## *In This Section*

- River Basin Description
- Population and Land Use
- Local Governments and Planning Authorities
- Water Use Classifications

*Section 2*

# River Basin Characteristics

This section describes the following major characteristics of the Ochlockonee River basin:

- *River basin description (Section 2.1): the physical features and natural processes of the basin.*
- *Population and land use (Section 2.2): the sociological features of the basin, including the types of human activities that might affect water quality and water resource use.*
- *Local governments and planning authorities (Section 2.3): identification and roles of the local authorities within the basin.*
- *Water use classifications (Section 2.4): description of water use classifications and baseline goals for management of waters within the basin as defined in the state regulatory framework.*

## 2.1 River Basin Description

This section describes the important geographical, geological, hydrological, and biological characteristics of the Ochlockonee River basin.

The physical characteristics of the Ochlockonee River basin include its location, physiography, soils, climate, surface water and ground water resources, and natural water quality. These physical characteristics influence the basin's biological habitats and the ways people use the basin's land and water resources.

### 2.1.1 River Basin Boundaries

The Ochlockonee River basin is located in mid to southwestern Georgia and is flanked by the Flint River basin to the west and the Suwannee River basin to the east (Figure 2-1). The headwaters are located in Worth County and the river flows in a southwesterly direction into Florida and eventually empties into the Gulf of Mexico. The Ochlockonee River basin is located in Georgia and Florida and drains approximately 6,330 square miles. Approximately 1460 square miles of the basin are in Georgia. One of

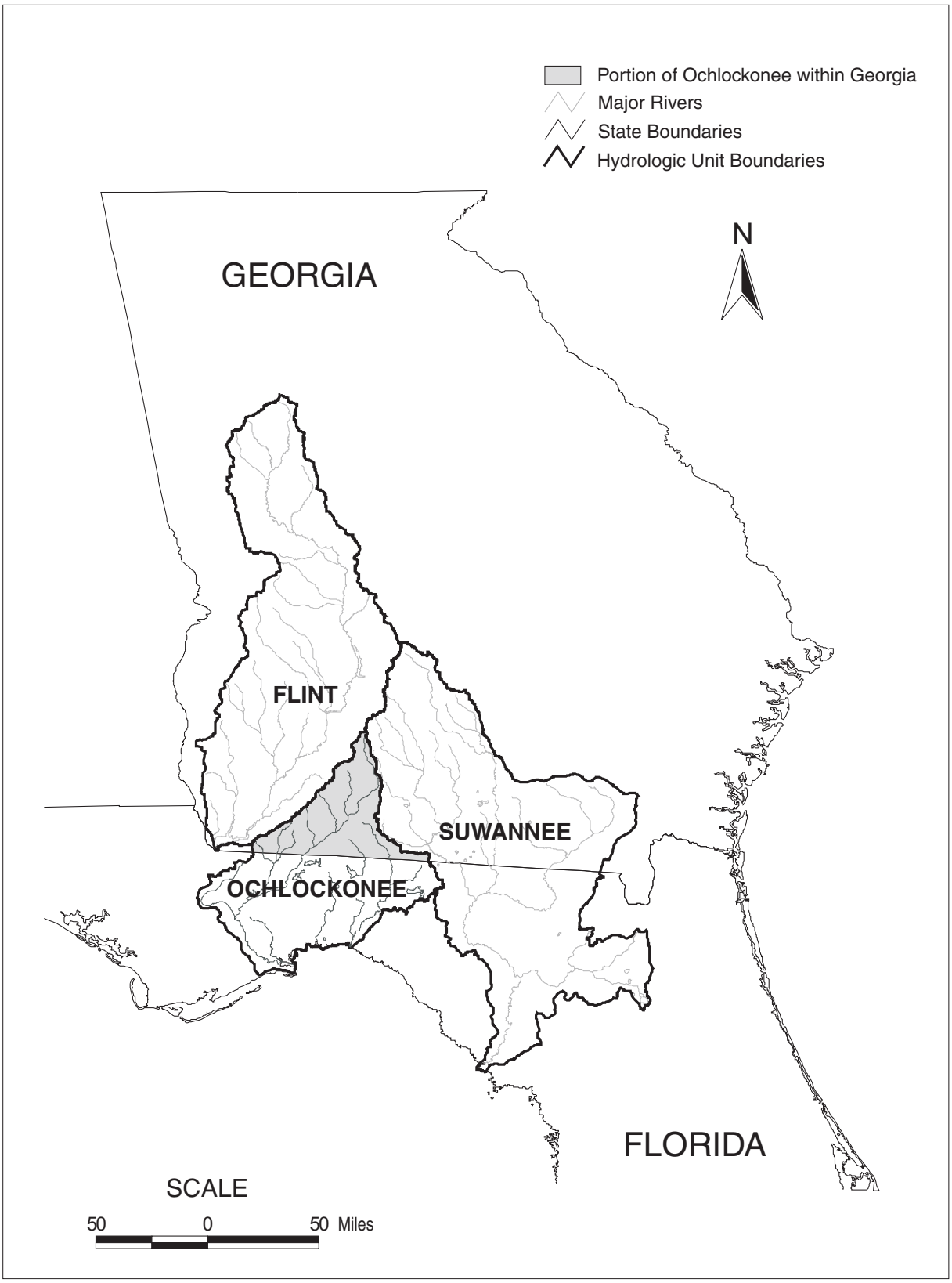


**Figure 2-I. Location of the Ochlockonee River Basin**

the unique features of the Ochlockonee River basin is the presence of three smaller watersheds, each of which discharges their waters separately into the Gulf of Mexico without ever merging with the waters of the Ochlockonee River. The Aucilla River and Wards Creek watersheds flow into Florida east of the Ochlockonee River. A tributary of the Apalachicola River, N. Mosquito Creek, lies within Georgia to the west of the Ochlockonee River.

The U.S. Geological Survey (USGS) has divided the Ochlockonee River basin into five subbasins, or Hydrologic Unit Codes (HUCs; see Table 2-1). These HUCs are referred to repeatedly in this report to distinguish conditions in different parts of the Ochlockonee River basin. Figure 2-2 shows the location of these subbasins and the associated counties within each subbasin.

**Table 2-I. Hydrologic Unit Codes (HUCs) of the Ochlockonee River Basin in Georgia**

| | |
|---|---|
| 03110103 | Aucilla River |
| 03120001 | Wards Creek |
| 03120002 | Upper Ochlockonee River |
| 03120003 | Lower Ochlockonee River |
| 03130011 | N. Mosquito Creek (Apalachicola River) |

### 2.I.2 Climate

The Ochlockonee River basin is characterized by mild winters and hot summers. Mean annual precipitation ranges from 46 to 52 inches per year. Precipitation occurs as rainfall. Rainfall is fairly evenly distributed throughout the year, but a distinct dry season occurs from mid-summer to late fall. Rainfall is usually greatest in March and least in October. The mean annual temperature is about 68 degrees Fahrenheit (Journey and Atkins, 1996; citing Peck et al., 1992; Schneider et al., 1965; and Carter and Stiles, 1983).

### 2.I.3 Physiography, Geology, Soils, and Hydrogeology

#### Physiography

The Ochlockonee, Satilla, St. Marys and Suwannee River basins lie entirely within the Coastal Plain physiographic province, which extends throughout the southeastern margin of the United States. The physiography of these river basins reflects a geologic history of repeated periods of land submergence which is typical of the Coastal Plain Province. These basins include all or portions of the Tifton Upland, the Okefenokee Basin, the Bacon Terraces and the Barrier Island Sequence districts of the Coastal Plain. The Ochlockonee River basin lies within the western third of the Tifton Upland District. The Satilla River basin lies entirely within the Bacon Terraces and Barrier Island Sequence districts. The St. Marys River basin lies entirely within the Okefenokee Basin and Barrier Island Sequence districts. The Suwannee River basin lies within the Tifton Upland and Okefenokee Basin districts.

The Tifton Upland District is characterized by a well developed, extend dendritic stream pattern where narrow, rounded interfluves occur 50 to 200 feet above relatively narrow stream valley floors. The northwestern boundary of the district is the base of the Pelham Escarpment, which rises as much as 200 feet above the Dougherty Plain to the west. The Okefenokee Basin District is typified by very low topographic relief, numerous extensive swamps, and local sand ridges. The Bacon Terraces District displays a very extended, southeast trending dendritic drainage pattern containing ling, narrow

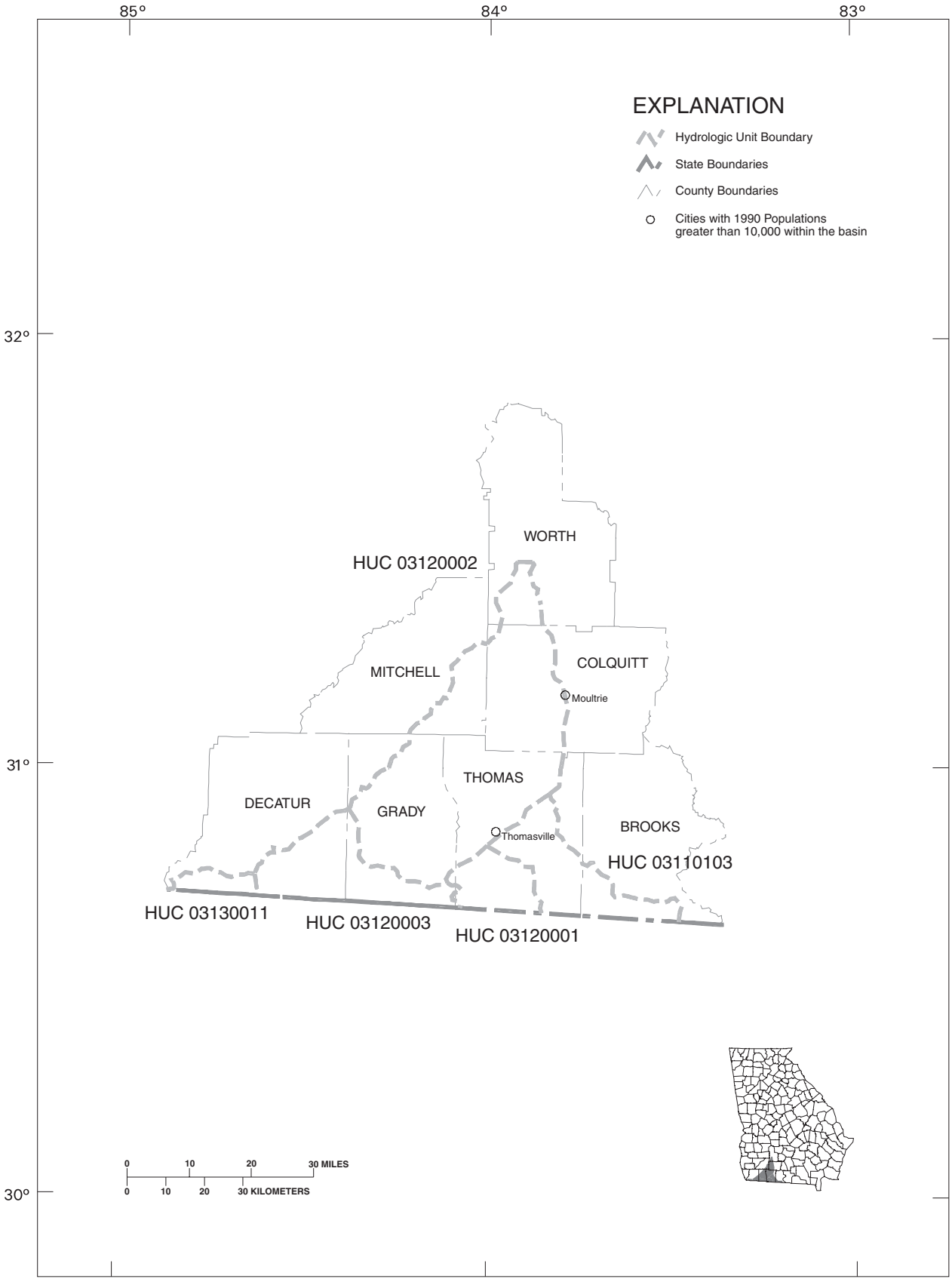


**Figure 2-2. Hydrologic Units and Counties of the Ochlockonee River Basin**

interfluves with gently rounded to flat summits that are 50 to 100 feet above narrow, marshy floodplains. The district also contains several low, moderately dissected terraces which are generally parallel to the coastline. From west to east, these are designated the Hazlehurst, Pearson, Claxton, Argyle, Waycross and Penholoway terraces. The Barrier Island Sequence District is characterized by a series of prominent marine terraces which form a step-like progression of decreasing altitudes toward the sea. The former, higher sea levels created barrier island-salt marsh environments parallel to and similar to those found on the present coast. The terraces are composed of sand ridges marking the former barrier islands, and are flanked by fresh water marshes at the former salt marsh locations. They have undergone slight to moderate dissection which is generally more advanced at the western edge of the district. Trail Ridge is the most prominent of these terraces with a maximum elevation of approximately 160 feet. It marks the western boundary of the Barrier Island Sequence District where it joins the Bacon Terraces and Okefenokee Basin districts. Other, less prominent terraces in the district, from west to east, are the Wicomico, Penholoway, Talbot, Pamlico, Princess Anne, and Silver Bluff-Holocene terraces.

The streams in these basins are typical of the Coastal Plain. They generally lack the riffles and shoals that are common to streams in the Piedmont Province to the north, and exhibit more extensive floodplain development and greater sinuosity.

Carolina Bays are elliptical or "spoon-shaped" wetland depressions aligned roughly north-northwest and are logically well developed throughout the area east of the Suwannee River basin. Lime sinks and lake-filled sinks are well developed in areas underlain by limestone in the shallow subsurface, notably in the Lake Park area south and west of Valdosta, Lowndes County.

