L
MAX JOBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS 7URB-TURBIDITY mG/L
ALK-ALKALINITY MG/L CELA-CHLOROPHYLL UG/L DOSAT-DC, I SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L VIQI-XhkTER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML
PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'$ BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLOW-FLOW CFS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT:
03140203 CHOCTA.1,MTCHEE RIVER
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'x'=EKCEE:)S SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
'0'=WITH:N SCREENING CRITERIA
NG DATA
I RANK DATA RECORZI IN I STREAM I LAKE I PH I
ALK I TURB & I OOND I OXYGEN I DO 1COLIFORM I BIOL I CHIA I SECCHI I
------------------ I I TP I TP I I
I TSS I I DEMAND 1 1 BACTI I DIV I I DISC I
KI CURRENT I I I I I
I I I I I I I I I
WATERSHED i OR OR ITN>2.0 I T?>.46 1 TP>.12 1 PH>8.8
IALK<20 ITURB>16.51COND>12751 BOD>3.3 I D0<4 ITOT>3700 IDIART<1.951 CHLA>40 I SD<.7 I
ID NAME I TSI HISTORICAL I I I I PH<5,2 I
I TSS>18 I I COD>102 I IFECAL>470)DINAT<1.5 I
----- --- I
I TOC>27.51 I I BECK<5.5 I

� WATER BODY TYPE: ESTUA.RY
4 DIS.VL CREEK I GOOD Historical 1 0 1 1 0 1 1
1 0 1 0 1 1 0 1 1 0 1

� WATER BODY TYPE: LAKE
19 LAKE =NIPER. I GOOD Historical 1 0 1 1 0 1 0 1
x I 1 0 1 0 1

� WATER BODY TYPE: STREAM
1 CHOCTAWHATCHEE RIVER I GOOD Historical 1 0 1 0 1 1 0 1
1 0 1 0 1 0 1 0 1 1 1 0 1 0 1
2 CHOCTK,,F:;.ATnEE RIVER I GOOD Current 1 0 1 0 1 1 0 1
0 1 0 1 1 0 1 0 1 0 1 x 1
3 BLACK CREEK I GOOD Historical 1 0 1 0 1 1 0 1
1 0 1 x 1 0 1 0 1 0 0 a 1
5 PATE BRANCH I GOOD Historical 1 0 1 0 1 1 0 1
x 1 0 1 1 1 0 1 1 1 . 1
6 PINE @@ CREEK f GOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 0 1
7 SEVEN X@Ns I GOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 0 1
6 HARD :-ABOR CREEK I GOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x 1
9 HOLMES CREEK I GOOD Current 1 0 1 0 1 1 0 1
0 1 0 1 1 0 1 0 1 0 1 1 0 1
10 PANTREER CREEK j GOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x
11 GUILY CREEK I UNKN Historical I . I . I 1 0 1
0 1 1 1 1 0 1 1

12 BAY BRANCH I GOOD Current 1 0 1 0 1 0 1
x 1 0 1 1 0 1 x 1 0 1 0
13 BRUCE CREEK I GOOD Current 1 0 1 0 1 0 1
x 1 0 1 1 0 1 0 1 0 1 1 0
14 GUM CREEK I GOOD Current 0 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x
15 CHOC1,ANFATCHSE RIVER GOOD Current 0 1 0 1 1 0 1
0 1 x I 1 0 1 0 1 0 1

0 0 x I x
16 OPEN CREEK I GOOD Current p 1 0 1 0 1
x 1 0 1 1
17 WEST SANDY CREEK I GOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x
18 P_vEDY CREEK I GOOD Current 1 0 1 0 1 1 0 1
0 1 0 1 1 0 1 0 0 1 0 1
20 SANDY CREEK I GOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x
21 CAMP BRANCH I GOOD Current 1 0 1 0 1 1 0 1
0 f 0 1 1 0 1 0 1 0 f x
22 CHOCTAWHATCHEE RIVER I FAIR Current 1 0 1 0 1 1 0
x I x I 1 0 1 0 1 x I x
23 G:,y BRANCH I UNKN Historical I . 1 0 1 1
1 x I 1 1 1 1 .
24 WR7GRTS CREEK I GOOD Current 1 0 1 0 1 1 0 1
0 1 0 1 1 0 1 0 1 a I x
25 A.LLTGATOR CREEK I FAIR Current 1 0 1 0 1 1 0 1
0 1 0 1 1 0 1 x 1 0 1 x
26 SIKES CREEK I FAIR Current 1 0 1 0 1 1 0 1
x I x I 1 0 1 0 1 0 1 x
27 FjSH BRANCH 1 FAIR Current 1 0 1 0 1 1 0 1
x I x I 1 0 1 x 1 0 1 x
28 Gis"HOUSE BRANCH I GOOD Current 1 0 1 0 1 1 Q I
x 1 0 1 1 0 1 0 1 6 1 0
29 TENM7LE CREEK I GOOD Current 1 :0 1 0 1 1 0 1
0 1 0 1 1 0 1 0 1 0 1 1 0
30 LIT:_',E CREEK I GOOD Current 1 0 1 0 1 1 0 1
0 1 0 1 1 0 1 0 1 0 1 1 x
31 EAST P:TTMAN CREEK I GOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 1 x 1
32 PARROT CREEK I GOOD Current I 1 0 1 i 0 1
x 1 0 1 1 0 1 0 1 0 1 1 x I

LEGEND: COND-CONDUCTIVITY FECAL-FECAL POLIFORM
BACTERIA TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKAL_-N17Y DO-61SSOLVED OXYGEN HISTORICAL-1970 TO J989
TOT-TOTAL COLIPORM BACTERIA WHICH INDEX U .SED, WQI OR IS .I IS
BECK-BECK'S BIOTTC INDEX CURRENT-1984 TO 1993 OXYGEN DEMAND-BOD COD
TOC TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-B:CDOGICAL DIVERS:TY DIART-ARIIFICIAL SUBSTRAT; DIVERSITY PH-PH
TURB-TURBIDITY
C@IA-CHLOROPhYLL :ITNAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METE"

= M m m m m m = = = m m @ = m m = @ M

SURFACE WATER QUALITY ASSESSMENT REPORT USGS HYDROLOGIC
UNIT: 03140203 CHOCTAWHATCHEE RIVER
TRENDS-SOURCES-CLEANUP

'X'=DEGRADING TREND 1 1984 - 1993 TRENDS
I
'0'-STABLE TREND I---

'+'-IMPROVING TREND I IW TI T T C S) P Al T TI B TI
D DIT Fl T F I<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'-MISSING DATA IQUALITY RANK [OVER-IQ or Sl N P H DI H LI U Sl 0 01
0 01C Cl E L I
I------------- I ALL II II L I KIR SI D Cl
SI0 01 M 0 1
1 WQI ITRENDI I A I I B I I
AlL LI P W I
WATERSHED I MEETS OR I I I I I I I
TII II I
ID NAME I USE ? TSI
I I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I-------------

WATER BODY TYPE: ESTUARY
4 DISMAL CREEK]YES GOODI I I I I I I
I I I

WATER BODY TYPE: LAKE
19 LAKE JUNIPER IYES GOOD[I I I I I I
I I I

WATER BODY TYPE; STREAM

1 CHOCTAWHATCHEE RIVER IYES GOOD I I I I I I I
I I

2 CHOCTAWHATCHEE RIVER IYES GOODI 0 1 0 1 + 0 .1 0 010 .1 1
0 01 01 0 0 1

3 BLACK CREEK IYES GOODI I I I I

5 PATE BRANCH IYES GOODI I I I I

6 PINE LOG CREEK IYES GOODI I I I

7 SEVEN RUNS IYES GOODI I I I

8 HARD LABOR CREEK IYES GOODI I I I

9 HOLMES CREEK IYES GOODI I

10 PANTHER CREEK IYES GOODI I I I

11 GULLY CREEK INO UNKNI I I I I I I
I 1 1

12 BAY BRANCH IYES GOODI I I I

13 BRUCE CREEK IYES GOODI I I I

14 GUM CREEK IYES GOODI I I I

15 CHOCTAWHATCHEE RIVER IYES GOODI I I 1 .1
.1 1

16 OPEN CREEK IYES GOOD]

17 WEST SANDY CREEK IYES GOODI I I I

18 REEDY CREEK]YES GOODI I I I

20 SANDY CREEK IYES GOODI 0 1 x I . . . . 1 0 .1 .1
.1 0 01 .1 0 1

21 CAMP BRANCH IYES GOODI I I I

22 CHOCTAWHATCHEE RIVER IPARTIAL FAIRI I I I

23 GUM BRANCH INO UNKNI I I I I I I
I 1 1

24 WRIGHTS CREEK iYES GOOD 1 0 1 0 1 . . . . 1 0 .1 .1
.1 0 01 .1 0 1

25 ALLIGATOR CREEK IPARTIAL FAIRI I I . . . . I . .1 .1
.1 . .1 .1 . 1

26 SIKES CREEK IPARTIAL FAIRI
1

27 FISH BRANCH IPARTIAL FAIRI I I . . . . I - .1 .1
.1 . .1 .1 . 1

28 GINHOUSE BRANCH IYES GOOD 1 .1
.1 1

29 TENMILE CREEK IYES GOODI .1
1

30 LITTLE CREEK IYES GOOD I

31 EAST PITTMAN CREEK IYES GOOD[

32 PARROT CREEK IYES GOODI I

LEGEND-

TURB-TURBIDITY

TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES

WQI-WATER OULAITY INDEX FOR STREAMS AND SPRINGS

	DOSAT-DO SATURATION	TCOLI-TOTAL COLIFORM
	FCOLI-FECAL COLIFORM	TEMP-TEMPERATURE
ALK-ALKALINITY	FLOW-FLOW	TN-NITROGEN
BOD-BIOCHEM. OXYGEN DEMAND	MEETS USE-MEETS DESIGNATED USE	TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLL	PH-PH	TP-PHOSPHORUS
DO-DISSOLVED OXYGEN	SD-SECCHl DISC METERS	TSS-TOTAL SUSPENDED SOLIDS

--a
t-j

PINE BARRE CREE

NOE CREEK

ALABAMA

SCAMBIA RIVER

RF- CREEK

ELL CREEK

RIVER

ESCAMBIA BAY

ESCAMBIA RIVER BASIN
03140305
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

ESCAMBIA. RIVER BASIN

Basig Facts

Drainage Area: 4,200 (about 10% in Florida)
Major Land Uses: silviculture, agriculture
Population Density: low with urban area at mouth (Pensacola, Century
Major Pollution Sources: point sources at mouth
Best Water Quality Areas: most of basin
Worst Water Quality Areas: areas assessed by nonpoint source survey
Water Quality Trends: stable quality at 6 sites
OFW Waterbodies: none
SWIM Waterbodies: part of the Pensacola Bay System SWIM watershed
Reference Reports:
  Florida Rivers Assessment, DEP/FREAC/NPS, 1989
  Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
  Pensacola Bay SWIM Plan, NWFWMD, 1990
Basin Water Quality Experts:
  Homer Royals, FGFWFC, 904/357-6631
  Don Ray, DEP (Pensacola), 904/444-8300
  Gray Bass, FGFWFC, 904/957-4172
  Glenn Butts, DEP (Pensacola) 904-444-8380

---

la the News

Health advisories recommending limited consumption of largemouth bass due to mercury contamination have been issued for the Escambia River.

Ecological Characterization

Just north of the Florida-Alabama state line, the Conecuh River and Escambia Creek join to form the Escambia River. The Escambia River flows approximately 92 miles south from the Florida-Alabama state line to Escambia Bay. The drainage basin encompasses a total of 4,200 miles, only 10% of which is located in Florida. The average flow of the , Escambia is 6,500 cfs; however, the flow rate is highly variable. The Escambia River is an

alluvial river, draining mostly agricultural and forestry lands. The upper basin is mostly sandy, well-drained soils, while the lower basin has more swamps, sloughs and a relatively wide floodplain. The river is characterized by its -numerous cut-offs, oxbows and meanders. In-stream islands are common. At its mouth -the river breaks into -numerous channels -and bayous eventually emptying into Escambia Bay, -one of the major lobes in the Pensacola Bay basin. During low flow, a saltwater wedge penetrates -about 8 miles upstream.

Land use in the upper basin is primarily agriculture, while the lower river has more silviculture. Urbanization is occurring along the tributaries and at the river's mouth.

Anthropogenic Impacts

Water quality in this basin is generally good, but the Nonpoint Assessment found most of the tributaries to be threatened and a couple are moderately impaired. The Canoe Creek and Pine Barren: Creek systems suffer from agricultural and dirt road runoff. Sedimentation, high turbidity and pesticides are suspected to be causing declining fisheries. However, the Soil Conservation Service is designing a cropland watershed plan to alleviate agricultural runoff in the Canoe Creek drainage and much of the Escambia River.

Point sources in the upper basin include the Container Corporation (a paper company in Alabama at the state border), and the WWTPs of the cities of Century and Jay. Preliminary results of a basin assessment by DEP indicate elevated bacteria values downstream of Century. Bluff Springs Campground WWTP which discharged into a tributary to Canoe Creek will go toa septic tank with sand filter and subsurface drain field by the end of 1994. A point source assessment for the Town of Jay in August, 1992 showed severe biological impairment in Bray Mill Creek. Taxa richness and species diversity was dramatically reduced below the outfall which would indicate toxicity. Bioassay samples of the effluent and receiving stream showed 100% mortality of the test organisms within 10 minutes. Chlorine residual of the effluent was 1.7 mg/l and the creek was 1.5 mg/1, which was indicated as the cause of the mortality. The creek contains at least 88% effluent therefore a no discharge wasteload allocation was issued in September 1992. They are working on plans for construction of an upland site for elimination of their current discharge to Bray Mill Creek.

The old Century facility was abandoned and discharges to the old location ceased in 1991. The new Century facility discharges directly to Escambia River. In addition, there are gravel mining operations near Century. The Soil Conservation Service is conducting a feasibility study of restoring Big Escambia Creek from previous mining activities. Until recently, the pesticide Guthion was aerially sprayed on cotton fields in Santa Rosa County. Fish kills in private impoundments resulting from spray runoff prompted a hearing ruling' to tighten spraying restrictions and replace Guthion with Malathion.

Near the mouth of the river, point source discharges include Monsanto Textiles Company, the University of West Florida WWT? and thermal effluent from a power plant. A no discharge WLA was issued to the University of West Florida WWTP in March 1993. These point sources are discussed in more detail in the Escambia Bay section of the Pensacola Bay Basin narrative summary. The lower river is also affected by nonpoint pollution from increasing urbanization as well as the point sources.

Sandy Hollow Creek disappeared after sedimentation filled its channel and adjacent wetland due to agricultural run-off and now the Soil Conservation Service is working to stop the erosion. Moore and Holly Creeks receive significant agriculture run-off impacting fish and wildlife. Significant runoff from the agricultural areas of Santa Rosa County has resulted in sedimentation filling stream channels not only eliminating fish and wildlife habitat but, also causing rising waters to periodically destroy many of the bridges at steam crossings. Citizens still complain about lack of fish and the disappearance of native mussels caused by pollution in the Escambia River from the Container Corporation just across the state line in Alabama.

```
                                                                                                        USGS HYDROLOGIC
UNIT: 03140305 ESCAMBIA RIVER

INDEX        GOOD FAIR POOR
               SURFACE WATER QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
               MEDIAN VALUES FOR EACH WATERSHED
WQI-RIVER      0-44 45-59-60-90
               CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100        -----
               PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE       0-59 60-69 70-100        1

1

BIOLOGICAL                         WATER
               WATERSHED                                   WATERSHED DATA RECORD                    WATER
DISSOLVED        OXYGEN          PH         TROPHIC                             SPECIES                               QUALITY
               ID  NAME                                    ----------------------                 CLARITY
OXYGEN         DEMAND       ALKALINITY      STATUS       COLIFORM      DIVERSITY      COND FLOW          INDICES
               ----- ---------------------------------  MAX   BEG END     DATA ---------------------------- ----------
--------------- ---------- --------------- ---------- --------------- ----- ----- ---------------
                                                           #OBS  YR  YR      PERIOD       TURB  SD COLOR     TSS  DO
DOSAT     BOD  COD    TOC   PH    ALK   NITRO PHOS    CHLA TOTAL FECL NAT ART BECK      COND FLOW       WQI     TSI

               WATER BODY TYPE: STREAM
               1   THOMPSON BAYOU                         37 71  88   Historical      7.0         45      9  5.8
66    1.0   23      5   6.2     3   0.94 0.02        1300   36                      37       0        39
               2   ESCAMBIA RIVER                         50 89  93   Current        18.5  0.9    70      6  7.1
77    0.7           5   6.2    23  0.56 0.05     2  4300  275                     2099              43
               3   CLEAR CREEK                            6  92  92   Current         2.8  0.3    30      1  7.4
86                  1   6.2     4   0.54 0.01         100   14                      43              10
               4   ESCAMBIA RIVER                         7  90  90   Current        12.0  0.7    60      5  7.3
76    0.2           3   6.2     .   0.51 0.03     2   260   80                     105              26
               5   SPANISH MILL CREEK                     7  92  92   Current         2.7  0.5    40      1  7.0
87                  5   6.0     2   0.28 0.01          14    2                      32              11
               6   ESCAMBIA RIVER                         27 89  93   Current        20.0  0.2    46      6  7.3
79    0.6           5   6.0    16  0.68 0.05     4   149   90                      60              40
               10  THE CANAL                              34 70  79   Historical     13.4         73     13  7.5
81    1.0           9   6.6    20  0.50 0.04         155   98                      52   3169        35
```

16	THOMAS CREEK	7	89	90	Current	1.1		6	3	8.2	93	0.7			7.9	.	1.75	0.03	13	1193	75		211		6	28	
18	ESCAMBIA RIVER	63	70	88	Historical	13.6	0.8	5?	8	8.6	81	1.4	13		6.7	28	0.54	0.04	2	1070	83	19	76			38	
23	BLUE WATER CREEK	7	92	92	Current	1.8	0.8	18	2	9.5	93			1	5.7	2	0.26	0.01		300	33		19			12	
28	PINE BARREN CREEK	26	89	93	Current	6.2	1.0	30	5	7.7	83	0.3		2	5.8	1	0.81	0.02		375	140		32			25	
31	LITTLE PINE BARREN CR	7	92	92	Current	6.0	0.5	50	2	9.1	87			1	6.2	2	0.94	0.01		15046	396		31			29	
33	MITCHELL CREEK	6	92	92	Current	2.7	0.3	40	2	8.1	88			3	5.0	1	0.15	0.02		400	75		17			16	
40	BRAY MILL CREEK	9	92	93	Current	3.8	0.2	8	2	8.8	94			1	5.9	1	3.14	0.01			56		73			23	
41	CANOE CREEK	17	89	92	Current	3.1	0.5	23	3	8.0	84	0.3		1	6.3	2	1.08	0.03		465	34		35			20	
42	ESCAMBIA RIVER	1638	89	93	Current	20.5	0.7	78	22	7.3	82	1.2		7	6.7	25	0.59	0.06	4	388	93		92	4061		40	
43	BIG ESCAMBIA CREEK	6	92	92	Current	10.0	0.7	50	8	7.9	86			4	6.3	1	0.47	0.02	.	3000	120		28			31	

LEGEND: BOD-BIOCHE14ICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L
MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS 7URB-TURBIDITY MG/L

ALK-ALKALiNiTy MG/L CHLA-CHLOROPHYLL UG/L DOSAT-DO I SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHE24ICAL OXYGE14 DEMAND MG1L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML
PH-PH STANDARD UNITS tSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLOW-FLOW CPS
PHOS-TOTAL PHOSPHORUS MG/t TSS-TOTAL SUSPENDED SOLIDS MG/L

m m m m m m m m m m m m m m m m m m m

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT: 03140305 ESCAMBIA
RIVER
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'K'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
'0'=WITHIN SCREENING CRITERIA I
'.'=MISSING DATA I I I I I I
I I I I
I RANK DATA RECORDI IN I STREAM I LAKE I PH I ALK I
TURB & I COND I OXYGEN I DO ICOLIFORM I BIOL I CHLA I SECCH: I
I------------------ I I TP I TP I I I
TSS I DEMAND I BACTI I DIV I I DISC I
I wQ1 CURRENT I I I I I I
I I I I i
WATERSHED I OR OR I TN>2.0 I TP>.46 ITP>.12 I PH>8.8 I ALK<20
ITURB>16.51COND>12751 BOD>3.3 I DO<4 ITOT>3700 IDIART<1.951 CHLA>40 I SD<.7 I
ID NAME I TS1 HISTORICAL I I I I PH<5.2 I I
TSS>18 I I COD>102 I IFECAL>4701DINAT<1.5 I I I
----- --
I TOC>27.51 I I BECK<5.5 I I I

WATER BODY TYPE: STRUM
1 THOMPSON BAYOU IFAIR Historical 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1
2 ESCAMBIA RIVER IGOOD Current 1 0 1 0 1 1 0 1 0 1
x I x 1 0 1 0 1 x I 1 0 1 0 1
3 CLEAR CREEK IGOOD Current 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1 x 1

4 ESCAMBIA RIVER IGOOD Current 1 0 1 0 1 1 0 1 1
0 1 0 1 0 1 0 1 0 1 0 0 1
5 SPANISH MILL CREEK IGOOD Current 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1 x 1
6 ESCAMBIA RIVER IGOOD Current 1 0 1 0 1 1 0 1 x I
x 1 0 1 0 1 0 1 0 1 0 x I
10 THE CANAL IGOOD Historical 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1
16 THOMAS CREEK IGOOD Current 1 0 1 0 1 1 0 1 1
0 1 1 0 1 0 1 0 1 0
18 ESCAMBIA RIVER IGOOD Historical 1 0 1 0 1 1 0 1 0 1
0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1
23 BLUE WATER CREEK IGOOD Current 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1 0 1
28 PINE BARREN CREEK IGOOD Current 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1 0 1
31 LITTLE PINE BARREN CR IGOOD Current 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 x I I I x 1
33 MITCHELL CREEK IGOOD Current 1 0 1 0 1 1 x I x I
a I 1 0 1 0 1 0 1 x
40 BRAY MILL CREEK IFAIR Current I x 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1 x
41 CANOE CREEK IGOOD Current 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1 x
42 ESCAMIA RIVER IGOOD Current 1 0 1 0 1 1 0 1 0 1
x 1 0 1 0 1 0 1 0 1 0 x 1
43 BIG ESCAMBIA CREEK IGOOD Current 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 1 0 1

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS KI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, KI OR TSI, IS
BECK-BECK'S BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,COD,TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT - USGS HYDROLOGIC
UNIT: 03140305 ESCAMBIA RIVER
TRENDS-SOURCES-CLEANUP

'x'=DEGRADING TREND 1984 - 1993 TRENDS
'0'=STABLE TREND --

'+'=IMPROVING TREND 1W TI T T C Sl P Al T T1 B
T1 D D1 T Fl T F I<--- PLEASE READ THESE COLUMNS VERTICALLY
'.*=MISSING DATA IQUALITY RANK IOVER-IQ or Sl N P H DI H Ll U Sl 0
01 0 01 C Cl E L I
I------------- I ALL II il L I KI R Sl D
Cl Sl 0 01 M 0 1
1 WQI ITRENDI I A I I B I
I Al L Ll P W I
WATERSHED I MEETS OR I I I I I I
I Tj I Il I
ID NAME IUSE ? TSI I I I I I I
I I I I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I-------------

```
                 WATER BODY TYPE: STREAM
                 I    THOMPSON BAYOU                 IYES        FAIRI     .  I     .   I  . . . . . I
                 2    ESCAMBIA RIVER                 IYES        GOODI     0  1     0   1  0 0  .   01 x .1  0 01
1  0 01     01   0    1
                 3    CLEAR CREEK                    IYES        GOOD I    .  I     .   I . . . . I    - .1  . .1
.1  . .1     .1   .    1
                 4    ESCAMBIA RIVER                 IYES        GOOD 1    0  1     0   1  0 0  .   01 x .1  0 .1
.1  0 01     .1   0    1
                 5    SPANISH MILL CREEK             IYES        GOODI     .  I     .   I . . . . I    - .1  - .1
.1  . .1     .1   .    1
                 6    ESCAMBIA RIVER                 IYES        GOODI     0  1     0   1  0 0  .   .1 x .1  0 .1
.1  0 01     .1   0    1
                 10   THE CANAL                      IYES        GOODI        I         I          I    I     I
I     I      1         1
                 16   THOMAS CREEK                   IYES        GOODI        I         I  . . . .  I
                 18   ESCAMBIA RIVER                 IYES        GOODI        I         I  . . . .  I
                 23   BLUE WATER CREEK               IYES        GOODI        I         I  . . . .  I
                 28   PINE BARREN CREEK              IYES        GOOD 1    0  1     0   1  0 0  .   .1 0 .1  0 01   0
1  0 01   0 01   0    1
                 31   LITTLE PINE BARREN CR          IYES        GOODI        I         I  . . . .  I
                 33   MITCHELL CREEK                 IYES        GOODI        I         I  . . . .  I
                 40   BRAY MILL CREEK                IYES        FAIRI        I         I  . . . .  I
                 41   CANOE CREEK                    IYES        GOODI     0  1     0   1  0 0      .1 0 .1  0 01   0
1  x X1   0 01   0    1
                 42   ESCAMBIA RIVER                 IYES        GOODI     0  1     0   1  0 0      01 x 01  0 01   0
1  0 01     01   0 0  1
                 43   BIG ESCAMBIA CREEK             IYES        GOODI     .  I     .   I . . . . I
```

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FOOLI-FECAL COLIFORM TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKhLINITY FLIOW-FLOW TN-NITROGEN
WI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

NPS QUALITATIVE
SURVEY RESULTS
AN ..X" INDICATES A PROBLEM WITH
POLLUTANT OR SOURCE
THE - ON MAPID INDICATES NO STORET
INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE It POP, LEGEND
POP, THIS TABLE-
-- CATNAME=ESCAMBIA RIVER
HUC=03140305 ---

N B S P 0 S
0 F T F 0
U A E E I A H T T I U I T
M T C D S H D 0 L
A H H S R S N N H
A B W W R T I T E E X I M
B E s H A B H 0 0 E
P W A Q Q I E M I R B Y N E
I F R R K L W 1 0 D S F R
B S 3 N E R E 0 C C R G I T
T L M P I G E D D E W I S I S

y I 1 0 P N I N I I H I E T P A A 0 A 0 L A E 1 0 C I
S Y N T A R S L U C H 0
D D N 5 S T A T L D E S N Y H L
T W I L LL D T R L M H M D P G E L D R N M I

1 586 THOMPSON BAYOU GOOD POOR x x x x x x x x
x x x xx x x x x x x x x x x
2 IOF ESCAMBIA RIVER GOOD FAIR x x x x x x x x x x x
x x x x xx x K. x x x x x x x x x x x x
3 531 CLEAR CREEK GOOD FAIR x x x x x x
x x x xx K x x x x x x x
4 JOE ESCAMBIA RIVER GOOD FAIR x x x x x x x x x x x
x x x x xx x x x x x x x x x x x x x x
5 475 SPANISH MILL CREEK GOOD FAIR x x x x x
x x x x x x x x x x x x x
6 10D ESCAMBIA RIVER GOOD FAIR x x x x x x x x x x x
x x x x xx x x x x x x x x x x x x x x
7* 389 BEARLE CREEK FAIR x x x x x x
x x x x x x x x x x
8* 395 WILLIAMS CREEK FAIR x x x x x
x x x x x x x x x x x x
9* 374 ROCKY BRANCH FAIR x x x x x x x
x x x x x x x x x x
10 341 THE CANAL GOOD THREAT x x x x x x
x x x x x x x x
it* 342 PRETTY BRANCH FAIR x x x x x x
x x x xx x x x x K x x x x x
12* 310 TENMILE CREEK FAIR x x x x x x
x x x x x x x x
13* 315 BUFFALO MILL CREEK FAIR x x x x x x
x x x x x x x x x
14* 316 CROOKED CREEK FAIR x x x x x x
x x x x K x x x
15* 326 WILDER BRANCH FAIR x x x x x
x x x x x x x x x x x
16 258 THOMAS CREEK GOOD FAIR x x x x x
x x x x x K x x x
17* 265 MORGAN BRANCH FAIR x x x x x
K x x x x x x x
18 IOA ESCAMBIA RIVER GOOD FAIR x x x x x x x x x x x
x x x x xx x x x x x x x x x x x x x x
19* 244 DELANEY CREEK FAIR x x x x x x
x X, K x K x x x x x
20* 237 GULLY BRANCH FAIR x x x x x
x x x x x x x x
21- 236 BELL CREEK POOR x x x x x K
x x xx x x x x x x x x

```
              22*    217    BLACK BRANCH                    FAIR     x   x    x        x       x
x       x                       x       x    x   x    x       x
              23     192    BLUE WATER CREEK        GOOD    FAIR     x   x    x        x       x
x       x                       x       x    x   x    x       x
              24*    168    MC DAVID CREEK                  FAIR     x   x    x        x  K    x
x                            x       x            x           x       x    x   x    x   x   x
              25*    131    COTTON CREEK                    FAIR              x        x       x
x                            x       x            x            x   x            x   x   x
              26*    ill    MOORE CREEK                     FAIR     x   x    x        x  x    x
x                  x x       K       x            x           x  x   x    x   x    x   x   x
              27*    JOB    ESCAMBIA RIVER                  FAIR     x   x    x   x    x  x    x  x    x   x   x
x  x     x   x     x x    x    x  x    x            x           x  x   x    x   x    x   x   x
              28     5      PINE BARREN CREEK       GOOD    FAIR     x   x    x        x  x    K
x            x               x       x            x           x  x   x    x   x    x   x   x
              29*    134    UNNAMED BRANCH                  FAIR     x   x    x        x       x
x       x                       x       x    x   x    x       x
              30*    lie    MCCOSTILL MILL CREEK            FAIR     x   x    x        x  x    x
x                            x       x            x           x       x    x        x   x   x
              31     87     LITTLE PINE BARREN CR   GOOD    FAIR     x   x    x        x       x
x       x                       x       x    x   x    x       x
              32*    102    HOLLAND BRANCH                  FAIR     x   x    x        x       x
x       x                       x       x    x   x    x       x
              33     71     MITCHELL CREEK          GOOD    THREAT            x
x                            x       x            x           x       K    x        x   x   x
              34-    74     HOLLY CREEK                     FAIR     x   x    x        x  x    x
x                            x       x            x           x       x    x        x   x   x
              35*    89     WILSON BRANCH                   THREAT   x        x   x       x
x                            x       x            x           x       x             x   x   x
              36*    79     HALL BRANCH                     FAIR     x   x    x        x       x
x       x                       x       x    x   x    x       x
              37*    39     BRESTWORKS BRANCH               FAIR     x   x    x        x       x
x       x                       x       x    x   x    x       x
              38*    9      PRITCHETT MILL BRANCH           POOR              x                x
x       x                       x       x        x    x       x
              39*    25     WIGGINS BRANCH                  POOR              x                x
x       x                       x       x        x    x       x
              40     36     BRAY MILL CREEK         GOOD    POOR     x   x    Y,  x    x  x    x               x
x  x         x     x Y.   x    x  x    X            x           x  x   x    x   x    x   x   x
              41     7      CANOE CREEK             GOOD    FAIR              x                x
x       x                       x       x        x    x       x
              42     loc    ESCAMBIA RIVER          GOOD    FAIR     x   x    x   x    x  x    x  x    x   x   x
x  x     x   x     x x    x    x  x    x            x           x  x   x    x   x    x   x   x
              43     10     BIG ESCAMBIA CREEK      GOOD    FAIR     x   x    x   x    x  x    x  x    x   x   x
x  x     x   x     x x    x    x  x    x            x           x  x   x    x   x    x   x   x
              44*    8      HOBBS BRANCH                    FAIR              x        x
x                            x       x            x           x       x             x       x
```

00

NEW RIVER

AY CREEK

ER CREEK

NEW RIVER

D RIVER

GULF OF MEXICO

NEW RIVER BASIN
03130013
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

NEW RIVER BASIN

------------------------- ---

Basic Fact

Drainage Area: S69 square miles
Major Land Uses: forest, wetlands
Population Density: low (Carrabelle)
Major Pollution Sources: WWTP, septic tank seepage, marinas
Best Water Quality Areas: New River, Juniper Creek, Crooked River
Worst Water Quality Areas: Carrabelle River near WWTP
Water Quality Trends: no trend data
OFW Waterbodies:
  Alligator Harbor State Aquatic Preserve
  Apalachicola Bay State Aquatic Preserve
SWIM Waterbodies: none
Reference Reports:
  Florida Nonpoint Source Assessment, DEP (Tallahassee), 1999
Basin Water Quality Experts:
  Gray Bass, FGFWFC, 904/957-4172
  Don Ray, DEP (Pensacola), 904/444-8300

In the News

Upgrades in treatment and discharge of the Carrabelle WWTP occurred in 1988.

