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GEOLOGICAL SURVEY

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KENTUCKY GEOLOGICAL SURVEY
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WATER-SUPPLY PAPER 1987
PLATE 11

SYSTEM	SERIES	GROUP	FORMATION	SECTION	THICKNESS (IN FEET)	LITHOLOGY	TOPOGRAPHY AND GEOLOGIC SETTING	HYDROLOGY
QUATERNARY	Pleistocene and Holocene		Alluvium of the Mississippi River		0–197+	Gray micaceous silt to white clayey silty sand. Beds of very fine grained sand and compact clay. Thin sandy gravel at the surface adjacent to river. Thick carbonaceous pebbly to gravelly sand bed near Wickliffe. Brown to gray carbonaceous pebbly to gravelly sand. Contains abundant green and dark-colored pebbles and white quartz. Locally, sandy gravel lenses are present; a deep channel through Sassafras Ridge is predominantly sandy gravel.	Flood-plain deposits in the valley of the Mississippi River. Much of the material was probably deposited by the melt water of the Pleistocene glaciers.	Yields from shallow driven wells generally are reported adequate for domestic use; however, near the river, water levels fluctuate greatly and some shallow wells are dry or are inadequate in the summer and fall. Will not yield large amounts of water. No drilled wells are completed in this shallow clayey unit. Water is hard and contains objectionable amounts of iron and manganese which may limit the use unless treated. Wells are easily contaminated because of the shallow water table. Drilled wells may supply large amounts of water from the deeper gravelly unit for irrigation and for public and industrial uses, except in areas where the saturated thickness is less than 10 feet. Saturated thickness generally ranges from about 30 to 150 feet and a well may yield 3,000 gpm.(gallons per minute) or more in favorable areas. Yields of 1,000 gpm may be expected in most places. The water is hard and contains objectionable amounts of iron and manganese.
			Alluvium of the Ohio River		0–122+	Brown to gray lignitic sandy silt to micaceous silty sand. A few gravel lenses. Trace of dark-colored and green minerals downstream from Colvin Lake. Predominantly silt south of Humphrey Creek; mostly sand to the north. Gray to brown pebbly sand. Lignitic and locally micaceous. Contains trace of green and dark-colored minerals south of Colvin Lake.	Flood-plain deposits in the valley of the Ohio River. Deposits were transported partly by the melt water of the Pleistocene glaciers. Upstream from Colvin Lake, deposits are not considered to be of glacial origin and are thin.	Yields from driven wells generally are reported adequate for domestic use. No drilled wells are completed in this shallow clayey unit. Locally, the unit rests on sediments of Tertiary or Cretaceous age and may have an insufficient saturated thickness. Water is soft to moderately hard and contains an objectionable amount of iron. Drilled wells may supply large amounts of water from the deeper gravelly unit for irrigation and public and industrial uses, except in areas where the saturated thickness is less than 10 feet. The saturated thickness ranges from about 25 to 70 feet. Possible yields of wells range from 100 to more than 1,400 gpm. The water is soft to moderately hard and contains objectionable amounts of iron and manganese.
			Alluvium of the Tennessee River		0–140±	Gray to brown clayey silt and lenses of gravelly sand. Slightly micaceous. Brown to gray sandy coarse to fine gravel.	Flood-plain deposits in the valley of the Tennessee River. The material was derived from the Cretaceous and Paleozoic sediments.	Yields from shallow dug and bored wells are generally reported adequate for domestic use. Shallow wells may go dry during dry seasons. The water is soft to moderately hard. Drilled wells supply large amounts of water for public and industrial uses in the area of a deep channel. Smaller yields are available elsewhere. Saturated thickness in the deep channel is between 50 and 60 feet. The maximum yield at an individual well is estimated to be about 3,500 gpm. The water is moderately hard to hard and contains objectionable amounts of iron and manganese.
