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A DESCRIPTION OF THE AGRICULTURAL ECONOMY  
OF THE SOUTHEAST WISCONSIN RIVERS BASIN

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TECHNICAL REPORT NO. 1

SOUTHEAST WISCONSIN RIVERS BASIN

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
ECONOMIC RESEARCH SERVICE  
FOREST SERVICE

MARCH 1969

WORKING MATERIALS

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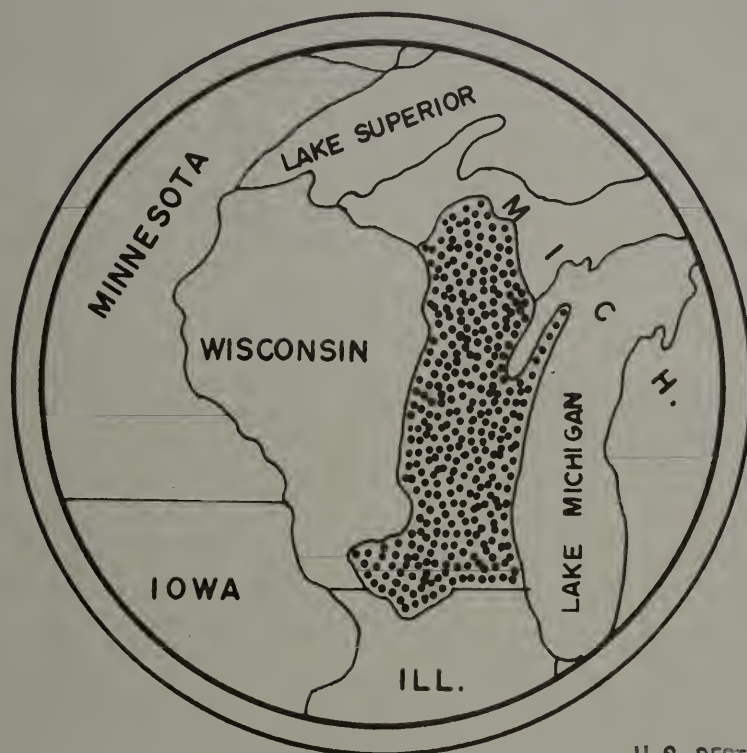
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The United States Department of Agriculture is conducting a Type IV River Basin study in cooperation with Wisconsin state and local agencies on the Southeast Wisconsin Rivers. The USDA is carrying out its assignment in accordance with a Memorandum of Understanding dated April 15, 1968, between the Soil Conservation Service, Forest Service and Economic Research Service.

The planning responsibilities of the USDA are to evaluate the resources and consider solutions to the water and related land problems and needs associated with projected future land use patterns. The studies will be directed toward the identification of potential feasible projects which could be implemented for flood prevention, drainage, irrigation, soil and water conservation, fish and wildlife enhancement, water supply, control and reduction of pollution, and recreational development. Economic Subareas One through Four are included in a Type I Great Lakes Study. Economic Subarea Five is included in a Type I Upper Mississippi River Basin Study. The results of the Type I Studies will have application to the Southeast Wisconsin area, but the Type IV Southeast Wisconsin Study will contain greater detail and be directed toward the location and identification of corrective measures.

This preliminary report is prepared jointly by the three USDA agencies to provide basic resource information concerning the present agricultural economy of the Southeastern Wisconsin Rivers Basin. The data presented in this report are intended to provide information of the existing agricultural use of land and water, output of agricultural products, and the concentration of output in each economic subarea. General trends in the data are presented but no analysis other than simple projections of future characteristics are attempted. Subsequent reports will relate to future demand of agricultural products and projected agricultural economic activity in the Basin.



The object of this report is to describe the present agricultural economy and provide useful background information on the agricultural activity in the Southeast Wisconsin Rivers Basin (Figure 1). To facilitate economic discussion, the thirty-nine counties of the Basin have been grouped in five economic sub-areas (Figure 2).

In 1960 there were about 290,000 people living on farms in the Basin. The rural population has been declining as people have migrated to the urban centers. Farm employment has decreased and a higher proportion of farm operators are working part-time away from their farms. Agriculturally related industries employ many workers in the Basin.

About 42 percent of the land area is forested. Subareas One and Two contain the major forest producing areas within the Basin. Over 700,000 acres are included in the Nicolet and Ottawa National Forests. Wood using firms comprise an important part of the Basin's industry.

The average size and value per farm in the Basin have been increasing. In 1964 the average farm size was 156 acres with a value of more than \$34,800. Corresponding to the growing average size of farm, there has been a decline in the total number of farms. Over two-thirds of the farms in 1964 were in the census type of farm class designated livestock, dairy, and poultry. Eighty-four percent of the 62,089 farms in the Basin were classified as commercial farms.

The value of farm products sold in the Basin in 1964 was over 644 million dollars. Livestock and livestock products accounted for \$461 million, crop sales \$138 million, poultry and poultry products \$20 million, farm forest products \$11 million, and others \$14 million.

The 9.7 million acres classified as farm land compose about 62 percent of the total acreage in the Basin. Sixty-nine percent of the land on farms is cropland. Alfalfa and other hay, corn, and oats are grown on 88 percent of the cropland harvested in the Basin. The remaining 12 percent is divided among several different crops. The number of acres irrigated has increased substantially over the ten year period from 1954 to 1964. About 30,600 acres were irrigated in the Basin in 1964.

Dairying is important throughout the Basin. In 1964, 1.1 million or 7.5 percent of the nation's dairy cows were located in the Basin. While dairy cow numbers have declined, the production per cow has been increasing. The Basin sold more than one million head of cattle, 2.1 million hogs, 83,500 sheep, and 1.3 million broilers in 1964. Sheep and broiler sales in the Basin have been declining.





A DESCRIPTION OF  
THE AGRICULTURAL ECONOMY OF THE  
SOUTHEAST WISCONSIN RIVERS BASIN

INTRODUCTION\*

The object of this report is to describe the present agricultural economy and provide useful background information on the agricultural activity in the Southeast Wisconsin Rivers Basin. Materials are presented by economic subareas within the overall basin area. Comparisons of the Basin to the State of Wisconsin plus three Michigan counties and two Illinois counties and to the United States are made where relevant.

Discussion herein concerns a brief description of the Basin, geographic concentration of production, and relative importance of the Basin in producing agricultural products. Analysis of trends and possible future agricultural activity by economic subarea will be limited to apparent directional changes. Projected agricultural activity and analyses of economic potentials for water resource development will be presented in later reports.

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\* This report was prepared by John R. Gordon, an agricultural economist, with the Economic Research Service, NRED, NCRG. Contributions were made by other members of the River Basin Staff. An earlier draft was reviewed by Economic Research Service, Forest Service, and Soil Conservation Service personnel.



## DESCRIPTION OF THE BASIN

The Southeast Wisconsin Rivers Basin lies in eastern and southern Wisconsin, north central Illinois, and northern Michigan. There are portions of two major continental drainage basins in the study area, the Upper Mississippi and the Great Lakes-St. Lawrence. The study area has a total drainage area of about 15,530,606 acres or 24,266 square miles including the following eight subbasin drainage areas: Menominee River, Peshtigo River, Oconto River, Wolf-Fox River, Milwaukee River, Fox River (Wisconsin), Rock River, and Other Drainage Areas less than 800 square miles. Major cities are Green Bay, Madison, Milwaukee, West Allis, Racine, and Kenosha in Wisconsin and Rockford, Illinois.

