

POTENTIOMETRIC SURFACE

The potentiometric surface maps (figs. 5 and 6) show the altitude at which the water level would have stood in tightly cased wells screened in the "2,000-foot" sand. The maps are constructed from water levels measured in May 2002 in 19 wells screened in the "2,000-foot" sand (table 1). The wells were not pumping when the water levels were measured. All data are on file at the USGS office in Baton Rouge. The potentiometric surface and water-level data indicate that within the study area:

1. Water levels are lowest in and near the industrial district.
2. A cone of depression in the potentiometric surface exists north of the fault in the city of Baton Rouge and the immediate area surrounding the city.
3. Water levels in the "2,000-foot" sand south of the fault (wells EB-778 and WBR-111) are much higher than water levels north of the fault in and near the city.

Water levels are 200 ft or more below NGVD 29 (2002) north of the fault in parts of the city of Baton Rouge, including the industrial district (figs. 3 and 4). As a result of ground-water withdrawals, water levels in the city have decreased and ground water generally flows toward Baton Rouge from surrounding areas (shown by arrows in fig. 5). Distribution of withdrawal sites of 0.1 Mgal/d or more in the "2,000-foot" sand in the five-parish study area is shown in figure 1.

A comparison of the 2002 potentiometric surface with the 1990 potentiometric surface (Tomaszewski, 1996, fig. 12) indicates present (2002) water levels generally are about 20 ft lower in much of East and West Baton Rouge Parishes north of the fault. Water levels in other parts of the study area changed little.

Table 1. Water-level data used to construct the potentiometric-surface map of the "2,000-foot" sand of the Baton Rouge area, Louisiana, May 2002

Well number	Well depth	Altitude of land surface, in feet above NGVD 29	Date measured	Water level, in feet above or below (-) land surface	Water level, in feet above or below (-) NGVD 29
East Baton Rouge Parish					
EB-90	2120	59.05	05-16-02	-253.84	-194.79
EB-297	1940	61.00	05-22-02	-276.33	-215.33
EB-304	1725	67.00	05-17-02	-78.63	-11.63
EB-367	2061	64.40	05-22-02	-311.95	-247.55
EB-630	2253	45.00	05-23-02	-254.00	-209.00
EB-774	2143	47.00	05-23-02	-228.05	-181.05
EB-778	2586	28.00	05-16-02	-18.13	9.87
EB-874	2250	50.00	05-23-02	-270.62	-220.62
EB-878	2178	50.00	05-23-02	-198.87	-148.87
EB-1028	2238	40.00	05-16-02	-231.44	-191.44
EB-1150	2242	57.00	05-23-02	-255.90	-198.90
EB-1280	1685	70.00	05-17-02	-145.83	-75.83
EB-1306	1763	57.00	05-17-02	-105.97	-48.97
Pointe Coupee Parish					
PC-66	1530	33.00	05-3-02	-68.29	-35.29
PC-138	1637	27.00	05-7-02	-48.46	-21.46
West Baton Rouge Parish					
WBR-102B	2100	18.00	05-24-02	-162.81	-144.81
WBR-106	2017	22.00	05-24-02	-228.28	-206.28
WBR-111	2650	25.00	05-31-02	5.90	30.90
West Feliciana Parish					
WF-40	632	50.00	05-1-02	-12.24	37.76