Tate's Hell Swamp (184,000 acres) was sold in 1991 by Proctor and Gamble to a Georgia land broker.

Ecological Characterization

The New River Basin is a small panhandle Florida coastal basin between the Apalachicola River and Ochlockonee River basins. The basin drains about 569 square miles of1ow wet forest in Liberty and Franklin Counties. Its headwaters are in the Apalachicola National

Forest, and it flows through Tate's Hell Swamp. The swamp is a vast forested plain that was extensively ditched, drained, cleared and replanted in the mid-1960s. The river is very

darkly stained, one of the "blackest" of the blackwater'streams. Forestry and wetland areas are the predominant -land uses in the basin. After its confluence with Crooked River, the stream becomes wider, estuarine -in character andis calledthe Carrabelle River. Little of the land in the basin has been developed. Only 1% of the basin is urban area, principally the coastal community,of Carrabelle. Seafood processing is thearea!smajor economic activity.

Anthropogenic Impacts

Sampling of the New River hasbeen very Jimited; however, it drains, an Areanearly devoid of pollution sources except for a few logging operations and roads. The,portionof-the basin in St. George Sound also has good water quality -except 6or a small area near Carrabelle. The city previously discharged primary -treated wastewater directly into the Sound. A new plant with both improved treatment and discharge to a sprayfield began functioning in 1988. However, marinas and small shellfish processing areas in Carrabelle and Eastpoint continue to threaten water quality in their immediate vicinity. One of the larger processing facilities was ordered to discontinue their surface water discharge.

The streams in this basin have been severely modified by dredge and fill activities from past and present silvaculture practices. Planted pines have replaced native hardwoods along stream banks, topography flattened, stream channels filled from logging roads/clear cutting, and deep ditches are used to lower the basin's water table.

USGS HYDROLOGIC UNIT:
03130013 NEW RIVER INDEX GOOD FAIR POOR

----------- ----- ----- -----
SURFACE WATER QUALITY DATA FOR 1970-1993
WQI-RIVER 0-44 45-59-60-90
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100 -----
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE 0-59 60-69 70-100

BIOLOGICAL WA.-R
WATERSHED WATERSHED DATA RECORD WATER DISSOLVED
OXYGEN PH TROPHIC SPECIES Q7,:A:.:Iy
ID NAME ----------------------- CLARITY OXYGEN
DEMAND ALKALINITY STATUS COLIFORM DIVERSITY COND FLOW _-ND_-CES

----- --------------------------------- MAX BEG END DATA --------------------------- ---------- ---
------------ ---------- --------------- ---------- --------------- ----- ----- ---------------

BECK COND FLOW 1"Q: TST
#OBS YR YR PERIOD TURB SD COLOR TSS DO DOSAT
BOD COD TOO PH ALK NITRO PHOS CHLA TOTAL FECL NAT ART

� WATER BODY TYPE: ESTUARY
4 ALLIGATOR HARBOR 6 87 87 Historical 8.0 0.5 30 34 9.4 101
2.2 7.5 1.08 0.06 13 13 5 30500 64

� WATER BODY TYPE: STREAM
I NEW RIVER 36 78 79 Historical 10.1 . 241
5.6 0.72 0.01 42 32
2 NEW RIVER 16 92 93 Current 9.4 0.7 125 16 5.6 62
15 7.5 55 0.67 0.01 1 107 23150 44
3 CROOKED RIVER 20 92 93 Current 4.7 0.7 155 2 4.0 48
17 6.0 5 0.60 0.02 0 253 62 73 43
5 4 92 92 Current 2.7 0.5 300 4 6.1 62
28 4.6 1 0.@2 0.01 500 24 59 39
NEW RIVER
36
6 JUNIPER CREEK 10 92 93 Current 2.5 0.5 225 2 6.2 64
31 4.0 1 0.57 0.01 51 35
7 CAT BRANCH 4 92 92 Current 4.7 0.5 500 1 5.4 63
35 4.1 1 0.89 0.01 2200 50 54 49
8 WEST PRONG NEW RIVER 5 92 92 Current 2.9 0.7 300 1 3.7 43
26 4.3 1 0.73 0.01 1400 26 31 46
9 BAY CREEK 4 92 92 Current 3.3 0.4 400 1 3.0 36
31 4.1 1 0.75 0.01 2000 8 63 48

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MIL DO-DISSOLVED OXYGEN MGIL
MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURE-TURBIDITY MG/L
ALK-ALKALINITY MG/L CHLA-CHLOROPHYLL UG/L DOSAT-DO % SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WQI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML
PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLOW-FLOW CFS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

3C
4-

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT: 03130013
NEW RIVER
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'x'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA
I I
I RANK DATA RECORDI TN I STREAM I LAKE I PH I
ALK I TURB & I COND I OXYGEN I DO ICOLIFORM I BIOL I CHLA I SECCHI I

```
                                                       I------------------  I          I    TP    I   TP    I
I   TSS    I          I  DEMAND   I          I BACTI     I   DIV      I           I  DISC   I
                                                       I WQI     CURRENT I          I         I         I
I          I          I           I          I           I            I           I         I
             WATERSHED                                 I OR         OR      I TN>2.0   I TP>.46   I TP>.12  I PH>8.8    I
ALK<2 0   ITURB>16.51COND>12751     BOD>3.3  I  DO<4    ITOT>3700   IDIART<1.951   CHLA>40   I  SD<.7  I
             ID     NAME                               I TSI   HISTORICAL   I                               I PH<5.2    I
I TSS>18   I          I  cOD>102  I         IFECAL>4701DINAT<1.5     I           I         I
                    ------------------------------------------      I                               I           I
I          I          I  TOC>27.51           I           I BECK<5.5   I           I         I

             � WATER BODY TYPE: ESTUARY
               4    ALLIGATOR HARBOR                   IUNICK  Historical   1     0    1         1   0      1      0    1
1     x    I     x    1     0     1     0    1     0     1            1     0     1     x    I

             � WATER BODY TYPE: STREAM
               I    NEW RIVER                          IGOOD   Historical   1     0    1     0    1         1      0    1
1     0    1                                                                       1         1
               2    NEW RIVER                          IGOOD   Current      1     0    1     0    1         1      0    1
0    1     0    1      x    1     0     1     0    1     0     1        1     0     1     x   1
               3    CROOKED RIVER                      IGOOD   Current      1     0    1     0    1         1      0    1
x    1     0    1      0    1     0     1     0    1     0     1        1     0           x   1
               5    NEW RIVER                          IGOOD   Current      1     0    1     0    1         1      x    I
x    1     0    1           1     x     1     0    1     0     1        1                 x   1
               6    JUNIPER CREEK                      IGOOD   Current      1     0    1     0    1         1      x    I
x    1     0    1           1     x     1     0    1     0     1                    1     x   1
               7    CAT BRANCH                         IFAIR   Current      1     0    1     0    1         1      x    I
x    1     0    1           1     x     1     0    1     0     1                          x   1
               8    WEST PRONG NEW RIVER               IFAIR   Current      1     6    1     0    1         1      x    I
x    1     0    1           1     0     1     x    1     0     1        1                 0   1
               9    BAY CREEK                          IFAIR   Current      1     0    1     0    1         1      x    I
x    1     0    1                 x     I     x    1     0     1
```

LEGEND. COND-CONDUCTIVITY FECAL-FECAL COLIFORM
BACTERIA TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED; WQI OR TSI, is
BECK-BECK'S BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,CODTOC
TSS-TOTAL SUSPENDED SOLIDS' BASED ON WATtRBODYTYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
7URB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE 'DIVERSITY ' TN-NITROGEN
SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMF14T REPORT - USGS HYDROLOGIC UNIT: 03130013
NEW RIVER
TRENDS-SOURCES-CLEANUP

'x'-DT_GRADING TREND 1984 - 1993 TRENDS
'0'=S-ABLE TREND ---
'+'=IMPROVING TREND I 1W T1 T T C Sl P Al T TI B TI DDI TFl I
F l<--- PLEASE READ THESE COLUMNS VERTICALLY
DATA IQUALITY RANK JOVER-JQ or Sl N P H D1 H Ll U Sl 0 01 001 CCl E
L I

I------------- I ALL IT Il L I KI R Sl D Cl Sl 001 M
0 1
1 WQI !TRENDI I A I I B I I Al LLl P
W I
WATERSHED I MEETS OR I I I I I I I TI IIl
I
ID NAla IUSE ? TSI I I I I I I I I I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

ID	NAla	USE ?	TSI
WATER BODY TYPE: ESTUARY			
4	ALLIGATOR HARBOR	INO	UNKNI
WATER BODY TYPE: STREAM			
1	NEW RIVER	IYES	GOODI
2	NEW RIVER	IYES	GOODI
3	CROOKED RIVER	IYES	GOODI
5	NEW RIVER	IYES	GOOD I
6	JUNIPER CREEK	IYES	GOODI
7	CAT BRANCH	IPARTIAL	FAIRI
8	WEST PRONG NEW RIVER	IPARTIAL	FAIRI
9	BAY CREEK	IPARTIAL	FAIR[

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM TURB-TURBIDITY
FOOLI-FECAL COLIFORM TEMP-TEMPERATURE TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLOW TN-NITROGEN WQI-WATER. OULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLL 2H-2H TP-PKOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

oc
(71

GEORGIA Odhk)ckortee River

-j7

Am@

w

LAKE JACKSON

TELOGIA CREEK

Lake Talquin

VX

YELLOW CREEK

PCHOPPY RIVER

OCHLOCKONEE RIVE

HLOCKONEE BAY

OCHLOCKONEE RIVER BASIN
03120003
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

OCHLOCKONEE RIVER BASIN

Basic Fact

DrainageArea: 1,553 square miles (about 81% in Florida)
Major Land Uses: forest, agriculture
Population Density: low (Quincy, Havana, Sopchoppy, part of Tallahassee)
Major Pollution Sources: agricultural runoff, WW`TP, strip mining
Best Water Quality Areas: Sopchoppy River, lower Ochlockonee River
Worst Water Quality Areas: Telogia Creek below Gretna WWTP, Little River
Water Quality Trends: a couple of watersheds on Ochlockonee showed improving trends; the Sopchoppy, Lake Jackson and several small streams show stable trends
OFW Waterbodies:
- Ochlockonee River
- Lake Jackson
- Sopchoppy River within Apalachicola National Forest
- Lake Talquin State Recreation Area

SWIM Waterbodies: Lake Jackson
Reference Reports:
  Water Quality of the Ochlockonee River, DEP (Tallahassee, Biology), 1987
  Lake Jackson Management Plan, NWFWMD, 1990
  Florida Rivers Assessment, DEP/FREAC/NPS, 1989
  Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Basin Water Quality Experts:
  Gray Bass, FGFWFC, 904/957-4172
  Don Ray, DEP (Pensacola), 904/444-8300
  Homer Royals, FGFWFC, 904/357-6631
  Glenn Butts, DEP (Pensacola) 904/444-8380

In the New

88

I

I

* Concern over the health of Lake Jackson led to a temporary building moratorium in the immediate watershed area in 1989.
* Health advisories recommending limited consumption of largernouth bass due to mercury content have been issued for Lake Talquin, Lake lamonia, and the Ochlockonee River.

Ecological Characterization

The Ochlockonee River originates in the clay hillsof Georgia, entering Florida approximately 15 miles north of Tallahassee. The river flows 162 miles, first through rolling piedmont hills near the headwaters, then through sandy coastal,plains before entering the Gulf of Mexico at Panacea, Florida. An impoundment, Lake Talquin, lies- directly west of Tallahassee covering 8,850 acres. The Ochlockonee River averages 1,600 cfs upstream of Lake Talquin, although flow in the river fluctuates widely with occasional periods of flooding and drought. The Florida drainage basin is 1,253 square miles (there are an additional 300 square miles in Georgia).

The upper river and the Little River tributary are more alluvial in nature than blackwater, although both have some color. Land use in the upper clay hills portion of the basin is mostly agriculture, and many of its headwater tributaries are impounded for farm ponds. To the east of the upper river, in Florida, are two shallow lakes that are undergoing rapid residential development. The southernmost, Lake Jackson, receives a substantial portion (roughly one-third) of Tallahassee's urban drainage. Lake Jackson also has the distinction of periodically (on average every twenty-five years) draining via sinkholes, leaving only a few deep pools. In the middle in pounded section, Lake Talquin has both agriculture and silviculture land use. The lower river flows mostly through forested coastal lowlands encompassing the Apalachicola National Forest. A remote blackwater creek, the Sopchoppy River, and the Ochlockonee River both flow into the western end of the Ochlockonee Bay, a small embayment along the Apalachee Bay coast.

Anthropogenic Impacts

There are several problem areas evident in this basin, mostly in the upper portions of the basin. First, Little River and its upstream tributary, Quincy Creek, have historically shown bacteria, nutrient and turbidity problems. Upstream point sources include strip mines (Englehaid, Floridan, and Oil Dry for Fuller's earth) and the City of Quincy WWTP (1. 5 MGD design capacity). The only background stream for monitoring fuller's earth mining is Attapulgus Creek northeast of Attapulgus Ga. as all the streams of this region in Florida are impacted by mining activities.

Bioassessment by Butts, 1990 found degraded conditions in Womack Mill Creek below the Havana WWTP discharge. Effluent water chemistry showed elevated BOD (21 mg/L), ammonia (I I mg/L), and coliform bacteria violations. Benthic macroinvertebrate fauna below the discharge was dominated by pollution tolerant forms including oligochaete worms (66% of fauna) and tolerant chironomid larvae (21% of fauna). An advanced wastewater treatment WQBEL was issued. An AWT WQBEL was re-established in April 1993. The City of Havana was issued a TOP in 1993 requiring an upgrade to AWT or an elimination of their surface water discharge by October, 1996.

Another problem area is the Ochlockonee River immediately below the Georgia-Florida state line. Water quality problems include high bacteria, nutrient and turbidity values and low macroinvertebrate diversity. A 1987 survey of the upper Ochlockonee basin conducted by the DEP Biology Section indicated that the primary source for the heavy turbidity and siltation is agricultural runoff in Georgia. Siltation is also apparently responsible for the depressed macroinvertebrate community and consequent decline in the fisheries reported by the Nonpoint Source Assessment. The Georgia Soil and Water Conservation Committee is applying for federal funds through the Georgia Environmental Protection Division to begin implementing farming Best Management Practices. Georgia point sources (primarily WWTPs and a pickle canning factory) appear to be responsible for the nutrient and bacteria problems in the upper reaches.

Lake Talquin has good water quality, 'with the exception of its junction with Little River where the stream adds nutrients and turbidity. There are some algae and aquatic weed problems, but the lake still serves as an excellent fishing and swimming area. It also acts to improve water quality downstream by allowing turbidity to settle out.

A tributary to the Ochlockonee, Telogia Creek, has severe nutrient and DO'problerns in the upper portions due to runoff from the Gretna WWTP overland flow /sprayfields. Court action has been taken against the City of Gretna to remove all discharges from Telogia Creek. The Court settlement is pending. Nutrient and weed problems extend several miles downstream.

Water quality in the Lower Ochlockonee River is good. Turbidity, sedimentation, bacteria, and stream 'habitat destruction was observed from county road maintenance in Caney and Pine Creeks along C-375 below Lake Talquin. Additionally, the Sopchoppy River has excellent water quality. However, Ochlockonee Bay is reported to have high nutrients and low macroinvertebrate diversity, perhaps due to nonpoint sources (construction, clear cutting and septic tank leachate) in the immediate vicinity of the bay.

Finally, concern about Lake Jackson in Tallahassee is growing. Although for the most part the water quality is still good, the lake and sediments, especially in Megginnis Arm, are threatened from residential, construction, and road/parking lot stormwater runoff. There is a stormwater treatment facility, but it is undersized and has had operating troubles. A major restoration effort, the dredging of contaminated sediments from Megginnis Arm, was recently completed. Due to local controversy and the fact that the lake is a priority SWIM waterbody, more attention is being directed toward the expansion and maintenance of the facility and other lake management improvements.

The other major waterbody in' the basin, the Sopchoppy River, predominantly draming wetlands and forest land, shows excellent water quality. Its high color, low pH, and relatively low DO levels are natural conditions due to its swamp drainage origin. It is an Outstanding Florida Water.

USGS HYDROLOGIC
UNIT: 03120003 OCHLOCKONEE RIVER

INDEX GOOD -A:., P003.
SURFACE WATER QUALITY DATA FOR 1970-1993
--------- - ----- ----- -----
MEDIAN VALUES FOR EACH WATERSHED
WQI-RIVER 0-44 4_'-59-60-90'
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-20C - -----

TSI-LAKE 0-59 60-63 70-00 1
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
I

BIOLOGICAL WATER

```
            WATERSHED                                           WATERSHED DATA RECORD                    WATER
DISSOLVED        OXYGEN            PH           TROPHIC                                  SPECIES
QUALITY
            ID   NAME                                           ----------------------                   CLARITY
OXYGEN        DEMAND          ALKALINITY       STATUS               COLIFORM       DIVERSITY        CON" FLOW          INDICES
            ----- ---------------------------------    MAX   BEG END      DATA ---------------------------- ----------
--------------- ---------- --------------- ---------- --------------- ----- ----- ---------------
                                                        OOBS  YR  YR     PERIOD           TURB   SD COLOR      TSS   DO
DOSAT BOD COD          TOC   PH    ALK    NITRO PHOS CHLA   TOTAL FECL NAT ART BECK          COND FLOW        wQ I
TSI

            � WATER BODY TYPE: ESTUARY
            1    OCHLOCKONEE BAY                            10    75  79   Historical       10.0   0.2     179  25    7.7
82    1.1         23    7.3    19    0.90 0.06     3  3100   180    2.9                     187@                        47

            � WATER BODY TYPE: LAKE
            16   outside Lake                                 4   92  92   Current           9.6   0.6     60     7   7.4
83                  4   6.9      3   0.54 0.02                 84                            34                         54
            21   Lake Talquin                                 4   89  89   Current          16.0   0.9                8.2
105                 6.9          0.95 0.09    13                                             61                         59
            30   Lake Talquin                                 4   89  89   Current          24.0   0.8                8.6
89                  7.0          0.81 0.18    24                                             14,                        60
            58   LAKE OVERSTREET DRAIN                      17    89  89   Current          59.0    .      136  25
3.0    25   10          49    0.77 0.39                                              12;                        51
            70   LAKE JACKSON                               129   89  93   Current           4.0   1.5                8.0
91                  6.4    10    0.62 0.04     6                                             .2                         45
            93   LAKE IAMONIA    OUTLET                     32    79  80   Historical        1.3   2.3     29         7.0
67                  5.7      3   0.44 0.01     8                                             is                         33

            �WATER BODY TYPE: STREAM
            2    OCHLOCKONEE RIVER                          20    89  93   Current           5.0   1.0     90     3   6.0
71    0.4         11    6.6          0.68 0.07     3   110    18                            152              26
            3    BUCKHORN CREEK                             75    81  82   Historical        2.5    .              6
4.3           .  0.03                                         56             22
            4    SYFRETT CREEK                                6   92  92   Current           1.8   0.5     400    1   5.6
64                36    4.0      1   0.86 0.02         420    44                             50              42
            5    OTTER CREEK                                17    78  78   Historical       18.0           335
4.2           .  0.02                                         5-             46
            6    VAUSE BRANCH                               37    76  77   Historical       12.5           170
5.2          0.39 0.02                                        35             39
            7    MONKEY CREEK                                 4   85  85   Historical        9.0           350
3.8      0   0.84 0.04                                        56             42
            8    SMITH CREEK                                38    76  77   Historical        8.5           153
6.5          0.42 0.03                                        37             34
            9    SOPCHOPPY RIVER                            28    89  93   Current           1.3   0.4     160    1   6.9
75                25    6.6    14    0.55 0.05                 31                            5-     55       22
```

10	MILL CREEK	39	76	77	Historical	15.8	.	149						
6.2		0.31 0.03							34	43				
11	YELDOW CREEK	4	92	92	Current	5.2	0.7	350	1	6.1				
69			28	4.6	1	0.72 0.01		3000	80		42			46
12	WEST BR SOPCHOPPY RI	74	76	78	Historical	21.8	.	425						
4.1		0.63 0.01							58	50				
13	BLACK CREEK	7	93	93	Current	2.0	0.3	80	1	7.7				
82			11	7.0	35	0.28 0.01			450		6-			29
14	CYPRESS BRANCH	6	79	79	Historical					4.6				
54				7.3							464			64
15	OCHLOCKONEE RIVER	8	93	93	Current	10.5	0.8	100	2	6.2				
71			9	6.8	11	0.60 0.08			25		63			32
17	TELOGIA CREEK	15	89	93	Current	4.7	0.8	120	6	7.2				
79	3.3		8	6.6	4	1.33 0.08	5	425E3	107		72			33
18	FREEMAN CREEK	8	89	89	Current	16.0	1.0	.	.	7.3				
91				7.0		0.99 0.08	19				so			48
19	HARVEY CREEK	7	93	93	Current	2.6	0.6	40	1	7.0				
76			3	6.6	2	0.20 0.01			1100		22			27
20	BIG CREEK	8	93	93	Current	1.6	0.4	75	1	8.2				
87			8	5.2	1	0.20 0.01			239		23			23
28	OCKLAWAHA CREEK	51	73	77	Historical	3.0		88		8.0				
87			7	4.3	1	0.33 0.02			220		11 9			27
31	MILL BRANCH	3	79	79	Historical					7.0				
83				4.8							35			25
39	MEGGINNIS ARM RUN	26	89	93	Current	14.0	0.9	286	144	5.7				
56	9.0	55	17	6.3	23	0.64 0.08	8				6-			51
48	BEAR CREEK	5	92	92	Current	4.1	0.2	50	3	8.6				
90			5	6.5	2	0.27 0.07		1000	280		16			27
so	TIMBERLANE RUN	7	89	89	Current	154.0		214	234					
8.0	82	21		12	1.83 1.99					44			84	
53	HARBINWOOD ESTATES DN	7	89	89	Current	117.0		231	64					
3.0	29	11		26	0.80 0.66					8^			63	
54	MONROE CREEK	7	93	93	Current	7.4	0.4	so	5	7.9				
86			5	7.0	14	0.48 0.09			192		36			33
S6	Ochlockonee River	90	89	93	Current	20.0				'1. 1				
79				6.7	le	1.08 0.16			57		149	29,		54
57	MULE CREEK	3	79	79	Historical					7.3				
84											45	26		20
59	LITTLE RIVER	31	89	93	Current	24.0	0.8	110	12	7.3				
83			7	6.9	12	1.10 0.11	21	12250	223		63			so
68	JUNIPER CREEK	7	93	93	Current	6.3	0.6	120	4	6.2				
68			12	6.6	5	1.37 0.16	.	.	240		26			51

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L
MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBID7-y MG/L
ALK-ALKALINITY MG/L CHLA-CHLOROPHYLL UG/L DOSAT-DO % SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L %VI-WATER QUALITY INDEX

ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN D EMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML
PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLCW-FLCW CFS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

14D
1_j

USGS HYDROLOGIC
UNIT: 03120003 OCHLOCKONEE RIVER

INDEX GOOD FAIR POOR
SURFACE WATER QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
MEDIAN VALUES FOR EACH WATERSHED
WQI-RIVER 0-44 45-59-60-90
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100 -----
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE 0-59 60-69 70-100 1

1

BIOLOGICAL WATER
WATERS14ED WATERSHED DATA RECORD WATER
DISSOLVED OXYGEN PH TROPHIC SPECIES QUALITY

ID NAME CLARITY OXYGEN DEMAND ALKALINITY STATUS COLIF.ORM DIVERSITY COND FLOW INDICES

MAX BEG END DATA

ID	NAME	#OBS	BEG YR	END YR	PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHIA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
73	YON CREEK	3	79	79	Historical					7.4	85				5.1										32	14	19	
81	TALLAHASSEE CREEK	6	92	92	Current	3.3	0.3	45	1	8.0	88			4	6.6	5	1.88	0.02		380	164				58		25	
63	TANYARD BRANCH	1B	75	76	Hist@rical	16.3		63		7.5	82			4	6.9	31	1. 66'	0.15			1304				92	4	51	
85	HURRICANE CREEK	7	93	93	Current	13.0	0.3	100	4	8.3	89			8	7.1	14	0.47	0.07			280				55		37	
87	QUINCY CREEK	10	89	92	Current	12.0	0.2	60	11	7.5	83	0.9		3	6.3	20	1.05	0.09	4	9750	2@3@				65		44	
91	HUBBERT BRANCH	19	75	76	Historical	20.0		80		7.2	78			7	6.5	10	0.69	0.11			700				48	5	52	
94	HOLMAN BRANCH	21	75	76	Historical	10.8		43		7.4	78			3	6.5	9	0.55	0.11			1035				38	2	47	
96	Ochlockonee River	64	89	93	Current	24.0	0.5	129	13	6.7	74			8	6.5	17	1.@l	0.18		18675	750				153		@q	
98	WILLACOOCHEE CREEK	6	92	92	Current	20.0	0.5	120	10	7.8	85			5	6.9	10	0.76	0.08		440	330				42		38	
102	SWAMP CREEK	7	92	92	Current	100.0	0.2	190	68	6.5	68			6	6.4	10	0.83	0.40		4850	800				49		56	