The study area is bounded on the east by Lake Michigan, on the west by the Wisconsin Galena Platte Drainage Basins, on the south by the Wisconsin state line, except for the inclusion of the Rock River Basin, downstream to Rockton, Illinois, and on the north by the northern boundary of the Menominee River Basin in Michigan (Figure 1). The Rock and Fox Rivers drainage areas flow south and west to join the Mississippi River. The other drainage areas flow to the Great Lakes.

For economic analysis five subareas have been delineated.\* The subarea boundaries were selected as a compromise so as (a) to encompass an area that is relatively homogeneous with respect to problems, (b) to include an area of a minimum of five or six counties, (c) to be consistent with other development studies in the area, (d) to approximate hydrologic river basin boundaries as closely as possible, and (e) to encompass entire metropolitan market areas. The entire basin includes thirty-four counties in Wisconsin, three in Michigan and two in Illinois (Figure 2).

### Geology and Land Form Regions

The western one-half of the Rock River Basin is in the "Driftless Area", an unglaciated region. The rugged landscape has numerous rock outcrops, a relief of several hundred feet, and a dendritic drainage pattern. The remainder of this basin is within the land form region designated the Eastern Ridges and Lowlands. This area has been glaciated and mantled with thick and thin glacial outwash, moraine, lake, deltaic, and miscellaneous drift deposits. The land is generally undulating but broken by the pronounced cuestas and glacial moraines. There are a few natural lakes larger than 3,000 acres. This land form covers much of the entire study area. Its western boundary extends northeasterly in Wisconsin from northern Dane County to southeastern Marinette County.

Waushara, Marquette, and parts of neighboring counties are within the Central Plain land form. Underlain mainly with sandstone, local relief is variable, but nowhere is it very great. The northern portion of the Basin is located in the Northern Highland. The greater portion of this region consists of a level

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\* In this report reference is made to economic subareas by name or by number as described on Figure 2. The thirty-nine county area will be referred to as "Wisconsin Extended" throughout this report.





to gently rolling surface of relatively high elevation but in most places having low relief. Three types of hills can occur, (1) sandstone outliers, (2) monadnocks, and (3) terminal and recessional moraines. There are many lakes and swamps.

### Climate

The average annual temperature is about 42° F. in the northern part of the Basin and 48° F. in the southern portion. The climate is characterized by marked temperature changes during the year. For short durations temperatures may exceed 100° F. in the summer and fall below -30° F. in the winter. The growing season is less than 90 days in the extreme north and 170 days in some parts of the southern areas and along the Lake Michigan shoreline.

The average annual precipitation varies from 28 inches in the north to 34 inches in the southern part of the Basin. Approximately two-thirds of the precipitation comes during the summer months (May-September). Average annual snowfall in the southern areas is slightly over 30 inches and around 70 inches in the extreme northwestern area of the Basin.

### General Soils Description

Soils in the basin were first mapped over broad areas in the mid-nineteenth century, and individual county reports have been produced since the early nineteenth hundreds. In view of the refinements in soil science during the past thirty years, older county surveys have not been used in the tabular presentation below. December 1968 was the cut-off date for mapped acreage.

Economic Sub-area	Total Acres In Subarea	Total Acres of Soils Mapped in Subarea	Percent of Total
1	3,758,720	1,004,058	26.7
2	4,571,520	471,095	10.3
3	176,480	601,752	34.1
4	1,681,920	1,661,920	98.8
5	4,129,280	2,887,458	69.9
TOTAL	15,905,920	6,626,283	41.6





Economic Subarea Four, the urban heartland, is 99 percent soils mapped. Almost 42 percent of the Southeast Wisconsin Rivers Basin is covered by a standard soils survey.

Economic Subareas Four and Five primarily contain greyish brown silt loams (Miami, Dodge, McHenry, Morley, Blount, Casco, Rodman) with some black silt loams (Wea, Warsaw, Varna, Elliot, Waupun, Mendota) and a small amount of organic soils. The greyish brown silt loams have developed from loess and limely glacial tills of loamy texture. With the exception of some drainage problems and the gravelly hills of the Kettle Moraine, they are generally suited for agricultural purposes. Interspersed among the greyish brown silt loams are some organic soils that are used for truck cropping and some wet soils that are prime wetland wildlife habitats. The black prairie soils are slightly acid but usually have excellent tilth.

In addition to the greyish brown silt loams described above, many of the soils in Subarea Three are reddish clay loams (Kewaunee and Manawa). These soils are usually productive but require careful management. In general, the soils east of the Upper Wolf River in Subarea Two are similar to the soils of Subarea Three. The soils west of the river are generally less fertile and consist mainly of sandy loams (Onaway, Emmet, and Shawano). Many of these soils are better suited to the development and conservation of forest resources. Waushara and Marquette counties have light colored sandy soils (Plainfield and Oshtemo), which are quite droughty, but an abundance of ground water allows substantial irrigation which makes these soils highly productive for vegetable and specialty crops.

Subarea One has stony sandy loams (Iron River) and reddish brown sands (Omega and Vilas). The terrain is generally undulating where they occur and consequently drainage is considered to be good. These soils are droughty, acid, low in fertility, and subject to both wind and water erosion. These characteristics plus the short growing season limit their usefulness for farming, but a majority will support forest growth and provide opportunities for the development of forest resources. Some sands along Green Bay contain enough organic material to grow specialty crops.

#### Status of P.L.-566 Projects

"The Watershed Protection and Flood Prevention Act (Public Law 566) authorizes the Secretary of Agriculture to give technical and financial help to local organizations in planning and carrying out watershed projects. ....The program is administered by the Soil Conservation Service." SCS-CI-4, Revised Brochure, 1963.

The objective of this Act was to "bridge the gap" between a going agricultural program of assistance to farmers or groups of farmers in a district, and flood prevention programs or multiple purpose developments in river basins or major river valleys.



Significant watershed problems such as upland sheet erosion, critical sediment producing areas, channel erosion, flood prevention, drainage, irrigation, rural water supplies, recreation, municipal and industrial water supply, and fish and wildlife development are criteria for providing P.L. 566 assistance to groups of landowners, to communities, and to the general public.

The project watershed cannot be more than 250,000 acres. No structure providing more than 12,500 acre-feet of floodwater detention capacity or more than 25,000 acre-feet of total storage may be included in a P.L. 566 watershed work plan.

Within the Southeastern Wisconsin Rivers Basin, two watersheds have been approved for operations, one watershed has been approved for planning, four watersheds have had their application approved by the state, and nine watersheds have a feasibility study completed. A list of watersheds by economic subarea, name, acreage, and status of applications is shown in Table 1. Figure 3 shows the location of P.L. 566 watersheds by economic subarea.

## Population Characteristics

### Nationalities of Settlers

Many ethnic groups are represented in the Basin. The early settlers in the area were French trappers. Later many of the settlers were eastern Americans but many foreign immigrants came too. People from Switzerland and Norway settled in the western part of Subarea Five. Large numbers of Germans, Scandinavian, and Polish have settled throughout most of Subareas Two and Three and in the northern part of Subareas Four and Five. American Indians are located in Menominee County, Wisconsin and also in an area just south of Green Bay, Wisconsin. Subarea One was settled by Finns, Germans, Swedes, and Norwegians, but much of the area is sparsely populated.