**Geology**

Weathered, poorly consolidated sediments underlie all of these river basins, and are dominantly composed of sands, clays, and gravels which range from Miocene to Holocene in age. These sediments include the Miccosukee Formation (Pliocene age), Altamaha Formation and various formations of the Hawthorne Group (all Miocene age), as well as barrier island and marsh/lagoon facies of the numerous shoreline complexes (Pleistocene to Holocene age). Local occurrences of calcareous sediments include the Suwannee Limestone (Oligocene age) and Duplin Marl (Pliocene age). Other rock types in the area include dolomite, chert, peat, phosphate and fuller's earth, as well as Quaternary alluvium in the flood plains along the major stream valleys. Most of these sediments were deposited in either terrestrial or shallow marine environments.

Sediments in the area are locally mined for construction sand and fill material. In addition, the Meigs Member of the Coosawhatchie Formation (Hawthorne Group) is the source of the economically important fuller's earth clay deposits being mined in the Ochlockonee River Basin. In the past, crushed stone was produced from some of the limestone deposits, and a few of the larger Carolina Bays were mined for peat.

**Soils**

The Ochlockonee River Basin is within the Southern Coastal Plain Major Land Resource Area (MLRA) (Figure 2-3). This area is characterized by nearly level to gently sloping, well drained upland soils that are dissected by nearly level, poorly drained soils along narrow drainageways. Most of the soils are strongly acid, are low in organic matter content, and low in natural fertility. Although individual soils vary considerably across the river basin, they can be categorized into three major groups.

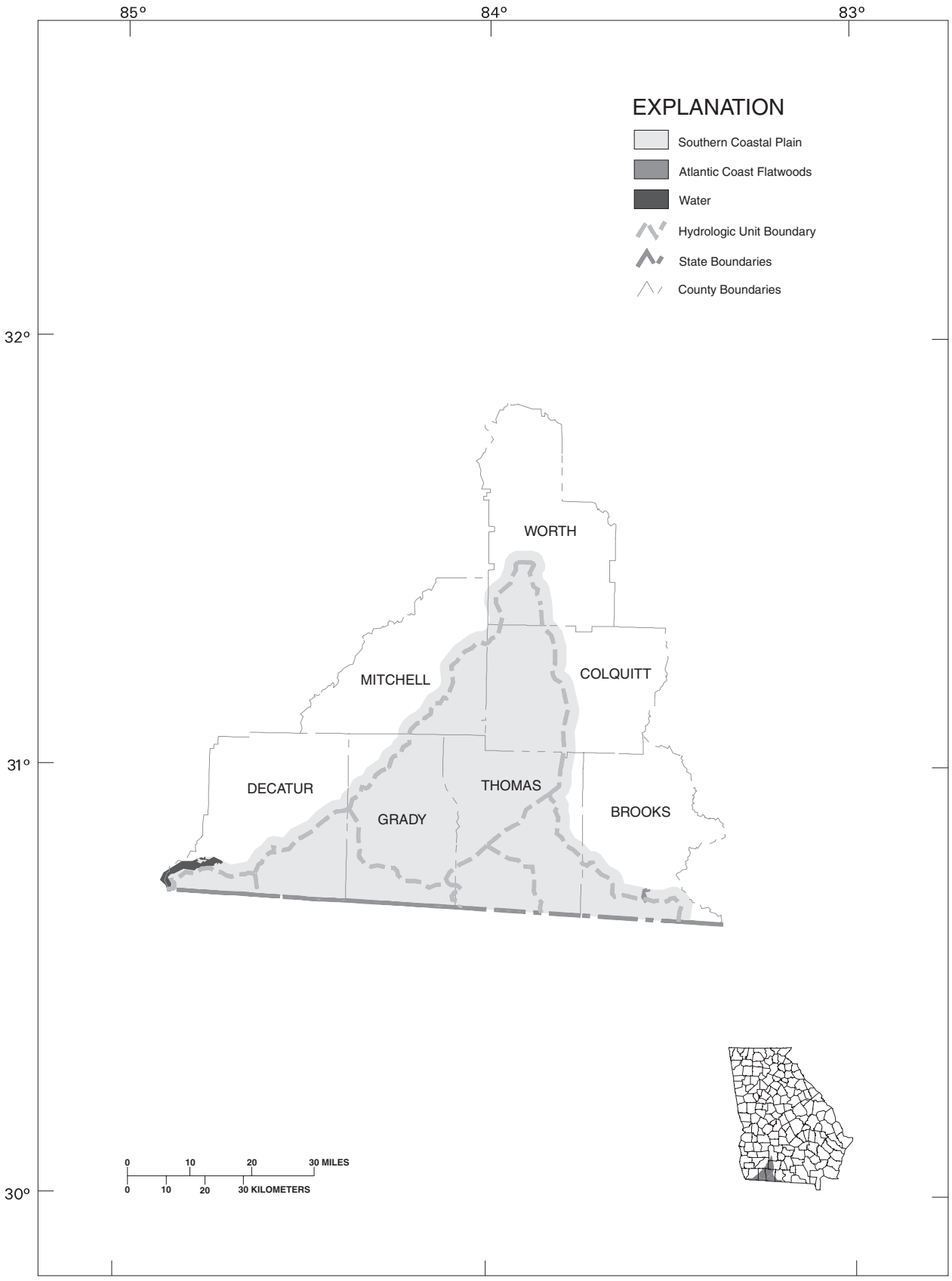


**Figure 2-3. Major Land Resource Areas in the Ochlockonee River Basin**

The first group of soils covers the northern two-thirds of the area, beginning at the southwest corner and going across to the east-northeast. This group is dominated by nearly level and very gently sloping Tifton and Dothan soils. These are well drained upland soils that have a sandy surface layer and a yellowish brown or strong brown, loamy subsoil. The surface layer is normally loamy sand and is about 10 inches thick. The subsoil is mostly sandy clay loam. Characteristic of these soils is a layer of plinthite in the subsoil at a depth of about 30 inches. Plinthite is an iron-rich mixture of clay with quartz and other constituents that can perch water during wet seasons. The soils within this group are the best suited for agriculture.

The second group of soils covers the lower third of the river basin. This group is dominated by Orangeburg, Faceville, and Lucy soils. These are mostly very gently sloping or gently sloping, well drained soils. They are slightly more sloping and dissected than the soils in the previous group. These soils are distinguished by their red subsoil. Orangeburg and Lucy soils have a sandy surface layer and a loamy subsoil. Faceville soils have a loamy surface layer and a clayey subsoil.

The third major group of soils is scattered throughout the first two areas. This group includes nearly level, poorly drained soils along narrow drainageways and floodplains. Most of these soils are sandy throughout, but some of them have a loamy subsoil at various depths. Water tables are commonly at or near the surface during wet seasons, and the soils are subject to flooding. Dominant soils in these areas are Osier and Pelham.

**Hydrogeology**

Coastal Plain sediments underlie the entire region and groundwater is produced from several aquifers. Sources of ground water include, in order of importance, the unconfined Surficial aquifer, the Upper and Lower Brunswick aquifers and the Upper and Lower Floridan aquifers. The Surficial aquifer is up to 230 feet thick and consists of interlayered, Miocene and younger, sand, clay and limestone. It is underlain by the Upper and Lower Brunswick aquifers both of which are composed of 150 and 70 feet, respectively, of poorly sorted sand. The Upper and Lower Floridan aquifers consist of Eocene to Oligocene carbonate rocks (largely limestone and dolostone) 700 to 2,500 feet in thickness. In each of the aquifers, except for the Surficial aquifer, the groundwater is under confined (aquifer) conditions. Most of these aquifers consistently have excellent water quality; however, the Lower Floridan aquifer is saline and generally does not meet drinking water standards.

### 2.1.4 Surface Water Resources

The main stem of the Ochlockonee River and its tributaries are the principal surface water resources in the basin. One of the unique features of this basin is the presence of two smaller watersheds, the Aucilla River and Ward Creeks, each of which discharge separately into the Gulf of Mexico without ever merging with the waters of the Ochlockonee River. The annual flow of the river as it crosses the Georgia-Florida border is estimated at 850 cfs, with a 7Q10 estimate of 24 cfs. There are no large storage reservoirs or hydroelectric plants in the Ochlockonee River basin. Stream networks within each HUC are shown in Figures 2-4 through 2-8.

### 2.1.5 Ground Water Resources

Ground water resources in the Ochlockonee River basin are supplied by the Floridan aquifer system, one of the most productive ground water reservoirs in the United States. This system supplies about 50 percent of the ground water used in the state. It is used as a major water source throughout most of South Georgia. A more detailed description of the Floridan aquifer system is provided below.

