WATER USE

WITHDRAWAL USE OF WATER IN 1966 IN MILLIONS OF GALLONS PER DAY

Use	Source and type of supply: Ground water: Public supply: Municipal	Ground water: Public supply: Other	Ground water: Private supply	Surface water: Public supply: Municipal	Surface water: Public supply: Other	Surface water: Private supply	Total
Domestic	24.4	2.0	13.7	0	0	0	40.1
Industrial and commercial, excluding fuel-electric power	27.9	1.0	20	0	0	0.1	49.0
Fuel-electric power	0	0	0	0	0	430	430
Irrigation	1.0	0	0.1	0	0	0.1	1.2
Stock	0	0	9.9	0	0	2.4	12.3
Other	17.3	0.8	1	0	0	0	19.1
Subtotal	70.6	3.8	44.7	0	0	433	
Total		119			433		552

Over 200 billion gallons of water were withdrawn for use in the Rock-Fox River basin in 1966. About 20 percent of this amount, or 119 mgd, came from wells and the remainder, 433 mgd, came from streams, natural lakes, and manmade impoundments.

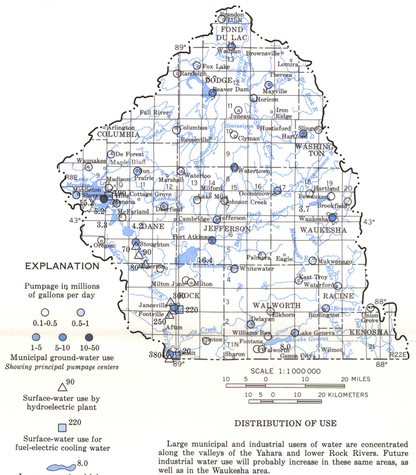
About 99 percent of the surface water withdrawn in the basin, 430 mgd, was for cooling condensers in steam-powered generating plants located at Madison, Janesville, and Beloit. In this use the only important change in quality or quantity of the water is an increase in temperature.

Ground water is the source for all municipal supplies, for most rural supplies, and for industrial purposes (with the exception of electric power generation).

In the table above, public supply use is that of municipalities, subdivisions, sanitary districts, and self-supplied schools and institutions. Under public supply, irrigation is largely parks and golf courses. In the use column "other" includes losses from the distribution system, street washing, main flushing, and use by schools and other public buildings. Private supply use is all other use, including rural farm and nonfarm, industries, and commerce.

Withdrawal use of water in 1966 was equivalent to about 37 percent of the average streamflow leaving the basin. However, because water is usually discharged into the nearest stream or lake after use, it is available for reuse downstream. Therefore, data on withdrawals cited in this section include an undetermined amount of reuse of the same water.

Probably less than 5 percent of the water withdrawn was consumed, that is transported from the basin or lost to evapotranspiration.



DISTRIBUTION OF USE

Large municipal and industrial users of water are concentrated along the valleys of the Yahara and lower Rock Rivers. Future industrial water use will probably increase in these same areas, as well as in the Waukesha area.

The lakes shown represent only a few of the many water-dependent recreation areas within the basin. Small lakes, wetlands, and streams, too numerous to show on this map, are utilized extensively for recreation and serve as fish and game habitat.

