

GROUND WATER IN PLAQUEMINES PARISH, LOUISIANA

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Large quantities of moderately to highly saline ground water are available throughout Plaquemines Parish. However, potable water is available only locally. Records are available for one very shallow well in the parish that yields water with a chloride content less than the U.S. Public Health Service's recommended limit for drinking water of 250 mg/l (milligrams per liter). Other fresh ground-water supplies may be obtained from similar deposits, as the same geologic and hydrologic conditions that control the occurrence of fresh water at the site of this well exist in much of the parish area that is adjacent to the Mississippi River. Several wells, ranging from 210 to 335 feet in depth, in the northern part of the parish yield water that has a chloride content of less than 500 mg/l, and several other wells yield water that is only slightly higher in chloride content.

¹Statement based on information obtained in investigation of the ground-water resources of Louisiana by the Geological Survey, U.S. Department of the Interior, in cooperation with the Louisiana Geological Survey, Department of Conservation and the Louisiana Department of Public Works.

Electrical logs of oil-test wells in the northern part of the parish outline the general area of occurrence of sands that contain slightly (250-500 mg/l chloride) to moderately (500-1,000 mg/l chloride) salty water between depths of about 200 to 400 feet. (See fig. 2.) Figure 1 is a generalized geologic section that illustrates the irregular bedding of these sands and the distribution of slightly to moderately salty water. In some areas, more highly mineralized water occurs in the lower part of the sand; therefore, water from large-capacity wells screened in the upper part of the sand would probably increase in salinity with continued pumping. Although the water is moderately salty, it would be satisfactory for industrial cooling because of its constant and relatively low (70-73°F) temperature. Because of the lenticular bedding of these sands and the local occurrence of highly mineralized ground water, any extensive ground-water development should include a test-drilling program to evaluate the local conditions. The location of several wells (P1-1, -16, -18, -19, -21, and -24) that yield water from the sands containing slightly to moderately salty water are shown in figure 2, and the chemical analyses of the water are listed in table 1.

Throughout the rest of the parish large yields of highly saline water can probably be obtained. Table 1 lists the chemical analyses of water from several wells, showing the general chemical character of the available ground-water supply. With one exception (well P1-11), all these wells yield highly saline water. Location of the wells (P1-3, -4, -5, -6, -7, -9, -11, -12, -14, -26, and -27) are shown in figure 2.

Near-surface silt and very fine sand, which form lenses of permeable material in the generally clayey natural-levee deposits of the Mississippi River, yield the only known fresh ground water in the parish. (See well Pl-13, table 1 and fig. 2.) Locally these lenses of permeable material may provide sufficient quantities of water for domestic use to wells not more than 20 to 30 feet deep.

Point-bar sand deposits of the Mississippi River form another possible source of fresh water in some areas. (See fig. 2.) These sands are hydraulically connected to the river and are subject to the infiltration of water from the river. Figure 3 is a generalized section showing the relation of a point-bar deposit to the river and the natural levee deposits. Salty water that moves up the river at times of low flow may infiltrate and contaminate these sands. Conversely, during periods of normal or high flow of the river, the point-bar deposits would be recharged with fresh water. Although not yet tested, it is possible that wells from about 50 to 100 feet deep, drilled in the point-bar areas shown in figure 2, may yield fresh water in small to moderate quantities. Wells of this depth yield fresh water from point-bar deposits in the southeastern part of Orleans Parish.

Water levels in the shallower sands in Plaquemines Parish fluctuate with the river and are generally near land surface; deeper wells generally flow continuously with heads up to several feet above land surface.

