TABLE 1.—*Summary of ground-water conditions and geohydrologic relationships that influence the water resources*

Geology, characteristics of deposits, and water-bearing properties	Ground water				Ground water–surface water relations	Data needed
	Availability	Quality	Present use	Potential use		
Southern and central parts of basin						
Holocene alluvial clay, silt, sand, and gravel deposits restricted to stream valleys and coastal lowlands; deposits generally are thin; relative permeability unknown but probably less than that for older Quaternary and Pliocene deposits.	Shallow domestic water supplies available in Jackson area; moderate to large domestic and industrial supplies in southeastern Louisiana; shallow water level.	Soft to moderately hard in central part of basin; soft, dissolved-solids content of 50 mg/l or less in southern part; salt water intrudes from tidal estuaries.	Comparatively undeveloped.	Large quantities of water available in Louisiana; relatively low temperature makes water from these deposits excellent for some industrial purposes and for irrigation.	Recharge mainly from rainfall; streams are largely effluent much of year, and ground water contributes to base flow; streams influent during brief high-water stages.	Comprehensive water-resources study, to detail hydrology and to determine water quality and occurrence of salt water in aquifers near coast and in estuaries and stream channels.
Pleistocene terrace deposits of silt, sand, and gravel; relatively thin (0–100 ft) along stream valleys of northern and central parts of Pearl basin, but coastal terrace deposits gradually dip and thicken southward; lagoonal deposits near coast; high permeability.[1]	Large quantities of water available in southern part of basin, generally under water-table conditions; small quantities probably available in northern part of basin (wells produce less than 100 gpm).[2]	Soft to moderately hard water, moderate dissolved-solids content[3]; excessive iron content (more than 0.3 mg/l) and dissolved gases troublesome for some uses; pH less than 7.	Developed for industrial use in southeastern Louisiana; important source of shallow rural and domestic water supplies in uplands.	Large quantities of water available; shallow deposits are potential sources where deeper beds contain salt water near coast.	Permeable deposits receive and store large quantities of rainfall; ground water is generally under water-table conditions and moves from high areas to stream valleys; helps maintain large dry-weather flow of streams, particularly in central and southern parts of basin.	Detailed mapping and field studies of lithology and hydrology of terrace deposits connecting with younger alluvium in southeastern Louisiana and in Mississippi, to learn of water-bearing characteristics. Streamflow analysis.
Early Quaternary and Pliocene deposits of clay, sand, and gravel crop out in the uplands of Washington Parish, La., and of Pearl River County and the south-central part of Pearl River basin in Mississippi; includes Citronelle Formation sand and gravel; high permeability.	Sands yield moderate to large quantities of water (wells can produce 3,000 gpm each); aquifers dip coastward to form artesian systems with some flowing wells in lowland; abundant water sources attractive to industries needing large supplies.	Predominantly soft, sodium bicarbonate type of water, low in dissolved-solids content; most shallow sands in uplands and intermediate-depth sands in Bogalusa and Columbia areas yield water containing more than 0.3 mg/l iron.	Source of most public and many industrial water supplies in much of central and southern parts of basin.	Extensive development of large quantities of water is possible because of indications of high permeabilities and well yields; growing industrial economy will result in development of supplies in the future.	Streams flowing across these deposits are effluent most of year, and ground water maintains large base flow; in south-central part of Pearl basin, minimum 7-day Q_2 streamflow is greater than 0.20 cfs per square mile of drainage area; some streams are influent for brief periods during high-water stages.	Comprehensive study by area or county, including mapping of geologic formations, to learn about lithology and hydrology of aquifers; quality-of-water studies, to delineate areas of salt water and to determine potential danger to fresh-water supplies; data on recharge-discharge relations by years and seasons.
Miocene blue-green clay and gray to olive sand crop out in belts of formations that dip south-southwestward at 25 to 100 feet per mile; steeply downwarped in Louisiana and Hancock County, Miss., areas toward axis of Mississippi River structural trough; deposits thicken downdip; moderate to high permeability; transmissibility values high where aquifer is thick and has been tested.	Several artesian aquifers of varying thickness and depth in central and southern parts of basin capable of yielding moderate to large quantities of water (avg well 1,000 gpm for industrial needs); areas attractive to industries in need of large water supplies.	Soft, sodium bicarbonate type of water with low to moderate dissolved-solids content; salt-water encroachment may be problem in coastal area.	Main source of water supply for many domestic, industrial, and municipal users in about half the basin. Deeper aquifers not used widely because of available supplies at shallower depths.	Large deep, mainly untapped ground-water reservoirs occur in central and southern parts of basin; test drilling at NASA site revealed potential supplies of fresh water to depth of more than 2,500 feet.	Streams receive discharge from aquifers in some areas and may contribute to aquifer recharge in others.	Detailed studies with test drilling, to define aquifers for industrial- and public-supply needs; knowledge of many physical facts of water, to aid planners, developers, and managers in making decisions.