MUNICIPAL WATER USE IN 1966 AND SOURCE OF WATER

Municipality	County	Population 1960	Average daily pumpage, in million gallons per day (mgd)	Maximum daily pumpage mgd	Source of water
Arlington	Columbia	349	0.02	0.06	Sandstone aquifer
Beaver Dam	Dodge	13,118	1.3	2.3	Sandstone aquifer
Beloit	Rock	32,846	5.9	8.8	Sand and gravel aquifer and sandstone aquifer
Brandon	Fond du Lac	758	0.10	0.14	Sandstone aquifer
Brookfield	Waukesha	19,812	0.23	—	Niagara aquifer, Plattville-Galena aquifer, and sandstone aquifer
Brownsville	Dodge	276	0.06	0.24	Sandstone aquifer
Burlington	Racine	5,856	1.0	2.1	Platteville-Galena aquifer and sandstone aquifer
Cambridge	Jefferson	605	0.06	0.11	Sandstone aquifer
Clinton	Rock	1,274	0.12	0.22	Sandstone aquifer
Clyman	Dodge	259	0.10	0.48	Platteville-Galena aquifer and sandstone aquifer
Columbus	Columbia	3,467	0.45	0.77	Sandstone aquifer
Cottage Grove	Dane	1,195	0.04	0.11	Sandstone aquifer
Deerfield	Dane	795	0.66	0.99	Sandstone aquifer
De Forest	Dane	1,223	0.21	0.36	Sandstone aquifer
Delavan	Walworth	4,846	0.62	1.0	Sand and gravel aquifer
Eagle	Waukesha	620	0.03	0.06	Platteville-Galena aquifer and sandstone aquifer
East Troy	Walworth	1,455	0.23	0.48	Sand and gravel aquifer, Platteville-Galena aquifer, and sandstone aquifer
Edgerton	Rock	4,000	0.44	0.85	Sandstone aquifer
Elkhorn	Walworth	3,586	0.46	0.75	Platteville-Galena aquifer and sandstone aquifer
Fall River	Columbia	584	0.09	0.16	Sandstone aquifer
Fontana-on Geneva Lake	Walworth	1,326	0.20	—	Sand and gravel aquifer
Footville	Rock	675	0.07	0.22	Sandstone aquifer
Fort Atkinson	Jefferson	7,908	2.2	4.7	Sandstone aquifer
Fox Lake	Dodge	1,181	0.11	0.27	Sandstone aquifer
Genoa City	Walworth	1,005	0.07	0.18	Sand and gravel aquifer, Platteville-Galena aquifer, and sandstone aquifer
Hartford	Washington	5,627	1.1	2.1	Sand and gravel aquifer, Platteville-Galena aquifer, and sandstone aquifer
Hartland	Waukesha	2,088	0.23	0.40	Sand and gravel aquifer
Horicon	Dodge	2,996	0.42	1.8	Sandstone aquifer
Hustisford	Dodge	708	0.07	0.45	Platteville-Galena aquifer, and sandstone aquifer
Iron Ridge	Dodge	419	0.02	—	Platteville-Galena aquifer and sandstone aquifer
Janesville	Rock	35,164	8.9	16.0	Sand and gravel aquifer and sandstone aquifer
Jefferson	Jefferson	4,548	0.99	1.6	Sandstone aquifer
Johnson Creek	Jefferson	686	0.26	0.44	Sandstone aquifer
Juneau	Dodge	1,718	0.14	0.25	Sandstone aquifer
Lake Geneva	Walworth	4,929	0.81	1.6	Sand and gravel aquifer, Platteville-Galena aquifer, and sandstone aquifer
Lake Mills	Jefferson	2,951	0.42	0.78	Sandstone aquifer
Lomira	Dodge	807	0.08	0.27	Niagara aquifer, Platteville-Galena aquifer, and sandstone aquifer
Madison	Dane	126,706	23.5	42.4	Sandstone aquifer
Maple Bluff	Dane	1,565	0.21	—	City of Madison
Marshall	Dane	736	0.06	0.13	Sandstone aquifer
Mayville	Dodge	3,607	0.74	5.5	Platteville-Galena aquifer and sandstone aquifer
McFarland	Dane	1,272	0.11	0.22	Sandstone aquifer
Middleton	Dane	4,410	0.72	1.6	Sandstone aquifer
Milton	Rock	1,671	0.14	0.34	Sandstone aquifer
Milton Junction	Rock	1,433	0.11	0.22	Sandstone aquifer
Monona	Dane	8,178	0.77	1.8	Sandstone aquifer
Mukwonago	Waukesha	1,877	0.21	0.40	Niagara aquifer, Platteville-Galena aquifer, and sandstone aquifer
Oconomowoc	Waukesha	6,682	0.98	2.0	Sand and gravel aquifer, Platteville-Galena aquifer, and sandstone aquifer
Oregon	Dane	1,701	0.18	0.30	Sandstone aquifer
Palmyra	Jefferson	1,000	0.12	0.32	Sandstone aquifer
Pewaukee	Waukesha	2,484	0.37	0.61	Platteville-Galena aquifer and sandstone aquifer
Randolph	Columbia and Dodge	1,507	0.14	0.21	Sandstone aquifer
Reeseville	Dodge	491	0.09	0.38	Sandstone aquifer
Sharon	Walworth	1,167	0.06	0.10	Platteville-Galena aquifer and sandstone aquifer
Shorewood Hills	Dane	2,320	—	—	City of Madison
Slinger	Washington	1,141	0.17	0.27	Sand and gravel aquifer and Niagara aquifer
Stoughton	Dane	5,555	1.3	2.2	Sandstone aquifer
Sun Prairie	Dane	4,008	0.92	3.1	Sandstone aquifer
Theresa	Dodge	576	0.04	0.07	Sand and gravel aquifer
Union Grove	Racine	1,970	0.39	0.91	Platteville-Galena aquifer and sandstone aquifer
Walworth	Walworth	1,494	0.25	0.39	Sand and gravel aquifer, Platteville-Galena aquifer, and sandstone aquifer
Waterford	Racine	1,500	0.20	0.35	Niagara aquifer, Platteville-Galena aquifer, and sandstone aquifer
Waterloo	Jefferson	1,947	0.44	0.82	Sandstone aquifer
Watertown	Jefferson and Dodge	13,943	1.5	2.8	Platteville-Galena aquifer and sandstone aquifer
Waukesha	Waukesha	30,004	6.5	11.0	Platteville-Galena aquifer and sandstone aquifer
Waunakee	Dane	1,611	0.23	0.65	Sandstone aquifer
Waupun	Dodge and Fond-du Lac	7,935	0.66	1.5	Sandstone aquifer
Whitewater	Walworth	6,380	0.97	1.6	Platteville-Galena aquifer and sandstone aquifer
Williams Bay	Walworth	1,347	0.28	0.76	Sand and gravel aquifer
Total		419,878	70.57		