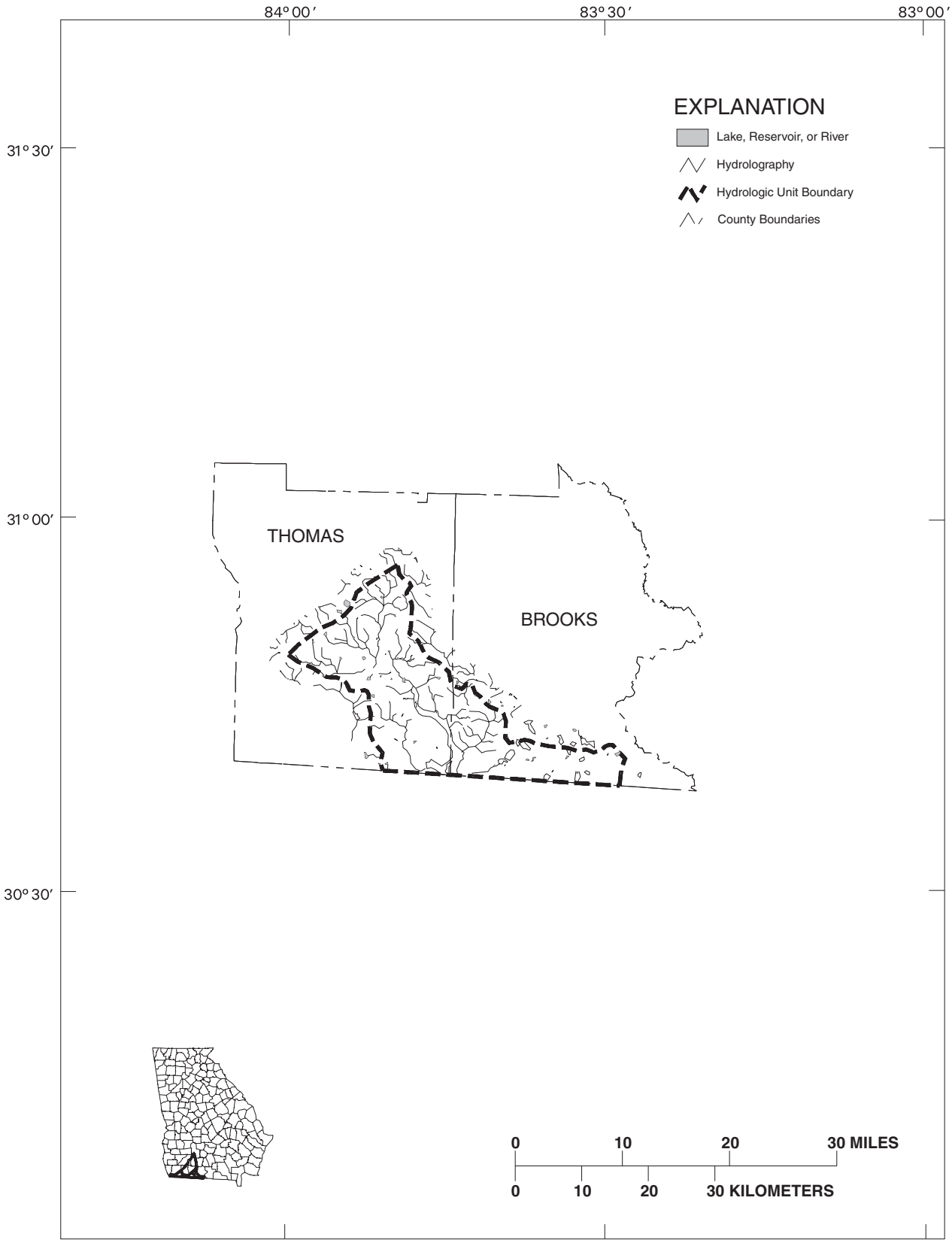


**Figure 2-4. Hydrography, Ochlockonee River Basin, HUC 03110103**

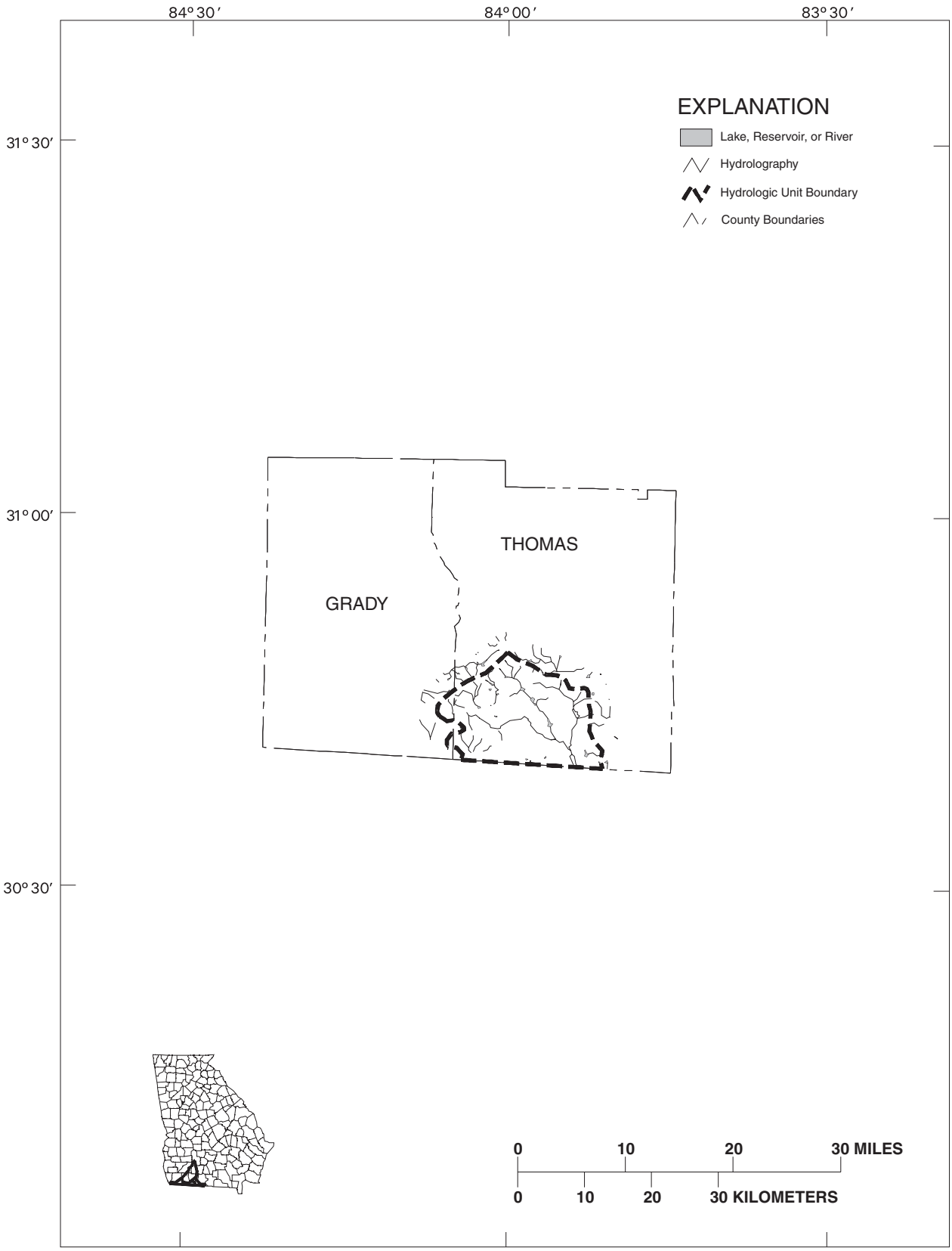


**Figure 2-5. Hydrography, Ochlockonee River Basin, HUC 03120001**

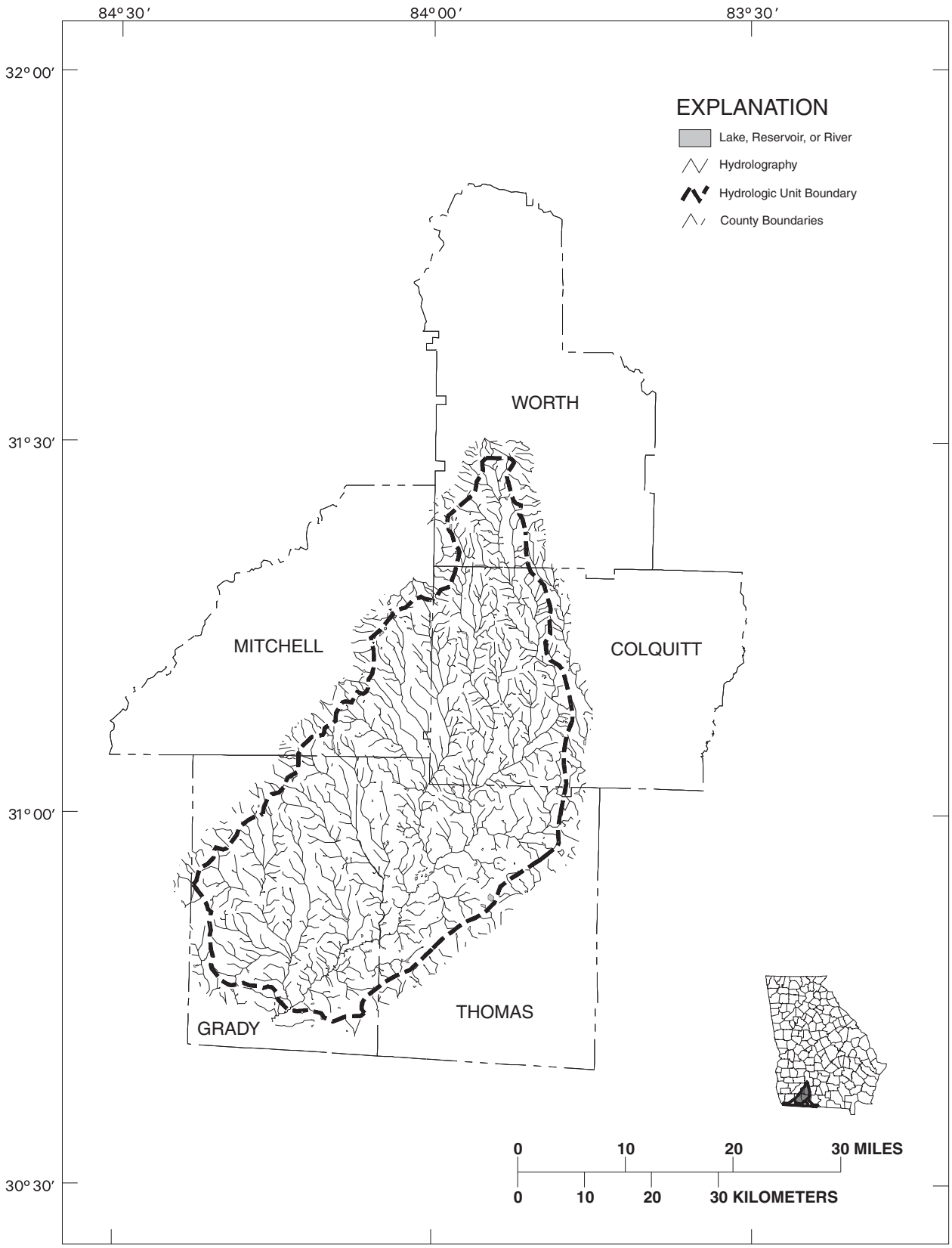


**Figure 2-6. Hydrography, Ochlockonee River Basin, HUC 03120002**

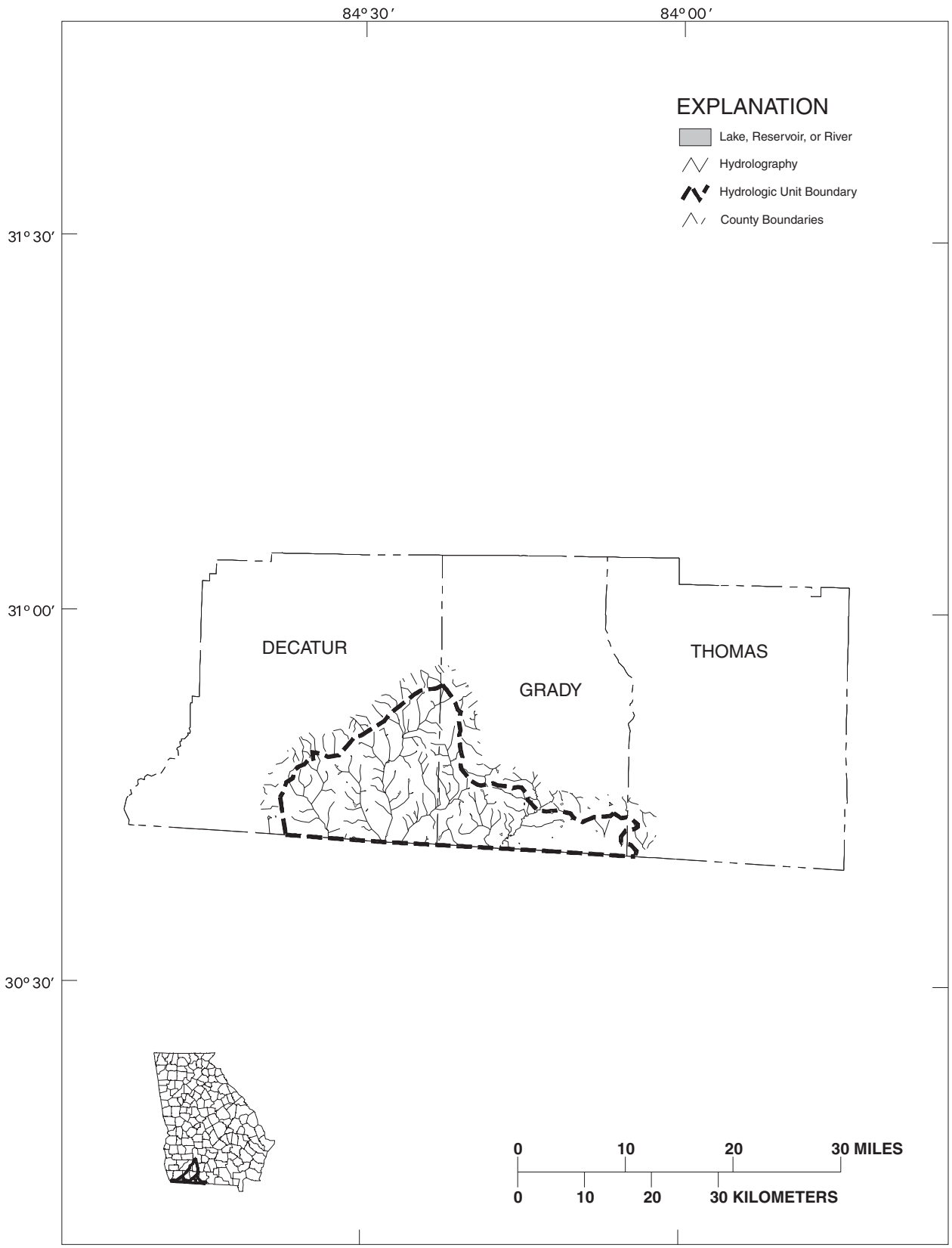


**Figure 2-7. Hydrography, Ochlockonee River Basin, HUC 03120003**

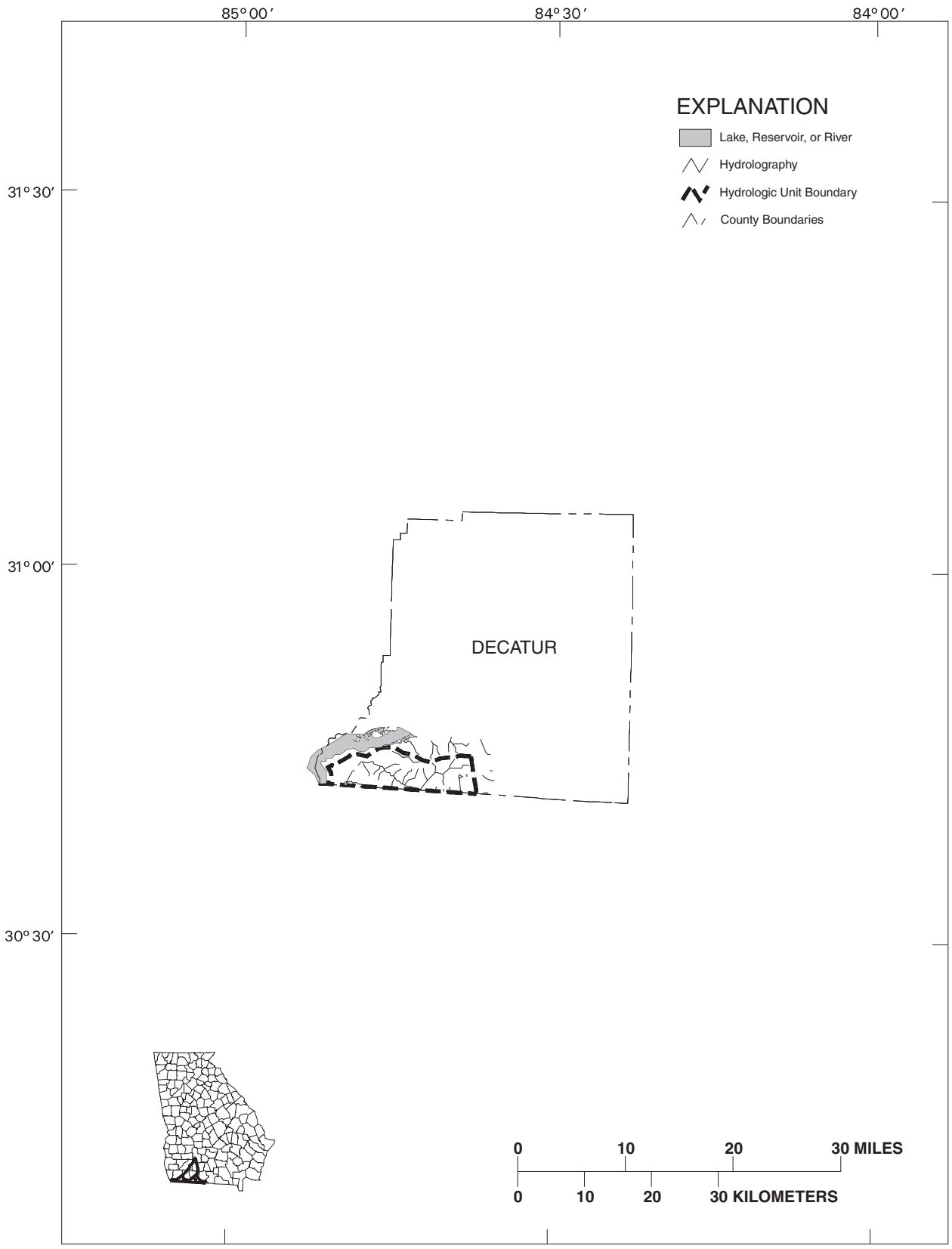


**Figure 2-8. Hydrography, Ochlockonee River Basin, HUC 03130011**

**Floridan aquifer**

The Floridan aquifer underlies the rest of the southern portion of the basin. The aquifer is overlain by approximately 25-125 feet of sandy clay residuum derived from chemical weathering of the underlying rock. The total thickness of the Floridan aquifer in the basin ranges from a few feet in the north to more than 400 feet in the extreme southern portion of the basin. Clastic grains of sand and shale are major components of the Floridan aquifer near its northernmost extent, where it is dominantly limestone in the Ochlockonee basin. Throughout most of the basin, the aquifer can be divided into three thick limestone formations: the Tampa Limestone, the Suwannee Limestone and the Ocala Limestone. The Tampa Limestone consists of whitish gray limestone that has a shale bed at its base. This shale acts as a confining layer to the underlying Suwannee and Ocala limestones (Miller, 1986). Below the Tampa, the Suwannee limestone is a massive chalky unit that is easily dissolved and weathered. For this reason, the many solution cavities in the Tampa provide abundant water to the underlying Ocala Limestone. The Ocala Limestone is the principal unit of the Floridan aquifer, and contains an upper friable, porous unit and a lower fine-grained unit (Miller, 1986). This lower unit contains most of the groundwater in the Floridan Aquifer (Torak and others, 1993). The Ocala is underlain by the clay-rich Lisbon Formation, which acts as a slower confining bed to the water-bearing limestones above. Well yields in the Floridan aquifer can range from about 40 GPM in the north to more than 10,000 GPM in the thickest, southern most portion of the Floridan aquifer. The Floridan serves as the main aquifer from Decatur and Burke counties to the coast.