Table 1.--Analyses of water from selected wells in Plaquemines Parish

Constituents, in milligrams per liter/

Well No.	Depth (feet)	Date of collection	Silica (SiO ₂)	Iron (Fe), total	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids		Hardness as CaCO ₃	Alkalinity as CaCO ₃	Specific conductance (micromhos at 25° C)	Color	Carbon dioxide (CO ₂) calc.	pH (lab.)	Temperature (° F)	
																Calculated (sum)	Residue on evaporation at 180° C								
Pl-1 ^a	335	1940	--	--	--	--	--	--	--	--	--	571	--	--	--	--	--	140	666	--	--	--	--	--	--
Pl-3 ^b	508	12- 3-39	--	--	--	--	--	976	--	4	3,580	0.2	--	--	--	--	--	772	--	--	--	--	--	--	--
Pl-4 ^b	640	12- 5-39	--	--	--	--	--	850	1	11,600	--	11,600	--	--	--	--	--	3,360	--	--	--	--	--	--	--
Pl-5 ^b	896	12- 9-39	--	--	--	--	--	453	25	14,300	--	14,300	--	--	--	--	--	3,420	--	--	--	--	--	--	--
Pl-6 ^b	520	7-24-50	34	5.6	179	303	4,210	55	851	0	4.1	7,120	.0	1.9	12,300	--	--	1,690	--	--	18,200	--	--	8.2	75
Pl-7 ^b	400	9-19-50	27	1.4	79	77	939	34	694	0	.6	1,450	.2	0.0	2,950	--	--	514	--	--	5,350	60	--	7.8	73
Pl-9 ^b	550	9-30-60	--	--	--	--	--	--	--	--	--	1,560	--	--	--	--	--	344	--	--	5,790	--	--	--	74
Pl-11 ^c	724	8-30-44	--	1.0	--	--	--	--	--	--	--	710	--	--	--	--	--	590	628	--	--	70	36	7.5	--
Pl-12 ^b	429	9-30-60	--	--	--	--	--	--	--	--	--	1,460	--	--	--	--	--	420	--	--	5,260	--	--	--	73
Pl-13 ^c	30	8-11-58	--	.2	--	--	--	--	--	--	--	60	--	--	--	--	--	324	384	--	--	10	0	6.9	--
Pl-14 ^c	304	5-11-42	--	2.4	--	--	--	--	--	--	--	2,550	--	--	--	--	--	360	920	--	--	120	18	7.4	--
Pl-16 ^c	250	6- 9-38	--	.0	--	--	--	--	--	--	--	286	--	--	--	--	--	400	397	--	--	12	18	--	--
Pl-18 ^d	300	5-21-57	--	--	--	--	--	--	--	--	--	673	--	--	--	--	--	291	--	--	--	--	--	--	74
Pl-19 ^c	248	2-24-55	--	.5	--	--	--	--	--	--	--	634	--	--	--	--	--	397	501	--	--	30	14	7.3	--
Pl-21 ^c	210	12-12-40	--	1.2	--	--	--	--	--	--	--	271	--	--	--	--	--	240	475	--	--	92	9.1	7.7	--
Pl-24 ^b	285	5-12-61	--	--	--	--	--	--	--	--	--	328	--	--	--	--	--	126	--	--	1,980	--	--	--	70
Pl-26 ^c	481	8-30-44	--	.0	--	--	--	--	--	--	--	12,100	--	--	--	--	--	800	1,170	--	--	65	74	7.7	--
Pl-27 ^c	250	8- 5-47	--	3.8	--	--	--	--	--	--	--	9,710	--	--	--	--	--	6,700	190	--	--	54	21	7.7	--

^aAnalysis by Shilstone Testing Laboratories.

^bAnalysis by U. S. Geological Survey.

^cAnalysis by Louisiana State Board of Health.

^dAnalysis by California Chemical Co., Oronite Division.