All municipal water supplies in the basin are from ground water. The table above lists the municipalities using ground water, but it does not include sanitary districts and subdivisions. Sixty-three of the 69 municipalities listed obtain all or part of their water from the sandstone aquifer, 23 obtain part from the Platteville-Galena aquifer, 5 obtain all or part from the Niagara aquifer, and 14 obtain all or part of their supplies from the sand and gravel aquifer.

Pumpage data from Wisconsin Public Service Commission for calendar year 1966

NONWITHDRAWAL USE

Nonwithdrawal uses of water have great social and economic importance in our society. The most important of these uses are: fish and wildlife habitat, recreation, hydroelectric power generation, navigation and transportation, and waste transport and disposal.

In Wisconsin the management of fish and wildlife habitat and recreation are extremely important because the State derives great economic gain from tourism. Wetlands make up a significant part of the fish and wildlife habitat in the basin, as well as furnish land for agricultural purposes. Since the mid-1930's the acreage of wetlands in the basin has decreased by about one-third. For example, in the Fox River basin there were 86,000 acres of wetlands in the 1930's and 58,500 acres in 1968. The draining of wetlands for agricultural purposes may be in conflict with the use of wetlands for wildlife habitat.

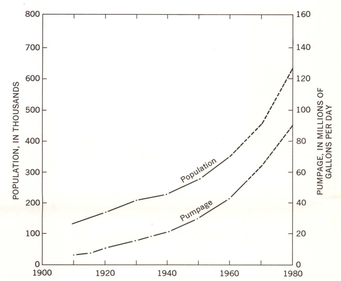
Recreation facilities in the Rock-Fox River basin show increasing daily and weekend use by residents of the nearby urban areas of Milwaukee and Chicago. This increased use is expected to become more intensive as continued highway development improves access to and within the basin. Water sports and special activities such as golfing, camping, skiing, pleasure driving, and sightseeing will be the major recreation activities demanded in this area. In the Fox River basin total participants in all recreation activities are expected to increase from 151,000 persons in 1960 to a projected 562,000 persons in 1990 (Wis. Dept. of Nat. Resources, written commun., Nov. 22, 1968).

