
Section 6

Concerns and Priority Issues

The assessments in Section 5 present a number of water quality and quantity concerns within the Flint River Basin. This section combines the assessment information to identify priority issues for which management strategies are needed. For many waters, ongoing control strategies are expected to result in attainment of designated uses. In some cases, however, the development of additional management strategies may be required or implemented in order to achieve water quality goals.

Long-term priorities for addressing water quality concerns have not yet been finalized; however, short-term water quality action priorities for EPD are summarized in Section 6.2. Priorities for addressing water quantity issues within the Flint River Basin will be identified as part of the ACT/ACF study, and are summarized in Section 6.3.

6.1 Identified Water Quality Planning and Management Concerns

Section 5 identified both site-specific and generalized sources of water quality stressors, based on data from water quality, fish tissue, and macroinvertebrate sampling. Some of the concerns were isolated to individual stream segments, while other stressors were evident throughout the basin. The criterion listed most frequently in the 1994-1995 Water Quality Assessment as a contributor to non-supporting or partially-supporting status in the basin is fecal coliform bacteria (35 segments covering 365 miles) followed by metals (22 segments covering 165 miles). Urban runoff was listed most frequently as the source of fecal coliform and metals.

Summarized below are the priority water quality concerns that were identified for each subbasin as they affect the primary uses. These uses include fishing, recreation, drinking water quality, fish consumption, and water supply (flow). Each concern summarizes the linkage between stressor sources and water quality impairment or threat. In some cases, the source of the stressor is unknown.

The following discussion is broken out by the three major sections in the basin—upper Flint, middle Flint, and lower Flint. Lake Blackshear and Lake Worth are treated under the middle Flint. Table 6-1 summarizes the stressors and associated sources for each section of the basin, while Table 6-2 summarizes the use impacts for each section and lists the stressors affecting the uses.

Problem Statements

Upper Flint (HUC 03130005)

This is the most urban subbasin in the Flint River Basin. The population in the upper Flint almost equals half of the remaining population in the entire Flint River Basin. Stressors are due primarily to urban nonpoint source inputs from southern Metropolitan Atlanta and Hartsfield International Airport. This subbasin reported the greatest number of violations to water quality standards criteria for fecal coliform, dissolved oxygen, metals, biota, toxicity, and pH.

Table 6-1. Summary of Concerns in the Flint River Basin

Stressor	Sources of Stressor		
	Upper Flint (03130005)	Middle Flint (03130006, 03130007)	Lower Flint (03130008, 03130009, 03130010)
Fecal Coliform Bacteria	urban runoff, agricultural nonpoint sources, point source discharges	urban runoff, nonpoint sources,	urban runoff, CSOs, agricultural nonpoint sources, point source discharges
Metals	urban runoff, point source discharges	urban runoff, nonpoint sources	nonpoint sources
Dissolved Oxygen	urban runoff, point source discharges	nonpoint sources	
Erosion/ Sedimentation	urban runoff, increased development, rural roads, agricultural nonpoint sources and forestry practices	agricultural nonpoint sources, rural roads, forestry practices	agricultural nonpoint sources, rural roads, forestry practices
Nutrients		agricultural nonpoint sources, point source discharges	agricultural nonpoint sources
Water Supply/Flow	water withdrawals for Atlanta area	groundwater depletion	groundwater depletion, low instream flows
Flooding	habitat modification, urbanization	habitat modification, urbanization	habitat modification, urbanization

Low dissolved oxygen concentrations are due to a combination of point source discharges from wastewater treatment plants and urban runoff. This was the only subbasin in the Flint River Basin to have a fish consumption guideline which was for mercury in largemouth bass and channel catfish.