German mechanics and farmers were largely responsible for the skills that have made brewing and machinery production important industries of the lake-shore cities. The Germans, Scandinavians, and eastern Americans possessed the technical skills that were required to make dairying the important industry that it is throughout the entire Basin.

### Present Population Characteristics

The State of Wisconsin, Department of Resource Development, has published a Wisconsin Development Series which deals with the social and economic characteristics of Wisconsin. From these reports it may be said that Subareas One and Two have a declining population which remains predominantly rural, comparatively





older, and somewhat less well-educated than is the pattern for the Basin as a whole. They contain proportionately more males than females, and are experiencing marked out-migration, especially of the economically active 15-44 age group.

Subarea Three has a population that is younger and slightly less educated in comparison with the Basin as a whole. It contains more females than males and is experiencing some out-migration.

By contrast Subareas Four and Five have a rapidly growing population which is comparatively younger, more urban, and more educated than is the pattern for the entire Basin. They contain more females than males and are experiencing in-migration, especially of the economically active 15-44 age group.

### Menominee County, Wisconsin

On April 30, 1961, the territory in Wisconsin known as the Menominee Indian Reservation was organized into Menominee County. Part of the reservation was in Shawano County and part in Oconto County. The legislation creating the county is subject to review in 1969.

The total population of the county is about 2600. Practically all of the residents are American Indians. There are no incorporated villages or cities, but much of the population is located in two unincorporated villages, Neopit and Keshena.

The Wisconsin State Conservation Department reported that the County has a total of 233,902 acres including approximately 222,000 acres of forested land, 902 acres of water (80 lakes) and 8000 acres of cleared land. The major occupation within the county is lumbering, with the entire county organized as a corporation, Menominee Enterprises, Inc. A Wisconsin statute requires operation of the forest lands on a sustained yield basis to assure a continuing source of income to the county residents. Farming is not an important occupation; there are no commercial farms in the county.

### GENERAL CHARACTERISTICS OF THE FORESTRY ECONOMY

Forest uses are a major facet of the land area in the Basin. The forest economy is principally influenced by returns resulting from the harvest of wood crops from the area, and from the conversion of wood into useful products. About 42 percent of the land area or approximately 6.5 million acres is involved in the production of this crop (Table 2). Ninety-eight percent of this area is classified as commercial forest land.\* The remainder is classified as non-commercial forest land.\*\*

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\* Land which is either producing or is capable of producing crops of industrial wood and is not withdrawn from timber utilization

\*\* Either unsuitable for timber growing because of low productivity or because of legal reservation for recreation and other non-timber users





The major timber-growing area is in the Menominee-Peshtigo and Wolf-Fox Subareas. About three-fourths of the commercial forest land is in these subareas. The Menominee-Peshtigo Subarea contains 3.1 million acres and the Wolf-Fox contains 1.7 million acres. The Minor Lake Michigan Tributaries Subarea and the Rock Subarea grow timber on forest acreage of 800 thousand and 700 thousand, respectively. The least amount of timber grows in the urbanized Milwaukee-Fox Subarea with 162 thousand acres of commercial forest land.

Farmers and miscellaneous private owners own about half of the forest land. About 13 percent is federally owned, including over 700 thousand acres managed as the Nicolet and Ottawa National Forests. The remaining 2.4 million acres of forest land is 7 percent in state ownership, 12 percent in county and municipal ownership, and 18 percent in forest industry.

### Current Forest Yields

The total inventory of forest volume on commercial forest land is over 3.9 billion cubic feet of growing stock including 9.3 billion board feet of sawtimber.\* The Menominee-Peshtigo and Wolf-Fox Subareas contain 86 percent of the growing stock volume and 84 percent of the sawtimber volume. The remaining growing stock volume is distributed six percent within the Minor Lake Michigan Tributaries Subarea, two percent within the Milwaukee-Fox Subarea, and six percent in the Rock Subarea. Sawtimber volumes in these three subareas are 7 percent, 3 percent, and 6 percent, respectively.

### Forest-Based Industry

Wood-using firms comprise an important part of the Basin's industry. Approximately one out of every seven employees of manufacturing firms is employed in forest-based industry. In 1963 over 35 thousand persons were employed in forest industries. There are over 100 major forest-based industries and hundreds of smaller sawmills and harvesting operations located in the Basin. Average salaries and wages earned annually in these industries ranged from less than three thousand dollars for timber harvesting to almost seven thousand dollars from those employed in pulp and paper mills.

Timber harvesting operations fell trees, and cut and collect them into logs and pulpwood bolts. Delivery of forest products is made to processing plants, rail yards and other delivering points.

As processors, wood pulp plants have the largest capital investment, employ the most people and require the most wood and water. Almost every kind of paper product from writing bond to paper board is produced. About 2000 tons of wood

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\* Growing stock volume includes all trees desirable for prospective use for timber products which have a d.b.h. of 5.0 inches or over.---Sawtimber volume is that part of growing stock volume made of trees containing at least a 12-foot saw log.





are used daily by these wood pulp mills (Table 3). The equivalent of about 330 million board feet of Basin wood is processed annually. Aspen is the major species used. Twice as much aspen is used as the other major species combined. The wood pulp plants are located in the northern three subareas. The water presently required to sustain these plants is about 57 million gallons per day.

Lumbering was responsible for the initial development of much of the northern part of the Basin. The lumber processing industry is still an important sector of the forest economy. Although the production of lumber has declined, sawmills are more numerous than they have ever been. Production from sawmills amounts to about 100 million board feet annually. About 580 sawmills presently operate in the Basin. About one-third of these sawmills sawed for factory or commercial use exclusively; one-fourth sawed primarily for the owners use; and 8 out of 10 worked on a custom basis sawing logs for others, generally neighbors.

Veneer plants and other miscellaneous wood manufacturing plants process wood in more specialized ways, such as, furniture, paneling, food packaging and excelsior. There are about 40 of these plants in the Basin. Logs for veneer plants have the highest value per unit of any of the log products and commonly sell for about two or three times as much as saw logs. The heaviest cut of veneer logs in Wisconsin occurs in the northern portion of the Basin which supplies about 30 percent of the total for the state.

### GENERAL FARM CHARACTERISTICS

In this section, information on size of farm, land and building investments, ownership patterns and economic classification of farms is given. An analysis of these data provides an appreciation of the magnitude of investment in agricultural lands and improvements and the land tenure characteristics of the area.

Prior to 1959 places of three or more acres were counted as farms if the annual value of agricultural products, whether for home use or for sale but exclusive of home-garden products, normally amounted to \$150 or more. Places of less than three acres were counted as farms only if the annual sales of agricultural products normally amounted to \$150 or more. In 1959 and 1964, places of less than ten acres were counted as farms if the estimated sales of agricultural products for the year normally amounted to at least \$250. Places of ten or more acres were counted as farms if the estimated sales for the year normally amounted to at least \$50.

#### Farm Size and Value of Land and Buildings

The average size of farm in the Basin was 156.4 acres in 1964, a 17 percent increase over the 1954 level (Table 4). Growth of farm size within the Basin has not been as rapid as that for the entire United States. In 1954, farms within the Basin were 55 percent of the national average. By 1964 the proportion had dropped to 44 percent. Relative farm size compared to Wisconsin Extended\* has remained constant over the three census years at 91 percent.

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\* Wisconsin Extended refers to the state of Wisconsin plus Dickinson, Iron, and Menominee Counties in Michigan & Stephenson & Winnebago Counties in Illinois.





