T. Skeffy

SURFACE WATER RESOURCES OF DANE COUNTY

DEPARTMENT OF NATURAL RESOURCES
MADISON, WISCONSIN
1985

SURFACE WATER RESOURCES OF DANE COUNTY

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Lake and Stream Classification Project

Second Edition

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Department of Natural Resources
Madison, Wisconsin

1985

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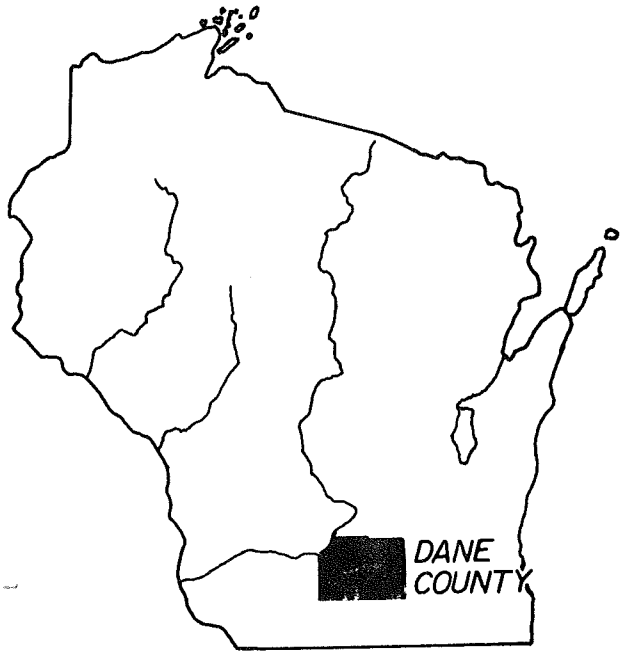

INTRODUCTION

In 1959 the Wisconsin Legislature directed the Wisconsin Conservation Department, now the Wisconsin Department of Natural Resources (DNR), to develop a lake classification system based on use. In 1961 this system was expanded to include streams, and the first Dane County inventory was published in 1962 (Poff and Threinen). This latest edition updates the descriptions of lakes and streams. Reflecting a rising level of industrialization, increasing recreational use of surface waters, and increasing urbanization within the county, current emphasis is placed on water quality, recreational potential, and the impact of land use activity on surface waters.

Data for this inventory was gathered from many sources, principally U.S. Geological Survey (USGS) topographic maps and aerial photos, DNR files, field investigations, and Dane County Regional Planning Commission studies. Sources of background information are listed in "Literature Cited" at the end of this report. Because of time constraints and the immensity of the task, data collection for most waters was limited to a single visit. Consequently, information may not be complete and discrepancies may exist due to annual and seasonal variations. Where necessary, information appearing in the first edition has been revised.

The maps in Appendix G should not be considered final or factual authority from any legal or regulatory standpoint because of possible changes since their development.

PHYSICAL GEOGRAPHY OF DANE COUNTY

Surface waters are affected and influenced by the geography of their region. The geography literally programs the surface waters. It is, therefore, critical to appreciate the various geographic factors, including geomorphology, geology, soils, climate, land use, and water use.

Geomorphology

Dane County's geomorphology has been influenced largely by three forces: glaciation, the Yahara River, and the Wisconsin River. The county can be divided into five areas with distinctive geomorphological features (Cline 1965): the Wisconsin River area, the valley and ridge area, the moraine area, the Yahara River valley area, and the drumlin and marsh area (Fig. 1).

The Wisconsin River valley area is a part of the unglaciated, driftless area of southwestern Wisconsin. This extensive flood plain is mostly marsh-covered in the bottoms and consists of large sand deposits on the upper plain. The valley sides slope steeply, rising as much as 320 ft in less than 0.1 mile. The lowest altitude in the county, 721 ft above sea level, is at the Wisconsin River and the highest altitude, 1,488 feet above sea level, is only 12 miles south of the lowest point, at Blue Mounds.

The valley and ridge area is also located within the driftless area and shows the sharpest relief of the county. The terrain ranges from rolling to rough and hilly. It is marked by ridge lands, steeply sloping valleys, numerous rock outcroppings, and narrow valley bottoms. Blue Mounds and Military Ridge are dominant features in the valley and ridge area. Military Ridge parallels the Wisconsin River and is the surface water drainage divide between the Wisconsin River and other rivers to the south. Its gently descending southern slope is in marked contrast with its short, steep, northern slope. Stream gradients are high in this region.

The moraine area is characterized by elongated hills of glacial till in a north-south direction. These moraines are separated by steeply sloping valleys with flat bottoms, many of which are or once were wetlands. These valleys once drained the meltwaters of glaciers. The moraine area is poorly drained and has numerous small kettles containing land-locked lakes.

The Yahara River valley has an irregular topography, ranging from flat and rolling to hummocky and hilly. Slopes are gentler and relief is less than in the western part of the county. Lakes Mendota, Monona, Wingra, Upper and Lower Mud, Waubesa, and Kegonsa dominate the valley. They are the remains of glacial damming of a preglacial valley. Lowlands along the Yahara River are generally marshy, whereas uplands are well drained.

The drumlin and marsh area is moderately hilly and has much flat and rolling land between the hills. The drumlins--teardrop-shaped mounds of glacial deposits--are aligned in a northeast-southwest direction. As of 1959, half of the wetlands in Dane County were in this area (Wis. Conserv. Dep. 1961). Many of the wetlands are deep peat marshes which mark the location of glacial lake beds. Stream gradients are low in this area.

Geology

Dane County's geology is a succession of shallow sea deposits overlying an arched and uneven surface of Pre-Cambrian igneous and metamorphic rocks. The earliest layer is composed principally of sandstone and dolomite of the Cambrian period. During the Ordovician period, Prairie du Chien dolomite was deposited over the Cambrian stratum. A long period of emergence and erosion followed, leaving an uneven surface with areas of great relief. Later in the Ordovician period, St. Peter sandstone was deposited on the irregular surface, followed by dolomite of the Platteville, Decorah and Galena formations, and the Maquoketa shale. Evidence in other parts of Wisconsin indicates dolomite and shale of the Silurian and Devonian periods were also deposited in Dane County but were subsequently eroded away (Cline 1965). This stratigraphic sequence is shown in Figure 2.

The rock formations in Dane County set the pattern for drainage systems as they dip gently to the south, southeast, and southwest, forming the central part of a southward plunging arch called the Wisconsin Arch. The Pre-Cambrian surface slopes 10-30 ft/mile to the east, south, and west, and the overlying sediments dip 10-15 ft/mile in the same direction. The sedimentary rocks thicken toward the south and particularly to the southeast and southwest. Erosion has reduced the thickness of the sedimentary rocks in the Wisconsin River Valley to about 300 ft, although 1,600 ft of sedimentary rock remains at Blue Mounds (Cline 1965).

During the Pleistocene epoch, continental glaciers incorporating enormous quantities of rock material advanced across Dane County from the northeast to the southwest. As the glaciers melted, the unconsolidated material was dumped on the land, forming the present surface that exhibits such glacial features as kettles, moraines, and drumlins. A terminal moraine extends from north to south on a line located west of Madison. It is the site of a number of small lakes and is distinguished by gravel hills. Glacial debris covers most of the bedrock outside the driftless area. In the driftless area, glacial and alluvial deposits of the Quarternary period occur in the valleys and windblown silt (loess) thinly blankets the entire area (Cline 1965).

Dolomitic limestone is the dominant bedrock formation and the principal aquifer in Dane County. Calcium and magnesium carbonates contributed by these rock formations are responsible for the very hard ground water characteristic of the area. Surface waters, especially streams and rivers, reflect these high levels. Alkaline soils of dolomitic origin also contribute to the hardness of surface waters through runoff.

Soils

Soils significantly influence the temperment of waters and their richness and condition. When light, tending toward sandiness, infiltration of water is good. When heavy, tending toward clayiness, infiltration and percolation are poor. The heavier soils are richer soils and more attractive to agriculture. Waters that enter the ground water system are gently metered out into the surface waters as springs. Obviously, more of this can occur in the lighter soils.

Deep silt loams are the predominant soil types throughout Dane County. However, there is much variation within this category, especially between the driftless and glaciated areas (Table 1).

Over much of the driftless area soils are shallow, especially along the ridges. Soil permeability in these areas is very low and runoff is high because of the topography. Along the creek bottoms, soils are deep and much more permeable. The slope soils are variable and can be deep or shallow, well drained or poorly drained; but on the average, permeability is only slightly higher than on the ridges. Streams in the western part of the county, the hilly driftless area, are more prone to flooding.

The Wisconsin River valley, although part of the driftless area, is quite different from the area just described, largely because of the influence of the river. Soils in the bottom lands consist of deep loams, loamy sands, and sandy loams. Permeability of the soils is very high. Similar soil types are also present in an isolated portion of the driftless area located along the lower Sugar River.

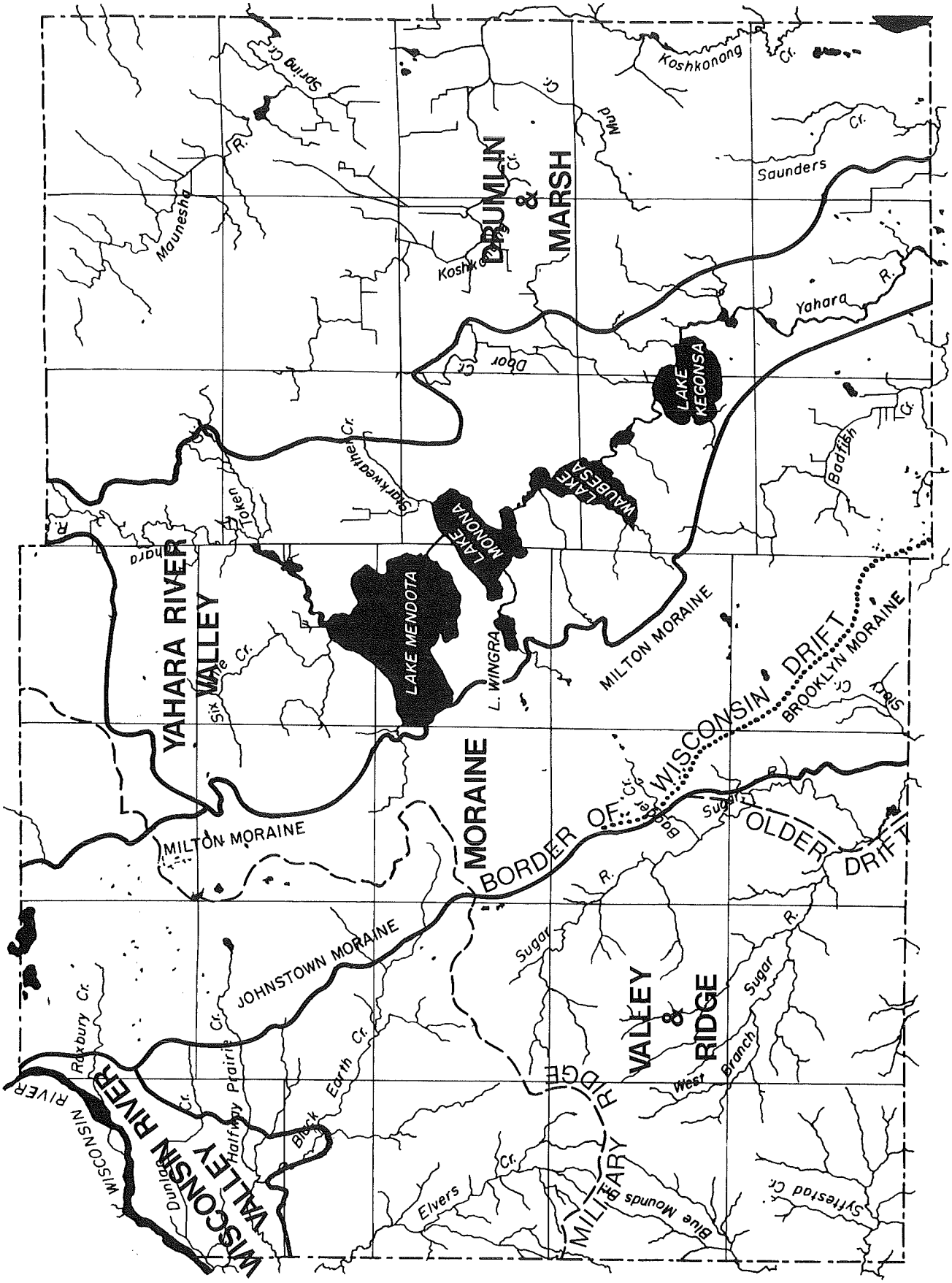

FIGURE 1. Physiographic areas of Dane County.
(Source: Dane County Regional Planning Commission)

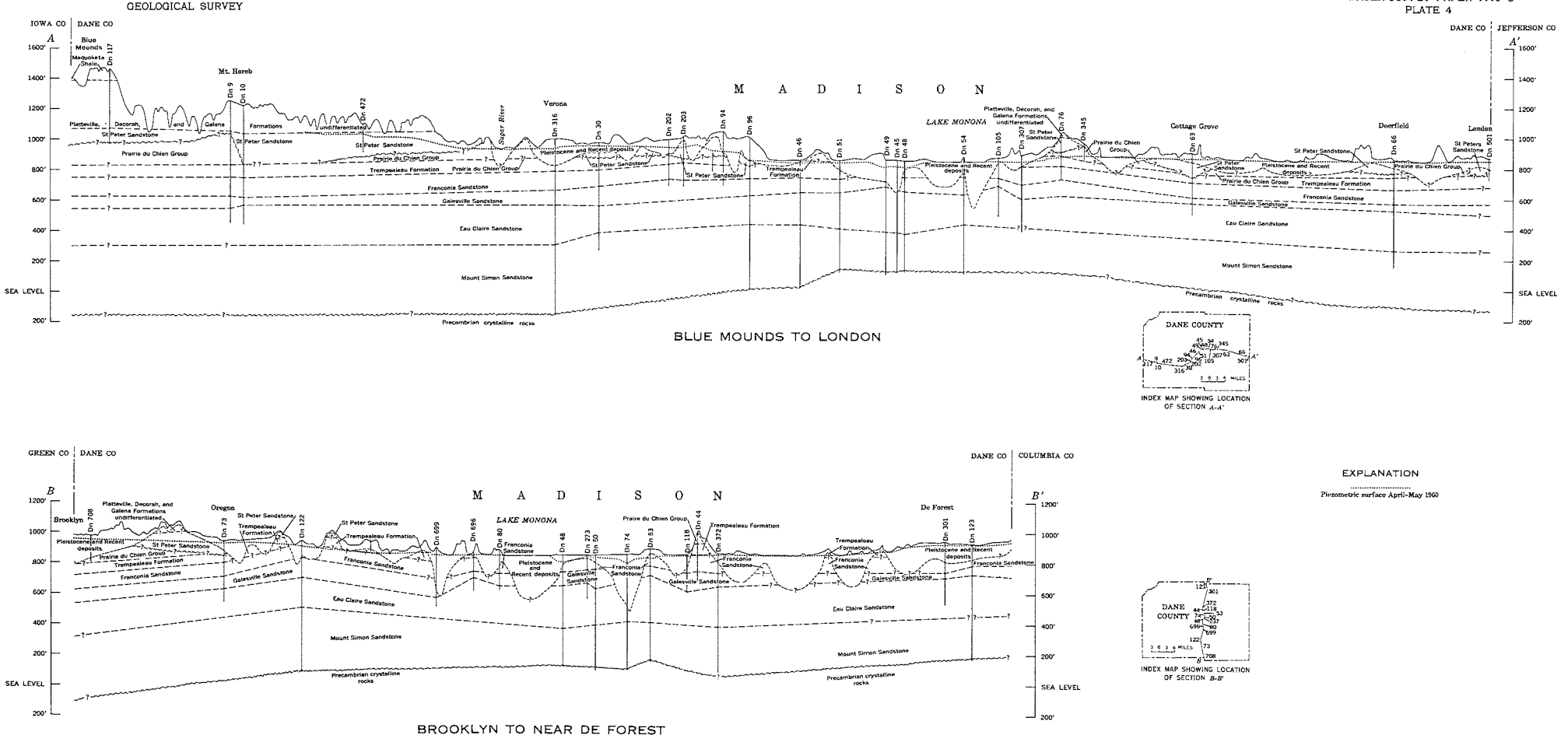

FIGURE 2. Geologic sections from Blue Mounds to London, and from Brooklyn to near DeForest.

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Deep silt loams and loams cover about one-half of the glaciated part of the county. These soils are found on glacial uplands such as drumlins and moraines, and are usually well drained. Deep silty loams and muck soils, including peat, are characteristic of the remaining portion of the glaciated area. These soils are found on glacial outwash plains which consist of glacial tills, depressions, and old lake beds. The permeability of these soils tends to be low. Marshes and peat lands are quite common (Glocker and Patzer 1978).

Soil permeability is moderate (0.8-2.5 inches/hour) in over 50% of the county. This includes the northern part of the county and extends south along the moraines to the west of the lakes. Scattered areas of moderately permeable soils are found in the southeast drumlin region.

Permeability is low (less than 0.05-0.8 inches/hour) in 48% of the county. These areas include the southern portion of the driftless area, the Yahara lakes area, and the marshy areas in the southeast. Isolated regions of high permeability covering 2% of the county are located in the Wisconsin River valley (5-10 inches/hour) along the Sugar River and Badfish Creek, and in the vicinities of Lodi Marsh and Fish Lake (2.5-5.0 inches/hour)(Conger 1981).

Drainage

Approximately 20% of Dane County lies within the Wisconsin River drainage basin, 20% within the Sugar River sub-basin, 3% within the Pecatonica River sub-basin, and 57% within the Yahara River, Maunesha River, and Koshkonong Creek sub-basins (Fig. 3). These 5 sub-basins drain into the Rock River. Because of its size and proximity to municipalities, the Yahara River is the county's most important surface water resource. It flows 40 miles through the center of the county and, combined with its lake and tributary acreage, accounts for over 85% of the surface water area in the county. Major tributaries include Token Creek, Six Mile Creek, and Door Creek. Lakes include Mendota, Monona, Upper Mud, Waubesa, Lower Mud, Kegonsa, and Wingra. Black Earth Creek drains the driftless, northwest corner of the county. Important tributaries include Halfway Prairie Creek, Vermont Creek, Garfoot Creek, Bohn Creek, and Ryan Creek. The Sugar River drains most of the southwest corner of the county, with its major tributaries being the Sugar River West Branch and Mount Vernon Creek. The Maunesha River and Koshkonong Creek drain the eastern part of the county.

Streams in the glaciated eastern and central portions of the county flow over moraine and drift deposits. They are usually sluggish streams and often have adjoining wetlands. Silt, sand, and muck are predominant bottom types. Streams in the driftless area in the western part of the county tend to have very high gradients. Bottom types are usually gravel or rubble as the high gradients discourage the settling of silt or other fine particles. Spring flooding is not a serious problem on the larger rivers because of low gradients and many impoundments. More flooding occurs in the driftless area because of the steep gradients and dendritic drainage pattern.

Climate and Hydrology

Dane County's climate is typically continental, and is under the influence of the prevailing westerly wind belt (Natl. Oceanic Atmos. Adm. 1980, Natl. Weather Serv. n.d., Wis. Stat. Rep. Serv. 1967). The year exhibits a wide range of temperatures and four distinct seasons (Table 2). The record low temperature was recorded in January 1951, when the mercury plunged to -37 F. The recorded high was 104 F in July 1936. January, the coldest month, has an average temperature of 16.7 F. The warmest month is July, with an average temperature of 71.4 F.

Summers are hot and humid, and uncomfortably muggy conditions in July and August make the county's swimmable waters immensely valuable. Summer winds are the calmest of the year, with average speeds of 7 mph. Tornadoes are infrequent, although winds over 80 mph have been recorded during violent thunderstorms. The average occurrence of thunderstorms from May through October is just under 7 days per month. Sixty percent of the annual precipitation falls during this period. Storm runoff carries great amounts of sediment into surface waters causing water quality problems.

Winters are cold and wind chill factors of -40 F are not uncommon. Temperatures drop below freezing in late November, at which time shallow lakes begin to freeze. The Madison lakes, which are much deeper, are normally frozen from 17 December to 5 April. The prevailing winter winds are from the north. The county's waters are not ignored during the winter, and ice anglers do very well on many county lakes. Ponds, lakes, and slow-moving rivers are popular ice skating spots and late winter is the time to pick watercress from many spring-fed streams. Ice boats and "sail skaters" skim across the bigger lakes and cross-country skiers and snowmobilers enjoy the open spaces when snow is present.

TABLE 1. Dane County soils.

General Landscape Group	Association	Topography	Parent Material	Classification	Location And Amount	Use
Soils underlaid by sandy loam glacial till.	Dodge-St. Charles-McHenry. Well drained and moderately well drained. Deep silt loams.	Varied. Gently sloping to sloping. Some level or moderately steep to steep. Characterized by drumlins and by ground, end, and recessional moraines.	Formed under mixed hardwoods in loess and sandy loam glacial till.	Alfisols	Throughout glaciated portion of the county; 25% of total area.	Mostly cultivated. Common crops are corn, oats, alfalfa, and some canning crops. Erosion, wetness, soil tilth, and fertility are the main concerns in management.
	Plano-Ringwood-Griswold. Well drained and moderately well drained. Deep silt loams and loams.	Gently sloping areas on glacial uplands. Some areas nearly level, some ridges.	Formed under prairie grasses in sandy glacial till, loess, or sand and gravel outwash.	Mollisols	Throughout glaciated portion; 14% of total area.	Mostly cultivated. Most canning crops in the county are grown in this association, including peas, sweet corn and some cabbage and beets.
Soils underlaid by sandstone, dolomite, or shale (at depths less than 40 inches).	Edmund-Sogn-Port Byron. Excessively drained to moderately well drained. Very shallow and deep silt loams. Underlaid by dolomite or silt.	Gently sloping to moderately steep on the tops of ridges, sloping in drainage ways. Side slopes steep to very steep.	Formed under prairie grass in shallow loess over fractured dolomite bedrock.	Mollisols	Southerly portions of driftless area; 5% of total area.	Mostly cultivated. Common crops are corn, small grains, and hay. Some areas better suited to pasture or wildlife habitat.
	Elkmound-Stony and rocky land-Dunbarton. Excessively drained and well drained. Shallow sandy loams, silt loams, and stony and rocky land.	Driftless landscape, very narrow sloping to moderately steep limestone ridge tops. Steep to very steep side slopes.	Former under mixed hardwoods and grasses in thin loess and residuum from dolomite, sandstone, or shale.	Alfisols and Inceptisols	Driftless area north of Military Ridge; 45% of total area.	Mostly suited to pasture, woodlands, small grains, or wildlife habitat.
	Dunbarton-New Glarus-Seaton. Well drained. Moderately deep and deep silt loams. Underlaid by limestone or sandstone.	Driftless landscape, sloping to steep. On foot slopes, side slopes, benches and ridges.	Formed under mixed hardwoods in thin loess, coarse silt, and clayey residuum underlaid by dolomite.	Alfisols	Driftless area south of Military Ridge; 6% of total area.	Steeper areas suited to pasture, woodland, or wildlife habitat. Other areas suited to small grains, meadow, and small areas suited to most common crops.

TABLE 1. Dane County soils, continued.

	Basco-Elkmound-Gale. Moderately well drained. Moderately deep and shallow silt loams and sandy loams. Underlaid by sandstone.	Driftless landscape, gently sloping to very steep. On ridges and side slopes.	Formed under mixed hardwoods with grassy understory in deep loess or residuum weathered from sandstone or shale bedrock.	Alfisols and Inceptisols	Scattered throughout the driftless area; 5% of total area.	Areas of gentler slopes suited to crops commonly grown in the county. Steeper areas well used as woodland, pasture, or wildlife habitat.
	Derinda-Dunbarton. Moderately well drained and well drained. Moderately deep and shallow silt loams. Underlaid by shale or limestone.	Driftless landscape. Highest elevation of all associations in county. Large limestone blocks scattered on the surface throughout.	Formed under mixed hardwoods in thin loess and residuum from shale or dolomite bedrock.	Alfisols	Only in Blue Mounds area; 1% of total area.	Some corn, oats, and alfalfa are cultivated on this association. Remaining area suited to meadow or wildlife habitat.
Soils formed in outwash material	Batavia-Houghton-Dresden. Well drained and poorly drained. Deep and moderately deep silt loams and mucks. Underlaid by silt, sand, and gravel.	Outwash plains with depressions and old lake basins.	Formed under hardwood forests with thick understory of prairie grasses in thick loess and loamy outwash.	Alfisols and Histosols	Throughout the glaciated area; 35% of total area.	Mostly cultivated, mainly in corn. Some mint and sod also grown.
	Meridian-Granby-Dickinson. Well drained, poorly drained, and excessively drained. Moderately deep and deep loams, loamy sands, and fine, sandy loams. Underlaid by sand and loamy sand.	Outwash plain. Nearly level. Some areas gently sloping or sloping.	Formed under hardwood forests, prairie grass, or sedge grass in deep, loamy outwash and sand and gravel outwash.	Mollisols and Alfisols	Areas adjacent to the Wisconsin and Sugar rivers; 1% of total area.	Some areas suited to row crops, small grains, or hay. Draining necessary in some areas. Other areas suited to wildlife habitat.
Soils formed in alluvium	Otter-Orion-Troxel. Poorly drained to well drained. Deep silt loams. Underlaid by silt loam.	Drainageways, stream bottoms, and flood plains. Nearly level to gently sloping.	Formed under mixed hardwoods and prairie grasses in deep recent silty alluvium and buried older alluvium.	Entisols and Mollisols	Delineates major water courses in driftless area; 4% of total area.	With adequate drainage, all crops common in the county may be grown, except alfalfa. All areas subject to flooding.

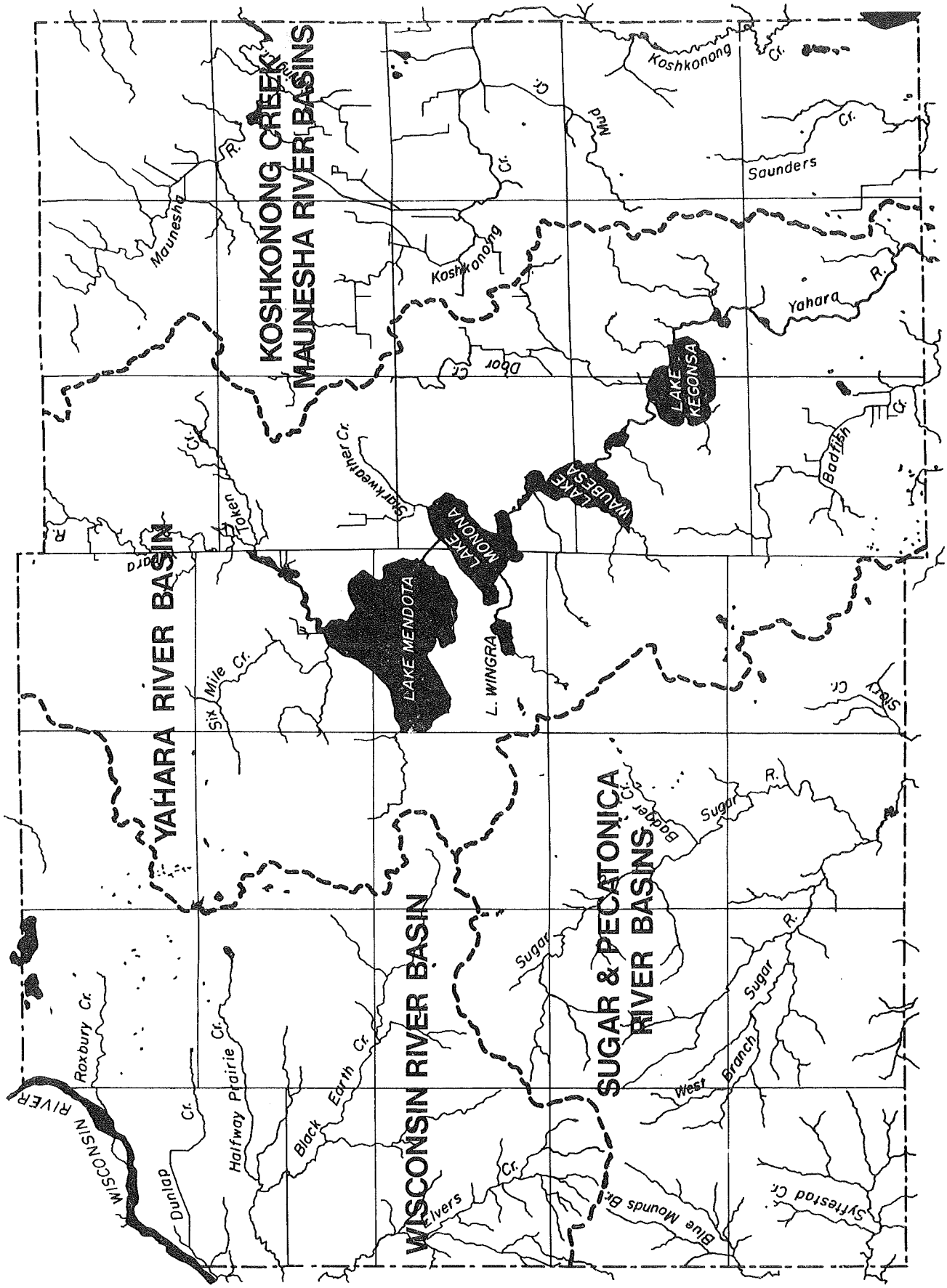

FIGURE 3. Dane County drainage basins.

(Source: Dane County Regional Planning Commission)

TABLE 2. Climatic conditions in Dane County.

Month	Average Temperature (F) Mean	Range	Average Precipitation (inches) Mean	Range	1941-1980 Snowfall (inches) Mean	Range	1965-74 Average Wind Speed* (knots) Mean
Oct	50.4	43.7-59.8	2.08	0.08-5.55	0.1	0- 0.9	8.6
Nov	35.4	28.1-41.9	1.90	0.11-3.94	3.2	tr-13.4**	8.8
Dec	22.6	11.3-31.1	1.51	0.25-3.64	10.1	tr-24.6	8.6
Jan	16.7	3.7-27.0	1.23	0.19-2.45	9.4	1.4-26.9	9.1
Feb	20.8	11.7-32.9	1.00	0.08-2.77	7.0	0.4-20.9	9.0
Mar	31.7	18.4-44.6	2.09	0.28-5.04	8.9	0.5-25.4	9.2
Apr	46.2	39.5-53.1	2.87	0.96-7.11	2.1	0-17.4	9.5
May	57.1	52.2-65.2	3.35	0.98-6.26	tr	0-2.7	8.5
Jun	66.9	59.5-71.8	4.09	0.81-9.95	-	-	7.5
Jul	71.4	62.0-78.1	3.71	1.38-10.93	0	-	7.0
Aug	69.5	62.0-77.8	3.54	0.70-9.49	0	-	6.7
Sep	60.6	56.8-65.1	3.20	0.11-9.51	tr	0-tr	7.3
Annual	45.8	43.0-48.7	30.57	21.08-40.34	40.8	12.7-76.1	8.3

*Truax Field data.
**tr = trace.

Spring and fall tend to be mild and windy, exhibiting a mixture of summer and winter conditions. As air and water temperatures equalize, the windy weather helps the deeper lakes turn over from summer to winter stratification and vice versa. Spring weather conditions greatly influence the operation of Dane County fisheries. Most warm water game fish spawn in spring and the timing of production of eggs and sperm is affected by temperature. Unusually warm temperatures may induce premature spawning and, if a long cold period follows, many eggs and fry may be lost.

Dane County's growing season averages 175 days extending from late April to early October. Over 60% of the annual precipitation falls in this period. Approximately 30 inches of precipitation falls annually, 7 inches of which occurs as 40 inches of snow. Annual evaporation is approximately equal to precipitation. Precipitation is necessary to maintain stream flows, but it is the ground water recharge which keeps stream water levels fairly consistent throughout the year. During dry periods, streams keep flowing as ground water is discharged, while in a wet period excessive precipitation can recharge ground water supplies. Rapid snow melt and excessive rainfall can cause surface runoff to streams to exceed the rate of ground water recharge, especially in areas with steep topography, low permeability, or sparse vegetation. This excessive runoff normally provides a flushing action which clears the streams of accumulated silt deposits, but it can result in flooding and severe bank erosion. Plants can impede surface runoff not only by the holding action of roots and leaf litter, but also by lowering the soil moisture through evapotranspiration.

Snow melt and spring rains falling on frozen ground cause surface runoff to peak in March. April brings increased precipitation but decreased runoff as the thawing soil absorbs the excess, recharging the ground water supply. Precipitation reaches its maximum in the summer months but runoff is reduced as plants lower the soil moisture through evapotranspiration (Fig. 4). Fall brings a reduction in evapotranspiration and precipitation; stream flows remain fairly constant. Precipitation is lowest in the winter months and is stored as ice or snow. Much of the surface water is frozen and runoff rates are minimal. Figure 5 shows mean monthly discharge and precipitation for a high and a low flow water year on Black Earth Creek. Black Earth spring runoff was quite high in both years, but a January thaw and heavy spring rains in 1974 increased the mean annual flow for that year.

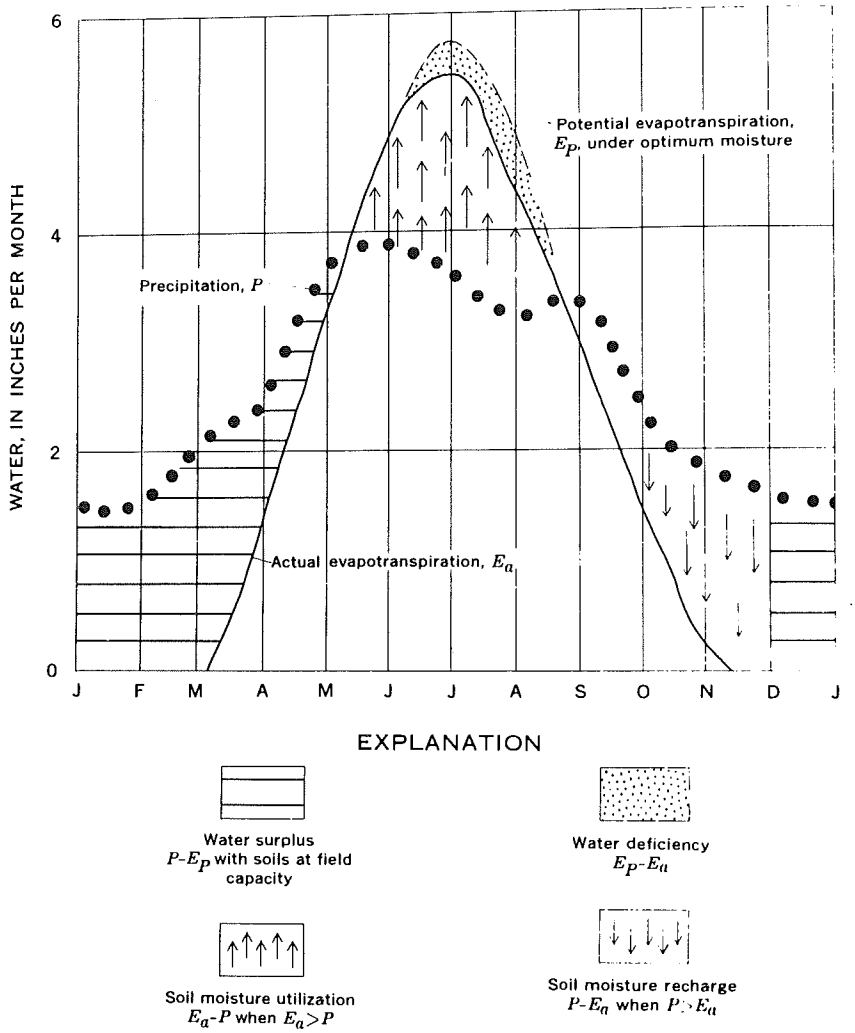

FIGURE 4. Water balance at Madison.

(Source: Thornwaite, Mather, and Carter (1958))

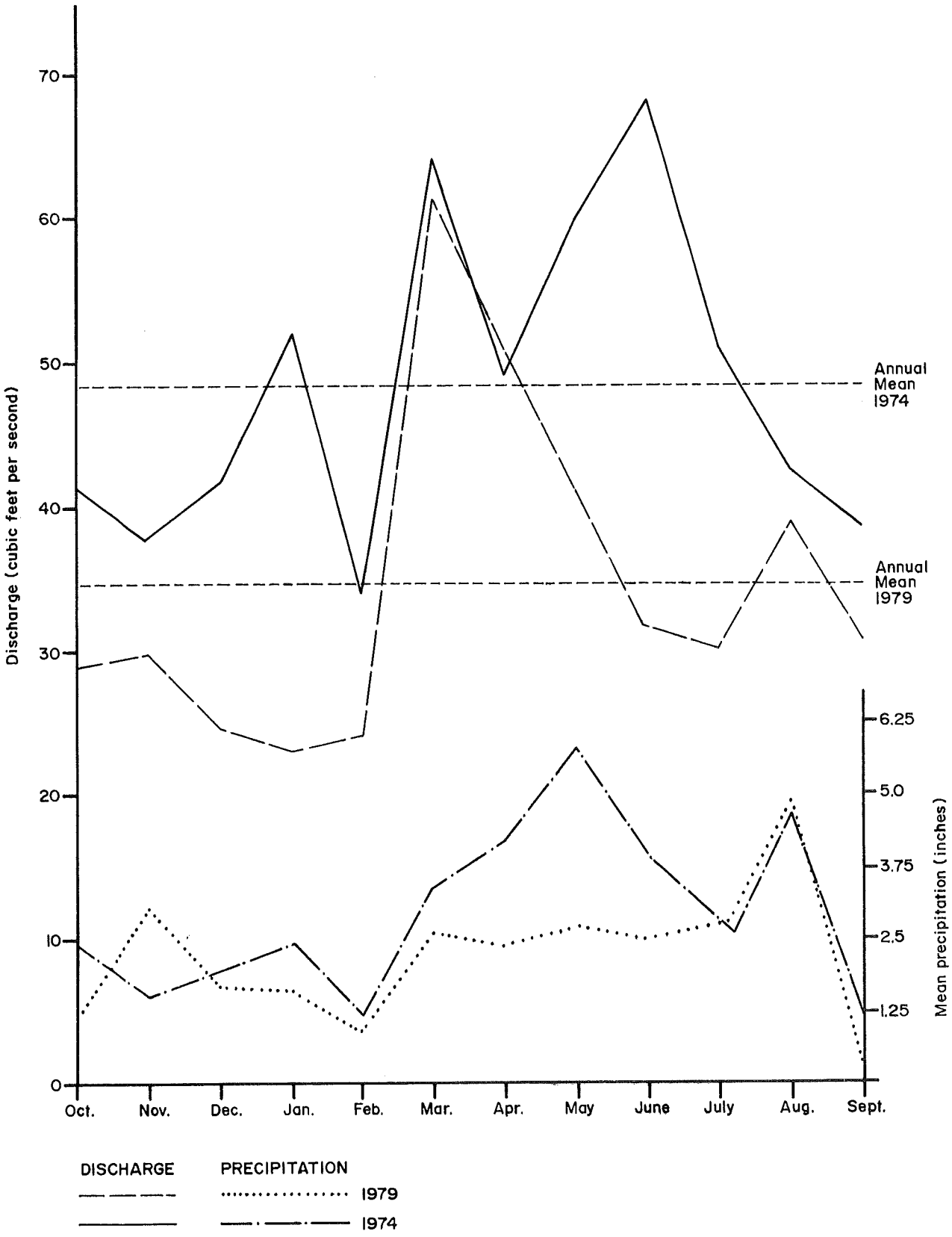

FIGURE 5. Mean monthly discharge and precipitation for a high and low water year on Black Earth Creek.

Description of the Waters of Dane County

This section provides descriptions of individual lakes and streams. Official lake and stream names are taken from USGS topographic maps and decisions made by the State Geographic Names Council. Any popular names that are different from the official name are cross-referenced. Named lakes and streams are listed in alphabetical order. Unnamed streams, farm ponds, and pothole and marsh ponds are presented by township according to the numerical order of the township and range and the sub-section numbering system shown in Figure 6. Stream locations refer to the position of the mouth or the point at which the stream exits the county. Water quality and flow data were usually obtained as close to the mouth as possible. Narrative descriptions follow for named lakes and streams while data on unnamed streams, farm ponds, and pothole and marsh ponds are presented in outline form. Detailed physical, chemical, and biological data are given in Appendixes A-E. A map showing the lakes and streams of Dane County can be found in Appendix G (Fig. 8).

Data on fish species composition was obtained from the DNR Bureau of Research fish distribution study (Fago n.d.). Fish species information can also be found in Appendix E tables and on a county map in Appendix G (Fig. 9).

In describing waters, standard terminology relating to water, limnology, and fishery science is used. Definitions of most terms appear in the the glossary at the end of this report. Clarification of other terms follows:

The shoreline development factor (SDF) is a measure of lake shoreline length per unit area of water. It increases with shoreline irregularities and islands and is calculated as follows:

$$SDF = \frac{L}{2\sqrt{\pi A}}$$ where L = perimeter of lake and islands (miles) and A = lake area (miles^2).

Stream length refers to the distance which was within the county boundaries when surveyed. Watershed acreage may, however, include areas lying outside county boundaries.

Fertility of surface waters is a term relating specific conductivity and alkalinity to productivity. See the section on water quality for a more detailed explanation.