			Alluvium of small rivers and creeks		0–120+	Gray to brown silty sandy clay. Lenses of clayey gravel or sand. Gray to brown gravelly to sandy gravel. Locally, very clayey.	Flood-plain deposits derived from older rocks in the Jackson Purchase region.	Yields from shallow bored wells generally are reported adequate in major tributary valleys and at places in minor tributary valleys. The silty phase of the alluvium is generally too clayey to supply sufficient water to shallow wells. Large yields may be obtained near the mouths of the major tributaries. The water may contain objectionable amounts of iron. Shallow wells may be easily contaminated.
	Pleistocene		Lake deposits		0–100?	Brown sandy gravel and brown fine-grained sand. Not covered by loess. Yellowish- to grayish-brown slightly micaceous silt. Abundant iron-oxide(?) concretions. Thin clayey sandy gravel near base.	Gravel bars are common near mouths of streams at 355 feet altitude. Silt probably was deposited at the same time as loess in the upland.	Lake silt transmits water to underlying aquifers, but does not furnish adequate yields to wells. Gravel near base may supply some water to bored wells. Gravel bars yield sufficient water for domestic use to large-diameter bored wells. Owing to the shallow water table and the permeable surficial material, the ground water may be easily contaminated.
			Loess		0–85	Yellowish-brown to brown unstratified clayey silt. Slightly sandy. Contains calcareous concretions in thicker deposits adjacent to the Mississippi River. Fossiliferous near Hickman.	Covers all upland and gently sloping sides of stream valleys. Thick deposits adjacent to the Mississippi River thin to a veneer near Kentucky Lake. Forms steep bluffs where thick. Many badland or heavily eroded gullies occur in the upland.	Not an aquifer. When saturated by rainfall, transmits water to underlying aquifers.
TERTIARY AND QUATERNARY	Pliocene(?) and Pleistocene		Gravel, sand, silt, and clay		0–93+	Brown to tan sandy silt and some medium-grained sand and chert pebbles. Slightly micaceous. Brown to white poorly sorted sandy gravel and lenses of sand. Locally silty and clayey, but appears less so where saturated. Commonly coarser than higher level gravel.	River-terrace deposits lying at least on three cut surfaces. The pre-Pliocene surface consists of channels and terraces cut by an intricate drainage system. The base of the lower terrace, ranging from 300 to 340 feet altitude, occurs chiefly west of Paducah and in a small area from Symsonia to Little Cypress. A second surface slopes from 390 feet altitude near Paducah to 420 feet altitude in the central part of the Purchase. The third surface slopes from 440 feet to 500 feet near the Tennessee State line.	Yields sufficient water from the lower terrace west of Paducah for industrial demands. Maximum yields are in the order of 1,000 gpm. In some of the area, yields are insufficient for domestic demands. Saturated thickness ranges from less than a foot to normally about 40 feet.
			Gravel, sand, silt, and clay [1]		0–90+	Brown to brick-red sandy gravel. Poorly sorted. Brown to white medium-grained sand. Lenses of chert pebbles and cobbles of gray, partly carbonaceous, clay. Iron-oxide cemented concretions are common. Brown to white sandy gravel. Locally, silty and clayey. Poorly sorted. Layers, locally thick in Calloway County, of iron-cemented gravel.		Most of the area of higher terraces probably will not yield sufficient water for industrial demands. Saturated gravel is underlain by clay, the normal saturated thickness being about 5 feet. Gravel of greater saturated thickness may be present in deeper than normal channels in broad areas. The saturated thickness is reduced in southern Marshall and Calloway Counties owing to the large amount of cemented gravel.