### 2.1.6 Biological Resources

The Ochlockonee River basin supports a diverse and rich mix of terrestrial and aquatic habitats and is home to several federally and state-protected species. The basin encompasses parts of five major land resource areas. Some of the biological resources of the basin are summarized below.

**Fish Fauna**

The fish fauna existent in the Ochlockonee River is similar to other unregulated coastal plain streams in that it possesses a high percentage of desirable game fish species. Redbreast sunfish, largemouth bass, and channel catfish contribute most to the game fish population by weight. Although not a game fish, spotted suckers are prevalent and contribute significantly to population biomass. Grayfin redhorses are also present, but not as numerous as spotted suckers.

Several species including the Suwannee bass, Bannerfin shiner, and Spotted bullhead that occur in the Ochlockonee Basin are listed as rare in Georgia. Striped bass, which migrate upstream from Lake Talquin, are also present in limited numbers.

**Fisheries**

Despite its relatively small size, the Ochlockonee supports a heavily utilized fishery that yields good angler catch rates. Redbreast sunfish are the dominant fish harvested both by number and weight followed by channel catfish. Stream access is largely limited to bridge crossings and launching a boat can be difficult at times due to low water levels. Thus, it is not surprising that a significant amount of fishing pressure on the Ochlockonee comes from bank anglers. Most of the fishing pressure occurs in late spring when water levels recede within the bank.

## 2.2 Population and Land Use

### 2.2.I Population

As of 1995, about 60,500 people lived in the Ochlockonee watershed (DRI/McGraw-Hill, 1996). Population distribution in the basin at the time of the 1990 census by census blocks is shown in Figure 2-9. Population centers in the Ochlockonee watershed include the development surrounding Thomas and Grady Counties.

Between 1995 and 2050, it is estimated that the population in the Ochlockonee River basin will increase by 0.8 percent per year (DRI/McGraw-Hill, 1996).

One area in which this river basin will differ slightly from state trends, is an age difference of residents 65 and older. This is in contrast with the 17 percent share this group is forecasted to comprise in Georgia by 2050. The river basin will mirror state trends in terms of its elderly population with the 65 and older age group showing the largest gains in share through 2050, at which time 20 percent of the population will be in this age group.

### 2.2.2 Employment

The Ochlockonee River basin supported 125,300 jobs in 1995. It is moving from a manufacturing- to a service-based economy. In the coming years, a decrease in jobs is expected in manufacturing and durable goods, offset by an increase in jobs in the service and trade sectors.

### 2.2.3 Land Cover and Use

Land use/land cover classification was (Figures 2-10 through 2-19) determined for the Ochlockonee River Basin based on high-altitude aerial photography for 1972-76 (U.S. Geological Survey, 1972-78). Subsequently in 1991 land cover data were developed based on interpretation of Landsat TM satellite image data obtained during 1988-90, leaf-off conditions. These two coverages differ significantly. Aerial photography allows identification of both land cover and land uses. Satellite imagery, however, detects primarily land cover, and not land use, such that a forest and a wooded subdivision may, for instance, appear similar. Satellite interpretation also tends to be less accurate than aerial photography.

The 1988-90 land cover interpretation showed 41 percent of the basin in forest cover, 8 percent in wetlands, 2 percent in urban land cover, and 44 percent in agriculture (Figures 2-15 through 2-19). Statistics for 15 landcover classes in the Georgia portion of the Ochlockonee River basin for the 1988-90 coverage are presented in Table 2-2 (GA DNR, 1996).

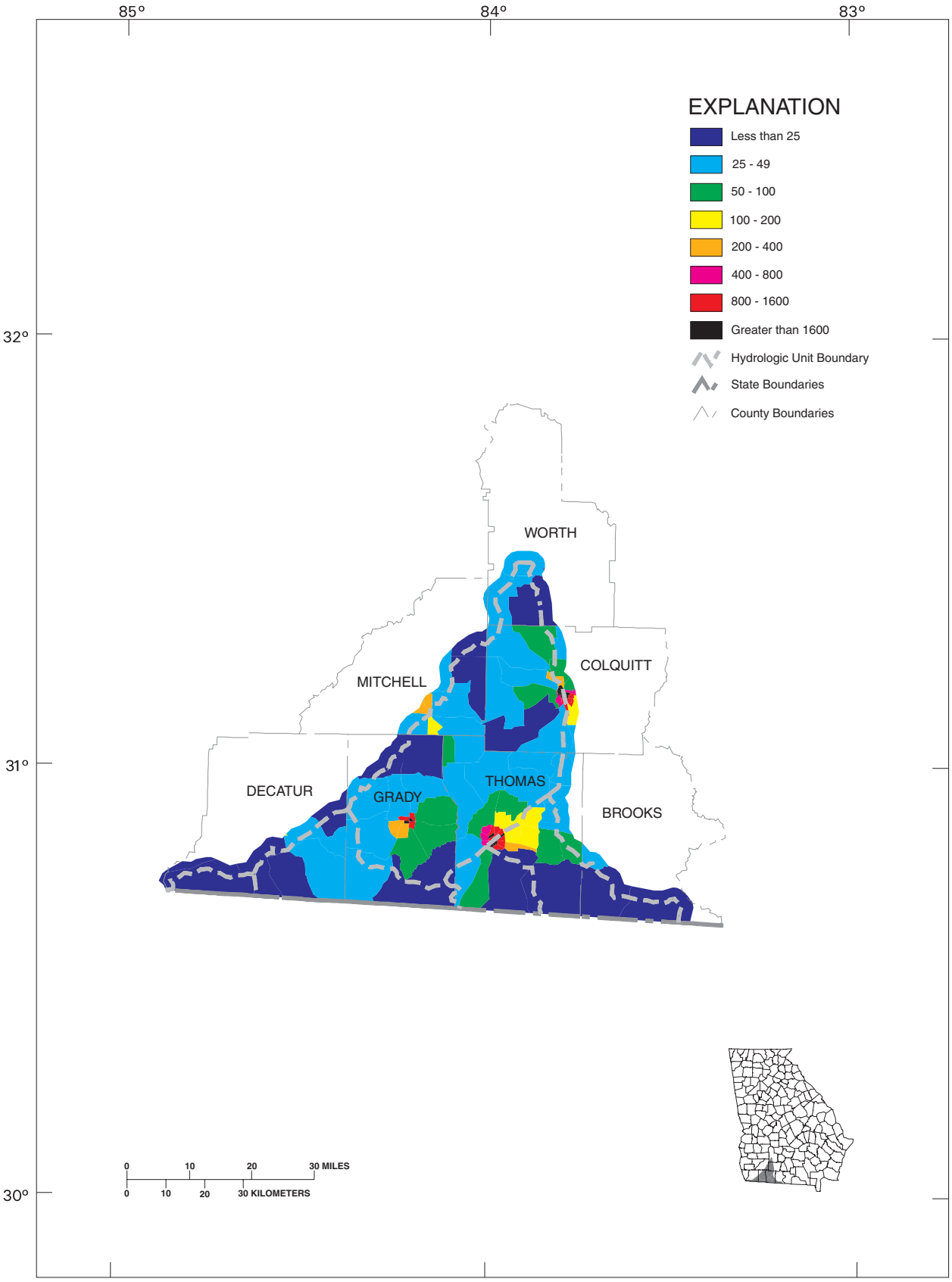


**Figure 2-9. Population Density in the Ochlockonee River Basin, 1990 (persons per square mile)**

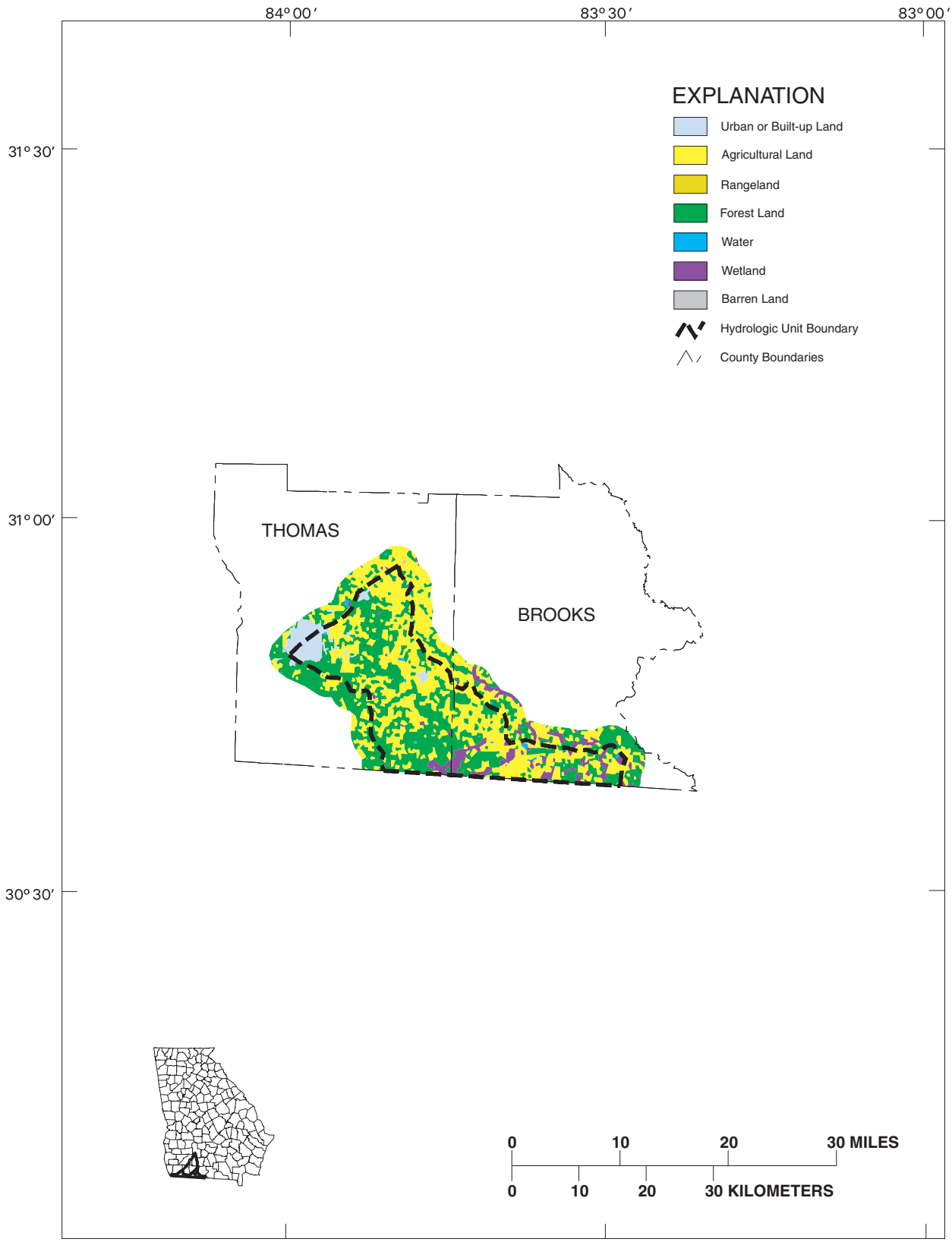


**Figure 2-10. Land Use, Ochlockonee River Basin, HUC 03110103, USGS 1972-76 Classification Updated with 1990 Urban Areas**