Table 6-2. Summary of Sources of Use Impairments in the Flint River Basin

Water Use Impacted	Stressors		
	Upper Flint (03130005)	Middle Flint (03130006, 03130007)	Lower Flint (03130008, 03130009, 03130010)
Fishing (Support for Aquatic Life)	metals, fecal coliform, sedimentation, low dissolved oxygen, flooding	metals, fecal coliform, nutrients, low dissolved oxygen, sedimentation, water supply, flooding	metals, fecal coliform, sedimentation, groundwater withdrawals, flooding
Fishing (Fish Consumption)	metals		
Recreation	fecal coliform	fecal coliform, nutrients	fecal coliform
Drinking Water	fecal coliform		nutrients, groundwater withdrawals
Water Supply/Flow	flooding	groundwater withdrawals, flooding	groundwater withdrawals, flooding

Stressors, Associated Use Impacts and Possible Sources of Stressors

A. Metals: The water use classification of fishing was not fully supported in 6 stream segments due to exceedances of water quality standards for metals (lead, zinc, and copper). One station had zinc violations, two stations between Hartsfield International Airport and Flat Shoals had lead violations due to urban runoff, three monitored tributaries draining the metropolitan Atlanta area of the subbasin had violations of standards for lead, and one of these had additional standard violations for copper and zinc.

B. Fish Consumption Guidelines: The water use classification of fishing was not fully supported in the Flint River mainstem (in Spalding/Fayette counties and Meriwether/Pike/Upson counties) based on fish consumption guidelines due to mercury. The guidelines are for largemouth bass and shoal bass, respectively.

C. Fecal Coliform Bacteria: The water use classification of fishing was not fully supported in 16 segments due to exceedances of the water quality standard for fecal coliform bacteria. Twelve monitored tributaries had violations of the standard for fecal coliform bacteria in urban areas (Atlanta, Griffin, Thomaston). These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, and rural nonpoint sources. An additional tributary near Greenville had violations of the fecal coliform standards due to a municipal discharge that has since been eliminated.

D. Dissolved Oxygen: The water use classification of fishing was not fully supported in 7 stream segments due to dissolved oxygen concentrations below water quality standards. Oxygen demand in urban runoff from metropolitan Atlanta contributed to reduced dissolved oxygen levels. Dissolved oxygen violations were also found in Flat Creek, Camp Creek and Beaver Creek, due to nonpoint sources.

E. Erosion/Sedimentation: The water use classifications of fishing and drinking water are potentially threatened in many segments, by erosion and loading of sediment, which can alter stream morphology, impact habitat, reduce water clarity, and clog drinking water systems. There are 15 stream segments listed in this subbasin as partially supporting designated uses due to poor fish communities. Sediment may be a factor influencing fish communities in these areas. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture.

F. Water Supply/Flows: Water supply to meet municipal water supply needs is threatened due to growth pressures in the subbasin.

G. Flooding: Flooding in the Flint River Basin threatens people and property located within the floodplain, as demonstrated during the massive floods of 1994. Flooding may also breach dams, and can contaminate drinking water wells located within the floodplain.

Middle Flint (HUC 03130006 and HUC 03130007), including Lakes Blackshear and Worth

This section of the Flint River Basin supports both suburban and rural land uses. The largest point source discharge in the Flint River Basin is located here. HUC 03130006 had the second largest number of violations in the basin for fecal coliform, dissolved oxygen, and metals. These are most likely attributed to both point source discharges and nonpoint source impacts from urban and rural sources.

Lake Blackshear and Lake Worth are located in the middle Flint so the surrounding watersheds can have a significant impact on loadings to the lakes. Both lakes support strong fisheries and provide a significant recreational resource in the basin. Both of the dams from these lakes were heavily damaged from the tropical storm Alberto in 1994. The dams have since been rebuilt and the reservoirs have been restocked. The lake water quality is directly affected by the upstream flows coming into the lakes. Therefore, sources of impairment in the lakes most likely result from activities upstream from the lakes.

Stressors, Associated Use Impacts and Possible Sources of Stressors

A. Metals: The water use classification of fishing was not fully supported in 13 stream segments due to exceedances of water quality standards for metals (lead, zinc, and copper) from nonpoint sources. The water use classification of recreation was not supported in a portion of Lake Blackshear due to metals (lead, nickel, zinc, and copper) from urban runoff and other nonpoint sources. A portion of the City of Cordele lies in the Gum Creek watershed, which drains to Lake Blackshear.