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLV9D OXYGEN MG/L
MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALKALINITY MG/L CHLA-CHLOROPHYLL UG/L DOSAT-DO I SATIURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORG IANIC CARBON MG/L WQI-1,1ATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-E .NDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL 'COLIFORM"iqPN/-100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML
PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLOW-FLOW CPS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUtPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT: 03120003
OC14LOCKONEE RIVER
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'x'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
10'=WITHIN SCREENING CRITERIA
S S I NG 13ATA

```
                                                    I RANK DATA RECORDI       TN    ISTREAM   I LAKE      I    PH     I   ALK
I TURB &   I COND      IOXYGEN     I   DO     ICOLIFORM   I BIOL       I CHLA     ISECCIHI
                                                    I------------------  I          I    TP   I      TP
I   TSS    I           IDEMAND     I          I BACTI     I   DIV      I          I  DISC
                                                    I VIQI    CURRENT I           I         I
I          I           I           I          I           I            I          I         i
           WATERSHED                                I OR        OR        I TN>2.0   ITP>.46   I TP>.12   IPH>8.8     IALK<20
ITURB>16.$ICOND>12751   BOD>3.3    I  DD<4    ITOT>3700   IDIART<1.951 CHLA>40    I SD<.7
           ID  NAME                                 I TSI   HISTORICAL   I          I         I          IPH<5.2     I
I TSS>18   I           ICOD>102    I          IFECAL>4701DINAT<1.5     I          I
           -----  ------------------------------------------   I          I         I          I           I
I          I           ITOC>27.51             I           IBECK<5.5    I

           WATER BODY TYPE: ESTUARY
           I  OCHLOCKONEE BAY                       IGOOD   Historical   1    0     1         1     0     1     0     1     x
I      x   I    x      1     0     1     0    1     0     1      0     1    0     1     x

           WATER BODY TYPE: LAKE'
           16 Outside Lake                          IGOOD   Current      1    0     1         1     0     1     0     1     x
1      0   1           1     0     1     0    1     0     1            1
           21 Lake Talquin                          IGOOD   Current      1    0     1         1     0     1     a
1      0   1                       1     0    1                        1    0     1     0
           30 Lake Talquin                          IFAIR   Current      1    0                     x     1     0
x   I                 1     0    t                                  D     1     0
           58 LAKE OVERSTREET DRAIN                 IGOOD   Current      1    0                     x     1                 0
x   1             0     1          1                                      1      .   1
           70 LAKE JACKSON                          IGOOD   Current      1    0     1         1     0     1     0     1     x
1      0   1                       1     0    1                             0     1     0
           93 LAKE IAMONIA OUTLET                   IGOOD   Historical   1    0     1         1     0     1     0     1     x
1      0   1                       1     0    1                        1    0     1     0

           WATER BODY TYPE:  STREAM
           2  OCHLIDCKONEE RIVER                    IGOOD   Current      1    0     1     0   1           1     0     1
1      0   1    0      1     0     1     0    1     0     1            1    0     1     0
           3  BUCKHORN CREEK                        IGOOD   Historical   I    .     1     0   1           1     x     I
1      0   1           1           1          1           1            1                .   t
           4  SYFRETT CREEK                         IGOOD   Current      1    0     1     0   1           1     x     I     x
1      0   1                 x     1     0    1     0     1            1                x
           5  OTTER CREEK                           IFAIR   Historical   I    .     1     0   1           1     x     I
x   I                 I          I           I           I                 .   1
           6  VAUSE BRANCH                          IGOOD   Historical   I    a           0   (           I     x     1
0   1                 1
           7  MONKEY CREEK                          IGOOD   Historical   1    0     1     0   1           1     x     I     x
1      0   1                       1
           8  SMITH CREEK                           IGOOD   Historical   1    0     1     0   1           1     0     1
1      0   1                       1
```

9 SOPCHOPPY RIVER IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 0 1 0 1 x
10 MILL CREEK IGOOD Historical 1 0 1 0 1 1 0 1
1 0 1 1 1 1 . I
11 YELLOW CREEK IFAIR Current 1 0 1 0 1 1 x I x
1 0 1 x 1 0 1 0 1 x
12 WEST BR SOPCHOPPY RI IFAIR Historical 1 0 1 0 1 1 x I
x I I I I . i
13 BLACK CREEK IGOOD Current 1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1 x
14 CYPRESS BRANCH IUNKN Historical I . I . 1 0 1
1 1 0 1 1 . i
15 OCHLOCKONTE RIVER IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 0 1 0 1 0
17 TELOGIA CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 0 1 x 1 0 0
18 FREEMAN CREEK IFAIR Current 1 0 1 0 1 0 1
1 ri 1 0 1 1 0 1 0
19 HARVEY CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 0 1 x I x
20 BIG CREEK IGOOD Current 1 0 1 0 1 1 x I x
1 0 1 0 1 0 1 0 1 x
28 OCKLAWAHA CREEK iGOOD Historical 1 0 1 0 1 1 x I x
1 0 1 1 0 1 0 1 0 1 1 1
31 MILL BRANCH IGOOD Historical I . I . I I x I
I I 1 0 1 1 1 1
39 mEGGiNNis ARM RUN IFAIR Current 1 0 1 0 1 1 0 1 0
1 x I x 1 0 0 1 0
48 BEAR CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 0 0 x
50 TIMBERLANE RUN IUNKN Current 1 0 1 x I I x
I x I x I
53 HARBINWOOD ESTATES DN IUNKN Current 1 0 1 x I 1 0
1 x 1 0 1
54 MONROE CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 0 1 0 1 x
56 Ochlockonee River IFAIR Current 1 0 1 0 1 0 t
0 1 0 1
57 MULE CREEK IGOOD Historical I . I . I I 1
0 1 1 1 1
59 LITTLE RIVER IFAIR Current 1 0 1 0 1 1 0 1 x
I x 1 0 1 0 1 x I 1 0 1 0
68 JUNIPER CREEK IFAIR Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 0 1 0 1 1 1 x

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM
BACTERIA TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING

```
           ALK-ALKALINITY                 DO-DISSOLVED OXYGEN                          HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA           WHICH INDEX USED, WQI OR TSI, IS
           B=-BECK'S BIOTIC INDEX         CURRENT-1989 TO 1993                         OXYGEN DMMD-BOD,OOD,TOC
TSS-TOTAL SUSPENDED SOLIDS            BASED ON WATERBODY TYPE
           BIOL DIV-BIOL40GICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-7URBIDITY
           CHLA-CHLOROPHYLL               DINAT-NATURAL SUBSTRATE DIVERSITY            TN-NITROGEN
SD-SECCHI DISC METERS
```

```
                SURFACE WATER QUALITY DATA SCREENING REPORT                                   USGS HYDROLOGIC
UNIT: 03120003 OCHLOCKONEE RIVER
                MEDIXN VALUES FOR EACH WATERSHED SCREENED

                      'x'=---XC--EDS SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
                      '0'--W:-'alN SCREENING CRITERIA                        I
                      '=M:@'S*:NG DATA                                       I          I          I
                                             I RANK DATA RECORDJ          TN    I STREAM   I LAKE      J
PH     I   ALK      I TURB &     I COND       I  OXYGEN     I    DO     ICOLIFORM I BIOL          I CHLA       J
SECCHI    I
                                             I------------------     I          I    TP    I    TP     I
I           I    TSS     I           I  DEMAND     I           I BACTI      I   DIV       I           I  DISC     I
                                             I WQI      CURRENT I                       I          I          I
I           I           I           I            I           I           I              I           I           I
                WATr:LS'*T' ,                I OR          OR        @1 TN>2.0   I TP>.46   I TP>.12    I
PH>8.8     I ALK<20     ITURB>16.51COND>12751        BOD>3.3    I DO<4      ITOT>3700    IDIART<1.951    CHLA>40    I
SD<.7    I
                ID    NAM:                   I TSI    HISTORICAL I                  I          I          I
PH<5.2     I          I TSS>18     I          I  OOD>102    I          IFECAL>4701DINAT<1.5       I
                ----- -------------------------------------------           I          I          I          I
I           I           I           I  TOC>27.51            I           I BECK<5.5    I
```

			73	YON C-REEK					IGOOD	Historical		I		I		I	I	
x	I		I		I		I		1	0	1		1		1			
			81	7A:.!.hHASSEE CREEK					IGOOD	Current		1	0	1	0	1	1	
0	1	x	1	0	1		1	0	1	0	1	0	1					x
			83	:A.NYA-:C BRANCH					IFAIR	Historical		1	0	1	0	1	1	
0	1	0	1	0	1		1	0	1	0	1	x	I					
			85	F.;RR:CA,';-- CREEK					IGOOD	Current		1	0	1	0	1	1	
0	1	x	I	a	I		1	0	1	0	1	0	1					x
			87	Q!L;:NCY CREEK					IGOOD	Current		1	0	1	0	1	1	
0	1	0	1	0	1	0	1	0	1	0	1	x	I					x
			91	@@jBT_R- BRANCH					IFAIR	Historical		1	0	1	0	1	1	
0	1	x	I	x	I		1	0	1	0	1	x	I					
			94	1HOLMAN BRANCH					IFAIR	Historical		1	0	1	0	1	1	
0	1	x	1	0	f			0	1	0	f	x	I					
			96	ochlockonee River					IFAIR	Current		1	0	1	0	1	1	
0	1	x	I	x	I		1	0	1	0	1	x	I					x
			98	W:L:_kCCOCHEE CREEK					IGOOD	Current		1	0	1	0	1	1	
0	1	x	I	x	I		1	0	1	0	1	0	1					x
			102	SWAMP CREEK					IFAIR	Current		1	0	1	0	1	1	
0	1	x	I	x	I		1	0	1	0	1	x	I					x

LEGEND: COND-CONDUCTIVITY FECAL-FECAL
COLIFORM BACTERIA TP-PHOSPHORUS W01 OR TSI-WATER QUALITY INDEX RATING
ALK-ALKA.L:S:7Y DO-DISSOLVED OXYGEN HISTORICAL-1970
TO 1988 TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS
BECK-BSC:<-S ;:OTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-
BOD,COD,TOC TSS-TOTAL SUSPENDED SOLIDS 13ASED ON WATERBODY TYPE
BIOL D:V-B!O:,CGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPIKYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

m m m m m w m m m m m m m m m m M m m @

SURFACE WATER QUALITY ASSESSMENT REPORT - USGS HYDROLOGIC
UNIT: 03120003 OCHLOCKONEE RIVER
TRENDS-SOURCES-CLEANUP

'x'=DEGRADING TREND 1 1984 - 1993 TRENDS
'0'=STABLE TREND I---

'+'=IMPROVING TREND I 1W T1 T T C Sl P Al T TI B T1
D D1 T F(T F I<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'=MISSING DATA (QUALITY RANK IOVER-IQ or Sl N P H DI H Ll U Sl 0 01
0 01 C Cl E L I
I------------- I ALL II Il L I KI R Sl D Cl
Sl 0 01 M 0 1
1 WQI [TREND(I A I i B I
I Al L Ll P W I
WATERSHED I 14EETS OR I I I I
I TI I Il
ID NAME IUSE ? TSI
I I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------- I-------------

� WATER BODY TYPE: ESTUARY
1 OCHLOCKONEE BAY IYES GOODI I I
I I I I

� WATER BODY TYPE: LAKE

16 Outside Lake IYES GOODI .1 .1
.1 .1 .1 1
21 Lake Talquin IYES GOODI .1 .1
.1 .1 .1 1
30 Lake TalqQin)PARTIAL FAIRI .1 -1
-1 .1 .1 1
58 LAKE OVERSTREET DRAIN IYES GOODI 1 .1 .1
.1 .1 .1 1
'10 LAKE JACKSCN IYES GOODI 0 1 0 1 0 x 0 01 0 .1 0 .1
.1 0 01 .1 0 1
93 LAKE IAMONIA OUTLET IYES GOODI I I I I I
I I I I

� WATER BODY TYPE: STREAM
2 OCHLOCKONEE RIVER @YES GOODI + 1 0 1 + 0 0 +1 0 .1 0 010
.1 0 01 + 01 0 1
3 BUCKHORN CREEK IYES GOODI I I I I I
I I 1 1
4 SYFRETT CREEK IYES GOOD1 I I 1 .1 .1
.1 .1 .1 1
5 OTTER CREEK IPARTIAL FAIRI I I I I I
I I 1 1
6 VAUSE BRANCH IYES GOODI i i I I I
I I 1 1
7 MONKEY CREEK IYES GOODI I I . . . . 1 .1 .1
.1 .1 .1 1
8 SMITH CREEK IYES GOODI I I I I I
I I I i
9 SOPCHOPPY RIVER IYES GOODI 0 1 0 1 + 0 . .1 + 01 0 .1
.1 x 01 01 0 0 1
10 MILL CREEK IYES GOOD I I I i I
11 YELLOW CREEK IPARTIAL FAIRI I I I
12 WEST BR SOPCHOPPY RI IPARTIAL FAIR] I I I
13 BLACK CREEK IYES GOODI I I 1 .1 .1
.1 .1 .1 1
14 CYPRESS BRANCH INO UNKNI I I I I I
I I I i
15 OCHLOCKONEE RIVER IYES GOODI I I 1 .1 .1
.1 .1 .1 1
17 TELOGIA CREEK IYES GOODI I I 1 .1 .1
.1 .1 .1 1
IS FREEMAN CREEK IPARTIAL FAIRI I I . . . . 1 .1 .1
.1 .1 .1 1
19 HARVEY CREEK IYES GOODI I I . . 1 .1 .1
.1 .1 .1 1
20 BIG CREEK IYES GOODI I I . . . . 1 .1 .1
.1 .1 .1 1

```
          28      OCKLAWAHA CREEK                  IYES        GOODI        I        I           I      I      I
I    I      1        1
          31      MILL BRANCH                      IYES        GOODI        I        I           I      I      I
I    I      1        1
          39      MEGGINNIS ARM RUN                IPARTIAL    FAIRI     0   1    0   1  0  0 0   of 0   01 0   .1
.1 0 01      .1 0     1
          48      BEAR CREEK                       IYES        GOODI        I        I . . . .  I  .   .1 .   .1
.1 - .1      .1 -     I
          50      TIMBERLANE RUN                   INO         UNKN I       I        I . .       1             .1
.1   .1      .1       1
          53      HARBINWOOD ESTATES DN            )NO         UNKNI        I        I . . . .  1             .1
.1   .1      .1       1
          54      MONROE CREEK                     IYES        GOODI        I        I . .       I  -   .1      .1
.1   .1      .1       1
          56      Ochlockonee River                IPARTIAL    FAIRI     0   1    0   1  0  +     .1 0   01 0   .1
.1 0 01      01 0  0  1
          57      MULE CREEK                       IYES        GOODI        I        I           I      I      I
I    I      1        1
          59      LITTLE RIVER                     I PARTIAL   FAIR I    .   I    .   I . . . .
```

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLOW TN-NITROGEN
WQI-WATER. QUIAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEH. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

SURFACE WATER QUAL7TY ASSESSMENT REPORT - USGS HYDROLOGIC UNIT:
03120003 OCHLOCKONEE RIVER
TRENDS-SOURCES-CLEANUP

'x'-DEGRADING TRE24_' 1984 - 1993 TRENDS
'0'=STABLE TREND --

```
                    '+'=IMPROVING TR-_ND                                  1W       TI T T C   Sl P Al  T TI  B TI  D DI  T
Fl  T F  l<--- PLEASE READ THESE COLUMNS VERTICALLY
                    '.'=MISSING DATA             IQUALITY RANK    IOVER-IQ or St   N P  H  DI H Ll  U Sl  0 01  0 0)  C
C)  E L  I
                                                 I-------------   I ALL 11      il      L  I    KI  R Sl  D Cl    Sl  0
01  M 0  1
                                                 .1         WQI ITRENDI          I      A  I     I  B  I     I    Al  L
Ll  P W  I
              WATERSHED                          I MEETS    OR I        I        I         I     I     I     I    T1  1
11       1
              ID    NAME                         IUSE ?     TSI   I     I        I                     I     I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
              ----- ------------------------     I-------------   I     t        t                     I     I
I-----------------------------------------------------------------------------------------------------

              68    JUNIPER CREEK                IPARTIAL   FAIRI       I        I . . . .            .1  . .1
1
              73    YON CREEK                    IYES       GOODI       I        I         I    I     I     I     I
I        I
              el    TALLAHMSEE CREEK             IYES       GOODI       I        I . . . . I  . .1  - .1  . .1  - .1  .
.1  - .  i
              83    TANYARD BRANCH               IPARTIAL   FAIRI       I        I         I    I     I     I     I
1        1
              85    HURRICANE CREEK              IYES       GOODI       I        I         I  . .1    .1    .1  - .1
.1       1
              87    QUINCY CREEK                 IYES       GOODI    0  1    0   1 . . . . 1  0 .1  0 .1    .1  0 01
.1  + 0  1
              91    HUBBERT BPANCH               IPARTIAL   FAIRi       I        I         I    I     I     I     I
1        1
              94    HOLMAN BRANCH                IPARTIAL   FAIRI       I        I         I    I     I     I     I
1        1
              96    Ochlockonee live.            IPARTIAL   FAIRI    +  I    +   I + + .   .1 0 .1  a .1    .1  0 a(
a
              98    WILLACOOCHEE CREEK           IYES       GOODI       I        I . . . . I
              102   SWAMP CREEK                  1PARTIAL   FAIRI       I        I . . . . I
```

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATURS
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLOW TN-NITROGEN
WQI-WATER OULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CliLk-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

```
                                                                                                            NPS QUALITATIVE
SURVEY RESULTS
                                                                                                  AN "X" INDICATES A PROBLEM
WITH POLLUTANT OR SOURCE
                                                                                     THE @ ON MAPID INDICATES NO STORET
INFORMATION AVAILABLE FOR THIS WATERSHED
                                                                                                         -SEE PAGE 11 FOR
LEGEND FOR THIS TABLE-

        ----------------------------------------------------------------------------------         CATNAME@OCHLOCKONEE
RIVER     HUC=03120003 ----------------------------------------------------------------------------------

                                                                                     N   B    S        P   0            S
0    F            T        F            0
                                                                                     U   A    E        E   T            A
H       T   T    I            U        I            T
              M                                                                      T C D             S H D 0 L
A       H H S                 R        S N N H
              A              B                              W          W             R   T    I        T   E   E   X    I
M    B        E   E    H  A         B        H  0   0       E
              P      W       A                              Q          Q             I   E    M        I   R   B   Y    N
E    I  F     R   R    K  L  W     1  0     D  S   F        R
                     B       S                              3          N             E R E 0 C C R G I
T T L M P I G E D D E W I S I S
              y      I       1                              0          P             N I N I I H I E T P A A 0 A 0 L A E 1 0
C I S Y N T A R S                                                                                   C H 0
              D      D       N                              5          S             T A T L D E S N Y H L T W L L L L D T R
L M H M D P G E @ 'I R N M T

                2    1297A    OCHLOCKONEE RIVER          GOOD       THREAT     x   x    x  x           x   x     x
x    x  x     x           x   x     x        x                       x    x    x    x       x    x    x
              15     1297B    OCHLOCKONEE RIVER          GOOD       THREAT     x   x    x  x           x   x     x
x    x  x     x           x   x     x        x                       X    X    x    x       x    x    x
              17     1300     TELOGIA CREEK              GOOD       THREAT     x        x       x          x     x
x                                      x         x    x             x   x
              21     1297C    Lake Talquin               GOOD       THREAT     x   x    x  x           x   x     x
x    x  x     x           x   x     x        x                       x    x    x    x       x    x    x
              22-    879      HAMMOCK CREEK                         THREAT     x   x    x
x                    x   x     x                             x                 x            x
              23-    900      UNNAMED RUN                           THREAT     x   x    x
x                    x   x     x                             x                 x            x
              24-    902      UNNAMED RUN                           THREAT     x   x    x
x                    x   x     x                             x                 x            x
```

			25*	882			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			26*	884			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			27*	8 87			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			28	811			OCKLAWARA CREEK			GOOD			THREAT		x	x		x							
x				x	x		x				x				x					K					
			29*	860			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			30	1297D			Lake Talquin			FAIR			THREAT		x	x		x	x				x	x	x
x	x	x	x			x	x	x	x			x		x	x		x			x	x	x			
			32*	849			MCINTOSH BRANCH						THREAT		x	x		x							
x				x	x		x				x				x					x					
			33*	845			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			34*	842			TODD BRANCH						THREAT		x	x		x							
x				x	x		x				x				x					x					
			35*	835			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			36*	832			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			37-	831			POLE BRANCH						THREAT		x	x		K							
x				x	x		x				x				K					x					
			38*	823			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			40*	818			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			41-	804			MULE CREEK						THREAT		x	x		x							
x				x	x		x				x				x					x					
			42*	817			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			43*	814			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			44*	816			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			45*	810			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			46*	798			DOUBLE BRANCH						THREAT		x	x		x							
x				x	x		x				x				x					x					
			47*	801			UNNAMED RUN						THREAT		x	x		x							
x				x	x		x				x				x					x					
			48	757			BEAR CREEK			GOOD			THREAT		x	x		x							
x				x	x		x				x				x					x					
			49*	796			JUNIPER BRANCH						THREAT		x	x		x							
x				x	x		x				x				x					x					

51* 1304 ROCKY COMFORT CREEK THREAT x x x x x
x x x x x x x x x
52* 1308 UNNAMED BRANCH THREAT x x x
x x x x x x x
54 711 MONROE CREEK GOOD THREAT x x x x
x x x x x x
55* 737 UNNAMED RUN THREAT x x x x x
x x x x x x
56 1297E Ochlockonee River FAIR THREAT x x x x x x x
x x x x x x x x x x x x x x x x x x
59 424 LITTLE RIVER FAIR THREAT x x x x
x x x x x x x x x x x x x x x
60* 726 UNNAMED RUN THREAT x x x x x
x x x x x x
61* 710 SWEETWATER BRANCH THREAT x x x
x x x K
62@ 720 UNNAMED RUN THREAT x x x x x
x x x x x x
63* 1307 UNNAMED BRANCH THREAT x x x x K
x x x x x x
64- 707 UNNAMED RUN THREAT x x x x x
x x x x x x
65* 709 UNNAMED RUN THREAT x x x x x
x x x x K X
66* 714 UNNAMED RUN THREAT x x x x x
x x x x x x
67* 687 CAMP CREEK THREAT x x x x x
x x x x x x
68 682 JUNIPER CREEK FAIR THREAT x x x x x
x x x x x x
69* 691 LONG BRANCH THREAT x x x x x
x x x x x x
71* 659 UNNAMED RUN THREAT x x x x
x x x x x x
72- 677 UNNAMED SLOUGH THREAT x x x x x
x x x x x x
73 626 YON CREEK GOOD THREAT x x x x x
x x x x x x

%cl
00

NPS QUALITATIVE SURVEY RESULTS

AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE

THE * ON

MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED

-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=OCHLOCKONEE RIVER HUC=03120003

(continued)

```
                                                                                                         N   B
S           P   0               S                            0     F              T         F
0
                                                                                                         U A E
E T                   A                 H T T I                          U          I              T
                        M                                                                                T C D
S H D 0 L                               A H H S                          R          S N N H
                        A                   B                             W             W             R   T
I           T   E     E   X     I       M     B       E      E     H   A            B         H     0     0
E
                        P       w           A                             9             Q             I   E
M           I   R     B   Y     N       E     I    F    R      R     K   L     W     1   0      D     S     F
R
                                z           s                             3             N             E   R
E    0      C   C     R   G     I       T     T    L    M      P     I   G     E     D   D      E     W     I
S    I    S
                        y                   1                             0             P             N I N I I
H I E T P A A 0 A 0 L A E 1 0 C I S Y N T A R S L U C H 0
                        D       D           N                             5             S             T A T L D
E S N Y H L T W L L L L D T R L M H M D P G E L D R N M T
```

```
                        74-     67z       UNNAMED RUN                                   THREAT        x
X           X              x     x                                          x
K          x    X                X    X
```

751 605 COX CREEK THREAT x
x X
X x X
76- 643 UNNAMED RIJN TgREAT X
X X x x X
X x X x X
77- 617 JTUNIPER BRANCH THREAT x
X X x X X
x x X X X
78* '305 LITTLE TELOGIA CREEK THREAT x
X X x x X
x x X x X
79- 6'15 SO PRONG TANYARD BR TgiEAT X
X X
X x X
80. 629 UNNAMED RUN THRtAT X
X X x x X
x x x x X
81 =79 TALLAHASSEE CREEK GOOD THfiAT x
X X X x X
X x x x X
82* 602 UNNAMED BRANCH THREAT X
X X X x X.
x x x X
83 z95 TANYARD BRANCH FAIR THREAT x
X X
X x X.
84* 568 UNNAMED RUN THREAT X
X X X x X
X x X X X
85 540 HURRICANE CREEK GOOD THREAT x
X x x X
X
86* 524 LEWIS CREEK THREAT x x
X x x X X
x x x
87 '303 QUINCY CREEK GOOD THREAT X.
X X
k x x
88* 5@8 UNNAMED BRANCH THREAT x
X X x x X
x x X x X
89* 505 WINKLEY BRANCH THREAT x
X k
X x

90. '_302 MCDONALD BRANCH THREAT X
X X X x X
K x X x X
91 499 HUBBERT BRANCH FAIR THREAT X
X X
x X
92* 497 HURRICANE BRANCH THREAT x
X X X X X
X x X X X
94 1301 HOLMAN BRANCH FAIR THREAT x
X x
X X
95* 485 PITTMAN BRANCH THREAT x
X X X X X
X X X X X
96 -_j97F Ochlockonee River FAIR THRiAT X X
X X X X X x X X x x X X X
x X k x i X X X X
97* 1299 unnamed branch THREAT X
X X X X X
x . x X X x
96 4' 0 WILLACOOCHEE CREEK GOOD THREAT x
X X
x X
99* -296 INTERLOCKING LAKES THRkAT X
X X
X x X
100. 440 UNNAMED STREAM THREAT x
X x X
X x
101* 460 UNNAMED RUN THREAT X.
X k
x X
102 427 SWAMP CREEK FAIR FAIR X
X X X X
X X
103* 430 SHAW CREEK THREAT X. x
X x X x X X X. X X X
X. X x X
104- -297G Ochlockonee River THREAT X. x
X x X X x x X X X x X X X
X x x X x x x
105* 417 UNNAMED BRANCH THREAT X
X X
X X
106* 428 MILL CREEK THREAT
x x x

107* 402 UNNAMED RUN THREAT x
X x
x X

I
I
I
I

t
I
I PEA RIVER BASIN
03140202
1 1
1
a
I
1 4
4
I
I THERE ARE NO FLORIDA WATER QUALITY STATIONS IN THIS RIVER BASIN
I
I
I
I
I

i
I
I
I

The Pea River is an Alabama tributary of the Choctawhatchee River. Northwcstflorida- contains a very small portion of the Pea River basin. The only waterbody in the Florida portion of the Pea River basin is Eightmile Creek which was sampled eleven times in 1970 when it exhibited excellent water quality.