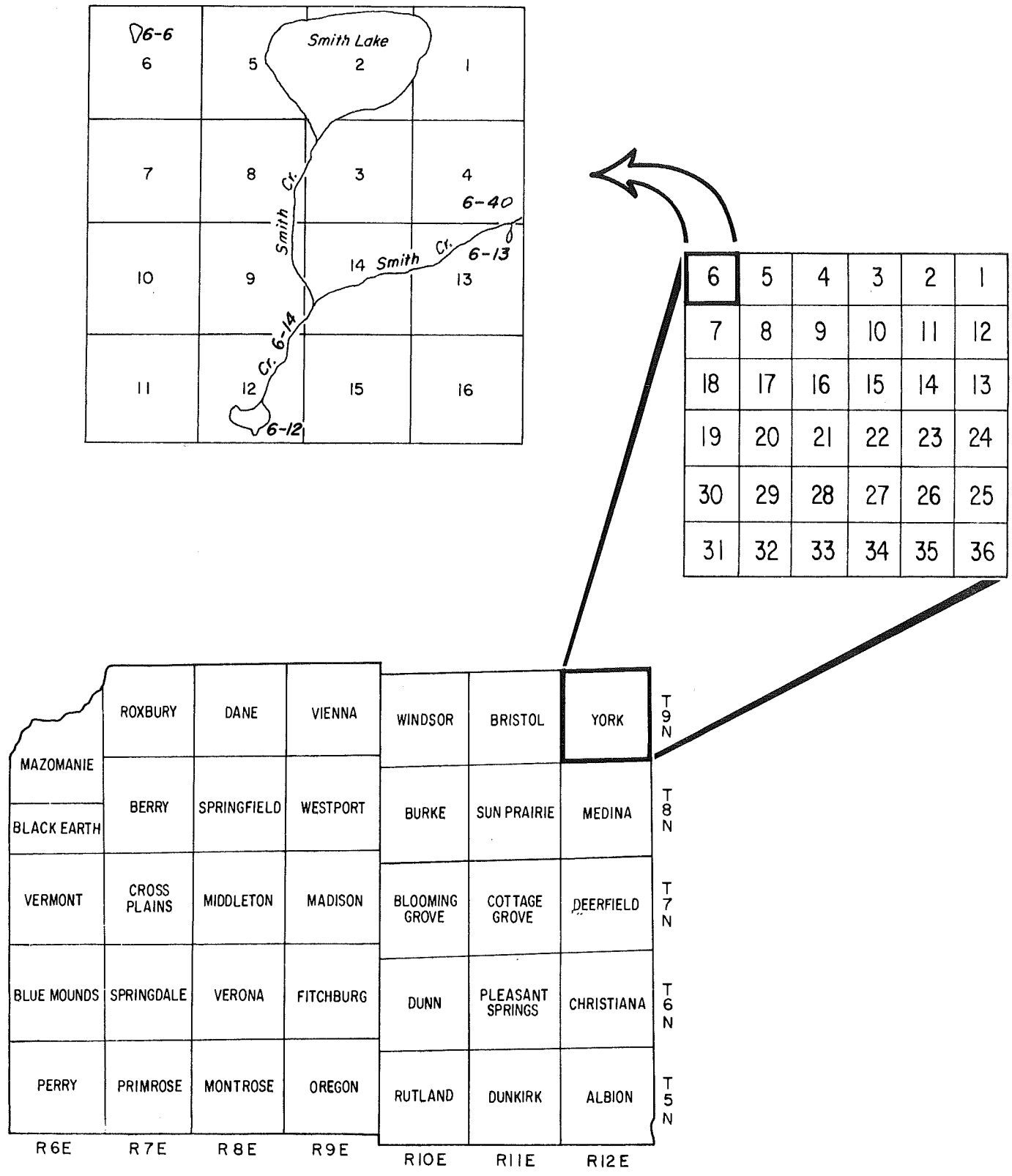

FIGURE 6. Numbering system for unnamed waters.

Barney Lake - T6N, R9E, Sec. 34
Surface acres = 27, SDF = 1.15, Maximum depth = 6 ft

Barney Lake is a small, shallow, land-locked drift basin lake completely surrounded by land owned by the State Department of Health and Social Services. The watershed is largely agricultural though the shoreline is undeveloped and relatively undisturbed. A small fresh meadow adjoins the lake on the south end and provides some waterfowl habitat. Water quality is good, the bottom is sand and muck, and macrophytes are abundant. The lake has some aesthetic value but little recreational potential. This lake was once managed by the Department of Natural Resources as a warm water game fish rearing pond but is no longer used due to its fluctuating water level. Winterkill conditions are severe though a few forage fish may survive. Public access is not available.

Fish species: forage fish.

Bass Lake - T5N, R10E, Sec. 24
Surface acres = 69, SDF = 1.43, Maximum depth = 9 ft

Bass Lake is a pothole, land-locked seepage lake of medium size with hard, alkaline water. A large portion of the lake's watershed is under intensive cultivation, though there is a small, shallow marsh on the southwestern shore. There are several permanent dwellings on the northeast shore though use of the lake is light. The fishery is limited by frequent winterkills. The bottom is largely a clay silt mixture and the water is turbid. Public access is not available.

Fish species: panfish, bullheads, and forage species.

Lake Belle View (Belleville Millpond) - T5N, R8E, Sec. 34
Surface acres = 100, SDF = 2.45, Maximum depth = 7 ft

A large, shallow impoundment of the Sugar River, Lake Belle View is located in the Village of Belleville. The lake is high in dissolved solids and water quality is poor. Problems stem from heavy sediment loads, turbidity, storm sewers, municipal and industrial effluents discharged upstream, and carp populations. Excessive macrophyte growth reduces its recreational potential. There is some private development on the lake. Local residents enjoy fishing for white suckers in Lake Belle View. Panfish, largemouth bass, and in lesser numbers, smallmouth bass, channel catfish, and bullheads are also caught. A few walleye are stocked but have been unable to establish themselves. A city park in Belleville provides swimming, fishing, and boating opportunities. The park is a favorite starting point for boat trips on the Sugar River and a terminus for trips originating upstream.

Fish species: common carp, golden shiner, common shiner, sand shiner, suckermouth minnow, bluntnose minnow, creek chub, silver, golden, and shorthead redhorse, orangespotted sunfish, bluegill, largemouth and smallmouth bass, black crappie, johnny darter, mottled sculpin, black bullhead, channel catfish, and white sucker.

Belleville Millpond - see Lake Belle View.

Brandenburg Lake (Lake Katrine) - T8N, R8E, Sec. 6
Surface acres = 38, SDF = 1.15, Maximum depth = 6 ft

A shallow, land-locked seepage lake, Brandenburg Lake is located in a terminal moraine. The surrounding land is privately owned and is mostly agricultural. The shoreline is relatively undisturbed. The Girl Scouts have a permanent summer camp on the north shore and use the lake for swimming and boating. Waterfowl frequent the lake and hunting is allowed with permission of landowners. Public access to this lake is not available. The lake is used as a warm water game fish rearing pond by the Department of Natural Resources; fishing is not permitted. Severe winterkill conditions prohibit the establishment of a year-round fishery.

Fish species: species being reared, usually walleye.

Cherokee Lake - T8N, R9E, Sec. 24
Surface acres = 57, SDF = 2.27, Maximum depth = 23 ft

A deep, medium-sized, man-made lake, Cherokee Lake is connected to the Yahara River and Cherokee Marsh. It was created as part of a residential subdivision on the north side of the City of Madison in the early 1960's. Private development is concentrated southeast of the lake. Over 700 acres of wetlands to the north and west provide excellent waterfowl habitat and fish spawning grounds. Water quality is only fair, but the lake does not have problems with winterkills or excessive macrophyte growth. Limited public access is available directly to the lake, but boats may enter from the Yahara River. Use is high. Game fish common to the Yahara River system are found in the lake and provide excellent fishing opportunities.

Fish species: northern pike, common carp, black bullhead, bluegill, largemouth bass, white crappie, black crappie, yellow perch, and walleye.

Crystal Lake - T9N, R7E, Sec. 1
Surface acres = 500, SDF = 1.69, Maximum depth = 9 ft

A large, shallow, land-locked basin, Crystal Lake is located in northwestern Dane and southwestern Columbia counties. The water quality of this lake has deteriorated over the last few decades. The substrate is composed of muck and is covered by a dense growth of macrophytes including sago pondweed, Elodea sp., water-milfoil, bulrush, arrowhead, yellow and white water lilies, and duckweed. Algae blooms occur throughout the summer. Water quality problems are related to fluctuating water levels and runoff from the adjacent trailer park and farmlands.

A narrow piece of marsh borders the lake and some of the shoreline has been developed into a trailer park. Residential development has occurred nearby. The remaining shoreline is farmland. Crystal Lake is used heavily by migrating waterfowl and a wide variety of birds can be seen in and around the lake. Winterkill is a continuing problem. Fishing success is poor in years following a winterkill but good at other times. Bass have been stocked. There is no free public access to the lake, but two commercial liveries provide boats and access for a fee.

Fish species: black bullhead, golden shiner, fathead minnow, bluegill, orangespotted sunfish, pumpkinseed, and largemouth bass.

Fish Lake - T9N, R7E, Sec. 3
Surface acres = 216, SDF = 1.60, Maximum depth = 62 ft

Fish Lake is a deep, land-locked seepage lake occupying a valley of glacial outwash in northwestern Dane County. Two resorts are located on Fish Lake with farmland and cottages dominating the remaining shoreline. Dense beds of macrophytes, both emergent and submergent, are found throughout the littoral zone including water-milfoil, coontail, bushy pondweed, flatstem pondweed, bulrush, cattail, yellow and white water lilies, rush, and smartweed (Dane Cty. Reg. Plann. Comm. 1979a). Water quality is very good and winterkills do not occur. Inadequate septic systems in the area must be identified and improved to prevent any degradation in water quality. Marx Pond is connected to Fish Lake by a culvert and serves as northern pike spawning grounds.

The fishery of Fish Lake is unusual in that both cold and warm water game fishes are present. The lake is managed for northern pike, largemouth bass, panfish, and cisco. In the past, rainbow trout and walleye were stocked but survival was low, probably due to northern pike predation. Fishing pressure is moderately heavy. Access is available at an improved town road access way. A small county park on the west side provides parking and picnicking facilities. A Town of Roxbury ordinance does not allow motorboats on Fish Lake. Development consists of a resort-mobile home park.

Fish species: cisco, northern pike, common carp, golden shiner, bluntnose minnow, white sucker, black and brown bullhead, green sunfish, pumpkinseed, bluegill, largemouth bass, black crappie, yellow perch, and walleye.

Fishers Lake - T9N, R6E, Sec. 32
Surface acres = 5.2, SDF = 1.66, Maximum depth = 8 ft

Located entirely within the Mazomanie Public Hunting Grounds, this small, shallow lake formed by a river oxbow is relatively undisturbed. The annual winterkills which occur in this lake are not of major concern. During spring high waters, many fish moved up from the Wisconsin River through a drainage ditch and remain in Fishers Lake. Waterfowl frequent the lake during spring and fall migration. Numerous walking trails exist in the surrounding area and many species of wildlife and birds can be seen. The fishery is not managed and fishing pressure is light.

Fish species: panfish and northern pike.

Goose Lake - T7N, R12E, Sec. 2
Surface acres = 32, SDF = 2.77, Maximum depth = 3 ft

A shallow depression in the ground moraine with an intermittent outlet to Koshkonong Creek, Goose Lake is surrounded by deep marsh and very little open water is present. Located in the Goose Lake Wildlife Area, this lake provides good waterfowl hunting and beautiful surroundings. The fishery is not managed because of frequent severe winterkill conditions.

Fish species: black bullhead.

Goose Pond - T6N, R8E, Sec. 13
Surface acres = 11.1, SDF = 1.46, Maximum depth = 7 ft

Goose Pond is a shallow basin in an outwash terrace forming the headwaters of Badger Mill Creek. Residential subdivisions comprise most of the surrounding watershed. Muskrat houses are abundant on the marshy edges of this lake and some migrating waterfowl are seen on the lake. Winterkills are an annual occurrence. The fishery is not managed, but bullheads are present. There is no public access available and fishing and recreational use are light.

Fish species: bullhead sp.

Grass Lake (Town of Dunkirk) - T5N, R11E, Sec. 18
Surface acres = 10.2, SDF = 1.18, Maximum depth = 5 ft

A small, shallow, land-locked depression, Grass Lake has very little open water. The surrounding land is almost entirely agricultural. Muskrats and cattails abound along the shoreline. This lake provides a good resting spot for migrating waterfowl. Winterkills occur annually and the fishery is not managed. Public access is not available and use of the lake is minimal.

Fish species: no information available.

Grass Lake (Town of Dunn) - T6N, R10E, Sec. 30
Surface acres = 48, SDF = 1.79, Maximum depth = 9 ft

A shallow, land-locked basin, Grass Lake is located in a highly agricultural watershed. A small deep marsh adjoins the lake on the north end and muskrats are abundant. Winterkills frequently decimate the fish population and the fishery is not managed. The water is colored, algal blooms occur throughout the summer, and there are above average concentrations of chloride ions present. The Lower Badfish Drainage Ditch runs along the western shore of this lake and its banks are now weakened through the actions of muskrats and nature. Lake property owners are concerned about deterioration of this lake as the result of bank degradation. Use of the lake is light and there is no public access.

Fish species: bluntnose minnow.

Lake Harriet - T5N, R9E, Sec. 9
Surface acres = 32, SDF = 1.30, Maximum depth = 12 ft

Lake Harriet is a land-locked basin located within a terminal moraine. An intermittent inlet drains farmland to the northwest and shows indications of contamination. Lake frontage is mostly pasture and cropland with development on the north shore. The bottom is silt. Water quality is average, and agricultural runoff poses a major problem. Winterkill occurs and the fishery is not managed. Panfish

and forage fishes reportedly are present, but fishing and recreational pressure is light. Public access is not available.

Fish species: panfish, fathead minnow, and black bullhead.

Hook Lake - T6N, R10E, Sec. 29
Surface acres = 9.2, SDF = 1.86, Maximum depth = 3 ft

This small, shallow, land-locked seepage lake is surrounded by over 100 acres of shallow marsh which supports waterfowl. Land use in the surrounding area is agricultural with some mixed hardwood forest. Two private sports clubs own land adjacent to the lake. Wilderness access is available through land owned by the Department of Natural Resources. Severe winterkill conditions exist and the fishery is not managed.

Fish species: no consistent fishery.

Indian Lake - T8N, R7E, Sec. 2
Surface acres = 66, SDF = 1.14, Maximum depth = 6 ft

A small, shallow drainage basin lying on the edge of the driftless area, Indian Lake is surrounded by moraine deposits. This lake's origin may, in part, be attributed to plant growth damming its outlet, the Halfway Prairie Creek. The shoreline is completely undeveloped and is owned by Dane County as part of a large park. There are approximately 10 acres of fresh meadow adjoining the lake to the northeast.

This lake has the potential to support a good warm water fishery, but winterkill conditions must be alleviated. A project is underway by the Dane County Parks Commission to raise the water level by further damming of the outlet. Panfish and bullheads are present but there has been a problem with stunted panfish. Largemouth bass will continue to be stocked if winterkill conditions are abated. A boat ramp is located on the west shore of the lake; parking and picnicking facilities are located east of the lake.

Fish species: fathead minnow, white sucker, black bullhead, green sunfish, bluegill, black crappie, and yellow perch.

Island Lake - T5N, R10E, Sec. 23
Surface acres = 9.8, SDF = 1.21, Maximum depth = 5 ft

A small, shallow, land-locked depression, Island Lake is classified as a shallow marsh in wetlands surveys. Approximately 10 acres of fresh meadow adjoin the lake. The surrounding land is primarily used for agricultural purposes, and there is little development. Muskrats are abundant in the area, and waterfowl use cover provided by the marsh vegetation. Winterkill conditions are severe and the fishery is not managed. There is no public access.

Fish species: no information available.

Lake Katrine - see Brandenburg Lake.

Lake Kegonsa - T6N, R10
Surface acres = 3,209, SDF = 1.30, Maximum depth = 31 ft

This large, moderately shallow drainage lake was formed by morainic damming of the preglacial Yahara River. The natural water level is presently augmented by a structure maintaining a 2-ft head. Approximately 1.5 miles of shoreline are in public ownership, including a county park, a state park, and 900 acres of wetlands. The rest of the shoreline is residential. The watershed as a whole, however, is highly agricultural.

Water quality in Lake Kegonsa has improved over the last 20 years since diversion of wastewater from the Madison Metropolitan Sewerage District, although blue-green algae blooms and excessive weed growths continue. The Yahara River still contributes to the nutrient load. Undersized, poorly located, and

neglected septic systems serving lake shore residents contribute some nutrients. Agricultural runoff to Lake Kegonsa is a significant source of nutrients and sediments, especially in the Door Creek watershed. These sources of nutrients must be eliminated or controlled to improve the water quality in Lake Kegonsa.

The lake supports an excellent, diverse warm water fishery. Northern pike, walleye, largemouth bass, channel catfish, panfish, crappies, white bass, and perch are commonly caught. Walleye and largemouth bass are stocked. Many forage species are also present, as are lake sturgeon. The lake has a history of rough fish problems. Waterfowl hunting is good and the lake is used heavily by boaters, skiers, and swimmers. Six boat ramps provide easy access to the lake. Access is also available through the Yahara River. Boat rentals are available on the lake.

Fish species: longnose gar, lake sturgeon, northern pike, emerald shiner, golden shiner, common carp, bluntnose minnow, channel catfish, fathead minnow, brook silverside, bigmouth buffalo, black, yellow, and brown bullhead, white bass, rock bass, green sunfish, pumpkinseed, bluegill, smallmouth and largemouth bass, white and black crappie, Iowa darter, yellow perch, logperch, walleye, freshwater drum, bowfin, and white sucker.

Marshall Millpond - T8N, R12E
Surface acres = 185, SDF = 2.57, Maximum depth = 5 ft

This large, shallow impoundment of the Maunesha River is located at the Village of Marshall. Fresh meadow and shallow marsh border the lake at its upstream end and most of the surrounding land is used for agricultural purposes. Marshall Millpond traps a large amount of sediments and nutrients from runoff from the surrounding fertile watershed. Eutrophication and turbidity are major water quality problems in the lake. Attempts to eradicate carp have proved unsuccessful. Fishing pressure is moderate. Heavy siltation, turbidity, and excessive weed growth limit the lake's recreational value. A village park provides public access and a boat ramp.

Fish species: channel catfish, black crappie, white sucker, green sunfish, bullhead, largemouth bass, pumpkinseed, bluegill, northern pike, and common carp.

Marx Pond - see Mud Lake (Town of Roxbury).

Lake Mendota - T7N, R9E
Surface acres = 9,842, SDF = 1.66, Maximum depth = 82 ft

Lake Mendota is a large, deep lake formed by morainic damming of the pre-glacial Yahara River. The present lake level is maintained by the Tenney dam and locks creating a 3-ft head. Land use in the watershed is a combination of municipal and agricultural development. Water quality has improved slightly over the last 20 years due to an increased awareness of pollution sources and bypassing of sewage effluents, but blue-green algae blooms and excessive weed growth in the summer still occur as a result of land use practices in the watershed and its naturally fertile condition. The ratio of the drainage area to size of the lake is 30:1.

Over 3 miles of shoreline are publicly owned, including a state park, a county park, six city parks, and land belonging to the University of Wisconsin. Wetlands are found at the Yahara River (Cherokee Marsh) and Six Mile Creek inlets, and in the University Bay area. Lake Mendota is noted as the most extensively researched body of water in the United States and has had a hydrobiology laboratory on its shore since the turn of the century.

Excellent sailing, boating, swimming, and fishing are available on Lake Mendota. There are eight public swimming beaches and numerous boat launching sites. Ice fishing for perch and other panfish, and open water fishing for perch, crappies, and walleye are outstanding and attract thousands of anglers annually. Largemouth and smallmouth bass, panfish, northern pike, and recently stocked hybrid muskie are present in this major inland fishery. Cisco are increasing after a low period. Diversity of forage fish populations is great and a total of 63 species of fish have been collected in Lake Mendota through the years. Thirty-four species are commonly found.

Fish species: lake sturgeon, longnose gar, bowfin, cisco, northern pike, hybrid muskie, common carp, golden carp, emerald and spotfin shiner, bluntnose and fathead minnow, white sucker, bigmouth buffalo, black, yellow, and brown bullhead, channel catfish, banded killifish, brook silverside, white and rock bass, green sunfish, pumpkinseed, bluegill, smallmouth and largemouth bass, white and black crappie, yellow perch, logperch, walleye, and freshwater drum.

Lake Monona - T7N, R10E
Surface acres = 3,274, SDF = 1.54, Maximum depth = 64 ft

A large, deep drainage lake, Lake Monona is the second in the series of moraInic dammed lakes of the Yahara River valley. The outlet is natural, without an impounding structure. The watershed below Lake Mendota which drains into Lake Monona is highly developed. Storm water runoff and input from the fertile Yahara River result in a high level of nutrient loading. Herbicides and algaecides have been used extensively in Lake Monona in an attempt to control algae blooms and excessive weed growth, but have proven to be only temporary cures. Improvement in water quality was noted following the bypass of sewage effluent from the City of Madison. The lake has a history of carp problems.

Boating, water skiing, sailing, swimming, and fishing are possible on Lake Monona. Ample public access is available at eight city parks and at numerous boat launching sites. The railroad fills and road fills across Monona Bay provide good bank fishing sites. Recent stocking of hybrid muskie has been successful and legal-sized fish are now being caught regularly. Lake Monona supports a diverse fishery with 36 species and 8 unspecified or hybrid fishes present.

Fish species: lake sturgeon, longnose gar, bowfin, cisco, northern pike, hybrid muskie, common carp, golden, emerald, and common shiner, bluntnose and fathead minnow, white sucker, black, yellow, and brown bullhead, channel catfish, burbot, brook silverside, white bass, bigmouth buffalo, rock bass, green sunfish, pumpkinseed, bluegill, smallmouth and largemouth bass, white and black crappie, sand, Iowa, and Johnny darter, yellow perch, logperch, walleye, freshwater drum, and mottled sculpin.

Morse Pond - T6N, R8E, Sec. 3
Surface acres = 11.6, SDF = 1.45, Maximum depth = 4 ft

This small, shallow, land-locked pothole pond is surrounded by nearly 550 acres of land owned by the University of Wisconsin Alumni Association. The watershed is largely agricultural. There are a few acres of shallow marsh on the north and south ends and the remaining shoreline is wet meadow. The water level is highly variable. Morse Pond has very little recreational potential as the water is turbid and the bottom is very soft. Severe winterkill conditions prohibit the establishment of a fishery. Various species of amphibians and reptiles, as well as raccoons, deer, and waterfowl, frequent the area. The American lotus grows profusely in the pond.

Fish species: fathead minnow.

Mud Lake (Town of Deerfield) - T7N, R12E, Sec. 2
Surface acres = 34, SDF = 1.20, Maximum depth = 8 ft

A shallow lake in an outwash valley with an intermittent outlet to Koshkonong Creek, Mud Lake is nearly completely encircled by shrub and timber swamp. It is located entirely within the Goose Lake Public Hunting Grounds and the surrounding area is undisturbed, abandoned farmland. Water quality is good but shallowness, excessive aquatic vegetation, a soft, silty bottom, and frequent winterkills limit the recreational and fishery potential of this lake. Largemouth bass were stocked several times in the 1970's but populations were decimated by winterkills. Stocking of game fish more tolerant of low oxygen conditions, such as northern pike, is being considered. There is a boat ramp on the lake, but because of its isolated location, use is light. Abundant waterfowl and wildlife can be seen in the area.

Fish species: mudminnow, white sucker, banded killifish, brook stickleback, brown bullhead, green sunfish, largemouth bass, and northern redbelly dace.

Mud Lake (Marx Pond) (Town of Roxbury) - T9N, R7E, Sec. 4
Surface acres = 54, SDF = 1.18, Maximum depth = 8 ft

This shallow, marshy bay of Fish Lake was separated from its parent body of water by a road fill. Mud Lake is connected to Fish Lake by a culvert and provides excellent spawning habitat for northern pike and largemouth bass. This pond also provides optimum habitat for waterfowl and is listed in wetlands inventories as a shallow marsh surrounded by deep marsh. Winterkills occur occasionally, but the lake still supports an excellent panfish, largemouth bass, and northern pike fishery. Public access is available at the town road crossing over the culvert connecting Mud Lake to Fish Lake.

Fish species: northern pike, common carp, golden shiner, white sucker, black bullhead, pumpkinseed, bluegill, largemouth bass, black crappie, and yellow perch.

Lower Mud Lake - T6N, R10E, Sec. 10
Surface acres = 195, SDF = 1.23, Maximum depth = 15 ft

This shallow lake is located on the Yahara River and is completely encircled by shallow marsh and fresh meadow. Water quality problems are a result of direct runoff from adjacent agricultural lands and the large nutrient load carried by the Yahara River. Shallowness, excessive aquatic vegetation, poor water quality, and lack of good public access limit the recreational value of this lake. Major fish species include panfish and bullheads, though most species common to the Yahara River system are present. A wilderness type access is available through public hunting grounds on the eastern shore and boats may reach the lake by way of the Yahara River. Waterfowl use of this shallow lake is extensive and hunting is good.

Fish species: longnose gar, bowfin, northern pike, common carp, golden shiner, bluntnose and fathead minnow, white sucker, black, brown, and yellow bullhead, channel catfish, brook silverside, white and rock bass, green sunfish, pumpkinseed, bluegill, largemouth bass, white and black crappie, yellow perch, walleye, and freshwater drum.

Upper Mud Lake - T7N, R10E, Sec. 28
Surface acres = 223, SDF = 1.34, Maximum depth = 8 ft

This shallow, fertile lake was formed by a railroad grade crossing the marsh at the inlet of the Yahara River to Lake Waubesa. The lake is entirely surrounded by timber marsh, shallow marsh, and wet meadow and provides excellent spawning habitat for game fishes. Migrating waterfowl frequent the lake. The Yahara River is the source of a large, constant flow of nutrients into the lake. Water quality is poor and aquatic vegetation is dense, limiting recreational potential. Upper Mud Lake supports a good fishery for game fish found in the Yahara River system and receives moderate use. Wilderness type access is available through state-owned lands on the eastern shore and through a county park on the western shore. Boats have access through the Yahara River from Lakes Monona and Waubesa.

Fish species: longnose gar, bowfin, northern pike, common carp, golden shiner, bluntnose and fathead minnow, white sucker, black, brown, and yellow bullhead, channel catfish, brook silverside, white and rock bass, green sunfish, pumpkinseed, bluegill, largemouth bass, white and black crappie, yellow perch, walleye, and freshwater drum.

Palmer's Pond - see Verona Gravel Pit.

Raemisch Pond - see Salmo Pond.

Rice Lake - T5N, R12E, Sec. 14
Surface acres = 98, SDF = 1.92, Maximum depth = 8 ft

Listed as a deep marsh pond in the 1961 inventory (Poff and Threinen 1962), this lake should be classified as a pothole lake. There is a large, deep marsh on the north end, but the rest of the lake has firm shores and little emergent vegetation. The surrounding land is upland hardwood forest and some pasture. There are some residential dwellings on the south end and a private campground on the west shore. Algae blooms in summer reduce aesthetic and recreational potential. Occasional winterkills reduce the diversity and potential of the fishery. Use of the lake is light. A population of bullheads inhabits the lake, though largemouth bass and panfish were once common. The campground on the west shore rents boats to campers but free public access to the lake is not available.

Fish species: bluntnose and fathead minnow, black bullhead, and bluegill.

Rockdale Millpond - T6N, R12E, Sec. 13
Surface acres = 72, SDF = 3.3, Maximum depth = 5 ft

Rockdale Millpond is an impoundment of Koshkonong Creek created by a mill dam at Rockdale maintaining a 10-ft head. The water is very fertile and a large carp population causes the water to be turbid. An unnamed creek draining several square miles of land under intensive cultivation enters the north end of this lake and contributes to the high fertility. The shoreline is mostly pasture on the west shore and Cam-Rock County Park borders the lake on the east shore. A large fresh meadow and shrub swamp adjoin the lake on the north end. The heavy silt load carried by Koshkonong Creek has substantially reduced the lake's depth. Shallowness and turbidity detract from Rockdale Millpond's aesthetic and recreational value. The overabundance of carp has seriously affected the fishery in Rockdale Millpond, and a carp removal program is being considered. Although channel catfish, panfish, and northern pike

were once present, few game fish remain. Access is available at the county park which also offers camping. Boat launching is possible at a ramp near the dam.

Fish species: northern pike, central stoneroller, common carp, hornyhead chub, and common shiner.

Salmo Pond (Raemisch Pond) - T8N, R7E, Sec. 32
Surface acres = 3.7, SDF = 1.41, Maximum depth = 20 ft

Salmo Pond is a small, deep, abandoned gravel pit dug out of the outwash gravel in the Black Earth Creek bottoms. It is spring fed with an outlet to Black Earth Creek. The surrounding land is part of the Black Earth Fishery Area and the pond receives heavy use. Brown trout fingerlings are stocked in autumn each year. Water quality is good. Problems result from recreational overuse, overfishing, and the introduction of undesirable fish species. Fish eradication was unsuccessfully attempted twice in the 1970's in order to eliminate stunted bullheads and panfish. Handicapped persons will find access to Salmo Pond easy because a parking lot is located within 30 yards of the shore.

Fish species: brown trout, black bullhead, green sunfish, pumpkinseed, largemouth bass, golden shiner, bluntnose minnow, and white sucker.

Stewart Lake - T6N, R6E, Sec. 2
Surface acres = 6.8, SDF = 1.37, Maximum depth = 13 ft

A dam on the headwaters of Bohn Creek created this small lake. To the south is the Village of Mount Horeb. The adjacent land is part of a county park and consists of upland hardwood forest. Water quality is fair but shows signs of contamination which could be caused by storm runoff from streets in Mount Horeb. Algae blooms and dense beds of marcrophytes in the littoral zone detract from this lake's aesthetic and recreational qualities. Fishing pressure is moderately heavy.

Fish species: rainbow trout, panfish, largemouth bass, and forage species.

Stoughton Lake - T5N, R11E, Sec. 5
Surface acres = 82, SDF = 2.16, Maximum depth = 5 ft

A shallow impoundment of the Yahara River, the majority of Stoughton Lake lies within the Stoughton city limits. The surrounding land is dominated by agriculture to the north and municipal and residential areas to the south. No major wetland areas border the lake, but several small sedge and grass meadows provide limited habitat for waterfowl and muskrats. The lake bottom is mostly clay with sand, silt, and some detritus present as well. With the exception of cattail stands on the lake's east side, macrophytes are scarce as a result of the large carp population. However, algae growths are common. The water is turbid, alkaline, and shows signs of eutrophication. Stoughton Lake supports a diverse warm water fishery, including northern pike, largemouth bass, and walleye. Access is available at Stoughton and from the Yahara River by way of Viking County Park just north of the lake.

Fish species: northern pike, common carp, bluntnose minnow, buffalo (unsp.), white sucker, black, yellow, and brown bullhead, brook silverside, green sunfish, pumpkinseed, bluegill, largemouth bass, white and black crappie, Johnny darter, yellow perch, walleye, and freshwater drum.

Sweet Lake - T5N, R12E, Sec. 23
Surface acres = 14.8, SDF = 1.48, Maximum depth = 5 ft

Sweet Lake is a shallow, land-locked, pothole lake with firm shores and little emergent vegetation. The surrounding land is mostly upland hardwood forest with some pasture. The shore is relatively undisturbed and the lake is used infrequently. Wildlife is common in the area and some migrating waterfowl use the lake. The water quality is good and the water is clear. Severe winterkill conditions prohibit the establishment of a game fishery, though some forage species may survive. There is no public access to Sweet Lake.

Fish species: forage species.

Token Creek Millpond - T9N, R10E, Sec. 34
Surface acres = 44, SDF = 2.80, Maximum depth = 6 ft

This shallow impoundment of Token Creek is located near the Village of Token Creek. The shoreline is a combination of wet meadow, residential developments, and agricultural land. The water is hard, fertile, turbid, and shows signs of contamination. Algae blooms and excessive macrophyte growth are also problems in the lake. The heavy nutrient load to Token Creek Millpond is due to agricultural and storm runoff and the hardness of the water is accentuated by the constant flow of springs in Token Creek. The invasion of carp has resulted in increased turbidity in the millpond as well as the creek downstream. The fishery in Token Creek Millpond consists of carp and other rough fish, a few panfish, and some trout which may have migrated downstream. Fishing pressure is light as is use for other recreational activities. Waterfowl use of the millpond is minimal due to its proximity to the village. There is no public access available.

Fish species: common carp, panfish, and trout.

Verona Gravel Pit (Palmer's Pond) - T6N, R8E, Sec. 22
Surface acres = 8, SDF = 1.26, Maximum Depth = 25 ft

An excavated land-locked gravel pit, Verona Gravel Pit is fed by the intercept of the ground water table. It is managed for bass and panfish, and as a village recreation area (Verona Fireman's Park). A swimming beach, bath house, and picnic area with ample parking are provided in the park. There are no adjoining wetlands and shore activity prevents use by migrant waterfowl and furbearers. At one time, the pond was managed for trout; however, this species offered limited recreational opportunities for youngsters, the dominant use group. Therefore, trout management was discontinued by chemical fish eradications and restocking with warm water species.

Fish species: brown bullhead, largemouth bass, green sunfish, and white sucker.

Lake Waubesa - T6 & 7N, R10E
Surface acres = 2,080, SDF = 1.54, Maximum depth = 34 ft

Lake Waubesa is third in the series of lakes formed by morainic damming of the pre-glacial Yahara River. The present level of this moderately shallow lake is maintained by a dam and locks with a 1-ft head at the outlet near the Village of McFarland. The surrounding watershed is a combination of municipal, industrial, and agricultural lands. In addition, wetlands are located on the north and southwest shores. Lake Waubesa was severely affected by large amounts of municipal wastewater received from the Nine Springs Sewage Treatment plant in the 1940's and 1950's. Though water quality has improved considerably since the wastewater was diverted, this lake still suffers from the effects of the large nutrient load it once received. This lake has had a history of rough fish problems. The sediments in Lake Waubesa now contain high concentrations of phosphorous which will be recycled into the lake for many years to come, causing the annual occurrence of blue-green algae blooms. By comparison, industrial effluents and agricultural runoff contribute minimally to the nutrient load.

Lake Waubesa supports a productive, diverse warm water fishery dominated by panfish. Large populations of rough fish, especially carp and freshwater drum, are present. Over 15 million pounds of rough fish have been removed from Lake Waubesa since the state initiated a rough fish removal program in 1937 (Dane Cty. Reg. Plann. Comm. 1979a).

The Lower Waubesa Marsh, located at the south end of Lake Waubesa, provides excellent spawning habitat. Numerous species of waterfowl are also seen in the marsh. Over 200 acres of the marsh are publicly owned. There are boat ramps located at Babcock, Goodland, and Lake Farm county parks. Lake Waubesa receives heavy use from power boaters, skiers, anglers, and swimmers.

Fish species: longnose gar, bowfin, northern pike, common carp, golden and spottail shiner, bluntnose and fathead minnow, white sucker, black, brown, and yellow bullhead, brook silverside, hybrid muskie, white and rock bass, green sunfish, pumpkinseed, bluegill, smallmouth and largemouth bass, white and black crappie, Iowa darter, yellow perch, logperch, walleye, freshwater drum, and channel catfish.

Lake Windsor - T9N, R10E, Sec. 31
Surface acres = 9, SDF = 1.67, Maximum depth = 6 ft

A shallow impoundment of an intermittent tributary to the Yahara River, Lake Windsor was created as part of a residential subdivision, and the shoreline is entirely developed. The tributary drains an

area of intensively cultivated land and lake water quality is poor. The water is turbid and fertile and algae blooms occur. The lake was once managed for trout under a private fish hatchery license though trout survival was marginal. The turbidity of the water indicates that carp may be present. Access is limited to residents of the adjoining subdivision.

Fish species: no information available.

Lake Wingra - T7N, R9E, Sec. 27
Surface acres = 345, SDF = 1.61, Maximum depth = 21 ft

A natural, shallow basin overlying a feeder stream to the pre-glacial Yahara River, its outlet is Murphy Creek, a tributary to Lake Monona. The lake level is 1 ft lower than its original level, maintained by a dam at the outlet. Man-made changes in the lake and surrounding wetlands and watershed have adversely affected Lake Wingra. Dredging, draining, urbanization, construction, and road salt use have been the major factors affecting the physical and chemical characteristics of the lake. The introduction of carp was disastrous to the lake's biology, and the spread of Eurasian water-milfoil, an aquatic weed, has caused concern among biologists. Baumann et al. (1974) provide an excellent summary of Lake Wingra's history.

Conditions in Lake Wingra have improved slightly in recent years. A carp removal program ran from 1936-55, and barriers were constructed at the outlet to prevent carp from entering. The City of Madison is reducing the use of road salt on city streets and the chloride levels in Lake Wingra are beginning to fall. Settling ponds constructed along storm sewers have proven effective in reducing the nutrient loading of the lake. Siltation, shoreline erosion, and the past draining and filling of wetlands reduces the recreational quality and fishery of Lake Wingra.

The fishery of Lake Wingra is dominated by stunted panfish (Churchill 1976), and it is best described as a bass-panfish lake. Carp removal allowed the domination of the macrophyte community by Eurasian water-milfoil, which has provided excellent spawning habitat for panfish, especially the bluegill. Predaceous rough fish such as longnose gar and bowfin were removed with the carp, thereby lessening predation on the panfish. Poor northern pike reproduction has also resulted in reduced panfish predation. True and hybrid muskie are being stocked in Lake Wingra. It is hoped that muskie will replace northern pike as an effective restraint on the panfish population and as a prized, spirited game fish. While other panfish have been stunted, crappies have exhibited good growth rates in Lake Wingra and a state record black crappie was caught in 1981. Nearly all frontage on the lake is in public ownership, either as parkway, city park, or part of the University of Wisconsin Arboretum. Boat launching is available at Vilas and Wingra parks.

Fish species: longnose gar, bowfin, central mudminnow, northern pike, muskie, hybrid muskie, common carp, golden shiner, bluntnose and fathead minnow, white sucker, black, brown, and yellow bullhead, brook silverside, rock bass, green sunfish, pumpkinseed, bluegill, largemouth bass, white and black crappie, yellow perch, and walleye.

NAMED STREAMS

Airport Creek - see Starkweather Creek West Branch.

Anthony Branch - see Rutland Branch.

Badfish Creek - T5N, R10E, Sec. 36
Surface acres = 20, Length = 6 miles, Stream order = III, Gradient = 4.1 ft/mile,
Base discharge = 77.5 cfs

Originating at the junction of the Rutland and Oregon branches, Badfish Creek flows south to the Yahara River in Rock County. Nearly the entire length in Dane County has been ditched, straightened, and widened. It is entirely navigable. Water quality is decidedly poor due to the large volume of wastewater discharged from the Madison Metropolitan Sewage District and Village of Oregon wastewater

treatment plants. The bottom is predominately sludge covered. Small populations of panfish, bullheads, suckers, and forage species are found in the lower reaches. An occasional trout which has wandered downstream from the Rutland Branch may be found near the origin. The creek flows almost 2 miles through the public Badfish Wildlife Area, a popular pheasant, rabbit, and deer hunting area. Access is also available through the Yahara River and at four road crossings.

Fish species: brown trout, central mudminnow, stoneroller, common carp, brassy minnow, northern redbelly dace, fathead minnow, white sucker, black bullhead, brook stickleback, and bluegill.

Badger Mill Creek - T6N, R8E, Sec. 28
Surface acres = 4.5, Length = 5 miles, Stream order = 1, Gradient = 10.7 ft/mile,
Base discharge = 3.7 cfs

This small tributary to the Sugar River has its origin at Goose Pond. Several small springs and ponds nearby also contribute to flow. The bottom is a mixture of gravel, sand, clay, and silt. Water quality has improved since the completion of the new wastewater treatment plant in Verona, although the stream is still receiving wastewater from a factory in Verona. The present fishery is limited to forage species. Summer temperature data indicate the lower part of the creek might support a stocked brown trout fishery. Aquatic vegetation is abundant, including watercress, water buttercup, Elodea sp., Veronica sp., and duckweed. Access is available at several road crossings, from the Sugar River, and through land owned by the Village of Verona. Several acres of fresh meadow adjoin the stream at its mouth.

Fish species: central mudminnow, common shiner, northern redbelly dace, fathead minnow, white sucker, black bullhead, brook stickleback, largemouth bass, fantail and johnny darter, mottled sculpin, and creek chub.

Big Spring Creek - see Blue Mounds Branch.

Black Earth Creek - T8N, R6E, Sec. 18
Surface acres = 51, Length = 21 miles, Stream order = 111, Gradient = 6.9 ft/mile,
Base discharge = 21.4 cfs

This spring-fed tributary to Blue Mounds Creek has 3 major feeder streams: Garfoot, Halfway Prairie, and Vermont creeks. Considering that this stream receives sanitary effluent from the Villages of Cross Plains, Black Earth and Mazomanie, water quality is surprisingly good. Intense agriculture dominates land use in the watershed. Stream bank cover is good and aquatic vegetation is common. The upper half of the stream supports an excellent Class I trout fishery. A stream survey in the fall of 1981 revealed a population of nearly 14,000 brown trout. Of these, over 5,000 were more than one year old. An intensive stream habitat improvement program started in 1949 is currently in effect. The lower stream supports a smallmouth bass fishery and other warm water game fish are also present. Beaver dams have become a nuisance in recent years. Access is provided at numerable road crossings and through many parcels of DNR land. Wood ducks, mallards, and blue-winged teal nest and feed in the area. Pheasants, rabbits, squirrels, and deer are present and provide some hunting. Trapping for muskrats, mink, and beaver is quite intensive.

Fish species: rainbow, brown, and brook trout, largescale stoneroller, common carp, common, bigmouth, spotfin, and sand shiner, bluntnose and fathead minnow, creek chub, quillback, highfin and river carpsucker, white and northern hog sucker, golden and shorthead redhorse, burbot, green sunfish, bluegill, smallmouth and largemouth bass, johnny and banded darter, sauger, walleye, and mottled sculpin.