B. Fecal Coliform Bacteria: The water use classification of fishing was not fully supported in 9 segments due to exceedances of the water quality standard for fecal coliform bacteria due to nonpoint sources. There is a large dairy operation in this subbasin which may contribute to the presence of fecal coliform bacteria. Land applications of sludge may also be a source of fecal coliform bacteria due to the karst topography in the region. The water use classification of recreation was not supported in a portion of Lake Blackshear due to elevated fecal coliform bacteria from urban and nonpoint sources. A portion of the City of Cordele lies in the Gum Creek watershed, which drains to Lake Blackshear.

C. Dissolved Oxygen: The fishing water use classification was not fully supported in one stream due to dissolved oxygen concentrations less than the water quality standard due to nonpoint sources.

D. Erosion/Sedimentation: The water use classifications of fishing and recreation are potentially threatened in waterbodies by erosion and loading of sediment, which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

E. Water Supply/Flow: Water supply for drinking water and agricultural uses is potentially impaired in the middle Flint due to the depletion of groundwater supplies. Large quantities of groundwater are withdrawn from the Floridan Aquifer for irrigation during dry periods of the growing season to support agricultural production in the middle Flint basin. The Floridan Aquifer is interconnected with the Flint River; therefore, as these agricultural withdrawals increase, the flow of the Flint River during dry periods gets progressively smaller, possibly leading to deleterious instream flow conditions. In addition, since no new municipal, industrial, or agricultural withdrawals of groundwater can be made from the Clayton Aquifer, a deeper aquifer in the Dougherty Plain which is not connected with surface streams, future expansions of irrigation pumping are likely to come from the Floridan, thereby possibly exacerbating the surface water effects.

F. Flooding: Flooding in the Flint River Basin threatens people and property located within the floodplain, as demonstrated during the massive floods of 1994. Flooding may also breach dams, and can contaminate drinking water wells located within the floodplain.

G. Nutrients and Eutrophication: The water use classifications of fishing and recreation are potentially threatened in Lakes Blackshear and Worth due to inputs of nutrients which may cause excess algal growth in the lakes. A source of nutrients may be agricultural runoff, since a primary land use surrounding Lake Blackshear is agricultural production of row-crops. Other sources may include municipal and industrial water pollution control plants discharging in the watershed.

H. Nuisance Weeds: The water use classifications of fishing and recreation are potentially threatened in Lakes Blackshear and Worth due to the presence of nuisance aquatic plant species.

Lower Flint (HUC 03130008, HUC 03130009, and HUC 03130010)

The lower Flint River Basin is primarily defined by agricultural operations. These agricultural operations have an impact on water supply due to the use of groundwater for irrigation, as well as potentially contributing sources of nonpoint source pollutants such as sediments, nutrients, and fecal coliform. Subbasins 03130008 and 03130009 had violations for fecal coliform. The Cities of Albany, Newton, and Bainbridge, are all located in HUC 03130008. These are the principal urban areas in the lower Flint that contribute point and nonpoint source pollution.

Stressors, Associated Use Impacts and Possible Sources of Stressors

A. Metals: The water use classification of fishing was not fully supported in 3 stream segments due to exceedances of water quality standards for metals (lead and zinc) as a result of urban runoff from the City of Albany.

B. Fecal Coliform Bacteria: The water use classification of fishing was not fully supported in 10 stream segments due to exceedances of the water quality standard for fecal coliform bacteria. These violations may be attributed to CSOs in the City of Albany and other sources of urban runoff.

C. Nitrates in Groundwater: Drinking water use is potentially threatened in the lower Flint due to the presence of nitrates in groundwater supplies in some of the Coastal Plain aquifers. In the southwest portion of the City of Albany, near the Albany Airport, a survey of nitrates in 221 shallow wells has indicated an elevated nitrate level in the groundwater. The EPD in cooperation with the Dougherty County Health Department, the Georgia Department of Agriculture, and the University of Georgia Extension Service conducted studies in 1997 which determined the lateral extent of the nitrate plume and the property from which the nitrate originated. The Dougherty County Health Department advised home owners with wells in the affected area of the need to secure an alternative source of drinking water. The study partners are continuing the monitoring program in the area to assess the movement of the plume and are working together to develop appropriate strategies for addressing the existing problem. EPD will install sentinel wells in 1998 to monitor for plume movement.