The Wisconsin Department of Natural Resources proposes to protect and develop the natural resources required for outdoor recreation through an environmental (natural resource) corridor management program. A natural resource corridor is an assemblage of natural resource or natural resource related elements (water, flora, and fauna), which provide the necessary environmental quality aspects required for cultural, scientific, recreational and economic growth.

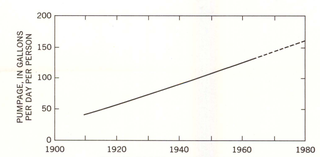
In the Rock-Fox basin 1,200 mgd is used to generate about 9.2 million kilowatt hours of electricity per year for industry, and for municipal and other uses.

Navigation and water transportation, although very important to Wisconsin because of the Great Lakes, have very little economic impact in the Rock-Fox River basin.

Many streams in the basin are being used to transport treated wastes from many sources. Reaches of streams in areas of high water use and waste disposal are subject to pollution (see sheet 2, Surface Water Pollution).



POPULATION AND PUMPAGE TRENDS OF 33 MUNICIPALITIES IN THE ROCK-FOX RIVER BASIN, PROJECTED TO 1980



TREND IN PER CAPITA WATER USE OF 33 MUNICIPALITIES IN THE ROCK-FOX RIVER BASIN, PROJECTED TO 1980

The pumpage, population, and per capita water use of municipalities are compared in the graphs above. Data from 33 municipalities in the basin indicate that per capita use increased from about 40 gpd in 1910 to about 140 gpd in 1965. An extrapolation of this trend shows that per capita use may be 160 gpd by 1980. Much of the increase in pumpage reflects the rapid population growth and development of industry in Madison, Janesville, Beloit, and Waukesha. In fact, three-fourths of the pumpage of the 33 municipalities is by these four cities. Increased per capita use also results from the increased availability of cheap water to operate domestic conveniences.

SUMMARY

Large amounts of good quality water are available in the Rock-Fox River basin. Of the 31.4 inches of average annual precipitation that falls on the basin, about 6.6 inches or 1,500 mgd runs off as streamflow. This represents the amount of water available for use, although man can also borrow from a "bank" of over 150 times this much water in storage beneath the ground.

The quantity of surface water used in the basin greatly exceeds that of ground water. Surface water is used for water power (about 1,200 mgd), fuel-electric cooling water (430 mgd), and for recreation, conservation, and waste transport. Ground water is used for all municipal supplies, for most rural supplies, and for most industrial purposes.

Ground water is more widespread than surface water. It is available from four aquifers in the basin: the sandstone aquifer, the Platteville-Galena aquifer, the Niagara aquifer, and the sand and gravel aquifer. Any of these aquifers is capable of yielding domestic and stock supplies. The sandstone aquifer commonly yields over 1,000 gpm to wells, as does the sand and gravel in the lower Rock River valley. Most municipalities have adequate supplies of ground water available for future growth and development.

The principal water problems in the basin are related to water quality. Both ground and surface water have high natural hardness; high iron content is a local problem in ground water. Some lakes and reaches of streams are polluted by industrial, municipal, or domestic wastes, rendering them less useful as wildlife habitat and for recreational purposes. Shallow aquifers, be they dolomite, sandstone, or glacial drift, are locally polluted by man's wastes from surface sources.

Another problem is the conflict of interest in the use of water and land. An example is the draining of wetlands to increase agricultural production in conflict with the use of wetlands for fish and wildlife habitat.

Two potential problems are flooding, and pollution of the artesian system. With a continued increase in occupation of flood plains, flood damage will increase. Surface disposal of wastes in the recharge area of the artesian system could pollute large areas of the aquifer because of its confined nature and long flow paths.