100

USGS HYDROLOGIC UNIT:
03140202

INDEX GOOD --A:.-, POO-1
SURFACE WATER QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
MEDIAN VALUES FOR EACH WATERSHED
WI-RIVER 0-44 45-59-60-90
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-'-00 -----
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE 0-59 60-69 70-100

I

BIOLOGICAL WATER
WATERSHED WATERSHED DATA RECORD WATER DISSOLVED
OXYGEN PH TROPHIC SPECIES QUALITY
ID NAME ---------------------- CLARITY OXYGEN
DEMAND ALKALINITY STATUS COLIFORM DIVERSITY COND FLOW :ND:CES
----- --------------------------------- MAX BEG END DATA ---------------------------- ---------- -----
---------- ---------- --------------- ---------- --------------- ----- ----- ---------------
OOBS YR YR PERIOD TURB SD COLOR TSS DO DOSAT BOD
COD TOC PH ALK NITRO PHOS CHLA TOTAL FECL NAT ART BECK COND FLOW WQ: TSI

WATER BODY TYPE: STREAM

1 EIGHTEENMILE CREEK 11 70 70 Historical 10.0 40
6.8 25 0.38 0.03 75 29 39

LEGEND: BOD-BIOCHEMICA.L OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L MAX
#OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/_1,

ALK-ALKALINITY MG/L CHLA-CHLOROPHYLL UG/L DOSAT-DO I SATURATION NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WQI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLIOW-FLOW CPS PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT: 03140202
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'x'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
'0'-WITHIN SCREENING CRITERIA
'.'=MISSING DATA I I
I
I RANK DATA RECORDI TN I STREAM I LAKE I PH I
ALK I TURB & I COND I OXYGEN I DO ICOLIFORM I BIOL I CHLA I SECCHI I
I------------------- I I TP I TP I I
I TSS I I DEMAND I I BACTI I DIV I I DISC I
I WQI CURRENT I I I I I
I I I I I I I I I
WATERSHED I OR OR I TN>2.0 I TP>.46 I TP>.12 I PH>B.B I
ALK<20 ITURB>16.51COND>12751 BOD>3.3 I DO<4 ITOT>3700 IDIART<1.95i CHLA>40 I SD<.7 I
ID NAME I TSI HISTORICAL I I I I PH<5.2 I
I TSS>18 I I COD>102 I IFECAL>47016INAT<1.5 I I I
----- -- I I I I
I I I TOC>27.51 I I BECK-C5.5 I I I

WATER BODY TYPE: STREAM
1 EIGHTEENMILE CREEK I GOOD Historical 1 0 1 0 1 1 1
0 1 0 1 1 1 1 1 1

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM
BACTERIA TP-PHOSPHORUS W@i OR TSI-WATER QUALITY,INDiEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-100 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS
BECK-BECK'S BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,COD,TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATiRBOb@ TYP9
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-7URBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBS@RATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

```
          SURFACE WATER QUALITY ASSESSMENT REPORT                                    - USGS HYDROLOGIC UNIT:
03140202
                TRENDS-SOURCES-CLEANUP
                :xl=DEGRADING TRENDS                            1                  1984 - 1993 TRENDS
I
                0'-STABLE TREND                                 ------------------------------------------------------
                '+'=IMPROVING TREND                                   W     TI  T T C Sl   P Al  T TI  B TI   D  D1 T
Fl T F   1<--- PLEASE READ THESE COLUMNS VERTICALLY
                '-'-MISSING DATA             IQUALITY RANK     IOVER-10 or Sl   N P H DI   H Ll  U Sl  0 01   0  01 C
Cl E L   I
                                               -------------   I ALL II     il       L   I    KI R Sl  D Cl      Sl 0
01 M 0   1
                                                         WQI @TREND:              A            B               A@ L
L@ P W
         WATERSHED                             MEETS     OR                                                    T  I
I
         ID      NAME                        I USE ?     TSI   I      I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
          -----   ------------------------    I -------------
-----------------------------------------------------------------------------------------------

           WATER BODY TYPE: STREAM
            1    EIGHTEENMILE CREEK           IYES       GOODI        I
I
```

LEGEND:	DOSAT-DO SATURATION	TOOLI-TOTAL COLIFORM	TURB-TURBIDITY
	FCOLI-FECAL COLIFORM	TEMP-TEMPERATURE	TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALX-ALKALINITY	FLOW-FLOW	TN-NITROGEN	14OI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND	MEETS USE-MEETS DESIGNATED USE	TOC-T.ORGANIC CARBON	
CHLA-CHLOROPHYLL	PH-PH	TP-PHOSPHORUS	
DO-DISSOLVED OXYGEN	SD-SECCHI DISC METERS	TSS-TOTAL SUSPENDED SOLIDS	

ULATTO

ESCAMBIA SAY

CARPENTER

Aj

ol,

BAYOU CHI

R BAY

GULF OF MEXICO

PENSACOLA BAY BASIN
03140105
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUAILITY
= GOOD
THREATENED
FAIR
POOR
UNKNOWN

PENSACOLA BAY BASIN

---------------------------- ---

Basic Fact

Drainage Area: 543 square miles
Major Land Uses: silviculture, urban development

Population Density: moderate, to high, along Bay and Gulf (Pensacola, Gulf Breeze, Ft. Walton Beach)
Major Pollution Sources: urban runoff, WWTP
Best Water Quality Areas: Santa Rosa Sound
Worst Water Quality Areas: Bayou Chico, Bayou Texar, areas assessed by nonpoint source survey
Water Quality Trends: stable quality at 7 sites
OFW Waterbodies:
Yellow River Marsh State Aquatic Preserve
Gulf Islands National Seashore
Ft. Pickens Park State Aquatic Preserve
SWIM Waterbodies: Pensacola Bay Area
Reference Reports:
Pensacola Bay SWIM Plan, NWFW?v1D, 1990
Bayou Texar Study, DEP (Pensacola), 1987
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Basin Water Quality Experts:
Don Ray, DEP (Pensacola), 904/444/8300
David Heil, DEP (Tallahassee), 904/488-5471
Glenn Butts, DEP (Pensacola), 904/444-83 80

--- --

* A bill that would change the boundaries of Santa Rosa and Escambia, Counties, possibly allowing less restrictive coastal development, was recently passed by the Governor.
* A controversial proposal to dig a pass through Santa Rosa Island near Navarre is being debated.
* Several large fish kills occurred during late summer/fall of 1990 and 1991 in tributaries of Pensacola Bay.

-------------- - ------------- - ------------------- - ---------------------

Ecological Characterization

The Pensacola Bay Basin (located in northwest Florida) has a drainage area of 543 square miles. The basin consists of several connected waterbodies. To the west is Escambia Bay which receives flow from the Escambia River at 6,500 cfs. The Blackwater River (400 cfs) and Yellow River (1,500 cfs) empty into Blackwater Bay which widens to become East Bay. Escambia and East Bays are relatively low salinity estuaries. They merge to join the more saline Pensacola Bay waterbody which opens to the Gulf of Mexico between Perdido Key and Santa Rosa Island. Santa Rosa Sound is a lagoon between the mainland and Santa Rosa Island that receives very little freshwater input.

Most of the eastern portion of the basin consists of state forest lands and Eglin Air Force Base. The city of Milton lies at the head of Blackwater Bay. The Escambia River drains mostly silvicultural lands, but the Escambia Bay drainage contains considerable urbanization. The Pensacola Bay portion of the basin is almost entirely urbanized.

Anthropogenic Impacts

The main water quality problems in the area are upper Escambia Bay and the nearshore portions of Pensacola Bay. Additionally, Bayou Chico and Bayou Texar drain the Pensacola urban area and have pollution problems.

Water quality problems in Escambia Bay are mostly due to point sources. Reduced DO concentrations, fish kills and bacteria problems have been evident around the mouth of the Escambia River. The University of West Florida WWTP, Monsanto industrial discharge and Gulf Power thermal discharge enter the Escambia River upstream of the mouth. The University of West Florida's WNVTF was issued a TOP requiring actions to be taken to either upgrade th-- facility to AWT or eliminate their current discharge to surface waters. In addition, this portion of the bay received discharge from two chemical manufacturing companies (CYTEC, formerly American Cyanamid, and Air products). Both discharges have been found to be toxic in several bioassay tests. Monsanto also has a history of toxicity. These companies discharge high levels of nitrogen and BOD. Problems in the upper bay were complicated by poor flushing due to natural circulation patterns and an old railroad bridge. A new railroad bridge has recently been constructed and the old one removed. Reports indicate significantly better circulation. Located on the eastern side of Escambia Bay is Mulatto Bayou which receives stormwater runoff from Avalon Beach.

Indian Bayou, in the southeastern portion of Escambia Bay, still supports a seagrass bed community.

Water quality improves in Pensacola Bay, mostly due to better flushing and the greater influence of Gulf waters. However, both nonpoint and point sources affect the bayous in Pensacola. Bayou Chico has very poor water quality. The bayou has bacteria, fish kill and nutrient problems. In addition to stormwater, it receives shipyard runoff, historic discharge from Reichold Chemicals, and the Warrington WWTP discharge. Historically, it was also degraded by chemical, lumberyard and creosote industries. Sediments are polluted with metals and support reduced macroinvertebrate life. A study of the sediments performed by the University of Florida found that various polycyclic aromatic hydrocarbons (PAH) and phenolic compounds were migrating from the American Creosote site to Pensacola Bay at the mouth of Bayou Chico (Delfino et al., 1991). The investigators also found I I OPP's and 3 PAHs and p-chloro-m-cresol in the waters of Bayou Chico. The water concentration of tetrachloroethylene (11.5 mg/1) at one station exceeded both EPA Human Health Criteria and the FDEP Surface Water Quality criteria for Class III waters. Additionally, at two stations phenanthreone and pyrene also exceeded the EPA Human Health Criteria. The two creeks which feed this bayou (Jackson Creek and Jones Creek) also exhibit water quality problems from urban runoff. Several actions have been and are being taken to alleviate problems in Bayou Chico. Improved stormwater treatment from the shipyards, Reichold Chemicals, Corry Field (a Navy installation) and a shopping complex have been negotiated. Additionally, a sedimentation basin (funded mostly by DEP) is being constructed in one of the three arms of the bayou to capture sand and organic sediment from stormwater. The Warrington plant has upgraded its treatment and since 1990, discharges to the Main Street W)ArTP rather than Pensacola Bay. DEP has been conducting a survey of sediments in port areas throughout the State. This study found that sediments in the Pensacola Bay port area east of Bayou Chico were the only ones in the State to contain phenols.

Bayou Texar, although not as degraded as Bayou Chico, has had increasing fish kill problems in recent years. It receives discharge from 68 storm sewers and discharge from Carpenters Creek containing heavy suspended solids loads. Recently, the City has proposed a demonstration project (funded by DEP) to modify four of these sewers to allow partial treatment of the stormwater before entering the bayou. In addition, a study by the University of West Florida will assess the problems of the bayou and make recommendations. As part of the Pensacola Bay SWINI plan, these two bayou drainages, as well as other drainages, will be monitored to determine their pollutant loading to the bay. The summer and fall of 1991 were particularly devastating for marine life. Large fish kills occurred in both Bayous Chico and Texar. As much as 10-12 tons of fish were removed. Crabs dying in traps were found in Santa Rosa Sound. High nutrient runoff

from Tiger Point Golf Course and low dissolved oxygen levels probably contributed to the die-off of crabs.

Pensacola Bay proper also receives discharge from Pensacola's Main Street wastewater treatment plant. Two years of water chemistry samples were collected by the facility in the bay around the discharge point and at several background sites. They indicated that the bay was assimilating the current discharge but that loadings should not be increased. DEP biological sampling indicates low diversity and heavy organic sedimentation a-round the discharge. Furthermore, the plant has been found toxic in several bioass4ys.

The USEPA has research projects in Pensacola Bay including EMAP and estuarine assessments of Bayou Chico, Bayou Texar, and Bayou Grande. Sediment toxicity, chemistry and benthic macroinvertebrates are included as research parameters. Preliminary findings has shown sediment toxicity in upper Bayou Texar below the 12th Avenue Bridge. No scientifically defensible cause and effect have been established for-this observation at this time. Recent 5th year surveys for Navarre WWTP, NAS WWTP, and Main Street WWTP have not shown biological impact due to these sources, however AGP results indicate that nutrient loading to Pensacola Bay should not be increased.

Santa Rosa Sound has good water quality. It is threatened by development of the island, ditching and stormwater. Only two WWTPs currently discharge to Santa Rosa Sound, Navarre Beach and Pensacola Beach. Both facilities provide tertiary treatment prior to discharge. Finally, the City of Navarre has proposed cutting a pass (and marina) through the island.

Dissolved oxygen violations were recorded in upper Escambia Bay below industrial outfalls during April, 1994. Citizen continue to complain about dirty foam originating near these outfalls. Additional public complaints were received that the CYTEC (formerly American Cyanamid) outfall pipe had broken again.

Serious fishkilis occurred in East Bay during September 1993. This area's history is similar to Bayou Texar where increased development led to increased nutrient loading which during neap tides with little wind mixing during cloudy late summer/early fall caused die off of algal blooms and fishkills. The East Bay area is developing with many waterfront home owners and the resulting nutrient laden nonpoint source runoff is beginning to contribute to the fishkills. A bridge permitted in June, 1994 to cross East Bay can be expected to exacerbate population growth in the watershed.

Mulatto Bayou has experienced turbidity, sedimentation, and habitat destruction from construction of a golf course in its headwaters. Enforcement action resulted in sediment dredging from the Bayou. Local homeowners still complain that fish and wildlife are now scarce in the bayou and blame runoff from the Moors golf course development.

Fishkills around Tiger Point golf course/WWTP in Santa Rosa Sound for summer 1993 were reported after the fact by citizens and the Gulf Islands National Seashore park supervisor.

Big Lagoon's water quality data has been added to the Perdido Bay basin section of this 305(b) report. It is an OFW with Big Lagoon State Park and Gulf Islands National Seashore Park and has the only nursery area of turtle (Ihalassia) seagrass beds in Escambia Co. This area is being intensely developed with condominiums, subdivision, and marinas.

USGS HYDROLOGIC UNIT: 03140105 PENSACOLA BAY

INDEX GOOD FAIR POOR
SURFACE WATER QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
MEDIAN VALUES FOR EACH WATERSHED
WQI-RIVER 0-44 45-59-60-90
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100 -----
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE 0-59 60-69 70-100 1

1

BIOLOGICAL WATER
WATERSHED WATERSHED DATA RECORD
WATER DISSOLVED OXYGEN PH TROPHIC
SPECIES QUALITY
ID NAME ----------------------
CLARITY OXYGEN DEMAND ALKALINITY STATUS COLIFORM
DIVERSITY COND FLOW INDICES
----- ---------------------------------- MAX BEG END DATA ------------
---------------- ---------- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------
------
#OBS YR YR PERIOD
TURB SD COLOR TSS DO DOSAT BOD COD TOC PH ALK NITRO PHOS CHLA TOTAL
FECL NAT ART BECK COND FLOW WQI TSI

WATER BODY TYPE: ESTUARY
2 PENSACOLA BAY (MOUTH) 246 71 88 Historical
6.0 3.0 11 12 8.2 91 1.0 4 8.1 97 0.45 0.01 2 79
5 43250 24

3 BAYOU GRANDE 48 71 76 Historical
9.4 1.4 28 8 7.9 90 1.5 B. 0 55 0.74 0.02 11
7 11200 44
4 PENSACOLA BAY (MID) 582 71 88 Historical
3.7 2.3 11 12 7.7 87 1.1 1050 7 8.2 93 0.40 0.01 2 28
16 37625 27
7 DIRECT RUNOFF TO GULF 22 72 88 Historical
3.0 3.0 10 11 9.7 96 0.9 26.7 99 0.40 0.00 2 9
5 49100 12
8 SANTA ROSA SOUND 11 89 89 Current
0.5 . 25 16 0.8 8.0 0.80 0.01 2
25085 18
10 DIRECT RUNOFF TO 13AY 2 90 90 Current
2.0 1.8 10 19 8.1 90 0.7 1 7.9 0.0311.00 2 5
5 29200 23
13 BAYOU CHICO 24 89 91 Current
7.5 1.0 35 21 8.2 68 2.5 1 7.8 0.74 0.09 11 2190
260 22518 52
14 PENSACOLA BAY (N) 500 71 88 Historical
3.7 1.9 10 15 B.2 89 0.8 7 7. 9 101 0.40 0.01 2 18
5 34913 25
17 DIRECT RUNOFF TO BAY 22 71 80 Historical
11.0 0.8 25 11 4.9 64 1.5 7.5 38 0.69 0.02 6 49
7 25100 45
18 BAYOU GRANDE 11 89 92 Current
4.4 1.0 33 15 3.9 42 0.6 3 7.0 0.54 0.04 900
193 20301 44
EAST RIVER BAY 14 90 93 Current
21.0 7.3 84 5.2 6 0.56 0.02
855 37
21 EAST BAY B 91 92 Current
6.5 1.6 34 16 7.4 79 0.3 3 7.2 0.66 0.04 143
19 19735 46
22 TEXAR BAYOU 19 89 92 Current
2.6 1.5 21 6 6.2 65 0.5 2 6.7 1.09 0.08 2791
590 6289 56
24 ESCAMBIA BAY (S) 1107 70 88 Historical
11.3 0.9 40 28 7.9 86 1.1 333 6 7.8 37 0.59 0.02 3 24
18 15824 41
30 TROUT BAYOU 9 92 92 Current
7.1 0.8 70 8 4.1 49 6 6.6 10 0.63 0.02 3 2000
1000 10421 43
32 BLACKWATER. BAY 14 92 93 Current
8.4 1.1 40 12 8.4 88 5 6.8 13 0.48 0.01 1
84 4440 34

33 INDIAN BAYOU 9 92 92 Current
7.5 1.0 60 10 5.5 66 6 6.9 11 0.53 0.02 5 210
20 10977 45
37 ESCAMBIA BAY (N) 26 89 93 Current
5.0 0.9 40 12 7.3 87 1.5 3 '7. 4 . 0.63 0.03 7 20
10 13420 48
42 MULATTO BAYOU 10 92 92 Current
23.0 0.5 120 14 4.7 57 11 6.5 6 0.66 0.02 10 230
700 8976 55
44 JUDGES BAYOU 9 92 92 Current
11.0 0.9 75 9 5.8 72 6 7.0 20 0.71 0.02 18 700
100 5016 53
,45 BLACKWATER BAY 14 92 93 Current
3.1 1.5 35 3 8.6 92 3 6.7 9 0.53 0.01 2
35 4363 32

- WATER BODY TYPE: STREAM
9 JONES CREEK 19 89 92 Current
5.7 1.0 60 5 3.9 41 0.8 1 6.6 1.31 0.26 2 3750
743 3430 56
is JACKSON CREEK 16 89 92 Current
2.1 1.0 16 4 6.1 65 0.7 2 7.0 2.85 0.20 8700
658 638 49
25 PRAIRIE CREEK 6 92 92 Current
1.0 0.6 15 1 8.6 80 1 5.8 1 0.16 0.02
90 16 15
29 CARPENTER CREEK 19 89 92 Current
3.5 2.0 36 5 7.7 80 0.5 2 6.7 0. 88 0.06 2475
681 127 30
31 LIVE OAK CREEK 6 92 92 Current
2.6 1.0 10 4 8.7 93 1 5.4 1 0.22 0.02
100 13 19
39 TURTLE CREEK 6 92 92 Current
1.3 0.9 10 1 9.1 99 1 5.6 1 0.24 0.02
46 14 12
47 PACE MILL CREEK 94 71 88 Historical
15.5 0.8 58 7 7.0 76 1.0 193 7 6.8 18 0.75 0.05 2 953
260 6 98 40

```
                    LEGEND:                                      BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
DO-DISSOLVED OXYGEN MG/L                     MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS
TURB-TURBIDITY MG/L
                    ALK-ALKALINITY MG/L                          CHLA-CHLOROPHYLL UG/L
DOSAT-DO % SATURATION                        NAT-NATURAL SUBSTRATE DIVERSITY                          TOC-TOTAL ORGANIC
CARBON MG/L                   WQI-WATER QUAL17Y INDEX
                    ART-ARTIFICIAL SUBSTRATE DI                  COD-CHEMICAL OXYGEN DEMAND MG/L
END YR-ENDING YEAR                           NITRO-TOTAL NITROGEN MG/L                                TOTAL-TOTAL COLIFORM
MP14/100ML
                    BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU
FECL-FECAL COLIFORM MPN/100ML                PH-PH STANDARD UNITS                                     TSI-TROPHIC @TATE INDEX
                    BECK-BECK'S BIOTIC INDEX                     COND-CONDUCTIVITY UMHOS
FLOW-FLOW CFS                                PHOS-TOTAL PHOSPHORUS MG/L                               TSS-TOTAL SUSPENDED
SOLIDS MG/L





           SURFACE WATER QUALITY DATA SCREENING REPORT                         USGS HYDROLOGIC    UNIT: 03140105
PENSACOLA BAY
           MEDIAN VALUES FOR EACH WATERSHED SCREENED

               'X'=EXCEEDS SCREENING CRITERIA                       I
SCREENING VARIABLES AND CRITERIA
               '0'--WITHIN SCREENING CRITERIA
               '.'=MISSING DATA
                                                     I RANK DATA RECORDI       TN   I STREAM   I LAKE     I      PH     I   ALK
I TURB &    I COND     I  OXYGEN   I    DO     ICOLIFORM  I BIOL      I CHIA      I SECCHI   I
                                                     I------------------            I    TP    I    TP    I             I
I   TSS     I          I  DEMAND   I           I RACTI    I    DIV     I           I  DISC    I
                                                     I WQ1     CURRENT              I          I          I             I
I           I          I           I           I          I            I           I          I
           WATERSHED                                 I OR         OR      ITN>2.0   I TP>.46   I TP>.12   I PH>8.8     IALK<20
ITURB>16.SICOND>12751     BOD>3.3  1  DO<4     ITOT>3700  IDIART<1.951   CHLA>40   I  SD<. 7  1
```

```
          ID   NAME                          I TSI  HISTORICAL    I         I         I         I PH<5.2     I
I TSS>18    I          I  COD>102  I         IFECAL>4701DINAT<1.5    I         I         I
          -----  --------------------------------------------         I                             I
I                      I  TOC>27.51                   I BECK<5.5     I         I         I

          WATER BODY TYPE: ESTUARY
          2   PENSACOLA BAY (MOUTH)          IGOOD  Historical    1    0    1         1    0    1      0     1     0
1     0     1     x    1      0    1     0    1     0    1          1      0    1     0    1
          3   BAYOU GRANDE                   IGOOD  Historical    1    0    1         1    0    1      0     1     0
1     0     1     x    1      0    1     0    1     0    1          1           1     0    (
          4   PENSACOLA BAY (MID)            IGOOD  Historical    1    0    1         1    0    1      0     1     0
1     0     1     x    I      x    1     0    1     0    1          1      0    1     0    1
          7   DIRECT RUNOFF TO    GULF       IGOOD  Historical    1    0    1         1    0    1      x     1     0
1     0     1     x    1      0    1     0    1     0    1          1      0    1     0    1
          8   SANTA ROSA SOUND               IGOOD  Current       1    0    1         1    0    1      0     1
1     0     1     x    1      0    1          1          1          1      0    1     .    I
          10  DIRECT RUNOFF TO    BAY        IGOOD  Current       1    0    1         1    x    1      0     1
1     x     I     x    1      0    1     0    1     0    1          1      0    1     0    1
          13  BAYOU CHICO                    IFAIR  Current       1    0    1         1    0    1      0     1
1     x     I     x    1      0    1     0    1     0    1          1      0    1     0    1
          14  PENSACOLA DAY (N)              IGOOD  Historical    1    0    1         1    0    1      0     1     0
1     0     1     x    1      0    1     0    1     0    1          1      0    1     0    1
          17  DIRECT RUNOFF TO    BAY        IGOOD  Historical    1    0    1         1    0    1      0     1     0
1     0     1     x    1      0    1     0    1     0    1          1      0    1     0    1
          18  BAYOU GRANDE                   IFAIR  Current       1    0    1         1    0    1      0     1
1     0     1     x    1      0    1     x    1     0                                  0    1
          19  EAST RIVER BAY                 IGOOD  Current       1    0    1         1    0    1      0     1     x
I     x     I                  1     0    1                                      .    1
          21  EAST BAY                       IGOOD  Current       1    0    1         1    0    1      0     1
1     0     1     x           0    1     0    1     0    1          1           1     0    1
          22  TEKAR BAYOU                    IFAIR  Current       1    0    1         1    0    1      0     1
1     0     1     x           0    1     0    1     x    I          I           1     0    1
          24  ESCAMBIA BAY (S)               IGOOD  Historical    1    0    1         1    0    1      0     1     0
1     x     I     x           x    1     0    1     0    1          1      0    1     0    1
          30  TROUT BAYOU                    IGOOD  Current       1    0    1         1    0    1      0     1     x
1     0     1     x    1      0    1     0    1     x    I          1      0    1     0    1
          32  BLACKWATER BAY                 IGOOD  Current       1    0    1         1    0    1      0     1     x
1     0     1     x    1      0    1     0    1     0    t          1      0    1     0    1
          33  INDIAN BAYOU                   IGOOD  Current       1    0    1         1    0    1      0     1     x
1     0     1     x    1      0    1     0    1     0    1          1      0    1     0    1
          37  ESCAMBIA BAY (N)               IGOOD  Current       1    0    1         1    0    1      0     1
1     0     1     x    I      a    1     0    1     0    1          1      0    1     0    1
          42  MULATTO BAYOU                  IFAIR  Current       1    0    1         1    0    1      0     1     x
I     x     I     x    1      0    1     0    1     x    I          1      0    1     x    1
          44  JUDGES BAYOU                   IFAIR  Current       1    0    1         1    0    1      0     1     0
1     0     1     x    1      0    1     0    1     0    1          1      0    1     0    1
```

45 BLACKWATER BAY IGOOD Current 1 0 1 1 0 1 0 1 x
1 0 1 x 1 0 1 0 1 0 1 1 0 1 0 1

WATER BODY TYPE: STREAM

9 JONES CREEK IFAIR Current 1 0 1 0 1 1 0 1
1 0 1 x 1 0 1 x I x 1 0 1 0 1

15 JACKSON CREEK IFAIR Current I x 1 0 1 1 0 1
1 0 1 0 1 0 1 0 1 x I 1 0 1

25 PRAIRIE CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 1 0 1 0 1 0 1 1 x I

29 CARPENTER CREEK IPAT FL Current 1 0 1 0 1 1 0 1
1 0 1 1 0 1 0 1 x 1 0 1

31 LIVE OAK CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 1 0 1 0 1 0 1 1 0 1

39 TURTLE CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 1 0 1 0 1 0 1 . I 1 0 1

47 PACE MILL CREEK IGOOD Historical 1 0 1 0 1 1 0 1 x
1 0 1 0 x I a 1 0 t 0 1 0 1 0 1

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS
BECK-BECKIS BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,C0D,TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

```
                 SURFACE WA:_--R QUALITY ASSESSMENT REPORT                                              - USGS
HYDROLOGIC UNIT: 03140105 PENSACOLA BAY
                       TRENDS - COURCES -CLEANUP

                       'x'=DE,'-;AD:','G TREND                                                 1984 - 1993 TRENDS
I
                       '0'-STA:-:'--- 'REND                                    --------------------------------------------
---------
                       ,+,=lMPR0V:N,c- TREND                                   I      1W        TI I T C Sl    P Al   I T1
B TI  D  DI  T Fl   T F  1<--- PLEASE READ THESE COLUMNS VERTICALLY
                                    DATA                    IQUALITY RANK     IOVER-IQ or Sl      N P H Di    H Ll   U Sl
0 01  0  01  C Cl   E L  I
                                                            I-------------    I ALL 11         11        L  I    Ki   R Sl
D Cl     Sl  0 01   M 0  1
                                                            1          WQI ITRENDI             I         A  I      I  B  I
I     Al  L Ll   P W  I
                 WATERSHED                                  I MEETS    OR I          I         I            I      I     I
I     T1  I Il        I
                 ID    NAMEE                                IUSE ?     TSI    I      I         I
I       I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
                 ----- ------------------------         I-------------
-----------------------------------------------------------------------------------------------

                 WATER BODY :YPE: ESTUARY
                 2     PENSAC-,:A BAY (MOUTH)               IYES       GOOD]         1         1  . . . .  I
                 3     BAYOU G-RANDE                        IYES       GOODI         i         I           I    I      I
I      I     1         1
                 4     PENSACO:.A BAY (MID)                 IYFS       GOODI         I         I  . . . .  I
                 7     DIRECT V--.','OFF TO GULF            IYES       GOODI         I         I  . . . .  I
                 8     SANTA ROSA SOUND                     IYES       GOODI         I         I  . . . .  I
                 10    DIRECT R`-NOFF -0    BAY             IYES       GOODI         I         I  . . . .  I
                 13    BAYOU CH:C0                          !PARTIAL   FAIRI      0  1     0   1  0 0   .  .1 0   1  0 01
x .1  0  01  0 01   0    1
                 14    PENSA,^,:.A BAY (N)                  IYES       GOODI      .  I     .   I . . . . I    . .1   . .1
. .1  .  .1  . .1   .    1
                 17    DIRECT RUNOFF TO     BAY             IYES       GOODI         I         I           I    I      I
I      I     1         1
                 18    BAYOU GRANDE                         IYES       FAIRI      0  1     0   1  x 0   .  .1 0   1  0 01
0 .1  0  01  0 01   0    1
                 19    EAST R:V--R BAY                      IYES       GOODI         I         I  . . . .  I
                 21    EAST BAY                             IYES       GOODI         I            . .      I
                 22    TEXAR BAYOU                          iPARTIAL   FAIRI      0  1     0   1  0 0      1  0   1  + 01
+  1  0  01  0 01   0    1
                 24    ESC;OS:A BAY (S)                     [YES       GOOD I        I         I  . . . .  I
```

30 TROUT BAYOU IYES GOOD I I I I
32 BLACKWA:---R BAY [YES GOODI I I I
33 INDTAI
- N BAYOU IYES GOODI I I I
37 ESCAMB:A BAY (N) IYES GOODI 0 1 0 1 0 0 0 01 0 .1 0 01
0 1 a 01 + 01 0 1
42 MULATTO BAYOU IPARTIAL FAIRI I I I
44 JUDGES BAYOU IPARTIAL FAIRI I I I
45 BLACKIA---;L BAY IYES GOOD I I I I

WATER BODY :YPE: STREAM
9 JONES CREEK]PARTIAL FAIRI 0 1 0 1 0 0 1 0 .1 0 01
0 1 0 01 0 01 0 1
15 JACKSON CREEK IPARTIAL FAIRI 0 1 a I x 0 1 0 .1 0 01
0 1 0 01 0 01 0 1
25 PRAIRIE CREEK IYES GOODI . I . I . . . . I . .1 . .1
. .1 . .1 . .1 . . 1
29 CARPENTER CREEK IYES FAIRI 0 1 0 1 0 0 . .1 + .1 0 01
+ .1 x xi 0 01 x 1
31 LIVE OAK CREEK)YES GOODI I I I
39 TURTLE CREEK IYES GOODI I I I
47 PACE M:"-:. CREEK @YES GOODI I I I

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
ECOLI-FECAL COLIFORM TEMP-TEMPERA7URE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKA.LINI:Y FLOW-FLOW TN-NITROGEN
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHL,OROPHY:.- PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED
SOLIDS

```
                                                                                                              NPS
QUALITATIVE SURVEY RESULTS
                                                                                                   AN "X" INDICATES A PROBLEM
WITH POLLUTANT OR SOURCE
                                                                                      THE * ON MAPID INDICATES No STORET
INFORMATION AVAILABLE FOR THIS WATERSHED
                                                                                                        -SEE PAGE 11 FOR
LEGEND FOR THIS TABLE-

       -------------------------------------------------------------------------------------
CATNAME=PENSACOLA BAY   HUC=03140105

                                                                                      N     B   S         P   0           S
0    F              T        F           0
                                                                                      U     A   E         E   T           A
H         T   T    I             U        I           T
              M                                                                       T C D               S H D 0 L
A         H H S                  R        S N N H
              A                 B                             W          W            R     T   I         T   E   E   X   I
M   B         E   E    H  A           B        H  0    0   E
              P        W        A                             Q          Q            I E M               I R B Y N
E I F R R K L W 1 0 D S F R
                       B        S                             3          N            E R E 0 C C R G I
T T L M P I G E D D B W I S I S
              y        I        1                             0          p            N I N I I H I E T P A A 0 A 0 L A E 1 0
C I S Y N T A R S
              D        D        N                             5          S            T A T L D E S N Y H L T W L L L L D T R
L M H M D P G E L

                 1.    1007   DIRECT RUNOFF   TO SAY                     FAT R        x     x   x   x     x   x   x   x     x
x   x                  x  x          x        x
                 5 *   893    DIRECT RUNOFF   TO SAY                     FAIR         x     x   x   x     x   x   x   X     x
x   x    x             x  x    x     X  X     X

x    x   x          x
                 6 *   925    DIRECT RUNOFF   TO BAY                     FAIR
x        x    x   x         x
                 7     930    DIRECT RUNOFF   TO GULF     GOOD           THREAT       x             x     x
x           x    x     x  x
                 9     24     DIRECT RUNOFF   TO BAY      GOOD           FAIR         K     X   X   X     X   X   X   X     X
x   x    x             x       x     x        x
```

9 846A JONES CREEK FAIR POOR x x x x x x x X X
x x x x x x x K
10 834 DIRECT RUNOFF TO BAY GOOD FAIR x x x x x K x x
x x x X X X X X
11* 870 DIRECT RUNOFF TO BAY FAIR x x x x x x x x x
x x x x x x x
12* 864 WILLIAMS CREEK FAIR x x
x x x
13 846 BAYOU CHICO FAIR POOR X X X X X X K X X
x x x x X x x x
15 846B JACKSON CREEK FAIR POOP, x x x x x x x X X
x x x x x x x x
16* 833 TOM KING BAYOU FAIR x x
x
17 829 DIRECT RUNOFF TO 13AY GOOD FAIR x x
x
le 740 BAYOU GRANDE GOOD POOR x x x x x x x X X
x x x K x x x x
19 701 EAST RIVER BAY GOOD FAIR x x x
x x
20* 825 EAST RIVER BAY FAIR x x
x x
22 738 TEXAR BAYOU FAIR POOR x x x x x x x X X
x x x x x x X X X X x
23* 736 PANTHER CREEK FAIR x x x
x x x x x
25 685 PRAIRIE CREEK GOOD FAIR x x x
x x x x x

x x x x
26* 683 DEAN CREEK FAIR x x
x x x x x
27* 639 DIRECT RUNOFF TO BAY POOR
x x x
28* 663 DIRECT RUNOFF TO BAY FAIR x x
x x x x x x x x
29 676 CARPENTER CREEK GOOD POOP, x x x x x x x X X
x x x x x x x x x x x x
30 694 TROUT BAYOU GOOD FAIR x x x x x x x x
x x x x
31 523 LIVE OAK CREEK GOOD FAIR x x x
x x x x x
33 649 INDIAN BAYOU GOOD FAIR x x x x x x x X X
x x x x x x x
34* 666 DIRECT RUNOFF TO BAY POOR x x x x X X
X X X X x x

x x x x x x

35* 635 WHITBOAK BAYOU FAI R

x x x

36* 669 DIRECT RUNOFF TO SAY FAIR x

x x x x x x x

38* 637 DIRECT RUNOFF TO BAY FAIR x x x x x x x

x x x x x x x x x X X

39 510 TURTLE CREEK GOOD FAIR x x x

x x x x x x x X X

40* 600 DIRECT RUNOFF TO BAY FAIR x x x x x x x x

x x x x x x x

41* 537 JAKES BAYOU FAIR x x x x x x x x

x x x x x x K

42 539 MULATTO BAYOU FAIR POOR x x x x x x X X

X X X X x x x x x x x

43* 534 SANDY POINT BAYOU FAIR x x x x x x x x

x x x x x x

44 493 JUDGES BAYOU FAIR POOR x x x x x x

x x x x x x x x x x x

45 502 BLIXCKWATER BAY GOOD FAIR x x x x x x x X X

x x x x x x x x x

46* 444 SPENCER FIELD DRAIN FAIR x x x x x x x x

x x x x x x x x

47 420 PACE MILL CREEK GOOD FAIR x x

x x

ELEVE-

AL.