TERTIARY	Eocene	Claiborne	Cockfield through Jackson Formation undivided	20–80 / 60–140 / 100–200+		Light-gray, light-brown, and yellowish-white fine- to coarse-grained sand; medium-gray to brownish-black silty to sandy clay; and olive-gray to yellowish-brown clayey silt. Base of formation, recognized in well cuttings and geophysical logs where the basal lithology is sand. Where the basal lithology is silt or clay the contact with the Cook Mountain Formation is difficult to recognize.	Crops out in roadcuts and creeks generally south and west of Obion Creek. Limited data suggest that the formation occupies a channel eroded into underlying formations from Bardwell southward along U.S. Highway 51.	Yields sufficient water for domestic use south and west of Obion Creek. Locally, may yield enough water for a small public-supply or industrial well; a public-supply well at Arlington yields 300 gpm.
			Cook Mountain Formation		60–100	Light- to medium-gray silty clay, micaceous in places and locally lignitic in upper part; light- to medium-gray or brownish-black clay, locally lignitic. Base of formation easily recognized in well cuttings and on geophysical logs where the upper Sparta is sand. Where the Sparta is mostly clay the base is recognizable on geophysical logs but is difficult to recognize in well cuttings.	Crops out in creeks and roadcuts generally along the north or east valley walls of Obion Creek upstream from Arlington.	Not an aquifer. Retards the movement of ground water between the overlying and the underlying aquifers.
			Sparta Sand		50–250	Reddish-brown to white very coarse to very fine grained sand. White to black lignitic clay and silt. Lateral changes in facies are common. Percentage of sand varies greatly in a short distance and ranges from less than 20 to about 80 percent. Clay content increases toward the Mississippi River. Clay at the base of unit may be equivalent to the Zilpha Clay of northern Mississippi and ranges in thickness from 5 to 25 feet. Base of formation easily recognized in well cuttings and on geophysical logs; however, in areas where the Sparta Sand is a good aquifer, wells generally are drilled only deep enough to penetrate good aquifer sand. In such wells the Sparta-Cook Mountain contact can be mistakenly identified as the Tallahatta-Sparta contact.	Crops out in creeks and roadcuts between Mayfield Creek and West Fork Clarks River and between Mayfield Creek and the Ohio River. Mantled by Pliocene(?) gravel and Pleistocene loess.	Yields are highly variable owing to facies changes. Where unit is largely sand, yields may be as much as 1,000 gpm. Locally, where clay content is high, wells must be finished in underlying aquifer. The water is soft to moderately hard and contains concentrations of dissolved solids which may increase with an increasing clay content of the unit.
			Tallahatta Formation		160–400	Reddish-brown to white very thick bedded well-sorted granular to very fine grained sand. Contains beds of lignitic white to black clay. Clay beds are normally less than 10 feet thick. Base of formation easily recognized in well cuttings and on geophysical logs where the upper Wilcox is clay. Where the upper Wilcox is sand the base of the Tallahatta, in this report, is chosen at small inflections on geophysical logs in order to maintain a Wilcox thickness comparable to the nearest logs where the upper Wilcox is more readily recognized; in well cuttings the two formations are separable only if the sand lithology changes appreciably at the contact.	Crops out in roadcuts and creeks chiefly between Mayfield Creek and West Fork Clarks River and between Mayfield Creek and the Ohio River. Mantled by Pliocene(?) gravel and Pleistocene loess.	Drilled wells supply large amounts of water for public-supply and industrial uses. Saturated thickness ranges from a few feet near the edge of outcrop to more than 360 feet near the Mississippi River. Yields of 3,000 gpm or more may be obtained in favorable areas from individual wells. Wells at Hickman, Mayfield, Hickory, and Hardeman tap only the upper 10 to 25 percent of the saturated thickness. The water is soft and contains a low concentration of dissolved solids. Iron content is below 0.3 mg/l (milligrams per liter) in area of outcrop of aquifer, but increases downdip sufficiently to require treatment for removal of iron for certain uses.