There is a marked difference in size of farm among the economic subareas. Subarea One was 202 acres compared to 124 and 132 acres in Subareas Three and Four, respectively.

Average value of land and buildings per farm has risen steadily since 1954, reaching a high of over \$34,800 in 1964. Per farm values have risen more rapidly than values per acre, because of the rapid farm size expansion. Per acre investments in 1964 ranged from a low of \$82 in Subarea One to a high of \$388 in Subarea Four where urban growth has a strong influence.

### Farm Tenure

Nearly 62,200 farmers operated farm businesses in the Basin in 1964 (Table 5). This number represents a decline of 23 percent from the corresponding figure for 1954. Part of the decline is due to a change in the census definition of a farm but the majority reflects the long-term trend of fewer but larger farms.

The proportion of full-farm owner has remained relatively constant over the census years at two-thirds of the total number of farms in the Basin. This is approximately 8 to 10 percent higher than the corresponding figure for the nation. Part owners increased from 14 percent in 1954 to 19 percent in 1964 in the Basin, while a somewhat faster rate was evident for the nation. Number of farms operated by professional managers is actually decreasing. Tenant farming in the Basin reflects the downward national trend but still remains high in the cash grain areas of the Rock and Milwaukee-Fox Subareas where 21 and 14 percent, respectively, of the farms are tenant operated.

### Farm Numbers by Type

Type of farm is a classification based on the major source of farm income. To be classified as a particular type at least 50 percent of the total value of farm sales must have resulted from the sale of that commodity. The major type of farming operations in terms of numbers of farms are (1) livestock, dairy, and poultry, and (2) miscellaneous and unclassified farms (Table 6). Cash grain farms, general farm and those including the growing of vegetables, fruit and nuts, and other field crops comprise only a small proportion of the Basin total.

The 42,225 livestock, dairy, and poultry farms represent over two-thirds of the total number of farms in the Basin. The number of these farms decreased from 1959 to 1964 by 7,906 farms. In 1964, the Basin contained 4 percent of all the livestock, dairy, and poultry farms in the United States. This type of farm is popular in every subarea.

Approximately one-fifth of the farms in the Basin are categorized as miscellaneous and unclassified. This classification includes all of those farms which do not have fifty percent or more of total farm sales from commodities listed in other classifications of Table 6. The total number of these farms in the Basin remained almost constant from 1959 to 1964. However, all subareas except the Rock show a slight decrease.





Although their total number is not large, the number of farms classified as vegetable, fruit, nuts, and other field crops as well as the number of cash grain farms in the Basin increased from 1959 to 1964. The number of vegetable, fruit, nuts, and other field crop farms in 1964 was 1,416. Compared to Wisconsin Extended the percentage of these farms has decreased from 68 percent in 1959 to 49 percent in 1964. In 1964 the 2,202 cash grain farms represented 69 percent of all the cash grain farms of Wisconsin Extended. Eight-one percent of the cash grain farms in the Basin are in Subareas Four and Five.

### Commercial Farms

The Basin contained over 51,900 commercial farms in 1964, representing 84 percent of all farms in the study area (Table 7). A commercial farm was defined in 1959 to be one on which \$2500 or more of agricultural products were sold. Farms with a value of sales of \$50 to \$2499 were classified as commercial if the farm operator was under 65 years of age and he did not work off the farm 100 or more days during the year. Perhaps because of the less productive soils and short growing season lessor concentrations of commercial relative to other farms occurs in Subarea One. Sixty-eight percent of the farms in that subarea are classified as commercial. The highest proportion of farms classified commercial is 87 percent in Subareas Two and Five.

Commercial farms were divided into six economic classes on the basis of the total value of all farm products sold. The following table shows the criteria for determining the economic class of farm as well as the percentage of the commercial farms within the Basin in each class.

<u>Class of Farm</u>	<u>Total Sales (\$)</u>	<u>% of Basin Farms</u>
I	40,000 or more	3
II	20,000 to 39,999	12
III	10,000 to 19,999	33
IV	5,000 to 9,999	30
V	2,500 to 4,999	18
VI	50 to 2,499	4

The proportion as well as the absolute number of farms in Classes I, II, and III have increased from 1959 to 1964.

### Incidence of Rural Poverty

In a paper recently prepared for the Institute for Research on Poverty at the University of Wisconsin by Professor William Saupe on the incidence of poverty in Wisconsin agriculture, he concludes that, "The counties with the largest numbers of poverty-level farmers generally form a belt from Polk County eastward across the state to Door and Manitowoc Counties. Counties with the most poverty-level farmers per square mile lie along the eastern lakeshore and scattered among the western river counties. The highest percentages of poverty-level farmers are in the northern counties."\* His analysis is an approximation based on Census "Economic Class of Farm" classification (Table 7). The value of

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\* Saupe, William, "The Incidence of Poverty-Level Farm Income in Wisconsin," Institute for Research on Poverty, The University of Wisconsin, Madison, Wisconsin.



farm products sold per farm was adjusted to estimate net family income. The definition of poverty level income considers all sources of family income, family size, and food costs. Poverty levels of income ranged from \$1858 for a family of three to \$2971 for a family of five. In general, farms in Economic Classes I, II, and III were above the poverty levels. Farms in the other classes usually fell below the poverty standards.

Counties in Subarea One, Door and Kewaunee Counties in Subarea Three, and counties west of the Wolf River in Subarea Two all have more than 30 percent of their total farms in the poverty class under this definition. In general, Subareas Two and Three have the largest number of poverty level farms per square mile.

#### FARM POPULATION AND EMPLOYMENT

Tabular data for this section are developed from the Census of Agriculture and the Census of Population. Differences in definition make the data not comparable in some instances.\*

##### Rural Farm Population

The 1960 Population Census reports that there were about 290,000 people living on farms in the Basin (Table 8). This represents declines of approximately 24 and 35 percent, respectively, from 1950 and 1940. This reduction in farm numbers and population reflects the consolidation of farming units, decreasing farm family size, and some change in farm definition.

The downward trend in the Basin follows the direction of the national trend, but the farm population within the Basin is not decreasing as rapidly as is the nation's. From 1950 and 1940 the national farm population decline was 42 and 55 percent, respectively. All five economic subareas have experienced declines in farm population, but the extent of migration varies significantly between the subareas. This trend was indicative of general economic conditions. Farm population reductions in Subareas One and Four between 1954 and 1964 were 60 and 51 percent, respectively. People migrated from the farm in Subarea One because of poor farming conditions and in Subarea Four because of the large urban influence. The least amount of migration has been from

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\* The 1960 Census rural farm population definition was more restrictive than the definition used in previous census years. Residents were classified rural farm in 1960 if the farm exceeded 10 acres in size and sold \$50 worth of products or if the farm was less than 10 acres and sold \$250 worth of products. In previous census years the respondent was merely asked whether he lived on a farm without restrictions to acreage or sales. In midwestern corn, wheat and dairy states where commercial farms prevail, the 1960 rural farm population as listed is estimated to be 9 percent lower because of the new definition. (See paper by C. L. Beals and G. K. Bowles, "The 1960 Definition of Farm Residence and Its Market Effects on Farm Population Data," February 6, 1961, Agricultural Marketing Service, USDA, Washington, D.C. See also "Farm Population - Revised Estimates for 1941-59," ERS-90, August 1962, Economic Research Service, Washington, D.C.)





Subarea Five where 26 percent of the farm population left farming during the 1954 to 1964 period.