Blue Mounds Branch (Big Spring Creek) - T5N, R6E, Sec. 6
Surface acres = 6, Length = 5.5 miles, Stream order = 11, Gradient = 51.1 ft/mile,
Base discharge = 6.5 cfs

This medium-sized, spring-fed stream flows south along the western edge of the county, joining German Valley Creek to form Gordon Creek. Its gradient is steep; the bottom is rubble mixed with gravel, silt, and sand. A large portion of the watershed is pastured. Water quality is good, but severe stream bank erosion and heavy grazing are problems. This stream is classified as a Class II trout stream. Fishing pressure is moderate and several large trout are present. Stream bank cover is good in the upper one-third of the stream and the best trout population inhabits this stretch. Access is available at five road crossings.

Fish species: brown trout, white sucker, creek chub, common shiner, redside dace, northern redhorse, green sunfish, and hornyhead chub.

Blue Mounds Creek East Branch - T8N, R6E, Sec. 31
Surface acres = 11, Length = 4 miles, Stream order = III, Gradient = 3.9 ft/miles,
Base discharge = 22.3 cfs

This large, slow-moving stream originates at the junction of Elvers and Ryan creeks, and is a tributary to the Wisconsin River in Iowa County. Spring floods and flash flooding are problems, and the bottom is mostly silt covered. Water quality is good as the watershed is highly rural and little of the land is cultivated. It is managed as a Class III trout stream and brown trout are stocked. An intensive management program for the creek and watershed could result in the upgrading of the stream to at least a Class II stream. Nearly 1 mile of stream frontage is in DNR ownership, and additional access is available at four road crossings. The DNR ownership of 105 acres includes a mixture of cropland, wet meadow, shallow marsh, and hardwood uplands. This combination of habitat produces a variety of wildlife such as deer, squirrel, rabbit, pheasant, ruffed grouse, and duck. Hunting pressure is especially heavy for deer.

Fish species: rainbow and brown trout, central mudminnow, white sucker, northern pike, green sunfish, and mottled sculpin.

Blums Creek - see Roxbury Creek.

Bohn Creek - T7N, R6E, Sec. 27 (also see Elvers Creek)

Surface acres = 3, Length = 3 miles, Stream order = II, Gradient = 37 ft/mile, Base discharge = 1.4 cfs

This small, spring-fed stream flows down the north slope of Military Ridge to join Elvers Creek. Water quality is good and summer temperatures remain cool. The bottom is sand, clay-silt, and gravel. The lower portion of the stream is considered Class III trout water. Appropriate in-stream habitat improvement could greatly increase the fishery value of this stream. Access is available at two road crossings and from Elvers Creek.

Fish species: rainbow and brown trout, blacknose dace, creek chub, and white sucker.

Brewery Creek (Enchanted Valley Creek, Dry Run Creek) - T7N, R7E, Sec. 3
Surface acres = 1.7, Length = 4 miles, Stream order = 1, Gradient = 11.5 ft/mile,
Base discharge = 0.86 cfs

This small tributary to Black Earth Creek has its mouth located on the east side of the Village of Cross Plains. Serious flooding problems exist and stretches of the stream have been dredged, ditched, and straightened in an attempt to alleviate this problem. Brewery Creek contributes a large sediment load to Black Earth Creek during storm events. Its substrate is mostly sand and silt with some hardpan and gravel. The fishery consists of only a few forage species near the mouth because of flooding and low summer flow. The stream is considered navigable but has little value for wildlife or recreation. Access is available at several road crossings and from Black Earth Creek.

Fish species: fathead minnow and white sucker.

Busseyville Creek - see Koshkonong Creek.

Clemen's Creek - see Murphy's Creek.

Daleyville Branch - see Syftestad Creek.

Deer Creek - T6N, R7E, Sec. 33
Surface acres = 4, Length = 5 miles, Stream order = 1, Gradient = 42 ft/mile,
Base discharge = 1.7 cu. ft./sec.

This small stream joins Fryes Feeder to form Mount Vernon Creek. Its watershed is extensively pastured, stream bank cover is minimal, and summer water temperatures are quite high. Water quality is generally good, but turbidity and stream bank erosion are problems in pastured areas. The stream supports a good diversity of forage fish species, but has little potential to support a trout fishery. It has minimal value to wildlife or for recreational activities. Access is available at three road crossings and from Mount Vernon Creek.

Fish species: stoneroller, redside and southern redbelly dace, creek chub, white sucker, brook stickleback, and mottled sculpin.

Door Creek - T6N, R10E, Sec. 13
Surface acres = 12.3, Length = 12.7 miles, Stream order = 11, Gradient = 2.4 ft/mile,
Base discharge = 9.4 cfs

This tributary to the Yahara River system enters on the north shore of Lake Kegonsa and has been channelized along its entire length. Soil loss in the watershed is high and the stream bottom is silt covered. A large, shallow marsh near the mouth of the stream provides excellent northern pike spawning grounds. Waterfowl and upland game birds also use the area. There were 1,280 acres of wetlands in the watershed in the late 1950's (Poff and Threinen 1962), but due to continued draining, only about 800 acres remain. Water quality in the stream is poor. Drainage of wetlands and poor soil conservation practices within the watershed contribute to high phosphorous and inorganic nitrogen loading. Wastewater from the sewage lagoon for the Village of Cottage Grove formerly entered through a small tributary. Sewage from Cottage Grove now goes through the metropolitan Madison system. Door Creek's physical characteristics and low flow limit the fishery to forage species. Improvements in water quality would, however, be beneficial to Lake Kegonsa. Access is available at eight road crossings and from the Yahara River system.

Fish species: common and spotfin shiner, bluntnose minnow, creek chub, white sucker, black bullhead, brook stickleback, bluegill, and johnny darter.

Dorn Creek - see Spring Creek (Westport).

Dry Run Creek - see Brewery Creek.

Dunlap Creek (Dunlap Hollow Creek) - T9N, R6E, Sec. 31
Surface acres = 7, Length = 9.5 miles, Stream order = 1, Gradient = 15.0 ft/mile,
Base discharge = 5.8 cfs

This spring-fed tributary to the Wisconsin River originates in a terminal moraine and has a relatively steep gradient in the upper half and a low gradient in the lower half of the stream. The lower section of the creek was diverted from a northerly course and now flows through a drainage ditch in a southwesterly direction. This drainage ditch runs for more than 4 miles through the Mazomanie Wildlife Area which encompasses extensive wetlands. Fair populations of northern pike and largemouth bass inhabit the lower stretch. The upper half of the stream has good in-stream cover and is classified as a Class II and III trout fishery. Water quality is good. Some habitat improvement has been made, but improvement and protection of the major springs could benefit the trout population. The substrate in the lower end consists mainly of silt, clay, and hardpan. In the upper reaches the bottom is mainly sand and gravel. A bog is located upstream from Highway 78. Access is available from the Mazomanie Wildlife Area, seven road crossings, and the Wisconsin River.

Fish species: brown trout, central mudminnow, northern pike, common carp, blacknose dace, creek chub, white sucker, black bullhead, brook stickleback, mottled sculpin, and largemouth bass.

Dunlap Hollow Creek - see Dunlap Creek.

Elvers Creek (Bohn Creek) - T7N, R6E, Sec. 17
Surface acres = 7.6, Length = 8 miles, Stream order = III, Gradient = 21.0 ft/mile,
Base discharge = 15 cfs

This spring-fed stream flows down the north slope of Military Ridge, joining Ryan Creek to form the East Branch of Blue Mounds Creek. Tributaries include Bohn and Moen creeks and three unnamed creeks. Bottom substrate is mostly gravel in the upper sections changing to sand and silt in the middle and deep silt and muck in the lower sections. Some ditching has occurred in the lower end. Water quality is good throughout the stream. The middle sections of the creek are considered Class II trout fishery as some natural reproduction occurs. The rest of the stream is Class III. Good populations of forage fish are present. Parts of Elvers Creek could be upgraded to Class I trout waters through an intensive management program. Overgrazing and stream bank erosion are problems, and beavers have recently become a nuisance. The Department of Natural Resources owns 105 acres fronting on Elvers (Bohn) and Ryan creeks in Sections 8 and 17 of Vermont Township. Access is also available at four road crossings.

Fish species: brook lamprey, brown and rainbow trout, blacknose dace, creek chub, white sucker, green sunfish, and mottled sculpin.

Enchanted Valley Creek - see Brewery Creek.

Flynn Creek - T5N, R8E, Sec. 18
Surface acres = 1.7, Length = 3 miles, Stream order = 1, Gradient = 21.8 ft/mile,
Base discharge = 1.6 cfs

Flynn Creek is a small, spring-fed tributary to the West Branch of the Sugar River. Its substrate is mostly sand and silt with some gravel, especially near the headwaters. Two large springs provide good flow and keep summer temperatures cool. Forage fish are abundant. It is managed as a Class II trout stream as some natural reproduction occurs, and brown trout are stocked annually. Some in-stream habitat improvement has occurred. Shallow pools and periods of low flow prevent this stream from having a more productive trout fishery. Watershed problems include intensive grazing, stream bank erosion, and siltation. About 27 acres of shrub swamp adjoin the stream at the mouth. Access is available at five road crossings.

Fish species: brown trout, central mudminnow, redside dace, common shiner, fathead minnow, creek chub, white sucker, black bullhead, brook stickleback, and mottled sculpin.

Frogpond Creek - T5N, R10E, Sec. 36
Surface acres = 1.4, Length = 7 miles, Stream order = 1, Gradient = 11.0 ft/mile,
Base discharge = 2.3 cfs

This small, spring-fed stream flows across the southeastern edge of Dane County to Badfish Creek. The headwaters lie in an area of diverse moralnal wetlands. Several species of waterfowl which rarely nest in Dane County nest in this area including pintail, shoveler, ruddy duck, red-head, green-winged teal, and gallinule (Dane Cty. Reg. Plann. Comm. 1979a). Much ditching and tiling have occurred in the headwaters and the water levels are subject to fluctuations. Water quality is good and forage fish are numerous. A high priority has been placed on protection of the wetlands in this area because of their value as waterfowl habitat. Access is available at three road crossings.

Fish species: creek chub.

Fryes Feeder (Picture Rock Creek) - T6N, R7E, Sec. 33
Surface acres = 1.5, Length = 4 miles, Stream order = 1, gradient = 38.3 ft/mile,
Base discharge = 4.3 ft./sec.

This small, spring-fed stream joins Deer Creek to form Mount Vernon Creek. Water quality is good, there is good in-stream cover, and most of the stream banks have been fenced in pastured areas. There is a dense canopy of mature white cedars along the lower stretch of the stream. The Dane County Conservation League, in cooperation with the landowner, Dane County Highway Department, and the DNR recently diverted the stream from a barnyard on the west side of Town Hall Road to the east side of the road, improved the stream bank, and provided additional in-stream cover. Aquatic invertebrates and forage fish are plentiful. Fryes Feeder is the only stream in Dane County where rosyface shiners are found. A good native brown trout population is present, and fishing pressure is moderate. Cooperation

from landowners has been important in establishing the excellent fishery and must be continued to insure its protection . Access is available at three town roads.

Fish species: brown trout, creek chub, rosyface shiner, white sucker, central stoneroller, and mottled sculpin.

Garfoot Creek - T7N, R7E, Sec. 5
Surface acres = 2.5, Length = 3 miles, Stream order = 11, Gradient = 32.0 ft/mile,
Base discharge = 3.5 cfs

Garfoot Creek is a small, spring-fed tributary to Black Earth Creek. Its watershed is dominated by firm pasture and upland hardwoods. The creek's bottom is mostly gravel, silt, sand, and rocks. Many small farm ponds are located along the stream and a few stretches have been straightened. Water quality is good although overgrazing is a problem. Since it is a Class II trout stream, 1,500 fingerling brown trout are stocked annually in the lower reaches, and good natural reproduction occurs in the upper portion. In-stream cover is good. The Department of Natural Resources, with help from the Youth Conservation Corps, completed an extensive habitat improvement project in 1978. Funding was provided by trout stamp revenues. Public lands border the stream near its mouth and a 0.67-mile stretch upstream from Garfoot Road is under a fish management easement. Access is available at three road crossings. Pheasants, rabbits, and furbearers have been observed. Trapping for muskrats is quite intensive on the state-owned part of the stream.

Fish species: brown trout, common shiner, creek chub, white sucker, largemouth bass, and mottled sculpin.

German Valley Creek - T5N, R6E, Sec. 6
Surface acres = 1.5, Length = 5 miles, Stream order = 11, Gradient = 36.0 ft/mile,
Base discharge = 0.19 cfs

This small, spring-fed stream on the south slope of Military Ridge joins the Blue Mounds Branch near the Iowa-Dane county line to form Gordon Creek. Approximately 130 acres of pastured fresh meadow adjoin the stream near the mouth. Watershed problems include severe stream bank erosion, overgrazing, and agricultural runoff. The stream presently supports a good diversity of forage fish. A trout fishery could be established through an intensive habitat and watershed management program. Access is available at six road crossings.

Fish species: brook lamprey, central stoneroller, blacknose dace, creek chub, white sucker, brook stickleback, and johnny darter.

Gordon Creek - see Iowa County.

Halfway Prairie Creek - T8N, R6E, Sec. 16
Surface acres = 7, Length = 11 miles, Stream order = 11, Gradient = 15.7 ft/mile,
Base discharge = 5.7 cfs

Indian Lake and its surrounding wetlands form the headwaters of this small tributary to Black Earth Creek. A diverse wetland area also adjoins the stream in Section 8, T8N, R7E. Several small seasonal tributaries contribute flow, and Wendt Creek joins Halfway Prairie Creek just upstream from the mouth. Previous ditching, stream bank erosion, and heavy grazing adversely affect water quality. Warm temperatures and low flow in summer limit the fishery to warm water forage species. Access is available at the county park at Indian Lake, at six road crossings, and from Black Earth Creek.

Fish species: fathead minnow, creek chub, and white sucker.

Henry Creek - T5N, R8E, Sec. 14
Surface acres = 0.1, Length = 1 mile, Stream order = 1, Gradient = 27.8 ft/mile,
Base discharge = 1.3 cfs

This very short, spring-fed tributary to the Sugar River is adjoined by approximately 40 acres of fresh meadow at its mouth. The gradient is steep for this part of the county and water quality is good. Henry Creek is not managed for trout because of its small size. A private trout rearing pond has an

outlet to the creek and some trout reportedly escape to the creek. White suckers and many small forage fish were observed but not identified in the fall of 1981. Access is available at two road crossings.

Fish species: white sucker and forage fish (unsp.).

Jeglum Valley Creek - T5N, R6E, Sec. 32
Surface acres = 0.5, Length = 1.5 miles, Stream order = 1, Gradient = 53.3 ft/mile,
Base discharge = 2.0 cfs

This small, spring-fed stream originates in Green County and is a tributary to Kittleson Valley Creek in the southwest corner of Dane County. Pasture and upland hardwoods dominate the watershed's rugged terrain. Water quality is good although overgrazing and bank erosion are problems, especially near the mouth. The substrate is typically gravel and silt. Since it is a Class III trout stream, brown trout are stocked, and a good diversity of forage fish are present. Access is available at two road crossings.

Fish species: brown trout, brassy minnow, common shiner, southern redbelly dace, bluntnose minnow, creek chub, white sucker, brook stickleback, johnny darter, and mottled sculpin.

Keenan Creek - T6N, R10E, Sec. 10
Surface acres = 2.1, Length = 4.4 miles, Stream order = 1, Gradient = 25 ft/mile,
Base discharge = 1.3 cfs

Keenan Creek is a small tributary to the Yahara River system which flows through 400 acres of wetlands before entering Lower Mud Lake on its southwestern shore. This wetland area contains many small springs and is valuable as waterfowl habitat. There are also fresh meadows and shallow marshes further upstream. Small warm water forage fish are present, but the potential for the development of a more valuable fishery is low. Access is available at three road crossings and from the Yahara River system.

Fish species: brook stickleback.

Kittleson Valley Creek - T5N, R6E, Sec. 30
Surface acres = 2.9, Length = 8 miles, Stream order = III, Gradient = 19.3 ft/mile,
Base discharge = 7.0 cfs

This medium-sized stream is a tributary to Gordon Creek in Iowa County. Its tributaries include Jeglum Valley, Pleasant Valley, Syftestad, and York Valley creeks. Above Hwy. H, the substrate has significant areas of silt and gravel, while the percentage of gravel decreases in the lower portion of the stream (Dane Cty. Reg. Plann. Comm. 1979a). Records show 32 springs in the watershed. Temperatures are cool and flows are fairly constant in the summer but severe stream bank erosion, overgrazing, and flooding limit the fishery value of this stream. It is presently managed as a Class II stream, but the potential exists for increasing the wild brown trout fishery. A diverse grouping of forage species are present. Small pockets of wet meadow are found along the creek's lower stretches. Six road crossings provide access.

Fish species: brown trout, brassy minnow, hornyhead chub, common shiner, southern redbelly dace, bluntnose minnow, creek chub, white sucker, green sunfish, fantail and johnny darter, and mottled sculpin.

Klevenville Creek - see Schalpbach Creek.

Koshkonong Creek (Busseyville Creek) - T5N, R12E, Sec. 12
Surface acres = 45, Length = 32 miles, Stream order = III, Gradient = 3.8 ft/mile,
Base discharge = 63.8 cfs

This large stream drains lands of the drumlin-marsh area in Dane and Jefferson counties and is a tributary to the Rock River system entering at Lake Koshkonong. Small plots of wetlands, totalling several thousand acres, adjoin the stream. Mud Creek is a major tributary and Rockdale Millpond is a major impoundment. Ditching has occurred over most of its length, and many portions are now clogged with debris. The substrate consists of thick silt over gravel, except in areas of faster water. Water

quality is poor throughout the Dane County sections, but especially near the headwaters. The City of Sun Prairie is a major contributor of treated sewage effluent and storm sewer runoff. Although the Sun Prairie treatment plant has been recently upgraded, very few species of aquatic life are found directly below this discharge. Further downstream the Villages of Deerfield, Cambridge, and Rockdale contribute wastewater as do several industries. Increased flow in the lower reaches of the stream dilutes pollutants, improving water quality and diversity. Carp have become a nuisance in the system and an eradication program is being considered. Northern pike provide a fair fishery in the lower part of the stream. Improved soil conservation and wastewater treatment would benefit water quality and game fishery potential. Cam-Rock County Park on Rockdale Millpond provides camping and picnicking. Numerous road crossings also provide access.

Fish species: central mudminnow, grass pickerel, northern pike, central stoneroller, common carp, brassy minnow, golden, common, bigmouth, blackchin, blacknose, spotfin, and sand shiner, southern redbelly dace, bluntnose minnow, creek chub, white sucker, golden and shorthead redhorse, channel catfish, stonecat, blackstripe topminnow, brook silverside, brook stickleback, white bass, green sunfish, pumpkinseed, bluegill, largemouth bass, white crappie, black crappie, johnny darter, banded darter, logperch, and walleye.

Lee Creek - see York Valley Creek.

Leuten Creek - T6N, R11E, Sec. 28
Surface acres = 2, Length = 3 miles, Stream order = 11, Gradient = 9.7 ft/mile, Base discharge = 3.0 cfs

Leuten Creek is a small, spring-fed tributary to the Yahara River, entering below Lake Kegonsa. The watershed consists of agricultural land with scattered residual wetlands. Extensive ditching has destroyed most of the original wetlands and has disturbed the remainder. Some migrating waterfowl frequent the area. Water quality is below average for the county, because of agricultural influences. It was managed for trout in the 1950's but presently supports only a few species of forage fishes. Access is provided at four road crossings and from the Yahara River.

Fish species: no information available.

Little Door Creek - T7N, R11E, Sec. 32
Surface acres = 2.5, Length = 3 miles, Stream order = 1, Gradient = 11.8 ft/mile,
Base discharge = 1.8 cfs

This small, ditched stream joins Door Creek north of Hwy. I-90. Agricultural lands dominate the watershed and several small areas of fresh meadow adjoin the stream along its length. Water quality is below average due to intensive agricultural influences. Low flow and ditching limit the fishery to forage species. Improved soil conservation practices in the watershed are needed to improve the fishery and water quality. Four road crossings provide access.

Fish species: brassy minnow, creek chub, white sucker, brook stickleback, and johnny darter.

Little Norway Creek - T7N, R6E, Sec. 34
Surface acres = 1, Length = 1.3 miles, Stream order = 11, Gradient = 92.3 ft/miles,
Base discharge = 0.36 cfs

Little Norway Creek is a small, spring-fed tributary to Bohn Creek. Land in its steep-walled valley is cropped, pastured, or in upland hardwoods. The stream bottom is predominately gravel. Watercress is found in the stream. Water quality is good and the current is swift. The fish population has never been sampled and is not managed. It is possible that some trout find their way into the lower stretches from Bohn Creek. Access is available at one town road crossing.

Fish species: no information available.

Little Sugar River (New Glarus Branch) - T5N, R7E, Sec. 32
Surface acres = 1.5, Length = 2 miles, Stream order = 1, Gradient = 7.5 ft/mile,
Base discharge = 1.6 cfs

The Little Sugar River is a small, spring-fed stream originating in southwestern Dane County and flowing south to the Sugar River in Green County. Pastured land dominates the watershed. The stream bottom is gravel, sand, and silt. Many species of aquatic plants are found in the stream including arrowhead, flat-leaved pondweed, Elodea sp., watercress, speedwell, and bulrush. Water quality is good in Dane County though overgrazing and streambank erosion are problems. It is managed as a Class III trout stream. Good populations of forage fish are present. Access is provided by one road crossing in the county.

Fish species: redside dace, fathead minnow, creek chub, white sucker, mottled sculpin, and brown trout.

Lodi Marsh Creek - see Spring Creek (Dane).

Marsh Creek (Marsh Valley Creek) - T8N, R6E, Sec. 6
Surface acres = 1.3, Length = 3.5 miles, Stream order = 1, Gradient = 5.0 ft/miles,
Base discharge = 2.7 cfs

Marsh Creek is a short seepage and spring-fed tributary to the Wisconsin River. Its gradient is low and many wetlands adjoin the stream. Portions near the headwaters have been ditched. Water quality is good although agricultural runoff and the potential for more ditching pose problems. Migrating waterfowl frequent the area. Access is available at three road crossings.

Fish species: forage species.

Marsh Valley Creek - see Marsh Creek.

Maunesha River (Waterloo Creek) - T8N, R12E, Sec. 12
Surface acres = 85, Length = 20 miles, Stream order = III, Gradient = 5.8 ft/mile,
Base discharge = 67 cfs

This large stream drains parts of Columbia, Dane, Jefferson, and Dodge counties, and empties into the Crawfish River in Dodge County. Much of the watershed in Dane County is ditched and drained wetland. A large percentage is in cropland and soil loss is high. Deansville Marsh is a large, slightly disturbed wetland adjoining the river. The Department of Natural Resources owns 1,459 acres in the marsh, including 4 miles of frontage on the river. This area provides hunting for pheasants, waterfowl, small game, and deer. Impoundments are found above the Villages of Marshall and Waterloo (Jefferson County). Siltation and agricultural runoff are problems above the Marshall Millpond but water quality is good. Below the Village of Marshall water quality is poor due to the fact that the Marshall wastewater treatment plant is presently overloaded. A new plant is scheduled for completion in June 1983.

The river has been chemically treated to remove rough fish several times in the past and largemouth bass, northern pike, channel catfish, and walleye were restocked. The bass and northern pike have some good survival and growth rates, but information on the catfish and walleye has been unattainable. Carp, bullheads, panfish, and forage species are also present. The possibility of developing a smallmouth bass fishery above Marshall Millpond has been suggested but is not likely. Access is available at numerous road crossings, at one county park which has a boat ramp, and through the public lands in the Deansville Marsh. The Deansville Marsh is a popular hunting area for deer, rabbits, and pheasants.

Fish species: central mudminnow, northern pike, common carp, central stoneroller, common shiner, southern redbelly dace, bluntnose and fathead minnow, creek chub, white sucker, yellow bullhead, blackstripe topminnow, green sunfish, pumpkinseed, bluegill, largemouth bass, and fantail darter.

Milum Creek - T5N, R8E, Sec. 20
Surface acres = 0.5, Length = 2 miles, Stream order = 1, Gradient = 15.0 ft/mile,
Base discharge = 0.4 cfs

This small, spring-fed tributary to the West Branch of the Sugar River is located in a predominately agricultural watershed. Sampling in autumn 1981 revealed high levels of chloride, suggesting pollution from agricultural runoff. The stream is not managed for trout and the potential of the stream to

support a trout fishery is not known. Forage fishes are present. Access is available at two road crossings.

Fish species: redside dace, golden shiner, bluntnose and fathead minnow, creek chub, white sucker, brook stickleback, and johnny darter.

Moen Creek - T7N, R6E, Sec. 35
Surface acres = 1, Length = 2 miles, Stream order = 1, Gradient = 103.3 ft/mile,
Base discharge = 2.4 cfs

This small, spring-fed tributary to Elvers Creek flows down the north slope of Military Ridge with a very steep gradient. The headwaters have been dammed to form Stewart Lake. Land use features in the watershed include pasture, cropland, hardwoods, Stewart Lake County Park, and the City of Mount Horeb. The stream bottom is gravel and rubble, in-stream cover is good, and summer temperatures remain cool. Water quality is good, but overgrazing, beaver dams, and in-stream cattle watering are problems. Moen Creek is presently managed as a Class II trout stream although it could support a native trout population if habitat improvements were made. Access is available at the county park near the headwaters and at two road crossings.

Fish species: no information available.

Mount Vernon Creek - T5N, R7E, Sec. 13
Surface acres = 10, Length = 7 miles, Stream order = 11, Gradient = 18.5 ft/mile,
Base discharge = 19.7 cfs

This medium-sized tributary of the West Branch of the Sugar River originates in the moraines of southwestern Dane County at the junction of Deer Creek and Fryes Feeder. The former Helland Spring, now owned by the state and located approximately 1 mile above the Village of Mount Vernon, contributes substantially to the flow. The watershed is comprised mostly of cropland, pasture, and upland hardwoods. The bottom substrate consists of gravel and rubble in the upper sections grading to clay, hardpan and silt in the lower sections. Water quality is good. Aquatic vegetation is plentiful in the upper sections including watercress, speedwell, water buttercup, flat-leaved pondweed, and crowfoot. Parts of the stream near the mouth were dredged in the 1940's, and a dam above Hwy. G was abandoned in 1948.

The trout fishery in Mount Vernon Creek has been extensively researched, developed, and managed for the last thirty years. An intensive habitat improvement program initiated in 1964 included placement of in-stream cover, extensive fencing, and installation of spawning beds. The state has acquired 5-1/2 miles of stream frontage and 389 acres of surrounding land. Mount Vernon Creek is now one of the best trout streams in the area and stocking is not necessary. A population survey in autumn of 1980 estimated over 10,000 native brown trout present, including nearly 3,500 yearlings and over 2,100 adult fish. Trout are more numerous in the upper sections but are larger in the lower sections. A 12-pound fish was removed from the stream in 1972 and each year several fish over 20 inches long are taken by anglers. Fishing pressure is heavy and fly fishermen, spin-casters, and bait fishermen all enjoy success. Access is easy, as nearly all stream frontage is publicly owned, and is also available at four road crossings. State-owned lowlands and hardwood uplands provide habitat for deer, rabbits, squirrels, furbearers, ducks, pheasants, and ruffed grouse. Considerable hunting and trapping occurs for these species each year.

Fish species: brook lamprey, rainbow, brown, and brook trout, central mudminnow, common shiner, and fathead minnow, creek chub, white sucker, and mottled sculpin.

Mud Creek (Village of Deerfield) - T7N, R12E, Sec. 23
Surface acres = 2.2, Length = 9 miles, Stream order = 11, Gradient = 6.0 ft/mile,
Base discharge = .1 cfs

Mud Creek is a ditched drainage stream in the eastern part of the county, tributary to Koshkonong Creek. The watershed once consisted of many interconnected wetlands, but in the early 1900's, farmers organized to straighten the stream and drain the wetlands. The watershed is now primarily agricultural (Johnson 1976). Ground water recruitment is low, causing fluctuations in flow and water levels. Water quality is average. The Village of Deerfield discharges treated wastewater and storm sewer effluent to Mud Creek through a small tributary. Agricultural runoff and siltation also contribute to pollution of the stream. Mud Creek is inhabited primarily by forage species. In the past, northern pike were observed moving up Mud Creek to spawn in the wetlands adjoining the stream (Poff and Threinen 1962),

but it is not known if this still occurs. The fishery could be improved through better soil conservation practices in the watershed and improvement in the quality of discharge from the Deerfield treatment plant. Access is available at eight road crossings and through Koshkonong Creek.

Fish species: northern pike, central mudminnow, common carp, brassy minnow, blackchin and blacknose shiner, northern redbelly dace, bluntnose and fathead minnow, creek chub, and fantail and johnny darter.

Mud Creek (Town of York) - T9N, R12E, Sec. 24
Surface acres = 0.3, Length = 3 miles, Stream order = 1, Gradient = 5.0 ft/mile,
Base discharge = 0.2 cfs

This small, ditched drainage stream is a tributary to the Crawfish River in Dodge County. Land use in the small watershed is predominately agricultural. A few disturbed, relict wetlands are found adjoining the stream. Some parts of the stream have been ditched and the bottom is mostly silt covered. Water quality is average. Fall 1981 sampling revealed high levels of dissolved solids. Problems stem from agricultural runoff and the fertile watershed. Good populations of forage fish are present, but the stream is too small in Dane County to support a sport fishery. Access is available at three road crossings.

Fish species: brassy minnow, bigmouth and spotfin shiner, bluntnose and fathead minnow, brook stickleback, and johnny darter.

Murphy Creek (Wingra Creek) - T7N, R9E, Sec. 25
Surface acres = 10, Length = 2.5 miles, Stream order = 11, Gradient = 2.0 ft/mile,
Base discharge = 0.1 cfs

This channeled stream connects Lake Wingra to Lake Monona and the Yahara River system. The stream is often choked with weeds and is periodically stagnant. The stream is navigable by canoe but there are two low head dams. Water quality is poor due to the highly municipal and industrial aspect of the watershed. Dissolved oxygen levels are frequently low (Dane Cty. Reg. Plann. Comm. 1979a) and chloride levels are high. Manure from livestock shows at the Dane County Exposition Center washes into storm sewers which lead to Murphy Creek. A severe fishkill in 1977, in which 27,000 fish died, was partly attributable to this runoff. Murphy Creek also receives noncontact cooling water from at least four industries. It supports good populations of bluegills and forage species. Walleye and northern pike are present during the spawning season. Hybrid muskies enter the lower end at Lake Monona. Low flow and low dissolved oxygen levels limit the fishery of Murphy Creek at the present time. Access is available at several road crossings and nearly all stream frontage is in public ownership, either as parkway or the University of Wisconsin Arboretum. A good boat ramp on the lower end at Olin Park provides access to Lake Monona.

Fish species: common carp, northern pike, hybrid muskie, golden and emerald shiner, bluntnose and fathead minnow, white sucker, bigmouth buffalo, black bullhead, bluegill, largemouth bass, black crappie, yellow perch, and walleye.

Murphy's Creek (Clemen's Creek) - T6N, R10E, Sec. 7
Surface acres = 1.1, Length = 5 miles, Stream order = 1, Gradient = 8.0 ft/mile,
Base discharge = 2.1 cfs

This small, spring-fed stream is a tributary to the Yahara River system entering at the southern tip of Lake Waubesa. Its small watershed is mostly wetland. One large wetland near the headwaters has several springs but has been altered and damaged by construction in the area. The South Waubesa Wetland, a much larger wetland, lies near the mouth of the stream. This wetland has been relatively undisturbed and has a good diversity of wetland types including fens which are rare in Dane County. The Department of Natural Resources and the Nature Conservancy have acquired 170 acres of this wetland for a scientific area. Wildlife use is extensive and it is an important spawning area for fish from Lake Waubesa. Lower portions of Murphy's Creek support forage fish species. Flow is low and water quality is poor due to discharge from the Oakhill Correctional Institute wastewater treatment plant in the upper part of the creek. The stream is managed for the protection of the wetlands and their benefits to Lake Waubesa, but not as a fishery. Access is available at three road crossings and through the state-owned lands in the Lower Waubesa Marsh.

Fish species: central mudminnow, central stoneroller, fathead minnow, creek chub, white sucker, brook stickleback, and green sunfish.

New Glarus Branch - see Little Sugar River.

Nine Springs Creek - T7N, R10E, Sec. 29
Surface acres = 5.8, Length = 6 miles, Stream order = 11, Gradient = 3.3 ft/mile,
Base discharge = 0.1 cfs

An intermittent outlet from Dunn's Marsh and Seminole Pond, Nine Springs Creek picks up flow in the Nine Springs area and from a small tributary in the Nevin Marsh before emptying into the Yahara River. Parts of the stream have been ditched and the overall gradient is low. Consequently, periods of low flow and warm temperatures occur in the summer. Overall water quality is poor. Runoff from agricultural lands contribute sediment to the stream, and several industries discharge wastewater. The Nevin Fish Hatchery releases 2 million gallons per day from its trout ponds although the quality is good. Large sludge ponds constructed by the Madison Metropolitan Sewerage District adjoin the stream near its mouth. The dikes have given way in the past, releasing water and sludge of high ammonia content to the stream. Sludge is now trucked away.

Forage fish are plentiful in Nine Springs Creek, and some escaped trout survive below the hatchery. Game fish are found near the mouth. Any attempt to improve the fishery would require a great deal of cooperation. Access is available at four road crossings and through several tracts of publicly owned land. State-owned lands east of the marsh provide habitat and hunting for deer, rabbits, and pheasants. Ducks use the Nevin Marsh extensively.

Fish species: bowfin, rainbow, brown, and brook trout, central mudminnow, common carp, brassy minnow, golden, emerald, common, spottin,and sand shiner, bluntnose and fathead minnow, creek chub, white sucker, black, yellow, and brown bullhead, brook silverside, brook stickleback, white and yellow bass, green sunfish, pumpkinseed, bluegill, smallmouth and largemouth bass, black crappie, yellow perch, walleye, and freshwater drum.

Nolan Creek - T9N, R12E, Sec. 12
Surface acres = 1.2 Length = 5 miles, Stream order = 1, Gradient = 22 ft/mile, Base discharge = 0.1 cfs

Nolan Creek originates in Columbia County and swings through the northeast corner of Dane County before emptying into the Crawfish River in Dodge County. This small, ditched creek drains 5.7 square miles of cropland in Dane County including some marshy areas. Base flow is very low and the creek supports only a limited forage fishery. Dissolved solids and alkalinity in Nolan Creek are normal but the chloride concentration is high. Since there are no municipal or industrial wastes discharging to the creek, this chloride might be the result of seepage from septic systems. Four road crossings provide public access.

Fish species: bluntnose and fathead minnow, creek chub, white sucker, and johnny darter.

Oregon Branch - T5N, R10E, Sec. 16
Surface acres = 18.2, Length = 10 miles, Stream order = 1, Gradient = 8.2 ft/mile,
Base discharge = 42.9 cfs

Originating in the Village of Oregon, the Oregon Branch serves as a drainage ditch that carries effluent from the Oregon and Madison Metropolitan Sewerage District treatment plants to Badfish Creek, which in turn flows into the Yahara River. It was channelized approximately 30 years ago and its substrate now consists of muck over rubble (Dane Cty. Reg. Plann. Comm. 1979a). Oregon Branch drains 30 square miles of primarily agricultural land. The natural base flow before the addition of sewage plant effluent was approximately 2 cfs It is now measured at 42.9 cfs. Conductivity, alkalinity, and chloride readings are very high and overall the stream has been radically altered by the influx of sewage effluent. Oregon Branch has a low diversity of fish and macroinvertebrates since only the most tolerant species can exist (Dane Cty. Reg. Plann. Comm. 1979a). Access is available in Oregon and at one other road crossing.

Fish species: common carp, fathead minnow, white sucker, black bullhead, and brook stickleback.

Pheasant Branch Creek - T7E, R8E, Sec. 12
Surface acres = 4, Length = 7 miles, Stream order = 1, Gradient = 19.7 ft/mile, Base discharge = 1.6 cfs

Pheasant Branch Creek begins in the glacial moraine area of the Town of Springfield (T8N, R8E, Sec. 34) and flows south and east through the City of Middleton, entering Lake Mendota on its western lobe. A

south branch, mostly ditched and draining an urban area, forms Pleasant Branch above Highway 12. Much of the creek has been straightened and most adjacent wetlands have been drained for agricultural and residential development. One important wetland that remains largely intact is the 311-acre Pheasant Branch Marsh. Located near the mouth of the creek, it offers spawning habitat for northern pike. The worst problem facing Pheasant Branch Creek is a poor base flow and excessive peak runoff that created a high sediment load which threatens the marsh and contributes to lake sediments.

The main source of sediment is the erosion of unconsolidated, unstable glacial deposits at the headwaters (Dane Cty. Reg. Plann. Comm. 1979a). This natural erosion is exacerbated by local land development and could be slowed through improved soil conservation measures. Many farmers owning land along the banks have cooperated in innovative soil and water conservation programs. Other water quality problems include moderately high alkalinity and fertility in addition to unusually high levels of chloride for a creek that receives no municipal or industrial discharges. However, it does collect urban runoff as it flows through Middleton. The natural, steep-sided configuration of the creek channel and its watershed are conducive to spring flooding. The creek has a low base flow in its upper portions where it supports forage fish. A diverse warm water fishery is found downstream where the creek joins Lake Mendota. Waterfowl use the Pheasant Branch Marsh for nesting, and as a wintering area. Access is available at four road crossings and over Middleton public lands near the headwaters.

Fish species: bowfin, northern pike, northern pike x muskie, common carp, southern redbelly dace, fathead minnow, blacknose dace, creek chub, white sucker, bullhead (unsp.), brook stickleback, crappie (unsp.), pumpkinseed, bluegill, largemouth bass, and walleye.

Picture Rock Branch - see Fryes Feeder.

Pleasant Valley Branch - T5N, R6E, Sec. 28
Surface acres = 6, Length = 7 miles, Stream order = 11, Gradient = 27 ft/mile, Base discharge = 2.1 cfs

Pleasant Valley Branch originates in Section 3 of Perry Township (T5N, R6E) and flows south, joining Kittleson Valley Creek in the same township. It drains crop and pasture land and upland forest areas. No wetlands adjoin the creek. The creek is spring-fed with a moderate gradient. Water quality is quite good although slightly alkaline, but fish are sparse. Access is good at Hwy. A and along Hwy. H.

Fish species: brown trout, sucker, and forage species.

Pleasant Valley Creek - T7N, R6E, Sec. 5
Surface acres = 1, Length = 3 miles, Stream order = 1, Gradient = 51 ft/miles, Base discharge = 0.1 cfs

Pleasant Valley Creek originates in Section 15 of Vermont Township and flows northwest through steep pasture lands and upland forests to meet the East Branch of Blue Mounds Creek in the same township. Water quality is good, but the creek supports only forage fish. Bank erosion is a problem as a result of grazing. One road crossing provides access.

Fish species: southern redbelly dace, creek chub, white sucker, brook stickleback, fantail and johnny darter, and mottled sculpin.

Pleasure Valley Creek - T7N, R6E, Sec. 30
Surface acres = 1, Length = 2.5 miles, Stream order = 1, Gradient = 120 ft/mile,
Base discharge = 2.7 cfs

Pleasure Valley Creek originates north of the Village of Blue Mounds and flows north to join Ryan Creek. It drains approximately 2.3 square miles of upland forest and steep pasture land. The creek presently supports only forage fish, but has the potential to support trout if erosion can be controlled. Water quality is good. Public access is available on Ryan road, which passes through state lands near the headwaters.

Fish species: forage species.

Primrose Branch - T5N, R7E, Sec. 14
Surface acres = 1.8, Length = 5 miles, Stream order = 11, Gradient = 19.4 ft/mile,
Base discharge = 2.8 cfs

Primrose Branch drains 3 square miles of fertile cropland, pasture land, and upland and swamp hardwoods in Primrose Township. Its flow is augmented by at least 5 springs on its way to joining the West Branch of the Sugar River. Primrose Branch is a Class II trout stream supporting a wild trout population in its middle portion. Brown and brook trout are stocked. Five road crossings provide public access.

Fish species: brown, brook, and rainbow trout, white sucker, and brook stickleback.

Roxbury Creek (Blums Creek) - T9N, R6E, Sec. 13
Surface acres = 14.3, Length = 8 miles, Stream order = II, Gradient = 26 ft/mile, Base discharge = 2 cfs

Roxbury Creek begins east of the Village of Roxbury and flows west draining 21 square miles of agricultural and forest land before emptying into the Wisconsin River. The upper reaches of the creek adjoined a large wetland as late as 1958. This area is now ditched and dry through most of the year (Dane Cty. Reg. Plann. Comm. 1979a). The last mile of Roxbury Creek is spring fed and the water is of good quality, although somewhat high in alkalinity. The substrate in this section consists of sand and gravel with organic matter in the pool area, but base flow is too low to support trout (Dane Cty. Reg. Plann. Comm. 1979a). The fish population is comprised mainly of forage species. Five road crossings and state land at the creek's mouth provide public access.

Fish species: central mudminnow, stoneroller (unsp.), central stoneroller, emerald and spottin shiner, bluntnose and fathead minnow, creek chub, white sucker, burbot, brook stickleback, and yellow perch.