			Wilcox Formation	20–170 / 0–320 / 100–400		Light-gray to black silty clay to sandy silt, lignitic in places; locally, clay is not silty. Contains lenses, a few inches to several feet thick, of reddish-brown sand. Based on geophysical logs, the clay in northwestern Graves, northern Carlisle, and Ballard Counties contains thick beds of sand. The relation of these sands with those in outcrop is uncertain. Reddish-brown to white fine to very coarse grained sand. Variable thickness appears to be caused by pre-Eocene erosion. This unit may be locally absent or as thick as 170 feet. Base of formation is generally recognized in well cuttings and on geophysical logs; however, where sand beds are present in the upper part of the Porters Creek the base of the Wilcox on some geophysical logs may not show clearly; accurately collected well cuttings are needed to identify the base. The base is normally recognized as an "off scale" resistivity reading on commercially made electrical logs.	Crops out in creek beds along the valley of West Fork Clarks River and near U.S. Highway 60 from Paducah to Barlow.	May yield sufficient water for domestic use to some large-diameter bored wells and locally in the area of outcrop to drilled wells. High clay content of unit may cause problems in well completion. Thicker sands, 30 to 90 feet thick, between Wickliffe and Mayfield may yield sufficient water for industrial needs, but locally may be too clayey to furnish large yields. Wherever more than a few feet of sand is saturated, it will yield adequate amounts of water for domestic use. Locally, yields of about 100 gpm are available for commercial or light industrial use.
	Paleocene	Midway	Porters Creek Clay		100–320+	Light- to dark-gray or black slightly to very micaceous, predominantly montmorillonitic clay. Streaks of fine- to medium-grained sand. Abundant fine to very fine grained sand, commonly glauconitic, in upper part. Glauconitic sand or clay and black clay at base; basal sand is locally fossiliferous. Limestone at base in extreme southwest part of area. Dikes filled with very fine to fine-grained sand are common in outcrop. Base of formation is not easily recognized in well cuttings or in geophysical logs where the upper McNairy beds contain clay.	Crops out on both sides of the West Fork Clarks River, mainly on the west and south sides of the East Fork Clarks River and Perkins Creek. Commonly exposed in small tributaries of Clarks River and Perkins Creek where it underlies the terrace deposits or thin Eocene deposits. Covered completely by terrace deposits west of Paducah West quadrangle, except for one small exposure in northwest Heath quadrangle. Forms a buried valley wall between various terrace levels.	Large-diameter bored wells in the upper sand locally in the Paducah West and Oak Level quadrangles yield adequate water for domestic use. In Lone Oak, a few abandoned jetted wells may have been completed in this sand. Quality of water ranges from good to very poor. Some deep large-diameter wells around the Brewers-Harvey-Symsonia area have bored into the basal interbedded glauconitic sand and clay and yield adequate water for domestic use. The quality of water is good to very poor, containing objectionable amounts of iron.
CRETACEOUS	Upper Cretaceous		McNairy Formation [2]		0–400	Brown to white micaceous very fine to fine-grained sand in western Marshall, McCracken, and Ballard Counties. Medium- to coarse-grained, slightly micaceous sand in central Marshall and Calloway Counties. Thin-bedded gray micaceous very fine to fine-grained sand and dark-gray lignitic clay. Locally includes lenses of fine- to medium-grained sand. Brown to white slightly to very micaceous very fine to coarse-grained sand. Silty and clayey in northern Jackson Purchase. Contains abundant heavy minerals, especially in the south. Pebbles are common near the Tennessee State line. Near Kentucky Dam, the lower part contains beds of loose to indurated poorly sorted gravel. Lignitic clay above bedrock present near Hamlin. Base of formation is generally easily identified in well cuttings but generally not recognizable on geophysical logs.	Exposed in roadcuts and creeks east of the East Fork Clarks River. Few exposures west of the East Fork. Present at shallow depth below alluvial or lacustrine deposits along the Ohio River. In eastern Calloway County and southeastern Marshall County, badlands are formed where sand crops out.	Best potential for large yields to wells is in Calloway and in central and southern Marshall Counties. The yields increase southward from central Marshall County to Tennessee. One well in Calloway County produces more than 1,100 gpm. Wells in Ballard, McCracken, and northern Marshall Counties have lower yields but are adequate for domestic use. The water is soft to moderately hard but may contain an objectionable amount of iron. Wells in the area of outcrop of this unit may yield sufficient water for domestic use. High pumping rates may cause well screens to become clogged by flakes of mica. The water is soft in areas where the underlying unit is thick; it is moderately hard to very hard where that unit is thin. Best potential for large yields is in the northeast and southern parts of Marshall County and most of Calloway County. The southernmost large-yielding wells tapping this unit are several commercial or irrigation wells east of Murray. Municipal wells at Reidland, Draffenville, and Benton, Ky., and at Brookport, Ill., are completed in lower unit. Yields range from 150 to 450 gpm; yields are lowest where this unit is thinnest. This unit thins westward from near the east border of Graves County. It is either too thin or too silty in most of Ballard, McCracken, and western Marshall Counties to yield enough water to domestic wells. Mica is common and may clog the screens of heavily pumped wells. The water is soft in areas where this unit is thick; it is moderately hard to very hard where the unit is thin. The iron content of the water is generally less than 0.3 mg/l in Calloway County but increases northward to objectionable amounts in the northern part of the Purchase.