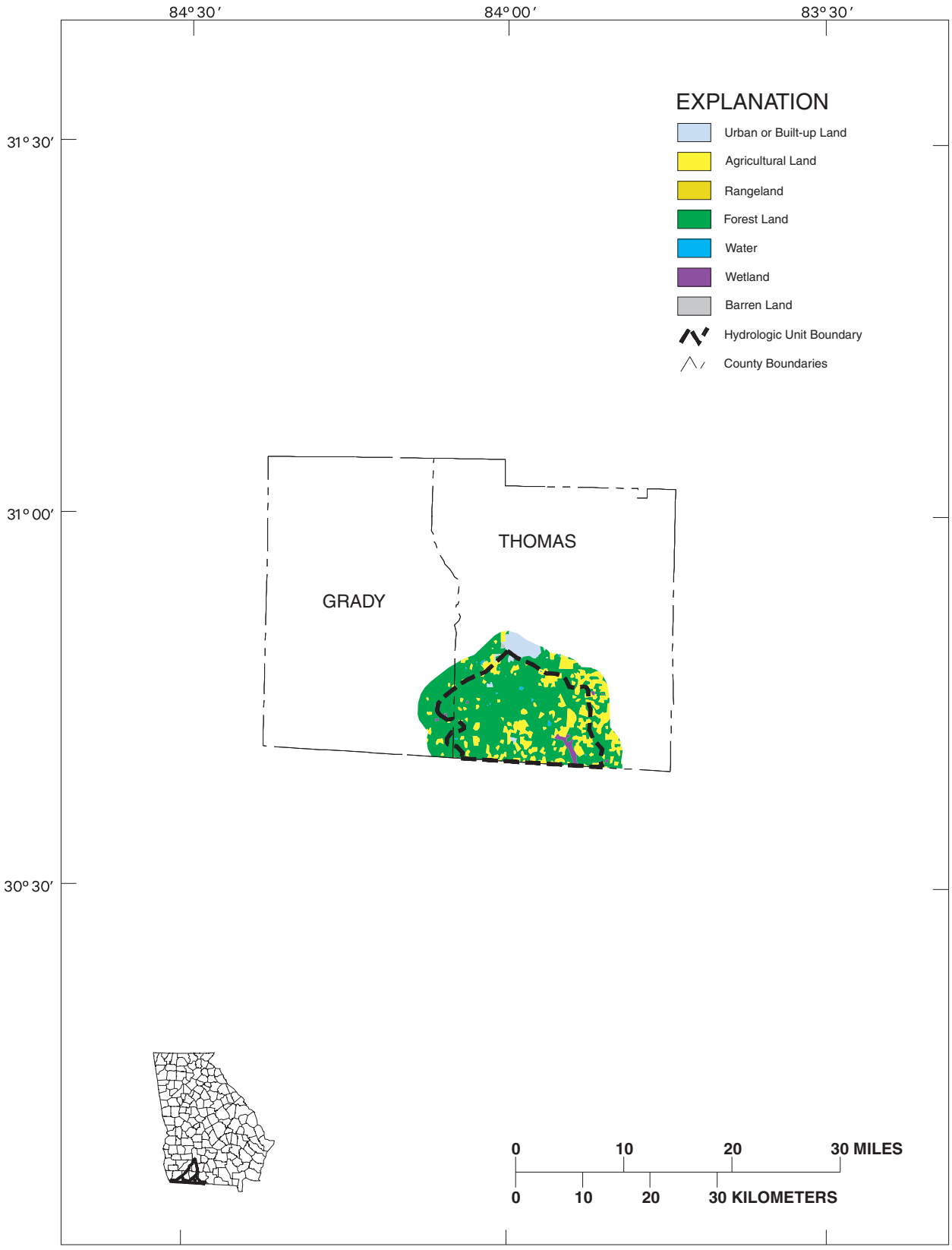


**Figure 2-11. Land Use, Ochlockonee River Basin, HUC 03120001, USGS 1972-76 Classification Updated with 1990 Urban Areas**

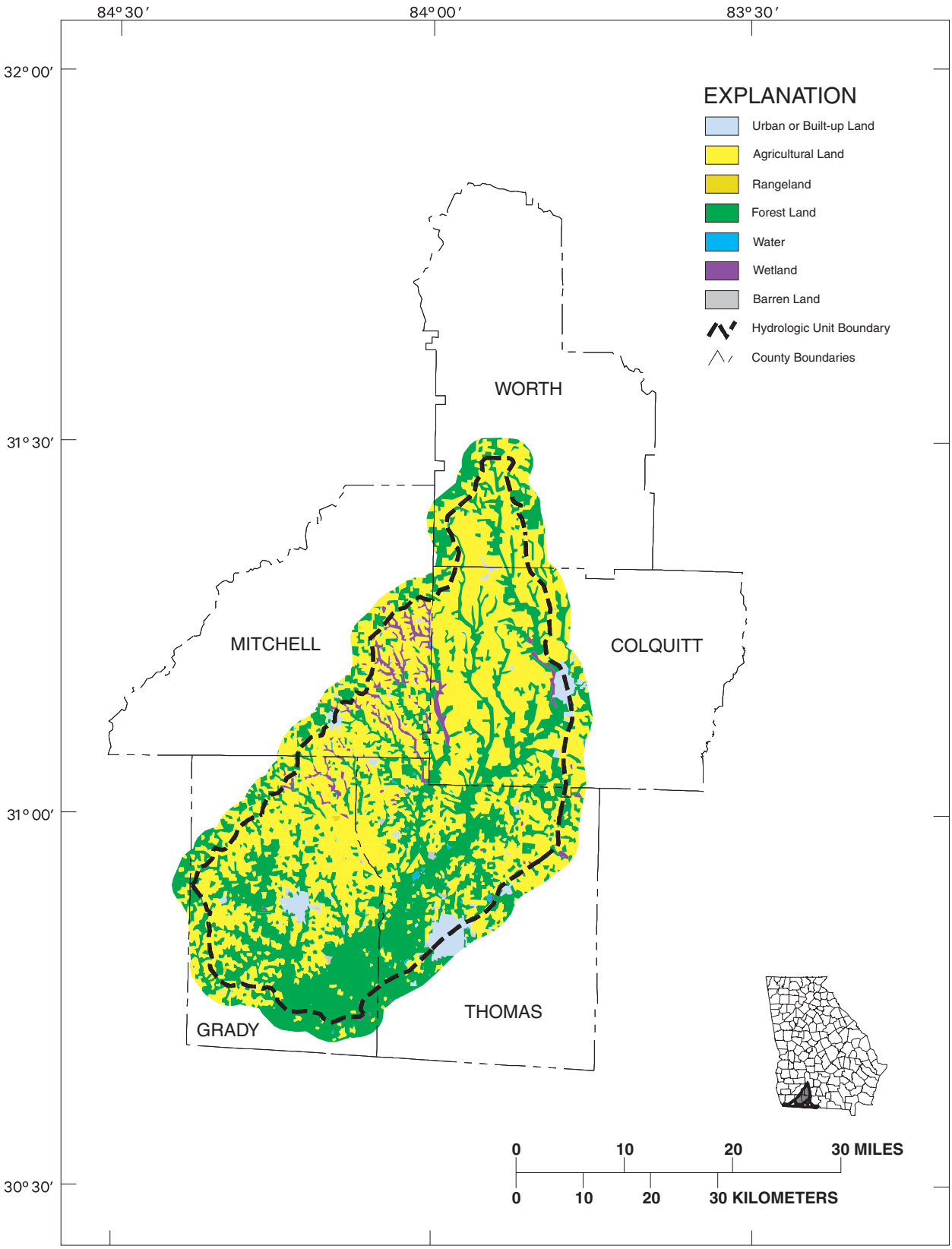


**Figure 2-12. Land Use, Ochlockonee River Basin, HUC 03120002, USGS 1972-76 Classification Updated with 1990 Urban Areas**

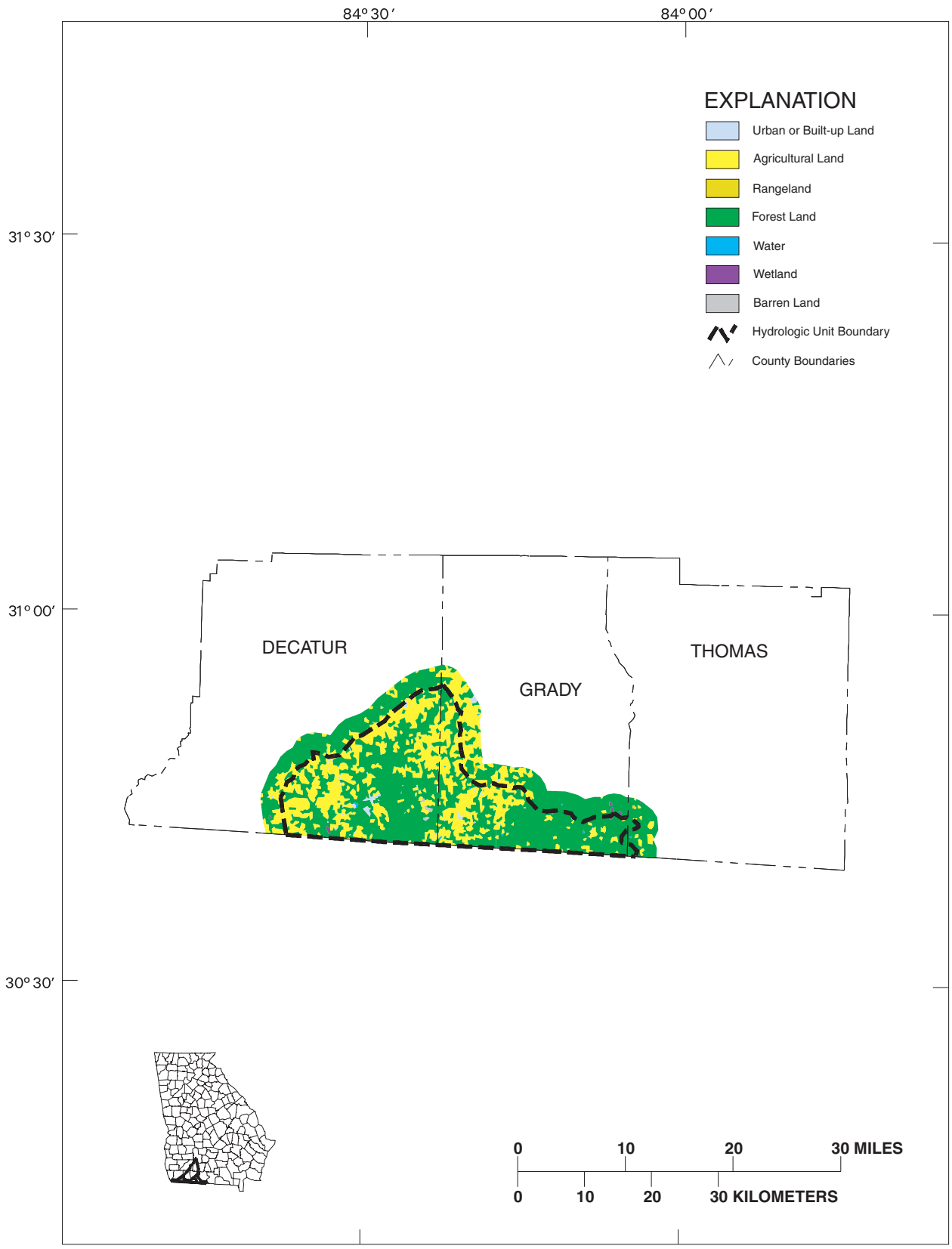


**Figure 2-13. Land Use, Ochlockonee River Basin, HUC 03120003, USGS 1972-76 Classification Updated with 1990 Urban Areas**

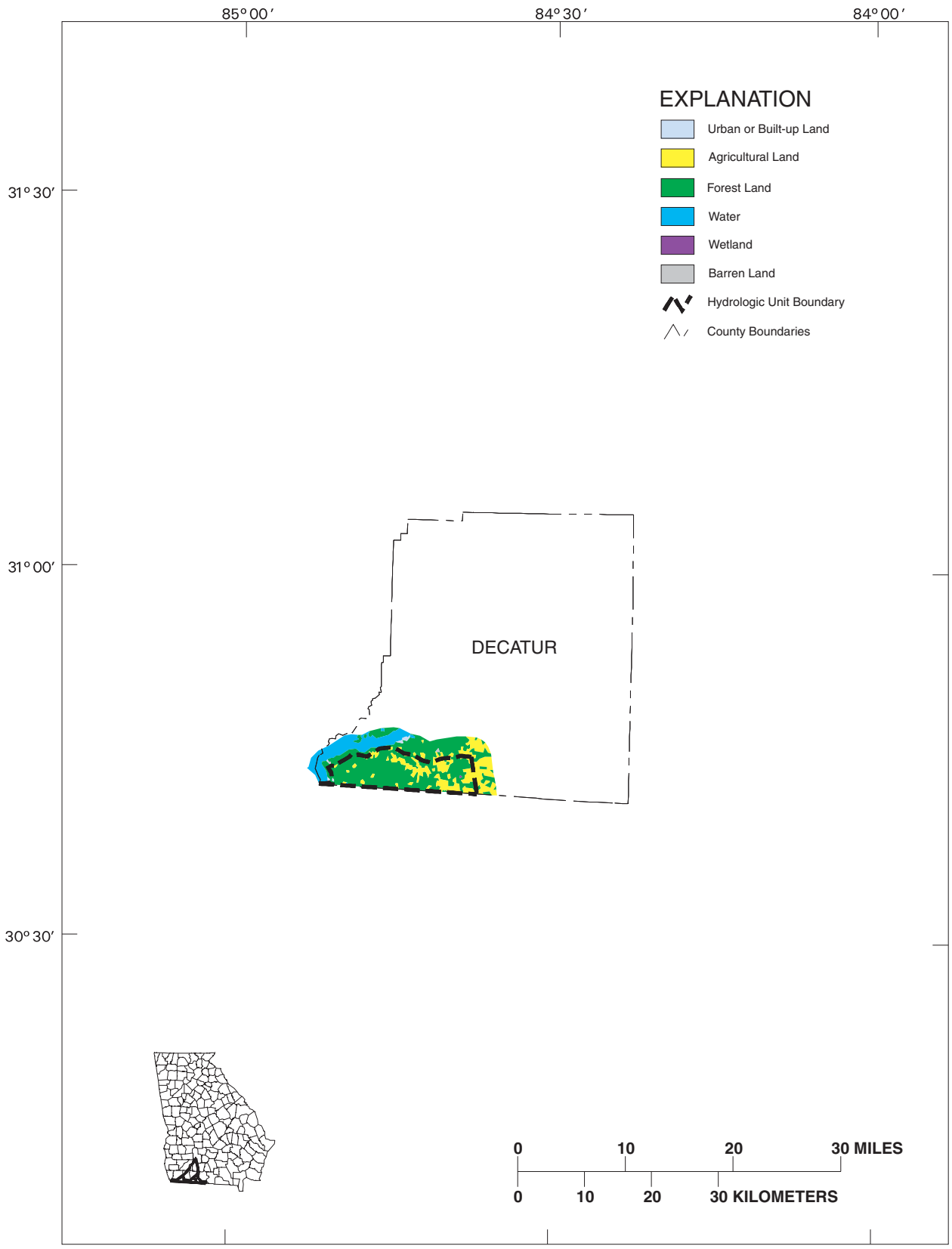


**Figure 2-14. Land Use, Ochlockonee River Basin, HUC 03130011, USGS 1972-76 Classification Updated with 1990 Urban Areas**