D. Erosion/Sedimentation: The water use classifications of fishing and recreation are potentially threatened in many segments by erosion and loading of sediment, which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and

agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

E. Water Supply/Flow: The water supply, drinking water use, and fisheries are potentially impaired in the lower Flint due to groundwater demand. Very large quantities of groundwater are withdrawn from the Floridan Aquifer for irrigation during dry periods of the growing season to support agricultural production in the upper Flint basin. The Floridan Aquifer is interconnected with the Flint River; therefore, as these agricultural withdrawals increase, the flow of the Flint River during dry periods gets progressively smaller, possibly leading to deleterious instream flow conditions. Also, the striped bass fisheries south of Albany are dependent on groundwater springs to provide cool water refuges during the summer months. In addition, since no new municipal, industrial, or agricultural withdrawals of groundwater can be made from the Clayton Aquifer, a deeper aquifer in the Dougherty Plain which is not connected with surface streams, future expansions of irrigation pumping are likely to come from the Floridan, thereby possibly exacerbating the surface water effects.

F. Flooding: Flooding in the Flint River Basin threatens people and property located within the floodplain, as demonstrated during the massive floods of 1994. Flooding may also breach dams, and can contaminate drinking water wells located within the floodplain.

6.2 Short-term Water Quality Action Priorities for EPD

Section 6.1 identifies water quality concerns for which management and planning will be required. Because of limited resources, and in some cases, limitations to technical knowledge, varying degrees of effort can be expended to address these concerns within the current 5-year cycle of basin management. It is therefore necessary to assign action priorities for the short term, based on where the greatest return for available effort can be expected. This section provides a rationale for assigning relative priorities to addressing the various concerns.

The current priorities for action identified by EPD are discussed below (EPD, 1996). These reflect EPD's assessment of where the greatest short-term return can be obtained from available resources. These priorities were presented to and discussed with the local advisory committee. In addition, the priorities were presented to the public in stakeholder meetings in Griffin and Albany. The priorities were also public noticed and approved by the USEPA as a part of the 303(d) listing process in 1996 and discussed in the report, *Water Quality in Georgia, 1995-1996*. These priorities may change based on stakeholder input throughout the basin in the next basin-planning cycle.

Priorities for addressing water segments that do not fully support designated uses are summarized in Table 6-3. In the discussion below, 305(b) waters are waters for which water quality data have been assessed and the waters categorized—as supporting, partially supporting, or not supporting of uses—during the state's biennial water quality assessment, mandated by section 305(b) of the Clean Water Act. 303(d) waters are a subset of 305(b) waters for which no action has been initiated by EPD which will result in water quality improvement and attainment of water quality standards. Section 7 describes action plans to address these problem waters.

Table 6-3. EPD's Short-Term Priorities for Addressing Waters Not Fully Supporting Use

Priority	Type
1	Active 305(b) waters where ongoing pollution control strategies are expected to result in achieving support of designated uses; Active special projects.
2	Segments with dissolved oxygen violations or with multiple data points showing violation of standards for toxic metals.
3	Waters for which government partners are available, including low DO problems associated with dam releases and potential impact from agricultural nonpoint sources
4	Waters for which urban runoff and generalized nonpoint sources have resulted in violations of standards for metals or fecal coliform bacteria.

Priority One Actions

For many water bodies in the Flint River Basin, ongoing control strategies are expected to result in attainment of designated uses in the water body. The majority of EPD resources will be directed to ensuring that the ongoing pollution control strategies are implemented as planned and water quality improvements are achieved. These waters (see Appendix E) are the highest priority waters because these segments will continue to require resources to complete actions and ensure that water quality standards are achieved. These stream segments have been assigned priority one.

Priority Two Actions

Second priority was allocated to stream segments with multiple data points which showed metals or other toxic substance concentrations in excess of water quality standards and to segments in which dissolved oxygen concentration was an issue.