			Tuscaloosa Formation		0–200±	Gray chert pebbles and cobbles as large as 8 inches in diameter in a matrix of silty to sandy siliceous clay. In Briensburg quadrangle, 95 feet of dark-gray clay. Base of formation is difficult to pick in well cuttings where the underlying formation is chert rubble. The Tuscaloosa is not known to be identifiable on geophysical logs.	May occur in remnants of channels eroded into the surface of the Paleozoic rocks. Thickest deposits appear to be in down-dropped fault blocks near the Tennessee River (Kentucky Lake).	Not significant as an aquifer. May yield sufficient water to some drilled wells, but tripolitic clay in the formation tends to clog well screens. Shallow large-diameter wells near Kentucky Lake may yield adequate water for domestic use. May contain more than 0.3 mg/l of iron.
POST-MISSISSIPPIAN TO PRE-LATE CRETACEOUS	Chester		Chert rubble		0–180±	The rocks that underlie the Cretaceous beds are of Paleozoic age and are called the "bedrock" by drillers and many geologists. The upper surface of the bedrock may be deeply weathered limestone or chert rubble consisting of angular to subangular chert fragments in a matrix of varying amounts of silty tripolitic clay.	The surface of the Paleozoic rock locally has been reduced to a chert rubble by pre-Late Cretaceous weathering of the limestone and and chert. Pinnacles of limestone project through the rubble. This rubble zone is present around the periphery of the embayment; its extent beneath the embayment is not known.	Probably will yield more than enough water for domestic use; locally, may yield sufficient water for small public supplies. Yields are as large as 100 gpm. Yields vary with the saturated thickness of the rubble and characteristics of the rubble's matrix. Hydrologic properties resemble those of gravel. The water level in the rubble slopes downward from highs on the limestone surface toward collapse structures (areas of thick chert rubble formed by solutional collapse along fracture zones and former drainage channels). The water is soft and has a low content of dissolved solids but may contain an objectionable amount of iron, which probably is derived from the iron-rich clay that commonly fills voids in the rubble.
			Chester rocks undifferentiated		0–600+	Alternating beds of sandstone, shale, siltstone, and limestone. Commonly gray fine- to medium-grained partly calcareous sandstone; dark-gray silty and sandy shale; and light- to dark-gray dense to crystalline cherty limestone, in part argillaceous and fossiliferous.	Occurs in a narrow down-faulted block at Little Cypress in northwestern Marshall County.	
MISSISSIPPIAN	Meramec		Ste. Genevieve Limestone		200	Light-gray to almost white oolitic, medium-crystalline, massive to thin-bedded limestone. Some chert in lower part. Sandstone in upper part. Numerous shale partings.	May occur, in a fault block at Little Cypress, below the Chester rocks.	