Slightly more than 63 percent of the farm operators in the Basin are over 45 years of age. This age distribution is similar to the one for the entire United States. Farmer retirement during the next twenty years will allow an excellent opportunity for further adjustments in terms of farm size and number of farms.

#### Farm Employment

Farm employment has generally followed the same downward trend as farm population in the Basin. In 1960 over 91,000 persons were employed in agriculture (Table 8). This represents a decline of about 33 and 38 percent, respectively, from the farm employment totals in 1950 and 1940.

The development and adoption of new technology in agriculture has had a significant effect on labor productivity. Each farmer now produces sufficient food for 43 people. Since 1920 the output per man has quadrupled. Productivity of American farm workers has increased over 6 percent annually since 1950, while output per man hour in non-agricultural industry increased about 2 percent a year. These great strides in labor productivity have literally produced involuntary underemployment in agriculture. The agricultural labor force thus contains many workers available for nonfarm jobs.

#### Off-Farm Work

In the Southeastern Wisconsin Rivers Basin the number of farm operators working off the farm has decreased in conjunction with farm numbers and farm population (Table 9). However, the proportion of all farm operators who are working off the farm has been slowly, but steadily, increasing over the years and is expected to continue this trend for some time in the future. The Census of Agriculture reports that some 25,200 operators worked off the farm in 1964. Although this is a decrease of over 2,000 from the 1959 Census, it still represents 40 percent of all Basin farm operators in 1964. Of those operators working off the farm, 55 percent worked off their farms 100 days or more in 1954. In 1959, 63 percent of the off-farm workers exceeded 100 days work off the farm. By 1964 this figure had risen to 68 percent and represents a definite upward trend. Thirty-nine percent of the operators in Subarea Five worked off their farms 100 days or more in 1964. The corresponding figures for the remaining subareas ranged from 22 percent in Subarea Five to 33 percent in Subareas Three and Four.

#### Type of Farm Employment

In 1959, the Census of Agriculture reports upwards of 132,800 farm workers in the Basin (Table 10). This is a decline of about 36,400 from the total in 1954, mainly due to the decline in numbers of farm operators and family workers. The majority of farm workers are members of farm families. Operator and family labor accounted for 88 percent and 82 percent of all farm labor in 1954 and 1959, respectively. Comparable data are not available for 1964. The remaining farm workers were hired either on a regular or seasonal basis.





In 1954, the number of regular hired workers, those working 150 days or more, represented 44 percent of the total hired labor within the Basin. The remaining hired labor was classified as seasonal labor. By 1959 regular hired workers had reduced in absolute number by 2,500, but the 10,800 regular hired workers represented 67 percent of the total hired labor force. Seasonal workers decreased from 17,197 to 5,243. In 1964 the definition of a regular hired worker was changed to include all regular hired workers paid cash wages for at least 150 days. Prior census definitions of regular hired workers required that the worker be living on the farm at the time of enumeration.

Farm labor data are not strictly comparable between most census years due to differences in enumeration dates. In 1954 farm labor data were collected in most states for the period of September 26-October 2, a period of peak employment during the harvest season. However, the same data for 1959 related to the week preceding enumeration which generally ran from the middle to end of November, a period of minor seasonal employment. Data on employment in the 1964 Census were enumerated during a period similar to 1959.

#### Employment in Related Industries

The farm sector of the Basin's economy creates a good deal of economic activity in related industries. Farmers purchase many of their inputs and produce products that often require further processing before they reach the consumer. Measuring this activity is often difficult because the Census does not always separate these firms into separate groups and the firms often sell to non-agricultural buyers as well. Some idea of the importance of this activity to an area can be seen by examining employment figures.

Although it is the smallest subarea in terms of physical size, Subarea Four is the industrial center of the Basin. One of the important manufactured products in this subarea is farm machinery and equipment. In 1964, over 11,000 workers were employed to produce this type of equipment. The demand for farm machinery is expected to increase gradually. The success of farm machinery manufacturers is closely related to trends in agriculture. Growth of farm size has produced a demand for large, more efficient, and more specialized equipment.

Another segment of the manufacturing industry that is agriculturally related is the manufacturing of food and kindred products. It includes firms involved in canning, brewing, meat packing, dairy products processing, and related activities. Firms of this type in Subarea Four are primarily concerned with dairy products, meat products, and malt beverages. In 1964, 22,270 workers were employed in the manufacturing of food and related products in this subarea. Non-manufacturing food and dairy stores employed 33,000 people in the Basin in 1964. Employment in this category has been increasing since 1940 when the number employed was 27,600. Subarea Four employs over 50 percent of the workers in this classification.



Each of the other subareas has several dairy processing plants and in the vegetable producing areas there are canneries. Often the dairy processing plants are small in size. Activity of the canneries is dependent on the raw material produced by the farmers of the area. The long-term outlook is for continued expansion of vegetable production and processing in the Basin.

Activity in the food and kindred products area is often seasonal in nature. During the harvest months canneries usually increase their work force three to five fold. This temporary increase is filled largely by migrant workers. Automation has been successfully introduced into much of this industry and as a result employment has been declining over time.

### VALUE OF AGRICULTURAL PRODUCTION

Agriculture is a significant contributor to the Basin's economy. In this section information on the gross value of agricultural product sales is given. Values indicate only sales receipts of farmers and not net returns or profits to the farm operator. Also, the data in this section do not include value added through processing and manufacturing of agricultural products in the Basin.

#### Value of All Farm Products

Total value of all farm products sold in the Basin was over 644 million dollars in 1964, more than 157 million dollars above sales in 1954 (Table II). The prices received index for all farm products dropped by 10 points between the two census years. Therefore, farm sales volume had to expand more than is at first evident to overcome the lower farm prices. Fruit, vegetables, and dairy products were the only major commodities grown in the Basin whose prices increased over the ten year period.

Sales value in 1959 was 573 million and in 1954 the value was 486 million. The Rock Subarea has consistently provided over 40 percent of the total value of agricultural products from the study area. By contrast, Subarea One produces less than 3 percent of the total value of agricultural production in the Basin. The portion of the total United States value of farm products produced in the Southeast Wisconsin Rivers Basin has decreased one-tenth of one percent in each census year since 1954 and in 1964 was 1.8 percent.

The average gross sales per farm in the Basin were about the same as the national average in 1959, but by 1964 average sales per farm were 8 percent less than for the average farm in the United States. The average sales per farm vary from \$5587 in Subarea One to more than twice that amount in Subareas Four and Five. Average sales per acre range from \$28 in Subarea One to \$88 in Subarea Four.





### Value of Crop Production

Sales of crops in the Basin exceeded 138 million dollars in 1964, approximately \$49 million more than was reported in 1959 (Table 12). The prices received index for all crops stood at 242 in 1954, 20 points higher than 1959, but just 4 points above 1964. However, the index for feed grain prices which is relevant for the southern subareas was down by 37 points in 1964 from ten years earlier. Major increases in volume of crop sales accounted for the substantial rise in value in the face of less favorable prices. Largest sales values consistently came from Subarea Five. The price indexes for fruits and vegetables increased substantially over the ten years and may explain some of the larger crop values in those subareas where these crops are produced.

### Value of Livestock and Livestock Products

The value of livestock and livestock products sold in the Basin was almost \$461 million in 1964, \$3 million less than in 1959 but more than \$53 million above the 1954 level (Table 12). The prices received index for livestock and livestock products stood at 249 in 1954. It increased by 7 points in 1959 and value of sales also rose, due in part to the higher prices. However, the 1964 sales value represented more product than 1959 because the price index had dropped 21 points from the 1959 level.