Rutland Branch (Anthony Branch) - T5N, R10E, Sec. 16
Surface acres = 1.5, Length = 2 miles, Stream order = II, Gradient = 25.6 ft/mile,
Base discharge = 6.8 cfs

Rutland Branch is a small, spring-fed tributary which joins the Oregon Branch to form Badfish Creek. It drains about 6 square miles of wet meadow, pasture, and cropland. Rutland Branch was heavily ditched in the 1940's and 1950's but has since recovered from this disturbance (Dane Cty. Reg. Plann. Comm. 1979a). A modest wild brown trout population now inhabits the creek. Its substrate is mostly sand and gravel with little silt. Although it receives no municipal or industrial discharge, the creek is subject to agricultural runoff problems. Conductivity is somewhat higher than normal for Dane County streams. Access is available at Hwy. A.

Fish species: brook lamprey, rainbow and brown trout, central mudminnow, hornyhead chub, fathead minnow, creek chub, white sucker, brook stickleback, johnny darter, and mottled sculpin.

Ryan Creek - T7E, R6E, Sec. 17
Surface acres = 4.5, Length = 6 miles, Stream order = II, Gradient = 106 ft/mile,
Base discharge = 5.8 cfs

Ryan Creek, sometimes called Elvers Creek, originates in Section 1 of T6N, R5E in Iowa County. It flows northward to meet Elvers Creek where they join to form the East Branch of Blue Mounds Creek. Ryan Creek drains 5.5 square miles of hilly pasture land, upland and lowland forest. The lower portion has been ditched in an effort to drain a wetland area consisting of wet meadow and shallow marsh. Its flow is traced to 5 springs (Dane Cty. Reg. Plann. Comm. 1979a) and the water quality is good. Because the watershed is steep and cattle have access to the creek in many areas, grazing causes a fair amount of erosion. Erosion is also significant in the ditched section of the creek. Ryan Creek is managed for brown trout, but access is limited by extensive posting of adjacent lands. A native brook trout population present before 1970 no longer inhabits the creek. Access is available through DNR land at the headwaters, on DNR land below Hwy. F, and at four road crossings. Ducks, pheasants, rabbits, and deer inhabit the state owned land below Hwy. F. Furbearers are also common.

Fish species: brook lamprey, brown and rainbow trout, central mudminnow, brassy minnow, creek chub, white sucker, green sunfish, johnny darter, and mottled sculpin.

Saunders Creek - T5N, R12E, Sec. 33
Surface acres = 11, Length = 10 miles, Stream order = II, Gradient = 5.1 ft/mile,
Base discharge = 3.6 cfs

Saunders Creek originates near Utica (Sec. 19) in Christiana Township, and flows south to meet the Rock River in Rock County. It is a meandering creek with a low gradient and drains 36 square miles of agricultural lands in southern Dane County. Many parts of the creek have been ditched in order to drain the wet meadows and shallow marshes that were once plentiful in the watershed (Dane Cty. Reg. Plann. Comm. 1979a). Nonpoint pollution from farms and erosion from ditching present problems for Saunders Creek. Its warm waters are high in sulfate (Dane Cty. Reg. Plann. Comm. 1979a) with slightly elevated alkalinity and conductivity readings. Northern pike spawn in its associated marshes. Some panfish and many species of forage fish also inhabit the creek. Four road crossings offer public access.

Fish species: central mudminnow, central stoneroller, common carp, brassy minnow, hornyhead chub, common and bigmouth shiner, northern redbelly dace, bluntnose and fathead minnow, creek chub, pearl dace, white sucker, black bullhead, stonecat, brook stickleback, green sunfish, fantail and johnny darter.

Schalpbach Creek (Klevenville Creek) - T7N, R7E, Sec. 34
Surface acres = 1.8, Length = 3.5 miles, Stream order = 1, Gradient = 24.4 ft/mile,
Base discharge = 2.6 cfs

Schalpbach Creek is a small tributary which originates at Mount Horeb and flows northeast through Springdale Township (T6N, R7E) before joining the Sugar River. It drains about 5 square miles of land and its flow is augmented by several large springs in Section 8 of Springdale Township (Dane Cty. Reg. Plann. Comm. 1979a). The waters of Schalpbach Creek are moderately fertile. Erosion caused by grazing has resulted in heavy silting of the creek bottom. Access is available in Mount Horeb and at four road crossings.

Fish species: central mudminnow, redside and southern redbelly dace, bluntnose and fathead minnow, creek chub, white sucker, largemouth bass, and mottled sculpin.

Schumacher Creek - T8N, R12E, Sec. 9
Surface acres = 1.5, Length = 3 miles, Stream order = 1, Gradient = 5 ft/mile, Base discharge = 0.1 cfs

Schumacher Creek is a small tributary to the Maunesha River that originates in Section 30 of Medina Township and empties into the Marshall Millpond. Its gradient and base flow are quite low. The creek drains eleven square miles of cropland and wetlands. It is extensively ditched upstream to keep the croplands drained. Wetlands occur near the creek's mouth (Dane Cty. Reg. Plann. Comm. 1979a) and the substrate consists of peat and silt. The waters of Schumacher Creek are slightly high in dissolved solids, probably resulting from erosion as there are no known point sources of pollution entering the creek. The fishery is very limited, consisting only of seasonal use by forage species. Access is available at Hwy. T and through the millpond.

Fish species: forage species.

Six Mile Creek - T8N, R9E, Sec. 28
Surface acres = 14.5, Length = 12 miles, Stream order = 11, Gradient = 7.2 ft/mile,
Base discharge = 16.4 cfs

Six Mile Creek originates in Section 2 of Springfield Township (T8N, R8E) and flows east to Waunakee and south to the north end of Lake Mendota. The watershed once encompassed plentiful wetlands, but many of these areas have been drained, filled, or altered for the development of more cropland. Two major remaining wetlands are the Waunakee Marsh in the northwestern part of the watershed, and the marshes near the creek's mouth on Lake Mendota (Dane Cty. Reg. Plann. Comm. 1979a). Channel alterations in the upper reaches of the creek and sewage effluent contribute to the high sediment load caused by agricultural runoff. Much of the creek bottom is heavily silted. The marshes serve as sediment traps and also contribute ground water seepage to the creek. Six Mile Creek supports a diverse forage and warm water game fishery and offers abundant spawning areas for fish from Lake Mendota. The creek has a history (as recent as 1980) of fishkills near Waunakee caused by discharges of biochemical oxygen demand (BOD) waste from a canning factory with a defective land irrigation disposal system. There are no other known point sources of pollution on the creek and water quality is good. Public access is available at state and city parks, the DNR-owned portion of the Waunakee Marsh, and 19 road crossings. The Waunakee Marsh supports a varied habitat for pheasants, waterfowl, rabbits, deer, and furbearers.

Fish species: bowfin, central mudminnow, northern pike, stoneroller (unsp.), common carp, golden and common shiner, southern redbelly dace, bluntnose and fathead minnow, creek chub, white sucker, pearl dace, bullhead (unsp.), black and yellow bullhead, channel catfish, brook stickleback, white bass, green sunfish, pumpkinseed, bluegill, largemouth bass, white and black crappie, yellow perch, freshwater drum, and walleye.

Spring Brook - see Wendt Creek.

Spring Creek (Lodi Creek, Lodi Marsh Creek) (Dane Township) - T9N, R8E, Sec. 4
Surface acres = 4, Length = 3.5 miles, Stream order = II, Gradient = 41.3 ft/mile,
Base discharge = 5 cfs

Spring Creek originates in northern Dane Township and flows north into Columbia County where it joins the Wisconsin River. In Dane County it drains 23 square miles of pasture and marsh, where it has a much lower gradient of 3.4 ft/mile. There are no inputs of municipal or industrial wastes to Spring Creek, but pastureland runoff, erosion, and associated livestock-related damage are problems that affect the creek (Dane Cty. Reg. Plann. Comm. 1979a).

Lodi Marsh, which adjoins the creek, is one of Dane County's most diverse wetlands. There are several springs within the marsh and further downstream that supply the creek with cool water (Dane Cty. Reg. Plann. Comm. 1979a). The lower part of the creek is managed for trout and has a Class II rating. Lack of a gravel substrate prohibits natural reproduction. The DNR owns 1,002 acres of marshland and uplands in this watershed (including land in Columbia County) which provide excellent access. Waterfowl, pheasant, and furbearer production is good in the Lodi Marsh; thus, hunting and trapping are popular sports.

Fish species: brown trout, central mudminnow, northern and southern redbelly dace, fathead minnow, creek chub, pearl dace, white sucker, brook stickleback, and mottled sculpin.

Spring Creek (Medina Township) - T8N, R12E, Sec. 15
Surface acres = 2.3, Length = 3.5 miles, Stream order = I, Gradient = 5 ft/mile,
Base discharge = 0.9 cfs

Spring Creek is a highly ditched creek originating in northern Deerfield Township (T7N, R12E) and flowing north through Medina Township where it joins the Maunesha River below Marshall Millpond. It drains 6 square miles of agricultural and marsh lands in the drumlin lowlands of eastern Dane County. The creek's gradient and base flow are both very low, making summer temperatures quite high and allowing silt to accumulate in the creek bed. Although there are no point sources of pollution discharging to the creek, agricultural pollution is a problem (Dane Cty. Reg. Plann. Comm. 1979a). Because of the creek's physical characteristics, only forage fish inhabit the stream. Access is available from the Maunesha River and at two road crossings.

Fish species: central mudminnow, central stoneroller, brassy minnow, northern redbelly dace, fathead minnow, white sucker, and brook stickleback.

Spring Creek (Dorn Creek) (Westport Township) - T8N, R9E, Sec. 28
Surface acres = 7.3, Length = 6 miles, Stream order = II, Gradient = 21.6 ft/mile,
Base discharge = 3.5 cfs

Spring Creek is a tributary to Six Mile Creek that drains 12.7 square miles in the southwestern portion of Westport Township. This area includes approximately 325 acres of shallow marsh and sedge meadow located near the mouth of the creek and extending upstream (Dane Cty. Reg. Plann. Comm. 1979a). These areas have remained relatively undisturbed and the state has acquired some of these lands for protection as spawning areas for northern pike and panfish. The fresh meadow and wetlands provide habitat for waterfowl, pheasants, rabbits, deer, and furbearers. Hunters use the area frequently.

The waters of Spring Creek are moderately high in chloride, indicating a pollution source, most likely livestock related. The creek has a high sediment load, causing heavy silting problems in many areas. The fishery is limited to forage species, panfish, and spawning northern pike. Diversity could be increased by improving soil conservation practices within the watershed. Access is available at four road crossings and at a small boat launch on state property at North Shore Bay Drive.

Fish species: central mudminnow, common carp, golden shiner, northern redbelly dace, bluntnose and fathead minnow, creek chub, pearl dace, white sucker, black and yellow bullhead, banded killifish, brook stickleback, and johnny darter.

Spring Valley Creek - T5N, R7E, Sec. 32
Surface acres = 1, Length = 2 miles, Stream order = 1, Gradient = 13.3 ft/mile, Base discharge = 1.0 cfs

Spring Valley Creek is a small tributary to the Little Sugar River which drains about 2 square miles of agricultural lands. Its substrate consists of 80% clay-silt and 20% sand. Edge vegetation includes canary grass and sedge. The creek is ditched in several places and has low water quality. Conductivity is high and the water is quite alkaline. Forage fish are the only species present. Access is available on Hwy. G.

Fish species: common shiner and dace (unsp.).

Starkweather Creek - T7N, R10E
East Branch: Sec. 8
Surface acres = 6.5, Length = 3 miles, Stream order = 11, Gradient = 5 ft/mile, Base discharge = 1.7 cfs

West Branch (Airport Creek): Sec. 5,
Surface acres = 4.2, Length = 2 miles, Stream order = 1, Gradient = 3.7 ft/mile,
Base discharge = 8.8 cfs

Starkweather Creek is a slow-moving creek which drains 21.5 square miles of highly developed land on the east side of the City of Madison and discharges to the northeast side of Lake Monona at Olbrich Park. Most of its wetlands have been drained, filled, and developed for industrial, commercial, and residential purposes. The creek has been extensively altered through channelization, and the water quality in both branches is poor (Dane Cty. Reg. Plann. Comm. 1979a).

The West Branch, sometimes called Airport Creek, originates in Cherokee Marsh near the Dane County Airport and is a tributary to the East Branch. In the past, the East Branch has received industrial effluent high in ammonia. Although this discharge has been eliminated, ill effects of this pollution remain (Dane Cty. Reg. Plann. Comm. 1979a). Both branches have very low gradients and consequently have elevated summer temperatures with resulting low oxygen levels.

Starkweather Creek's substrate consists of 90% silt and 10% gravel and sand. Recreational value is quite limited owing to the polluted conditions. The fish population is limited to a few forage species, except near the mouth where fish enter from Lake Monona. Public access is available from several city street crossings, a boat ramp at Olbrich Park, and from Lake Monona.

Fish species: golden shiner, fathead minnow, and brook stickleback.

Story Creek (Tipperary Creek) - T5N, R8E, Sec. 36
Surface acres = 6.5, Length = 3 miles, Stream order = 11, Gradient = 8.7 ft/mile,
Base discharge = 8.9 cfs

Story Creek is a spring-fed tributary to the Sugar River originating in south central Dane County and joining the Sugar River in Green County near Dayton. It is located within the Brooklyn Wildlife Area and drains 27 square miles (Dane and Green counties) of agricultural and marsh lands. Much of the agricultural land has been created by draining these peat marshes and ditching the creek. One effect of these alterations is a lowering of the water table and a resultant reduction in stream flow (Dane Cty. Reg. Plann. Comm. 1979a). Stream bank erosion is a significant problem and beaver dams near the creek's headwaters have ruined most of the trout habitat in the upper part of the stream. Despite these problems Story Creek is a Class II trout stream. Most of the stream is located in Green County. Its 12 feeder springs keep the waters cool and the substrate composition in some portions is favorable spawning habitat for brown trout. In addition, both brook and brown trout are stocked. Northern pike are common in the ditched stretches, along with diverse groupings of panfish and forage fish.

Story Creek is not effected by any industrial or municipal wastes, and its waters are of good quality. Agricultural runoff and stream bank erosion are the only significant causes of pollution (Dane Cty. Reg. Plann. Comm. 1979a).

Public access to the creek is good within the Brooklyn Wildlife Area. Its recreational value is high owing to its wildlife resources, that include pheasant, duck, quail, deer, rabbit, woodcock, and squirrel. The Brooklyn Wildlife Area is one of the most popular hunting sites in Dane County. The channelized portions have little aesthetic value. The stream has the potential to produce more wild trout.

Fish species: American brook lamprey, brown, brook, and rainbow trout, central mudminnow, central stoneroller, redside dace, fathead minnow, blacknose dace, creek chub, white sucker, golden and shorthead redhorse, brook stickleback, green sunfish, rainbow, Iowa, fantail and Johnny darter, mottled sculpin, and northern pike.

Stransky Creek - T8N, R12E, Sec. 4
Surface acres = 1, Length = 2 miles, Stream order = 1, Gradient 16.1 ft/mile, Base discharge = 0.04 cfs

Stransky Creek is a short, intermittent stream that drains 3 acres of wet meadow surrounded by croplands. It empties into the Maunesha River just north of the Marshall Millpond. The creek's waters have very high fertility, probably originating from a combination of high agricultural runoff and very low base flow. Its banks and substrate composition are highly disturbed from extensive ditching. A small impoundment is located on the lower end. Public access is available at two road crossings, but the creek has negligible recreational value due to its intermittent nature. Stransky Creek has low potential for an improved fishery because of its inherent low flow and its water quality problems.

Fish species: central mudminnow, white sucker, brook stickleback, and green sunfish.

Sugar River - T5N, R8E, Sec. 35
Surface acres = 120, Length = 30 miles, Stream order = 111, Gradient = 4.1 ft/mile,
Base discharge = 70 cfs

The headwaters of the Sugar River originate in Section 31 of Cross Plains Township (T7N, R7E) among the western reaches of the glacial moraine region. The river flows southeastward, draining over 200 square miles of pasture and cropland in Dane County and eventually joining the Rock River in Illinois. The Sugar River watershed contains approximately 2,000 acres of diverse wetland resources that provide habitat for waterfowl and wildlife. Many additional acres of wetlands have been drained for agricultural use (Dane Cty. Reg. Plann. Comm. 1979a).

Water quality of the Sugar River is affected by the discharge of biochemical oxygen demand (BOD)waste and suspended solids from a milk processing plant at Belleville. The town's sewage treatment plant has also been polluting the river, but construction is underway on a new plant scheduled for completion in June 1983. Fecal coliform levels frequently exceed the recommended maximum for body contact recreation (Wis. Dep. Nat. Res. unpubl., Dane Cty. Reg. Plann. Comm. 1979a). Erosion is also a problem in many areas although this river has not been channelized. Any success in adopting better land use practices and reducing nonpoint source pollution through the efforts of the Upper Sugar River Watershed Association will benefit the water quality downstream in the Sugar River.

Five tributaries to the Sugar River support trout populations and the potential for fishery improvement in the river itself is good. There are several springs along the river which keep the temperature down, and oxygen levels are generally good. Base discharge is high despite the low stream gradient. Erosion and agricultural runoff must be reduced significantly if any areas of the Sugar River are to support trout. At the present time, the river supports a diverse forage fishery, some panfish and rough fish, and a smallmouth bass fishery downstream from the Paoli Mill Dam. Some areas of the stream also provide excellent fishing for northern pike and channel catfish. Access is available at 19 road crossings and through the mill ponds at Paoli and Belleville. The river is navigable by canoe and recreational value is high on the river itself as well as within adjacent wetlands. Swimming is not recommended because of periodic high bacteria levels.

The river provides opportunities for jump shooting waterfowl, i.e., mallard, blue-winged teal, and wood duck. Beavers, muskrats, and mink attract many trappers.

Fish species: central mudminnow, stoneroller (unsp.), central stoneroller, common carp, brassy minnow, hornyhead chub, common, spotfin, and sand shiner, suckermouth, bluntnose, and fathead minnow, creek chub, redhorse (unsp.), white and northern hog sucker, silver, golden, and shorthead redhorse, brown bullhead, stonecat, channel catfish, brook stickleback, green sunfish, smallmouth and largemouth bass, black crappie, rainbow, fantail, Johnny, and blackside darter, walleye, mottled sculpin, and northern pike.

Sugar River West Branch - T5N, R8E, Sec. 28
Surface acres = 30, Length = 18 miles, Stream order = 111, Gradient = 7.5 ft/mile,
Base discharge = 8.1 cfs

The Sugar River West Branch originates south of Mount Horeb, and flows southeast to meet the Sugar River just upstream of Belleville. It drains 66.5 square miles which is mostly pasture land with the remainder in upland hardwoods, marsh, and cropland. Above Mount Vernon Creek, the West Branch has a moderate gradient and low base flow. Below this point, the creek has mostly a very low gradient and meanders through a wide flood plain (Dane Cty. Reg. Plann. Comm. 1979a). Flow is augmented by the input from several spring-fed tributaries that support trout fisheries.

Channel alterations have been made in the lower portions of the West Branch for the purpose of draining agricultural lands. Stream bank erosion, in-stream watering, and overgrazing by livestock are very significant problems for this stream (Dane Cty. Reg. Plann. Comm. 1979a). Many portions of the stream are heavily silted and fertility is high. Mount Horeb discharges treated sewage effluent to the headwaters of the West Branch of the Sugar River. Effluent standards for this plant have recently been upgraded and any pollution from this source is less important than nonpoint sources (Dane Cty. Reg. Plann. Comm. 1979a).

The stream from the mouth of the Primrose Branch (Sec. 14, T5N, R7E) to Hwy. PB is classified as a Class II trout stream. Stream habitat development has been conducted by the Dane County Conservation League and Madison School Program in cooperation with the DNR. There is limited spawning of brown trout in the stream, and both brown and rainbow trout have been stocked. The remaining portions of the West Branch of the Sugar River support a diverse warm water fishery. There is no public ownership of lands along the stream but the Dane County Conservation League has leases with several landowners to better protect and manage the stream. Access is available at 7 road crossings.

Fish species: brook lamprey, rainbow, brown, and brook trout, central mudminnow, northern pike, minnow (unsp.), stoneroller (unsp.), central stoneroller, redside dace, common carp, brassy minnow, golden, common, and sand shiner, bluntnose and fathead minnow, creek chub, buffalo (unsp.), river carpsucker, white sucker, golden redhorse, black and yellow bullhead, brook stickleback, green sunfish, pumpkinseed, largemouth bass, black crappie, johnny and blackside darter, walleye, sculpin (unsp.), and mottled sculpin.

Swan Creek - T6N, R10E, Sec. 7
Surface acres = 2, Length = 2 miles, Stream order = 1, Gradient = 16.1 ft/mile,
Base discharge = 1.1 cfs

Swan Creek is a small tributary to the Yahara River that originates in Sections 11 and 14 of Fitchburg Township (T6N, R9E) and empties into the southwestern tip of Lake Waubesa. It drains 7 square miles of cropland and disturbed sedge/cattail marsh land known as the Southern Waubesa Wetlands. The stream has been extensively ditched. Swan Creek has a moderate gradient but a low base discharge. Its waters arise from marsh seepage, runoff, and springs. Fertility is very high. Swan Creek supports a limited forage fishery of brook stickleback and johnny darter, although fish from Lake Waubesa migrate up the lower end of the stream. Recreational value is limited due to low flow.

Fish species: northern pike, white sucker, brown bullhead, brook stickleback, and johnny darter.

Syftestad Creek (Daleyville Branch) - T5N, R6E, Sec. 29
Surface acres = 1.8, Length = 5 miles, Stream order = 1, Gradient = 28.2 ft/mile,
Base discharge = 0.49 cfs

Syftestad Creek is a spring-fed tributary to the Kittleson Valley Creek originating in Sections 9 and 17 of Perry Township (T5N, R6E). It drains 6 square miles of hilly pasture land in the driftless area and has good water quality despite bank erosion problems. Presently, Syftestad Creek supports only suckers and forage fish, but it has the potential to support a trout population if soil conservation measures are employed.

Fish species: central stoneroller, redside dace, brassy minnow, common shiner, southern redbelly dace, bluntnose and fathead minnow, creek chub, white sucker, brook stickleback, johnny darter, and mottled sculpin.

Tipperary Creek - see Story Creek.

Token Creek - T8N, R10E, Sec. 7
Surface acres = 18, Length = 10 miles, Stream order = 1, Gradient = 8.7 ft/mile,
Base discharge = 18.6 cfs

Token Creek originates in Section 24 of Windsor Township (T9N, R10E) and empties into the Yahara River north of Lake Mendota. It drains 27.3 square miles of residential, agricultural, and marsh land. The creek is spring-fed but its flow is interrupted by several impoundments, limiting most portions of the creek to warm water fish species. Water quality is quite good considering the developmental pressures affecting the area, such as residential subdivisions and a major highway interchange. However, agricultural runoff has caused heavy silting problems.

Although brown trout are no longer stocked in Token Creek, there is great potential for a trout fishery if the dams were removed, making the springs accessible to trout. Two spring impoundments presently

serve as trout rearing ponds and two short sections support some wild brown trout. Carp are a problem in Token Creek and several eradication attempts have been made with no permanent success. The creek is navigable and receives moderate fishing pressure. Public access is available from several DNR- and county-owned tracts and from six road crossings. The creek flows through part of Cherokee Marsh which provides habitat for wildlife and waterfowl. Token Creek County Park located near the junction of Hwys. 19 and I-90/94 provides camping and day use facilities.

Fish species: common carp, fathead minnow, creek chub, white sucker, brook stickleback, green sunfish, bluegill, walleye, and brown trout.

Vermont Creek - T8N, R6E, Sec. 26
Surface acres = 9, Length = 8 miles, Stream order = 1, Gradient = 19.2 ft/mile, Base discharge = 6.4 cfs

Vermont Creek originates in Section 13 of Vermont Township (T7N, R6E) and joins Black Earth Creek at Black Earth. It flows for the most part within a broad, flat valley alongside Hwy. 78. The surrounding topography is hilly and the land is used for grazing and some row crops. Wet meadows are associated with the creek in some areas. Vermont Creek is spring-fed but several of these springs have been impounded (Dane Cty. Reg. Plann. Comm. 1979a). Adjacent lands tend to be overgrazed and some areas of the creek have been ditched causing problems from agricultural runoff and stream bank erosion. The water quality remains quite good.

Upper and lower Vermont Creek are considered Class II and Class III trout streams, respectively. In 1979 and 1980, DNR-owned reaches of the creek in Sections 2 and 13 (Vermont) underwent trout habitat improvement to direct stream flow and control livestock use. Vermont Creek is popular with anglers and is of sufficient size to be navigable. Access is available at four road crossings and through DNR-owned land on the upper part of the creek. Upland hunting is available on a 42-acre DNR-owned parcel in Section 13. Waterfowl also use a spring-fed tributary in the same vicinity.

Fish species: brown trout, white sucker, black bullhead, and mottled sculpin.

Waterloo Creek - see Maunesha River.

Wingra Creek - see Murphy Creek.

Wendt Creek (Spring Brook) - T8N, R6E, Sec. 16
Surface acres = 4, Length = 6 miles, Stream order = 1, Gradient = 23.3 ft/mile, Base discharge = 2.7 cfs

Wendt Creek originates in the glacial drift hills in western Berry Township (T8N, R7E) and flows westward through shallow marshes and farmland before emptying into Halfway Prairie Creek just above Black Earth Creek near Mazomanie. It is fed by springs and marsh seepage. A substantial portion of the stream in Mazomanie Township has been ditched and straightened to provide drainage for agricultural lands (Dane Cty. Reg. Plann. Comm. 1979a). The creek waters are of good quality and are slightly alkaline. Its substrate consists of approximately 65% clay-silt and 35% gravel-rubble. Attempts at trout management were made in the creek in the 1950's with no success. At present it supports only a forage fishery. Access is available at four road crossings.

Fish species: spotfin shiner, fathead minnow, creek chub, white sucker, fantail and johnny darter.

Wisconsin River
Surface acres = 1,386, Length = 14 miles, Gradient = 1.4 ft/mile, Base discharge = 2,000 cfs

A large tributary to the Mississippi River, the Wisconsin River drains only 225 square miles in northwest Dane County. Approximately 1/4 of this area is bottom lands, made up of a variety of wetlands ranging from deep marsh to shrub carr and lowland forest. About 2,700 acres of this valley make up the Mazomanie Wildlife Area which supports diverse plant and wildlife communities within its varied habitats (Dane Cty. Reg. Plann. Comm. 1979a). Much of the lower Wisconsin River valley has been drained for agricultural use. The remaining upland portion of the Wisconsin River watershed is agricultural land, much of it hilly.

Conductivity, alkalinity, and other pollution indicators are significantly lower in the Wisconsin than in the smaller streams in Dane County. Dilution is probably a factor since the base discharge of the Wisconsin is 2 magnitudes higher than any other stream in the county. Dane County contributes agricultural pollution to the Wisconsin River, but point sources are negligible.

The Wisconsin River supports the most diverse warm water fishery in the county including several of the rarer species such as paddlefish and shovelnose sturgeon. Public access along the river is provided by two boat launching sites (Hwy. Y and in the Mazomanie Wildlife Area).

Fish species: lamprey (unsp.), silver lamprey, shovelnose sturgeon, paddlefish, mooneye, pike (unsp.), northern pike, hybrid muskie, minnow (unsp.), common carp, brassy minnow, speckled chub, emerald, river, bigmouth, spottin, and sand shiner, bluntnose and fathead minnow, pearl dace, carpsucker (unsp.), sucker (unsp.), quillback, highfin and river carpsucker, white sucker, bigmouth buffalo, golden and shorthead redhorse, channel and flathead catfish, white bass, bluegill, smallmouth bass, sand, Johnny, and banded darter, logperch, slenderhead darter, sauger, walleye, and freshwater drum.

Yahara River - T5N, R11E, Sec. 35
Surface acres = 129, Length = 40 miles, Stream order = III, Gradient = 3.6 ft/mile, Base discharge = 68.8 cfs

The Yahara River is a large tributary to the Rock River which drains over 1/3 of Dane County. It originates in Columbia County and flows south, joining the Rock River in Rock County. It connects the county's four largest lakes--Mendota, Monona, Kegonsa, and Waubesa--which provide a wide range of recreational activities for a large percentage of the population of Dane County. Since the majority of the county's population resides within the Yahara River Valley, development pressure on the Yahara system has been and continues to be intense. Although large acreages of wetlands have been filled, drained or dredged, the Yahara Valley still encompasses some of the largest wetlands in the county due to their undrainable nature (Dane Cty. Reg. Plann. Comm. 1979a). The Yahara River has undergone only limited channelization projects, but its flow has been interrupted at many points by dams and locks built for flood control and navigation. Ground water inputs are reduced and flows decline during dry periods due to the heavy demands placed on the aquifer by the City of Madison and the passing of sewage effluent of the metropolitan area around the Madison lakes and into Badfish Creek.

In addition to these physical alterations of the river and its wetlands, municipal, industrial, and agricultural pollution have greatly affected the Yahara River. Prior to the 1950's all Madison area sewage effluent, usually treated but still high in nutrients, was discharged to the Madison lakes and the river. Currently all wastes are treated as efficiently as possible and are diverted around the lakes via Badfish Creek. Stoughton and Cottage Grove have the only treatment plants that discharge directly to the Yahara River. The only other point sources still remaining are runoff from the railroad yards which is polluted with oil, sulfur, and chloride; noncontact industrial cooling waters; and city swimming pool outflow (Dane Cty. Reg. Plann. Comm. 1979a). Nonpoint sources of pollution are runoff from agricultural and metropolitan areas and bank erosion. The Yahara River is moderately fertile and only slightly alkaline, but chloride levels are quite high. Despite the reduction in pollution sources in the past 20 years, fishkills usually due to low dissolved oxygen have been a problem in the Yahara River, most often below Lake Monona.

The fishery is quite diverse, containing most of the species common to the Madison lakes along with occasional brown trout in the upper reaches. The river is also an important spawning area for white bass and walleye. There are many parks along the Yahara and the Madison lake shores, making public access very good. The Cherokee Marsh Fishery Area located north of Lake Mendota provides waterfowl, deer, pheasant, rabbit, and squirrel hunting. Muskrat and mink also inhabit the area.

Fish species: American eel, brown trout, northern pike, central stoneroller, common carp, golden, emerald, common, and spottail shiner, bluntnose and fathead minnow, creek chub, buffalo (unsp.) white sucker, black, yellow, and brown bullhead, brook silverside, brook stickleback, white bass, crappie (unsp.), pumpkinseed, bluegill, largemouth bass, white and black crappie, Johnny darter, yellow perch, walleye, and mottled sculpin.

York Valley (Lee Creek) - T5N, R6E, Sec. 27
Surface acres = 1, Length = 2 miles, Stream order = II, Gradient = 9.6 ft/mile, Base discharge = 4.2 cfs

York Valley Creek originates in Green County and flows northward through hilly pasture and cropland to meet the Kittleson Valley Creek in the southwestern corner of Dane County. The creek is spring-fed and its waters are of fairly good quality although the banks experience severe erosion. Its substrate consists of approximately 30% gravel and 30% silt, with sand, rubble, and clay hardpan as the remaining constituents. The lower part of the creek is a Class II trout stream and the upper portion a Class III. Brown trout are stocked annually. Heavy grazing, runoff, and erosion are threatening the quality of this creek's trout habitat. Access is available at one road crossing.

Fish species: brook lamprey, lamprey (unsp.), brown trout, creek chub, white sucker, and mottled sculpin.

Perry - T5N, R6E

20-14

Surface acres = 0.3
Length = 1.0 miles
Gradient = 60 ft/mile
Water: Clear, very hard
Direction of flow: South
Tributary of: Syftestad Creek
Bottom types: Sand, some gravel, silt, muck
Fishery: Forage
Access: One county road crossing
Comments: Good bank cover

22-10

Surface acres = 1.5
Length = 3 miles
Gradient = 60 ft/mile
Water: Clear, very hard
Direction of flow: West
Tributary of: Pleasant Valley Creek
Bottom types: Sand, gravel, silt, rubble
Fishery: Forage
Access: Two road crossings
Comments: Moderate erosion, pastured

34-4

Surface acres = 0.4
Length = 2 miles
Gradient = 60 ft/mile
Water: Turbid, very hard
Direction of flow: West
Tributary of: York Valley Creek
Bottom types: Sand, silt, detritus
Fishery: Forage
Access: One town road crossing
Comments: Pastured, heavy bank erosion

34-8

Surface acres = 0.25
Length = 0.7 mile
Gradient = 130 ft/mile
Water: Clear, very hard
Direction of flow: North
Tributary of: York Valley Creek
Bottom types: Gravel
Fishery: Forage
Access: None
Comments: Ditched, good bank cover, swiftly flowing water

Primrose - T5N, R7E

4-12

Surface acres = 1.2
Length = 4 miles
Gradient = 45 ft/mile
Water: Turbid
Direction of flow: Southeast
Tributary of: West Branch Sugar River
Bottom types: Gravel, rubble, sand
Fishery: Forage
Access: Two road crossings
Comments: Heavy bank erosion

6-15

Surface acres = 0.4
Length = 3 miles
Gradient = 27 ft/mile
Water: Clear, fertile
Direction of flow: Northeast
Tributary of: West Branch Sugar River
Bottom types: Gravel, rubble, sand
Fishery: Forage
Access: Three road crossings
Comments: Inhabited by creek chubs, brook stickleback, southern redbelly dace

13-8

Surface acres = 0.2
Length = 1.0 mile
Gradient = 40 ft/mile
Water: Clear
Direction of flow: Northeast
Tributary of: West Branch Sugar River
Bottom types: Gravel, sand, silt
Fishery: Forage
Access: Two highway crossings

33-15

Surface acres = 0.1
Length = 1.0 mile
Gradient = 80 ft/mile
Water: Clear, very hard
Direction of flow: South
Tributary of: Little Sugar River
Bottom types: Sand, muck, detritus, silt
Fishery: Forage
Access: One town road
Comments: Heavy bank erosion

33-16

Surface acres = 0.1
Length = 1.0 mile
Gradient = 80 ft/mile
Water: Turbid, very hard
Direction of flow: South
Tributary of: Little Sugar River
Bottom types: Sand, detritus
Fishery: Forage
Access: One town road

Oregon - T5N, R9E

8-1

Surface acres = 0.5
Length = 2 miles
Gradient = 17 ft/mile
Water: Brown tint, very hard
Direction of flow: Southeast
Tributary of: Lake Harriet
Bottom types: Sand, muck, gravel
Fishery: Forage
Access: Two road crossings
Comments: Malodorous, very low flow

Dunkirk - T5N, R11E

21-9

Surface acres = 0.1
Length = 1 mile
Gradient = 20 ft/mile
Water: Clear, very hard
Direction of flow: South
Tributary of: Yahara River
Bottom types: Gravel, sand, some rubble
Fishery: Forage
Access: Two town roads
Comments: Swiftly moving water

35-6

Surface acres = 1.8
Length = 3 miles
Gradient = 17 ft/mile
Water: Turbid, very hard
Direction of flow: South
Tributary of: Yahara River
Bottom types: Sand, muck, detritus
Fishery: Forage
Access: Three road crossings

Albion - T5N, R12E

12-3

Surface acres = 0.1
Length = 1 mile
Gradient = 10 ft/mile
Water: Clear, hard, fertile
Direction of flow: Southeast
Tributary of: Koshkonong Creek
Bottom types: Sand, some detritus
Fishery: Forage
Access: Two road crossings
Comments: Good bank cover

Blue Mounds - T6N, R6E

21-15

Surface acres = 0.1
Length = 1 mile
Gradient = 140 ft/mile
Water: Clear, very hard, fertile
Direction of flow: Southeast
Tributary of: German Valley Creek
Bottom types: Gravel, some sand
Fishery: Forage
Access: Two road crossings
Comments: Spring fed, watercress present

25-5

Surface acres = 0.1
Length = 0.5 mile
Gradient = 160 ft/mile
Water: Clear, very hard, fertile
Direction of flow: Southeast
Tributary of: West Branch Sugar River
Bottom types: Gravel, sand, detritus
Fishery: Forage
Access: One town road crossing
Comments: Spring fed, low flow

32-9

Surface acres = 0.25
Length = 1.5 miles
Gradient = 53 ft/mile
Water: Clear, very hard
Direction of flow: West
Tributary of: German Valley Creek
Bottom types: Gravel, sand
Fishery: Forage
Access: None

Verona - T6N, R8E

7-11

Surface acres = 2
Length = 2 miles
Gradient = 60 ft/mile
Water: Turbid
Direction of flow: East
Tributary of: Sugar River
Bottom types: Hardpan, silt
Fishery: Forage
Access: Three road crossings
Comments: Ditched over most of its length

Fitchburg - T6N, R9E

12-16

Surface acres = 0.3
Length = 1.5 miles
Gradient = 6 ft/mile
Water: Hard
Direction of flow: Southwest
Tributary of: Swan Creek
Bottom types: Gravel, detritus, hardpan
Fishery: Forage
Access: One town road crossing
Comments: Drainage ditch

Dunn - T6N, R10E

26-8

Surface acres = 1.1
Length = 2.0 miles
Gradient = 23 ft/mile
Water: Clear
Direction of flow: East
Tributary of: Yahara River - Lake Kegonsa
Bottom types: Sand, silt, muck, detritus
Fishery: Forage
Access: Two road crossings
Comments: Heavy bank erosion

Pleasant Springs - T6N, R11E

28-12

Surface acres = 2
Length = 3.0 miles
Gradient = 8 ft/mile
Water: Turbid, very hard
Direction of flow: West
Tributary of: Leuten Creek
Bottom types: Mostly muck, some sand, silt
Fishery: Forage
Access: One town road crossing
Comments: Spring fed, pastured, watercress present

Christiana - T6N, R12E

5-11

Surface acres = 2
Length = 2 miles
Gradient = 20 ft/mile
Water: Clear, fertile
Direction of flow: Southeast
Tributary of: Mud Creek
Bottom types: Gravel, sand
Fishery: Forage
Access: Two road crossings

11-15

Surface acres = 0.25
Length = 1.0 mile
Gradient = 30 ft/mile
Water: Clear, fertile
Direction of flow: Southeast
Tributary of: Unknown Creek T6N, R12E, 13-5
Bottom types: Gravel, sand, detritus
Fishery: Forage
Access: One county highway crossing
Comments: Good bank cover

13-5

Surface acres = 1.2
Length = 2.5 miles
Gradient = 24 ft/mile
Water: Clear, very hard
Direction of flow: Northeast
Tributary of: Koshkonong Creek
Bottom types: Gravel, rubble, detritus
Fishery: Forage
Access: Three town road crossings
Comments: Partially diverted to two private ponds

Vermont - T7N, R6E

7-16

Surface acres = 0.2
Length = 1 mile
Gradient = 70 ft/mile
Water: Clear
Direction of flow: Northeast
Tributary of: East Branch Blue Mounds Creek
Bottom types: Sand, silt, detritus
Fishery: Forage
Access: Two road crossings
Comments: Very low flow

21-15

Surface acres = 0.06
Length = 1 mile
Gradient = 80 ft/mile
Water: Clear, alkaline
Direction of flow: Northeast
Tributary of: Elvers Creek
Bottom types: Gravel, sand
Fishery: Forage
Access: One county highway crossing
Comments: Spring fed, low flow

28-1

Surface acres = 0.2
Length = 2 miles
Gradient = 60 ft/mile
Water: Clear, hard
Direction of flow: West
Tributary of: Elvers Creek
Bottom types: Gravel, detritus
Fishery: Forage
Access: One county highway crossing
Comments: Good bank cover

28-4

Surface acres = 0.25
Length = 1 mile
Gradient = 80 ft/mile
Water: Clear, hard
Direction of flow: Northeast
Tributary of: Elvers Creek
Bottom types: Gravel, rubble, sand
Fishery: Forage
Access: Two town road crossings
Comments: Several springs, good bank cover

Cross Plains - T7N, R7E

5-1

Surface acres = 0.5
Length = 4 miles
Gradient = 35 ft/mile
Water: Clear, very hard
Direction of flow: South
Tributary of: Black Earth Creek
Bottom types: Gravel, sand, detritus
Fishery: Forage
Access: Four road crossings
Comments: Spring fed, stream overgrown with grasses

Blooming Grove - T7N, R10E

28-3

Surface acres = 3
Length = 4 miles
Gradient = 7 ft/mile
Water: Turbid
Direction of flow: South
Tributary of: Yahara River - Upper Mud Lake
Bottom types: Silt, muck, detritus
Fishery: Forage
Access: Many road, street crossings
Comments: Evidence of municipal pollution

28-4

Surface acres = 1.3
Length = 0.5 mile
Gradient = 3 ft/mile
Water: Clear, very fertile
Direction of flow: Southwest
Tributary of: Yahara River - Upper Mud Lake
Bottom types: Silt, detritus
Fishery: Forage
Access: None
Comments: Drainage ditch, possible value as spawning grounds for warm water game fish

33-3

Surface acres = 1.4
Length = 4 miles
Gradient = 4 ft/mile
Water: Clear, very hard, fertile
Direction of flow: Southwest
Tributary of: Yahara River - Lake Waubesa
Bottom types: Silt, detritus, rubble
Fishery: Forage
Access: Many municipal road crossings
Comments: Moderate bank erosion

Cottage Grove - T7N, R11E

13-3

Surface acres = 4.3
Length = 6 miles
Gradient = 5 ft/mile
Water: Turbid, hard
Direction of flow: South
Tributary of: Koshkonong Creek
Bottom types: Sand, silt, hardpan
Fishery: Forage
Access: Two road crossings
Comments: Drainage ditch

14-7

Surface acres = 0.75
Length = 1.5 miles
Gradient = 7 ft/mile
Water: Turbid, very hard, fertile
Direction of flow: East
Tributary of: Koshkonong Creek
Bottom types: Gravel, silt
Fishery: Forage
Access: None
Comments: Drainage ditch, very low flow

17-10

Surface acres = 0.7
Length = 3 miles
Gradient = 13 ft/mile
Water: Clear, very hard
Direction of flow: Southwest
Tributary of: Door Creek
Bottom types: Gravel, rubble
Fishery: Forage
Access: Two road crossings
Comments: Moderate bank erosion