			St. Louis and Salem Limestones		400	Gray medium- to coarse-grained limestone. Chert nodules are common; locally oolitic. Grades laterally into limestone composed of angular fossil fragments. Some beds are shaly or dolomitic.	Caps hills in a down-dropped fault block at Hamlin. Near Fairdealing and Aurora, base of the formation extends beneath Kentucky Lake in two fault blocks. Occurs near Kentucky Dam in small exposures owing to faulting. Bedrock suggesting the St. Louis and Salem Limestones has been found in water wells west of Paducah near the Ohio River.	Weathers to chert rubble which may yield enough water for domestic and public supplies. Solution has enlarged openings along joints and bedding planes in dense limestone; openings become narrower with depth. The solutional openings generally are better developed in the Warsaw and St. Louis Limestones than in the siliceous limestone of the Fort Payne Formation. There is a tendency in faulted areas for rubble to be thicker, joints to be more closely spaced, and openings in limestone to be more enlarged by solution than in undisturbed areas. The availability of water in a faulted area of bedrock depends on the degree of cementation in the fault gouge and the surrounding rock and on the amount of fine-grained material in the voids of the rock. No wells in the bedrock are known that do not yield enough water for domestic use. The water is hard to very hard and has a high content of dissolved solids. It may contain an objectionable amount of iron, which probably is derived from iron-rich clay within the solution openings in the limestone. It may at places contain minor amounts of hydrogen sulfide. Water from the siliceous limestone of the Fort Payne Formation is softer and has a lower content of dissolved solids than water from the Warsaw, Salem, or St. Louis Limestones.
			Warsaw Limestone		150–240	Gray medium- to coarse-grained fossil-fragmental limestone. Locally cherty or silty. Locally, lenses of cherty limestone are present in center of formation.	Caps hills mainly in the Rushing Creek quadrangle. Near Hamlin and Shannon Creek in southwestern Calloway County and north and east of Fairdealing, the base of the formation extends below the level of Kentucky Lake owing to fault blocks. Bedrock suggesting the Warsaw Limestone is found in deep water wells at Reidland and near Lone Oak.	
	Osage		Fort Payne Formation		400–600	Dark- to medium-gray very silty very fine grained limestone. Very cherty in upper part. May contain lenses of coarse-grained fragmental limestone. Calcareous siltstone, glauconitic shale, and one or two limestone beds in basal part may be the New Providence Shale.	Occurs along Kentucky Lake from below lake level to tops of hills. Present in the fault blocks under the embayment sediments.	
DEVONIAN	Upper Devonian		Chattanooga Shale		100–250	Black to gray carbonaceous fissile shale. Locally contains beds of reddish-brown fine sand. Excellent marker bed in well cutting and on geophysical logs, especially on gamma-ray logs because of its relatively high radioactivity.	Marine shale concealed mostly in the subsurface. Locally crops out along Kentucky Lake owing to faulting. Subcrop pattern and altitude of the Chattanooga Shale are greatly modified by the numerous faults.	Yields little or no water. Confines water in the underlying rocks and retards the movement of water between the overlying aquifer and the underlying Devonian limestone. Wells near a fault zone northeast of Benton are reported to be finished in the Chattanooga Shale and the water is believed to come from fractures in the shale.
	Lower and Middle Devonian		Devonian limestones undifferentiated		700–900	White to gray finely to coarsely crystalline limestone and dolomite, siliceous and silty in zones, and dark-gray to white slightly calcareous interbedded chert, in part dolomoldic. Locally glauconitic. Locally, the top of the limestone below the Chattanooga Shale has been weathered to a brown porous earthy limestone. Near the upper part, a thin white medium-grained probably calcareous sandstone is present, which may thin to the southeast.	Crops out in a fault zone northeast of Briensburg. Subcrops in an arc from east of Hazel through Paducah into southwestern Illinois. The subcrop pattern is modified by numerous faults.	Several wells along the outcrop area of Cretaceous sediments yield sufficient water from Devonian rocks for domestic use. Normally wells are drilled into uplifted fault blocks and find water in the upper few feet of leached limestone. Data from some oil-test holes indicate that the Devonian limestone is likely to yield little or no water except in areas of pre-Chattanooga weathering and in areas adjacent to faults. The Devonian limestone probably will yield water where the Chattanooga Shale has been removed by pre-Cretaceous weathering. Large yields may be possible in northwestern Ballard County. Water, if found, may be moderately hard to very hard and may contain an objectionable amount of iron. Hydrogen sulfide may be present in minor amounts. No saline water is known in the Devonian rocks in the Jackson Purchase.