Northern part of basin						
Oligocene calcareous clay, sandy gray limestone, and gray fine to medium sand; upper, clayey and limy beds have moderate permeability locally; lower part of Forest Hill Sand in southern Hinds and Rankin Counties is relatively thin and has moderate permeability.	Two known artesian aquifers; limy beds yield water to wells locally; limited supplies available south and southeast of Jackson.	Hard water, dissolved solids average about 500 mg/l; fluoride content high in some places; color increases in downdip direction.	Main source of water supply for domestic and farm use in southern parts of Hinds and Rankin Counties and for towns of Terry and Florence.	Comparatively small quantities of water available for limited development in local areas in central part of basin.	Interchange of ground water and surface water is of little significance.	Reconnaissance studies, to aid in selection of most suitable aquifers or streamflow for water supplies.
Eocene clay, marl, lignitic and glauconitic materials, and beds of fine to medium sand crop out in northern third of basin in belts of formations that dip southwestward beneath successively younger beds; normal dip, 20 to 35 feet per mile in central and northern parts of basin; thick aquicludes separate three major aquifers and at least two minor aquifers; permeabilities generally moderate to high.	Moderate to abundant supplies of ground water available in sands of Cockfield Formation, Sparta Sand, and Meridian–upper Wilcox aquifer systems; in northern fourth of basin, aquifers in lower Wilcox section capable of moderate to large yields; artesian conditions with fairly low lift and moderate to large well production attractive to industries needing moderate to large supplies.	Ground water in shallower aquifers low in dissolved-solids content, usually soft; pH less than 7; excessive iron content a common objectionable feature. In deeper aquifers, water is a soft, sodium bicarbonate type; pH above 7; dissolved-solids content averages about 400 mg/l, except for deeper Wilcox water, which is somewhat higher. Saline water exists in Sparta Sand in southern half of basin and in Meridian–upper Wilcox system from latitude of Jackson southward.	Cockfield is widely used in belt 50 to 60 miles wide from outcrop southward for domestic and farm, municipal, and some industrial needs; Sparta Sand is source of supply for several industries and municipalities in north-central part of basin, including Jackson area, and for hundreds of domestic and farm wells; Meridian–upper Wilcox aquifer system used in northern part of basin for several municipal and industrial supplies and for farm use.	Moderate water supplies can be developed, as much as 500 gpm per well, from Cockfield; large supplies, as much as 1,000 gpm per well, from Sparta in area from Scott County to southern Copiah and Simpson Counties; large quantities of water remain untapped in Meridian–upper Wilcox system from outcrop to Jackson area; sands of lower Wilcox contain large untapped reservoirs in northern part of basin.	Portion of basin underlain by Eocene deposits has smallest average minimum 7-day Q_2 streamflow of entire basin; water impounded in reservoir north of Jackson probably contributes little to recharge of Cockfield because reservoir is mostly on Yazoo Clay outcrop; substantial recharge to aquifers is maintained by infiltration of rainfall and flooding in outcrop areas; some aquifer overflow contributes to base flow of streams.	Knowledge on extent and thickness of aquifers in area northeast of Rankin County; more accurate definition of downdip extent of fresh water in each aquifer and of zones of fresh water–salt water mixing; pumping tests and specific-capacity data, to better define aquifer ability to transmit and store water; chemical quality data, to guide water developers and managers in providing best available supplies; current and potential water-use evaluations.

[1] High permeability: more than 1,000 gpd per square foot. Moderate permeability: 200 to 1,000 gpd per square foot. Low permeability: less than 200 gpd per square foot.
[2] Large production: more than 500 gpm per well. Moderate production: 100 to 500 gpm per well. Small production: less than 100 gpm per well.
[3] High dissolved solids: 500 to 1,000 mg/l. Moderate dissolved solids: 100 to 500 mg/l. Low dissolved solids: less than 100 mg/l. Saline water: more than 1,000 mg/l.