17-10

Surface acres = 2.5
Length = 2 miles
Gradient = 12 ft/mile
Water: Turbid, hard, fertile
Direction of flow: Southeast
Tributary of: Door Creek
Bottom types: Hardpan, silt, detritus
Fishery: Forage
Access: Four town road crossings
Comments: Drainage ditch

Medina - T8N, R12E

9-12

Surface acres = 0.1
Length = 1 mile
Gradient = 3 ft/mile
Water: Clear, very hard
Direction of flow: North
Tributary of: Maunesha River - Marshall Millpond
Bottom types: Gravel, sand
Fishery: Forage
Access: One county road crossing
Comments: Low flow, overgrown with grasses

Roxbury - T9N, R7E

16-11

Surface acres = 0.3
Length = 3 miles
Gradient = 12 ft/mile
Water: Clear, fertile
Direction of flow: Northwest
Tributary of: Roxbury Creek
Bottom types: Sand, rubble, detritus
Fishery: Forage
Access: Three road crossings

Bristol - T9N, R11E

10-12

Surface acres = 0.2
Length = 2 miles
Gradient = 12 ft/mile
Water: Clear, fertile
Direction of flow: Southeast
Tributary of: Maunesha River
Bottom types: Sand, gravel, detritus
Fishery: Forage
Access: One town road crossing

14-9

Surface acres = 0.5
Length = 1.5 miles
Gradient = 16 ft/mile
Water: Turbid
Direction of flow: Southwest
Tributary of: Maunesha River
Bottom types: Sand, silt, rubble
Fishery: Forage
Access: Two road crossings

15-1

Surface acres = 1.2
Length = 2 miles
Gradient = 10 ft/mile
Water: Clear, very hard
Direction of flow: Northeast
Tributary of: Maunesha River
Bottom types: Sand, gravel, detritus
Fishery: Forage
Access: Two town road crossings
Comments: Watershed intensively farmed

York - T9N, R12E

32-11

Surface acres = 4.8
Length = 4 miles
Gradient = 13 ft/mile
Water: Turbid, fertile
Direction of flow: Northeast
Tributary of: Maunesha River
Bottom types: Hardpan, silt, muck
Fishery: Forage
Access: One town road
Comments: Drainage ditch

FARM PONDS

Primrose - T5N, R7E

9-1

Surface acres = 0.75
Maximum depth = 14 ft
Type: Excavated
Fishery: No information

11-6

Surface acres = 2
Maximum depth = 12 ft
Type: Excavated
Fishery: Warm water

32-6

Surface acres = 0.3
Maximum depth = 12 ft
Type: Excavated and dammed
Fishery: No information

Montrose - T5N, R8E

14-4

Surface acres = 0.5
Maximum depth = 12 ft
Type: Excavated
Fishery: Bass

27-10

Surface acres = 0.25
Maximum depth = 14 ft
Type: Excavated
Fishery: No information

31-15

Surface acres = 0.25
Maximum depth = 8 ft
Type: Excavated and dammed
Fishery: Perch

Oregon - T5N, R9E

9-9

Surface acres = 0.4
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

20-6 (2)

Surface acres = 0.4 and 0.3
Maximum depth = 16 and 10 ft
Type: Excavated
Fishery: Warm water

31-10

Surface acres = 0.4
Maximum depth = 12 ft
Type: Excavated
Fishery: Warm water

Rutland - T5N, R10E

16-8

Surface acres = 0.3
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

17-10

Surface acres = 0.3
Maximum depth = 10 ft
Type: Excavated and dammed
Fishery: Trout

18-13

Surface acres = 0.4
Maximum depth = 3 ft
Type: Excavated
Fishery: None - winterkill

19-1 (2)

Surface acres = 0.3 each
Maximum depth = 13 ft
Type: Excavated
Fishery: Warm water

20-9 (2)

Surface acres = 0.25 each
Maximum depth = 10 ft
Type: Excavated and dammed
Fishery: Bass

23-15 (2)

Surface acres = 0.5 each
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

25-6 & 7 (7)

Surface acres = 0.3 each
Maximum depth = 10 ft
Type: Excavated
Fishery: Warm water

32-2

Surface acres = 0.3
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

Dunkirk - T5N, R11E

3-10

Surface acres = 1
Maximum depth = 2 ft
Type: Natural marsh
Fishery: None - winterkill

4-13 (2)

Surface acres = 0.3 each
Maximum depth = 10 ft
Type: Excavated
Fishery: Bass

19-3

Surface acres = 0.25
Maximum depth = 3 ft
Type: Excavated
Fishery: No information

19-12

Surface acres = 0.3
Maximum depth = 25 ft
Type: Excavated
Fishery: No information

29-7

Surface acres = 2
Maximum depth = 3 ft
Type: Natural marsh
Fishery: None - winterkill

35-3 (3)

Surface acres = 0.3, 0.3 and 0.1
Maximum depth = 3 ft
Type: Natural potholes
Fishery: None - winterkill

35-9

Surface acres = 0.3
Maximum depth = 8 ft
Type: Excavated
Fishery: Warm water

35-12

Surface acres = 0.3
Maximum depth = 12 ft
Type: Excavated
Fishery: Trout

Albion - T5N, R12E

2-9

Surface acres = 0.25
Maximum depth = 8 ft
Type: Excavated and dammed
Fishery: No information

4-1

Surface acres = 2
Maximum depth = 15 ft
Type: Excavated
Fishery: No information

8-5

Surface acres = 0.3
Maximum depth = 4 ft
Type: Excavated and dammed
Fishery: No information

8-6 (2)

Surface acres = 1 each
Maximum depth = 10 ft
Type: Excavated
Fishery: Bass

16-5

Surface acres = 1
Maximum depth = 2 ft
Type: Natural
Fishery: None - winterkill

18-7

Surface acres = 1
Maximum depth = 4 ft
Type: Natural
Fishery: Warm water

26-14 (5)

Surface acres = 0.4 each
Maximum depth = 14 ft
Type: Excavated and dammed
Fishery: Trout, bluegill, bass

31-3

Surface acres = 1
Maximum depth = 7 ft
Type: Excavated
Fishery: No information

32-6

Surface acres = 0.75
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

Blue Mounds - T6N, R6E

21-13

Surface acres = 0.75
Maximum depth = 10 ft
Type: Excavated and dammed
Fishery: Warm water

Springdale - T6N, R7E

15-1

Surface acres = 2
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

Dunn - T6N, R10E

16-4

Surface acres = 0.3
Maximum depth = 11 ft
Type: Excavated
Fishery: Warm water

18-9

Surface acres = 0.4
Maximum depth = 15 ft
Type: Excavated
Fishery: No information

20-11

Surface acres = 0.4
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

22-7

Surface acres = 0.4
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

33-16

Surface acres = 0.7 and 0.5
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

Pleasant Springs - T6N, R11E

9-8

Surface acres = 0.4
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

12-3

Surface acres = 1
Maximum depth = 14 ft
Type: Excavated
Fishery: No information

20-1

Surface acres = 0.5
Maximum depth = 9 ft
Type: Excavated
Fishery: No information

20-2

Surface acres = 0.3
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

20-4

Surface acres = 0.25
Maximum depth = 5 ft
Type: Excavated
Fishery: No information

20-5

Surface acres = 0.8
Maximum depth = 20 ft
Type: Excavated
Fishery: Bass

20-8

Surface acres = 0.4
Maximum depth = 7 ft
Type: Excavated
Fishery: Bass

Christiana - T6N, R12E

4-12

Surface acres = 0.75
Maximum depth = 10 ft
Type: Excavated
Fishery: Bass

5-8

Surface acres = 0.75
Maximum depth = 8 ft
Type: Excavated
Fishery: Bass

6-12

Surface acres = 0.5
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

7-7

Surface acres = 0.5
Maximum depth = 10 ft
Type: Excavated
Fishery: Warm water

7-10

Surface acres = 0.75
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

11-15

Surface acres = 0.5
Maximum depth = 4 ft
Type: Excavated
Fishery: Bass

11-16

Surface acres = 1
Maximum depth = 13 ft
Type: Excavated
Fishery: Bass

13-2

Surface acres = 0.3
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

13-15

Surface acres = 0.5
Maximum depth = 11 ft
Type: Excavated
Fishery: No information

22-14

Surface acres = 0.25
Maximum depth = 9 ft
Type: Excavated
Fishery: No information

29-12

Surface acres = 1
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

32-9

Surface acres = 0.25
Maximum depth = 4 ft
Type: Excavated
Fishery: Bass

36-15 (3)

Surface acres = 0.3, 0.3 and 0.2
Maximum depth = 14 ft
Type: Excavated and dammed
Fishery: Bass

Vermont - T7N, R6E

2-15

Surface acres = 0.75
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

25-13

Surface acres = 1
Maximum depth = 10 ft
Type: Excavated
Fishery: Bass

30-12

Surface acres = 1.5
Maximum depth = 12 ft
Type: Excavated and dammed
Fishery: No information

30-16

Surface acres = 1
Maximum depth = 10 ft
Type: Excavated
Fishery: Bass, perch

31-5

Surface acres = 0.3
Maximum depth = 10 ft
Type: Excavated and dammed
Fishery: Warm water

33-5

Surface acres = 0.5
Maximum depth = 9 ft
Type: Excavated and dammed
Fishery: No information

34-7

Surface acres = 0.5
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

Cross Plains - T7N, R7E

17-4

Surface acres = 1
Maximum depth = 14 ft
Type: Excavated
Fishery: Bass

35-9 (2)

Surface acres = 0.75 each
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

Middleton - T7N, R8E

12-3

Surface acres = 1.5
Maximum depth = 10 ft
Type: Excavated
Fishery: Warm water

16-1 (2)

Surface acres = 1.0 and 0.3
Maximum depth = 4 ft
Type: Excavated
Fishery: No information

17-2

Surface acres = 0.5
Maximum depth = 16 ft
Type: Excavated
Fishery: Warm water

36-6

Surface acres = 0.6
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

36-7

Surface acres = 1.8
Maximum depth = 10 ft
Type: Excavated
Fishery: Warm water

Madison - T7N, R9E

12-15

Surface acres = 4
Maximum depth = 8 ft
Type: Excavated and dammed
Fishery: Warm water

15-6

Surface acres = 2
Maximum depth = 2 ft
Type: Natural
Fishery: None - winterkill

25-10

Surface acres = 4
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

27-16 (8)

Surface acres = 6 @ 0.1 and 2 @ 0.8
Maximum depth = 6 ft
Type: Excavated
Fishery: Warm water

28-12

Surface acres = 0.25
Maximum depth = 4 ft
Type: Excavated
Fishery: No information

31-1

Surface acres = 10
Maximum depth = 6 ft
Type: Natural and excavated
Fishery: No information

33-13

Surface acres = 1
Maximum depth = 8 ft
Type: Excavated and dammed
Fishery: No information

34-2

Surface acres = 5
Maximum depth = 4 ft
Type: Excavated and dammed
Fishery: Warm water

Blooming Grove - T7N, R10E

10-11

Surface acres = 10
Maximum depth = 6 ft
Type: Excavated
Fishery: No information

25-9 (2)

Surface acres = 0.3 and 0.8
Maximum depth = 7 ft
Type: Excavated
Fishery: No information

Cottage Grove - T7N, R11E

6-7

Surface acres = 0.6
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

11-1

Surface acres = 0.8
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

16-1

Surface acres = 0.7
Maximum depth = 6 ft
Type: Excavated
Fishery: No information

19-9

Surface acres = 1
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

21-5

Surface acres = 1
Maximum depth = 9 ft
Type: Excavated
Fishery: No information

24-6

Surface acres = 0.75
Maximum depth = 14 ft
Type: Excavated
Fishery: Warm water

24-11

Surface acres = 0.2
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

25-13

Surface acres = 0.5
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

26-5

Surface acres = 0.75
Maximum depth = 9 ft
Type: Excavated
Fishery: No information

29-11

Surface acres = 0.25
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

30-4

Surface acres = 0.5
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

34-1

Surface acres = 3
Maximum depth = 6 ft
Type: Excavated
Fishery: No information

Deerfield - T7N, R12E

16-4

Surface acres = 0.5
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

25-5

Surface acres = 0.75
Maximum depth = 5 ft
Type: Excavated
Fishery: No information

Black Earth - south part
Mazomanie - T8N, R6E

3-14

Surface acres = 0.5
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

Berry - T8N, R7E

6-5 East

Surface acres = 0.4
Maximum depth = 7 ft
Type: Excavated and dammed
Fishery: Trout

6-5 West

Surface acres = 0.6
Maximum depth = 11 ft
Type: Excavated and dammed
Fishery: Warm water

6-6 North

Surface acres = 0.3
Maximum depth = 8 ft
Type: Excavated
Fishery: Warm water

6-6 South

Surface acres = 0.25
Maximum depth = 5 ft
Type: Excavated
Fishery: Warm water

18-16

Surface acres = 0.5
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

36-4

Surface acres = 0.5
Maximum depth = 8 ft
Type: Excavated
Fishery: Warm water

Westport - T8N, R9E

8-14

Surface acres = 2
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

31-3

Surface acres = 0.3
Maximum depth = 9 ft
Type: Excavated
Fishery: No information

Burke - T8N, R10E

3-6

Surface acres = 0.2
Maximum depth = 5 ft
Type: Excavated
Fishery: No information

5-16

Surface acres = 0.3
Maximum depth = 6 ft
Type: Excavated and dammed
Fishery: No information

8-5

Surface acres = 0.3
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

10-14

Surface acres = 0.6
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

13-16 (2)

Surface acres = 1 each
Maximum depth = 16 ft
Type: Excavated - gravel pits
Fishery: Warm water

16-1

Surface acres = 0.5
Maximum depth = 14 ft
Type: Excavated
Fishery: Bass, perch

18-13

Surface acres = 6
Maximum depth = 4 ft
Type: Excavated and dammed
Fishery: Warm water

Medina - T8N, R12E

5-16

Surface acres = 0.3
Maximum depth = 5 ft
Type: Excavated
Fishery: No information

12-11

Surface acres = 0.25
Maximum depth = 10 ft
Type: Excavated
Fishery: Bass

15-13

Surface acres = 1
Maximum depth = 10 ft
Type: Excavated and dammed
Fishery: No information

Roxbury - T9N, R7E

20-7

Surface acres = 5
Maximum depth = 8 ft
Type: Excavated
Fishery: Warm water

28-4

Surface acres = 2
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

31-12

Surface acres = 0.5
Maximum depth = 13 ft
Type: Excavated
Fishery: No information

Dane - T9N, R8E

13-15

Surface acres = 2
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

24-5

Surface acres = 0.4
Maximum depth = 14 ft
Type: Excavated
Fishery: No information

35-6

Surface acres = 0.6
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

36-10

Surface acres = 2
Maximum depth = 3 ft
Type: Natural
Fishery: No information

Vienna - T9N, R9E

10-4

Surface acres = 0.3
Maximum depth = 4 ft
Type: Excavated
Fishery: No information

13-15 (2)

Surface acres = 2 and 3
Maximum depth = 10 ft
Type: Excavated
Fishery: No information

Windsor - T9N, R10E

19-4

Surface acres = 2
Maximum depth = 12 ft
Type: Excavated and dammed
Fishery: No information

30-3

Surface acres = 0.5
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

31-3

Surface acres = 0.8
Maximum depth = 6 ft
Type: Excavated
Fishery: No information

34-3

Surface acres = 0.5
Maximum depth = 12 ft
Type: Excavated
Fishery: Warm water

Bristol - T9N, R11E

11-14

Surface acres = 0.6
Maximum depth = 12 ft
Type: Excavated
Fishery: No information

20-15

Surface acres = 0.3
Maximum depth = 7 ft
Type: Excavated
Fishery: No information

30-5

Surface acres = 0.3
Maximum depth = 6 ft
Type: Excavated and dammed
Fishery: No information

York - T9N, R12E

16-12

Surface acres = 0.3
Maximum depth = 8 ft
Type: Excavated
Fishery: No information

POTHOLE AND MARSH PONDS

Oregon - T5N, R9E

7-10 (Peterson Pond)

Surface acres = 3.1
SDF = 1.66
Maximum depth = 2 ft
Water: Clear, moderate fertility, seepage
Fishery: Not managed, winterkill conditions
Access: None

9-3 (Maher Pond)

Surface acres = 6.2
SDF = 1.09
Maximum depth = 4 ft
Water: Clear, soft, infertile
Fishery: Winterkill conditions
Access: None

26-8 (Ortman Pond)

Surface acres = 4.6
SDF = 1.26
Maximum depth = 4 ft
Water: Soft, acidic, seepage lake
Fishery: Winterkill conditions
Access: None
Comments: Relatively undisturbed pond

26-9 (Mortenson Pond)

Surface acres = 11.2
SDF = 1.38
Maximum depth = 3 ft
Water: Soft, acidic, light brown, seepage
Fishery: Winterkill conditions
Access: None
Comments: Muskrats present, much emergent vegetation

3 (Fox Pond)

Surface acres = 5.3
No other information

28-3 (Christenson Pond)

Surface acres = 2.5
No other information

Rutland - T5N, R10E

31-3 (Ames Pond)

Surface acres = 6.1
SDF = 1.47
Maximum depth = 4 ft
Water: Clear, acidic, seepage
Fishery: Winterkill conditions
Access: None
Comments: Shows considerable variation in water level

Dunkirk - T5N, R11E

36-7 (Bower Pond)

Surface acres = 12.5
SDF = 1.17
Maximum depth = 15 ft
Water: Clear, seepage
Fishery: Not managed, no information
Access: None
Comments: Surrounding land privately owned

Albion - T5N, R12E

34-9 (Mud Lake, Edgerton Pond)

Surface acres = 5.1
SDF = 1.20
Maximum depth = 5 ft
Water: Seepage lake
Fishery: Winterkill conditions
Access: None
Comments: Large proportion of surface area covered with duckweed

24-12 (Turtle Lake)

Surface acres = 15
No other information

Verona - T6N, R8E

22-14

Surface acres = 4.6
SDF = 1.07
Water: Alkaline, moderately fertile, seepage
Fishery: Smallmouth bass, largemouth bass, green sunfish
Access: None
Comments: Private fish hatchery, old gravel pit

Fitchburg - T6N, R9E

5-3 (Seminole Pond)

Surface acres = 13.8
SDF = 1.75
Maximum depth = 4 ft
Water: Very soft, seepage lake
Fishery: Winterkill conditions
Access: City park
Comments: Waterfowl nesting area, muskrats also present

26-16 (Section 26 Pond)

Surface acres = 4.4
SDF = 1.43
Maximum depth = 8 ft
Water: Clear, soft, seepage
Fishery: Not managed, no information
Access: None
Comments: Located on land owned by the State Department of Health and Social Services

33-7 (Anderson Pond)

Surface acres = 16.0
Fishery: Bullheads
Comments: Waterfowl feeding area
No other information

35-2 (Section 35 Pond)

Surface acres = 12.4
SDF = 1.30
Maximum depth = 4 ft
Water: Clear, seepage
Fishery: Winterkill conditions
Access: None
Comments: Located on land owned by the State Department of Health and Social Services

Cross Plains - T7N, R7E

11-9 (Gallagher Pond)

Surface acres = 5
SDF = 1.82
Water: Clear, fertile, drained
Fishery: No information
Access: None
Comments: Private gravel pit contributing significant flow to Black Earth Creek

Middleton - T7N, R8E

2-1 (Dreher Pond)

Surface acres = 12.7
SDF = 1.56
Maximum depth = 4 ft
Water: Light brown color
Fishery: Not managed, winterkill conditions
Access: None
Comments: Large amounts of emergent vegetation

11-16 (Tiedeman Pond)

Surface acres = 8.8
SDF = 2.26
Maximum depth = 6 ft
Water: Light brown, seepage
Fishery: Not managed, no information, winterkill
Access: City park - Middleton
Comments: Used by waterfowl and muskrats, managed as a conservancy area by the City of Middleton

10 (Techam Pond)

Surface acres = 13.0
Maximum depth = 3 ft
Water: Seepage

14 (Voss Pond or Strickers Pond)

Surface acres = 25.0
Maximum depth = 4.5 ft
Water: Seepage

14-2 (Dauck Pond)

Surface acres = 0.6
SDF = 1.20
Maximum depth = 1.5 ft
Water: Dark brown, alkaline, seepage
Fishery: Winterkill conditions
Access: None
Comments: Private development encroaching on shoreline, in 1961 Surface Water Inventory Report listed as 13 surface acres

Madison - T7N, R9E

31-1 (Westside Pond)

Surface acres = 14.9
SDF = 3.14
Maximum depth = 6 ft
Water: Clear, soft, drainage
Fishery: Bullheads
Access: City park and golf course
Comments: An excavated pond in the golf course is connected to this shallow body of water

Berry - T8N, R7E

3-5 (Bruenig Pond)

Surface acres = 8.1
SDF = 1.28
Maximum depth = 10 ft
Water: Clear, basic, seepage
Fishery: Not managed, no information
Access: None
Comments: Used by domesticated waterfowl

Springfield - T8N, R8E

2-7 (Barbian Pond)

Surface acres = 6.8
SDF = 1.56
Maximum depth = 3 ft
Water: Spring fed
Fishery: Winterkill conditions
Access: None
Comments: Numerous muskrats present

4-7 (Diedrich Pond)

Surface acres = 19.8
SDF = 1.57
Maximum depth = 6 ft
Water: Clear, moderately fertile
Fishery: Not managed, no information
Access: None

5-16 (Springfield Pond)

Surface acres = 2.9
SDF = 1.84
Maximum depth = 12 ft
Water: No data, seepage
Fishery: Not managed, no information
Access: None
Comments: Chemical data not obtained

8-13 (L. Buechner Pond)

Surface acres = .93
SDF = 1.42
Maximum depth = 8 ft
Water: Clear, seepage
Fishery: Not managed, no information
Access: None
Comments: Chemical data not obtained

9-7 (Krutchen Pond)

Surface acres = 1.8
SDF = 1.49
Maximum depth = 5 ft
Water: Clear, slightly acidic, seepage
Fishery: Panfish, not managed
Access: None
Comments: Shallow marsh pond

16-11 (Dahmen Pond)

Surface acres = 13.9
SDF = 1.34
Maximum depth = 4 ft
Water: Clear, slightly acidic, seepage
Fishery: Not managed, no information
Access: None
Comments: Has been dredged in the past

18-3 (Meier Pond)

Surface acres = 8.4
SDF = 2.14
Maximum depth = 6 ft
Water: Clear, alkaline, seepage
Fishery: Not managed, no information
Access: None
Comments: Pothole pond

19-2 (C. Buechner Pond)

Surface acres = 11.7
SDF = 1.41
Maximum depth = 3 ft
Water: Clear, seepage
Fishery: Winterkill conditions
Access: None
Comments: Water level fluctuates

25-14 (Dorn Pond)

Surface acres = 8.1
SDF = 1.28
Maximum depth = 4 ft
Water: Clear, acidic, infertile, seepage
Fishery: Winterkill conditions
Access: None
Comments: Large numbers of muskrats present

Westport - T8N, R9E

32-12 (O'Connell Pond)

Surface acres = 5.3
SDF = 1.30
Maximum depth = 6 ft
Water: Very alkaline, clear, seepage
Fishery: Panfish reportedly present
Access: None
Comments: Relatively undisturbed pond

SUMMARY OF DATA GATHERED

Quantitative Overview

The total surface area of the waters considered in this inventory is about 23,100 acres. There are about 20,750 acres in 64 lakes, 2,212 acres in 109 streams, and 138 acres in 166 farm ponds. The total acreage may actually be slightly higher due to some very small farm ponds, unnamed pothole and marsh ponds, and intermittent streams that may have been overlooked.

Table 3 gives lake morphometry by size class. Sixty-one percent of all Dane County lakes have a surface area of over 20 acres. All of the unnamed lakes have a surface area of less than 20 acres, with 66% under 10 acres. Of the named lakes, 80% have a surface area greater than 20 acres. Table 4 shows access information by size class. Access is best for lakes over 50 acres, especially the Madison lakes. Seventy-four percent of all county lakes are less than 10 ft deep, but these lakes comprise only 10% of the total lake surface area (Table 5). Farm ponds average 0.8 acres and have a mean maximum depth of 9.2 ft. Only 5% are natural basins; 23 are used as private fish hatcheries. Public access is not readily available as these ponds are all on private lands.

Table 6 shows that 80.7% of the streams in the county are less than 10 ft wide and comprise over half the total stream miles, but only 11% of the total stream surface area. On the other hand, only two streams, the Yahara and the Wisconsin rivers, with just 10% of the total stream length make up 68% of the total stream area. Although 56% of the county's stream miles are in the 88 streams under 10 ft wide, only 30% of the total public stream frontage lies along these waters, while 70% lies along the remaining 21 streams.

Water Quality

All surface waters studied were tested for levels of pH, alkalinity, specific conductivity, and chloride between September and November 1981. Water color was also noted in all lakes and in the unnamed streams. In addition, most of the named lakes were classified according to two different trophic indices. This information is summarized in Table 7.

Alkalinity is a measure of a water's quantitative capacity to neutralize a strong acid to a designated pH (Am. Public Health Assoc. 1976). This buffering capacity is primarily a function of bicarbonate, carbonate, and hydroxide ions. Since the availability of carbon is a primary factor in photosynthesis, alkalinity can be considered an indicator of water fertility. Due to the geology of the area, Dane County waters are naturally high in carbonates. Mean alkalinity for all county waters as determined by the methyl purple method (MPA) is 200 ppm with a range of 17-640 ppm. Waters having alkalinities between 100 and 200 ppm are considered hard, and those greater than 200 ppm are very hard. Stream alkalinities are more than twice as high as lake alkalinities. Higher concentrations of carbonates occur in streams because there is more ground water recruitment and contact with soil minerals. Relative contributions of surface runoff and rainfall are less in lakes and more fallout of dissolved materials through precipitation or settling of organic growth in the depths occurs, giving lakes lower alkalinities and conductivities.

Specific conductivity measures the concentration of electrolytes, or ionized substances that are dissolved in water, as the potential to carry an electrical current. A standard temperature of 77 F is used in this analysis because conductivity increases with temperature. Since nutrients and minerals exist as ions in water, conductivity can be used as an indicator of fertility. Runoff from agricultural lands and other sources of pollution can raise conductivity levels significantly. The mean conductivity of all Dane County waters is 629 umhos/cm with a range of 43-3,500 μmhos/cm. As with alkalinity, mean conductivity is more than twice as high in streams. This can again be attributed to recruitment of highly mineralized ground water by streams. Cline (1965) found a mean specific conductivity of 507 μmhos/cm in Dane County ground water.

A measure of the degree of acidity or alkalinity of waters is termed pH, and it is expressed as the negative logarithm of the hydrogen ion concentration. Values below the neutral level of 7 are acidic and those above 7 are alkaline or basic. The mean pH for all county surface waters is 7.7. A value of 7.5 is the average pH for Dane County ground water (Cline 1965). Stream pH ranges from 7.2-8.3 with a mean of 7.6. Lakes have a wider range of 6.5-9.4 with a similar mean of 7.8. Farm ponds have pH values anywhere from 6.5-10.0, but have a mean pH of 7.9. Most fish can easily tolerate pH levels ranging from 6.5-9.0 (Dane Cty. Reg. Plann. Comm. 1979c). Low and high pH values are generally not a threat to aquatic life in most surface waters of Dane County. Isolated high values in farm ponds are probably the result of localized erosion or high productivity having a greater effect on these very small basins. Acid precipitation does not produce problems in Dane County waters because of the contribution of well-buffered ground water and surface waters.

TABLE 3. Lake morphometry of Dane County lakes by size class.

Size Class (acres)	No.	% of Total	Area (acres)	% Total Area	Shoreline (miles)	% Total Shoreline
0-5	9	14	31.6	0.2	3.33	2
6-10	16	25	121.1	0.6	9.27	7
11-20	14	22	186.4	0.1	11.17	9
21-50	7	11	255.0	1.2	0.38	8
51-100	8	13	581.0	3.0	17.92	14
101-500	6	9	1,664.0	8.0	22.90	17
Over 500	4	6	17,894.0	86.0	56.70	43
Total	64		20,750.1		130.67	

TABLE 4. Access information for Dane County lakes by size class.

Size Class (acres)	Public Frontage* (miles)	% Total Public Frontage	Parking With Boat Launch	Parking Without Boat Launch	Unimproved Access	Wilderness Access	Without Public Access
0-5	0.80	3	-	1	-	-	8
6-10	2.09	6	-	2	1	2	11
11-20	4.36	14	1	-	3	-	10
21-50	4.17	13	-	-	1	2	4
51-100	4.55	14	3	1	1	-	3
101-500	7.90	24	3	-	2	-	1
Over 500	8.40	26	4	-	-	-	-
Total	32.27		11	3	9	4	37

*Does not include road crossings.

TABLE 5. Depth classes of Dane County lakes.

Maximum Depth Class (ft)	No.	% Total No.	Area (acres)	% Total Acreage	Shoreline (miles)	% Total Shoreline
Less than 5	17	27	174.9	1	11.60	9
5 to 10	29	47	1,766.8	9	45.84	35
10 to 20	8	13	283.1	1	6.31	5
20 to 50	5	8	5,234.7	25	26.38	20
Over 50	3	5	13,281.0	64	40.60	31
Totals	62		20,740.5		130.73	

TABLE 6. Number, area, length, and public frontage* of Dane County streams by average width.

Average Width (ft)	No.	% of Total	Surface Area (acres)	% Total Area	Length (miles)	% Total Length	Public Frontage* (miles)	% Total Public Frontage
Less than 10	88	80.7	236.81	11** 29[a]	316.7	56** 57[a]	21.89	30
10-19	12	11.0	170.3	8** 21[a]	103.7	18** 19[a]	18.19	24
20-39	7	6.4	292.3	13** 35[a]	92.0	16** 17[a]	15.91	21
40 and over	2	1.9	1,513** 127[a]	68** 15[a]	54** 40[a]	10** 7[a]	18.95	25
Total	109		2,212.41** 826.41[a]		566.4** 552.4[a]		74.94	

*Does not include road crossings.
**Including the Wisconsin River.
[a]Not including the Wisconsin River.

Chloride is an indicator of pollution in surface waters because it is a component of treated and untreated sewage as well as many types of industrial wastes. Although usually not a problem itself, chloride can sometimes be toxic when it reacts with ammonia to form chloramines, and it can affect the solubility of oxygen in water (Am. Public Health Assoc. 1976) Chloride concentrations range from 4.0-215 ppm in Dane County waters with a mean concentration of 19.6 ppm. The normal range for unpolluted waters is 0-10 or 15 ppm. A concentration greater than 15 indicates a potential pollution problem. Some of the highest values are found in streams that receive effluent from sewage treatment plants. In addition, several small creeks and farm ponds have excessively high chloride concentrations, probably resulting from nonpoint sources of pollution. Road salt runoff is also a significant source of chloride in some areas.

TABLE 7. Alkalinity, specific conductivity, pH, and chloride of Dane County surface waters.

	MPA Alkalinity (ppm)		Specific Conductivity (μmhos/cm at 77 F)		pH		Chloride (ppm)	
Surface Waters	Range	Mean	Range	Mean	Range	Mean	Range	Mean
Named streams	102-393	255	515-1,496	767	7.2- 8.3	7.6	7.5-150	19.3
Unnamed streams	103-640	276	493-3,500	873	7.2- 8.1	7.5	7.5-215	24.8
All streams	102-640	263	493-3,500	807	7.2- 8.3	7.6	7.5-215	21.4
Named lakes	17-308	134	139- 890	407	6.6- 9.4	8.0	7.5- 30	19.0
Unnamed lakes	34-239	89	43- 730	272	6.5- 9.2	7.5	4.0- 30	17.0
All lakes	17-308	116	43- 890	357	6.5- 9.4	7.8	4.0- 30	18.1
Farm ponds	17-443	182	88-1,700	598	6.5-10.0	7.9	7.5-127.5	18.6
All waters	17-640	200	43-3,500	629	6.5-10.0	7.7	4.0-215	19.6

Water color was noted as either clear, light brown, or turbid in all waters except the named streams and farm ponds. Sixty-six percent of small streams (10 square miles of drainage) and 79% of the unnamed lakes are clear, but only 27% of the named lakes are clear. Twenty-two percent of the small lakes and 36% of the larger lakes are moderately turbid. Turbidity is the result of either organic constituents such as leaf litter or algal blooms, or inorganic particles such as erosional sediments. When sediments settle out of the water column, changes will occur in the substrate composition which may render it less suitable to certain fish species. The oxygen demand of decomposing organic particles can significantly reduce the concentration of dissolved oxygen that is available to aquatic organisms. Turbidity can also limit primary productivity by reducing the amount of sunlight entering the water.

A Lake Condition Index (LCI) was developed by Uttormark and Wall (1975) for the purpose of classifying lakes according to their general trophic characteristics. Simply stated, it is a measure of water clarity. The index is an integration of four analytical categories for which penalty points are assigned for a given lake. The categories are: hypolimnetic dissolved oxygen deficit (0-6 points), transparency (0-4 points), fishkills (0-4 points), and use impairments such as macrophyte growth (0-9 points). The points for each category are added together to obtain the LCI value which relates to conventional trophic classifications as follows:

0-1 very oligotrophic, or nonfertile

2-4 oligotrophic

5-9 mesotrophic

10-12 eutrophic

13-23 very eutrophic, or highly fertile

All named lakes in Dane County were rated according to their LCI values, which range from 3-18. One is oligotrophic, 6 are mesotrophic, 3 are eutrophic, and 24 are very eutrophic.

The Trophic State Index (TSI) uses equations developed by Carlson (1977) that relate either Secchi disc depth, chlorophyll a, or phosphorous concentration to algal biomass to give an index number ranging from 0-100 (zero being the most oligotrophic). Secchi disc depth records (Dep. Nat. Resour. water files) were used to calculate the TSI values for 14 named lakes in Dane County with the following equation: $TSI = 10(6-\log_2 SD)$ where SD = Secchi disc depth (meters).

TSI values range from 43-93, indicating that all the lakes are eutrophic. Although the two indices are not proportional to one another, each is a valid method for the evaluation of lake trophic status.

Wetland Resources

The gentle topography of the eastern 2/3 of Dane County was very conducive to the formation of large, basin type wetlands and lakes. The steep topography and dendritic drainage pattern in the driftless area of the county precludes most of the basin type wetlands, leaving mostly river marshes. Original wetland acreage for Dane County is unknown. Frolick (1941) estimated a loss of 36,000 wetland acres between 1901 and 1926 and the Wisconsin Conservation Department (1961) reported a loss of 22,678 acres between 1939 and 1960. As of 1960, 44,599 acres remained (Wis. Conserv. Dep. 1961), and the present county acreage is probably much less than the 1960 figure. Over 48% of the county's wetlands in 1960 were of a nature which would make drainage feasible (Wis. Conserv. Dep. 1961). Draining of this land would leave only 23% of the 1,900 acreage. Most wetland drainage has occurred in the glaciated portion of the county where soils are good and land values are highest. Simple addition of these numbers reveals at least 103,000 wetland acres in the county in the 1900's.

Drainage is not the only threat to remaining wetlands. Grazing, damming of outlets to create recreation areas, and urban sprawl can be equally destructive to wetlands. Several large marshes are now in public ownership and plans are underway for the acquisition of several others. Marshes are valuable, not only aesthetically, but as wildlife habitat. They serve as nesting, resting, and feeding areas for migrating waterfowl, provide spawning sites for northern pike and other fishes, and act as giant filters for aquatic systems by removing silt and draining flood waters.

Fishery Resources

Fish species distribution is detailed in Appendix E. The locations of fisheries in Dane County are summarized on a county map in Appendix G (Fig. 9).

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Fishery Resources

Fish species distribution is detailed in Appendix E. The locations of fisheries in Dane County are summarized on a county map in Appendix G (Fig. 9).

Trout have been found in 25 of the county's streams; however, only the 19 streams shown in Table 8 have populations large enough to support a fishery. A total of 83.6 miles are classified as trout water consisting of 13.7 miles of Class I, 53.9 miles of Class II, and 16.0 miles of Class III water. Brook trout have been found in two streams, but only Story Creek is managed for this species. Black Earth Creek, Fryes Feeder, Mount Vernon Creek, Primrose Branch, Rutland Branch, Garfoot Creek, and Story Creek are the only streams showing significant natural reproduction of brown trout. Stocking of rainbow and brown trout provides fishing in the rest of the trout streams in the county. Stewart Lake and Salmo Pond are stocked with brown and rainbow trout and also provide trout fishing opportunities. Standing crops of 200-400 lb/acre of wild brown trout have been determined for portions of Black Earth and Mount Vernon creeks.

Northern pike are present in 14 streams and 14 lakes. All of these lakes except Fishers Lake support a valuable fishery. Koshkonong and Six Mile creeks and the Maunesha, Wisconsin and Yahara rivers support populations of northern pike. Northerns found in the smaller streams usually are not large enough or plentiful enough to provide rewarding fishing.

True muskies are found in Lake Wingra and hybrid ("tiger") muskies are found in Lakes Wingra, Waubesa, Monona, and Mendota and in the Wisconsin River, Pheasant Branch, and Murphy Creek. Recently stocked, these fish are just beginning to provide good fishing opportunities in the Madison lakes. Several fish over 40 inches were caught in 1980 and 1981.

Largemouth bass are fairly abundant in 14 lakes and present in 14 rivers. Most bass fishing in the county is directed toward the largemouth. Smallmouth bass are less common, though the Sugar River provides fair fishing.

Concentrated spring walleye fishing occurs below the dam at Prairie du Sac on the Wisconsin River, taking advantage of spawning concentrations. The lakes of the Yahara River system also support populations of walleye, though their abundance varies with year class strength and year classes are highly variable.

Panfish, including bluegills, perch, crappies, white bass, and bullheads are usually found in lakes that do not experience serious winterkills and in the slower moving streams and rivers. Crappie and perch fishing on Lakes Mendota and Monona is excellent. Some good-sized bluegills are found in all four of the larger Madison lakes. Lake Wingra's panfish population is overcrowded and the bluegills are generally slow growing. Crappies, however, have shown average growth in Lake Wingra.

White suckers are the most widely distributed fish in the county and are found in 54 named streams and 16 named lakes. Fishing pressure for white suckers is light in the county except in Lake Belle View where they are highly valued by local residents. Minnow species are occasionally harvested commercially and sold to bait dealers.

Cisco have made a strong comeback in Lakes Mendota and Monona in recent years. Fishermen harvest cisco while ice fishing or by dipping for them during the spawning season below the Tenney Locks. Cisco also inhabit Fish Lake.

Contracts to harvest rough fish are issued annually for Lakes Mendota, Monona, Waubesa, and Kegonsa. Most of the fish harvested are carp followed by buffalo, freshwater drum, suckers, and quillback (Table 9).

TABLE 8. Trout streams of Dane County.

Stream Name	Stream Portion With Trout	Brook	Brown	Rainbow	Class I Portion	Miles	Class II Portion	Miles	Class III Portion	Miles	Public Lands	Public Frontage (miles)
Black Earth Creek	To junction with Vermont Creek	N*	N	N	Above mouth of Garfoot Creek	6.0	Below mouth of Garfoot Creek	6.0	--		Yes	4.6
Blue Mounds Branch	All		X		--		All	4.0	--		No	--
Blue Mounds Creek East Branch	All		X	X	--		--		All	5.0	Yes	0.9
Bohn Creek	All		X	X	--		All			3.0	Yes	1.0
Dunlap Creek	Above DNR land Sec. 34 and 35, T9N, R6E	X			--		All	3.5	--		No	--
Elvers Creek	All		X	X	--			5.0	--		Yes	0.5
Flynn Creek	All		X		--		All	2.5	--		No	--
Fryes Feeder	All		N		All	1.5	--		--		No	--
Garfoot Creek	All		N		--		All	3.8	--		Yes	0.5
Kittleson Valley Creek	All		X		--		Above Hwy. H	5.0	Below Hwy. H	2.0	No	--
Mount Vernon Creek	All	N	N	N	Above Sec. 2, T5N, R7E	4.0	Below Sec. 2, T5N, R7E	4.0	--		Yes	2.8
Primrose Branch	All	X	N	X	--		All	3.0	--		No	--
Rutland Branch	All		N	X	--	2.2	All		--		Yes	0.7
Ryan Creek	All		X	X	--		All	3.0	--		No	--
Spring Creek (Lodi Creek)	All		X		--		All	4.0	--		Yes	3.2
Story Creek	All	X	N	X				2.6			Yes	3.6
Sugar River West Branch	Above Hwy. PB to Hwy. 92	X	X	X	--		All	5.5	--		Yes	0.1
Token Creek	Above Hwy. 51 to Portage Road		X		--		--		All	2.0	Yes	3.2
Vermont Creek	All		X		--		Above Sec. 2, T7N, R6E	2.0	Below Sec. 2, T7N, R6E	4.0	Yes	0.8
Total	83.6 miles					13.7		53.9		16.0		21.9

*N denotes natural reproduction.

TABLE 9. Pounds of rough fish removed by contract fishermen from the Madison lakes and the Yahara River, 1976-81.