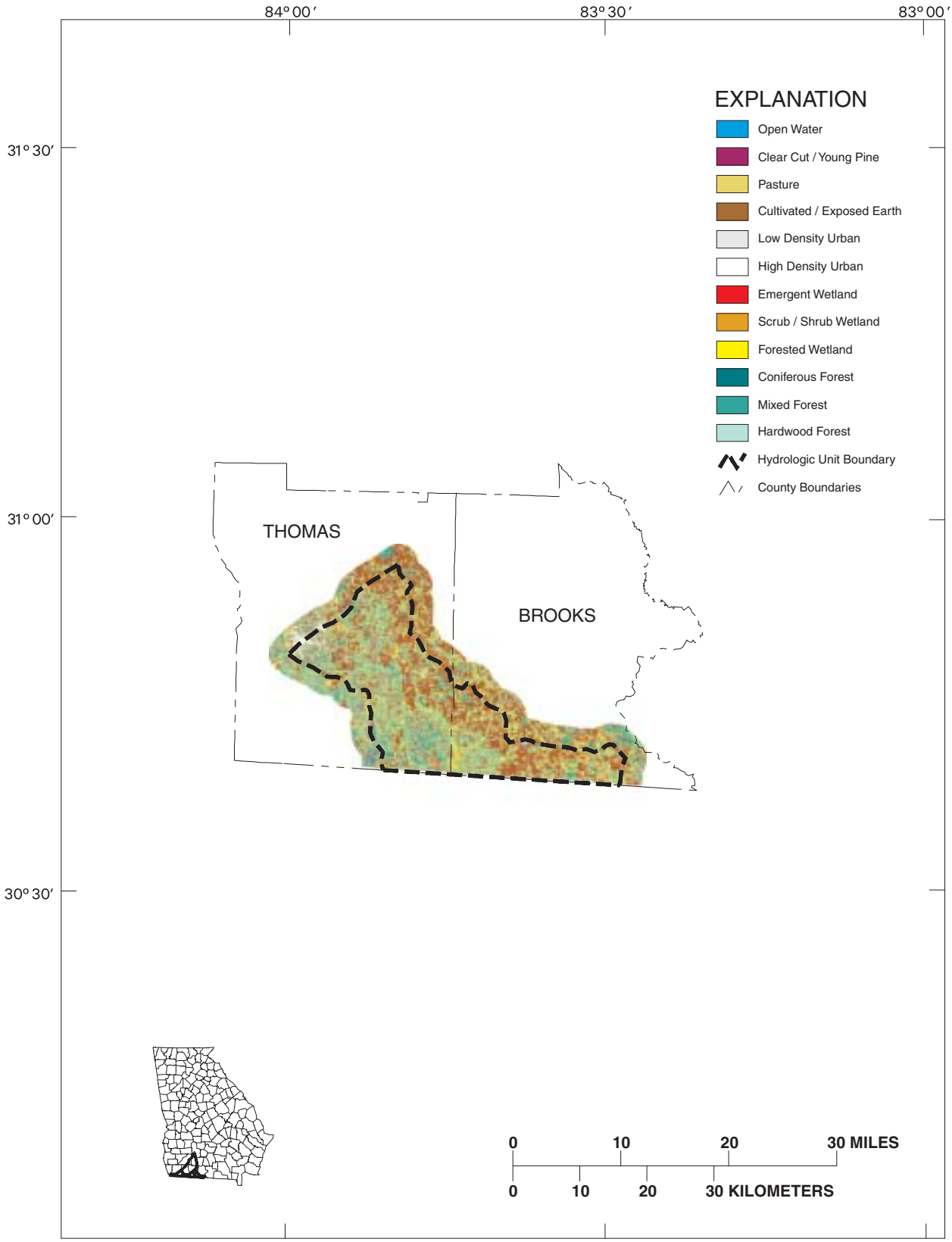


**Figure 2-15. Land Cover 1990, Ochlockonee River Basin, HUC 03110103**

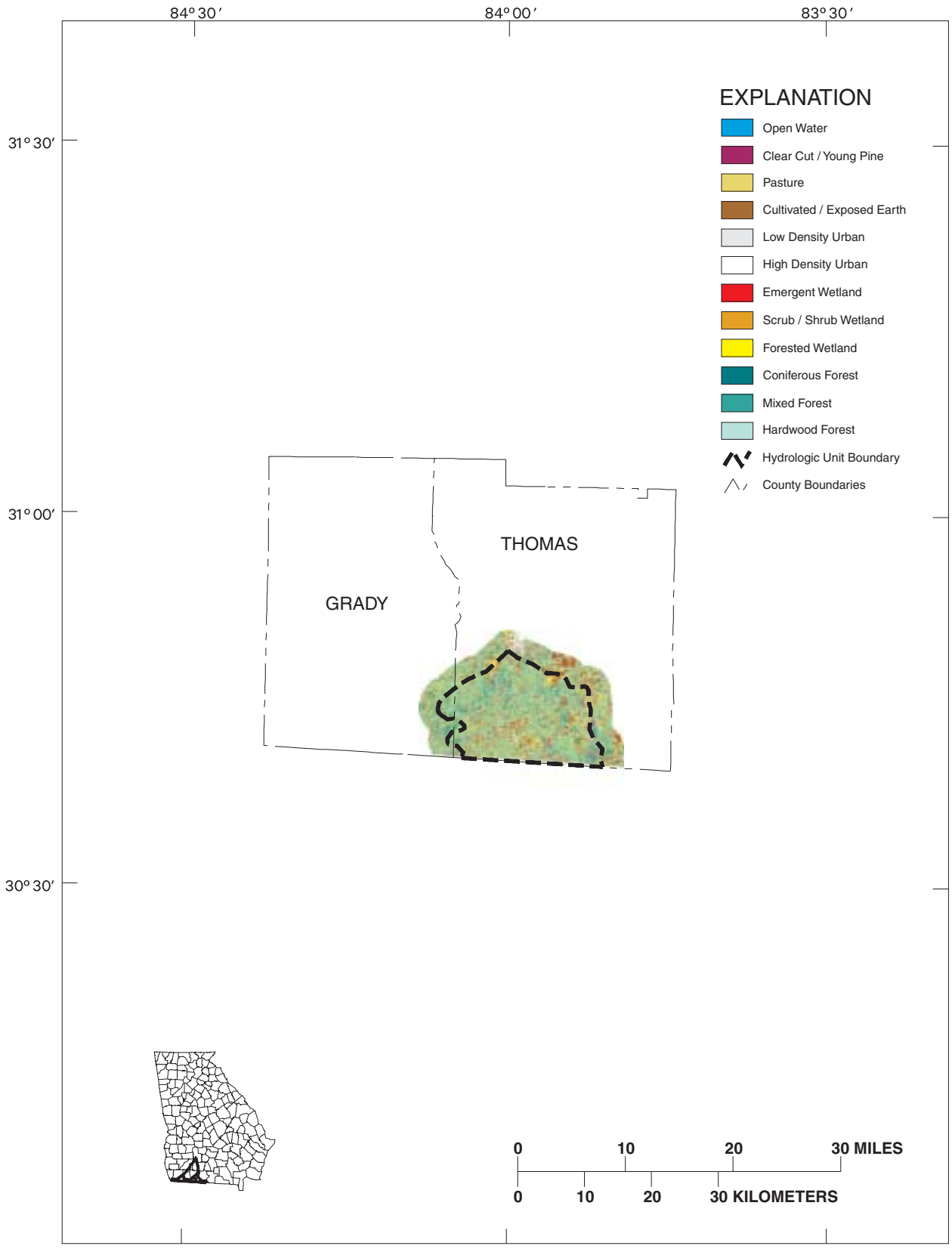


**Figure 2-16. Land Cover 1990, Ochlockonee River Basin, HUC 03120001**

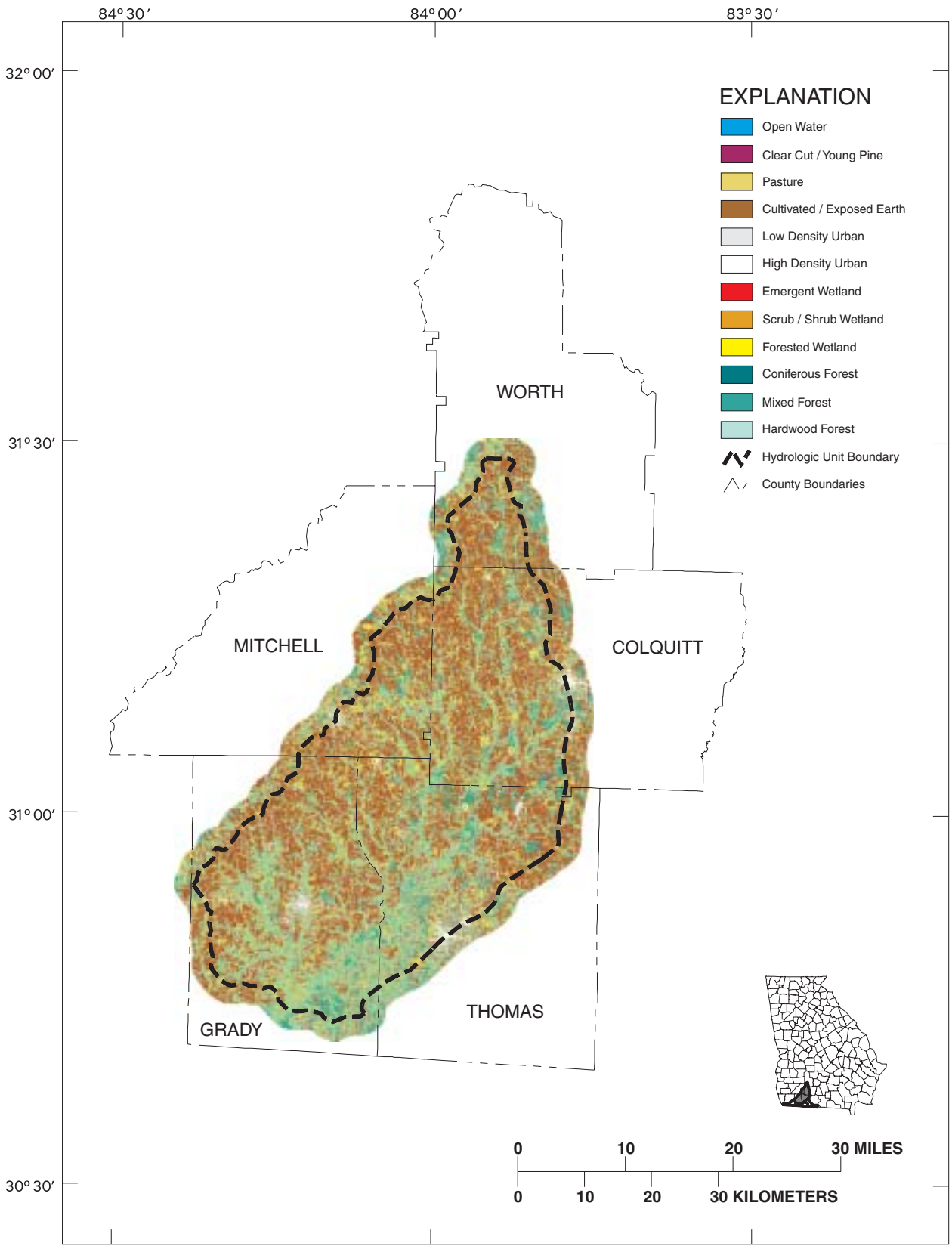


**Figure 2-17. Land Cover 1990, Ochlockonee River Basin, HUC 03120002**

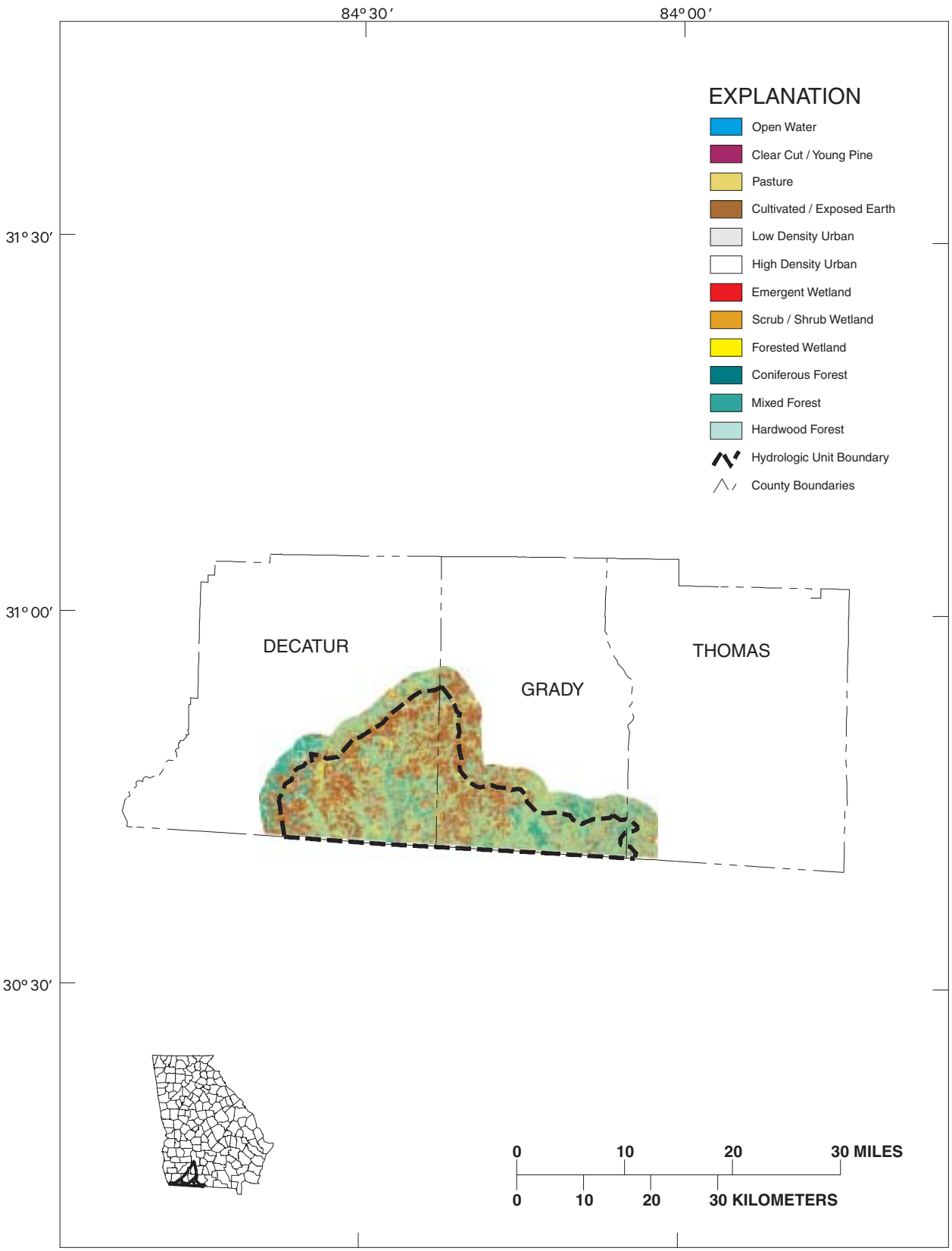


**Figure 2-18. Land Cover 1990, Ochlockonee River Basin, HUC 03120003**

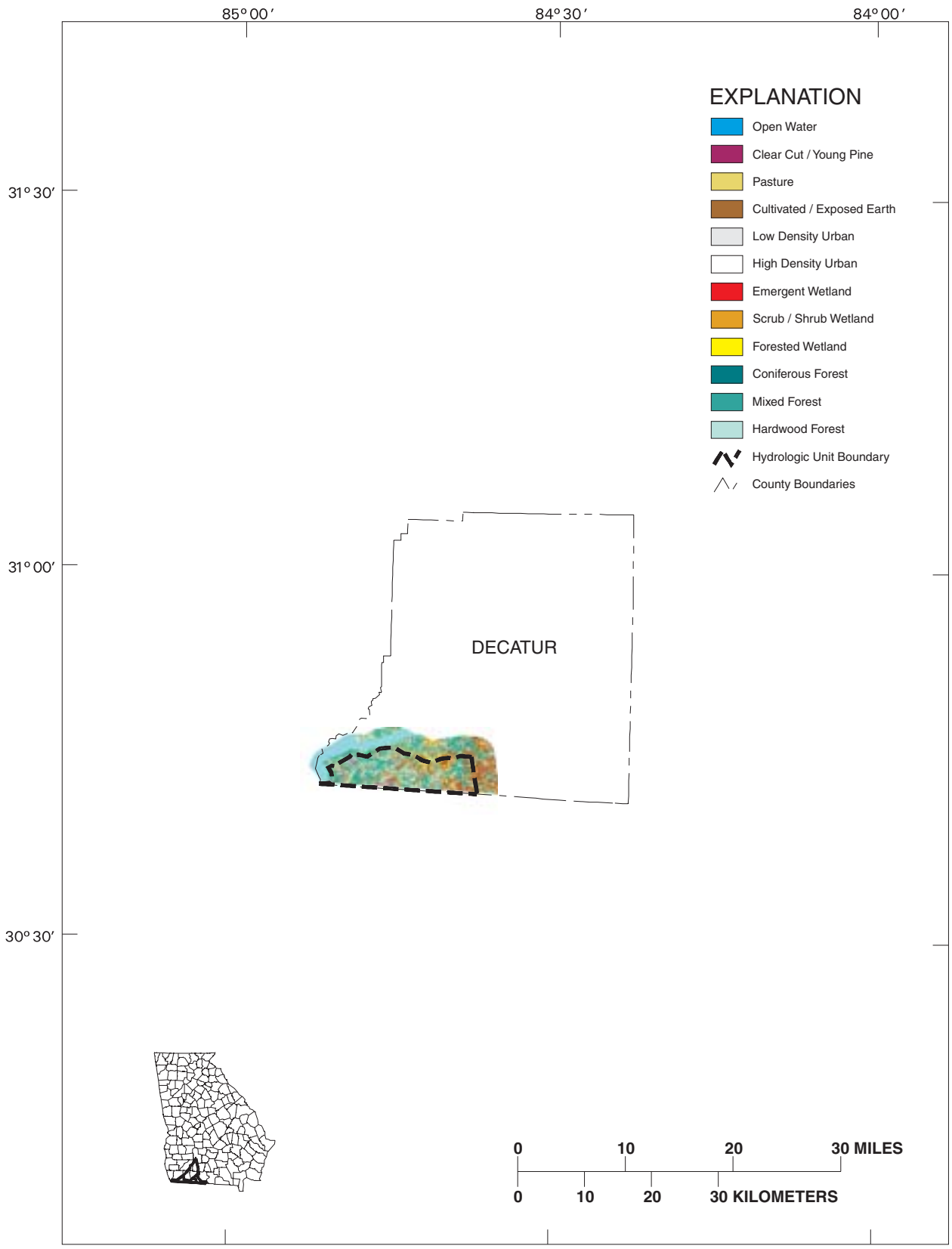


**Figure 2-19. Land Cover 1990, Ochlockonee River Basin, HUC 03130011**

**Table 2-2. Land Cover Statistics for the Ochlockonee Basin**

| Class Name | % | Acres |
|---|---|---|
| Open Water | 0.5 | 5,230.5 |
| Clear Cut/Young Pine | 4.6 | 44,978.2 |
| Pasture | 12.9 | 126,412.8 |
| Cultivated/Exposed Earth | 31.0 | 303,919.5 |
| Low Density Urban | 1.2 | 11,476.6 |
| High Density Urban | 0.4 | 4,116.6 |
| Emergent Wetland | 2.4 | 23,374.8 |
| Scrub/Shrub Wetland | 0.2 | 2,157.0 |
| Forested Wetland | 5.2 | 50,441.0 |
| Coniferous Forest | 6.4 | 62,475.9 |
| Mixed Forest | 30.6 | 300,098.6 |
| Hardwood Forest | 3.7 | 36,026.8 |
| Salt Marsh | 0.0 | 0.0 |
| Brackish Marsh | 0.0 | 0.0 |
| Tidal Flats/Beaches | 0.0 | 0.0 |
| *Total* | *100.0* | *979,881.0* |

### Forestry

Forestry is a major part of the economy within the basin. Markets for forest products afford landowners excellent investment opportunities to manage and sell their timber, pine straw, naval stores, etc., products. Statewide, the forest industry output for 1997 grew to approximately $19.5 billion dollars. The value added by this production, which includes wages, profits, interest, rent, depreciation and taxes paid into the economy reached a record high $9.3 billion dollars. Georgians are benefited directly by 177,000 job opportunities created by the manufacture of paper, lumber, furniture and various other wood products as well as benefiting the consumers of these products. Other benefits of the forest include hunting, fishing, aesthetics, wildlife watching, hiking, camping and other recreational opportunities as well as providing important environmental benefits such as clean air and water and wildlife habitat.

According to the US Forest Service's Forest Statistics for Georgia, 1997 report Thompson, 1997), there is approximately 1,228,400 acres of commercial forest land for the entire counties within the basin. Approximately 51.5 percent of the total land area is commercial forest. Private landowners account for 89 percent of the commercial forest ownership while the forest industry companies account for 10 percent. Governmental entities account for about 1 percent of the forest land. Figure 2-20 depicts silvicultural land use in the Ochlockonee basin. Forestry acreage in the Ochlockonee River basin is summarized in Table 2-3.