SILURIAN	Alexandrian and Niagara		Silurian rocks undifferentiated		300–450	Dark-gray calcareous siltstone and pyrite spicules. Gray silty dense to sublithographic limestone, in part cherty. Red to brownish-gray sublithographic partly silty limestone and trace of hematitic streaks and grains. The outstanding feature of this unit is the various colors of red. Pink to gray glauconitic limestone and occasional red crystals of calcite. Marker bed in well cuttings.	Crops out in a narrow belt near the Mississippi River in Illinois and Missouri. Subcrops in an arc under embayment sediments from near Hazel through Cunningham into southwestern Illinois.	All oil-test wells that penetrated into the Silurian are reported to have encountered no water.
ORDOVICIAN	Middle and Upper		Upper and Middle Ordovician rocks undifferentiated		4000±	Gray silty slightly micaceous fine-grained sandstone. Thinly laminated silty calcareous to dolomitic shale and beds of shaly limestone. Marker bed in well cuttings and on geophysical logs. White to yellowish-brown sublithographic to crystalline cherty limestone and yellowish-brown silty dolomite. Green to brown shale and varying amount of dolomitic sandstone and siltstone.	Crops out from Thebes, Ill., westward into Missouri. Concealed below the embayment sediments in the southwestern two-thirds of the Purchase. Subcrop pattern is modified by numerous faults. Rocks of Cambrian age underlie the Ordovician rocks, but few wells have penetrated them in the Jackson Purchase and adjacent areas.	Water bearing throughout the Jackson Purchase region. Salt water is reported at a depth of 2,690 feet at Farmington and 992 feet near New Concord. A water sample from below a depth of 2,035 feet near Folsomdale contained 5,938 mg/l of total solids, which is classified by the U.S. Geological Survey as moderately saline. This water sample may have been diluted by shallower fresh water; "good water" was reported to 1,180 feet. A water sample from the interval between 2,605 and 2,717 feet near Bardwell contains 10,800 mg/l of dissolved solids (classified as very saline by the U.S.G.S.). The fresh-saline water contact may be about 2,400 feet deep (at an altitude of about 1,900 feet below mean sea level). Other wells in the Ordovician rocks yielded water which the drillers did not indicate to be saline.
			St. Peter Sandstone			Medium- to coarse-grained sandstone; cemented with dolomite. May thin out in southern Jackson Purchase. Marker bed where present.		
	Lower		Lower Ordovician rocks undifferentiated			Gray to brown cherty sandy dolomite. Contains beds of sandstone and limestone.		

[1] Age undetermined. Estimates of age range from Pliocene or older to Pleistocene.
[2] Contains beds of Clayton (Paleocene) age and possibly of Owl Creek (Cretaceous) age at the top.

NOTE:—Thicknesses shown are ranges of thickness for the unit where not truncated or removed by pre-Cretaceous or more recent erosion. Because of the structure of the Jackson Purchase region, all formations except parts of the Ordovician and all of the Cambrian formations are absent and would have zero thickness in parts of the area.

GENERALIZED COLUMNAR SECTION AND WATER-BEARING CHARACTERISTICS OF THE ROCKS IN THE JACKSON PURCHASE REGION, KENTUCKY

523-313 O - 74 (In pocket)