Year	Water Body	Carp	Buffalo	Freshwater Drum	Quillback	Garfish	Total
1976	Lake Kegonsa	15,650	3,957				19,607
	Lake Mendota	75,410	6,816				82,230
	Lake Waubesa	1,280		4			1,280
Total		92,340	10,773	4			103,117
1977	Lake Kegonsa	7,318	200		108		7,626
	Lake Mendota	129,050	3,350	60			132,460
	Lake Monona	79,505	15,040	25		550	95,120
Total		215,873	18,590	85	108	550	235,206
1978	Lake Kegonsa	7,000	8,230				15,230
	Lake Mendota	1,500	300				1,800
	Lake Monona	700	1,700				2,400
Total		9,200	10,230				19,430
1979	Lake Kegonsa	331,525	10,980	600			343,105
	Lake Mendota	51,450	2,640	50			54,140
	Lake Monona	2,050	1,200				3,250
	Lake Waubesa	220,500	3,160	2,600			226,260
Total		605,525	17,980	3,250			626,755
1980	Lake Kegonsa	100,050	3,725				103,775
	Lake Monona	750	100				850
	Yahara River		75				75
Total		100,800	3,900				104,700
1981	Lake Mendota	300					300
Total		300					300

Aesthetic Value

The surface waters of Dane County offer a great variety of aesthetic pleasures and enjoyment. In the western part of the county lies part of the driftless area where clear trout streams begin in hilly, forested terrain and wind their way through widened valleys toward the Sugar, Pecatonica, and Wisconsin rivers. Besides offering boating, fishing, and swimming, the Madison lakes provide open space within the busy metropolitan area. The many county and city parks on the lake shores are available for a lunch hour jog or an evening stroll while the setting sun reflects on the water. The county's nine Public Hunting and Fishing areas, which include diverse wetland communities, are scattered over the entire county and range in size from 459 to 4,188 acres. The waterfowl, shorebirds, wildlife, and uncommon vegetation present in these areas can offer hours of discovery and enjoyment for the curious observer. The county's waters provide a broad framework for recreational activities and outdoor experiences.

Public Lands and Access

Availability and types of access found on Dane County lakes and streams and the major blocks of public land are shown in Figures 10 and 11 of Appendix G. Table 10 lists the state-owned and leased lands devoted to public wildlife and fishery areas. Public lands provide about 107 miles of frontage on Dane County lakes and streams.

With about 32 miles of public frontage, access to the county's lakes is very good. Public access, in one form or another, is available to 21 named lakes. Thirteen named lakes have improved launching sites. Of the 11 lakes over 100 acres in size, only 3 lakes--Lower Mud, Upper Mud and Crystal--do not have a public boat launching site. Lower and Upper Mud lakes, however, are accessible by boat through the Yahara River. Public access is unavailable to 14 named lakes.

With almost 75 miles of public frontage, access to the county's streams and rivers is also good. Public stream frontage is fairly equally divided among the 4 size classes: streams less than 10 ft wide have almost 22 miles (30% of the total); streams 10-19 ft wide have about 18 miles (24%), streams 20-39 ft wide have almost 16 miles (21%), and streams over 40 ft wide have 19 miles (25%).

Approximately 15% of the lake frontage on Lake Mendota is a combination of city and county parks, University of Wisconsin, Department of Health and Social Services, and DNR land. City and/or county parks lands also provide significant public frontage on Lakes Monona, Waubesa and Kegonsa. Public lake frontage on Lake Wingra is provided by University of Wisconsin Arboretum and City of Madison.

TABLE 10. State-owned and leased wildlife and fishery areas in Dane County.*

Name of Area	Acreage	Easement	Total	Future Goal
Wildlife Areas				
Badfish Creek	1,087.00	0	1,087.00	1,212.00
Brooklyn**	1,730.01	0.07	1,730.08	2,500.00
Deansville	1,459.08	0	1,459.08	1,795.00
Extended Wildlife Habitat	388.71	0	388.71	3,000.00
Goose Lake	1,560.49	0	1,560.49	2,443.00
Lodi Marsh**	1,001.92	0	1,001.92	1,211.20
Mazomanie	2,848.07	0	2,848.07	3,347.21
Scattered Wetlands	243.71	0	243.71	243.71
Waunakee	431.27		431.72	431.72
Total	10,750.71	0.07	10,750.78	16,183.84
Fishery Areas				
Black Earth Creek	148.02	24.13	172.15	437.10
Bohn and Ryan creeks	105.00	0	105.00	105.00
Castle Marsh	33.50	0	33.50	33.50
Cherokee Marsh	785.79	0	785.79	1,027.00
Dorn Creek	114.30	0	114.30	300.00
Dunkirk	59.96	0	59.96	59.96
Lake Kegonsa Rough Fish Station	19.70	0	19.70	19.70
Lake Marion	44.05	0	44.05	44.05
Lower Mud Lake	121.20	0	121.20	121.20
Lower Waubesa Marsh	168.50	0	168.50	168.50
McFarland Rough Fish Station	1.20	0	1.20	1.20
Mount Vernon Creek	354.90	34.28	389.18	450.00
Nevin Hatchery	300.87	0	300.87	300.87
Token Creek Rearing Station	11.19	0	11.19	11.19
Upper Mud Lake and Lake Waubesa	264.32	0	264.32	264.32
Vermont Creek	51.30	6.02	57.32	3,400.91
Total	2,583.80	64.43	2,648.23	3,400.91
Grand total	13,334.51	64.50	13,399.01	19,584.75

*Based on 1981 figures.
**Includes land outside county.

Boating

Dane County has a significantly greater number of lakes than any of its neighboring counties and, therefore, offers a greater diversity of recreational boating activities for more people. In 1981, 19,498 motor boats were registered in the county (Wis. Dep. Nat. Resour. 1982). Boating activities include fishing, water skiing, cruising, speed boating, and sailing. Boating is regulated on certain waters within the county by local ordinances (Lake Wingra and Fish Lake) to insure safety and minimize activity conflicts.

Due to size and depth limitations, most power boating activities are confined to a small number of lakes and two rivers--the Wisconsin and the Yahara. Some of the shallower lakes have dense weed stands that hamper propellers. The most popular lakes are Mendota, Monona, Wingra, Waubesa, Kegonsa, Fish, Marshall Millpond, and Lake Belle View which collectively provide over 19,000 acres of surface area. Although the latter two lakes are under 7 ft deep, they are popular because they are large and located near population centers. Sailing is also very popular on the larger lakes. All of these lakes and rivers have at least one public boat ramp.

Canoes, rowboats, and other small, nonmotorized craft can be used even on the smallest lakes and streams. Of the smaller Dane County streams, Sugar River and the lower reaches of Black Earth Creek are among those most extensively used for recreational boating. A 1976 DNR study of small stream use in Wisconsin showed that these waters are indeed significant recreational resources (Kalnicky 1976).

Swimming

The Dane County Parks Commission has found through user surveys that swimming is the second most popular recreational activity within their parks and that 65.3% of those surveyed had gone swimming in the last year (Dane Cty. Plann. Comm. 1982). The county presently maintains unsupervised swimming beaches at Mendota Park and Goodland Park on Lake Waubesa, and has plans for the development of another at Lake Farm Park on Lake Waubesa. There is also some swimming at Salmo Pond, a trout pond. Lake Kegonsa State Park also has a swimming beach and one is planned for Governor Nelson State Park as well. An additional 13 supervised swimming beaches are located within the City of Madison.

Swimming is also a popular activity at many private waterfront residences and resorts throughout the county enhanced by wave-washed sandy beaches. However, sediment deposits, algal blooms, and weed growths can limit the enjoyment of swimming activities.

Camping

Dane County has many campgrounds offering a wide variety of recreational activities (Table 11). A majority of the campgrounds are situated near lakes or streams. There are 2 state parks, but one is in the developmental stage. Of the 8 county parks presently offering camping facilities, 6 of these are adjacent to surface waters. Two additional county campgrounds are under construction, one located on Lake Waubesa. There are also at least 7 private campgrounds within the county, 3 of which include surface waters.

Economic Activity

Most employment is concentrated in service industries such as government, education, health care, and insurance (Dane Cty. Reg. Plann. Comm. 1971). There are fewer manufacturing operations, chemical industries, and food processing activities than in most counties, so the pollution threat is not so great. Most of the existing industries are well integrated with local pollution control facilities. These industries have a relatively minor impact on surface waters.

The agricultural industry is important in the county and it has the most impact on surface waters. Five percent of the county's work force is employed directly in farming, and the average farm size exceeds the state average of 180 acres (Theobald and Robbings 1981). Dane County ranks first in the state in production of corn for silage and human consumption, alfalfa hay, tobacco, cattle and calves, chickens and eggs; it ranks second in milk production. Unfortunately, a high rate of runoff from fields and barnyards creates a serious threat to water quality, aggravated by a heavy emphasis on row crops and the attendant high rates of soil erosion. Moderate increases in the demand for agricultural products are expected in the future.

TABLE 11. Campgrounds adjacent to Dane County surface waters.

Park	Ownership	Acres	Units	No. Camp	Group Launch	Boat Swimming	Comments
Lake Kegonsa State Park, Stoughton	State	343	72	X	X	X	
Governor Nelson State Park, Waunakee	State	395	--				Under development
Babcock Park, East Shore Lake Waubesa	County	40	25		X		
Cam-Rock Park, Koshkonong Creek	County + private	300	--	X	X		
Indian Lake Park, Hwy. 19, West of Hwy 12	County	442	--	X			
Lake Farm Park, Northwest Shore Lake Waubesa	County	295	55	X	X	X	Under development
Mendota Park, North Shore Lake Mendota	County	20	25		X	X	
Stewart Park, Stewart Lake	County	105	--	X			Spring-fed trout lake
Token Creek Park, Token Creek, East of Hwy. 51	County	387	38				
Adams Motel + Campground, Wisconsin River, Hwy. 12	Private	--	100			X	
Gaukel's Beautise Resort, Fish Lake	Private	--	--			X	
Hickory Hills Camp, Rice Lake	Private	--	250			X	

Population and Water Use

Dane County has a population of 323,545 people. Sixty-seven percent are located in cities and the balance is rural. With an average per capita water demand of 175 gal/day, water consumption for domestic and industrial purposes is very high. The metropolitan Madison sewage flow is 35 million gal/day, most of which must be processed through sewage disposal plants before it is acceptable for the surface waters. Water demand and sewage effluent exceed the base flow of the Yahara River. Domestic and industrial water use have a significant detrimental impact on the surface waters. The eutrophication problem of the Madison lakes has been nationally recognized over the last 80 years.

A sizable population combined with a good local economy also creates an equivalent demand for surface water recreation. As a result, almost all of Dane County's lake shores, except the shallows and most marsh areas, have been built upon or turned into parks.

Land Use

Of Wisconsin's 72 counties, Dane County ranks 7th in size and is the state's leading producer of agricultural commodities (Spencer et al 1981). Table 12 shows that 83.6% of the county is used for farming.

Historically, the agricultural acreage increased with the influx of immigrants until 1880, when nearly all land in the county was being farmed. Between 1880 and 1890, farm acreage decreased as soil quality was diminished and wheat farming became unprofitable. Farm acreage increased from 1890-1900 as dairying increased and the land was used for hay and pasture. Since 1900, farm acreage has steadily

decreased due to a demand for more roads and more development land for cities and villages (Fig. 7). In 1979, of 5,508 farm acres involved in real estate transactions, 1,644 acres remained in agriculture and 3,864 acres were diverted for other uses (Spencer et al. 1981). The gap between the value of land remaining in agriculture compared with land for other uses is narrowing (Dane Cty. Plann. Comm. 1979b). It is expected that the decline in farm acreage in Dane County will stabilize.

Noncommercial woodlands, which are often pastured, account for 9% of the total area of the county. These woodlands often are located on steep slopes, on poor soil, or in relatively inaccessible locations. However, they provide an increasingly important firewood commodity to Dane County residents. A trend toward not pasturing these woodlands should improve wildlife habitat and reduce erosion from these areas, which will substantially reduce siltation of nearby streams.

Residential areas comprise 5.3% of the county's total area. Most of this is within corporate limits, and primarily within the City of Madison. Application of fertilizers and herbicides to lawns is generally highly concentrated in residential areas, and runoff from these areas is very detrimental to Dane County's surface waters.

Transportation corridors account for 4.4% of the land in the county, and are concentrated around municipal areas. Outside of populated areas, less than 30% of a corridor is paved and the rest grows wild, providing good cover for birds and small mammals and serving as a buffer against soil erosion and sediment runoff. In cities and villages, there is little "wild" land bordering the roads or railroad tracks. The extensive impervious surfaces of city traffic corridors are pathways for storm runoff and provide a heavy contamination load to the nearest water body.

Commercial, industrial, institutional, governmental, and recreational lands comprise very little of the total land area in the county. Much of this land is developed, creating surfaces impervious to storm runoff and, subsequently, further contributing to the instability of the county's waters.

Surface waters cover only about 23,000 acres or 3% of the total area of Dane County. Yet these waters receive drainage from a large fraction of the land surface, or watershed, of the county. The types and sources of pollution to the surface waters of Dane County are diverse, and directly reflect the full spectrum of activities occurring in the county. Agriculture contributes soil and nutrient runoff from barnyards and fields, and considerable sediment loading to streams results from stream banks which are trampled and crushed by farm animals. The large urban area of Madison is a source of nutrient, sediment, and contaminant loading to local waters. The nature of land use in the Dane County watershed is the main determinant of surface water quality in the county.

TABLE 12. Land use in Dane County.*

Use	Acres	Percent of Total
Cropland, pasture, commercial forests, farm buildings	525,661	68.5
Noncommercial woodlands	69,121	9.0
All other farmland	46,299	6.1
Total farmland	641,081	83.6
Residential	40,560	5.3
Commercial	3,667	0.4
Industrial	4,573	0.6
Institutional, governmental, communication and utilities	6,257	0.9
Active recreational	7,776	1.0
Transportation	33,888	4.4
Total developed land	96,711	12.6
Undeveloped nonagrarian land	6,078	0.8
Surface water	22,926	3.0
Approximate total area	766,796	

*Data from Dane County Regional Planning Commission.

FIGURE 7. Total agricultural acreage in Dane County.

(Source: Ebling (1956), Wisconsin Department of Business Development (1976), and Spencer et al. (1981))

SURFACE WATER PROBLEMS

Water Quality

Despite the progress in controlling water pollution in Dane County over the past 25 years, serious problems still remain. The major nonpoint source of pollution is related to agriculture. Runoff of nutrients and sediments to streams and lakes is widespread and affects most areas of the county. High nutrient inputs cause excessive growth of weeds and algae which are aesthetically unpleasing and deplete precious supplies of dissolved oxygen during decomposition. This limits the oxygen available to fish and other organisms, and can eventually eliminate valuable game species through winterkill or summerkill. Accumulation of sediments causes filling of lakes which reduces boating accessibility, and produces chemical and physical changes which can destroy fish habitat in both lakes and streams. The leaching of effluent from failing septic systems into surface waters also causes significant nutrient-loading problems.

The most significant point source of pollution is effluent discharge from municipal sewage treatment plants. Although discharge of sewage to Lakes Mendota and Monona ceased in 1971, the bottom sediments of these lakes, as well as the other Madison lakes, are still loaded with nutrients and organic material. They get recirculated, causing excessive weed and algal growth and anoxic conditions, which limit fish species diversity. Sewage effluent from the Madison metropolitan area is now discharged south of the lakes into Badfish Creek, which is a medium-sized stream that cannot adequately assimilate such a high volume of effluent.

Population growth has caused the recent expansion of sewage treatment facilities at Sun Prairie, Mount Horeb, and Verona. Pollution problems still exist at Marshall, Cross Plains, Belleville, and Black Earth, but reconstruction or upgrading of these plants will have been completed by 1983 (George Oslpoff, Dep. Nat. Resour., pers. comm.).

Fisheries

The game fisheries in Dane County are limited by both natural and man-made factors. The trout fishery is generally limited to the western portion of the county, since the eastern half is low and somewhat marshy with low base flow streams and silting problems resulting from agricultural and residential development. Trout need cold, fast flowing streams with high oxygen content and gravel substrate. Some of the best trout fishing in the area is within the Sugar, Wisconsin, and Pecatonica river basins, but without good soil conservation practices and costly habitat rehabilitation, many of these streams are in danger of losing their trout populations (Novitzky 1973). There are also many potentially good trout streams that have suitable flow characteristics but require control of agricultural runoff and erosion before they can support trout populations.

Most lakes in Dane County are too shallow to support a cold water fishery. But even the deeper lakes, such as Mendota, Monona, and Fish, have such high biological oxygen demands that their hypolimnia become anoxic, threatening cisco populations.

Soil erosion and the subsequent accumulation of sediment and organic material in some already shallow impoundment lakes is causing winterkill problems for the more intolerant warm water species. This reduction in species diversity can be difficult and costly to correct. The continuing destruction of wetland spawning habitats for development is threatening northern pike populations in the eastern portion of the county.

Boating

Many Dane County lakes are naturally shallow and others are impassable to power boats because of dense weeds. Power boating in Dane County is limited to the 18 lakes with a surface area of 50 acres or more and a small number of rivers. This causes a crowding problem on some of the lakes, especially the Madison lakes which support a wide range of water activities. Conflicts occur between speed boaters, water skiers, anglers, and nonpowered boat users. Crowding problems are acute on weekend afternoons during the summertime.

Flooding

Streams with the highest flood probability are those having steep banks and a limited number of wetland associations or impoundments. The streams in the southwestern or driftless areas of the county have these characteristics. Soil permeability averages only 0.5 inches/hour in this area, and may be as low as 0.1 inch/hour. The Wisconsin River Valley is also subject to frequent flooding as it is low lying and is affected by storm events within an upstream drainage area of over 9,000 square miles.

The Yahara River Valley has higher soil permeability (1.65 inches/hour) than the western part of the county as well as more lakes and wetland areas and flatter topgraphy. Permeability is low in the Madison metropolitan area due to the concentration of paved areas. Heavy storms frequently back up storm sewers and flood city streets.

East of the Yahara River, soil permeabilities decrease to 0.5 inches/hour in most areas (Conger 1981). Many acres of wetlands in the Koshkonong and Maunesha basins have been drained and developed for agriculture. However, impoundments at Marshall and Waterloo along with undrained marshland still provide flood control in this area. Flood plain zoning laws have discouraged development of low areas and most flood damage occurs on pasture and cropland. Rural and urban properties are rarely subjected to devastating floods.

Public Access

Public access to the larger lakes in Dane County is excellent. Crystal Lake is the only lake with over 100 acres of surface area that has no public access. Approximately 66% of the lakes smaller than 100 acres have no public access, and 80% of these are smaller than 20 acres. Twenty-four percent of the county's lake shoreline is publicly owned. In contrast, only 13% of the stream frontage is in public ownership. However, road crossings generally provide good access to streams.

THE FUTURE

Dane County has a relatively large surface water acreage for a southern Wisconsin county. Opportunities for water-related recreation are many, and are available to a large number of people. With the upgrading of sewage treatment plants, water quality is on the upswing. However, it is not yet time to let down our environmental defenses. As the population continues to grow, so do pollution problems. Water quality must be constantly re-evaluated in order to detect problems at the earliest stage.

Although most point source pollution is presently under control, nonpoint sources are more difficult to deal with for social, political, and economic reasons. In Dane County, erosion and runoff of nutrients from cultivated lands and feedlots is widespread and affects most streams and lakes to some degree. This type of pollution produces physical and chemical changes that have negative effects on fish and other aquatic organisms, in addition to lowering recreational and aesthetic values. Soil conservation management policies are slowly being developed, but the problems caused by nonpoint pollution will have to be addressed more seriously if Dane County is to retain its sport fisheries. The continued destruction and degradation of wetlands is also affecting some species of fish that must spawn in these areas. Urban and agricultural development are compatible with healthy lakes and streams, but development must proceed in a manner which protects these natural resources.

LITERATURE CITED

American Public Health Association
1976. Standard methods for the examination of water and wastewater. 14th ed. Am. Public Health Assoc., Washington, D.C. 1,193 pp.

Baumann, P. C., J. F. Kitchell, J. J. Magnuson, and T. B. Kayes
1974. Lake Wingra, 1837-1973: A case history of human impact. Trans. Wis. Acad. Sci., Arts and Lett. 62:57-94.

Bush, D. M., R. Cornelius, and D. Engel
1980. Surface water resources of Green County. Wis. Dep. Nat. Resour. 70 pp.

Carlson, R. E.
1977. A trophic state index for lakes. Limnol. and Oceanogr. 22(2):361-69.

Chapman, C. B.
1859. Early events in the four lakes country. Pp 343-49 in Collections of the State Historical Society of Wisconsin. Vol. IV. Years 1857-1859. Madison, Wis.

Churchill, W. S.
1976. Population and biomass estimates of fishes in Lake Wingra. Wis. Dep. Nat. Resour. Tech. Bull. No. 93. Madison, Wis. 9 pp.

Cline, D. R.
1965. Geology and ground water resources of Dane County, Wisconsin. Geological survey water supply paper 1779-U. U.S. Gov. Print. Off., Washington, D.C. 64 pp.

Conger, D. H.
1981. Techniques for estimating magnitude and frequency of floods for Wisconsin streams. U.S. Geological Survey Water Resources Investigations Open - File Rep. 80-1214.

Dane County Regional Planning Commission
1971. Dane County economic characteristics. Madison, Wis. 28 pp.

1974. Dane County wetlands. Madison, Wis. 22 pp.

1979a. Dane County water quality plan. Appendix B: Water quality conditions. Madison, Wis. 357 pp.

1979b. Regional trends in Dane County. Madison, Wis. 82 pp.

1979c. Dane County water quality plan. Chapter 2: Water quality problems and causes. Madison, Wis. 93 pp.

1981. Annual report. Madison, Wis.

1982. Park, open space, and recreation plan. Madison, Wis. 123 pp.

Unpublished data on land use in Dane County. Madison, Wis.

Draper, L. C.
1872. Naming of Madison and Dane County and the location of the capitol. Pp. 388-96 in Collections of the State Historical Society of Wisconsin. Vol. VI. Years 1869-1872. Madison, Wis.

Drury, J.
1951. Dane County, Wisconsin. Inland Photo Company, Chicago, IL. 954 pp.

Ebling, W. H.
1956. Wisconsin rural resources, Dane County. Wis. State Dep. Agric. Crop Livestock Rep. Serv, Madison, Wis. 56 pp.

Fago, D.
n.d. Fish distribution study. unpubl. at Bur. of Res., Wis. Dep. Nat. Resour., Madison, Wis.

Frolick, A. L.
1941. Vegetation of the peat lands of Dane County, Wisconsin. Ecol. Monogr. 11:117-40.

Glocker, C. L. and R.A. Patzer
1978. Soil survey of Dane County, Wisconsin. U.S. Dep. Agric.-Soil Conser. Serv. in coop. with Wis. Agric. Exp. St. U.S. Gov. Print. Off., Washington, D.C. 193 pp.

Hutchinson, G. E.
1957. A treatise on limnology. Vol I. Geography, physics and chemistry. John Wiley and Sons, New York. 1,015 pp.

Hynes, H. B. N.
1970. The ecology of running waters. University of Toronto Press, Toronto.

Johnson, C. D.
1976. Wetland use in Wisconsin: Historical perspective and present picture. Wis. Dep. Nat. Resour., Madison, Wis.

Kalnicky, R. A.
1976. Recreational use of small streams in Wisconsin, Wis. Dep. Nat. Resour. Tech. Bull. No. 95. 20 pp.

National Oceanic and Atmospheric Administration
1980. Climatological data, annual summary, Wisconsin, 1980. Natl. Oceanic Atmos. Adm. Environ. Data and Inf. Serv. National Climatic Center, Asheville, N.C.

National Weather Service
n.d. Climatological records. Madison, Wis.

Novitzky, R. P.
1973. Improvement of trout streams in Wisconsin by augmenting low flows with ground water. Geological Survey Water-Supply Paper 2017. U.S. Gov. Print. Off., Washington, D.C. 52 pp.

Poff, R. J. and C. W. Threinen
1962. Surface water resources of Dane County. Wis. Conserv. Dep. Madison, Wis. 60 pp.

Spencer, C. D., J. Davies, E. Lipperty, J. S. Rowe, R. F. Kriesel, L. E. Krahn, and M. Heiser
1981. Wisconsin agricultural statistics, 1981. Wis. Stat. Rep. Serv. Madison, Wis. 98 pp.

Theobald, H. R. R., and P. V. Robbings
1981. The state of Wisconsin blue book 1981-1982. Legislative Reference Bureau, Madison, Wis. 985 pp.

Thornwaite, C. W., J. R. Mather, and D. B. Carter
1958. Three water balance maps of eastern North America. Resources for the Future Inc., Washington, D.C. 47 pp.

Uttormark, P. D. and J. P. Wall
1975. Lake classification - a trophic characteristic of Wisconsin lakes. Environ. Prot. Agency Rep. 660/3-75-033. Washington, D.C.

Veatch, J. O. and C. R. Humphrys
1966. Water and water use terminology. Thomas Printing and Publishing Co., Ltd., Kaukauna, Wis. 375 pp.

Western Historical Company
1951. Dane County, Wisconsin. Western Historical Company, Chicago. 954 pp.

Wisconsin Conservation Department
1961. Dane County wetlands. Wisconsin Wetland Survey, Madison, Wis. 150 pp.

Wisconsin Department of Business Development
1976. Economic profile, Dane County, Wisconsin. Madison, Wis. 8 pp.

Wisconsin Statistical Reporting Service
1967. Wisconsin weather: causes, variations, and effects. Wis. Stat. Rep. Serv., Madison, Wis.

Wisconsin Department of Natural Resources
n.d. Water files at Madison area office, Madison, Wis.

GLOSSARY

Algae--nonvascular aquatic plants (often microscopic) of planktonic or filamentous nature. Prolific growths of algae are referred to as "blooms".

Alluvial--relating to erosion materials deposited by flowing water.

Anoxic conditions--oxygen deficiency sufficient to inhibit or prohibit utilization of the waters by aquatic organism. Anoxic conditions commonly set in motion the formation of reduced substances which can cause mortality of aquatic organisms.

Base discharge--flow data not influenced by a storm event, spring runoff, or any other factor that might cause unusually high or low flow.

BOD (Biochemical Oxygen Demand)--the ability of a substance to directly or indirectly use the dissolved oxygen in water. The amount of oxygen consumed over a given time period (normally 5 days) and a given temperature (20 C) is the reported BOD.

Bottom types (particle size)

Silt: 1.5×10^{-4} to 2.4×10^{-3} inches in diameter.
Sand: 0.0025-0.075 inches in diameter.
Gravel: 0.075-3.0 inches in diameter.
Hardpan: a layer of hard subsoil or clay.
Rubble: 3.0-12.0 inches in diameter.
Muck: detritus, clay, silt, and marl.
Detritus: an accumulation of disintegrated debris.

Dolomite--a mineral composed of calcium carbonate and magnesium carbonate $CaMg(Co_3)2$. Also used to describe formations composed largely of dolomite.

Driftless area--an unglaciated land area.

Drumlin--an elongated, teardrop-shaped ridge formed of glacial debris (rock and soil).

Eutrophic--a state of advanced eutrophication, characterized by excessive growth of weeds and algae.

Eutrophication--accelerated rate of infilling of a body of water due to overproduction of organic matter resulting from excessive input of nutrients.

Forage fish--a group of fish which provide a source of food for sport fishes and other large predator fish.

Glacial outwash--material carried away from a glacier in meltwater.

Hypolimnion--the lower stratum of water in a lake and that portion of the basin that is unmixed by wind action.

Impoundment--a body of water owing more than 50% of its depth to a dam or other barrier.

LCI (Lake Condition Index)--a system for trophic classification of lakes using a scale of 0-23 points, zero indicating extreme oligotrophy, and 23 extreme eutrophy. Parameters: transparency, hypolimnetic dissolved oxygen, fishkills, and extent of macrophyte or algal growth.

Limnology--the study of physical, chemical, and biological conditions in fresh waters.

Loam--a soil consisting of an easily crumbled or pulverized mixture of varying proportions of clay, sand, and organic matter.

Macrophytes--rooted aquatic plants.

MPA (Methyl Purple Alkalinity)--the amount of available carbonates, bicarbonates, and hydroxides in water, expressed as parts per million of calcium carbonate (ppm $CaCO_3$). An indicator of water fertility.

Moraine--glacial drift or till (debris) deposited by a glacier.

Nonpoint source pollution--pollution caused by sediments, nutrients, organic and toxic substances, carried directly to lakes and streams by surface runoff. Associated with types of land use.

Oligotrophic--a state of water quality characterized by a lack of the basic nutrients required for plant and animal life; unfertile.

pH--the negative logarithm of the hydrogen ion concentration. A pH less than 7.0 is acidic, pH 7.0 is neutral, and greater than 7.0 is basic.

Panfish--small, easily caught food fish including bluegill, perch, green sunfish, pumpkinseed, crappie, and bullhead.

Point source pollution--pollution that flows from a distinct source such as a pipe or culvert.

Predator fish (game fish)--collective grouping of fish to include any or all of the following species: trout, northern pike, muskie, walleye, largemouth and smallmouth bass, and channel catfish.

Public access--provision for use by the general public. Refers to publicly owned or leased roads or land for entrance to lakes and streams:

Boat launch--gravel, concrete, or natural shoreline ramp suitable for launching a boat from a trailer.

Unimproved or difficult access--means of approach which permits vehicular travel within 200 ft of the shoreline, but does not allow direct access to the water. No boat ramp is provided but small boats can often be launched over the bank with ease.

Wilderness access--means of approach to lake or stream which allows only foot travel within 200 ft of shoreline.

Public frontage--publicly owned shoreline area.

Rough fish--fish species deemed relatively undesirable or uncatchable for sport fishing and potentially detrimental in varying degrees to the welfare of more desirable game and panfish populations.

Seepage--ground water which filters into a stream or lake through the bottom, banks, or floor of its channel.

SDF (Shoreline Development Factor)--ratio of the length of the shoreline to the length of the circumference of a circle of area equal to that of the lake. A value of 1.0 indicates a perfect circle. As the value of this index increases, there is greater irregularity or available shoreline, and greater biological productivity can usually be expected.

Specific conductivity--the total concentration of dissolved electrolytes in a sample of water at 77 F, which reflects the relative fertility of water; expressed in micromhos (umhos)/cm.

Stream order--a measure of the position of a stream in the hierarchy of tributaries. First order streams have no tributaries. Two first order streams meet to become a second order stream, and so on.

Trout stream classifications--

Class I--a stream or portion thereof with a self-sustaining trout population. Such a stream contains trout spawning habitat and naturally produced fry, fingerling, and yearling in sufficient numbers to use the trout habitat; or contains trout with 2 or more age groups above the age of 1 year. Natural reproduction and survival of wild fish is in sufficient numbers to use the available trout habitat and to sustain the fishery without stocking.

Class II--a stream or portion thereof that contains a trout population made up of 1 or more age groups above 1 year in sufficient numbers to indicate substantial survival from one year to the next. May or may not have natural trout reproduction occurring; however, stocking is necessary to fully use the available trout habitat or to sustain the fishery.

Class III--a stream or portion thereof that requires annual stocking to provide a significant harvest. Does not provide habitat suitable for the survival of trout year-round or for natural reproduction of trout.

TSI (Trophic State Index)--a system for the trophic analysis of lakes that relates water transparency to algal biomass to produce an index number between 0 and 100; zero is the most oligotrophic. Parameters: chlorophyll *a*, transparency, and total phosphorous.

Turbidity--the degree of opaqueness of water due to the amount of fine matter in suspension. The particles that cause turbidity may also determine apparent color.

Watershed--the whole surface drainage area that contributes water to a lake or stream.

Wetlands--areas characterized by surface water or saturated soils during at least part of the growing season, such that moist soil vegetation or shallow water plants can thrive. The permanent channels of streams and rivers and open water areas of lakes and reservoirs are not included in this definition. Wetlands are important for water supply, flood control, water purification, and for plants, fish and wildlife.

Winterkill--fish mortality in ice-covered lakes resulting from dissolved oxygen depletion. The high oxygen demand of organic materials causes the kill. Winterkills usually occur in shallow, fertile lakes or in shallow bays when there is no inflow of fresh water.

APPENDIX A.1. Physical characteristics of named Dane County lakes.

Named Lakes	Location T	R	S	Drainage System	Surface Acres No.	Under 3 ft (%)	Over 20 ft (%)	Maximum Depth (ft)	Maximum Length (miles)	Maximum Width (miles)	Shoreline (miles)	SDF*
Barney Lake	6N	9E	34	Land-locked	27	70	0	6	0.28	0.84	0.84	1.15
Bass Lake	5N	10E	4	Badfish Creek	69	40	0	9	0.67	1.67	1.67	1.43
Lake Belle View	5N	8E	34	Sugar River	100	45	0	7	0.46	3.43	3.43	2.45
Brandenburg Lake	8N	8E	6	Land-locked	38	40	0	6	0.30	0.99	0.99	1.15
Cherokee Lake	8N	9E	24	Yahara River	57	15	5	23	0.8	2.4	2.4	2.27
Crystal Lake	9N	7E	1	Land-locked	500	25	0	9	1.8	5.30	5.30	1.69
Fish Lake	9N	7E	3	Land-locked	216	15	45	62	1.0	3.30	3.30	1.60
Fishers Lake	9N	6E	32	Dunlap Creek	5.2	30	0	8	0.21	0.53	0.53	1.66
Goose Lake	7N	12E	2	Koshkonong Creek	32	100	0	3	0.96	2.2	2.2	2.77
Goose Pond	6N	8E	13	Badger Mill Creek	11.1	80	0	4	0.16	0.68	0.68	1.46
Grass Lake (Town of Dunkirk)	5N	11E	18	Land-locked	10.2	60	0	5	0.18	0.53	0.53	1.18
Grass Lake (Town of Dunn)	6N	10E	30	Badfish Creek	48	40	0	9	0.68	1.74	1.74	1.79
Lake Harriet	5N	9E	9	Land-locked	32	10	0	12	0.40	1.03	1.03	1.30
Hook Lake	6N	10E	29	Land-locked	9.2	100	0	3	0.39	0.79	0.79	1.86
Indian Lake	8N	7E	2	Halfway Prairie Creek	66	25	0	6	0.53	1.3	1.3	1.14
Island Lake	5N	10E	3	Land-locked	9.8	50	0	5	0.16	0.14	0.53	1.21
Lake Kegonsa	6N	11E	16	Yahara River	3,209	10	50	31	3.2	2.4	9.5	1.30
Lake Marion	8N	6E	16	Black Earth Creek	16.7	20	0	10	0.35	0.11	0.85	1.48
Marshall Millpond	8N	12E		Maunesha River	185	50	0	5	1.18	0.40	4.9	2.57
Lake Mendota	7N	9E		Yahara River	9,842	5	80	82	5.1	4.8	22.9	1.66
Lake Monona	7N	10E		Yahara River	3,274	5	70	64	3.3	1.6	14.4	1.78
Morse Pond	6N	8E	3	Land-locked	11.6	85	0	4	0.30	0.08	0.69	1.45
Mud Lake (Town of Deerfield)	7N	12E	2	Land-locked	34	40	0	8	0.34	0.21	0.98	1.20
Mud Lake (Town of Roxbury)	9N	7E	4	Land-locked	54	50	0	8	0.48	0.33	1.22	1.18
Lower Mud Lake	6N	10E	10	Yahara River	195	25	0	015	0.78	0.43	2.4	1.23
Upper Mud Lake	7N	10E	28	Yahara River	223	30	0	8	0.60	0.56	2.8	1.34
Rice Lake	5N	12E	14	Land-locked	98	30	0	8	0.93	0.40	2.67	1.92
Rockdale Millpond	6N	12E	13	Koshkonong Creek	72	75	0	5	1.33	0.23	2.79	3.3
Salmo Pond	8N	7E	32	Black Earth Creek	3.7	15	0	20	0.17	0.04	0.38	1.41
Stewart Lake	6N	6E	2	Moen Creek	6.8	25	0	13	0.20	0.10	0.50	1.37
Stoughton Lake	5N	11E	5	Yahara River	82	60	0	5	1.0	0.22	2.44	2.16
Sweet Lake	5N	12E	23	Land-locked	14.8	75	0	5	0.25	0.22	8.80	1.48
Token Creek Millpond	9N	10E	34	Token Creek	44	60	0	6	0.88	0.14	2.6	2.80
Verona Gravel Pit	6N	8E	22	Land-locked	9.1	10	0	20	0.27	0.1	0.6	1.25
Lake Waubesa	6N	10E	32	Yahara River	2,080	10	25	34	3.34	0.71	9.9	1.54
Lake Windsor	9N	10E	31	Yahara River	9	40	0	6	0.25	0.08	0.7	1.67
Lake Wingra	7N	9E	27	Murphy Creek	345	15	1	21	0.36	0.57	4.2	1.61

*Shoreline Development Factor.

APPENDIX A.2. Chemical characteristics of named Dane County lakes.

Named Lakes	pH	Total Alkalinity (ppm)	Specific Conductance (μmhos/cm)	Chloride (ppm)	Water Color	Lake Condition Index* (0-23)	Trophic State Index** (0-100)	Sampling Date (1981)
Barney Lake	7.1	51	139	15	Clear	13		22 Sep
Bass Lake	9.2	137	367	15	Turbid	14		30 Oct
Lake Belle View	7.8	188	693	15	Light brown	18	78	22 Sep
Brandenburg Lake	8.0	68	213	15	Dark brown	15	93	18 Sep
Cherokee Lake	8.2	307	705	22.5	Turbid	8		5 Nov
Crystal Lake	9.2	103	198	7.5	Light brown	14		5 Oct
Fish Lake	9.4	103	216	15	Clear	6	43	5 Oct
Fishers Lake	8.5	171	278	15	Light brown	13		11 Nov
Goose Lake						13		24 Sep
Goose Pond	7.2	68	261	22.5	Light brown	18		5 Oct
Grass Lake (Town of Dunkirk)						18		27 Oct
Grass Lake (Town of Dunn)	6.9	103	326	30	Light brown	18		9 Nov
Lake Harriet	7.8	51	192	15	Turbid	16		22 Sep
Hook Lake	6.6	17	168	15	Light brown	15		9 Nov
Indian Lake	7.6	86	267	15	Clear	18	64	18 Sep
Island Lake	6.9	68	200	22.5	Light brown	14		9 Nov
Lake Kegonsa	8.8	137	562	15	Clear	16	57	13 Oct
Lake Marion	8.0	239	626	22.5	Turbid			28 Oct
Marshall Millpond	7.9	308	704	22.5	Light brown	15	68	12 Oct
Lake Mendota	8.5	154	350	22.5	Turbid	13	42	5 Nov
Lake Monona	8.5	137	515	22.5	Turbid	12	48	5 Nov
Morse Pond	7.7	51	224	7.5	Light brown	11		26 Oct
Mud Lake (Town of Deerfield)	7.2	137	296	15	Clear	16		24 Sep
Mud Lake (Town of Roxbury)	7.0	86	239		Light brown	11		5 Oct
Lower Mud Lake	8.2	171	330	22.5	Turbid	9	70	11 Nov
Upper Mud Lake	9.0	103	573	22.5	Turbid	18		11 Nov
Rice Lake	8.5	68	175	15	Light brown	16		27 Oct
Rockdale Millpond	8.0	154	890	22.5	Turbid	13	77	29 Sep
Salmo Pond	7.7	222	438	7.5	Clear	3	50	29 Sep
Stewart Lake	8.2	154	750	22.5	Clear	7	57	3 Nov
Stoughton Lake	8.7	171	544	30.0	Turbid			27 Oct
Sweet Lake	7.9	103	225	15	Clear	13		27 Oct
Token Creek Millpond	7.2	239	826	30	Turbid	8		5 Nov
Verona Gravel Pit	7.7	214	452	22.5	Clear			20 Sep
Lake Waubesa	8.9	188	507	30	Light brown	14	54	5 Oct
Lake Windsor	8.2	171	577	15	Turbid	16		5 Nov
Lake Wingra	8.7	154	498	30	Clear	9	60	6 Nov

*0 = extreme oligotrophy, 23 = extreme eutrophy
**0 = extreme oligotrophy, 100 = extreme eutrophy

APPENDIX B.1. Physical characteristics of named Dane County streams.