EIGH-MILE CREEK

PERDIDWO

Cus

ALABAMA

*6

BIG LAGOON

GULF OF ME)aCO

PERDIDO BAY BASIN
03140107
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD -
THREATENED
FAIR
POOR
UNKNOWN

PERDIDO BAY BASIN

Basic Facts

Drainage Area: 350 square miles
Major Land Uses: forest, urban development
Population Density: moderate around coastal areas (West Pensacola, Gulf Beach, Avondale)

Major Pollution Sources: pulp mill, urban runoff
Best Water Quality Areas: Marcus Creek, Eight Mile Creek
Worst Water Quality Areas: Elevenmile Creek, Perdido Bay near mouth of Eleven Mile Creek, Bridge Creek
Water Quality Trends: stable water quality at 2 sites, improving quality at Eleven Mile Creek, and Marcus Creek
OFW Waterbodies:
Gulf Islands National Seashore
Ft. Pickens Park State Aquatic Preserve
SWIM Waterbodies: none
Reference Reports:
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1989
Basin Water Quality Experts:
Don Ray, DEP (Pensacola), 904/444-8340
David Heil, DEP (Tallahassee), 904/488-5471
Glenn Butts, DEP (Pensacola) 904/444-8380

In the Ng&

Champion Paper Corp. has implemented new treatment methods for decreasing color in discharge water.
* Perdido Bay Cooperative Management Study for development of a Bay management plan is near completion.
* Health advisories recommending against consumption of fish because of high dioxin concentration have been issued for Elevenmile Creek.

Ecological Characterization

Perdido Say is a relatively small Florida estuary (50 square miles) with an immediate drainage area of approximately 300 square miles. The center line of the bay forms the state boundary line between Alabama and Florida, with each state sharing approximately half of the basin drainage area. The Perdido River is the major- freshwater -inflow to the bay with an average annual flow of 700 cfs. Florida land use in the immediate drainage basin is primarily forest though a portion is rapidly becoming urbanized (western -edge of Pensacola). The Alabama side has agriculture as well as silviculture.

Because of its small, "off-center" inlet from the Gulf, the bay is subject to rapidwater quality changes depending on rainfall, wind and tidal effects. After rainy periods and with north winds, the bay experiences extreme outflowing currents, rapid flushing and low, salinities. During low rainfall, low wind periods, the bay is very poorly flushed, thus concentrating pollutant inputs.

Anthropogenic Impacts

The most concentrated and voluminous pollution source in the basin is the Champion Paper Company (formerly the St. Regis Paper Company) which discharges 28 MGD of treated pulp mill effluent into Elevenmile Creek making up most of its flow at its headwaters. The historical record shows that the creek has had major water quality problems since the early 1970s. After the installation of a treatment facility at St. Regis Paper Company, water quality parameters showed improvement in the mid-1970s; however, in the mid-1980s Champion changed production methods to include a bleaching process. This change required a new permit. In the summer of 1987, the company applied for an operating permit and for variances in zinc, iron, lead, specific conductivity and transparency. The permit was contested by a local environmental group. After lengthy administrative hearings, and under a complicated Consent Order requiring studies of both treatment processes and water quality impacts, a five year temporary operation permit with the variances was issued in December 1989.

The discharge negatively affects many in-stream water quality parameters, particularly
g
biological integrity, color, DO, BOD, nutrients, turbidity and solids. Of the 81 STORET samples from the creek taken in the last ten (10) years, the median value for DO was 3.4 mg/l which is below the state criterion of 5 mg/l for Class III waters. Dissolved oxygen violations were recorded for Perdido Bay and ElevenMile Creek during the spring of 1994. The Department continues to receive many water quality complaints for Perdido Bay. Complaints from ElevenMle Creek below the papermill now include mats of

duckweed flowing downstream which appear to be from changes in the mill wastewater treatment process. The poor water quality throughout the creek is reflected in low density, diversity and species richness values for benthic fauna. The company is investigating the possibility of going to land application rather than direct discharge. This

should improve water quality, but would have a pronounced effect on flow in the creek. In the meantime, Champion has invested in numerous studies and treatment methods. One report indicated a 70% reduction in effluent color and further color removal studies are being conducted. Treatments to reduce color are likely to have positive effects on BOD and other parameters.

Other dischargers to Elevenmile Creek included the Silver Lake WVVTP and the Cantonment WWTP. Silver Lake WWTF is no longer in operation. Flows were diverted to the Escambia County Utility Authority facility in January, 1994. The Cantonment WWTF has been notified of a no discharge WLA. A TOP is in effect requiring diversion of flows to the Avondale WWTF and the elimination of their discharge to ElevenMle Creek by February 1998. The Cantonment WV*ITP discharges just above the Champion discharge.

In the last several years, a number of studies have been initiated by DEP (CZM), EPA, Alabama Department of Environmental Management, Fish and Wildlife Service, and Champion to investigate the effects of Elevenmile Creek and other tributaries on the bay itself. This is a difficult question to answer because of the overwhelming influence of the Perdido River (relative to the unusual flushing characteristics of the bay (sometimes very rapid, sometimes slow), and the extreme variability of the bay itself The DEP (CZM) study indicates that Eleverimile Creek currently contributes approximately 30% of the nutrients and only 10% of the freshwater input to the Bay, and that the excess carbon contributed by Elevenmile Creek may exacerbate seasonal low DOs in the bay. Overall, however, it is still unclear from the DEP (CZM) and Champion studies if the creek has significant long term deleterious effects in the bay. Additionally, a sampling of 48 fish (several species) from the bay were found to have normal liver histopathology by EPA (Gulf Breeze). Work on fish fillet dioxin concentrations by the EPA resulted in advisories being issued urging no consumption of fish from Elevenmile Creek. Fish fillets sampled exceeded EPA recommended maximum levels of 7 parts-per-trillion of dioxin. Another study of the bay's ecology has been performed by EPA (Athens). The Perdido Bay Cooperative Management Study will make a comprehensive assessment of all the studies and identify specific management strategies for improvements to the bay. This study is nearing completion.

Upper Perdido Bay also receives drainage from Eightmile Creek and Bayou Marcus which receive runoff from urbanized areas and have elevated water quality index values. In addition, the Avondale WWTP discharges to Bayou Marcus. The Avondale WWTP was upgraded to AWT in 1989 which improved the downstream water quality of Bayou Marcus. Avondale WWTF was issued a construction permit in June 1994 to expand the facility from 2.0 MGD to 7.1 MGD and to dispose of it's effluent to a wetland adjacent to Bayou Marcus AWT. Construction is to be completed prior to March 1997. Stormwater continues to be a pollution source to the bayou and the bay from a variety of nonpoint

sources. The Florida side contributes mostly urban and construction.stormwater, whereas the Alabama side has more agricultural runoff.

Bayou Garcon, in the southern portion of the bay, exhibits transparencyand DO prDblems. In addition, there have been local reports of increased siltation at the, rnouthof the bayou which was attributed to new development in the watershed area. Within thelast few years, there has been an increase -in development in the.swampy areas west of Pensacola. During rainy seasons, runoff from these developments can;affect much of the eastern portions of the bay. The runoff problem is a major concern because the bay studies indicate that the lower bay is also susceptible to sediment and water pollution.

= = m = = m m

USGS HYDROLOGIC UNIT:
03140107 PERDIDO BAY

INDEX GOOD FA_R POOR
SURFACE WATER QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
MEDIAN VALUES FOR EACH WATERSHED
WQI-RIVER 0-44 45-59-60-90
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100 -----
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE 0-59 60-69 70-100 1

1

BIOLOGICAL WATER
WATERSHED WATERSHED DATA RECORD WATER DISSOLVED
OXYGEN PH TROPHIC SPECIES QUALITY
ID NAME ---------------------- CLARITY OXYGEN
DEMAND ALKALINITY STATUS COLIFORM DIVERSITY COND FLOW INDICES
----- ---------------------------------- MAX BEG END DATA ----------------------------- ---------- ---
------------ ---------- --------------- ---------- --------------- ----- ----- ---------------
#OBS YR YR PERIOD TURB SD COLOR TSS DO DOSAT
BOD COD TOC PH ALK 14ITRO PHOS CHIA TOTAL FECL NAT ART BECK COND FLOW 11TQ I TSI

� WATER BODY TYPE: ESTUARY
3 DIRECT RUNOFF TO BAY 5 72 72 Historical 22.5 33 58 5.4 93
5.0 8.2 84 1.70 0.04 1 50
4 BIG LAGOON 3 89 89 Current 0.5 1.2 15 16 6.7 79
1.1 7.7 0.77 0.01 2 5 5 34800 35
5 DIRECT RUNOFF TO BAY 3 92 92 Current 2.5 1.5 10 22 3.0 31
0.7 3 8.0 0.55 0.03 25 8 31500 46
13 PERDIDO BAY 47 89 93 Current 5.0 0.8 50 11 7.9 85
1.6 5 7.3 64 0.96 0.03 6 40 5 10893 51

� WATER BODY TYPE: STREAM
10 UNNAMED STREAM 3 92 92 Current 2.5 1.0 85 3 2.5 25
0.5 6 6.2 . 0.66 0.02 500 88 3700 36
12 BRIDGE CREEK 13 72 88 Historical 205.5 1.2 64 1260 4.4 54
15.1 7.0 53 15.03 0.69 540 . 15350 72
15 MARCUS CREEK 38 89 92 Current 2.9 . 23 3 6.9 70
0.4 3 6.4 . 0.70 0.03 2 916 Ill 1311 26
16 BELLSHEAD BRANCH 6 92 92 Current 3.4 0.6 60 2 6.1 76
4 6.9 12 0.29 0.01 20 36 58 18
19 TURNER CREEK 14 72 75 Historical 14.0 65 . 5.8 59
1.8 7.5 11 1.02 0.02 730 . 64 52

20 UNNAMED BRANCH 9 89 92 Current 2.5 45 3 6.7 71
0.5 6 6.7 0.97 0.10 578 90 1590 29
21 HURST BRANCH 6 91 91 Current 6.5 70 3 6.2 65
1.4 8 5.9 0.34 0.04 2500 1170 130 41
22 EIGHTMILE CREEK 18 89 92 Current 17.2 60 3 6.1 63
0.5 7 6.7 1.18 0.10 770 100 347 41
23 ELEVENMILE CREEK 81 89 92 Current 27.0 0.2 188 28 3.4 41
8.0 37 7.5 266 5.02 0.29 2 463 153 0.7 1263 76

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L
MAX #0BS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALKALINITY MG/L CHIJk-CHLOROPHYLL UG/L DOSAT-DO I SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WQI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML
PH-PH STANDARD UNITS TSI-TPLOPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UNHOS FLOW-FLOW CFS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUAL:T'y DATA SCREENING REPORT USGS HYDROLOGIC UNIT:
03140107 PERDIDO BAY
MEDIAN VA:,U---S FOR EACH WATERSHED SCREENED

'x'=EXCE--Dc SCR--R@ING CRITERIA
SCREENING VARIABLES AND CRITERIA
'01-WIT;::,; SCR:_NING CRITERIA
NG DATA
1 RANK DATA RECORD[TN I STREAM I LAKE I PH
I ALK I TURB & I COND I OXYGEN I DO ICOLIFORM I BIOL I CHIA I SECCHI I
I------------------- I I IF I TP I
I I TSS I I DEMAND I I BACTI I DIV I DISC I
I WQI CURRENT I I I I
I I I I I I I I I
WATERSHED I OR OR I TN>2.0 I TP>.46 I TP>.12 I PH>8.8
I ALK<20 ITURB>16.51COND>12751 BOD>3.3 I DO<4 ITOT>3700 IDIART<1.951 CHLA>40 I SD<.7 I
ID N AM I TSI HISTORICAL I I I I PH<5.2
I I TSS>18 I I COD>102 I IFECAL>4701DINAT<1.5 I
----- -- I I
I I I TOC>27.51 I I BECK<5.5 I

WATER BODY TYP-: -STUARY
3 DIRE", X":\'OFF TO BAY I FAIR Historical 1 0 1 1 0 1 0
1 0 1 1 0 1 x 1 0 1 0 1
4 BIG LAGOON I GOOD Current 1 0 1 1 0 1 0
1 1 0 1 x 1 0 1 0 1 0 1 1 0 1 0 1
5 DIRE,--, XI@NOFF TO BAY I GOOD Current 1 0 1 1 0 1 0
1 x I x 1 0 1 x 1 0 1 1 1 0 1
13 PERDIDO BAY I FAIR Current 1 0 1 1 0 1 0
1 0 0 1 x 1 0 1 0 1 0 1 1 0 1 0 1

WATER BODY STREAM
10 UNNKIE" S_R7AM I GOOD Current 1 0 1 0 1 1 0
1 0 1 x 1 0 x 1 0 1 1 0 1

12 BRIDGE R-rz-K I POOR Historical I x I x I 1 0
1 0 1 x I x I x 1 0 1 0 1 1 0 1
15 MARCUS R:E_K GOOD Current 1 0 1 0 1 1 0
1 1 0 1 x 1 0 1 0 1 0 1 1 0 1 . 1
16 BELLSH:P_' B3,VCH I GOOD Current 1 0 1 0 1 1 0
1 x 1 0 1 1 0 1 0 1 0 1 x
19 TUILNER CREEK I FAIR Historical 1 0 1 0 1 1 0
1 x 1 0 1 1 0 1 0 1 0 1
20 U,';,NA.--:) 3RWI7:-. i GOOD Current 1 0 1 0 1 1 0
1 1 0 1 x 1 0 1 0 1 0 1
21 HURST I GOOD Current 1 0 1 0 1 1 0
1 1 0 1 1 0 1 0 1 x I
22 EIGHT-LE I FAIR Current 1 0 1 0 1 1 0
1 1 0 1 0 1 0 1
23 ELEV.NM:--- CREEK POOR Current I x 1 0 1 1 0
1 0 0 1 x I x 1 0 1 x 1 0 1 x

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM
BACTERIA TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKA.LIN77Y DO-DISSOLVED OXYGEN HISTORICAL-1970 TO
1988 TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS

BECK-BECK'S B:OT:C INDEX CIJRRENT-1989 TO 1993 OXYGEN DEMAND-
BOD,COD,TOC TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-B:0:@X-::A:. DIVERS:-Y DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-cHLoRo?@-.-_-_ DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

SURFACE WATER QUALITY ASSESSMENT REPORT - USGS HYDROLOGIC UNIT: 03140107
PERDIDO BAY
TRENDS -SOURCES - CLEANUP

'X'=DEGRADING TREND 1984 - 1993 TRENDS
I
'0'=STABLE TREND --
'+'=IMPROVING TREND 1W TI T T C Sl P Al T T1 B T1 D DI T Fl
I F l<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'=MISSING DATA lQUALITY RANK JOVER-JQ or Sl N P H DI H Ll U Sl 0 01 0 01 C Cl
E L I
I------------- I ALL IT ii L I KI R Sl D Cl si 0 01
m 0 1
1 WQI ITRENDI I A I I B I I Al L L!
P W I
WATERSHED I MEETS OR I I I I I I I Tj 1 11
1
ID NAME IUSE ? TSI I I I I I I I I I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I------------- I I I I I I I I I
I---

WATER BODY TYPE: ESTUARY
3 DIRECT RUNOFF TO BAY IPARTIAL FAIRI I I I I 1
1
4 BIG LAGOON IYES GOODI .1 .1 .1 .1 .1
1
5 DIRECT RUNOFF TO BAY IYES GOODI .1 .1 .1 .1 .1
1

13 PERDIDO BAY]PARTIAL FAIRI 0 1 0 1 0 0 0 01 0 .1 0 01 0 .1 0 01 0 01
0 1

WATER BODY TYPE: STREAM
10 UNNA14ED STREAM IYES GOODI .1 .1
1
12 BRIDGE CREEK INO POORI .1 .1
1
15 MARCUS CREEK IYES GOOD1 + I + I + 0 0 .1 0 .1 + 01 + .1 0 01 + +1
0 1
16 BELLSHEAD BRANCH IYES GOODI . I . I . . . . I . .1 . .1 . .1 . .1 . .1
. 1
19 TURNER CREEK IPARTIAL FAIRI I I I I I I I 1
1
20 UNNAMED BRANCH IYES GOODI + I + I + 0 .1 0 .1 + X1 0 .1 + +1 0 01
0 1
21 HURST BRANCH]YES GOODI . I . I . . I - .1 . .1 - .1 . .1 . .1
. 1
22 EIGHTMILE CREEK IYES FAIRI 0 1 0 1 0 0 1 0 .1 0 01 0 1 0 01 0 01
x 1
23 ELEVENMILE CREEK INO POORI + I + 1 0 0 0 01 0 .1 0 01 0 1 0 01 + +1
0 1

LEGEND: DOSAT-DO SATURATION TOOLI-TOTAL COLIFORM TURB-TURBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATURE TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLOW TN-NITROGEN WQI-WATER QUIAITY INDEX FOR STREAKS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

NPS QUALITATIVE SURVEY RESULTS

AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE

THE - ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED

-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=PERDIDO BAY HUC=03140107 ---

N B S P 0
S 0 F T F 0
U A E E T
A H I T I U I T
T C D S H D 0 L
A H H S R S N N H
W W R T I T E E
X I M B E E H A B H 0 0 E
P W Q Q I E M I R B Y N
E I F R R K L W 1 0 D S F R
B 3 N E R E 0 C C R
G I T T L M P I G E D D E W I S I S
7 1 0 P N I N I I H I E T P A A 0 A
0 L A E 1 0 C I S Y N T A R S L U C H 0

D D 5 S T A T L D E S N Y H L T W L
L L L D T R L M H M D P G E L D R N M T

1. 489A `_'PLS7 BRANCH THREAT x
x x x x x x
2- 1015 RUNOFF TO GULF THREAT x x x
x x x x x x x x
3 1014 D:REC-1 RUNOFF TO BAY FAIR THREAT x x x x
x x x x x x x
4 1004 3:G LAGOON GOOD THREAT x x
x x x x x x x x
991 _':RECT RUNOFF TO BAY GOOD FAIR x x x x
x x x x x x x x
6- 1018 DIRECT RUNOFF TO BAY FAIR x x x
x x x x x x x x x
7* 974 D-. R_CT RUNOFF TO BAY THREAT x x x
x x x x x x x x x
x x
7* 974 PERDIDO BAY THREAT x x x
x x x x x x x x x
x x
9* 945 7ARKILN BAYOU POOR x
x x x x x x x x
x
10 935 -NNAMED STREAM GOOD POOR x x
x x x x x x x x x x
x x
li* 871 D:RECT RUNOFF TO BAY POOR x
x x x x x x x x
x
12 872 BRIDGE CREEK POOR POOR x
x x x x x x x x
x
13 797 BAY FAIR FAIR x x x x x
x x x x x x x x
.4- 848 D-RECT RUNOFF TO BAY POOR x x x x x
x x x x x x x x x x x x
x
15 697 Y.ARCUS CREEK GOOD FAIR x x x x x
x x x x x x x x
16 779 BELLSHEAD BRANCH GOOD FAIR x x
x x x x x x x x x
x x
17* 763 :):REC-I RUNOFF TO BAY POOR x
x x x x x x x x
x

18, 784 :):kEC- RUNOFF TO BAY POOR x
x x x x x x x x
x
19 730 70PINER CREEK FAIR FAIR x x x x x
x x x x x x
20 725 UNNAMED BRANCH GOOD FAIR x x x x x
x x x x x x
21 681 H:,RST BRANCH GOOD THREAT x
x x x x x x
22 624 --:GHTM--LE CREEK GOOD POOR x x x x x
x x x x x x x x x x x x x
x x
23 489 EL-EVEIN'MILE CREEK POOR FAIR x x x x x x
x x x x x x x x
x

ALAB

USHY CREEK

AC DAVID CREEK

"I Y,

PERDIDO RIVER

KS BRANCH

PERDIDO BAY

PERDIDO RIVER BASIN
03140106
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

PERDIDO RIVER BASIN

Basic Facts

Drainage Area: 913 square miles (about 25% in Florida)
Major Land Uses: forest, agriculture, wetlands
Population Density: low, no major population centers in Florida
Major Pollution Sources: industrial sources in Alabama
Best Water Quality Areas: Perdido River
Worst Water Quality Areas: no significant problem areas
Water Quality Trends: stable quality at 3 sites, improvement at Lower Perdido River
OFW Waterbodies: Perdido River
SWIM Waterbodies: none
Reference Reports:
 Florida Rivers Assessment, DEP/FREAC/NPS, 1989
 Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Basin Water Quality Experts:
 Gray Bass, FGFWFC, 904/957-4172
 Don Ray, DEP (Pensacola), 904/444-8300

In the News

* A citizens action group (Friends of Perdido Bay) is seeking congressional action to designate the Perdido River under the Wild and Scenic Rivers Act.
* Health advisories recommending limited consumption of largemouth bass due to mercury content have been issued for the Perdido River.

Ecological Characterization

The Perdido River forms the boundary between Florida. and Alabama. The basin'�, drainage area'is-913 square Miles, of which only 25% is located in Florida. The -river i's blackwater in nature and meanders through mostly sand and gravel substrate, The@river discharges at about 700 cfs into Perdido Bay and is estuarine an&tidal in its--lowest reacir. The basin is mostly forested, and silviculture. is the pnimary land use in Florida; however, the upper basin contains significant. agricultural- lands.. There - islittle urban. area within the basin.

Anthropogenic Impacts

Water quality in'the uppet'basin is generally good. All stream reaches meet-their-designated use. One historical problem area in the,basin is Jacks Branch. In the.early 1980.s, there was some hazardous waste contamitfation: from Dubose. Oil, Company 'to., JacksBranch. Since that time the State and EPA have contained, this pollution source -and are involved in the cleanup process.

The lower river reaches are allected by water fi-om Perdido Bay.. The lower river. i& considered fair to poor by district personnel, exhibiting very low bottom DO levels,*aitd, concomitant low benthic diversity values.

Specific problems that have occurred are as follows. The Perdido Landfill had water quality violations of turbidity, fecal and total coliforms, and pH, in tributaries emptying into the Perdido River. In addition, 28 acres ofjurisdictional wetlands were filled without a permit. Escambia County signed a Consent Order and agreed to pay FDEP expenses, fund an environmental education project, release 183 acres for a conservation easement on property between Perdido Landfill and the Perdido, restore disturbed wetlands, and submit a Surface Water Assessment Plan f67r the facility. A criminal investigation of the Perdido landfill was Conducted during 1993/4 by EPA. State monitoring found a contaminated stream flowing off the property with very low diversity and an altered community structure dominated by bloodworms. A background tributary just upstream was clear, with a diverse benthic community with fish, stoneflies, and mayflies etc.

Boggy Creek has severe erosion problems from historical silviculture activities as reported by the Soil Conservation Service. The water body is a candidate site for FDEP's Pollution Recovery Trust Fund.