**Table 2-3. Forestry Acreage in the Ochlockonee River Basin**

| County | Commercial Forest | Pine | Oak-pine | Upland Hardwood | Lowland Hardwood |
|---|---|---|---|---|---|
| Brooks | 189,300 | 58,900 | 28,300 | 30,700 | 69,300 |
| Colquitt | 168,800 | 81,200 | 28,900 | 6,700 | 36,500 |
| Decatur | 201,100 | 108,900 | 36,200 | 23,800 | 28,100 |
| Grady | 166,700 | 56,600 | 28,100 | 50,800 | 29,500 |
| Mitchell | 121,500 | 79,000 | 7,700 | 19,500 | 11,600 |
| Thomas | 187,000 | 68,900 | 61,900 | 23,200 | 33,100 |
| Worth | 194,000 | 94,300 | 37,600 | 10,300 | 44,500 |
| *Total* | *1,228,400* | *547,800* | *228,700* | *165,000* | *252,600* |

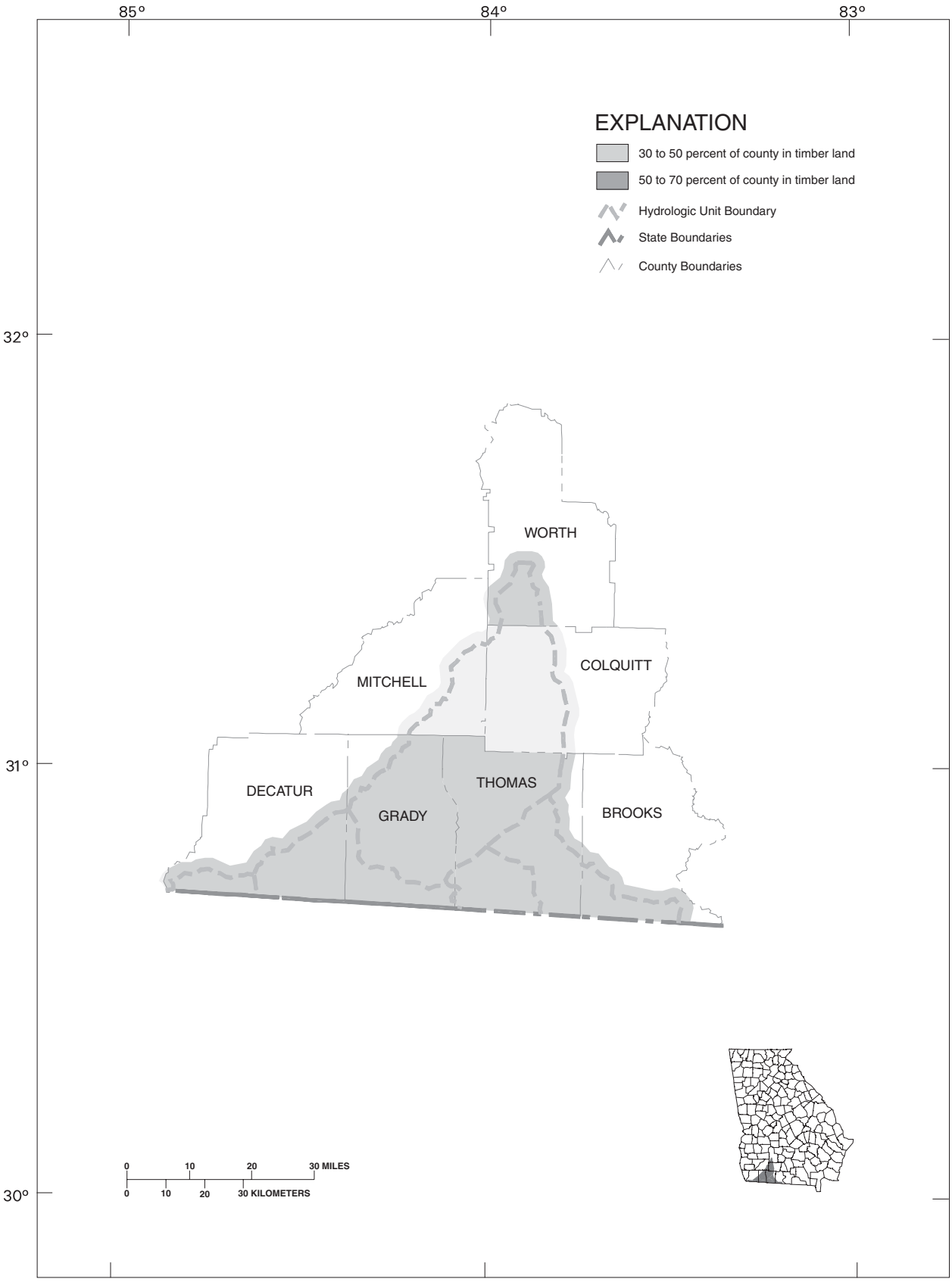


**Figure 2-20. Silviculture Land in the Ochlockonee River Basin**

For the period from 1982 to 1997, for the entire counties within the basin, the area classified as commercial forestland increased approximately 14 percent. The area classified as pine type increased approximately 7.3 percent. The area classified as oak-pine type increased approximately 83.5 percent. The area classified as upland hardwood decreased approximately 12.6 percent. The area classified as bottomland hardwood increased approximately 6.8 percent.

**Agriculture**

The Ochlocknee River Basin is one of Georgia's most productive agriculture areas. In fact, agriculture accounts for almost 40 percent of the land use in the basin despite soils that are strongly acidic, low in organic matter, and low in natural fertility.

In 1997, there were some 384,436 acres devoted to agricultural production (Figure 2-21). All major commodities that are grown in Georgia (peanuts, corn, cotton, oats, rye, sorghum, soybeans, and tobacco) are produced in the Basin. Grady is the top corn-producing county in Georgia, with Mitchell County also in the top ten with respect to corn production. Colquitt County leads the State in cotton and tobacco production. Brooks, Decatur, Mitchell, and Thomas Counties all rank among the State's top ten in cotton production. Worth County is among the State's leaders in peanut, rye, and sorghum production.

Orchard production is also significant in the Basin. In fact, Brooks County is Georgia's second most productive county for peaches; while Colquitt County also ranks in the top ten counties. Grady, Mitchell, and Thomas Counties all rank among the State's leaders with respect to pecan production. Additionally, the Basin serves as a core for a strong vegetable production market in the South Georgia.