CONVERSION FACTORS, DATUMS, AND ABBREVIATED WATER-QUALITY UNIT

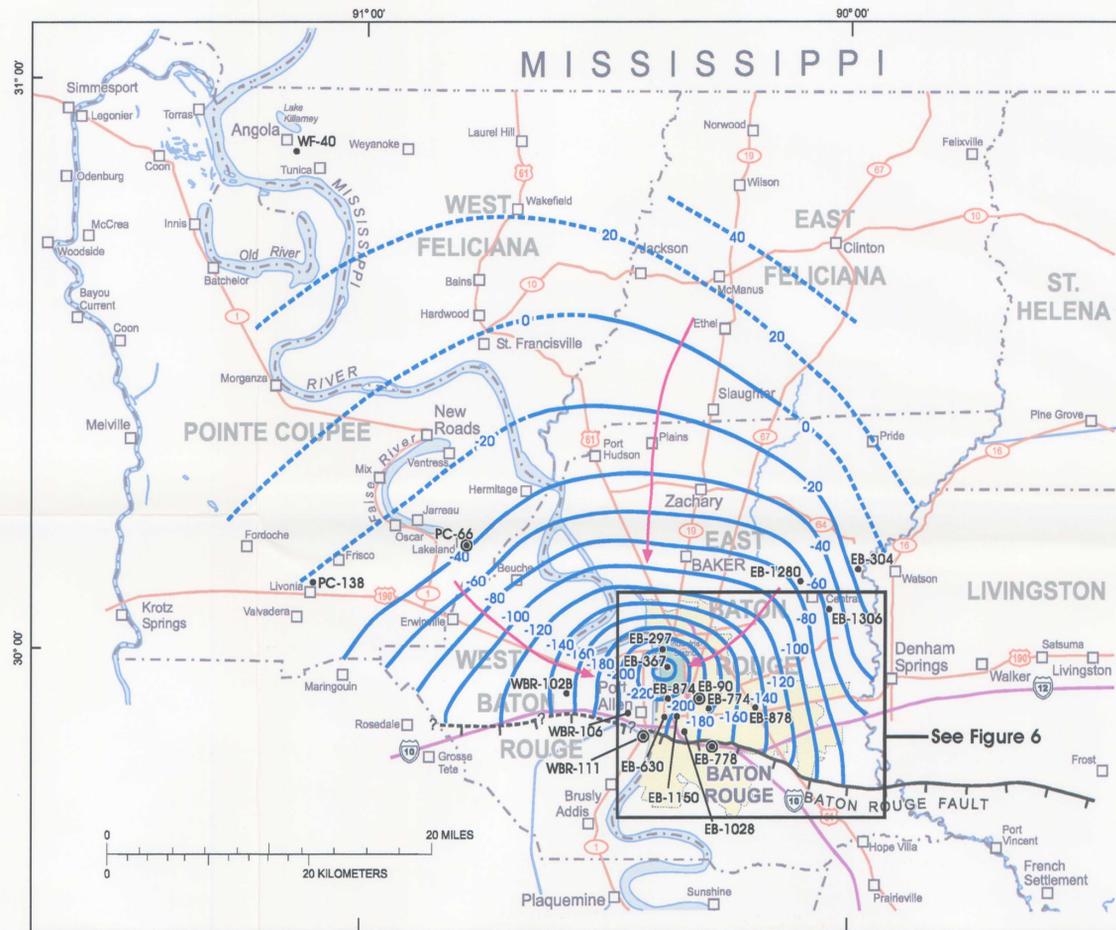
Multiply	By	To obtain
foot (ft)	0.3048	meter (m)
foot per year (ft/yr)	0.3048	meter per year (m/yr)
mile (mi)	1.609	kilometer (km)
million gallons per day (Mgal/d)	3,785	cubic meter per day (m ³ /d)

Vertical coordinate information in this report is referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada.

Horizontal coordinate information in this report is referenced to the North American Datum of 1927.