USGS HYDROLOGIC

UNIT: 03140106 PERDIDO RIVER INDEX GOOD FAIR POOR

-------- -- ----- ----- -----

```
         SURFACE WATER QUALITY DATA FOR 1970-1993
WQI-RIVER      0-44 45-59-60-90
           MEDIAN VALUES FOR EACH WATERSHED
Y 0-49 50-59 60-100       -----
           CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUAR
           PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE       o-59 60-69 70-1-OC


BIOLOGICAL
         WATERSHED                                  WATERSHED DATA RECORD                   WATER
DISSOLVED       OXYGEN           PH           TROPHIC                       SPECIES                       QUA= -Y
         ID     NAME                                 ----------------------                   CLARITY
OXYGEN        DEMAND        ALKALINITY       STATUS        COLIFORM      DIVERSITY       COND FLOW         lN:D:C_TS

--------------- ----- ----- --------------
         ----- ---------------------------------    MAX    BEG  END     DATA  ---------------------------- ---------- -
-------------- ---------- --------------- ----------                             BECK   COND FLOW        wQI     -5:
                                                    #OBS   YR   YR     PERIOD         TURB  SD COLOR      TSS   DO DOSAT
BOD   COD    TOC   PH    ALK   NITRO PHOS   CHLA  TOTAL FECL NAT ART
           WATER BODY TYPE: STREAM
29
          1    PERDIDO RIVER                        82 89   92   Current          3.4   1.3    49       8   6.9
73   0.4            5   6.5     12  0.65 0.03      2   216   38                     3358
          3    PERDIDO RIVER                        45 89   93   Current          3.5   1.1    45       3   8.2
86   0.3            4   5.6     1   0.47 0.02      2   213   75                     23    963          20
          7    PERDIDO RIVER                        10 92   93   Current          2.7   0.9    25       2   8.2
82                  2   6.4     2   0.44 0.01             93                      21                 le
          8    JACKS BRANCH                         2  89   89   Current          3.5    .     50       6   5.5
64   1.0                5.2     .   0.54 0.01      2   400   30                     57                 30
          9    PERDIDO RIVER                        28 89   93   Current          2.7   0.8    45       3   7.8
82   0.3            4   5.4     1   0.51 0.03      2   155   30                     31                 15
         11    JACKS BRANCH                         6  92   93   Current          9.2   0.7    75       3   4.9
52                  7   5.8     2   0.38 0.01          60   84                      38                 34
         13    COWDEVIL CREEK                       7  92   92   Current          1.2   0.3    10       1   9.3
90                  1   5.5     1   1.01 0.01          28   46                      30                 12
         14    PENASULA CREEK                       8  92   93   Current          3.4   0.6    50       2   7.6
81                  6   5.8     1   0.46 0.01          .    275                     28                 27
         18    ALLIGATOR CREEK                      7  92   92   Current          1.4   0.4    is       1   8.8
91                  1   5.8     1   1.07 0.01         230   88                      29                 17
         25    MC DAVID CREEK                       6  92   92   Current          4.3   0.7    30       3   8.0
85                  3   5.3     4   0.24 0.01          76   60                      19                 15
         28    BOGGY CREEK                          6  92   93   Current          6.5   0.6    33       4   7.8
82                  2   6.0     2   0.57 0.01          90   108                     23                 22
         29    HELVERSON CREEK                      6  92   92   Current          2.8   0.6    60       2   5.5
60                  9   4.9     1   0.30 0.01          60   26                      is                 23
```

35 FREEMA14 SPRINGS BRANCH 6 92 92 Current 1.9 0.3 40 2 3.9
45 5 5.0 1 0.21 0.01 20 14 22 23
36 BRUSHY CREEK 12 89 92 Current 4.1 31 4 7.7
80 0.2 3 6.2 . 0.8*7 0.11 336 43 43 26

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L
MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALKALINITY MG/L CHLA-CHLOROPHYLL UG/L DOSAT-DO I SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WIQI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML
PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLOW-FLOW CPS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

```
                SURFACE WATER QUALITY DATA SCREENING REPORT                        USGS HYDROLOGIC     UNIT: 03140106
PERDIDO RIVER
                MEDIAN VALUES FOR EACH WATERSHED SCREENED

                     'x'-EXCEEDS SCREENING CRITERIA                      I
SCREENING VARIABLES AND CRITERIA
                     '0'=WITHIN SCREENING CRITERIA                       I
I
                     '.'=YISSING, DATA                                   I          I         I          I          I
I
                                                    I RANK DATA RECORDI       IN    ISTREAM   I  LAKE    I    PH    I
ALK      I TURB &   I COND      I OXYGEN    I    DO    ICOLIFORM   I BIOL      I CHLA      ISECCHI   I
                                                    I-------------------  I          I    TP   I   TP     I          I
I   TSS    I          I DEMAND    I          I BACTI     I   DIV     I          I DISC    I
                                                    I WQI.    CURRENT I          I         I          I          I
I          I          I          I          I          I          i          I         I
                WATERSHED                           I OR        OR       I TN>2.0   ITP>.46   I TP>.12   IPH>8.8    I
ALK<20    ITURB>16.51COND>12751    BOD>3.3   I DO<4     ITOT>3700   IDIART<1.951  CHLA>40   I  SD<.7  I
                ID   NAME                           I TSI   HISTORICAL   I          I         I          IPH<5.2    I
I TSS>18   I          I COD>102   I          IFECAL>4701DINAT<1.5    I
                ----- --------------------------------------------                 I         i          I          I
I TOC>27.51           I          IBECK<5.5   I

                WATER BODY TYPE: STREAM
                1    PERDIDO RIVER                  IGOOD   Current      1    0     1     0   1          1     0     1
x      1     0    1       x    1     0     1     0    1     0     1           1     0     1     0   1
                3    PERDIDO RIVER                  IGOOD   Current      1    0     1     0   1          1     0     1
x      1     0    1       0    1     0     1     0    1     0     1           1     0     1     0   1
                7    PERDIDO RIVER                  IGOOD   Current      1    0     1     0   1          1     0     1
x      1     0    1            1     0     1     0    1     0     1           1           1     0   1
                8    JACKS BRANCH                   IGOOD   Current      1    0     1     0   1          1     x     I
1     0    1     0    1     0     1     0    1     0     1          1     0     1     .   1
                9    PERDIDO RIVER                  JGOOD   Current      1    0     1     0   1          1     0     1
x      1     0    1       0    1     0     1     0    1     0     1           1     0     1     0   1
                11   JACKS BRANCH                   IGOOD   Current      1    0     1     0   1          1     0     1
x      1     0    1            1     0     1     0    1     0     1                             0   1
                13   COWDEVIL CREEK                 IGOOD   Current      1    0     1     0   1          1     0     1
x      1     0    1            1     0     1     0    1     0     1                             x   1
```

14 PENASULA CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x I
18 ALLIGATOR CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x 1
25 MC DAVID CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 0 1
28 BOGGY CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x 1
29 HELVERSON CREEK IGOOD Current 1 0 1 0 1 1 x I
x 1 0 1 1 0 1 0 1 0 1 x 1
35 FREEMAN SPRINGS BRANCH IGOOD Current 1 0 1 0 1 1 x I
x 1 0 1 0 1 x 1 0 1 x 1
36 BRUSHY CREEK IGOOD Current 1 0 1 0 1 1 0 1
1 0 1 0 1 0 1 0 1

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM
BACTERIA TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS

BECK-BECK'S BIOTIC INDEX CURRENT-1989 TO 19@3 OXYGEN DEMAND-BOD.,COD',TOC
TSS-TOTAL SUSPENDED SOLIJ)S BASED ON WATERBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE P.IVERSITY PH-PH
TURB-TURBIDITY
CHIA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITRCGEN
SD-SECCHI DISC METERS

6.)

m m m m m m m m m m m m m m m m m m m

SURFACE WATER QUALITY ASSESSMENT REPORT - USGS HYDROLOGIC UNIT:
03140106 PERDIDO RIVER
T KENDS -SOURCES -CLEANUp

:X:@DEGRADING TREND 1984 - 1993 TRENDS
0 =STABLE TREND ---

'+'=IMPROVING TREND I 1W TI I T C Sl P Al T T1 B Ti
D DI T F1 T F l<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'-MISSING DATA IQUALITY RANK 10VER-IQ or Sl N P H DI H Ll U Sl 0 01
0 01 C C I E L I
I------------- I ALL II il L I KI R Sl D Cl
Sl 0 01 M 0 1
1 VJQI [TREND[I A I I B I I
Al L Ll P W I
WATERSHED I MEETS OR I I I I I I I
TI I Il I
ID NAME IUSE ? TSI I I I I I I I
I I I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I-------------

WATER BODY TYPE: STREAM
I PERDIDO RIVER IYES GOODI + I + I + 0 0 +1 0 .1 0 01 + .1
0 01 + +1 +
3 PERDIDO RIVER IYES GOOD I + I + I + 0 . .1 0 xl 0 01 0 .1
0 01 + 01 0 0 1

```
          7   PERDIDO RIVER                      IYES      GOODI          I        I   . . . . I  - .1
          8   JACKS BRANCH                       IYES      GOODI          I        I   . . . . I  - .1
          9   PERDIDO RIVER                      IYES      GOODI       0  1     0  1   0 x  .  .1 0 .1   0 +1  0 .1
0 01  + 01   0    1
         11   JACKS BRANCH                       ]YES      GOODI          I        I   . . . . I  - .1
         13   COWDEVIL CREEK                     IYES      GOODI
         14   PENASULA CREEK                     [YES      GOODI          I        I   . . . . I
         18   ALLIGATOR CREEK                    IYES      GOOD I         I        I           1            .1    .1
.1    .1        1
         25   MC DAVID CREEK                     IYES      GOODI          1
.1       1
         28   BOGGY CREEK                        IYES      GOOD I         1
.1       1
         29   HELVERSON CREEK                    IYES      GOODI          I        I   . . . . 1            .1
         35   FREEMAN SPRINGS       BRANCH       IYES      GOOD I         I        I   . . . . 1            .1
         36   BRUSHY CREEK                       IYES      GOOD 1      0  1     0  1   0 0 . .1   0 .1   0 01   + .1
0 01  0 01   0
```

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES

ALK-ALKALINITY FLOW-FLOW TN-NITROGEN
WPQI-WATER QUIAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHIA-CHLOROPHYLL PH-PH TP-PROSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

NPS

QUALITATIVE SURVEY RESULTS

AN "X9 INDICATES A PROBLEM

WITH POLLUTANT OR SOURCE

THE - ON MAPID INDICATES NO STORET

INFORMATION AVAILABLE FOR THIS WATERSHED

-SEE PAGE 11 FOR

LEGEND FOR THIS TABLE-

-- CATNAME=PERDIDO
RIVER HUC=03140106 ---

N B S P 0 S
0 F T F 0
U A E E T A H T T I U I T
M T C D S H D 0 L
A H H S R S N N H
A B W W R T I T E E X I
M B E E H A B H 0 0 E
P W A 0 Q I E M I R B Y N
E I F R R K I W 1 0 D S F R
3 S 3 N E R E 0 C C R G I
T T L M P I G E D D E W I S I S
1 0 P N I N I I H I E T P A A 0 A 0 L A E 1
0 C I S Y N T L U C H 0
D D N S T A T L D E S N Y H L T W L L L L D T
R L M H M D P G E I D R N M T

1 4 62A PERDIDO RIVER GOOD FAIR x x x x x x
x K x x x x x
2- 6@6 BLACK LAKE FAIR x
x x x x x x x x

3 462B PERDIDO RIVER GOOD FAIR X X K X X x
x x x x x x x
4- 616 BEULAH DRAIN FAIR x
x x x x x x x x x
5- 607 CIAYPIT BRANCH FAIR x
x x x x x x x x x
6- 542 REST AREA RUN FAIR X X X X X X X K X
x x x x x x x x x x x x
7 462 PERDIDO RIVER GOOD FAIR x x x x x x
x x x x x x x
8 494 JACKS BRANCH GOOD THREAT x x x x x x
x x x x x x x
9 462C PERDIDO RIVER GOOD FAIR x x x x x x
x x x x x x x
10. 407 FARM HILL RUN THREAT x x x x x x
x x x x x x x
11 2@1 JACKS BRANCH GOOD THREAT x x x x x x
x K x x x x x
12- 357 CHURCHHOUSE BRANCH THREAT x x x x x x
x x x x x x x
13 345 COWDEVIL CREEK GOOD THREAT x x x x k x
x x x x x x x
14 2D7 PENASULA CREEK GOOD THREAT x x x x x x
x x x x x x x
15- 3'_ I BOWMAN CREEK THREAT x
x x x x x x
16- 290 DRY CREEK THREAT x x x x x x
x x x x x x x
17* 273 COWHIDE CREEK THREAT x
x x x x x x
18 245 ALLIGATOR CREEK GOOD THREAT x x x x x x
x x x x x x x
19* 12D DIRECT RUNOFF TO STM THR1kT x x x x x x
x x x x x x x
20* 259 POND BRANCH THREAT x
x x x x x x
21* 252 STILL BRANCH THREAT x
x x x x x x
22* 243 SCHOOLHOUSE BRANCH THREAT x
x k x x x x
23* 228 JACKSON SPRINGS BRANCH THREAT x
x x x x x x
24* 208 MCDADE CREEK iHREAT x
x x x x x x
25 '49 MC DAVID CREEK GOOD THREAT x
x x x x x x

			26-	32		DIRECT RUNOFF TO SIM								THREAT	x	x	x	x		x		x
x		x				x		x	x		x		x									
			27-	.82		WEST FORK								THREAT			x					
x						x		x		x			x									
			28	.35		BOGGY CREEK						GOOD		THREAT			x					
x						x		x		x			x									
			29	i48		HELVERSON CREEK						GOOD		THREiT			x					
x	x				x									x			x					
			30-	.97		NARROW GAP BRANCH								THREAT			x					
x		K						x		x			x									
			31*	72E		DIRECT RUNOFF TO STM								THREAT	x	x	x	x		x		x
x		x				x		x	x		x		x									
			32-	:72		REEDY BRANCH								THREAT			x					
x	x				x		i							x			x					
			33*	165		BUCKEYE BRANCH								THREAT			x					
x		k				x		x		x			x									
			34*	'38		ROCKY CREEK								THREAT			x					
x		x				x		x		x			x									
			35	'105		FREEMAN SPRINGS BRANCH						GOOD		THREAT			x					
x		x				x		x		x			x									
			36	4		BRUSHY CREEK						GOOD		FAIR	x	x	x			x	x	x
x					x		x				x	x		x	x	x	x		x			
			37-	72F		DIRECT RUNOFF TO STM								THREAT	x	x	x	x		x		x
x		x						i	x				x									
			38*	'73		UNNAMED BRANCH								THREAT			x					
x		x				x		x		x			x									
			39-	3		REEDY BRANCH								THREXf			x					
x		x				x		x		x			X									
			40*	2F		DIRECT RUNOFF TO STM								FAIR	x	x	x					x
x					x		x						x	x			x		x			

t")

AR-

-ECONFINA CREE

BRANCH

GE CREEK

LAKE P EL

ST. ANDREWS

PO

"N

GULF OF MEXICO

THER SWAMP

ST. ANDREWS BAY BASIN
03140101
AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS UNK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

WATER QUAUTY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

ST. ANDREWS BAY BASIN

Basic Fact

Drainage Area: 1,350 square miles
Major Land Uses: forest, urban development
Population Density: low, moderate around Bay (Panama City, Lynn Haven
  Tyndall Air Force Base)
Major Pollution Sources: paper mills, WWTP, urban runoff
Best Water Quality Areas: Econfina Creek, Sandy Creek
Worst Water Quality Areas: Panther Swamp, Beatty BAYOU
Water Quality Trends: stable quality at 2 sites, improvement at
  Econfina Creek
OFW Waterbodies:
  St. Joseph Bay State Aquatic Preserve
  St. Andrews State Park Aquatic Preserve
  Lake Powell
SWIM Waterbodies: Deer Point Lake
Reference Reports:
  Deer Point Lake SWIM Plan, NWFWMD, 1991
  Florida Rivers Assessment, DEP/FREAC/NPS, 1989
  Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Basin Water Quality Experts:
  David Heil, DEP (Tallahassee), 904/488-5471
  Don Ray, DEP (Pensacola), 904/444-8300
  Glenn Butts, DEP (Pensacola) 904/444-8380

In the News

* The dredging operation at Military Point Lagoon has been completed. The lagoon, which serves Bay County, the Four City Sewer System, Tyndall Air Force Base, Stone Container Corporation and Panama City was cleared of a large buildup of sludge. Biochemical oxygen demand has been -reduced by 50 percent.
* Health advisories recommending limited consumption of largemouth bass due to mercury content have been issued for Deer Point Lake and Econfina Creek.

- � A notice of violation was given to Bay County for 66 sites because of stonnwater runoff caused erosion and sedimentation into waters of th-- State.
- � A die-back of salt marsh cordgrass has been occurring along the inner perimeter of the St. Andrews Bay.

Stone Container pulpmill will be closed most of the surnmer (1994) due to an industrial accident.

Ecolop-ical Characterization

St. Andrews Bay Basin encompasses a large bi-lobed em, bayment on the panhandle of Florida. To the west of the inlet, West Bay and North Bay form one lobe. On the southeast is St. Andrews Bay proper, and East Bay forms the other lobe. Panama City fies between the lobes. The basin also includes the long stretch of coast enclosing St. Andrews Sound, and the large, open St. Joseph's Bay. The major freshwater inflow into the bay complex is the Econfina River, entering at North Bay. The northernmost bayou where this spring-fed river enters the bay is impounded to form the freshwater lake, Deer Point Lake, which is the drinking water source for Panama City. Other freshwater drainages into the bay are small, mostly blackwater creeks draining forest and swamp land. St. Josephs Bay, in the southern part of the basin, is distinctly different from the dark brackish waters of West, North and East Bays. It is essentially composed of the clear, saline waters of the Gulf of Mexico, and is separated from the Gulf by a thin dune line. There are no major freshwater inflows; however, the brackish Gulf County Canal connects the bay to the Intracoastal Waterway.

The entire basin drains a total area of about 1,350 square miles. The watershed is primarily forested with an urbanized area concentrated adjacent to St. Andrews Bay. The major urban centers are Panama City, Lynn Haven and a narrow strip of development along the gulf Except for these urban areas, the primary land use is silviculture.

Anthropogenic Impacts

The St. Andrews Bay system generally exhibits good water quality. The major river inflow, Econfina Creek, is nearly pristine, and most of the urbanized area is concentrated where the bay is better flushed by the Gulf However, the Bay is threatened, not only by the growth-induced nonpoint source pollution, but also by several important domestic and industrial point sources.

There are several areas of concern in the basin. Deer Point Lake is the drinking water source for Panama City. Although its major inflow is from Econfina Creek, its other tributaries have some pollution impacts. Bayou George Creek has the Majette Landfill located in its watershed. In a 1987 study, Pond C effluent to the creek had significant amounts of ammonia and unionized ammonia. The creek below the landfill had elevated nutrients and specific conductance, and the macroinvertebrate community was depressed. Perhaps most threatening to the lake itself is the impact from recreation activities and shoreline development. Boating docks and facilities, construction activities, and residential development runoff add fertilizer, sediment and oils and grease to the watershed. The lake has severe weed problems which were treated by both the State and private citizens with herbicides in the seventies. Chemical treatment has been replaced by biological controls (grass carp). Sampling in 1989 indicated elevated values for some metals in the sediments near the dam and depauperate benthic fauna and low diversities in the mid- to lower lake. Water quality sampling indicates low DO values and some bacteria problems. Deer Point Lake is a priority SVM4 waterbody and plans were developed for its conservation and restoration including a careful study of the nonpoint pollution sources in the watershed.

Nonpoint source pollution also affects several of the urban creeks and bayous. In addition, Beatty Bayou below the impoundment was affected by the Lynn Haven WWTP sprayfields. The plant diverted it's flows to the Bay County WWTP in April, 1994. Watson Bayou, in Panama City, also suffers from historical WWTP discharge and urban runoff. A major fish kill in the summer/fall of 1991 was linked to leaking sewage lines and a sewage discharge from the Millville WWTP. The Nonpoint Source Assessment indicates some metals contamination of that waterbody. A study performed by NOAA!s National Status and Trends Program found high concentrations of lead, mercury, DDT, chlordane, PCB's, and polycyclic aromatic hydrocarbons in sediments from Watson Bayou. West Bay in the vicinity of the Panama City Beach WWTP, is also showing water quality problems with decreased DO values. Panama City Beach's recent application for an operating permit renewal was denied based on their current discharge to Class II waters. This denial is currently in the hearing mode. It is anticipated that the matter will be resolved through a temporary operating permit requiring appropriate actions to be taken to eliminate any further discharges to their present location. Finally, the St. Andrews WWTP which handles wastewater from Panama City appears to be affecting the sediments and biological richness in the vicinity of its outfall in St. Andrews Bay. St. Andrews WWTP will be required to upgrade to AWT when their current permit expires in 1997.

The most significant point source problems in the basin are treatment plants that receive more industrial wastes than domestic. The Bay County Regional WWTP treats industrial

wastewater from Stone Container (paper/pulp mill) and Arizona Chemicals Company (a resin processor) as well as domestic - wastewater'fr6m several small- communities. The-Bay County facility and the industries have jointly signed a Consent Order requiring better-treatment and outlining the financial penalties for non-compliaince. St. Andrews, Bay, in-the vicinity of the outfall at Military Point, indicates biological degradation with poor diversity and productivity. The, sediments in the vicinity of the- outfall have: high BOD. and-are rich in organics.

The City of Port St. Joe WWTP (in Gulf County) treats wastewater from St. Joe Forest Products (paper/pulp mill). Premier Services Corporation (formerly known as Basic Magnesia, Inc.) treats wastes from it's magnesium operation. The WWTPI plant discharges enter the Gulf County Canal near the St. Josephs Bay where it becomes diluted, with good quality bay water. However, in the vicinity of the canal, sediments are mucky instead of sandy and seagrass coverage is decreased due to the poorer transparency of the-waters. Both Bay Count and City of Port St. Joe WWTP facilities discharge at- about 3-9 MGD (of which 80-90% is from the paper companies). Both are publicly owned treatment plants that mutually benefit the paper companies and the counties (by virtue of, having the industrial development). Both of the receiving bays show biological degradation and shifts in sediment composition. The WWTP's have applied for a TOP (temporary operating permit) which will require them to address current discharge problems resulting from high pH and TSS.

Lake Powell is ecologically interesting in that it has characteristics of both freshwater and saltwater lakes. It is also in relatively pristine condition; however, it is currently undergoing rapid development. The utmost care should be taken to prevent stormwater pollution in this sensitive area. It was recently designated as Outstanding Florida Waters.

Other pollution sources in this basin include many small package plants and septic tanks which discharge poorly treated waste into ditches emptying into the St. Andrews Bay, significant amounts of highway and construction site runoff, and runoff from logging operations.

Venture Out WWTP (currently discharging directly to St. Andrews Bay) will connect to Panama City Beach by November, 1994. Pride Resorts WWTP (currently discharging to Alligator Bayou) was issued a TOP in January 1994 requiring it to tie-in to the Panama City Beach WWTP or upgrade to AWT by October, 1994.

```
UNIT: 03140101 ST ANDREWS BAY

INDEX       GOOD FAIR POOR
           SURFACE WATER QUATITY DATA FOR 1970-1993
----------- ----- ----- -----
           MEDIAN VALUES FOR EACH WATERSHED
KI-RIVER      0-44 45-59-60-90
           CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49 50-59 60-100
           PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE      0-59 60-69 70-100


BIOLOGICAL                       WA7ER
           WATERSHED                                 WATERSHED DATA RECORD                   WATER          DISSOLVED
OXYGEN          PH          TROPHIC                              SPECIES                       QUALITY
           ID  NAME                                 ----------------------                 CLARITY            OXYGEN
DEMAND         ALKA.LINITY      STATUS        COLIFORM       DIVERSITY       COND FLOW          1NDICES

------- ----- ----- ---------------
           ----- --------------------------------- MAX    BEG END     DATA ---------------------------- ---------- ---
------------ ---------- --------------- ---------- --------               CK  COND FLOW       K:       TSI
                                                         #OBS   YR  YR     PERIOD        TURB   SD COLOR    TSS      Do DOSAT
BOD  COD    TOC   PH    ALK   NITRO PHOS CHLA   TOTAL FECL NAT ART BE
           WATER BODY TYPE: ESTUARY
5   3000  156                40538                    52
           1   ST. JOSEPH BAY                            6  92  92   Current          1.8   0.5      20 17     5.6   70
5   B. 0     89 0.54 0.02                                    25100                      56
           2   PANTHER SWAMP                           20   92  93   Current         10.0   0.4      140  8     6.5   72
14   7.4      76 0.97 0.06     2           25                  32300                    52
           3   WALKER BAYOU                              4  73  73   Historical         .   1.5       .  12     8.3   88
0.6             8.0      .  5.37 0.03     25     5                                                  12
           4   DIRECT RUNOFF   TO GULF                   4  71  71   Historical       9.0     .       13   .     8.3  102
0.3             8.8      1  0.69 0.01      .      I
           6   EAST BAY (E)                            32   71  88   Historical       3.5   2.5       20   6     6.1   74
1.1             8.2      91 0.62 0.01     7      26    8  3.6              41800                    32
           7   CALIFORNIA BAYOU                          1  92  92   Current          7.6   1.0       30 30     7.3   83
5   7.7      74 0.57 0.02     4           2                  31500                      46
           8   EAST BAY (W)                            88   71  87   Historical       7.0   1.8       16 12     6.5   73
1.4             8.0   100   0.58 0.02     37     94    13                  32300                    36
           9   ST. ANDREWS BAY (MOUTH)                 16   73  87   Historical       2.5   37.7      11 24     8.4   96
0.9             26.4  100   0.30 0.02     16     10    5                   47350                    3 11
           10  PITTS BAY                               17   72  88   Historical       3.2   1.9       30 12     4.5   57
1.8             7.9      99 0.52 0.01     7   182  1085                41975                    24
           11  LAIRD BAYOU                               8  72  73   Historical      26.5   3.4       13 31     7.0   79
1.6             8.2   100   0.61 0.04     35  411      .                   19069                    43
```

12 DIRECT RUNOFF TO BAY 16 89 89 Current 2.0 . 60 52 6.8 77
31.8 189 6.7 . 9.64 2.18 2 16700 1050 2041 63
14 MASSALINA BAYOU 16 92 93 Current 1.8 1.5 13 13 5.8 62
4 8.0 101 0.40 0.02 2 8 40350 37
15 PARKER BAY 25 71 73 Historical 12.0 . 43 127 4.6 56
1.8 1460 7.9 73 0.88 0.03 230 . 34750 41
16 ST. ANDREWS BAY (M) 118 74 86 Historical 2.0 3.0 15 5 8.8 90
0.8 - 4 8.0 108 0.36 0.02 3 5 4 4.2 3.2 42500 25
17 'WOODLAWN CANAL 197 74 74 Historical 1.4 . . 5.2 63
8 7.4 . 0.40 0.03 73 28 37
18 WATSON BAYOU 46 91 93 Current 4.7 0.9 25 19 5.8 70
4.7 4 7.8 107 0.57 0.04 11 13000 28 40200 49
19 DIRECT RUNOFF TO BAY 17 73 87 Historical 3.5 2.9 30 15 7.6 81
0.5 7.9 0.38 0.01 33 113 5 44250 35
21 PRETTY BAYOU 167 74 74 Historical 2.7 . . 4.5 56
10 7.0 0.37 0.09 7 1 37
22 ROBINSON BAYOU 6 73 79 Historical 1.3 . 16 10 6.6 79
1.3 8.0 84 0.59 0.04 20 1 24865 28
24 MILL BAYOU 6 13 14 Historical 2.2 1.6 14 . 6.9 83
1.8 1.4 65 0.56 0.03 152 22625 46
25 GOOSE BAYOU 6 73 73 Historical 2.0 . 8 30 7.0 83
1.1 8.2 78 0.88 0.03 96 75 22000 53
26 ST. ANDREWS BAY (N) 54 71 88 Historical 3.7 1.8 18 14 8.3 94
0.6 7 7.7 85 0.49 0.02 2 14 5 41000 35
27 BEATTY BAYOU 16 92 93 Current 5.1 0.9 45 5 5.4 56
8 7.0 81 2.48 0.77 2 . 305 9205 55
29 DIRECT RUNOFF TO BAY 13 71 74 Historical 3.0 1.8 15 5 7.3 74
1.0 7.8 78 0.58 0.03 95 74 . 31775 39
30 NORTH BAY (N) 26 73 76 Historical 3.0 2.1 10 14 7.3 83
1.1 8.0 70 0.63 0.02 83 10 5 35150 3-1
31 NORTH BAY (N) 14 73 73 Historical 4.0 2.1 15 77 7.2 90
1.6 8. 0 65 0.73 0.03 71 6 23425 50
33 WEST BAY 37 89 93 Current 2.5 1.7 18 19 7.9 83
0.7 3 7.6 . 0.41 0.03 3 5 5 38200 38
35 DIRECT RUNOFF TO BAY 6 72 72 Historical 10.5 23 5.1 71
1.5 8.4 93 1.11 0.04 . 1 48
� WATER BODY TYPE: LAKE 7 72 72 Historical 30.0 30 6.6 78
1.5 90 1.12 0.01 17 24
34 LAKE POWELL
5 33
36 DEERPOINT LAKE 12 89 89 Current 2.5 1.5 60 3 7.5 87
0.6 6.4 32 0.32 0.01 2 51 8 7
41 WESTERN LAKE OUTLET 3 80 80 Historical . 1.5 150
6.6 21 0.28 0.00 2 4540 26
44 MERIAL LAKE 32 79 80 Historical 2.0 2.1 3
8.3 96 0.69 0.02 1 106 22

48 L. GAP POND   3 80 80   Historical   .   4.5   4
5.1   1 0.31 0.01   2   13   20
49 COMPASS LAKE OUTLET   34   79 79   Historical   1@0   4.3   9.1   88
0.25 0.00   22

� WATER BODY TYPE: STREAM
5   WATAPPO   6 92 92   Current   8.0   0.6   80   4   7.9   85
6   7.0   4 0.37 0.02   40   30   22
13 SANDY CREEK   5 92 93   Current   2.7   0.6   30   2   8.3   89
3   6.3   5 0.13 0.01   33   30   13

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MGIL MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALKALINITY]MG/L CHLA,-CHLOROPRYLL UG/L DOSAT-DO % SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L WQI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/10014L PH-PH STANDARD UNITS TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX COND-CONDUCTIVITY UMHOS FLOW-FLOW CPS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

USGS HYDROLOGIC
UNIT: 03140101 ST ANDREWS BAY

SURFACE WATER QUALITY DATA FOR !970-1993

MEDIAN VALUES FOR EACH WATERSHED

CURRENT PERIOD OF RECORD (1969-1993) USED WHERE AVAILABLE

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59-	60-90
TSI-ESTUARY	0-49	50-59	60-100

PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

TSI-LAKE 0-59 60-69 70-100 1

1

BIOLOGICAL WATER
WATERSHED WATERSHED DATA RECORD WATER
DISSOLVED OXYGEN PH TROPHIC SPECIES
QUALITY
ID NAME ----------------------- CLARITY
OXYGEN DEMAND ALKALINITY STATUS COLIFORM DIVERSITY COND FLOW INDICES
----- --------------------------------- MAX BEG END DATA ----------------------------- --------
-- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------