Poultry and poultry product sales have continuously declined since 1954 and were reported as slightly less than 20 million dollars in 1964. The Rock Subarea contributed the largest percentage of the subareas to both livestock and poultry sales.

### Value of Farm Forest Products

Census of agriculture data on forest products pertain only to products cut on farms. Commercial logging, timber operations, and forest products grown or cut on non-farm places are excluded. Thus the values listed herein do not reflect the total value of forest production, but only the farm forest production.

Value of sales of nursery and greenhouse products sold from farms increased from \$7 million in 1954 to \$10.8 million in 1964. Economic Subarea Four is the leading producer, with more than 50 percent of the Basin's sales coming from this area.





## AGRICULTURAL LAND USAGE

In terms of physical land area in the Southeastern Wisconsin Rivers Basin, there are over 24,000 square miles or approximately 15.5 million acres of land. The Census of Agriculture indicates that there were 9.7 million acres classified in farms in 1964, over 62 percent of the total land use. The remainder consists of urban places, public lands, and other private holdings not classified as farms by the Census of Agriculture.

Subarea One contains about 24 percent of the total land area in the Basin but only 16 percent of this subarea is in farms. Most of the land is forested. Subarea Two is the largest of the five economic subareas with 29 percent of the total land within the Basin. Slightly over 62 percent of the land is in farms. Subareas Three and Four each contain approximately 11 percent of the total land within the Basin. Eighty-three percent of Subarea Three is in farms. Subarea Four is highly urbanized and has only 65 percent of the total land in farms. Subarea Five makes up 25 percent of the Basin and has the highest percentage of land in farms, 87 percent. The following discussion relates to the 9.7 million acres encompassed by the Agricultural Census.

### Land Usage on Farms

Approximately 69 percent of all land in farms in the Basin is cropland (Table 13). Less than one-tenth of the cropland was neither harvested nor pastured in 1964. This is more than twice as large relatively as the idle acreage in 1959 and 1954. Cropland used only for pasture has declined steadily from 18 percent in 1954 to 13 percent in 1964. This same trend is evident in woodland pasture acreage which declined from 11 percent of total acreage in farms in 1954 to 7 percent in 1964. Total acreage in farm woodland has continued to decrease throughout the study period dropping from 2.0 million acres in 1954 to 1.5 million acres in 1964. The percentage of woodland not pastured has increased which is consistent with recommended practice in forest management. Approximately one-sixth of the land in farms was classified as woodland in all three census periods.

Averages for the entire Basin are not always representative of each subarea. This is particularly true in the land use description for Subarea One. This subarea contains only six percent of the total land in farms within the Basin. The percentage of land in farms is decreasing more rapidly than in any other subarea. Only 43 percent of the land in farms is cropland, 48 percent is woodland. Because of differences like these, statements pertaining to the average of the entire Basin may not be very close to the real situation in Subarea One.

In the remaining text, information on acreage and production of major crops in the Basin is discussed. Differences in acreages and yields among census years are not necessarily evidence of trends since variations in weather and market prices can have a substantial influence on that data for a particular year. There are, however, nationwide long-term trends such as the rapid decline in oat acreage or the increase in soybeans. The section begins with a discussion of fertilizer use, national conservation practices, and irrigation on farmland in the Basin. Each of these represents a form of technology that has a significant impact on agricultural production.



## Fertilizer Use

Data from the last three Agricultural Censuses show that fertilized acreage on the Southeastern Wisconsin Basin has remained at approximately 2.3 million acres for each census year (Table 14). This represents an increasing proportion of farmland fertilized since the acreage in farms has continually declined over this period. By census definition an acre was fertilized if any commercial fertilizer or fertilizer materials, including rock phosphate, were applied.

Three hundred ten thousand tons of fertilizer were applied to Basin farmland in 1964, slightly less than a 14 percent increase over fertilizer used ten years earlier. Application rates per acre fertilized were about 264 pounds in 1964, slightly less than a 14 percent increase over application rates ten years earlier. The heaviest application rates have been in Subareas One and Four with application rates of 310 and 290 pounds, respectively, in 1964. These rates are close to the national average of 309 pounds per acre. The rates on the remaining subareas ranged from 248 to 270 pounds per acre.

The census data reflect the tonnage of fertilizer and not the actual nutrients applied. Farmers in the Basin may have applied fertilizer with either higher or lower analysis than that applied in other regions. Actual fertilizer applied will be understated in areas of greatest livestock concentration where manure is a large contributor of nutrients.

## Land Treatment Measures

Since the eighteenth century, land treatment measures in the United States have been developed and refined through scientific farming practices. The establishment of land-grant colleges, the formation of the Soil Conservation Service, the Agricultural Conservation Program, and the organization of soil and water conservation districts have produced national and uniform conservation practices that are reported each year.

From 105 coded national conservation practices that are commonly reported in this area, twenty representative practices were selected, grouped by economic subareas, and comparisons made for the years 1964 to 1968.

Table 15 summarizes by economic subareas the twenty representative practices, indicates the percent increase or decrease from 1965 to 1968, and assigns a unit dollar value, and total dollar value of practices on the land.

The four most impressive gains in land treatment practices from 1965 to 1968 have been in streambank protection, a 262 percent increase; land clearing, an 84 percent increase; farm ponds, an 82 percent increase; and wildlife habitat preservation, an increase of 77 percent.





The estimated total costs of practices on the land based on 1968 prices rose from \$61,511,194 in 1965 to \$73,560,010 in 1968. The total value increased 19 percent in these years.

### Irrigation

In 1964, there were 30,600 acres of irrigated cropland in the Basin, a 318 percent increase over 1954 and a 98 percent increase over 1959 (Table 16). Almost 70 percent of the irrigated land is in Subarea Two. Within this subarea irrigation is concentrated in the counties of Marquette, Waushara, Waupaca, and Langlade. The sandy soils are well suited to irrigation. The major crops irrigated are potatoes, sweet corn, snapbeans, and cucumbers. Wells represent the most significant source of irrigation water.

### Cropland Production

Corn, oats, and hay were grown on over 88 percent of the cropland harvested in the Basin in 1964 (Tables 17 and 18). No other crop approaches the importance of any of these three. Wheat, barley, and rye acreage is relatively small. All three of these small grains combined comprise less than 2 percent of the total cropland. Soybeans do not constitute a large acreage in the Basin, however, soybean production is increasing in Subareas Four and Five. Irish potatoes and other vegetable crops are important crops in some areas of the Basin.

#### Corn

Approximately 1.6 million acres of corn were grown for all purposes in the Basin in 1964, about 30 percent of all Basin cropland harvested. In 1964 the Basin produced 2.5 percent of the nation's corn harvested for grain and 7.8 percent of the corn silage.

The total acreage of corn harvested for grain increased from 1954 to 1959, but decreased by 1964 to a point only slightly above the 1954 acreage. This general trend is true for all subareas with the exception of Subarea Three which has shown a continuous increase in corn acreage since 1954. The average corn yield per acre ranged from a low of 58 bushels in Subarea One to a high of 83 bushels in Subarea Five. From 1954 to 1964 corn yields increased an average of 14 bushels per acre. However, the yield increases have not been enough to compensate for the acreage decreases; consequently, production fell from 94 million bushels in 1959 to 84 million bushels in 1964.