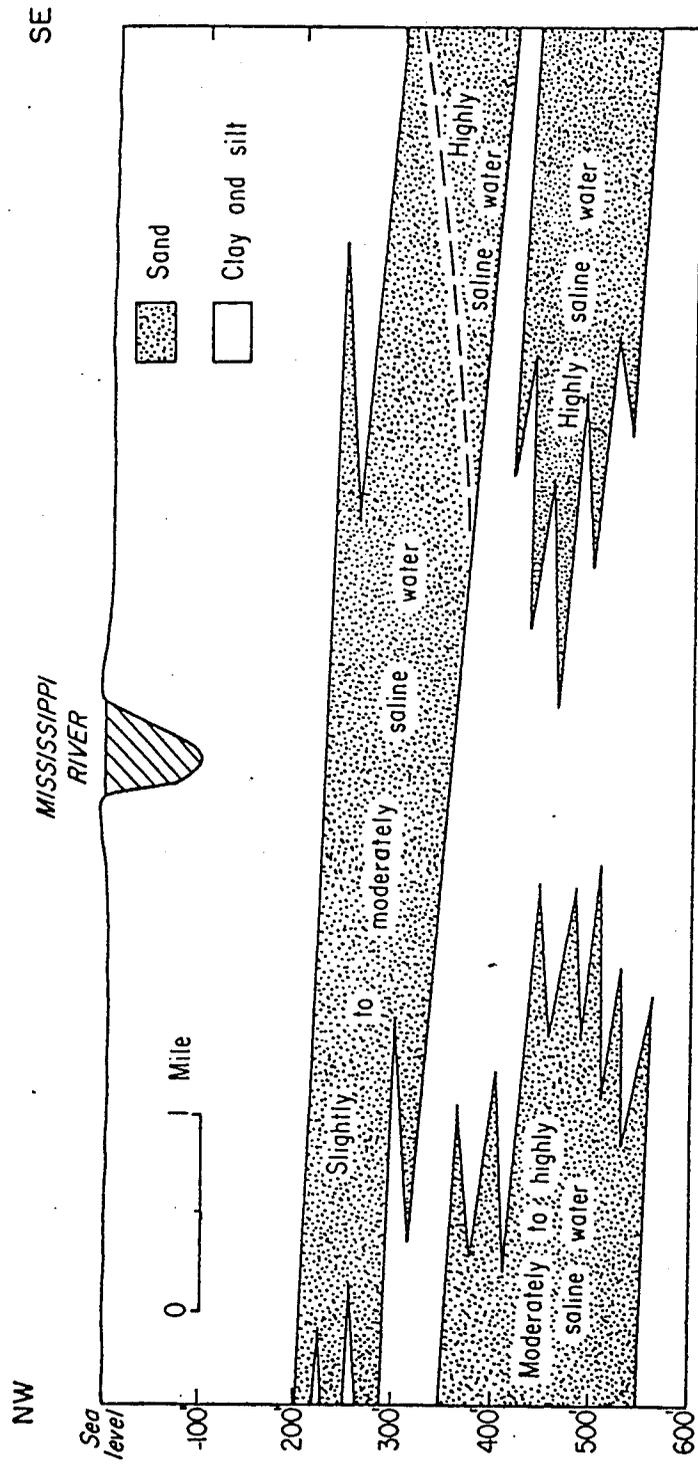


Figure 1.--Generalized geologic section in the vicinity of Dalcour.