SUMMARY OF WATER AVAILABILITY AND SUITABILITY FOR VARIOUS USES

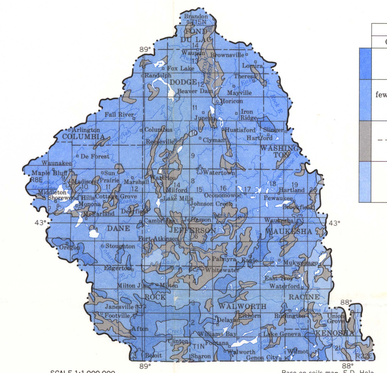
Use \ Source	Rock River	Fox River	Des Plaines River	Tributary streams	Large lakes	Small lakes and wetlands	Sand and gravel aquifers: Surface	Sand and gravel aquifers: Buried	Niagara Dolomite aquifer	Platteville-Galena aquifer	Sandstone aquifer
Municipal and industrial supply	Adequate flow in downstream reaches Less mineralized than ground water Treatment required for domestic use Storage required Pollution Ease of pollution	Less mineralized than ground water Treatment required for domestic use Storage required Pollution Ease of pollution	No flow during dry seasons Treatment required for domestic use Storage required Ease of pollution	Treatment required for domestic use Storage required May be polluted Ease of pollution	Adequate quantity Adequate quality for industrial use Treatment required for domestic use Pollution Ease of pollution	Treatment required for domestic use Storage required Some are polluted Ease of pollution	Well yields of over 500 gpm possible Rapidly recharged Generally adequate quality Limited areal distribution Ease of pollution May require iron and hardness removal	Wide areal distribution Generally adequate quality Well yields commonly inadequate May require iron and hardness removal	Well yields of a few hundred gpm possible Generally adequate quality Well yields erratic; may be inadequate Restricted to eastern ⅓ of basin May require iron and hardness removal Easily contaminated where shallow	Generally adequate quality Well yields commonly inadequate Productive over only about ¼ of basin May require iron and hardness removal Easily contaminated where shallow	Well yields of over 1000 gpm possible Underlies the entire basin Generally adequate quality In eastern ⅓ of basin wells are deep and costly and recharge poor May require iron and hardness removal
Rural domestic and stock supply	Adequate flow Low-cost stock watering Limited to frontage on river Treatment required for domestic use Pollution Ease of pollution	Adequate flow Low-cost stock watering Limited to frontage on river Treatment required for domestic use Pollution Ease of pollution	Low-cost stock watering No flow during dry seasons Limited to frontage on river Treatment required for domestic use Ease of pollution	Adequate flow in larger streams Low-cost stock watering Wide distribution Limited to frontage on river Treatment required for domestic use May be polluted Ease of pollution	Adequate quantity Low-cost stock watering Limited to lake frontage Treatment required for domestic use Pollution Ease of pollution	Low-cost stock watering Wide distribution Adequate quality May dry up during dry seasons Treatment required for domestic use Ease of pollution	Adequate well yields Generally adequate quality Limited areal distribution Ease of pollution	Adequate well yields Wide areal distribution Generally adequate quality Aquifers are not continuous	Adequate well yields Generally adequate quality Restricted to eastern ⅓ of basin Easily contaminated where shallow	Adequate well yields Generally adequate quality Productive only in central part of basin Easily contaminated where shallow	Adequate well yields Underlies entire basin Generally adequate quality Costly to develop where deeply buried Easily contaminated where shallow
Irrigation supply	Adequate flow in downstream reaches Irrigable soils adjoin lower reaches of stream Adequate quality Limited to areas near the river	Adequate flow in downstream reaches Adequate quality Limited to areas near the river	Adequate quality Inadequate flow during irrigation season Soils are clayey Limited to areas near the river	Wide distribution Adequate quality Smaller streams have inadequate flow during irrigation season	Adequate quantity Limited to lake frontage Lake frontage is costly	Wide distribution Adequate quality Quantity may be inadequate especially during growing season	Well yields of over 500 gpm possible Rapidly recharged Commonly underlies irrigable soils Adequate quality Limited areal distribution	Wide areal distribution Adequate quality Adequate well yields are unlikely	Well yields of a few hundred gpm possible Adequate quality Well yields erratic; may be inadequate Restricted to eastern ⅓ of basin	Quality adequate Well yields commonly inadequate Productive only in central part of basin	Well yields of over 1000 gpm possible Underlies entire basin Quality adequate In eastern ⅓ of basin wells are deep and costly and recharge poor
Recreation	Suitable for fishing; for boating in downstream reaches Flow highly variable in upstream reaches Pollution limits body-contact activity Water colored from swamps Limited public access Limited shoreline zoning	Suitable for fishing; for boating in downstream reaches Flow highly variable in upstream reaches Pollution limits body-contact activity Water colored from swamps Limited public access Limited shoreline zoning	Flow highly variable; no flow for 25 percent of the time Too small for boating	Suitable for fishing Larger streams suitable for boating and some swimming Small tributaries have intermittent flow and are too small for boating Ease of pollution	Suitable for boating, fishing, and water skiing Some suitable for swimming Limited public access Few public beaches Limited shoreline zoning Pollution Ease of pollution	Wide distribution Many suitable for fishing, boating, water skiing and swimming Limited public access Few public beaches Limited shoreline zoning Pollution Ease of pollution					
Fish and wildlife habitat	Suitable for fish The river, its floodplain, and its associated lakes and wetlands suitable for wildlife Pollution may affect fish Limited shoreline zoning	Suitable for fish The river, its floodplain, and its associated lakes are suitable for wildlife Pollution may affect fish Limited shoreline zoning	Small wetland areas suitable for wild life Flow highly variable; no flow for 25 percent of the time	Many are suitable for fish Most have associated wetlands suitable for wildlife Small tributaries have intermittent flow	Suitable for fish The lake and its associated wetlands suitable for wildlife Pollution may affect fish Limited shoreline zoning	Most lakes suitable for fish Wetlands and lakes suitable for wild life Pollution may affect fish Limited shoreline zoning					