ID	NAME	#013S	YR	YR	PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
20	CALLOWAY CREEK	4	92	92	Current	3.5	0.2	50	1	6.3	65			3	5.7	1	0.17	0.02			38				32		20	
23	LAKE MARTIN BAYOU	67	72	74	Historical	27.0	.	88	4	8.2	89	0.8			4.3	10	1.36	0.05		1301	.				135		34	
28	BAYOU GEORGE CREEK	11	89	93	Current	7.4	0.8	100	2	6.5	70	0.9		10	6.5	24	0.45	0.01	2	280	84				99		34	
32	BEEFWOOD BRANCH	9	92	93	Current	2.8	0.6	110	1	7.2	74			11	4.9	2	0.37	0.01			13				27		17	
37	DIRECT RUNOFF TO BAY	10	71	73	Historical	28.3	1.6	25	24	8.4	90	0.9			8.4	94	1.47	0.01	36	49	.			.	35300		31	
38	SO FK LITTLE BEAR CK	7	92	93	Current	2.8	0.5	40	1	6.4	84			5	6.4	14	0.22	0.01			123				41		20	
40	CROOKED CREEK	10	92	93	Current	1.1	2.0	40	2	4.2	43			5	5.9	20	0.23	0.01			48				30750		24	
42	BURNT MILL CREEK	6	89	92	Current	1.1	1.0	58	9	6.5	74	0.6		5	6.9	9	0.54	0.02	2	130	40				12641		23	
43	BEAR BRANCH	3	89	89	Current	3.0	1.8	40	3	6.8	68	0.8			6.1	19	0.24	0.02	2	190	30				34		18	
45	LITTE BEAR CREEK	3	89	89	Current	2.0	.	36	3	8.7	89	0.4			5.5	1	0.16	0.01	2	870	120				26		is	
46	CEDAR CREEK	3	89	89	Curreni	3.0	0.4	100	3	7.6	79	0.5			6.0	6	0.17	0.01	2	480	80				36		is	
47	ECONFINA CREEK	16	89	93	Current	1.0	1.4	13	2	6.7	69	0.3		1	7.3	38	0.15	0.01	2	300	42				94		15	

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L
MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MG/L
ALK-ALkALINITY MG/L CHLA- CHLOROPHYLL UG/ L . DOSAT7DO I SATURATION
NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/l, WQI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTRATE D" COD-CHEMICAL OXYGEN DEMA&D i-S/L END YR-ENDING iEAR.
NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL tOLIFORM MPN/100ML
BEG YR-BEGINNING SAMPL:IZG YEAR COLOR-COLOR PCU FECL-FECAL COLiFORM MPN1100ML
PH-PH STANDARD UNITS TSI-TROPH .IC STATE I.NDEX
BECK-BECK'S BIOTIC INDEX 'OND-CONDUCTIVITY UMHOS FLOW-FLOW CFS
PHOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

m m m m m m m m m m m m m m

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT: 03140101 ST ANDREWS BAY
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'X'-EXCEEDS SCREE14ING CRITERIA
SCREENI14G VARIABLES AND CRITERIA
'0'--WITHIN SCREENING CRITERIA
'.'=MISSING DATA
I RANK DATA RECORDI TN ISTREAM I LAKE I PH I ALK
I TURB & I COND I OXYGEN I DO ICOLIFORM I BIOL I CHLA I SEC,_Hi I
I------------------ I I TP I TP I I
I TSS I I DEMAND I I BACTI I DIV I I DISC I
I WQI CURRENT I I I I I
I t I t I I I i
WATERSHED I OR OR I TN>2.0 ITP>.46 I TP>.12 I PH>8.8 IALK<20
ITURB>16.51COND>12751 BOD>3.3 I DO<4 ITOT>3700 IDIART<1.951 CHLA>40 I SD<.7 I
ID NAME I TSI HISTORICAL I I PH<5.2 I
I TSS>18 I I COD>102 I IFECAL>4701DINAT<1.5 I I I
----- ---
I TOC>27.51 I IBECK<5.5 I

WATER BODY TYPE: ESTUARY
1 ST. ZOSEPH BAY IFAIR Current 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 0 1 x 1
2 PANTHER SWAMP IFAIR Current 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 0 1 x 1
3 WALKER BAYOU IFAIR Historical I x I 1 0 1 0 1
1 0 1 1 0 1 0 1 0 1 1 0 1 0 1
4 DIRECT RUNOFF TO GULF IGOOD Historical 1 0 1 1 0 1 0 1 x
1 0 1 1 0 1 0 1 0 1 1 1 . 1
6 FAST BAY (E) IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 0 1 0 1 0 1
7 CALIFORNIA BAYOU iGOOD Current 1 0 1 1 0 1 0 1 0
1 x I x 1 0 1 0 1 0, I 1 0 1 0 1
8 EAST BAY (W) IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 0 1 0 1
9 ST. ANDREWS BAY(MOUTH) IGOOD Historical 1 0 1 1 0 1 x 1 0
1 x I x 1 0 1 0 1 0 1 1 0 1 0 1
10 PITTS BAY IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 x I 1 0 1 0 1
11 LAIRD BAYOU IGOOD Historical I a I 1 0 1 0 1 0
1 x I x 1 0 1 0 1 0 1 1 0 1 0 1
12 DIRECT RUNOFF TO BAY (UNKN Current i x I I x 1 0 1
1 x I x I x 1 0 1 x I 1 0 1 . 1
14 MASSALINA BAYOU IGOOD Current 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 0 1 0 1
15 PARKER BAY IGOOD Historical 1 0 1 1 0 1 0 1 0
1 x I x I x 1 0 1 0 1 1 1 . 1
16 ST. ANDREWS BAY (M) IGOOD Historical 1 0 1 1 a 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 0 1 0 1 0 1

17 WOODLAWN CANAL IGOOD Historical 1 0 1 1 0 1 0 1
1 0 1 0 1 0 1 0 1 0 1 1 1 . 1
18 WATSON BAYOU IGOOD Current 1 0 1 0 0
(1 k x x x 0 x 1 0 0 1
19 DIRECT RUNOFF TO BAY IGOOD Historical 1 0 1 1 a 1 0 1
1 0 1 x 1 0 1 0 1 0 1 1 0 1 0 1
21 PRETTY BAYOU IGOOD Historical 1 0 1 1 0 1 0 1
1 0 1 0 1 0 1 0 1 0 1 1
22 ROBINSON BAYOU IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1
24 MILL BAYOU IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 0 1
25 GOOSE BAYOU IFAIR Historical 1 0 1 1 0 1 0 1 0
1 x I x 1 0 1 0 1 a I x I . I
26 ST. ANDREWS BAY (N) IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 0 1 0 1
27 BEATTY BAYOU IFAIR Current I x I I x 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 0 1 0 f
29 DIRECT RUNOFF TO BAY IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 x 1 0 1
30 NORTH BAY (N) IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 x 1 0 1 0 1 0 1 1 x I 1 1
31 NORTH BAY (N) IFAIR Historical 1 0 1 1 0 1 0 1 0
1 x I K 1 0 1 0 1 0 1 1 x 1 0 1
33 WEST BAY IGOOD Current 1 0 1 1 0 1 0 1
1 x I x 1 0 1 0 1 0 1 1 1 0 1
35 DIRECT RUNOFF TO BAY IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 1 0 1 0 1 0 1 1

� WATER BODY TYPE: LAKE
34 LAKE POWELL IGOOD Historical 1 0 1 1 0 1 1 0
1 x 1 0 1 0 1 0 1 0 1 1 1
36 DEERPOINT LAKE IGOOD Current 1 0 1 1 0 1 0 1 0
1 0 1 0 1 0 1 0 1 0 1 1 0 1 0 1
41 WESTERN LAKE OUTLET IGOOD Historical 1 0 1 1 0 1 0 1 0
1 1 x I I 1 0 1 0 1
44 MERIAL LAKE IGOOD Historical 1 0 1 1 0 1 0 1 0
1 0 1 1 1 0 1 0 1
48 L. GAP POND IGOOD Historical 1 0 1 1 0 1 x I x
I I I 1 0 1 0 1
49 COMPASS LAKE OUTLET IGOOD Historical 1 0 1 0 1 1
1 0 1 1 0 1 1 0 i

� WATER BODY TYPE: STREAM
5 WATAPPO IGOOD Current 1 0 1 1 0 1 x
1 0 1 1 0 1 0 1 0 1 x 1

13 SANDY CREEK IGOOD Current 1 0 1 0 1 1 0 1 x
1 0 1 1 0 1 0 1 0 1 x I

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM
BACTERIA TP-PHOSPHOP.TJS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALYALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, W01 OR TSI, IS
BECK-BECKIS BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD, COD, TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT@ 03140101
ST ANDREWS BAY
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'x'=EKCEEDS SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'-MISS.'NG DATA
I RANK DATA RECORD] TN I STREAM I LAKE I PH I
ALK I TURB & I COND I OXYGEN I DO ICOLIFORM I BIOL I CHLA ISECCHI I
------------------ I I TP I TP I I
I TSS I I DEMAND I I BACTI I DIV I I DISC I
wQI CURRENT I I I I I
I I I I I I I I
WATERSHED I OR OR 1 TN>2.0 ITP>.46 I TP>.12 IPH>8.8 I
ALK<20 ITURB>16.51COND>12751 BOD>3.3 I DO<4 ITOT>3700 IDIART<1.951 CHLA>40 I SD<.7 I
ID NAME I TSI HISTORICAL I I I IPH<5.2 I
ITSS>18 I I COD>102 I IFECAL>4701DINAT<1.5 I

----- -- I I I I I
I I I TOC>27.51 I I BECK<5.5 I

20 CALLOWAY CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 1 1 x 1

23 LAKE MARTIN BAYOU IGOOD Historical 1 0 1 0 1 1 x I
x I x I 1 0 1 0 1 0 1 1 1 . 1

28 BAYOU GEORGE CREEK IGOOD Current 1 0 1 0 1 1 0 1
0 1 0 1 0 1 0 1 0 1 0 1 1 0 1 0 1

32 BEEFWOOD BRANCH IGOOD Current 1 0 1 0 1 1 x I
x 1 0 1 1 0 1 0 1 0 1 1 1 x 1

37 DIRECT RUNOFF TO BAY IGOOD Historical 1 0 1 0 1 1 0
0 1 x f x 1 0 1 0 1 0 1 1 0 0 1

38 SO FK LITTLE BEAR CK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 0 1 0 1 x 1

40 CROOKED CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 1 0 1 a 1 0 1 1 0 1

42 BURNT MILL CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 x 1 0 1 0 1 0 1 0 1 0 1

43 BEAR BRANCH IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1

45 LITTE BEAR CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 0 1 0 1 0 1 0 1 1 0 1 . 1

46 CEDAR CREEK IGOOD Current 1 0 1 0 1 1 0 1
x 1 0 1 0 1 0 1 0 1 0 1 1 0 x 1

47 ECONFINA CREEK IGOOD Current 1 0 1 0 1 1 0 1
0 1 0 1 0 1 0 1 0 1 0 1 1 0 0 1

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM
BACTERIA TP-PHOSPHORUS WQI OR TSI-WATEi QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISrORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS
BECK-BECK'S BIOTIC :NDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,COD,TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
@D-SECCHI DISC METERS

M m m m m m m m m m m m M m M
m m m M

SURFACE WATER QUALITY ASSESSMENT REPORT USGS HYDROLOGIC UNIT: D3140101
ST ANDREWS BAY
TRENDS-SOURCES-CLEANUP

:-":-DEGRADING TREND 1 1984 - 1993 TRENDS
0 =STABLE TREND --
'+'=IMPROVING TREND)W TI T T C Sl P Al T TI B T1 D DI T Fl T
F j<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'=MISSING DATA IQUALITY RANK IOVER-IQ or St N P H Di H Ll USl 001 0 01 C Cl E
L I
I------------- I ALL II if L I KI RSl DCl si 0 01 m
0 1
1 WQI ITRENDI I A I I B I I Al L Ll P
W I
WATERSHED I MEETS OR I I I I I I I T1 I If
I
ID NAME IUSE ? TSI I I I I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I------------- I

WATER BODY TYPE: ESTUARY
1 ST. JOSEPH BAY IPARTIAL FAIRI
2 PANTHER SWAMP]PARTIAL FAIRI
3 WALKER BAYOU IPARTIAL FAIRI
4 DIRECT RUNOFF TO GULF IYES GOODI
6 EAST BAY (E) IYES GOODI
7 CALIFORNIA BAYOU]YES GOOD[
8 EMT BAY (W) IYES GOODI
9 ST. ANDREWS BAY(MOUTH) IYES GOODI
10 PITTS BAY IYES GOODI
11 LAIRD BAYOU IYES GOODI
12 DIRECT RUNOFF TO BAY INO UNKNI
14 MASSALINA BAYOU IYES GOODI
15 PARKER BAY IYES GOODI
16 ST. ANDREWS BAY (M) IYES GOODI
17 WOODLAWN CANAL IYES GOODI
18 WATSON BAYOU IYES GOODI
19 DIRECT RUNOFF To BAY IYES GOODI
21 PRETTY BAYOU IYES GOODI
22 ROBINSON BAYOU IYES GOODI t I t
1
24 MILL BAYOU IYES GOODI I I I
25 GOOSE BAYOU IPARTTAL FAIRI I I I
26 ST. ANDREWS BAY (N) IYES GOODI 0 1 0 1 0 0 0 X1 0 1 0of 0 1 1 x01
27 BRATTY BAYOU IPARTIAL FAIRI
29 DIRECT RUNOFF TO BAY IYES GOODI
30 NORTH BAY (N) IYES GOOD]
31 NORTH BAY (N) IPARTIAL FAIR[
33 WEST BAY IYES GOODI 0 1 x 1 0 0 0 01 0 1 001 0 1 0 Of 0 01 0
1
35 DIRECT RUNOFF TO BAY IYES GOODI

WATER BODY TYPE: LAKE
34 LAKE POWELL IYES GOODI
36 DEERPOINT LAKE IYES GOOD I
41 WESTERN LAKE OUTLET IYES GOODI
44 MERIAL LAKE IYES GOODI I
48 L. GAP POND)YES GOOD I I
49 COMPASS LAKE OUTLET IYES GOODI

WATER BODY TYPE: STREAM
5 WATAPPO IYES GOODI

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM 7URB-
7URBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATURE TSI-
TROPHIC STATE INDEX FOR LAKES AND ESTUARIES

ALK-ALKALINITY FLOW-FLOW TN-NITROGEN WQI-
WATER QUIAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLK-CHL40ROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

SURFACE WATER QUALITY ASSESSMENT REPORT - USGS HYDROLOGIC UNIT:
03140101 ST ANDREWS BAY
TRENDS-SOURCES-CLEANUP

'x'-DEGRADING TREND 1984 - 1993 TRENDS
'0'=STABLE TREND --
'+'=IMPROVING TREND I 1W TI T TC Sl P Al T TI B TI D DI T
Fl T F j<--- PLEASE READ THESE COLUMNS VERTICALLY
'.'=MISSING DATA QUALITY RANK IOVER-10 or Sl N P H DI H Ll U Sl 0 01 0 01 C
Cl E L I
I------------- I ALL II ii L I Ki R Sl D Cl si 0
01 M 0 1
1 WQI ITRENDI I A I I B I I Al L
Ll P W I
WATERSHED I MEETS OR I I I I I I I TI 1
11 1
ID NAME IUSE ? TSI I I I I I I I I
I I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I------------- I I I I I I I I
I I--

13 SANDY CREEK IYES GOODI I 1 .1 .1 .1 .1
20 CALLOWAY CREEK IYES GOODI I I . . . . . 1 .1 .1 .1
23 LAKE MARTIN BAYOU iYES GOODI I I I I I I I
1 1
28 BAYOU GEORGE CREEK IYES GOODI I I . . . . . 1 .1
32 BEEFWOOD BRANCH IYES GOODI I I . . . . . 1 .1
37 DIRECT RUNOFF TO BAY [YES GOODI i I I I I I I
1 1
38 SO FK LITTLE BEAR CK IYES GOODI I I . . . . . 1 .1
40 CROOKED CREEK IYES GOODI I I . . . . . 1 .1

42 BURNT MILL CREEK IYES GOODI I I . . . . . 1 .1
43 BEAR BRANCH IYES GOOD1 I I . . . . . 1 .1
45 LITTE BEAR CREEK [YES GOODI I I . . . . . 1 .1
46 CEDAR CREEK IYES GOODI I I . . . . . 1 .1
47 ECONFINA CREEK IYES GOODI + I + I + 0 . .1 0 01 0 .1 .1 0 01
+1 0 1

LEGEND: DOSAT-DO SATURATION TbOLI-TOTAL COLIFORM
TURB-7URBIDITY
FCOLI-FECAL COLIFORM TkKP-TEMPERATURE TSI-
TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLdw TN-NITROGEN WQI-
WATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHIA-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDtD SOLIDS

NPS QUALITATIVE
SURVEY RESULTS
AN "X" INDICATES A PROBLEM
WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES No STORET
INFORMATION KVAILABLS FOR TRIS 'KNTERSIAZZ
-SEE PAGE 11 FOR
LEGEND FOR THIS TABLE-
-- CATNAME=ST ANDREWS
BAY HUC=03140101 ---

N B S P 0 S
0 F T F 0
U A E E I A H T T I U I T
M T C D S H D 0 L
A H H S R S N N H
A B W W R. T I I E E X I
M B E E H A B H 0 0 E
P W A Q 0 1 E M I R B Y N
E I F R R K L W 1 0 D S F R
B S 3 N E R. E 0 C C R G I
T T L M P I G E D D E W I S I S
y I 1 0 p N I N I I H I B T P A A 0 A 0 L A E 1 0 C
I S Y N T A R S L 0
D D N 5 S T A T L D E S N Y H L T W L L L L D T R L
M H 14 D P G E L D R N M I
17 1120 WOODLAWN CANAL GOOD THREAT x x x x x x x x
x x x x x x x
39- 1040 DIRECT RUNOFF TO GULF THREAT x x
x x x x

L
4-

Lake Mi

Ar&

LLOYD CREEK

m

LOST CREE

APALACHEE BAY

ST. MARKS RIVER BASIN
03120001
AVERAGE WATER QUALITY
1984-1993 STORET DATA

WATER QUALITY
GOOD
THREATENED
FAIR

ST. MARKS RIVER BASIN

DrainageArea: 1,180 square miles (about 95% in Florida)
Major Land Uses: forest, urban development
Population Density: low, moderate in Tallahassee area
Major Pollution Sources: WWTP, urban runoff
Best Water Quality Areas: Wakulla River, upper St. Marks
Worst Water Quality Areas: Lake Munson and Tallahassee drainage ditches
Water Quality Trends: stable water quality at one site on St. Marks
OFW Waterbodies:
- St. Marks National Wildlife Refuge
- St. Marks River
- Wakulla River
- Wakulla Springs State park
- Big Bend Seagrasses State Aquatic Preserve

SYJM Waterbodies: none
Reference Reports:
- Florida Rivers Assessment, DEP/FREAC/NPS, 1989
- Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988

Basin Water Quality Experts:
- Gray Bass, FGFWFC, 904/957-4172
- Don Ray, DEP (Pensacola), 904/444-8300

Ecological Characterization

The St. Marks River basin drains approximately 1, 180 square miles and extends from south Georgia to the Gulf of Mexico. It includes approximately one-half of the drainage from Tallahassee. The St. Marks begins as a tiny blackwater stream meandering through a series of sloughs and ponds. Lake Lafayette, on the outskirts of Tallahassee, also flows via a slough to the St. Marks when rainfall is great. Near the Leon-Wakulla County line, the river widens and clarity improves with water input from several springs, particularly Horn Spring. The river then plunges underground at Natural Bridge and emerges a short distance downstream at St. Marks Spring. Here, the stream is larger and more characteristic of a spring run, although during heavy rains it does become tannic. The

flow here averages about 700 cfs. Its sister river, the Wakulla, with-a flow of about 400 efs, emerges from Wakulla Springs about 10 miles to the west. The streams join- near the City of St. ?Aarks about 3 miles upstream from the Gulf of Mexic(Y.

Both river corridors are heavily wooded with cypress and other native vegetation; however, there are increasing numbers of home sites encroaching on both rivers. Both- rivers are used heavily for canoeing, fishing and swimming. Land use in-the basin is, largely for silviculture. The lower basin is teeming with wildlife in pine woods. and fresh and saltwater marshes. Much of this area is protected by the St. Marks National Wildlife; Refuge. Both rivers are designated as Outstanding Florida Waters.

Anthropogenic Impacts

Water quality is excellent in much of this basin. There are two areas in thebasin which have water quality problems. Munson Slough drains portions of the Tallahassee urban area and historically received treated wastewater from small package plants and runoff. from the city WWTP sprayfield. The stream system enters-Lake Munson and.then disappears into a sinkhole several miles downstream of the lake. The lake and stream system exhibit poor water quality with algal blooms, high nutrients, bacteria and transparency problems. Effluent from the major WVv1TP in Tallahassee has been diverted from Munson Slough to a land spreading operation. The lake still has problems relating -to urban runoff from Tallahassee.

A Lake Munson study was conducted in the mid- I 980s by the Department to determine the status of water and sediment quality as a first step toward a proposed restoration project. The study indicated that since the diversion of treated wastewater from Munson-Slough the algal growth potential has decreased tenfold and the biological. community has relatively good diversity. It was also determined that the low nutrient, highly tannic swamp waters draining into the lake have had a beneficial effect on the lake's, recovery. However, with the proximity of the lake and slough to ground water, there is a fear that the nearby chain of sinkholes will become polluted.

The other problem is in the St. Marks River downstream of Rattlesnake Branch (the-lower 3-4 river miles). This section of the river received effluent from Seminole Refining Corporation (which was found in 1985 to be acutely toxic to bioassay organisms) and Purdom Power Plant. The former company is under a Consent Order from DEP and is no longer operating. Seminole is in the process of remediating the site. To pay for the remediation, the property was sold to St. Marks Refining. St. Marks Refining was issued a temporary operating permit until 1996, but they are currently not refining oil at the site. In addition, there are docking and pumping stations for oil barges, and a few small marinas

for fishing and recreational boats. There have been several major and minor oil spills in the past, and sediments in the area are coated with oil. There is a small 50,000 GPD sewage treatment which discharges into the lower St. Marks River. Plant inspection in October, 1993 found no problems with toxicity, metals, W-BNA or pesticides, however algal growth potential (AGP) exceeded the EPA established threshold. Nutrient input into the St. Marks Basin is a cause for concern.

The Wakulla River is fed by one of Florida!s highest discharge springs and has excellent water quality. The upper portion of the river was recently bought by the State and made into a state park; however, the lower portion of the river is threatened by continued waterfront development with insufficient buffer areas along the river's edge. Near its confluence with the St. Marks, the Wakulla receives increased nutrient loading from Boggy Branch (Olin Corp. discharge). Olin is studying the problem.

Recently, problems have been noted in the Lake Lafayette drainage of Tallahassee's east side. These problems are being investigated, USGS

HYDROLOGIC UNIT: 03120001 ST MARKS RIVER

INDEX GOOD FAIR POOR

SURFACE WATER QUALITY DATA --OR 1970-1993

----------- ----- ----- -----

MEDIAN VALUES FOR EACH WATERSHED

WQI-RIVER 0-44 45-59-60-90

CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE

TSI-ESTUARY 0-49 50-59 60-1100 -----

PERIOD PRIOR TO 1989 :S EVALUATED AS HISTORICAL INFORMATION

TSI-LAKE 0-59 60-69 70-100 1

1

BIOLOGICAL WATER

WATERSHED WATERSHED DATA RECORD WATER

DISSOLVED OXYGEN PH TROPHIC SPECIES QUALITY

ID NAME ---------------------- CLARITY

OXYGEN DEMAND ALKALINITY STATUS COLIFORM DIVERSITY COND FLOW INDICES

----- --------------------------------- MAX BEG END DATA ---------------------------- ---------

- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------

#OBS YR YR PERIOD TURB SD COLOR TSS DO

DOSAT BOD COD TOC PH ALK NITRO PROS CHIA TOTAL FECL NAT ART BECK COND FLOW WQI TSI

WATER BODY TYPE: LAKE

2 LOST LAKE REC AREA 38 86 86 Historical 1.4 30

5.1 1 0.28 0.01 22 18

13 CLEAR LAKE 5 86 86 Historical 2.5 23

4.5 1 0.27 0.01 29 27

315 Lake Munson 921 73 87 Historical 18.5 0.5 69 7 9.1

97 6.5 38 18 8.2 48 3.09 0.46 140 445 44 163 86

21 Lake Bradford 9 92 92 Current 1.6 1.0 100 1 7.2

80 11 5.8 1 0.53 0.01 5 100 4 23 41

27 BRADFORD BROOK 10 85 86 Historical 2.3 . 8

4.8 1 0.21 0.01 27 is

34 LAKE LAFAYETTE DAA:N 23 89 92 Current 34.0 0.5 97 13 5.2

50 2.0 28 8 6.2 16 0.61 0.26 10 400 4 56 51

43 ALFORD ARM 13 89 89 Current 25.0 . 94 8
5.0 36 12 14 0.67 0.17 42 48
45 Lake Miccosukee 6 92 92 Current 4.6 0.6 140 4 2.0
25 16 5.5 2 0.94 0.05 2 3000 60 40 53

WATER BODY TYPE: SPR:';G'
I KINI SPRING 9 73 74 Histo@ical 1.5 60
0.5 14 6 7.7 74 0.32 0.02 192 9

WATER BODY TYPE: S I RIKH
4 BIG BOGGY BRANC'H 8 93 93 Current 1.3 0.5 30 2 5.5
63 5 7.6 177 1.11 0.19 350 880 41
5 WAKULLA RIVER 20 92 93 Current 1.0 1.8 10 1 7.2
79 2 7.5 126 0.66 0.01 200 277 296 19
6 UNNAMED DRAIN 3 85 85 Historical 5.2 340
5.0 0 0.56 0.01 50 29
8 BLACK CREEK 4 78 78 Historical
7.2 . 0.12 0.08 366 22
9 LOST CREEK 7 93 93 Current 1.1 0.5 140 1 7.3
B3 18 7.3 38 0.43 0.01 80 99 29
10 ST. MARKS RIVER 20 92 93 Current 3.4 1.5 38 3 5.6
61 5 7.3 65 0.36 0.04 1271 !45 34
11 MCBRIDE SLOUGH 7 93 93 Current 0.5 1.6 10 1 3.3
34 1 7.1 131 0.56 0.01 80 275 30
12 Munson sink 15 92 93 Current 3.8 0.5 60 2 5.1
58 9 6.9 34 0.47 0.13 2000 40 9Q 36
16 Munson Slough fbe-ow L 7 93 93 Current 3.3 0.4 50 3 5.9
73 12 7.4 30 0.58 0.09 102 92 39
17 Munson Slough (above L 7 93 93 Current 8.0 0.7 120 5 0.9
10 9 6.5 62 0.61 0.12 144 158 54
25 EAST DRAINAGE D:TCH 20 87 87 Historical 47.5 81 32
12.0 34 20 31 1.07 0.51 90 72
26 UNNAMED SLOUGH 14 89 89 Current 145.0 112 39
2.5 28 lo 15 0.49 0.65 52 60
31 ST AUGUSTINE BRAN7:: 14 88 88 Historical 131.0 12@ 95
5.5 38 15 34 1.04 0.87 0 700 88 65
33 CENTRAL DRAINAGE D:7CH 13 89 B9 Curre@t 71.5 68 127
11.0 93 26 29 1.61 0.80 72 81
37 MALL DRAINAGE D:'CH 21 89 89 Current 61.0 165 34
4.0 23 9 18 0.65 0.32 62 59
39 LLOYD CREEK 6 92 92 Current 3.1 0.5 55 1 9.0
91 15 6.5 13 0.69 0.12 302 203 50 24
40 GODBY DITCH 1B 87 88 Historical 84.7 96 44
7.5 62 24 31 0.72 0.63 400 83 71
42 UNNAMED RUN 35 87 80 Historical 36.o 61 @5
8.0 60 15 13 0.89 0.43 0 Soo 48 66

46   WARD CREEK   5 92 92   Current   1.9 0.7   100 4   1.2
12   10   6.0   4 0.80 0.07   800   42   30   45

LEGEND: BOD-BIOCREMICAL OXYGEN DEMAND MG/L   DO-DISSOLVED OXYGEN MG/L
MAX #OBS-MAXIMUM NUMBER OF SAMPLES   SD-SECCHI DISC METERS   TURB-TURBIDITY MG/L
AJK-ALKALINITY MG/L   CHIA-CHLOROPHYLL UGIL   DOSAT-DO I SATORATION
NAT-NATURAL SUBSTRATE DIVERSITY   TOC-TOTAL ORGANIC CARBON M/L   FOI-WATER QUALITY INDEX
ART-ARTIFICIAL SUBSTW_z   COD-CHEMICAL OXYGEN 15EMANp MG/L   END YR-ENDING YEAR
NITRO-TOTAL NITROGEN MG/L'   TOTAL-TOTAL POLIFORM MPN/100ML
BEG YR-BEGINNING SAMPLTNG YEAR COLOR-COLOR PCU   FECL-FECAL COLiFORM MPN/100ML
PH-PH STANDARD UNITS   TSI-TROPHIC STATE INDEX
BECK-BECK'S BIOTIC INDEX   -)ND-CONDUCTIVITY UMHOS   FLOW-FLOW CFS
PHOS-TOTAL PHOSPHORUS MG/L   TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT   USGS HYDROLOGIC   UNIT: 03120001 ST
MARKS RIVER
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'x'-EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES   AND CRITERIA
'0'--WITHIN SCREENING CRITERIA
'.'=MISSING DATA   I   I
I RANK DATA RECORDI   TN   I STREAM   I LAKE   I   PH   I   ALK
I TURB &   I COND   I OXYGEN   I   DO   ]COLIFORM   I BIOL   I CHLA   I SECCHI I
I------------------ I   I   TP   I   TP   I   I
I   TSS   I   I DEMAND   I   I BACTI   I   DIV   I   I DISC   I