Priority Three Actions

Third priority was assigned to segments where governmental partners may be available to aid in the process of implementing water quality improvements such as the Corps of Engineers in segments where dissolved oxygen is low below a dam or the Georgia Soil and Water Conservation Commission (designated lead agency for agriculture) in segments potentially impacted by nonpoint sources from agricultural practices.

Priority Four Actions

Fourth priority was assigned to active 303(d) segments where urban runoff and general nonpoint sources caused metal or fecal coliform bacteria standards violations. Within the current round of basin planning these sources of stressors will be addressed primarily through general strategies of encouraging best management practices for controls of the stressors.

A couple of scientific issues help forge the rationale for priorities. First, the vast majority of waters on the active 303(d) list are a result of exceedance of the criteria for metals, fecal coliform bacteria, or poor fish communities due to urban runoff or nonpoint sources. At the present time the viability of the standards for metals and the efficacy of the fecal coliform bacteria standard are in question in the scientific community, as described in Section 4.2. Also, in many cases, the metals database was minimal with as little as one data point showing a concentration in excess of stream standards placing a stream reach or area of a lake on the partial support lists.

6.3 Priorities for Water Quantity Concerns

With regard to the priority to be placed on meeting competing demands for future water use, the Environmental Protection Division (in conjunction with a broad group of stakeholders from north, central, and southwest Georgia) has established a set of “guiding principles” which will be followed in developing the state’s position regarding the allocation of water among the states of Alabama, Florida, and Georgia. These principles are partially based upon the prioritization given to meeting categories of water needs under Georgia law (i.e., municipal needs are the first priority, and agricultural water needs are second; all other water needs follow these two). The principles are summarized below:

1. Municipal demands have the highest priority.
2. Agriculture needs must be satisfied.
3. Minimum instream flow rates must be met in order to preserve water quality.
4. If other demands (e.g., industrial, recreation, hydropower, navigation, and environment) cannot be met under conditions of water shortage, efforts will be made to optimize the mix of economic and environmental values.

While these “guiding principles” were specifically developed to give expression to Georgia’s water needs priorities in those areas of Georgia within the study area of the Alabama-Coosa-Tallapoosa/Apalachiocola-Chattahoochee-Flint (ACT/ACF) Comprehensive Study, it is likely that they characterize water needs priorities throughout the state. Thus, Georgia places highest value on the use of water for its citizens to use in drinking and water for agricultural needs. Also, with respect to surface waters, extremely important are the needs for sufficient instream flows to maintain acceptable quality in the State’s rivers and streams to address aquatic habitat and species needs.

In managing Georgia’s surface waters, EPD’s approach is to meet as many of the identified water needs to the highest extent practicable, while minimizing adverse impacts associated with meeting those needs. Of foremost importance in meeting those needs is maximizing use of already developed water resources along with aggressive water conservation. As existing developed sources are maximized and water conservation efforts approach diminishing returns, inter-jurisdictional regional cooperation to identify and develop water sources takes on heightened importance.

The Interstate Compact which has been drafted by the states and Federal government for the ACF basin does not give the Commission power to determine how Georgia must allocate its share of available water among competing uses; that decision, and the mechanism to implement that allocation, is left to the Environmental Protection Division. Of course, the larger Georgia’s share of the available water resource in these basins, the less often any single demand will not be met.

6.4 Priorities for Additional Data Collection

In the 1996-97 time frame monitoring efforts are focused on work to support the Chattahoochee River Modeling Project and modeling projects for West Point and Allatoona Lakes as well as on listed priority waters in the Coosa/Oconee/Tallapoosa (1996) and Savannah/Ogeechee (1997)

river basins in accordance with EPD basin planning schedule. Intensive monitoring will return to the Flint basin in support of the next iteration of the basin planning cycle in 2000. Prior to this time, EPD and partners will develop a strategic monitoring plan for the Flint, documented through a written monitoring plan. The monitoring plan will have two major components: general assessment of water quality status within the basin, and targeted assessment to address priority issues and concerns.

References

EPD. 1996. *Water Quality in Georgia, 1994-1995*. Georgia Department of Natural Resources, Environmental Protection Division, Atlanta, Georgia.