EXPLANATION

Adequate flow — Advantages for use above the line
Treatment required — Limitations on use below the line
General suitability for use: Good / Fair / Poor

This table lists advantages and limitations of various sources without regard for legal limitations. Water withdrawals from streams, lakes, and high capacity (over 100,000 gpd) wells require permits from the Wisconsin Department of Natural Resources

POTENTIAL WATER USE FOR IRRIGATION



EXPLANATION

Suitability: On uplands	Suitability: On wetlands	Qualifications	Parent material
Good	- - - - - -	Soil is level and permeable, water table is over 4 feet below land surface	Sand and gravel
Good, on few upland areas Fair, on slopes	Poor, if undrained Good, if drained	Soil is permeable but not level, water table is within 4 feet of the land surface over much of the lowland	Till, sand, and gravel
- - - - - -	Poor, if undrained Good, if drained	Soil is level and permeable, water table is generally within 4 feet of the land surface	Alluvium, loess; wetland vegetation
Fair	Poor, if undrained Good, if drained	Soil is not level and is not permeable. Water table is generally over 4 feet below land surface	Clayey till

Area boundary
Surface-water divide

SOIL SUITABILITY FOR IRRIGATION

Water for irrigation is available nearly everywhere within the basin; however, the suitability of soils varies greatly depending upon the topography of the land, the permeability of the soil, and the depth to the water table. Soils in this basin are grouped into four categories (Hole and others, 1968), as shown above. The soil suitability shown does not take into account water availability or soil fertility.

Under the best conditions (good suitability in table), the topography is level to allow uniform distribution of water and to prevent excessive water runoff, the soil is permeable so that water can infiltrate and percolate to the root zone, and the depth to the water table is 4 feet or more so that plant roots remain in the zone of aerated soil for proper assimilation of oxygen and nutrients.