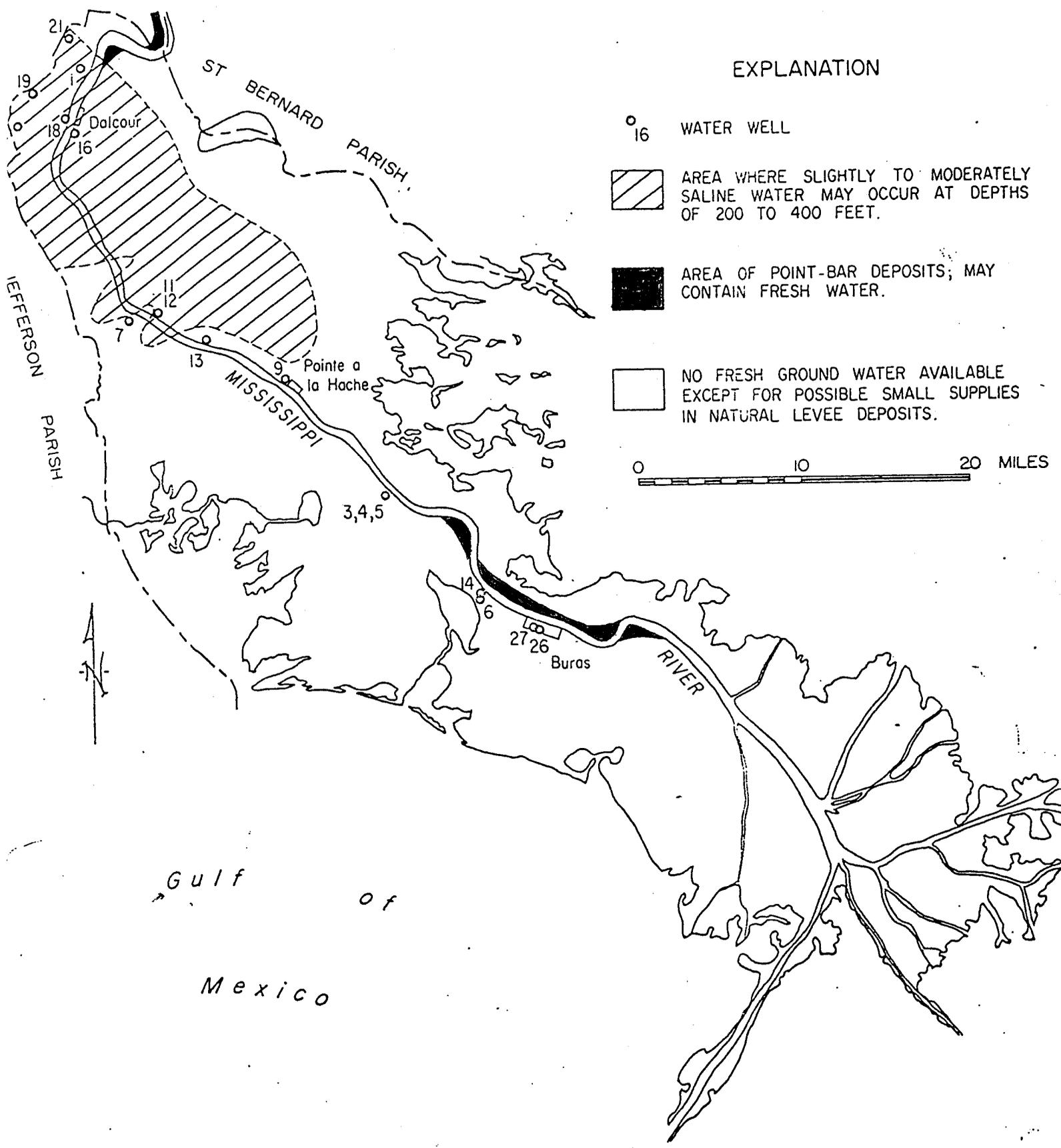


Figure 2.--Map of Plaquemines Parish showing locations of water wells and availability of ground water.

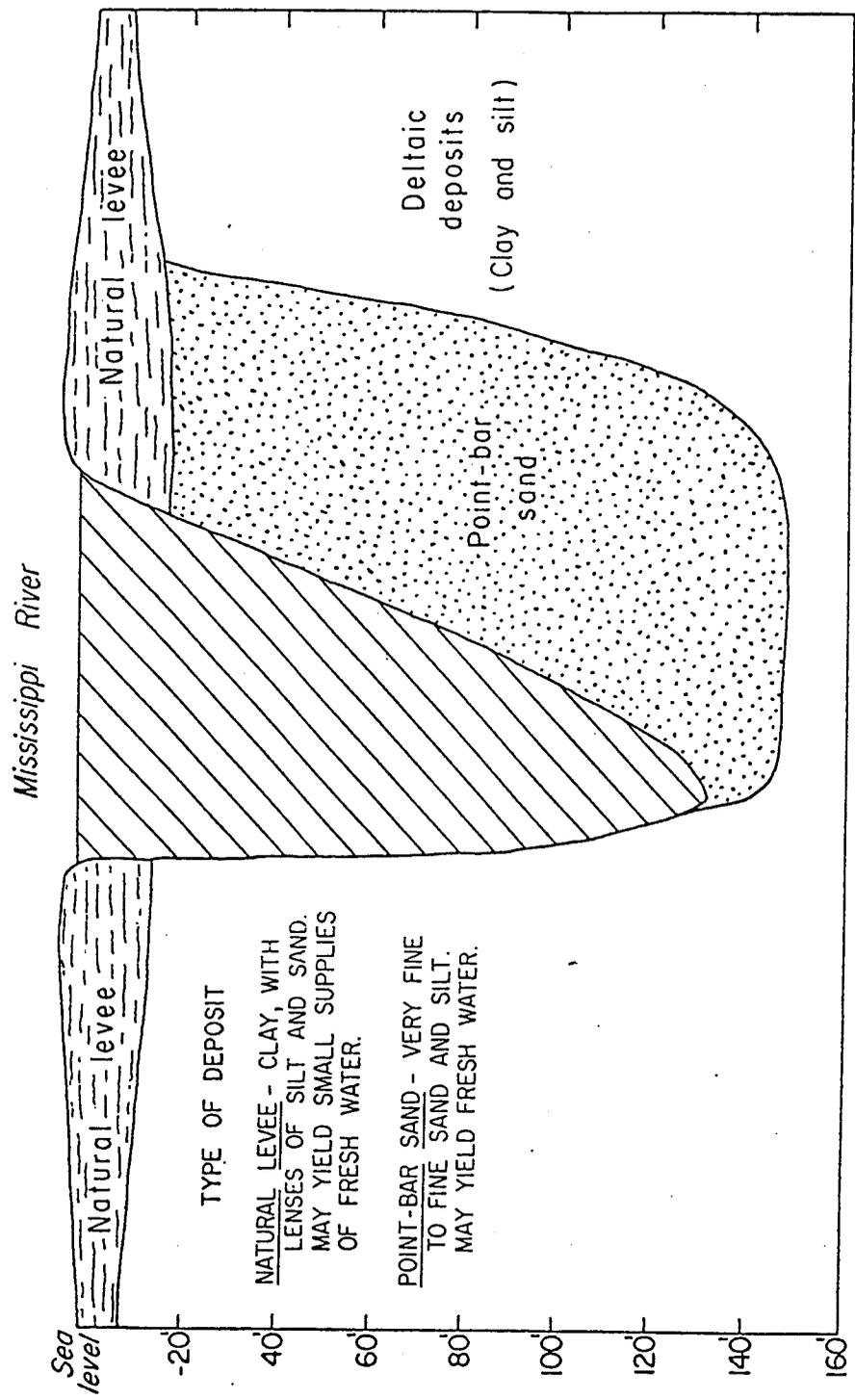


Figure 3.--Generalized section through natural-levee and point-bar deposits.