Corn acreage harvested for silage has decreased from 1954, but increased slightly from 1959 and in 1964 stands at one-half million acres that produced over 6 million tons of silage. The 1964 average yields per acre ranged from 9.6 tons in Subarea One to 13.3 tons in Subarea Five.





### Oats

In 1964 oats were grown on over one million acres in the Basin or about 21 percent of the total cropland harvested. Oat acreage and total production of oats have been steadily decreasing over time in the Basin. However, acreage and production of oats have not been decreasing as rapidly in the Basin as in the entire United States. In 1964 the Basin produced more than 7 percent of the nation's oats. Yields ranged from 38 bushels per acre in Subarea One to 59 bushels per acre in Subarea Five.

### Hay

Hay was grown on almost 2 million acres or 37 percent of the cropland harvested in the Basin. The acreage of hay has remained about the same since 1954. The type of hay has shifted rapidly to alfalfa and in 1964 about 86 percent of the hay grown in the Basin was of this type.

Hay production is important to all parts of the Basin. Yields are lowest in Subarea One and highest in Subarea Five. In 1964 the alfalfa yields in these subareas were 1.6 and 2.9 tons per acre, respectively. Compared to the United States, the Basin is not an important producer of clover and other hays, but over the years the Basin has produced approximately 7 percent of the nation's alfalfa hay.

### Soybeans

The acreage of soybeans grown within the Basin is not large enough to be of statistical importance to the entire United States production, but the number of acres planted to soybeans in Subareas Four and Five have increased substantially over the 1954 to 1964 period. In 1954 there were 23,000 acres. By 1964 this figure had grown to more than 73,000 acres. Soybeans are not grown in the northern areas of the Basin.

### Irish Potatoes

Potato production has increased 35 percent from 1954 to 1964. During this same period the acreage of this crop increased only 4 percent. Total potato production in the Basin in 1964 was 5.2 million cwt. Subarea Two, specifically Langlade County, Wisconsin, is a very important potato producing area.

### Other Vegetable Crops, Orchards And Vineyards

The acreage of vegetables raised in the Basin in both 1954 and 1959 was about 176,500 acres. By 1964 the number of acres growing vegetable crops had increased to 202,500. Vegetables are produced throughout the Basin, but Subareas Two and Five are the largest vegetable producing subareas.



Both production and value of vegetable crops have been increasing. The total value of vegetables harvested for sale in the Basin in 1964 was over 16 million dollars. The production of these crops is often concentrated in small areas rather than spread uniformly throughout the Basin. As a result, the income and employment created by these crops can be highly important to a local community. The three most important vegetable crops in the Basin are green peas, sweet corn, and snap beans. Other vegetables, such as cucumbers for pickeling, are important in local areas.

Vegetable crops are frequently irrigated. In 1964 the Agricultural Census reported 1,555 acres of sweet corn and 9,955 acres of snap beans in the Basin grown on irrigated land. This acreage is expected to increase.

The acreage of orchards and vineyards in the Basin has decreased nearly 6,000 acres from 1954 to 1964. The total acreage in 1964 was slightly over 16,700 acres. Door County, Wisconsin, in Subarea Three is a very important area in the production of cherries and apples.

#### Cropland Not Harvested Or Pastured

Over 639,000 acres of cropland were neither harvested nor pastured in 1964 (Table 13). This classification represents three subclasses. Approximately 62 percent of this type of cropland was in soil improvement grasses and legumes. This subclass includes most of the cropland retired for the 1964 Feed Grain Program. Six percent of the unharvested and un-pastured cropland represents land where there was a crop failure in 1964. The remaining 32 percent of the cropland in this classification includes idle land and also land in crops not harvested in 1964, but intended for harvest in 1965.

### Livestock Production

#### Dairy

The Southeast Wisconsin Rivers Basin contained over one million dairy cows in 1964 (Table 19). Dairy cow numbers have been declining in the Basin but not as rapidly as the entire United States. The percentage of the nation's dairy cows in the Basin has increased from 5.8 percent in 1954 to 7.5 percent in 1964. As dairy cow numbers have decreased, production per cow has increased. Average milk production per cow in the Basin was 7,065 pounds in 1954 and by 1964 had increased to 8,956 pounds. This was 1,076 pounds above the national average.

#### Cattle

As reported in the 1964 Census of Agriculture more than one million head of cattle and calves were sold from Basin farms. This figure has remained about the same since 1954.





Population increases and the trend toward increased per capita consumption of red meat have resulted in larger cattle numbers and sales in recent years. Cattle sold include both dairy and beef animals. Since dairy cattle numbers are so large many of the cattle sold from the Basin are no doubt reflecting the disposal of dairy stock.

#### Hogs

Over 2.1 million hogs were sold during 1964 from Southeast Wisconsin Rivers Basin farms. That was 170,000 less than the 1959 period and over 464,000 more than in 1954. These fluctuations are best explained by examining the hog cycle which generally runs from 3 to 7 years. In 1954 hogs were near the bottom of one of these cycles. By 1959 they were near the peak and in 1964 they were again approaching the trough of a cycle. Over this ten year period the portion of the nation's hogs sold from the Basin was decreasing and in 1964 was 2.6 percent of the total United States hog sales.

#### Sheep

Numbers of sheep sold from Basin farms increased slightly from 1954 to 1959, but by 1964 sheep sales had decreased 16,300 to a total of 83,500. All subareas produce some sheep, but 67 percent of the sheep sold from the Basin are produced in Subarea Five.

#### Poultry

The Basin produced over 1.3 million broilers in 1964, slightly less than one-third of the number sold in 1954. This is consistent with the national trend of broiler production shifting to the southeast. Egg production decreased 8 million dozen from 1954 to 1964. The 1964 egg production in the Basin was about 46 million dozen. All subareas followed the Basin trends except for Subarea Four, which showed an increase in egg production.

The number of turkeys produced in the Basin is increasing and in 1964 there were slightly over one-half million turkeys produced in the Basin.



TABLE 1--STATUS OF P.L.-566 WATERSHED APPLICATIONS,  
SOUTHEAST WISCONSIN RIVERS BASIN

ECONOMIC SUBAREA	WATERSHED	ACREAGE	STATE	P.L. 566 STATUS OF WATERSHED APPLICATIONS
1	East Branch Sturgeon River Little River	83,980 37,973	Michigan Michigan	Approved for Operations Approved for Operations
2	Spring Brook Fond du Lac River Bear Creek Little Suamico River	41,000 101,696 39,000 34,624	Wisconsin Wisconsin Wisconsin Wisconsin	Approved for Planning Application Approved by the State Feasibility Study Report Completed Feasibility Study Report Completed
3	Brillion Creek East River	11,744 94,144	Wisconsin Wisconsin	Application Approved by the State Feasibility Study Report Completed
4	Delavan Lake - Jackson Creek Des Plaines River Pike River Sugar - Honey Creek Whitewater Creek	32,691 85,056 38,912 103,488 34,842	Wisconsin Wisconsin Wisconsin Wisconsin Wisconsin	Feasibility Study Report Completed Feasibility Study Report Completed Feasibility Study Report Completed Feasibility Study Report Completed Feasibility Study Report Completed
5	First Capitol Furnace Hill Otter Creek	52,198 31,300 28,660	Wisconsin Wisconsin Illinois	Application Approved by the State Application Approved by the State Feasibility Study Report Completed
SUMMARY	16 Watersheds	851,308		