SELECTED REFERENCES

Alden, W. C., 1918, The Quaternary geology of southeastern Wisconsin, with a chapter on the older rock formations: U.S. Geol. Survey Prof. Paper 106, 356 p.
Bean, E. F., 1949, Geologic map of Wisconsin: Wisconsin Geol. and Nat. History Survey.
Cline, D. R., 1965, Geology and ground-water resources of Dane County, Wisconsin: U.S. Geol. Survey Water-Supply Paper 1779-U, 64 p.
Comly, H. H., 1945, Cyanosis in infants caused by nitrates in well water: Am. Med. Assoc. Jour., 129, p. 112-116.
Dean, H. T., Jay, P., Arnold, F. A., Jr., and Elvove, E., 1941, Domestic water and dental caries, Chapter II: U.S. Public Health Rept. 56, p. 761-792.
Dean, H. T., Arnold, F. A., Jr., and Elvove, E., 1942, Domestic water and dental caries, Chapter V: U.S. Public Health Rept. 57, p. 1155-1179.
Devaul, R. W., 1967, Trends in ground-water levels in Wisconsin through 1966: Wisconsin Geol. and Nat. History Survey Inf. Circ. 9, 109 p.
Ericson, D. W., 1961, Floods in Wisconsin, magnitude and frequency: U.S. Geol. Survey open-file rept., 109 p.
Foley, F. C., Walton, W. C., Drescher, W. J., 1953, Ground-water conditions in the Milwaukee-Waukesha area, Wisconsin: U.S. Geol. Survey Water-Supply Paper 1229, 96 p.
Green, J. H., 1968, The Troy Valley of southeastern Wisconsin: U.S. Geol. Survey Prof. Paper 600-C, p. C135-C139.
Green, J. H., and Hutchinson, R. D., 1965, Ground-water pumpage and water-level changes in the Milwaukee-Waukesha area, Wisconsin, 1950-61: U.S. Geol. Survey Water-Supply Paper 1809-I, 19 p.
Hole, F. D., Beatty, M. T., Lee, G. B., and Klingelhoets, A. J., 1968, Soils map of Wisconsin: University Extension, The University of Wisconsin Geol. and Nat. History Survey.
Hutchinson, R. D., Water resources of Racine and Kenosha Counties, Wisconsin: U.S. Geol. Survey Water-Supply Paper 1878 [in press].
LeRoux, E. F., 1963, Geology and ground-water resources of Rock County, Wisconsin: U.S. Geol. Survey Water-Supply Paper 1619-X, 50 p.
Newport, T. G., 1962, Geology and ground-water resources of Fond du Lac County, Wisconsin: U.S. Geol. Survey Water-Supply Paper 1604, 52 p.
Olcott, P. G., 1968, Water resources of Wisconsin—Fox-Wolf river basin: U. S. Geol. Survey Hydrol. Inv. Atlas HA-321
Sawyer, C. N., 1947, Fertilization of lakes by agricultural and urban drainage: New England Water Works Assoc. Jour., v. 61, pp. 109-127.
Schraufnagel, F. H., Montie, L. A., Lueschow, L. A., and Stautz, F. P., 1963a, Report on an investigation of the pollution in the upper Rock River drainage basin made during 1961-1962: Madison, Wis., State Board of Health and the Comm. on Water Pollution, mimeo. rept., 34 p.
———1963b, Report on an investigation of the pollution in the lower Rock River drainage basin made during 1962-1963: Madison, Wis., State Board of Health and the Comm. on Water Pollution, mimeo. rept., 27 p.
Schraufnagel, F. H., Montie, L. A., Stautz, Floyd, and Winter, Donald, 1967a, Report on an investigation of the pollution in the Fox (Illinois) River drainage basin made during 1966 and 1967: Madison, Wis., Dept. of Nat. Resources, mimeo. rept., 19 p.
———1967b, Report on an investigation of the pollution in the Des Plaines and Pike basin made during 1966 and 1967: Madison, Wis., Dept. of Nat. Resources, mimeo. rept., 12 p.
Southeastern Wisconsin Regional Planning Commission, 1966, Soils of southeastern Wisconsin: Waukesha, Wis., Planning Rept. 8, 403 p.
U.S. Public Health Service, 1962, Drinking water standards, 1962: U.S. Public Health Service Pub. 956, 61 p.
U.S. Department of Commerce, Weather Bureau, 1931-66, Climatological data: Washington, D.C., U.S. Govt. Printing Office.
Wisconsin Department of Resource Development, [no date], A plan for Wisconsin: Madison, 103 p.