I VJQI CURRENT I I I I I
I I I I I I I I I
WATERSHED I OR OR I TN>2.0 I TP>.46 I TP>.12 I PH>8.8 IALK<20
ITURB>16.51COND>12751 BOD>3.3 I DO<4 ITOT>3700 IDIART<1.951 CHLA>40 I Sl><. 71
ID NAME I TSI HISTORICAL I I I I PH<5.2 I
I TSS>18 I I COD>102 I IFECAL>4701DINAT<1.5 I I I
----- ---
I TOC>27.51 I I BECK<5.5 I I I

� WATER BODY TYPE: LAKE
2 LOST LAKE REC AREA GOOD Historical 1 0 1 1 0 1 x I x
1 0 1
13 CLEAR LAKE iGOOD Historical 1 0 1 1 0 1 x I x
1 0 1
15 Lake Munson IPOOR Historical I x I I x 1 0 1 0
1 x I I x 1 0 1 0 1 x I x 1
21 Lake Bradford IGOOD Current 1 0 1 1 0 1 0 1 x
I a I 1 0 1 0 1 0 1 0 1 0 1
27 BRADFORD BROOK IGOOD Historical 1 0 1 1 0 1 x I x
1 0 1 1 1 1 1 1 . I
34 LAKE LAFAYETTE DRAIN IGOOD Current 1 0 1 1 x 1 0 1 x
I x I 1 0 1 0 1 0 1 0 1 x 1
43 ALFORD ARM IGOOD Current 1 0 1 1 x I x
I x I I x I I I I . 1
45 Lake Miccosukee IGOOD Current 1 0 1 1 0 1 0 x
1 0 1 1 0 1 x 1 0 1 0 1 x I

�WATER BODY TYPE: SPRING
1 KINI SPRING IGOOD Historical 1 0 1 0 1 1 0 1 0
1 0 1 1 0 1

WATER BODY TYPE: STREAM
4 BIG BOGGY BRANCH IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 0 1 0 1 0 1 0 1 x 1
5 WAKULLA RIVER IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 1 0 1 0 0 1 0 1
6 UNNAMED DRAIN IGOOD Historical 1 0 1 0 1 1 x I x
1 0 1
8 BLACK CREEK IGOOD Historical 1 0 1 0 1 1 0 1
1 1
9 LOST CREEK IGOOD Current 1 0 1 0 1 1 0 1 0
1 a I 1 0 1 0 1 0 1 1 x I
10 ST. MARKS RIVER IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 0 1 0 1 0 1 x 1 0 1
11 MCBRIDE SLOUGH IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 1 0 1 x 1 0 1 0 1

12 Munson Sink IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 1 0 1 0 1 0 1 x 1

16 Munson Slough (below L IGOOD Current 1 0 1 0 1 1 0 1 0
1 0 1 1 0 1 0 1 0 1 x 1

17 Munson Slough (above L IFAIR Current 1 0 1 0 1 1 0 1 0
1 0 1 1 0 1 x 1 0 1 0 1

25 EAST DRAINAGE DITCH IPOOR Historical 1 0 1 x I I 1 0
1 x I I x I I I

26 UNNAMED SLOUGH IUNKN Current 1 0 1 x I I I x
I x I 1 0 1 1 1

31 ST AUGUSTINE BRANCH IPOOR Historical 1 0 1 x I I 1 0
1 x I x I x I

33 CENTRAL DRAINAGE DITCH IPOOR Current 1 0 1 x I 1 0
1 x I x I

37 MALL DRAINAGE DITCH IFAIR Current 1 0 1 0 1 1 x
I x I x I

38 LLOYD CREEK IGOOD Current 1 0 1 0 1 1 0 x
1 0 1 0 1 0 0 1 1 x 1

40 GODBY DITCH IPOOR Historical 1 0 1 x I 1 0
1 x I x 1 0 1 1 1 1

42 UNNAMED RUN IPOOR Historical 1 0 1 0 1 1 x
I x I x I x 1 1

46 WARD CREEK IFAIR Current 1 0 1 0 1 1 0 1 x
1 0 1 0 1 x 1 0 1 x I

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS WQI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS
BECK-BECK'S BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,COD,TOC
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-BIOL40GICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

SliRFACE WATER QUA@:-Y ASSESSMENT REPORT - USGS HYDROLOGIC
UNIT: 03120001 ST MARKS RIVER
-RENDS_SOURCv_s_c____AYUP

'x'=DEGRA:)ING -.%ZYDD 1984 - 1993 TRENDS
'0'=STABLE TREKD ---

'-'=.IMPROVING 7REND I 1W TI T I C SI P Al T TI B
TI D DI T F1 T F I<--- PLEASE READ THESE COLUMNS VERTICALLY
,.'=MISSING DATA [QUALITY RANK (OVER-IQ or S(N P H DI H LI U S(0
Of 0 01 C CI E L I
i------------- I ALL II II L I Ki R SI D
CI SI 0 of M 0 1
1 WQI ITRENDI I A I I B I
I A[L LI P W I
WATERSHED I MEETS OR I I I I I I
I If I If I
ID NAME IUSE ? TSI I I I I I I
I I I I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
----- ------------------------ I-------------

� WATER BODY TYPE: LA-KE
2 LOST LAKE RE', AR:.k IYES GOODI I I I
i3 CLEAR LAKE IYES GOODI I I I
15 Lake Yunson INO POOR I I I I
2. Lake Bradford IYES GOOD I I I I . I . .1 .1
.1 .1 .1 1
27 BRADFORD BROOK IYES GOODI I I I
34 LAKE LAFAYETTE IYES GOODI I I I
43 ALFORD ARM IYES GOODI I I I
45 Lake Miccosukee IYES GOOD I I I I

�WATER BODY TYPE: S?--,:IZG
I KIN! SPRING IYES GOOD I I I I I I

�WATER BODY TYPE: STREAM
4 B-G BOGGY BPk';C:-' IYES GOODI I I I
5 WAK`,JLLA RIVER IYES GOODI I I I

6 T.NNAMED DRAIN IYES GOODI I I I
3 BLACK CREEK IYES GOODI I I I I I
I I 1 1
9 LOST CREEK]YES GOODI I I . . . . I . .1 .1
.1 .1 .1 1
10 SZ. MAAKS RIVER IYES GOOD 1 0 1 0 1 0 0 . .1 0 01 0 .1
.1 0 01 01 0 1
11 M,-BRIDE SLOUGH IYES GOOD I I I I
12 Munson Sink IYES GOODI I I I
16 Munson Slough ('_-e*_ow L IYES GOODI I I I
17 Munson Slough (above L IPARTIAL FAIRI I I I
25 EAST DRAINAGE [No POOR(I I . . . .
26 UNNAMED SLOUGH INO UNKNI I I . . . .
31 ST AUTUSTINE INO POORI I
33 CENTRA.L DRAINAGE Z:TCH INO POORI I I . . . .
37 MALL DRAINAGE IPARTIAL FAIRI I I . . . .
38 LLOYD CREEK (YES GOODI I
40 GODBY DITCH INO POORI I I . . . .
42 UNNAMED XUN IND POORI I I . . . .
46 WARD CREEK)PARTIAL FAIRJ I I . .

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATURE
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLOW TN-NITROGEN
WQI-WATER OULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN D-@-ANTD MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHLOROPHYLL PH-PH TP-PHOSPHORUS
DO-DTSSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED
SOLIDS

NPS
QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM
WITH POLLUTANT OR SOURCE
THE - ON MAPID INDICATES NO STORET
INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR
LEGEND FOR THIS TABLE-

-- CATNAME=ST MARKS
RIVER HUC=03120001 ---

N B S P 0 S
0 F T F 0
U A E E T A
H T T I U I T
M
T C D S H D 0 L
A H H S R S N N H
A B W W R T I T E E X I
M B E E H A B H 0 0 E
P W A Q Q I E M I R B Y N
E I F R R K L W 1 0 D S F R
B S 3 N E R E 0 C C R G I
T T L M P I G E D D E W I S I S
T I 1 0 P N I N I I H I E T P A A 0 A 0 L A E 1
0 C I S Y N T A R S L U C F 0
D D N 5 S T A T L D E S N Y
H L T W L L L L D T R L M H M D P G E L D R N M T

3- 1071 DIRECT RUNOFF TO BAY GOOD
7* 1032 HOSFORD BRANCH REACH THREAT x
x x
10 793B ST. MARKS RIVER GOOD THREAT x
x x x
14* 1000 LIMESTONE CREEK THREAT x x
x x x
18* 977 MOORE BRANCH THREAT x x
x x x
19- 965 SWEETWXTER BRANCH THREAT x
x x x x
20- 942 CROW POND OUTLET THREAT K x
x
22* 932 UNNAMED BRANCH THREAT x x
x

23- 910 CUBA BRANCH THREAT x x x
x x x x
24* 918 BURNT MILL CREEK THREAT K x
x
28* 922 UNNAMED BRANCH GOOD
29* 899 LANG BRANCH THREAT x x
x x x
30* 912 UNNAMED BRANCH GOOD
32* 873 HALL BRANCH THREAT x x x
x x x x
35* 868 UNNAMED BRANCH GOOD
36- 862 POLAR MILL BRANCH THREn x
x x x
38 791A LLOYD CREEK GOOD THREAT x x x x
x x x x x x x
39* 808 COPELAND SINK DRAIN THREAT x x x x
x x
41* 761 MORRIS BRANCH THREAT x x
x x
44* 716 CANEY BRANCH THREAT x x
x x
45 791L Lake Miccosukee GOOD THREAT x x x x
x x x x x x x
46 459 WARD CREEK FAIR THREAT x x x x
x x x x x x x

4,

YELLOW RFvlER,,.

BIG

POND CREEK

CREEK

YELLOW

K

EAST BAY

YELLOW RIVER BASIN
03140103

WATER QUALITY
GOOD

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
INDICATES QUALITATIVE ASSESSMENT

THREATENED
FAIR
POOR
UNKNOWN

YELLOW RIVER BASIN

Basic Fact

Drainage Area: 1,320 square miles (about 860 in Florida)
Major Land Uses: forest, agriculture
Population Density: low (Crestview)
Major Pollution Sources: WWTP, agriculture, runoff
Best Water Quality Areas: most of Yellow and Shoal Rivers
Worst Water Quality Areas: Trammel Creek
Water Quality Trends: stable quality at one site
OFW Waterbodies:
  Shoal River
  Yellow River Marsh State Aquatic Preserve
SWIM Waterbodies: part of Pensacola Bay System SWIM watershed
Reference Reports:
  Florida Rivers Assessment DEP/FREAC/NPS, 1989
  Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
  Pensacola Bay SWIM Plan, NWFWMD, 1990
Basin Water Quality Experts:
  Gray Bass, FGFWFC, 904/957-4172
  Don Ray, DEP (Pensacola), 904/444-8340
  Glenn Butts, DEP (Pensacola), 904/444-8380

In the News

* Health advisories recommending limited consumption of largemouth bass due to mercury content have been issued for the Yellow River.
* A sewage spill into Trammel Creek from the Crestview WWTP resulted in large fish kill during November 1990. Approximately 13,000 sport fish died.
  Since 1988, Crestview WWTP has been cited for 2693 violations of federal rules regarding discharge of untreated or inadequately treated sewage EPA has proposed a $115,000 fine.

Ecological Characterization

The Yellow River Basin originates in Covington County, Alabama and flows southward for approximately 92 miles before emptying into Blackwater Bay in Florida. The Yellow River Basin drains roughly 860 square miles of northwestern Florida. The largest tributary, the Shoal River, joins the Yellow River near Crestview, Florida, discharging an average of 1, 100 cfs. The rate of flow for the Yellow River (40 miles above the mouth) averages 1,500 cfs. The Yellow River is so named because its tannic waters appear yellowish against the white sandy river bed. The Yellow River's drainage basin is ,the highest in Florida and contains large sandy deposits' thought to be part of a barrier islands system when sea levels were higher. The river runs swiftly and creates high banks and large sand bars. The Shoal River is similar in character and drainage. After its confluence with the Shoal, the Yellow River becomes deeper and slower as it flows through the low swamp and marsh lands to the bay. Land use in the Yellow River Basin is primarily forest and agriculture. Crestview and Milligan are the largest towns in this basin. Much of the southern basin is a large Air Force base. It contains several landing fields and numerous roads.

Anthropogenic Impacts

The Yellow River has excellent water quality. The Shoal River has been declared an Outstanding Florida Water. All stream reaches in the basin which have been sampled exhibit good overall quality except for Trammel Creek. Upper reaches of the Yellow River have some impact from Alabama agricultural runoff, Florida hog lots and other agricultural activities.

Trammel Creek received treated wastewater from the City of Crestview WWTP (1.5 MGD design capacity) until April 1994. The creek exhibits nutrient and turbidity problems. The Crestview plant has had a history of treatment problems. A sewage spill in Trammel Creek in November, 1990 resulted in the death of approximately 13,000 sport fish. The City of Crestview constructed a new WVV7P and now disposes all of it's effluent to an upland site. The old discharge into Trammel Creek was discontinued inApril, 1994. Trammel Creek joins the Yellow River approximately 3 112miles west of the town of Crestview. The Yellow River was posted for non-contact by the Okaloosa County Health Department several times in the past two years after system failures at the Crestview WWTP. Runoff from the City of Crestview goes both to the Trammel Creek-Yellow River drainage and to the lower Shoal River drainage.

In addition, some areas in the basin near agricultural areas are threatened by nutrient, silt and BOD loadings from runoff. Particularly noted.are Pond Creek and the Shoal River near Crestview.

Horsehead Creek, east of Laurel Hill, was severely altered due to non-vegetated eroded banks, sediment filled channel, and livestock waste disposal.

Juniper Creek below Laurel Hill was in need of habitat restoration activities because of historical clearing and moving of the stream channel resulting in the lack of fish and wildlife propagation.

Hurricane Creek in the State Forest had a low diversity and an unbalanced aquatic community below the impoundment of Hurricane Lake.

Juniper Creek draining Crestview into Shoal River continues to be under enforcement due to severe erosion from unpaved Raspberry Road and clay/sand borrow pits.

USGS HYDROLOGIC UNIT: 03140103 YELLOW RIVER

```
INDEX         GOOD FAIR POOR
                   SURFACE WA.:IR QUALITY DATA FOR 1970-1993
----------- ----- ----- -----
                   ME:)'X'; V)L-:;'--S FOR EACH WATERSHED
WQI-RIVER        0-44    45-59-60-90
                   C'J.R.R@- -_-RIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
TSI-ESTUARY 0-49         50-59 60-100       -----
                   PER:^= @R:OR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION
TSI-LAKE         0-59    60-69 70-100           1


BIOLOGICAL                             WATER
               WA7ERS-_7                                                 WATERSHED DATA RECORD
WATER               DISSOLVED           OXYGEN              PH            TROPHIC                             SPECIES
QUALITY
               ID       NKM_                                            ----------------------
CLARITY                OXYGEN           DEMAND         ALKALINITY            STATUS          COLIFORM
DIVERSITY           CONE) FLOW           INDICES
               ----- ---------------------------------           MAX     BEG   END       DATA  ----------------------
------ ---------- --------------- ---------- --------------- ---------- --------------- ----- ----- ---------------
```

```
                                                                      #OBS    YR    YR.      PERIOD          TURB    SD
COLOR        TSS    DO DOSAT       BOD COD        TOC   PH      ALK    NITRO PHOS      CHLA  TOTAL FECL NAT ART BECK
COND FLOW         WQI       TSI

                   'WA-7--, B,:` -.Y?E: STREAM
                   i              CREEK                                 15 89    93   Current              4.0    0.3
40        3    7.3    74     3.3             7   6.4      23    2.14  0.65        2   605     80
121                   48
                   2    Y-711CW RIVER                                   29 90    93   Current             12.6    0.9
65        5    6.8    70     0.2             5   6.0      11    0.47  0.03             418    114
33                    40
                   3              CREEK                                 6  92    92   Current              1.1    1.0
10        1    8.7   101                     1   5.5       1    0.20  0.02                       6
14                    6
                   4    Y--*---W RIVER                                  69 73    85   Historical          13.5    0.9
55       12     7.3    77     0.7     16     6   6.3      12    0.47  0.04        1   510    129     2.3 3.9
49      34                   35
                   5    F.Al-NE CREEK                                   6  92    92   Current              0.9    0.8
15        1    8.6    94                     1   5.6       1    0.16  0.02                   22
13                    9
                   6    ?--kRL :REEK                                    8  92    93   Current              6.5    1.2
55        4    8.0    82                     5   6.1       2    0.40  0.01                  520
21                    31
                   7             31:VER                                 13 90    93   Current             15.5      .
.    8.0     86                        5.7        6   0.46  0.03                                                   20
34
                   8    ::T: -7K                                        2  85    85   Historical           5.2    0.4
5   18     8.9   102     0.7              5.1        1   0.29  0.04       2  3800    490           3.3
12                    34
                   9    iA:,L M:'-L    CREEK                            2  85    85   Historical           9.0    0.7
40       11     8.1    97     0.3                  5.8       1    0.59  0.06        2  2200    280
23                    35
                   10   SHCAL -.:VER                                    8  90    92   Current              9.0
65       10     7.8    78     0.4             5   6.2            0.58  0.03             750    220
31                    34
                   11             WOODS  CREEK                          9  92    93   Current              3.5    0.5
45        2    8.7    89                     4   6.2       3    0.42  0.01                  219
23                    23
                   12   POK-- -:,E_-K                                   2  85    85   Historical           7.5      .
35       13     8.6    99     0.4                  6.5       4    0.58  0.07        2  3000    170
36                    35
                   13             _1:VER                                8  92    93   Current              4.8    0.5
50        3    8.7    87                     5   5.7       2    0.66  0.01                   98
23                    24
                   14   GUM ::z7K                                       5  92    92   Current              6.0    0.7
120       5    6.9    79                    12   4.7       1    0.59  0.02            1300    200
23                    38
```

15 ?01@7= CREEK 7 92 92 Current 2.9 0.3
20 3 8.8 95 1 5.8 1 0.32 0.02 40
21 14
,:7-
6 5.5 2 6.67 0.02 3000 600 32 34
16 Z7REEK 6 92 92 Current 3.6 0.5
80 3 6.4 72
17 ='R@7_-Y @7REEK 6 92 92 Current 6.0 0.3
100 4 8.0 90 8 6.5 2 0.63 0.02 8000 610
47 35
18 P:K_-- '_@OG CREEK 8 92 93 Current 4.8 0.5
35 2 8.6 86 3 6.2 5 0.40 0.01 72
30 is
19 Z_UEK 7 92 92 Current 1.6 0.7
50 1 6.0 64 4 5.7 1 0.37 0.02 so
20 21
20 B:, HC_-,ST_ CREEK 6 92 92 Current 5.5 0.5
50 2 6.9 94 3 6.4 5 0.32 0.02 200
24 25
21 POND Z.:LEEK 26 91 93 Current 7.4 0.8
60 3 6.3 72 0.8 3 6.6 13 0.70 0.05 1225 150
66 34
22 B:G ::.:=K 6 92 92 Current 9.4 0.4
50 9 8.5 89 3 6.4 3 0.44 0.02 . 390
25 32
23 -RIVER 60 89 93 Current 10.3 0.7
45 5 7.8 86 0.2 3 6.8 22 0.47 0.03 2 405 115
48 1075 37

LEGEND: BOD-BIOCHEMICAL OXYGEN DEMAND MG/L DO-DISSOLVED OXYGEN MG/L MAX #OBS-MAXIMUM NUMBER OF SAMPLES SD-SECCHI DISC METERS TURB-TURBIDITY MGIL
ALK-ALKA.L:N:-'-' MG/L CHLA-CHLOROPHYLL UG/L DOSAT-DO I SATURATION NAT-NATURAL SUBSTRATE DIVERSITY TOC-TOTAL ORGANIC CARBON MG/L V.1QI-WATER QUALITY INDEX
ART-ARTIF:@::.k@ SUBSTRATE DI COD-CHEMICAL OXYGEN DEMAND MG/L END YR-ENDING YEAR NITRO-TOTAL NITROGEN MG/L TOTAL-TOTAL COLIFORM MPN/100ML
BEG YR-B-_G:NN:N_1 SAMPLING YEAR COLOR-COLOR PCU FECL-FECAL COLIFORM MPN/100ML PH-PH STANDARD UNITS ISI-TROPHIC STATE INDEX
BECK-BECK'S B:^-7:C INDEX COND-CONDUCTIVITYUMHOS FLOW-FLOW CFS MOS-TOTAL PHOSPHORUS MG/L TSS-TOTAL SUSPENDED SOLIDS MG/L

SURFACE WATER QUALITY DATA SCREENING REPORT USGS HYDROLOGIC UNIT: 03140103 YELLOW RIVER
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'X'=EXCEEDS SCREENING CRITERIA
SCREENING VARIABLES AND CRITERIA
'0'=WITHIN'SCREENING CRITERIA
'.'=MISSING DATA

```
I
                                           I RANK DATA RECORDI      IN    ISTREAM   I LAKE     I    PH    I   ALK    I
TURB &    I COND     I OXYGEN   I    DO    1COLIFORM  I BIOL      I CHIA      ISECCHI   I
                                           I------------------  I         I   TP    I  TP     I         I          I
TSS     I          I DEMAND   I          I BACTI    I    DIV    I           I DISC    I
                                           I WQI     CURRENT I            I         I         I         I          I
I         I          I          I          I          I          I         I
       WATERSHED                           I OR        OR       ITN>2.0    TP>.46   ITP>.12   I PH>8.8   I ALK<20
ITURB>16.51COND>12751    BOD>3.3  I  DO<4    ITOT>3700  IDIART<1.951  CHLA>40   I SD<.7   I
       ID     NAME                         I TSI   HISTORICAL  I         i         I         I PH<5.2   I          I
TSS>18    I          I COD>102  I          IFECAL>4701DINAT<1.5   I
```

```
      -----   -------------------------------------------                                                        I
I TOC>27.51          I         I BECK<5.5  I

         WATER BODY TYPE: STREAM
         I   TRAMMEL CREEK                IFAIR   Current      I   x     I    x    I         1     0    1     0    1
0     1     0    1     x    1     0    1     0    1             0     1     x   1
         2   YELLOW RIVER                 IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                   1     0   1
         3   BOILING CREEK                IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                   1     0   1
         4   YELLOW RIVER                 IGOOD   Historical   1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1     0    1     0     1     0   1
         5   MALONE CREEK                 IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                         0   1
         6   PEARL CREEK                  IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     x    1                         0   1
         7   SHOAL RIVER                  IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1          1     0    1          1                         .   I
         8   TITI CREEK                   IGOOD   Historical   1   0     1    0    1         1     x    I     x    1
0     1          1     0    1     0    1     x    1     0    1     0     1     x   1
         9   LAIRD MILL CREEK             IGOOD   Historical   1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1          1     0     1     0   1
       10    SHOAL RIVER                  IGOOD   Current      1   0     1    0    1         1     0    1          1
0     1          1     0    1     0    1     0    1                   1     .   I
       11    PINEY WOODS CREEK            IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                   1     x   1
       12    POND CREEK                   IGOOD   Historical   1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1             0     1     .   1
       13    SHOAL RIVER                  IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                   1     x   1
       14    GUM CREEK                    IGOOD   Current      1   0     1    0    1         1     x    I     x    1
0     1          1     0    1     0    1     0    1                   1     0   1
       15    POVERTY CREEK                IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                         x   1
       16    LITTLE CREEK                 IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     x    I                         x
       17    TURKEY CREEK                 IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     x    I                         x
       18    PINE LOG CREEK               IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                         x
       19    MURDER CREEK                 IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                         0   1
       20    BIG HORSE CREEK              IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                         x   1
       21    POND CREEK                   IGOOD   Current      1   0     1    0    1         1     0    1     x    1
0     1          1     0    1     0    1     0    1                         0   1
```

22 BIG CREEK IGOOD Current 1 0 1 0 1 1 0 1 x 1
0 1 1 0 1 0 0 1 1 x 1
23 YELLOW RIVER IGOOD Current 1 0 1 0 1 0 1
0 1 0 1 0 1 0 0 1 1 0 0 1

LEGEND: COND-CONDUCTIVITY FECAL-FECAL COLIFORM BACTERIA
TP-PHOSPHORUS WI OR TSI-WATER QUALITY INDEX RATING
ALK-ALKALINITY DO-DISSOLVED OXYGEN HISTORICAL-1970 TO 1988
TOT-TOTAL COLIFORM BACTERIA WHICH INDEX USED, WQI OR TSI, IS
BECK-BECK'S BIOTIC INDEX CURRENT-1989 TO 1993 OXYGEN DEMAND-BOD,OOD,T0C
TSS-TOTAL SUSPENDED SOLIDS BASED ON WATERBODY TYPE
BIOL DIV-BIOLOGICAL DIVERSITY DIART-ARTIFICIAL SUBSTRATE DIVERSITY PH-PH
TURB-TURBIDITY
CHLA-CHLOROPHYLL DINAT-NATURAL SUBSTRATE DIVERSITY TN-NITROGEN
SD-SECCHI DISC METERS

```
                lx'=DEGRADING TREND                                        1984 - 1993 TRENDS
                '0'=STABLE TREND                            ----------------------------------------------------
-
                '+'=IMPROVING TREND                              W       TI T T C Sl P Al   T TI B TI   D DI  T
Fl  T F  l<--- PLEASE READ THESE COLUMNS VERTICALLY
                '.'=MISSING DATA              IQUALITY RANK    IOVER-IQ or Sl  N P H  DI H Ll   U Sl 0 01   0 01  C
Cl  E L  I
                                              I-------------   I ALL ;I      Il    L    I   KI  R Sl D  Cl    St  0
01  M 0  1
                                              1         WQI ITRENDI         I     A    I     I B  I     I    Al  L
Ll  P W  I
               WATERSHED                      I MEETS   OR I         I       I          I     I    I     I    Tj  1
11       1
               ID   NAME                      IUSE ?    TSI    I     I
I DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
               ----- ------------------------     I-------------
-----------------------------------------------------------------------------------------------

               WATER BODY TYPE: STREAM
               I    TRAMMEL CREEK             IPARTIAL  FAIRI        I       I . . . . . I
               2    YELLOW RIVER              IYES      GOODI        I       I . . . . . I
               3    BOILING CREEK             IYES      GOODI        I       I . . . . . I
               4    YELLOW RIVER              IYES      GOODI        I       I . . . . . I
               5    MALONE CREEK              IYES      GOODI        I         . .      1   .1    .1    .1    .1
.1       1
               6    PEARL CREEK               IYES      GOODI        I       I . . . . . 1   .1    .1    .1    .1
.1       1
               7    SHOAL RIVER               IYES      GOODI        I       I . .      1   .1    .1    .1    .1
.1       1
               8    TITI CREEK                IYES      GOODI        I       I . . . . . 1   .1    .1
               9    LAIRD MILL CREEK          IYES      GOODI        I       I . . . . . 1   .1    .1
               10   SHOAL RIVER               IYES      GOOD]        I       I . . . . .
               11   PINEY WOODS CREEK         IYES      GOODI        I       I . . . . .
               12   POND CREEK                IYES      GOOD]        I       I . . . . .
               13   SHOAL RIVER               IYES      GOODI        I       I . . . . .
               14   GUM CREEK                 IYES      GOODI        I       I . . . . .
               15   POVERTY CREEK             IYES      GOODI        I       I . . . . .
               16   LITTLE CREEK              IYES      GOODI        I       I . . . . .
               17   TURKEY CREEK              IYES      GOODI        I       I . .      1   .1    .1    .1    .1
.1       1
               18   PINE LOG CREEK            IYES      GOODI        I       I . . . . . 1   .1    .1
               19   MURDER CREEK              [YES      GOODI        I       I . . . . . 1   .1    .1
               20   BIG HORSE CREEK           IYES      GOOD1        I       I . .      1   .1    .1    .1    .1
.1       1
               21   POND CREEK                IYES      GOODI        I       I . . . . . 1   .1    .1
               22   BIG CREEK                 IYES      GOODI        I       I . . . . . 1   .1    .1
```

23 YELLOW RIVER IYES GOODI 0 1 0 1 0 0 . .1 x 01 0 01 .1 0 01
01 0 0 1

LEGEND: DOSAT-DO SATURATION TCOLI-TOTAL COLIFORM
TURB-TURBIDITY
FCOLI-FECAL COLIFORM TEMP-TEMPERATUR9
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
ALK-ALKALINITY FLOW-FLCW TN-NITROGEN
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS
BOD-BIOCHEM. OXYGEN DEMAND MEETS USE-MEETS DESIGNATED USE TOC-T.ORGANIC CARBON
CHLA-CHLORCPHYLL PH-PH TP-PHOSPHORUS
DO-DISSOLVED OXYGEN SD-SECCHI DISC METERS TSS-TOTAL SUSPENDED SOLIDS

I