Georgia's irrigation permit database shows 1,039 irrigation permits have been issued for the purpose of agricultural irrigation in the Ochlocknee River Basin. Commodity producers, in the counties that comprise the Basin, applied some 141.61 million gallons of water per day for supplemental irrigation to over 238,651 acres. This equates to an average of 7.9 inches per acre for 1995. A vast majority of agricultural water use for irrigation came from groundwater sources, some 83 percent, in 1995. Decatur, Mitchell, and Grady Counties contain two-thirds of the Basin's irrigated acreage.

In addition to commodity production, the Ochlocknee River Basin has an intensive animal industry as well. Table 2-4 shows number of animals by sector within the animal agricultural industry in the Basin. Brooks, Mitchell, and Colquitt Counties rank among the State's top ten counties in three areas—Mitchell and Colquitt with the number of cattle on farm; Mitchell and Brooks with milk production; and all three counties with respect to swine production. Poultry production is present, and growing, in the Basin due to new hatcheries and processing plants near Camilla.

Collectively, across all animal operations, there are an estimated 101,907 Animal Units (AUs) in the Basin. AUs are defined here as 1000 lb. Animal Equivalents. Animal operations, in the counties that comprise the Basin, used some 2.01 million gallons of water per day in 1995. Additionally, some 1.3 million tons per year of animal waste was generated on these operations. Producers handle animal waste through various management activities that utilize nutrients, and other soil amendment benefits, for commodity production.

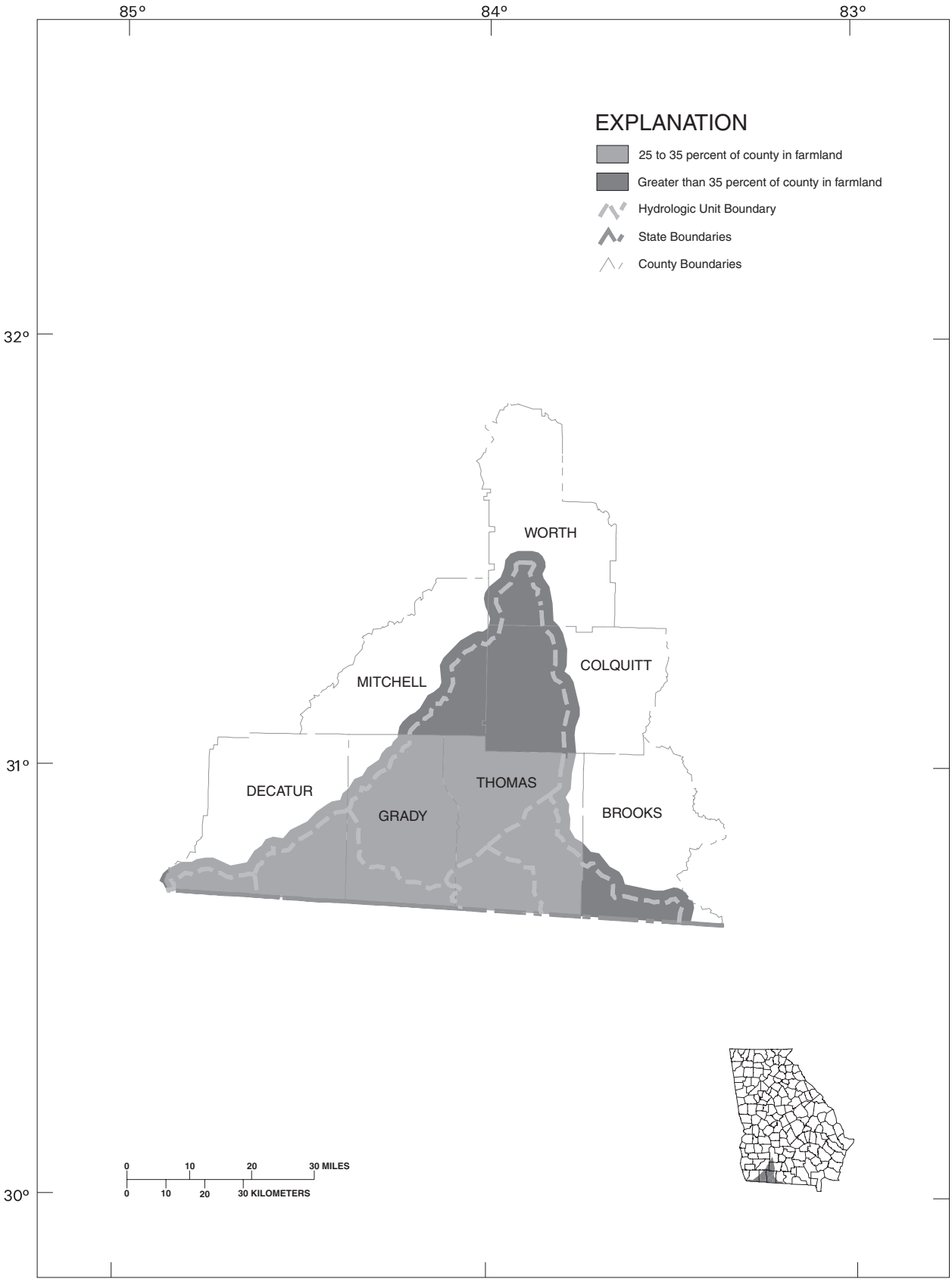


**Figure 2-21. Agriculture Land in the Ochlockonee River Basin**

**Table 2-4. Agricultural Operations in the Ochlockonee River Basin (data supplied by NRCS)**

| Element | Watershed 03120001 | Watershed 03120002 | Watershed 03120003 | Watershed 03110103 | Ochlockonee Basin Total |
|---|---|---|---|---|---|
| Acres | 23488 | 226951 | 22816 | 50368 | 323622 |
| Dairy Cattle (Head 1997) | 88 | 1887 | 294 | 482 | 2751 |
| All Cattle and Calves (Head 1997) | 2312 | 31090 | 7271 | 5599 | 46272 |
| Hogs and Pigs (Head 1996) | 4745 | 42918 | 5131 | 10950 | 63744 |
| Boilers (thousands, 1997) | 258031 | 13708983 | 3129689 | 217647 | 17314351 |
| Layers (thousands, 1997) | 0 | 27554 | 0 | 0 | 27554 |
| Irrigated Acres (1995) | 2011 | 38338 | 22673 | 5551 | 68573 |
| Total Agriculture Acres (1989-1997) | 30059 | 266116 | 24583 | 63677 | 384436 |

Agriculture is a key component of the Ochlocknee River Basin's economy. In 1997, agriculture contributed over $2.5 billion to the local economy. Along with significant agricultural production, however, comes an increased potential for agricultural non-point source pollution. As a part of the river basin planning process, the Georgia Soil and Water Conservation Commission (GSWCC)—with technical assistance from the Natural Resources Conservation Service (NRCS)—assess agricultural impacts on water quantity and water quality. Historical, present, and future agricultural water demand is assessed in Section 3; while agricultural non-point source pollution is assessed in Section 4.

## 2.3 Local Governments and Planning Authorities

Many aspects of basin management and water quality protection depend on decisions regarding zoning, land use, and land management practices. These are particularly important for the control of nonpoint pollution—pollution that arises in storm water runoff from agriculture, urban or residential development, and other land uses. The authority and responsibility for planning and control of these factors lies with local governments, making local governments and jurisdictions important partners in basin management.

The Department of Community Affairs (DCA) is the state's principal department with responsibilities for implementing the coordinated planning process established by the Georgia Planning Act. Its responsibilities include promulgation of minimum standards for preparation and implementation of plans by local governments, review of local and regional plans, certification of qualified local governments, development of a state plan, and provision of technical assistance to local governments. Activities under the Planning Act are coordinated with the Environmental Protection Division (EPD), Regional Development Centers (RDCs), and local governments.

### 2.3.1 Counties and Municipalities

Local governments in Georgia consist of counties and incorporated municipalities. As entities with constitutional responsibility for land management, local governments have a significant role in the management and protection of water quality. The role of local

governments includes enacting and enforcing zoning, storm water and development ordinances; undertaking water supply and wastewater treatment planning; and participating in programs to protect wellheads and significant ground water recharge areas. Many local governments are also responsible for operation of water supply and wastewater treatment facilities.

The Ochlockonee River basin includes part of 7 Georgia counties (Table 2-5 and Figure 2-2). Municipalities or cities are communities officially incorporated by the General Assembly. Georgia has more than 530 municipalities. Table 2-6 lists the municipalities in the Ochlockonee River basin.

**Table 2-5. Georgia Counties in the Ochlockonee River Basin**

| Counties Entirely Within the Ochlockonee River Basin | Counties Partially Within the Ochlockonee River Basin | Counties With Less Than 20% Area Within the Basin |
|---|---|---|
| None | Colquitt, Mitchell, Decatur, Grady, Thomas | Worth, Brooks |

**Table 2-6. Georgia Municipalities in the Ochlockonee River Basin**

| | | | | |
|---|---|---|---|---|
| **HUC 03120001** | | | | |
| Metcalf | | | | |
| **HUC 03120002** | | | | |
| Bridgeboro | Doerun | Laney | Ochlockonee | Sigsbee |
| Cairo | Funston | Meigs | Pelham | Thomasville |
| Coolidge | Gordy | Merrillville | Pine Park | Whigham |
| Cotton | Hartsfield | Moultrie | Sale City | |
| Dawesville | Hinsonton | Murphy | Schley | |
| **HUC 03120003** | | | | |
| Climax | Attapulgus | Calvary | Beachton | |
| Fowlton | Amsterdam | Reno | | |

## 2.3.2 Regional Development Centers

Regional Development Centers (RDCs) are agencies of local governments, with memberships consisting of all the cities and counties within each RDC's territorial area. There are currently 17 RDCs in Georgia. RDCs facilitate coordinated and comprehensive planning at local and regional levels, assist their member governments with conformity to minimum standards and procedures, and can have a key role in promoting and supporting management of urban runoff, including watershed management initiatives. RDCs also serve as liaisons with state and federal agencies for local governments in each region.

Funding sources include members' dues and funds available through DCA. Table 2-7 summarizes the RDCs and the associated counties within the Ochlockonee River basin.

**Table 2-7. Regional Development Centers in the Ochlockonee River Basin**

| Regional Development Center | Member Counties with Land Area in the Ochlockonee Basin |
|---|---|
| Southwest Georgia | Worth, Mitchell, Colquitt, Decatur, Grady, Thomas |
| South Georgia | Brooks |

## 2.4 Water Use Classifications

### 2.4.1 Georgia's Water Use Classification System

The Board of Natural Resources was authorized through the Rules and Regulations for Water Quality Control promulgated under the Georgia Water Quality Control Act of 1964, as amended, to establish water use classifications and water quality standards for the surface waters of the State.

The water use classifications and standards were first established by the Georgia Water Quality Control Board in 1966. Georgia was the second state in the nation to have its water use classifications and standards for intrastate waters approved by the federal government in 1967. For each water use classification, water quality standards or criteria were developed which established a framework to be used by the Water Quality Control Board and later the Environmental Protection Division in making water use regulatory decisions.

The water use classification system was applied to interstate waters in 1972 by the EPD. Georgia was again one of the first states to receive federal approval of a statewide system of water use classifications and standards. Table 2-8 provides a summary of water use classifications and criteria for each use.

**Table 2-8. Georgia Water Use Classifications and Instream Water Quality Standards for Each Use**

| | Bacteria (fecal coliform) | | Dissolved Oxygen (other than trout streams)[2] | | pH | Temperature (other than trout streams)[2] | |
|---|---|---|---|---|---|---|---|
| Use Classification[1] | 30-Day Geometric Mean[3] (no/100 ml) | Maximum (no./100ml) | Daily Average (mg/l) | Minimum (mg/l) | Std. Units | Maximum Rise above Ambient (°F) | Maximum (°F) |
| Drinking Water requiring treatment | 1,000 (Nov-April) 200 (May-October) | 4,000 (Nov-April) | 5.0 | 4.0 | 6.0-8.5 | 5 | 90 |
| Recreation | 200 (Freshwater) 100 Coastal) | -- | 5.0 | 4.0 | 6.0-8.5 | 5 | 90 |
| Fishing | 1,000 (Nov-April) | 4,000 (Nov-April) | 5.0 | 4.0 | 6.0- | 5 | 90 |
| Coastal Fishing[4] | 200 (May-October) | | | | 8.5 | | |
| Wild River | No alteration of natural water quality | | | | | | |
| Scenic River | No alteration of natural water quality | | | | | | |

[1] Improvements in water quality since the water use classifications and standards were originally adopted in 1972 provided the opportunity for Georgia to upgrade all stream classifications and eliminate separate use designations for "Agriculture", "Industrial", "Navigation", and "Urban Stream" in 1993.

[2] Standards for Trout Streams for dissolved oxygen are an average of 6.0 mg/l and a minimum of 5.0 mg/l. No temperature alteration is allowed in Primary Trout Streams and a temperature change of 2°F is allowed in Secondary Trout Streams.

[3] Geometric means should be "based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours." The geometric mean of a series of N terms is the Nth root of their product. Example: the geometric mean of 2 and 18 is the square root of 36.

[4] Standards are same as fishing with the exception of dissolved oxygen which is site specific.

Congress made changes in the CWA in 1987 that required each state to adopt numeric limits for toxic substances for the protection of aquatic life and human health. To comply with these requirements, the Board of Natural Resources adopted 31 numeric standards for protection of aquatic life and 90 numeric standards for the protection of human health. Appendix B provides a summary of toxic substance standards that apply to all waters in Georgia. Water quality standards are discussed in more detail in Section 5.2.1.

In the latter 1960s through the mid-1970s there were many water quality problems in Georgia. Many stream segments were classified for the uses of navigation, industrial, or urban stream. Major improvements in wastewater treatment over the years have allowed the stream segments to be raised to the uses of fishing or coastal fishing which include

more stringent water quality standards. The final two segments in Georgia were upgraded as a part of the triennial review of standards completed in 1989. All of Georgia's waters are currently classified as either fishing, recreation, drinking water, wild river, scenic river, or coastal fishing.

### 2.4.2 Water Use Classifications for the Ochlockonee River Basin

Waters in the Ochlockonee River basin are classified as fishing, recreation.

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