Name	Location T	R	S	F	Tributary to:	Base Discharge (cfs)	Watershed in County ($miles^2$)	Surface Area (acres)	Length (miles)	Avg. Gradient (ft/mile)	Avg. Width (ft)	Avg. Depth (ft)	Principal Fishery Value
Badfish Creek	5N	10E	36	16	Yahara River	77.5	67	20.0	6	4.1	30	1.8	Forage
Badger Mill Creek	6N	8E	28	11	Sugar River	3.7	34	4.5	5	10.7	7.5	1.0	Forage
Black Earth Creek	8N	6E	18	11	East Branch Blue Mounds Creek	21.4	105	51.0	21	6.9	17	1.2	Trout
Blue Mounds Branch	5N	6E	6	5	Gordon Creek	6.5	8	6.0	5.5	51.1	6	0.6	Forage
Blue Mounds Creek, East Branch	8N	6E	31	6	Wisconsin River	22.3	35	11.0	4	3.9	22	1.2	Trout
Bohn Creek	7N	6E	27	11	Elvers Creek	1.4	4	3.0	3	37	2.5	0.6	Trout
Brewery Creek	7N	7E	3	3	Black Earth Creek	0.86		1.7	4	11.5	3.5	0.4	Forage
Deer Creek	6N	7E	33	5	Mount Vernon Creek	1.7	4	4.0	5	42	6.5	0.8	Forage
Door Creek	6N	10E	13	14	Yahara River, Lake Kegonsa	9.4	29.5	12.3	12.7	2.4	16	1.0	Forage
Dunlap Creek	9N	6E	31	12	Wisconsin River	5.8	13.5	7.0	9.5	15.0	8	0.9	Trout
Elvers Creek	7N	6E	17	5	East Branch Blue Mounds Creek	15	12	7.6	8	21.0	7	1.0	Trout
Flynn Creek	5N	8E	18	16	West Branch Sugar River	1.6	5	1.7	3	21.8	7	0.5	Trout
Frogpond Creek	5N	10E	36	14	Badfish Creek	2.3	4	1.4	7	11.0	3	0.5	Forage
Fryes Feeder	6N	7E	33	5	Mount Vernon Creek	4.3	4.8	1.5	4	38.3	3	0.5	Forage
Garfoot Creek	7N	7E	5	2	Black Earth Creek	3.5	6.0	2.5	3	32.0	5	0.4	Trout
German Valley Creek	5N	6E	6	5	Gordon Creek	.19	10.2	1.5	5	36.0	1	0.6	Forage
Halfway Prairie Creek	8N	6E	16	2	Black Earth Creek	5.7	29.2	7.0	11	15.7	6	0.8	Forage
Henry Creek	5N	8E	14	9	Sugar River	1.3	2.0	0.1	1	27.8	4	1.0	Trout
Jeglum Valley Creek	5N	6E	32	2	Kittleson Valley Creek	2.0	1	0.5	1.5	53.3	0.5	0.4	Forage
Keenan Creek	6N	10E	10	14	Yahara River, Lower Mud Lake	1.3	3.6	2.1	4.4	25	3	0.5	Forage
Kittleson Valley Creek	5N	6E	30	10	Gordon Creek (Iowa County)	7.0	29.8	2.9	8	19.3	6	0.5	Trout
Koshkonong Creek	5N	12E	12	13	Rock River	63.8	138	45	32	3.8	20	1	Forage
Leuten Creek	6N	11E	28	12	Yahara River	3.0	10	2	3	9.7	4	0.9	Forage
Little Door Creek	7N	11E	32	7	Door Creek	1.8	8.3	2.5	3	11.8	4	0.75	Forage
Little Norway Creek	7N	6E	34	10	Bohn Creek	0.36		1	1.3	92.3	1	0.25	Trout
Little Sugar River	5N	7E	32	16	Sugar River	1.6	6.9	1.5	2	7.5	3	0.4	Forage
Marsh Creek	8N	6E	6	7	Wisconsin River	2.7	3.4	1.3	3.5	5.0	3	0.3	Forage
Maunesha River	8N	12E	12	4	Crayfish River (Dodge County)	67	88	85	20	5.8	20	1	NP, PF*
Milum Creek	5N	8E	20	7	West Branch Sugar River	0.4	3.3	0.5	2	15.0	1	0.7	Forage
Moen Creek	7N	6E	35	11	Elvers Creek	2.4	2.5	1	2	103.3	3	0.3	Trout
Mount Vernon Creek	5N	7E	13	6	West Branch Sugar River	19.7	16.7	10	7	18.5	10	2	Trout
Mud Creek (Deerfield)	7N	12E	23	6	Koshkonong Creek	0.1	22.4	2.2	9	6.0	4	2	Forage
Mud Creek (York)	9N	12E	24	1	Crawfish River (Dodge County)	0.2	6.0	0.3	3	5.0	1	0.4	Forage
Murphy Creek	7N	9E	25	8	Yahara River, Lake Monona	0.1	8.6	10	2.5	2.0	30	3	PF*
Murphy's Creek	6N	10E	7	16	Yahara River, Lake Waubesa	2.1	5.4	1.1	3	8.0	3	0.4	Forage
Nine Springs Creek	7N	10E	29	13	Yahara River	0.1	15.1	5.8	6	3.3	8	2	Forage, Trout
Nolan Creek	9N	12E	12	4	Crawfish River (Dodge County)	0.1	5.7	1.2	5	22.0	3	1	Forage
Oregon Branch	5N	10E	16	14	Badfish Creek	42.9	30	18.2	10	8.2	15	1	Forage
Pheasant Branch Creek	7N	8E	12	1	Yahara River, Lake Mendota	1.6	22.7	4	7	19.7	3	0.6	PF*
Pleasant Valley Branch	5N	6E	28	14	Kittleson Valley Creek	2.1		6	7	27.0	5	0.5	Forage
Pleasant Valley Creek	7N	6E	5	12	East Branch Blue Mounds Creek	0.1		1	3	51.0	3	0.4	Forage
Pleasure Valley Creek	7N	6E	30	3	Ryan Creek	2.7	2.3	1	2.5	120	3	0.4	Forage
Primrose Branch	5N	7E	14	6	West Branch Sugar River	28	9.0	1.8	5	19.4	3	0.5	Trout

APPENDIX B.1. Named streams, continued.

Name	Location T	R	S	F	Tributary to:	Base Discharge (cfs)	Watershed in County ($miles^2$)	Surface Area (acres)	Length (miles)	Avg. Gradient (ft/mile)	Avg. Width (ft)	Avg. Depth (ft)	Principal Fishery Value
Roxbury Creek	9N	6E	13	14	Wisconsin River	2.0	21.2	14.5	8	26	15	2	Forage
Rutland Branch	5N	10E	16	14	Badfish Creek	6.8	6.0	1.5	2	25.6	6	1	Trout
Ryan Creek	7N	6E	17	5	East Branch Blue Mounds Creek	5.8	5.5	4.5	6	106	6	0.7	Trout
Saunders Creek	5N	12E	33	16	Rock River (Rock County)	3.6	36	11	10	5.1	5	1.2	Forage
Schalpbach Creek	7N	7E	34	11	Sugar River	2.6	5	1.8	3.5	24.4	3	0.5	Forage
Schumacher Creek	8N	12E	9	12	Maunesha River (Marshall Millpond)	0.1	11	1.5	3	5.0	2	1	Forage
Six Mile Creek	8N	9E	28	13	Yahara River, Lake Mendota	16.4	43	14.5	12	7.2	10	1	NP, PF*
Spring Creek (Dane)	9N	8E	4	1	Wisconsin River, (Columbia County)	5.0	22.9	4	3.5	41.3	0.6	0.3	Trout
Spring Creek (Medina)	8N	12E	15	3	Maunesha River	0.9	6	2.3	3.5	5.0	3.5	0.5	Forage
Spring Creek (Westport)	8N	9E	28	7	Six Mile Creek	3.5	12.7	7.3	6	21.6	10	1	Forage, NP
Spring Valley Creek	5N	7E	32	16	Little Sugar River	1.0	2	1	2	13.3	3	0.3	Forage
Starkweather Creek, East Branch	7N	10E	8	5	Yahara River, Lake Monona	1.7	21.5**	6.5	3	5.0	12	0.7	Forage
Starkweather Creek, West Branch	7N	10E	5	14	East Branch Starkweather Creek	8.8		4.2	2	3.7	12	0.8	Forage
Story Creek	5N	8E	36	16	Sugar River (Green County)	8.9	27	6.5	3	8.7	8	0.8	Trout
Stransky Creek	8N	12E	4	14	Maunesha River	0.04	3	1	2	16.1	4	1	Forage
Sugar River	5N	8E	35	12	Rock River (Illinois)	70	218.4	120	30	4.1	20	1	NP, PF*, Catfish
Sugar River, West Branch	5N	8E	28	12	Sugar River	8.1	66.5	30	18	7.5	7	0.7	Trout
Swan Creek	6N	10E	7	13	Yahara River, Lake Waubesa	1.1	7	2	2	16.1	3	0.5	Forage
Syftestad Creek	5N	6E	29	11	Kittleson Valley Creek	0.49	6	1.8	5	28.2	3	0.3	Forage
Token Creek	8N	10E	7	6	Yahara River	18.6	27.3	18	10	8.7	15	1.5	Trout, NP
Vermont Creek	8N	6E	26	8	Black Earth Creek	6.4	14.9	9	8	19.2	10	0.7	Trout
Wendt Creek	8N	6E	16	1	Halfway Prairie Creek	2.7	10.5	4	6	23.3	7	6	Forage
Wisconsin River					Mississippi River	2,000	225	1,386	14	1.4	500	6	WE, NP, PF
Yahara River	5N	11E	35	11	Rock River (Rock County)	68.8	466	127	40	3.6	100	4	WE, NP, PF
York Valley Creek	5N	6E	27	11	Kittleson Valley Creek	4.2	3	1	2	9.6	4	1	Trout

*WE = walleye, NP = northern pike, PF = panfish.
**Watershed of east and west branches combined.

APPENDIX B.2. Chemical characteristics of named Dane County streams.

Name	pH	Total Alkalinity (ppm)	Specific Conductivity (μmhos/cm)	Chloride (ppm)	Sampling Date (1981)
Badfish Creek	7.5	256	1,496	150	Oct
Badger Mill Creek	7.8	256	875	30	Oct
Black Earth Creek	7.7	274	619		Sep
Blue Mounds Branch	7.7	308	749	7.5	Sep
Blue Mounds Creek, East Branch	7.6	256	625	7.5	Sep
Bohn Creek	7.7	222	765	7.5	Sep
Brewery Creek	8.3	273	833		Oct
Deer Creek	7.8	239	942	15	Sep
Door Creek	7.5		960	22.5	Oct
Dunlap Creek	7.5	222	661	7.5	Nov
Elvers Creek	7.5	256	762	15	Sep
Flynn Creek	7.5	222	693	15	Oct
Frogpond Creek	7.7	308	705	7.5	Nov
Fryes Feeder	7.6	256	731	7.5	Oct
Garfoot Creek	7.7	256	625	7.5	Oct
German Valley Creek	8.2	239	824	15	Sep
Halfway Prairie Creek	7.8	256	705	7.5	Oct
Henry Creek	7.3	188	791	15	Oct
Jeglum Valley Creek	7.6	222	716	7.5	Sep
Keenan Creek	7.6	393	832	37.5	Oct
Kittleson Valley Creek	7.7	239	690	7.5	Oct
Koshkonong Creek	7.6	239	765	22.5	Oct
Leuten Creek	7.4	222	795	22.5	Oct
Little Door Creek	7.3	374	1,108	22.5	Nov
Little Norway Creek	7.7	222	750	7.5	Oct
Little Sugar River	7.4	291	625	15	Sep
Marsh Creek	7.7	222	720	15	Oct
Maunesha River	7.5	308	770	22.5	Nov
Milum Creek	7.4	188	610	37.5	Oct
Moen Creek	7.7	273	635	15	Sep
Mount Vernon Creek	7.3	239	515	15	Oct
Mud Creek (Deerfield)	7.2	291	596	15	Nov
Mud Creek (York)	7.5	273	1,033	15	Oct
Murphy Creek	7.8	154	624	37.5	Oct
Murphy's Creek	7.6	308	882	22.5	Oct
Nine Springs Creek	7.6	205	768	15	Oct
Nolan Creek	7.3	222	700	30	Oct
Oregon Branch	7.4	359	1,609	142.5	Sep
Pheasant Branch Creek	7.4	308	797	22.5	Nov
Pleasant Valley Branch	7.6	256	676	7.5	Sep
Pleasant Valley Creek	7.6	239	667	7.5	Nov
Pleasure Valley Creek	8.2	205	561	7.5	Oct
Primrose Branch	7.4	274	609	15	Sep
Roxbury Creek	7.5	308	677	15	Oct
Rutland Branch	7.7	274	870	15	Oct
Ryan Creek	8.1	256	556	7.5	Oct
Saunders Creek	7.5	256	874	15	Nov
Schalpbach Creek	7.8	320	856	7.5	Oct
Schumacher Creek	7.2	291	725	15	Oct
Six Mile Creek	8.0	239	681	15	Nov
Spring Creek (Dane)	7.4	308	845	7.5	Oct
Spring Creek (Medina)	7.6	223	848	15	Oct
Spring Creek (Westport)	7.5	325	635	22.5	Oct
Spring Valley Creek	8.0	307	918	15	Oct
Starkweather Creek, East Branch	7.4	222	808	30	Oct
Starkweather Creek, West Branch	7.4	308	815	22.5	Oct
Story Creek	7.3	171	750	15	Nov
Stransky Creek	7.5	286	1,006	15	Sep
Sugar River	7.5	171	665	15	Sep
Sugar River, West Branch	7.5	239	841	15	Sep
Swan Creek	7.7	188	1,112	15	Nov
Syftestad Creek	7.5	205	686	7.5	Sep
Token Creek	7.5	239	652	15	Sep
Vermont Creek	7.6	205	625	15	Sep
Wendt Creek	7.8	291	539	15	Sep
Wisconsin River	7.1	102	381	7.5	Oct
Yahara River	7.6	291	739	22.5	Oct
York Valley Creek	7.5	256	680	7.5	Sep

APPENDIX B.3. Physical characteristics of unnamed Dane County streams.

Mouth Location T	R	S	F	Tributary to:	Base Discharge (cfs)	Watershed in County ($miles^2$)	Surface Area (acres)	Length (miles)	Avg. Gradient (ft/mile)	Avg. Width (ft)	Avg. Depth (ft)	Principal Fishery Value
5N	6E	20	14	Syftestad Creek	0.5	1.1	0.3	1.0	75	2	0.2	Forage
5N	6E	22	10	Pleasant Valley Branch	1.6	4.0	1.5	3.0	55	4	0.3	Forage
5N	6E	34	4	York Valley Creek	1.4	0.8	0.8	2.0	60	3	0.3	Forage
5N	6E	34	8	York Valley Creek	1.3	0.3	0.25	0.7	120	0.3	0.2	Forage
5N	7E	4	12	West Branch Sugar River	1.8	3.0	1.2	4.0	45	2.5	0.3	Forage
5N	7E	6	15	West Branch Sugar River	0.2	3.0	0.4	3.0	27	1	0.3	Forage
5N	7E	13	8	West Branch Sugar River	0.9	2.0	0.2	1.0	40	2	0.2	Forage
5N	7E	33	15	Little Sugar River	0.2	1.0	0.1	1.0	80	1	0.3	Forage
5N	7E	33	16	Little Sugar River	0.1	1.0	0.1	1.0	80	1	0.3	Forage
5N	9E	8	1	Lake Harriet	0.1	2.0	0.5	2.0	17	2	0.5	Forage
5N	11E	21	9	Yahara River	1.3	0.8	0.1	1.0	20	1	0.3	Forage
5N	11E	35	6	Yahara River	2.3	5.0	1.8	3.0	17	5	0.6	Forage
5N	12E	12	3	Koshkonong River	0.2	1.0	0.1	1.0	10	1	0.4	Forage
6N	6E	21	15	German Valley Creek	0.3	0.3	0.1	1.0	128	1	0.5	Forage
6N	6E	25	5	West Branch Sugar River	0.1	0.5	0.1	0.5	140	1	0.5	Forage
6N	6E	32	9	German Valley Creek	0.2	1.5	0.25	1.5	53	1.5	0.3	Forage
6N	8E	7	11	Sugar River	3.3	5.0	2.0	2.0	60	8	3.0	Forage
6N	9E	12	16	Swan Creek	0.1	0.8	0.3	1.5	6	1.5	0.1	Forage
6N	10E	26	8	Yahara River, Lake Kegonsa	1.1	3.0	1.1	2.0	23	5	0.3	Forage
6N	11E	28	12	Leuten Creek	3.4	4.0	2.0	3.0	8	5	1.0	Forage
6N	12E	5	11	Mud Creek	0.1	1.0	0.2	2.0	20	1	0.3	Forage
6N	12E	11	15	Unnamed creek at 6N 12E, 13-5	0.1	1.6	0.25	1.0	30	2	0.3	Forage
6N	12E	13	5	Koshkonong River	0.8	9.0	1.2	2.5	24	4	0.4	Forage
7N	6E	7	16	East Branch Blue Mounds Creek	0.1	1.0	0.2	1.0	70	2	0.4	Forage
7N	6E	21	15	Elvers Creek	0.1	0.9	0.06	1.0	80	0.5	0.2	Forage
7N	6E	28	1	Elvers Creek	0.1	2.5	0.2	2.0	60	1	0.2	Forage
7N	6E	28	4	Elvers Creek	0.3	1.2	0.25	1.0	80	2	0.2	Forage
7N	7E	5	1	Black Earth Creek	0.1	6.0	0.5	4.0	35	1	0.2	Forage
7N	10E	28	3	Yahara River, Upper Mud Lake	1.2	2.0	3.0	4.0	7	6	1.0	Forage
7N	10E	28	4	Yahara River, Upper Mud Lake	0.1	0.3	1.3	0.5	3	20	2.0	Forage
7N	10E	33	3	Yahara River, Lower Waubesa	0.2	1.0	1.4	4.0	4	3	0.3	Forage
7N	11E	13	3	Koshkonong Creek	8.8	9.0	4.3	6.0	5	6	1.5	Forage
7N	11E	14	7	Koshkonong Creek	2.3	2.0	0.75	1.5	7	4	1.0	Forage
7N	11E	17	10E	Door Creek	0.3	3.0	0.7	3.0	13	2	0.2	Forage
7N	11E	17	10W	Door Creek	0.1	2.0	2.5	2.0	12	7	2.0	Forage
8N	12E	9	12	Maunesha River, Marshall Millpond	0.1	0.3	0.1	1.0	3	1	0.2	Forage
9N	7E	16	11	Roxbury Creek	0.2	6.0	0.3	3.0	12	1	0.3	Forage
9N	11E	10	12	Maunesha River	0.2	1.5	0.2	2.0	12	1	0.4	Forage
9N	11E	14	9	Maunesha River	0.4	0.5	0.5	1.5	16	3	0.5	Forage
9N	11E	15	1	Maunesha River	1.0	4.0	4.0	2.0	10	5	0.2	Forage
9N	12E	32	11	Maunesha River	1.3	5.0	5.0	4.0	13	10	2.5	Forage

APPENDIX B.4. Chemical characteristics of unnamed Dane County streams.

Mouth Location T	R	S	F	pH	Total Alkalinity (ppm)	Specific Conductivity (µmhos/cm)	Chloride (ppm)	Water Color	Sampling Date (1981)
5N	6E	20	14	7.5	291	660	15.0	Clear	11 Sep
5N	6E	22	10	7.5	256	758	15.0	Clear	10 Sep
5N	6E	34	4	7.3	257	677	7.5	Turbid	16 Sep
5N	6E	34	8	7.7	239	678	7.5	Clear	10 Sep
5N	7E	4	12	7.5	205	522	15.0	Turbid	21 Sep
5N	7E	6	15	7.5	222	810	7.5	Clear	16 Sep
5N	7E	13	8	7.3	171	652	15.0	Clear	8 Oct
5N	7E	33	15	7.5	274	493	7.5	Clear	21 Sep
5N	7E	33	16	7.2	257	564	7.5	Turbid	21 Sep
5N	9E	8	1	7.7	640	3,500	215.0	Light brown	22 Sep
5N	11E	21	9	7.4	410	935	7.5	Clear	7 Oct
5N	11E	35	6	7.4	359	895	22.5	Turbid	7 Oct
5N	12E	12	3	7.8	222	870	15.0	Clear	23 Sep
6N	6E	21	15	7.4	359	950	15.0	Clear	10 Sep
6N	6E	25	5	7.5	342	940	15.0	Clear	16 Sep
6N	6E	32	9	7.7	308	730	7.5	Clear	11 Sep
6N	8E	7	11	7.6	274	760	7.5	Turbid	1 Oct
6N	9E	12	16	7.3	274	840	37.5	Light red	30 Sep
6N	10E	26	8	7.5	222	720	22.5	Clear	30 Sep
6N	11E	28	12	7.4	340	875	15.0	Turbid	7 Oct
6N	12E	5	11	7.4	257	856	15.0	Clear	24 Sep
6N	12E	11	15	7.4	171	800	15.0	Clear	24 Sep
6N	12E	13	5	7.5	291	715	15.0	Clear	24 Sep
7N	6E	7	16	7.5	222	730	22.5	Clear	9 Sep
7N	6E	21	15	8.1	239	627	15.0	Clear	8 Sep
7N	6E	28	1	7.9	239	780	22.5	Clear	9 Sep
7N	6E	28	4	7.8	239	588	7.5	Clear	8 Sep
7N	7E	5	1	7.3	344	835	15.0	Clear	18 Sep
7N	10E	28	3	7.4	274	823	52.5	Turbid	5 Oct
7N	10E	28	4	7.3	103	1,370	105.0	Clear	10 Nov
7N	10E	33	3	7.4	308	903	30.0	Clear	5 Oct
7N	11E	13	3	7.2	273	890	30.0	Turbid	30 Sep
7N	11E	14	7	7.2	342	987	22.5	Turbid	7 Oct
7N	11E	17	10E	7.5	375	875	22.5	Clear	30 Sep
7N	11E	17	10W	7.6	273	945	22.5	Turbid	3 Nov
8N	12E	9	12	7.2	325	695	15.0	Clear	24 Sep
9N	7E	16	11	7.5	222	1,140	22.5	Clear	17 Sep
9N	11E	10	12	7.5	154	985	22.5	Clear	28 Sep
9N	11E	14	9	7.5	273	745	22.5	Turbid	28 Sep
9N	11E	15	1	7.4	308	820	30.0	Clear	28 Sep
9N	12E	32	11	7.8	188	854	15.0	Turbid	24 Sep

APPENDIX C. Physical and chemical characteristics of Dane County farm ponds.

Pond Location T	R	S	F	Type	Surface Area (acres)	Maximum Depth (ft)	Private Fish Hatchery	pH	Total Alkalinity (ppm)	Specific Conductivity (μmhos/cm)	Chloride (ppm)	Sampling Date (1981)
5N	7E	9	1	Excavated	0.75	14		7.6	205	745	15.0	3 Nov
5N	7E	11	6	Excavated	2.0	12		7.0	34	88	7.5	3 Nov
5N	7E	32	6	Excavated-Dammed	0.3	12		7.3	256	808	15.0	3 Nov
5N	8E	14	4	Excavated	0.5	12	Yes	7.8	239	667	22.5	3 Nov
5N	8E	27	10	Excavated	0.25	14		8.3	171	603	22.5	3 Nov
5N	8E	31	15	Excavated-Dammed	0.25	8	Yes	7.8	222	745	22.5	3 Nov
5N	9E	9	9	Excavated	0.4	12		7.3	34	94	7.5	30 Oct
5N	9E	20	6	Excavated	0.7 (2)	16		7.8	171	439	15.0	30 Oct
5N	9E	31	10	Excavated	0.4	11		8.2	154	362	7.5	29 Oct
5N	10E	16	8	Excavated	0.3	12		7.6	222	906	7.5	29 Oct
5N	10E	17	10	Excavated-Dammed	0.3	10	Yes	7.7	239	798	15.0	29 Oct
5N	10E	18	13	Excavated	0.4	3		9.4	86	218	7.5	29 Oct
5N	10E	19	1	Excavated	0.6 (2)	13		8.4	239	636	15.0	29 Oct
5N	10E	20	9	Excavated-Dammed	0.5 (2)	10	Yes	7.6	222	735	15.0	30 Oct
5N	10E	23	15	Excavated	1.0 (2)	12		7.3	256	867	15.0	30 Oct
5N	10E	25	6&7	Excavated	2.0 (7)	10		7.7	188	745	15.0	30 Oct
5N	10E	32	2	Excavated	0.3	10		7.4	188	663	30.0	30 Oct
5N	11E	3	10	Natural	1.0	2		6.9	359	1,006	15.0	27 Oct
5N	11E	4	13	Excavated	0.6 (2)	10	Yes	7.4	171	495	15.0	27 Oct
5N	11E	19	3	Excavated	0.25	3		8.0	51	154	15.0	27 Oct
5N	11E	19	12	Excavated	0.3	25		8.3	34	154	15.0	27 Oct
5N	11E	29	7	Natural	2.0	3		7.7	34	167	7.5	27 Oct
5N	11E	35	3	Natural	0.7 (3)	3		7.8	69	134	7.5	27 Oct
5N	11E	35	9	Excavated	0.3	8		7.8	188	630	7.5	27 Oct
5N	11E	35	12	Excavated	0.3	12		7.7	103	301	7.5	27 Oct
5N	12E	2	9	Excavated-Dammed	0.25	8		8.0	239	735	7.5	20 Oct
5N	12E	4	1	Excavated	2.0	15		7.8	188	636	15.0	20 Oct
5N	12E	8	5	Excavated-Dammed	0.3	4		8.1	222	660	15.0	13 Oct
5N	12E	8	6	Excavated	2.0 (2)	10	Yes	8.0	188	834	22.5	20 Oct
5N	12E	16	5	Natural	1.0	2		8.1	171	528	37.5	20 Oct
5N	12E	18	7	Natural	1.0	4		8.4	34	109	7.5	20 Oct
5N	12E	26	14	Excavated-Dammed	2.0 (5)	14	Yes	7.9	239	689	7.5	20 Oct
5N	12E	31	3	Excavated	1.0	7		8.0	51	283	15.0	20 Oct
5N	12E	32	6	Excavated	0.75	8		8.4	68	238	15.0	20 Oct
6N	6E	21	13	Excavated-Dammed	0.75	10	Yes	7.8	239	860	15.0	26 Oct
6N	7E	15	1	Excavated	2.0	10		8.0	256	750	7.5	28 Oct
6N	10E	16	4	Excavated	0.3	11		7.5	375	989	30.0	9 Nov
6N	10E	18	9	Excavated	0.4	15		7.1	274	726	15.0	9 Nov
6N	10E	20	11	Excavated	0.4	10		7.6	274	817	52.5	9 Nov
6N	10E	22	7	Excavated	0.4	8		7.6	205	978	30.0	9 Nov
6N	10E	33	16	Excavated	1.2 (2)	10		7.1	51	189	15.0	9 Nov
6N	11E	9	8	Excavated	0.4	10		8.0	188	1,000	45.0	29 Oct
6N	11E	12	3	Excavated	1.0	14		8.0	257	671	22.5	13 Oct
6N	11E	20	1	Excavated	0.5	9		7.2	257	1,208	15.0	29 Oct
6N	11E	20	2	Excavated	0.3	12		8.0	137	768	7.5	29 Oct
6N	11E	20	4	Excavated	0.25	5		7.7	68	241	7.5	29 Oct
6N	11E	20	5	Excavated	0.8	20	Yes	8.1	137	602	15.0	29 Oct
6N	11E	20	8	Excavated	0.4	7	Yes	8.0	154	530	7.5	29 Oct

APPENDIX C. Farm ponds, continued.

Pond Location T	R	S	F	Type	Surface Area (acres)	Maximum Depth (ft)	Private Fish Hatchery	pH	Total Alkalinity (ppm)	Specific Conductivity (umhos/cm)	Chloride (ppm)	Sampling Date (1981)
6N	12E	4	12	Excavated	0.75	10	Yes	8.2	239	663	15.0	13 Oct
6N	12E	5	8	Excavated	0.75	8	Yes	8.4	154	634	7.5	13 Oct
6N	12E	6	12	Excavated	0.5	8		7.8	205	580	7.5	13 Oct
6N	12E	7	7	Excavated	0.5	9		7.8	137	764	7.5	13 Oct
6N	12E	7	10	Excavated	0.75	10		8.1	222	742	7.5	13 Oct
6N	12E	11	15	Excavated	0.5	4		7.3	205	781	7.5	12 Oct
6N	12E	11	16	Excavated	1.0	13	Yes	8.3	222	851	15.0	12 Oct
6N	12E	13	2	Excavated	0.3	10		7.5	171	462	7.5	12 Oct
6N	12E	13	15	Excavated	0.5	11		8.2	188	495	7.5	13 Oct
6N	12E	22	14	Excavated	0.25	9		8.3	188	526	7.5	13 Oct
6N	12E	29	12	Excavated	1.0	8		8.0	274	742	30.0	13 Oct
6N	12E	32	9	Excavated	0.25	4	Yes	8.3	205	800	15.0	13 Oct
6N	12E	36	5	Excavated-Dammed	0.8 (3)	14	Yes	8.0	291	770	15.0	20 Oct
7N	6E	2	15	Excavated	0.75	8		8.2	205	578	15.0	26 Oct
7N	6E	25	13	Excavated	1.0	10	Yes	8.8	171	556	15.0	26 Oct
7N	6E	30	12	Excavated-Dammed	1.5	12		8.1	222	651	7.5	26 Oct
7N	6E	30	16	Excavated	1.0	10		8.2	154	235	7.5	26 Oct
7N	6E	31	5	Excavated-Dammed	0.3	10		8.7	171	572	15.0	26 Oct
7N	6E	33	5	Excavated-Dammed	0.5	9		7.9	188	545	7.5	26 Oct
7N	6E	34	7	Excavated	0.5	8		7.8	205	715	7.5	26 Oct
7N	7E	17	4	Excavated	1.0	14	Yes	8.2	188	626	15.0	28 Oct
7N	7E	35	9	Excavated	1.5 (2)	8		7.6	205	693	7.5	28 Oct
7N	8E	12	3	Excavated	1.5	10		7.9	154	760	30.0	13 Nov
7N	8E	16	1	Excavated	1.3	4		8.2	188	500	7.5	13 Nov
7N	8E	17	2	Excavated	0.5	16		7.9	171	403	7.5	13 Nov
7N	8E	36	6	Excavated	0.6	8		8.2	51	245	30.0	13 Nov
7N	8E	36	7	Excavated	1.8	10		7.9	34	167	7.5	13 Nov
7N	9E	12	15	Excavated-Dammed	4.0	8		7.9	154	447	30.0	6 Nov
7N	9E	15	6	Natural	2.0	2		6.7	171	636	30.0	6 Nov
7N	9E	25	10	Excavated	4.0	12		7.3	68	277	22.5	6 Nov
7N	9E	27	16	Excavated	2.5 (8)	6		7.3	359	1,700	97.5	11 Nov
7N	9E	28	12	Excavated	0.25	4		7.1	342	955	45.0	5 Oct
7N	9E	31	1	Natural-Excavated	10.0	6		-	-	-	-	-
7N	9E	33	13	Excavated-Dammed	1.0	8		7.3	68	258	15.0	11 Nov
7N	9E	34	2	Excavated-Dammed	5.0	4		8.0	325	1,138	52.5	6 Nov
7N	10E	10	11	Excavated	10.0	6		8.5	34	330	30.0	10 Nov
7N	10E	25	9	Excavated	1.1 (2)	7		10.0	188	473	15.0	10 Nov
7N	11E	6	7	Excavated	0.6	12		8.2	103	500	22.5	3 Nov
7N	11E	11	1	Excavated	0.8	12		6.9	443	1,012	15.0	3 Nov
7N	11E	16	1	Excavated	0.7	6		6.5	34	145	7.5	3 Nov
7N	11E	19	9	Excavated	1.0	12		8.1	171	693	22.5	3 Nov
7N	11E	21	5	Excavated	1.0	9		7.8	17	179	15.0	3 Nov
7N	11E	24	6	Excavated	0.75	14		8.3	154	537	22.5	3 Nov
7N	11E	24	11	Excavated	0.2	8		7.5	307	633	22.5	3 Nov
7N	11E	25	13	Excavated	0.5	12		7.7	205	565	15.0	5 Nov
7N	11E	26	5	Excavated	0.75	9		7.0	306	920	30.0	3 Nov
7N	11E	29	11	Excavated	0.25	8		8.2	188	835	22.5	20 Oct
7N	11E	30	4	Excavated	0.5	10		7.3	188	764	15.0	3 Nov
7N	11E	34	1	Excavated	3.0	6		7.0	306	750	7.5	3 Nov

APPENDIX C. Farm ponds, continued.

Pond Location T	R	S	F	Type	Surface Area (acres)	Maximum Depth (ft)	Private Fish Hatchery	pH	Total Alkalinity (ppm)	Specific Conductivity (umhos/cm)	Chloride (ppm)	Sampling Date (1981)
7N	12E	16	4	Excavated	0.5	8		8.3	154	633	15.0	12 Oct
7N	12E	25	5	Excavated	0.75	5		8.4	154	512	15.0	12 Oct
8N	6E	3	14	Excavated	0.5	10		8.5	222	438	7.5	27 Oct
8N	7E	6	5E	Excavated	0.4	7	Yes	8.0	188	413	15.0	27 Oct
8N	7E	6	5W	Excavated-Dammed	0.6	11	Yes	8.1	154	447	15.0	27 Oct
8N	7E	6	6N	Excavated	0.3	8	Yes	8.2	154	450	15.0	27 Oct
8N	7E	6	6S	Excavated	0.25	5	Yes	8.3	222	420	7.5	27 Oct
8N	7E	18	16	Excavated	0.5	12		8.3	256	636	15.0	27 Oct
8N	7E	36	4	Excavated	0.5	8		7.8	68	241	7.5	28 Oct
8N	9E	8	14	Excavated	2.0	8		7.9	239	932	45.0	28 Sep
8N	9E	31	3	Excavated	0.3	9		7.3	137	250	15.0	28 Sep
8N	10E	3	6	Excavated	0.2	5		7.6	205	730	22.5	11 Nov
8N	10E	5	16	Excavated-Dammed	0.3	6		7.4	239	722	15.0	11 Nov
8N	10E	8	5	Excavated	0.3	12		9.1	154	601	15.0	11 Nov
8N	10E	10	14	Excavated	0.6	8		7.1	17	358	45.0	11 Nov
8N	10E	13	16	Excavated	2.0 (2)	16		8.2	137	384	15.0	11 Nov
8N	10E	16	1	Excavated	0.5	14		7.8	171	578	15.0	11 Nov
8N	10E	18	13	Excavated-Dammed	6.0	4		7.3	154	538	15.0	11 Nov
8N	12E	5	16	Excavated	0.3	5		7.9	239	846	22.5	12 Oct
8N	12E	12	11	Excavated	0.25	10	Yes	8.3	188	641	15.0	12 Oct
8N	12E	15	13	Excavated-Dammed	1.0	10		7.8	222	864	15.0	12 Oct
9N	7E	20	7	Excavated	5.0	8		10.0	288	507	22.5	27 Oct
9N	7E	28	4	Excavated	2.0	8		7.7	103	413	15.0	27 Oct
9N	7E	31	12	Excavated	0.5	13		8.0	222	585	7.5	27 Oct
9N	8E	13	15	Excavated	2.0	10		7.1	103	312	22.5	5 Nov
9N	8E	24	5	Excavated	0.4	14		9.0	256	1,251	127.5	5 Nov
9N	8E	35	6	Excavated	0.6	12		8.0	205	477	15.0	5 Nov
9N	8E	36	10	Natural	2.0	3		6.5	137	335	22.5	5 Nov
9N	9E	10	4	Excavated	0.3	4		8.0	68	310	-	17 Nov
9N	9E	13	15	Excavated	5.0 (2)	10		7.5	257	1,056	-	17 Nov
9N	10E	19	4	Excavated-Dammed	2.0	12		7.7	274	808	22.5	5 Nov
9N	10E	30	3	Excavated	0.5	8		7.7	239	675	37.5	5 Nov
9N	10E	31	3	Excavated	0.8	6		8.7	137	406	15.0	5 Nov
9N	10E	34	3	Excavated	0.5	12	Yes	8.3	205	749	30.0	5 Nov
9N	11E	11	14	Excavated	0.6	12		7.9	249	551	15.0	5 Nov
9N	11E	20	15	Excavated	0.3	7		7.5	171	670	22.5	5 Nov
9N	11E	30	5	Excavated-Dammed	0.3	6		7.9	222	885	45.0	5 Nov
9N	12E	16	12	Excavated	0.3	8		8.3	222	616	15.0	12 Oct

APPENDIX D.1. Physical characteristics of named Dane County pothole and marsh ponds.

Ponds	Location T	R	S	F	Drainage System	Surface Acres No.	Under 3 ft (%)	Over 20 ft (%)	Maximum Depth (ft)	Maximum Length (miles)	Maximum Width (miles)	Shoreline (miles)	SDF*
Oregon													
Peterson Pond	5N	9E	7	10	Land-locked	3.1	100	0	2	0.12	0.08	0.41	1.66
Maher Pond	5N	9E	9	3	Land-locked	6.2	80	0	4	0.14	0.12	0.38	1.09
Ortman Pond	5N	9E	26	8	Land-locked	4.6	90	0	4	0.14	0.09	0.38	1.26
Mortenson Pond	5N	9E	26	9	Land-locked	11.2	100	0	3	0.25	0.12	0.65	1.38
Fox Pond	5N	9E	3	-	—	5.3	-	-	-	-	-	-	-
Christenson Pond	5N	9E	28	3	--	2.5	-	-	-	-	-	-	-
Rutland													
Ames Pond	5N	10E	31	3	Land-locked	6.1	85	0	4	0.20	0.07	0.51	1.47
Dunkirk													
Bower Pond	5N	11E	36	7	Land-locked	12.5	35	0	15	0.25	0.14	0.58	1.17
Albion													
Edgerton Pond	5N	12E	34	9	Land-locked	5.1	60	0	5	0.16	0.07	0.38	1.20
Turtle Lake	5N	12E	24	12	—	15.0	-	-	-	-	-	-	-
Verona													
Pond 22-14	6N	8E	22	14	Land-locked	4.6	-	-	-	0.13	0.08	0.32	1.07
Fitchburg													
Seminole Pond	6N	9E	5	3	Land-locked	13.8	85	0	4	0.28	0.14	0.91	1.75
Section 26 Pond	6N	9E	26	16	Land-locked	4.4	40	0	8	0.14	0.07	0.42	1.43
Anderson Pond	6N	9E	33	7	—	16.0	-	-	-	-	-	-	-
Section 35 Pond	6N	9E	35	2	Land-locked	12.4	85	0	4	0.21	0.13	0.64	1.30
Cross Plains													
Gallagher Pond	7N	7E	11	9	Black Earth Creek	5.0	-	-	-	0.17	0.08	0.57	1.82
Middleton													
Dreher Pond	7N	8E	2	1	Land-locked	12.7	90	0	4	0.23	0.13	0.78	1.56
Tiedeman Pond	7N	8E	11	16	Land-locked	8.8	60	0	6	0.23	0.10	0.94	2.26
Techam Pond	7N	8E	10	-	—	13.0	100	0	3	-	-	-	-
Voss Pond	7N	8E	14	-	--	25.0	-	0	4.5	-	-	-	-
Dauck Pond	7N	8E	14	2	Land-locked	0.6	100	0	1.5	0.04	0.03	0.13	1.20
Madison													
Westside Pond	7N	9E	31	1	Land-locked	14.9	80	0	6	0.32	0.10	1.7	3.14
Berry													
Bruenig Pond	8N	7E	3	5	Land-locked	8.1	30	0	10	0.20	0.08	0.51	1.28
Springfield													
Barbian Pond	8N	8E	2	7	Six Mile Creek	6.6	100	0	3	0.14	0.12	0.56	1.56
Diedrich Pond	8N	8E	4	7	Six Mile Creek	19.8	60	0	6	0.39	0.13	0.98	1.57
Springfield Pond	8N	8E	5	16	Land-locked	2.9	25	0	12	0.14	0.06	0.44	1.84
L. Buechner Pond	8N	8E	8	13	Land-locked	9.3	40	0	8	0.25	0.10	0.61	1.42
Krutchen Pond	8N	8E	9	7	Land-locked	1.8	75	0	5	0.08	0.06	0.28	1.49
Dahmen Pond	8N	8E	16	11	Land-locked	13.9	85	0	4	0.25	0.13	0.70	1.34
Meier Pond	8N	8E	18	3	Land-locked	8.4	40	0	6	0.28	0.08	0.87	2.14
C. Buechner Pond	8N	8E	19	2	Land-locked	11.7	100	0	3	0.21	0.13	0.68	1.41
Dorn Pond	8N	8E	25	14	Land-locked	8.1	85	0	4	0.16	0.14	0.51	1.28
Westport													
O'Connell Pond	8N	9E	32	12	Land-locked	5.3	65	0	6	0.12	0.10	0.42	1.30

*Shoreline Development Factor.

APPENDIX D.2. Chemical characteristics of named Dane County pothole and marsh ponds.