Abbreviated water-quality unit:

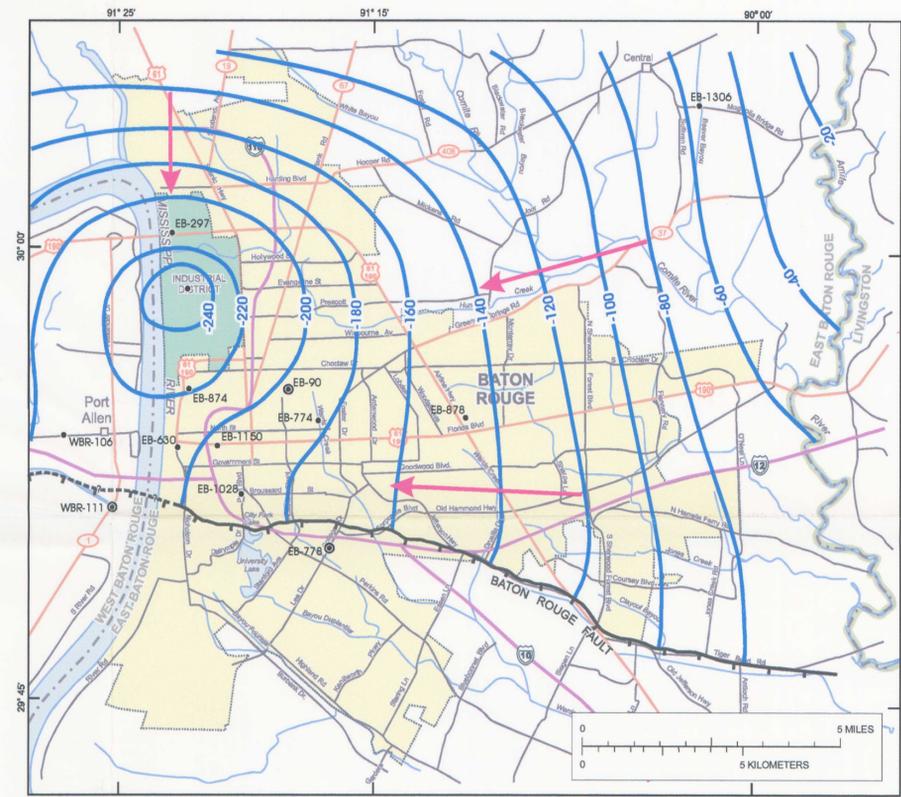
milligrams per liter (mg/L)



Base map modified from Louisiana Oil Spill Coordinator, Office of the Governor, Louisiana, Louisiana GIS CD: A Digital Map of the State, Version 2.0

- EXPLANATION**
- FAULT -- Dashed and queried where probable. Hachures on downthrown side (Modified from Whiteman, 1979, pl. 6; McCulloh, 1991, pl. 1a-e)
 - POTENTIOMETRIC CONTOUR -- Shows altitude at which water level would have stood in tightly cased wells. Dashed where approximately located. Contour interval 20 feet. Vertical datum is NGVD 29
 - FLOW ARROW -- Shows general direction of ground-water flow
 - CONTROL POINT -- Shows location and number of well used for contouring potentiometric surface (see table 1 for water-level data)
 - WELL WITH HYDROGRAPH -- Shows location and number of well for which a hydrograph is shown (see figs. 3 and 4 for hydrographs)

Figure 5. Generalized potentiometric surface of the "2,000-foot" sand of the Baton Rouge area, Louisiana, May 2002.



Base map modified from Louisiana Oil Spill Coordinator, Office of the Governor, Louisiana, Louisiana GIS CD: A Digital Map of the State, Version 2.0

- EXPLANATION**
- FAULT -- Dashed and queried where probable. Hachures on downthrown side (modified from Whiteman, 1979, pl. 6; and McCulloh, 1991, pl. 1a-e)
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 - FLOW ARROW -- Shows general direction of ground-water flow
 - CONTROL POINT -- Shows location and number of well used for contouring potentiometric surface (see table 1 for water-level data)
 - WELL WITH HYDROGRAPH -- Shows location and number of well for which a hydrograph is shown (see figs. 3 and 4 for hydrographs)
- Area of enlargement

Figure 6. Generalized potentiometric surface of the "2,000-foot" sand in parts of East and West Baton Rouge parish, Louisiana, May 2002.