AGENCIES HAVING ADDITIONAL INFORMATION

Geology:
University Extension—The University of Wisconsin Geological and Natural History Survey
1815 University Avenue, Madison, Wis. 53706
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
Soils:
University Extension—The University of Wisconsin Geological and Natural History Survey
1815 University Avenue, Madison, Wis. 53706
U.S. Department of Agriculture, Soil Conservation Service
4601 Hammersley Road, P. O. Box 4248, Madison, Wis. 53711
Topography and Drainage:
University Extension—The University of Wisconsin Geological and Natural History Survey
1815 University Avenue, Madison, Wis. 53706
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
Wisconsin Department of Natural Resources
P. O. Box 450, Madison, Wis. 53701
U.S. Department of Agriculture, Soil Conservation Service
4601 Hammersley Road, P. O. Box 4248, Madison, Wis. 53711
U.S. Department of Defense, Army Corps of Engineers
Clock Tower Building, Rock Island, Ill. 61202
Land Use:
Wisconsin Department of Natural Resources
P. O. Box 450, Madison, Wis. 53701
Wisconsin Department of Local Affairs and Development
1 West Wilson Street, Madison, Wis. 53702
Wisconsin Department of Agriculture
103B Hill Farms State Office Building, Madison, Wis. 53702
Southeastern Wisconsin Regional Planning Commission
916 North East Avenue, Waukesha, Wis. 53186
U.S. Department of Agriculture, Soil Conservation Service
4601 Hammersley Road, P. O. Box 4248, Madison, Wis. 53711
Water Budget:
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
University of Wisconsin, Soils Department
Soils Building, University of Wisconsin, Madison, Wis. 53706
Ground-Water—Surface-Water Relationships:
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
Wisconsin Department of Natural Resources
P. O. Box 450, Madison, Wis. 53701
Surface Water:
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
Surface Water: (continued)
Wisconsin Department of Natural Resources
P. O. Box 450, Madison, Wis. 53701
U.S. Department of Defense, Army Corps of Engineers
Clock Tower Building, Rock Island, Ill. 61202
U.S. Department of Agriculture, Soil Conservation Service
4601 Hammersley Road, P. O. Box 4248, Madison, Wis. 53711
Surface-Water Quality:
Wisconsin Department of Natural Resources
P. O. Box 450, Madison, Wis. 53701
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
Southeastern Wisconsin Regional Planning Commission
916 North East Avenue, Waukesha, Wis. 53186
U.S. Department of the Interior, Federal Water Pollution Control Administration
33 East Congress Parkway, Chicago, Ill. 60605
Ground Water:
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
University Extension—The University of Wisconsin Geological and Natural History Survey
1815 University Avenue, Madison, Wis. 53706
Wisconsin Department of Natural Resources
P. O. Box 450, Madison, Wis. 53701
Ground-Water Quality:
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
Wisconsin Department of Natural Resources
P. O. Box 450, Madison, Wis. 53701
Water Use:
Wisconsin Department of Natural Resources
P. O. Box 450, Madison, Wis. 53701
Public Service Commission of Wisconsin
432 Hill Farms State Office Building, Madison, Wis. 53702
U.S. Department of the Interior, Geological Survey, Water Resources Division
1815 University Avenue, Madison, Wis. 53706
U.S. Department of Agriculture, Soil Conservation Service
4601 Hammersley Road, P. O. Box 4248, Madison, Wis. 53711
University Extension—The University of Wisconsin Geological and Natural History Survey
1815 University Avenue, Madison, Wis. 53706
Southeastern Wisconsin Regional Planning Commission
916 North East Avenue, Waukesha, Wis. 53186
U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife
1006 West Lake Street, Minneapolis, Minn. 55408

Base from U.S. Geological Survey 1:500,000, 1968

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1969—W63374

WATER RESOURCES OF WISCONSIN—ROCK-FOX RIVER BASIN

By
R. D. Cotter, R. D. Hutchinson, E. L. Skinner, and D. A. Wentz

1969