Ponds	pH	Total Alkalinity (ppm)	Specific Conductivity (umhos/cm)	Chloride (ppm)	Water Color	Sampling Date (1981)
Oregon						
Peterson Pond	7.5	86	278	15.0	Clear	30 Oct
Maher Pond	7.2	34	135	7.5	Clear	30 Oct
Ortman Pond	6.5	51	152	7.5	Clear	22 Sep
Mortenson Pond	6.5	51	132	7.5	Light brown	22 Sep
Rutland						
Ames Pond	6.7	103	228	15.0	Clear	30 Oct
Dunkirk						
Bower Pond	7.7	103	310	15.0	Clear	27 Oct
Albion						
Edgerton Pond	6.8	68	208	15.0	Clear	27 Oct
Verona						
Pond 22-14	8.8	205	360	15.0	--	14 Jun*
Fitchburg						
Seminole Pond	7.3	34	195	15.0	Clear	30 Oct
Section 26 Pond	7.0	68	348	15.0	Clear	30 Oct
Section 35 Pond	7.0	171	730	30.0	Clear	30 Oct
Cross Plains						
Gallagher Pond	7.8	248	492	4.0	--	18 Nov**
Middleton						
Dreher Pond	7.1	171	481	7.5	Light brown	13 Nov
Tiedeman Pond	7.1	103	358	22.5	Light brown	13 Nov
Dauck Pond	9.2	68	239	7.5	Dark brown	13 Nov
Madison						
Westside Pond	7.2	51	209	-	Clear	17 Nov
Berry						
Bruenig Pond	8.7	86	219	15.0	Clear	28 Oct
Springfield						
Barbian Pond						
Diedrich Pond	7.1	86	250	22.5	Clear	28 Oct
Springfield Pond						
L. Buechner Pond					Clear	28 Oct
Krutchen Pond	6.9	86	305	30.0	Clear	28 Oct
Dahmen Pond	6.8	86	230	30.0	Clear	28 Oct
Meier Pond	8.2	68	250	22.5	Clear	28 Oct
C. Buechner Pond	7.0	68	204	30.0	Clear	28 Oct
Dorn Pond	6.7	86	43	22.5	Clear	28 Oct
Westport						
O'Connell Pond	9.0	68	192	15.0	Clear	28 Oct

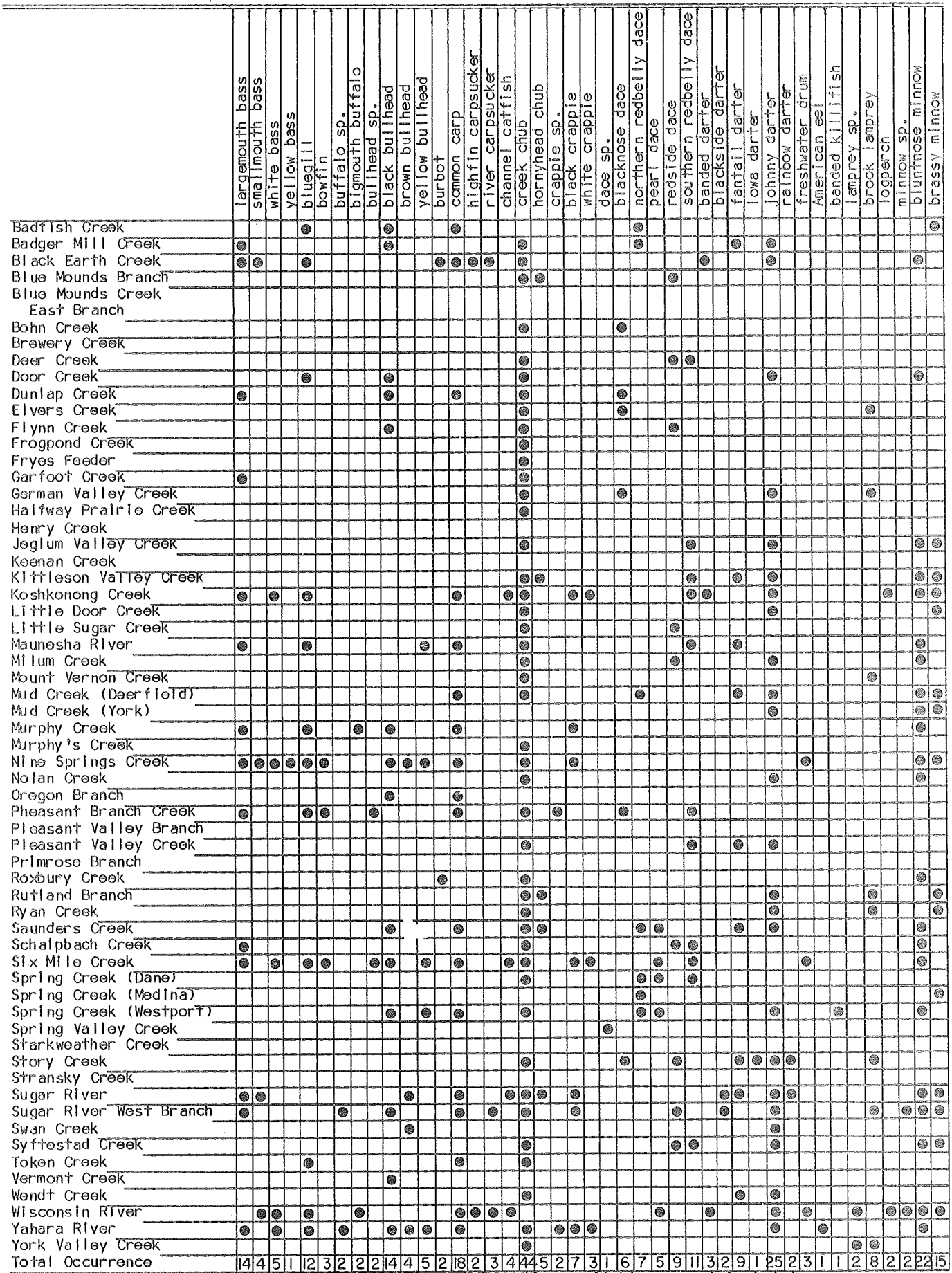
*Sampled in 1976.
**Sampled in 1969.

APPENDIX E.1. Fish species distribution Dane County lakes.*

	largemouth bass	rock bass	smallmouth bass	white bass	bluegill	bowfin	buffalo sp.	bigmouth buffalo	bullhead sp.	black bullhead	brown bullhead	yellow bullhead	common carp	golden carp	channel catfish	cisco	black crappie	white crappie	iowa darter	johnny darter	freshwater drum	longnose gar	banded killifish	logperch	bluntnose minnow	fathead minnow	central mudminnow	muskellunge	yellow perch	northern pike	northern pike x muskie	pumpkinseed	mottled sculpin	common shiner	emerald shiner	golden shiner	spotfin shiner	spottail shiner	brook silverside	lake sturgeon	white sucker	green sunfish	orangespotted sunfish	trout sp.	brown trout	rainbow trout	walleye	total species
Lake Belle View**	●		●		●					●			●		●		●			●				●								●			●					●						14
Cherokee Lake	●				●					●			●				●	●											●	●															●	9
Crystal Lake	●				●								●				●	●													●				●											7
Fish Lake	●				●					●	●		●			●	●								●				●	●		●			●				●	●				●	15
Fishers Lake																														●																1
Goose Lake										●																																				1
Goose Pond									●																																					1
Grass Lake (Dunn)																									●																				1
Lake Harriet										●																●																			2
Indian Lake					●					●							●									●			●											●	●				7
Lake Kegonsa	●	●	●	●	●	●		●		●	●	●	●		●		●	●	●		●	●		●	●	●			●	●		●		●	●			●	●				●	30
Marshall Millpond	●				●				●				●		●		●													●		●								●	●				10
Lake Mendota	●	●	●	●	●	●		●		●	●	●	●	●	●	●	●	●			●	●	●	●	●	●			●	●	●	●			●		●		●	●	●				●	33
Lake Monona[a]	●	●	●	●	●	●		●		●	●	●	●		●	●	●	●	●	●	●	●		●	●	●			●	●		●	●	●	●			●	●				●	35
Morse Pond																										●																			1
Mud Lake (Deerfield)[b]	●										●												●				●														●	●				6
Mud Lake (Roxbury)	●				●					●			●				●												●	●		●			●									10
Lower Mud Lake	●	●		●	●	●				●	●	●	●		●		●	●			●	●			●	●			●	●		●			●			●	●				●	24
Upper Mud Lake	●	●		●	●	●				●	●	●	●		●		●	●			●	●			●	●			●	●		●			●			●	●				●	24
Rice Lake					●					●															●	●																		4
Rockdale Millpond[c]													●																	●				●										3
Salmo Pond	●									●															●							●				●					●	●			8
Stewart Lake	●																																										●		2
Stoughton Lake	●				●		●			●	●	●	●				●	●		●	●				●				●	●		●						●		●	●			●	19
Token Creek Millpond													●																														●			2
Verona Gravel Pit	●										●																														●	●				4
Lake Waubesa	●	●	●	●	●	●				●	●	●	●		●		●	●	●		●	●		●	●	●			●	●	●	●			●		●	●		●	●			●	29
Lake Wingra	●	●			●	●				●	●	●	●				●	●				●			●	●	●	●	●	●	●	●				●		●	●		●	●			●	24
Total Occurrence	18	7	5	6	16	7	1	3	2	18	11	8	15	1	8	3	14	9	3	3	7	7	2	4	13	12	2	1	12	14	4	13	2	3	3	11	1	1	8	3	16	14	2	1	1	1	10	326

*Lakes without fish or with no information available are not included.
**Species present only in Lake Belle View include creek chub, suckermouth minnow, golden redhorse, shorthead redhorse, silver redhorse, and sand shiner.
[a]Species present only in Lake Monona include burbot and sand darter.
[b]Species present only in Mud Lake (Deerfield) include northern redbelly dace and brook stickleback.
[c]Species present only in Rockdale Millpond include hornyhead chub and central stoneroller.

APPENDIX E.2. Fish species distribution of Dane County streams.*



*Streams with unsp. forage fish and those with no information available are not included.

**Species present only in the Wisconsin River include carpsucker sp., flathead catfish, speckled chub, sand darter, slenderhead darter, silver lamprey, mooneye, paddlefish, pike sp., river shiner, and shovelnose sturgeon.

APPENDIX E.2. Fish species distribution of Dane County streams, continued.

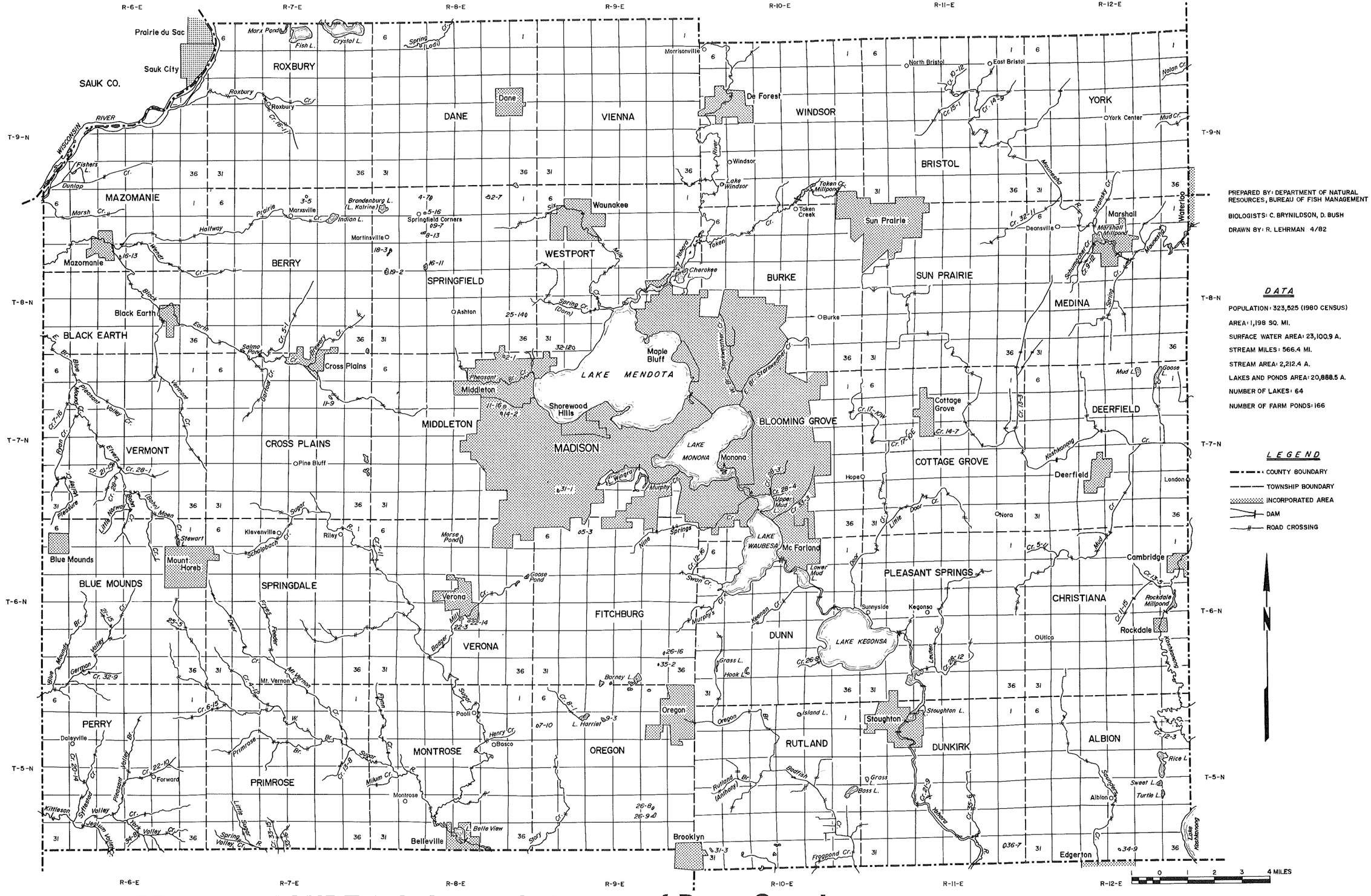
	fathead minnow	suckermouth minnow	central mudminnow	yellow perch	grass pickerel	northern pike	northern pike x muskie	pumpkinseed	quillback	redhorse sp.	golden redhorse	northern redhorse	shorthead redhorse	silver redhorse	sauger	sculpin sp.	mottled sculpin	bigmouth shiner	blackchin shiner	blacknose shiner	common shiner	emerald shiner	golden shiner	rosyface shiner	sand shiner	spottin shiner	spottail shiner	brook silverside	brook stickleback	stonecat	stoneroller sp.	central stoneroller	largescale stoneroller	sucker sp.	northern hog sucker	white sucker	green sunfish	blackstripe topminnow	brook trout	brown trout	rainbow trout	walleye	total species
Badfish Creek	●		●													●	●				●								●							●	●			●			11
Badger Mill Creek	●		●													●	●				●								●							●	●						12
Black Earth Creek	●								●		●		●		●	●	●				●				●	●									●	●	●		●	●	●	●	29
Blue Mounds Branch												●									●															●	●						8
Blue Mounds Creek East Branch			●			●											●																			●	●			●	●		7
Bohn Creek																																				●	●			●	●		5
Brewery Creek	●																																										2
Deer Creek																	●												●		●					●	●						7
Door Creek																					●					●			●							●	●						9
Dunlap Creek			●			●											●												●							●	●			●			11
Elvers Creek																	●												●							●	●			●	●		8
Flynn Creek	●		●														●				●								●							●	●			●			10
Frogpond Creek																																											1
Fryes Feeder																	●							●								●				●				●			6
Garfoot Creek																	●				●															●	●				●			6
German Valley Creek																													●			●				●							7
Halfway Prairie Creek	●																																			●							3
Henry Creek																																											1
Jeglum Valley Creek																	●				●								●							●				●			10
Keenan Creek																																											1
Kittleson Valley Creek																	●				●															●	●				●			12
Koshkonong Creek			●		●	●		●			●		●					●	●	●	●		●		●	●		●	●	●		●			●	●	●				●	35
Little Door Creek																													●	●						●							5
Little Sugar Creek	●																●																			●				●			6
Maunesha River	●		●			●		●													●											●				●	●	●					17
Milum Creek	●																						●						●							●	●						8
Mount Vernon Creek	●		●														●				●															●				●	●	●	10
Mud Creek (Deerfield)	●		●			●													●	●															●							12
Mud Creek (York)	●			●														●								●			●													8
Murphy Creek	●		●			●	●															●	●													●					●	15
Murphy's Creek	●		●	●																									●			●				●	●					8
Nine Springs Creek	●							●													●	●	●		●	●		●	●							●			●	●	●	●	30
Nolan Creek	●																																			●							5
Oregon Branch	●																												●							●							5
Pheasant Branch Creek	●					●	●	●																					●							●						●	16
Pleasant Valley Branch																																		●						●			2
Pleasant Valley Creek																	●												●							●							7
Primrose Branch																													●							●				●	●	●	5
Roxbury Creek	●		●	●																		●				●			●		●	●				●							12
Rutland Branch	●		●														●												●							●				●	●		12
Ryan Creek			●														●												●							●	●			●	●		10
Saunders Creek	●		●															●			●								●	●		●				●	●						18
Schalpbach Creek	●		●														●																			●							9
Six Mile Creek	●		●	●		●		●													●		●						●		●					●	●					●	28
Spring Creek (Dane)	●	●															●												●							●				●			10
Spring Creek (Medina)	●		●																										●			●				●							7
Spring Creek (Westport)	●		●																				●						●							●							14
Spring Valley Creek																					●																						2
Starkweather Creek	●																						●						●														3
Story Creek	●		●			●					●		●				●												●			●				●	●			●	●	●	21
Stransky Creek			●																										●							●	●						4
Sugar River	●	●	●			●				●	●		●	●			●				●		●		●				●		●	●			●	●	●					●	34
Sugar River West Branch	●		●			●		●			●					●	●				●		●		●				●		●	●			●	●	●		●	●	●	●	33
Swan Creek						●																							●							●							5
Syftestad Creek	●																●				●								●			●				●							12
Token Creek	●																												●							●	●			●		●	9
Vermont Creek																	●																			●				●			4
Wendt Creek	●																									●										●							6
Wisconsin River**	●					●	●		●		●		●					●				●				●	●								●		●					●	30
Yahara River	●			●		●		●									●				●	●	●				●	●	●			●				●	●			●		●	30
York Valley Creek																	●																			●				●			6
Total Occurrence	35	2	23	5	1	14	3	7	2	1	6	1	5	1	1	1	25	5	2	2	9	5	10	1	6	8	1	3	35	3	6	13	1	2	2	54	17	2	6	26	11	11	679

*Streams with unsp. forage fish and those with no information available are not included.

**Species present only in the Wisconsin River include carpsucker sp., flathead catfish, speckled chub, sand darter, slenderhead darter, silver lamprey, mooneye, paddlefish, pike sp., river shiner, and shovelnose sturgeon.

APPENDIX F. Dane County public lands acreage.

Township	State of Wisconsin DNR Lands Fish Mgt.	State of Wisconsin DNR Lands Wildlife Mgt.	State of Wisconsin DNR Lands Parks	State of Wisconsin Other	Dane County	Federal	Wisconsin Alumni Research Foundation	University of Wisconsin	University of Wisconsin Regents	City of Madison	Other	Township Totals
Albion												0.0
Berry	40.2				545							585.2
Black Earth	15.19				293							308.1
Blooming Grove	247.1				334		179.5			1,132		1,892.6
Blue Mounds			178.3		127							305.3
Bristol		153.5										153.5
Burke	625.9			10	540	1,910				688	44	3,817.9
Christiana		75.3			194							269.3
Cottage Grove		81.8										81.8
Cross Plains	91.7		102.0									193.7
Dane		783.1										783.1
Deerfield		1,560.5		40.5								1,601.0
Dunkirk	59.7				56.5	28.2					40.6	185.0
Dunn	168.5	174.8			34				243.9		40.3	661.5
Fitchburg	300.8			538.3	45	12	204.7		157.1	258.7	38.0	1,554.6
Madison	17.2				108	12		460	1,051	157		1,805.2
Mazomanie	44	2,764										2,808
Medina		71.2			31							102.2
Middleton									219	205	106	530
Montrose		549								112		661
Oregon		571.8										571.8
Perry												0.0
Pleasant Springs		155.6	342.8		58.8							557.2
Primrose	286.2											286.2
Roxbury					45.0							45.0
Rutland		1,127.5				538.7						1,666.2
Springdale	68.7											68.7
Springfield		431.7										431.7
Sun Prairie					118.5						242	360.5
Vermont	157											157.0
Verona					795.8		562			161		1,518.8
Vienna								111				111
Westport	334.8		359.9	445						210		1,349.7
Windsor	4.2											4.2
York		1,304.7										1,304.7
Total	2,461.19	9,804.5	983.0	1,033.8	3,325.6	2,500.9	946.2	571	1,671	2,923.7	510.9	26,731.7



PREPARED BY: DEPARTMENT OF NATURAL RESOURCES, BUREAU OF FISH MANAGEMENT

BIOLOGISTS: C. BRYNILDSON, D. BUSH

DRAWN BY: R. LEHRMAN 4/82

DATA

POPULATION: 323,525 (1980 CENSUS)

AREA: 1,198 SQ. MI.

SURFACE WATER AREA: 23,100.9 A.

STREAM MILES: 566.4 MI.

STREAM AREA: 2,212.4 A.

LAKES AND PONDS AREA: 20,888.5 A.

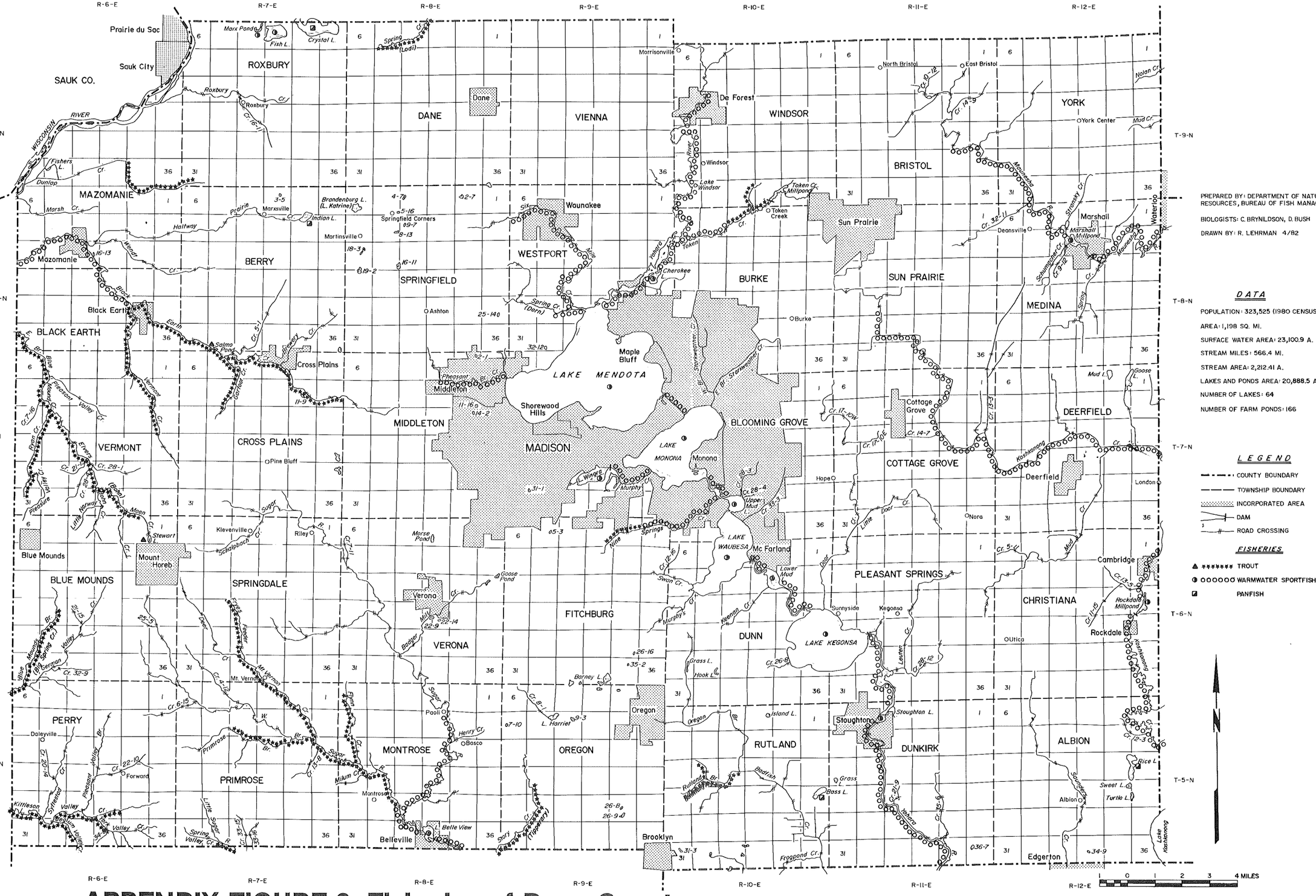
NUMBER OF LAKES: 64

NUMBER OF FARM PONDS: 166

LEGEND

- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY
- INCORPORATED AREA
- DAM
- ROAD CROSSING

APPENDIX FIGURE 8. Lakes and streams of Dane County.



PREPARED BY: DEPARTMENT OF NATURAL RESOURCES, BUREAU OF FISH MANAGEMENT

BIOLOGISTS: C. BRYNILDSON, D. BUSH

DRAWN BY: R. LEHRMAN 4/82

DATA

POPULATION: 323,525 (1980 CENSUS)

AREA: 1,198 SQ. MI.

SURFACE WATER AREA: 23,100.9 A.

STREAM MILES: 566.4 MI.

STREAM AREA: 2,212.41 A.

LAKES AND PONDS AREA: 20,888.5 A.

NUMBER OF LAKES: 64

NUMBER OF FARM PONDS: 166

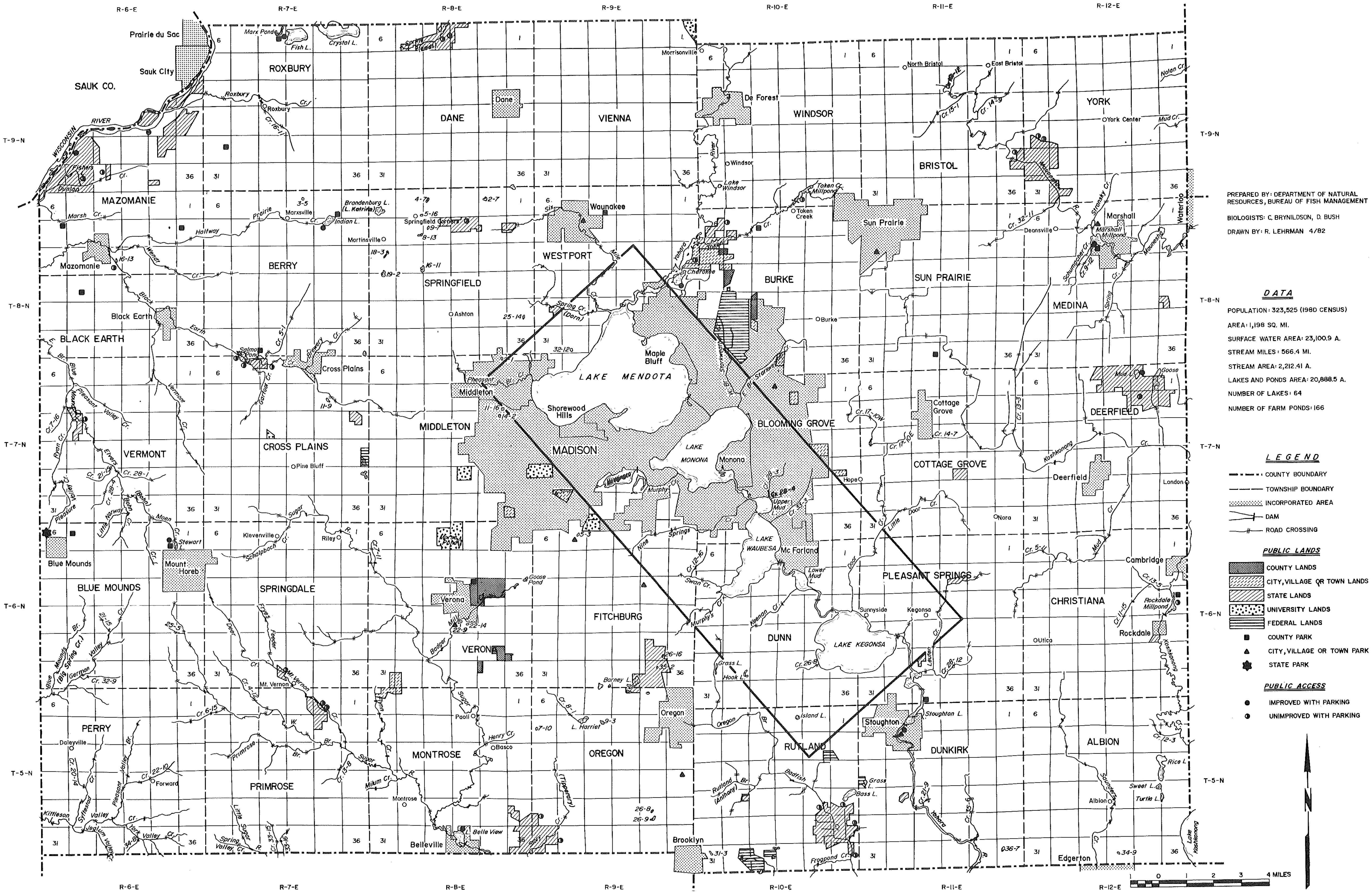
LEGEND

- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY
- INCORPORATED AREA
- DAM
- ROAD CROSSING

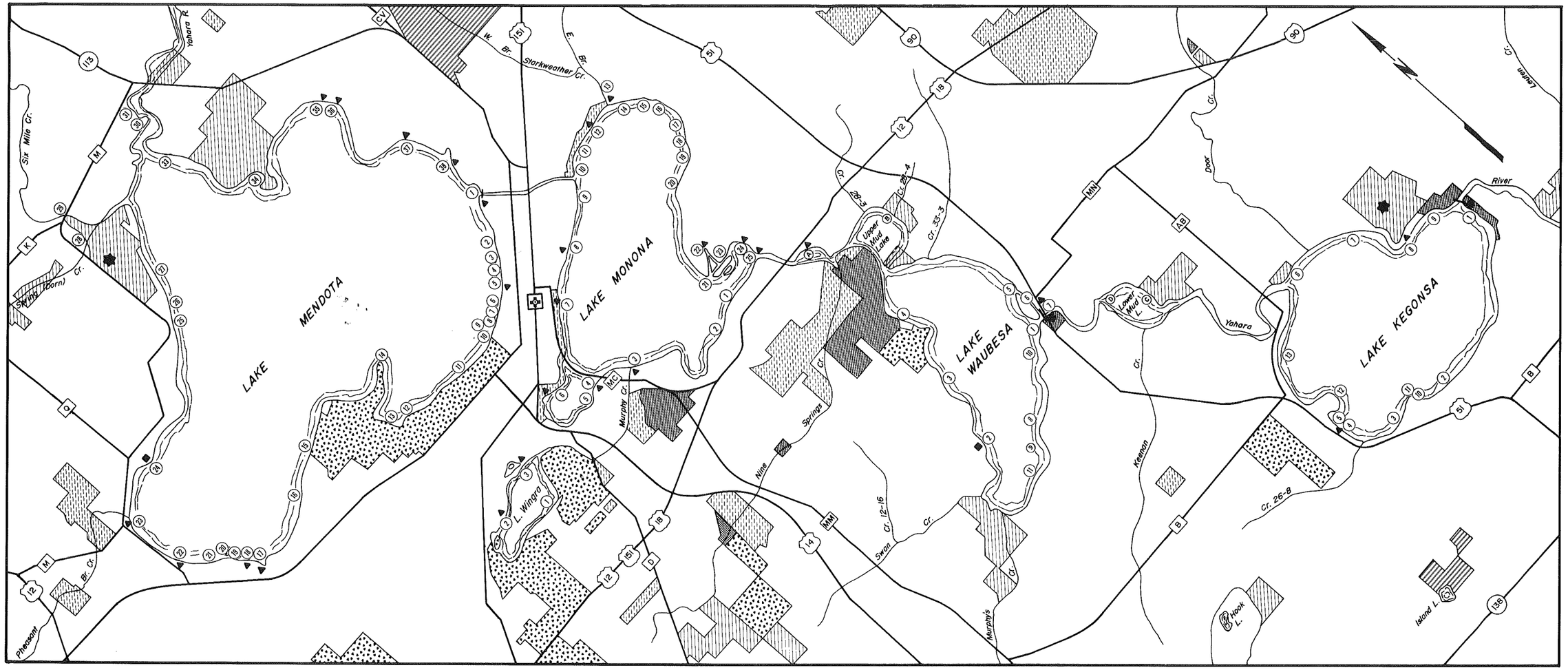
FISHERIES

- ▲ ******* TROUT
- ◑ OOOOOO WARMWATER SPORTFISH
- ◪ PANFISH

APPENDIX FIGURE 9. Fisheries of Dane County.



APPENDIX FIGURE 10. Public lands and access in Dane County.



APPENDIX FIGURE 11. Yahara lakes inset of public lands and access.

LEGEND

- COUNTY LANDS
- CITY, VILLAGE OR TOWN LANDS
- STATE LANDS
- UNIVERSITY LANDS
- FEDERAL LANDS
- COUNTY PARK
- CITY, VILLAGE OR TOWN PARK
- STATE PARK
- (13) ACCESS SITE

FIGURE 9. Key Public Access Points on the Yahara River Inset

Lake Kegonsa

Location: T6N, R10E, Sec. 13, 14, and 23-26; T6N, R11E, Sec. 18-20, 29 and 30.

Access points (clockwise from Yahara River outlet):

1. La Follette County Park, south of Yahara outlet. Access with parking. No boat ramp.
2. Camp Brooklyn. Boat ramp with limited parking.
3. Quam Road. Boat ramp with limited parking.
4. Off Hwy. 51 between Colladay Point and unnamed creek to the south. Boat ramp with limited parking.
5. Barber Drive. Unimproved access.
6. Fish Camp Road. Boat ramp with parking.
7. Sunnyside Resort. Boat ramp with parking.
8. Sunnyside Road, Williams Point. Boat ramp with parking.
9. Lake Kegonsa State Park. Boat ramp with parking.
10. Quam Road and Bjoin Road. Boat ramp with limited parking.
11. Quam Road at Lund's Point. Walk on access. No off-road parking.
12. Colladay Road. Walk on access. No off-road parking.
13. County Hwy. AB. Walk on access. No off-road parking.

Lake Mendota

Location: T7N, R9E, Sec. 1-18; T7N, R8E, Sec. 1 and 2; T8N, R9E, Sec. 27, 28, and 33-36.

Access points (clockwise from Yahara River outlet):

1. Tenney Park. Several unimproved access points and one launching ramp. Adequate parking.
2. N. Brearly Street. Boat ramp without parking.
3. N. Livingston Street. Steep access.
4. N. Blount Street. Unimproved access.
5. N. Blair Street/James Madison Park. Beach and parking. No launching ramp.
6. N. Pinckney Street. Steep access.
7. N. Carroll Street. Steep access.
8. N. Henry Street. Steep access.
9. N. Frances Street. Launching ramp with street parking.
10. N. Lake Street. Launching ramp with limited parking.
11. University lake front area and lake shore path, N. Lake Street to Picnic Point. Continuous unimproved access. Some areas with parking.
12. Willow Beach, Willow Drive. No launching ramp.
13. Willow Drive, near Marsh Lane and Walnut Street intersections. One launching ramp with parking in a nearby university lot.
14. Picnic Point. Wilderness access with parking.
15. Tent Colony. Steep wilderness access.
16. Lake Mendota Drive at Edgehill. Steep wilderness access with parking.
17. Spring Harbor. Boat launching with limited parking.
18. Off 5400 block of Lake Mendota Drive. Beach with limited parking.
19. Epworth Street. Unimproved access.
20. Capitol Avenue. Unimproved access.
21. Baker Avenue. Boat ramp without parking.
22. Marshall Park, City of Middleton. Boat launch with parking.
23. Lake Street, City of Middleton. Boat ramp with parking.
24. Mendota Park. County park near West Point Road and County M. Boat launch with parking.
25. Trantin Road. Unimproved access.
26. Wakanda Drive. Wilderness access on inlet.
27. Borchers Beach Road. Wilderness access by way of strip between two parcels of private land.
28. Spring (Dorn) Creek off North Shore Bay Road. Unimproved boat launch area (small stream channel) with parking.
29. Six Mile Creek on County M near County K. Unimproved access with roadside parking.
30. Off Blue Bill Drive on Yahara River. Marina with ramp and parking.
31. County M just west of Northport Drive. Marina with boat ramp and parking.
32. Burningwood Way (Cherokee subdivision) on Cherokee Lake (not shown on map). Several unimproved access sites.
33. Base of Governor's Island. Unimproved boat launching ramp on each side of peninsula and several unimproved access points.
34. Warner Beach. Boat ramp with parking and beach access.
35. Woodward Drive, Maple Bluff Village Park. Boat ramp with parking.
36. Village of Maple Bluff Beach. No boat access. Parking.
37. Bay Avenue. Walk-on access by storm sewer without parking.
38. Burrows Park (Maple Bluff). Unimproved access with parking.

Lake Monona

Location: T7N, R9E, Sec. 13 and 23-26; T7N, R10E, Sec. 7, 8, and 17-20.

Access Points (clockwise from Yahara River outlet):

1. Fayette Street. Unimproved access.
2. Esther Beach Road. Unimproved access.
3. Olin Park. Boat ramp with parking.

Monona Bay

4. Lake Court. Unimproved access.
5. Gilson Street/Shore Drive. Beach access.
6. Brittingham Park. Unimproved access with parking.
7. Law Park, John Nolen Drive. Two boat ramps with parking.
8. B.B. Clarke Park. Unimproved access without parking.
9. S. Dickinson Street. Unimproved access.
10. Yahara River inflow, Yahara Place. Unimproved access.
11. Dunning Street. Unimproved access.
12. Hudson Park, Lakeland Avenue. Unimproved access.
13. Starkweather Creek, Olbrich Park. Boat ramp with parking.
14. Olbrich Park. Unimproved lake access with parking.
15. Grove Street. Unimproved access.
16. Atwood Avenue at Lake Edge Road and Buckeye Road. Unimproved access.
17. Winnequah/E. Winnequah roads. Unimproved access.
18. Cold Spring Road. Unimproved access.
19. Outlook Road. Unimproved access at beach on inlet.
20. Tonyawatha Trail. Boat ramp with parking.
21. Winnequah Court. Boat ramp with parking.
22. Winnequah Road, near Tecumsech. Bank access to canal.
23. Nishishin Road. Bank access to canal.
24. Winnequah Road, 5800 block. Beach access.
25. Winnequah Road, near Yahara outlet. Unimproved access on inlet.

Lake Waubesa

Location: T6N, R10E, Sec. 3-5, 7-9, and 17; T7N, R10E, Sec. 28 and 32-34.

Access points (clockwise from Yahara outlet):

1. Yahara River outlet, south side. Babcock County Park. Boat ramp with parking.
2. Goodland County Park. Boat ramp with parking.
3. McConnell Road (off Waucheeta Road). Boat ramp with parking.
4. Libby Road. Boat ramp with parking.
5. Lake Edge Road. Boat ramp without parking.
6. Burma Road. Unimproved access at bridge over canal.
7. Gaging Station, Yahara River, north side. Unimproved access with parking.
8. Tower Road, Morris Park Road. Walk on access. No off-road parking.
9. Morris Park Road, Tower Road. Walk on access. No off-road parking.
10. End of Camp Leonard Road. Walk on access. No off-road parking.
11. Jordan Road. Walk on access. No off-road parking.

Lake Wingra

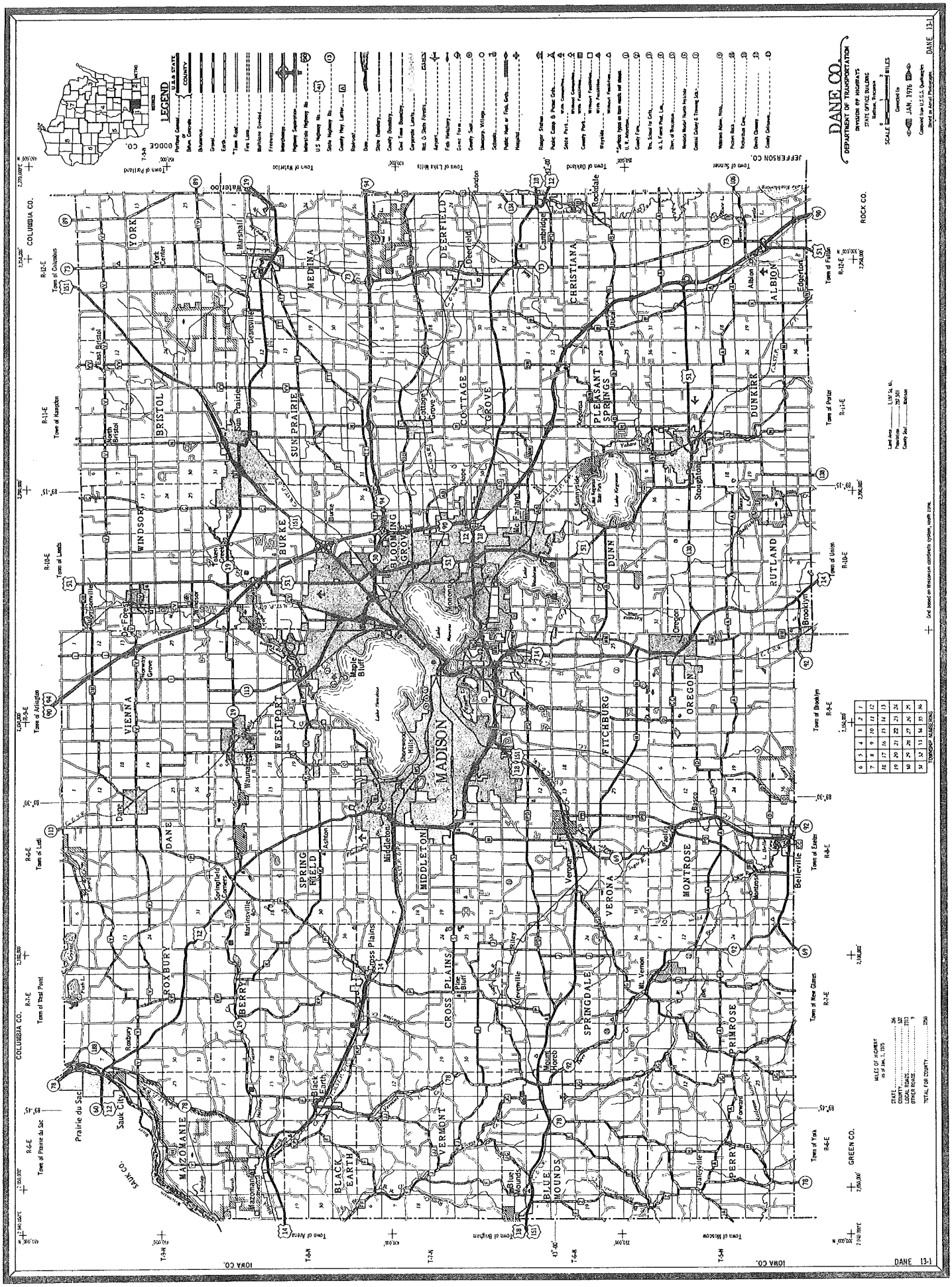
Location: T7N, R9E, Sec. 27 and 28.

Access points:

1. University Arboretum. Several unimproved and wilderness access points on the south, east, and west shores.
2. Knickerbocker Street. Boat ramp with parking.
3. Vilas Park, north shore. Unimproved access with parking.

Additional Access Points

A. Yahara widespread, north shore; above Upper Mud Lake. Unimproved access with parking at small city park on south side of Hwy. 12-18.
B. Upper Mud Lake, east shore. Wilderness access through DNR land.
C. Lower Mud Lake, east shore. Wilderness access through DNR land.
D. Lower Mud Lake, end of Sleepy Hollow Road. Boat ramp. No off-road parking.



APPENDIX FIGURE 12. Highway map of Dane County.