SELECTED REFERENCES

Kazmann, R.G., 1970, The present and future ground-water supply of the Baton Rouge area: Louisiana State University, Louisiana Water Resources Research Institute Bulletin 5, 44 p.

Lovelace, J.K., and Lovelace, W.M., 1995, Hydrogeologic unit nomenclature and computer codes for aquifers and confining units in Louisiana: Louisiana Department of Transportation and Development Water Resources Special Report no. 9, 12 p.

McCulloh, R.P., 1991, Surface faults in East Baton Rouge Parish: Louisiana Geological Survey Open-File Series 91-02, 25 p.

Meyer, R.R., and Turcan, A.N., Jr., 1955, Geology and ground-water resources of the Baton Rouge area, Louisiana: U.S. Geological Survey Water-Supply Paper 1296, 138 p.

Morgan, C.O., 1961, Ground-water conditions in the Baton Rouge area, 1954-59, with special reference to increased pumpage: Department of Conservation, Louisiana Geological Survey, and Louisiana Department of Public Works Water Resources Bulletin no. 2, 78 p.

Morgan, C.O., 1963, Ground-water resources of East Feliciana and West Feliciana Parishes, Louisiana: Louisiana Department of Public Works, 58 p.

Nyman, D.J., and Fayard, L.D., 1978, Ground-water resources of Tangipahoa and St. Tammany Parishes, southeastern Louisiana: Louisiana Department of Transportation and Development, Office of Public Works Water Resources Technical Report no. 15, 76 p.

Rollo, J.R., 1969, Saltwater encroachment in aquifers of the Baton Rouge area, Louisiana: Department of Conservation, Louisiana Geological Survey, and Louisiana Department of Public Works Water Resources Bulletin no. 13, 45 p.

Stuart, C.G., Knochenmus, Darwin, and McGee, B.D., 1994, Guide to Louisiana's ground-water resources: U.S. Geological Survey Water-Resources Investigations Report 94-4085, 55 p.

Tomaszewski, D.J., 1996, Distribution and movement of saltwater in aquifers in the Baton Rouge area, Louisiana, 1990-92: Louisiana Department of Transportation and Development Water Resources Technical Report no. 59, 44 p.

Torak, L.J., and Whiteman, C.D., Jr., 1982, Applications of digital modeling for evaluating the ground-water resources of the "2,000-foot" sand of the Baton Rouge area, Louisiana: Louisiana Department of Transportation and Development, Office of Public Works Water Resources Technical Report no. 27, 87 p.

U.S. Environmental Protection Agency, 1977, National Secondary Drinking Water Regulations: Federal Register, March 31, 1977, v. 42, no. 62, Public Law 143, p. 17143-17147.

U.S. Environmental Protection Agency, 1992, Drinking water regulations and health advisories: Washington, D.C., U.S. Environmental Protection Agency, Office of Water, 11 p.

Whiteman, C.D., Jr., 1979, Saltwater encroachment in the "600-foot" and "1,500-foot" sands of the Baton Rouge area, Louisiana, 1966-78, including a discussion of saltwater in other sands: Louisiana Department of Transportation and Development, Office of Public Works Water Resources Technical Report no. 19, 49 p.

Whiteman, C.D., Jr., 1980, Measuring local subsidence with extensometers in the Baton Rouge area, Louisiana, 1975-79: Louisiana Department of Transportation and Development, Office of Public Works Water Resources Technical Report no. 20, 18 p.

Winner, M.D., Jr., Forbes, M.J., Jr., and Broussard, W.L., 1968, Water resources of Pointe Coupee Parish, Louisiana: Department of Conservation, Louisiana Geological Survey, and Louisiana Department of Public Works Water Resources Bulletin no. 11, 110 p.

Louisiana Ground-Water Map No. 20:

Potentiometric Surface of the "2,000-foot" Sand of the Baton Rouge Area, Louisiana, May 2002

By

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