TABLE 2--FOREST LAND AND FOREST VOLUME,  
SOUTHEAST WISCONSIN RIVERS BASIN

Basin	Forest Land		Forest Volume	
	Commercial -----Million Acres-----	Non-Commercial -----Million Acres-----	Growing Stock (MM CU. FT.)	Saw Timber (MM BD. FT.)
Areas	6516.1	95.4	3907	9341
1. Menominee-Peshtigo	3114.9	59.3	2170	4602
2. Wolf-Fox	1726.0	7.0	1194	3202
3. Minor Tributaries	819.6	----	251	623
4. Milwaukee-Fox	162.8	----	82	247
5. Rock	662.8	29.1	210	667

Compiled from Research Note NC-38, 1966, and Research Note NC-50, 1968, North Central Forest Experiment Station;

Technical Note 554, April 1959, and Technical Note 509, October 1959, Lake States Forest Experiment Station;

1965 Timber Resources, Lake States Forest Experiment Station, St. Paul, Minnesota





TABLE 3--CAPACITY AND ESTIMATED MINIMUM  
FLOW REQUIREMENTS OF WOODPULP MILLS  
SOUTHEAST WISCONSIN RIVERS BASIN

<u>Areas</u>	<u>No. of Mills</u> ----- (TON/DAY) -----	<u>Subarea Capacity</u> ----- (TON/DAY) -----	<u>Estimated Flow Requirements</u> (1000 GAL/DAY)
Basin	13	2020	57,500
1. Menominee- Peshtigo	4	435	11,200
2. Wolf-Fox	5	895	27,600
3. Minor Tributaries	4	690	18,700
4. Milwaukee-Fox	--	----	-----
5. Rock	--	----	-----

Compiled from Pulpwood Production and Consumption 1966, Resource Bulletin NC-3, North Central Forest Experiment Station and Water Resources For Expanding Wood Using Industries, 1964, Lake States Forest Experiment Station, St. Paul, Minnesota



TABLE 4--AVERAGE SIZE OF FARM AND VALUE OF LAND AND BUILDINGS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS 1964, 1959, AND 1954

AREAS	AVERAGE SIZE OF FARM		
	1964	1959	1954
	----- ACRE -----		
Basin	156.4	146.9	133.4
1. Menominee-Peshtigo	202.3	190.1	163.6
2. Wolf-Fox	162.0	153.7	140.9
3. Minor Tributaries	123.9	118.0	107.9
4. Milwaukee-Fox	132.4	124.4	108.0
5. Rock	171.3	160.3	147.1
Wisconsin Extended	172.2	161.7	146.9
United States	351.6	302.8	242.0
Basin/Wisconsin Extended	90.8%	90.8%	90.8%
Basin/United States	44.5%	43.5%	55.1%

AREAS	AVERAGE VALUE PER FARM		
	1964	1959	1954
	----- DOLLARS -----		
Basin	34,842	28,512	19,353
1. Menominee-Peshtigo	16,598	12,740	8,839
2. Wolf-Fox	25,467	20,303	15,085
3. Minor Tributaries	26,667	21,567	17,243
4. Milwaukee-Fox	51,213	40,510	24,251
5. Rock	43,258	36,440	24,075
Wisconsin Extended	27,573	22,101	15,245
United States	50,646	34,825	20,405
Basin/Wisconsin Extended	126.4%	129.0%	126.9%
Basin/United States	68.8%	81.9%	94.3%

AREAS	AVERAGE VALUE PER ACRE		
	1964	1959	1954
	----- DOLLARS -----		
Basin	223.3	194.0	145.5
1. Menominee-Peshtigo	82.2	67.1	54.2
2. Wolf-Fox	157.2	135.1	107.0
3. Minor Tributaries	215.1	182.8	159.7
4. Milwaukee-Fox	388.0	326.7	224.6
5. Rock	253.0	227.8	163.8
Wisconsin Extended	160.3	136.4	103.7
United States	143.9	114.9	84.3
Basin/Wisconsin Extended	139.3%	142.2%	88.8%
Basin/United States	155.2%	168.8%	172.6%

Compiled from U. S. Census of Agriculture, 1964 and 1959





TABLE 5--FARMS BY TENURE OF OPERATOR  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	ALL FARM OPERATORS		
	1964	1959	1954
	----- NUMBER -----		
Basin	62,169	68,874	80,740
1. Menominee-Peshtigo	3,034	3,658	5,219
2. Wolf-Fox	17,710	19,675	22,875
3. Minor Tributaries	11,863	12,926	14,518
4. Milwaukee-Fox	8,414	9,479	12,415
5. Rock	21,148	23,136	25,713
Wisconsin Extended	123,451	136,565	160,243
United States	3,151,875	3,707,973	4,783,021
Basin/Wisconsin Extended	50.470	50.4%	50.4%
Basin/United States	2.0%	1.9%	1.7%

AREAS	PROPORTION AS TENANTS		
	1964	1959	1954
	----- NUMBER -----		
Basin	.12	.15	.18
1. Menominee-Peshtigo	.02	.02	.03
2. Wolf-Fox	.07	.09	.11
3. Minor Tributaries	.05	.06	.10
4. Milwaukee-Fox	.14	.15	.17
5. Rock	.21	.27	.33
Wisconsin Extended	.10	.12	.15
United States	.17	.20	.24
Basin/Wisconsin Extended	120.00	125.00	120.00
Basin/United States	70.6	75.00	75.00

TENURE	BASIN		
	1964	1959	1954
	----- NUMBER -----		
Full Owners	42,125	45,417	54,659
Part Owners	12,213	12,698	11,455
Managers	310	400	380
All Tenants	7,521	10,359	14,246

Compiled from U. S. Census of Agriculture, 1964, 1959, and 1954



TABLE 6--NUMBER OF FARMS BY TYPE  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	CASH GRAIN		
	1964	1959	1954
	NUMBER		
Basin	2,202	1,869	2,961
1. Menominee-Peshtigo	16	11	26
2. Wolf-Fox	282	235	450
3. Minor Tributaries	112	85	240
4. Milwaukee-Fox	642	626	837
5. Rock	1,150	912	1,412
Wisconsin Extended	3,196	2,581	4,397
United States	404,253	398,047	537,974
Basin/Wisconsin Extended	68.8%	68.5%	67.3%
Basin/United States	.5%	.5%	.5%

AREAS	LIVESTOCK, DAIRY & POULTRY		
	1964	1959	1954
	NUMBER		
Basin	42,225	50,131	61,401
1. Menominee-Peshtigo	1,744	2,036	3,508
2. Wolf-Fox	12,496	14,771	18,083
3. Minor Tributaries	8,381	9,792	11,676
4. Milwaukee-Fox	4,425	5,700	7,889
5. Rock	15,179	17,832	20,245
Wisconsin Extended	88,943	101,219	124,356
United States	963,616	1,164,998	1,397,906
Basin/Wisconsin Extended	47.4%	49.5%	49.3%
Basin/United States	4.4%	4.3%	4.4%

AREAS	GENERAL		
	1964	1959	1954
	NUMBER		
Basin	3,540	2,525	4,815
1. Menominee-Peshtigo	86	107	208
2. Wolf-Fox	813	647	1,183
3. Minor Tributaries	597	225	550
4. Milwaukee-Fox	632	356	637
5. Rock	1,412	1,190	2,237
Wisconsin Extended	5,825	4,076	8,378
United States	201,980	211,613	347,079
Basin/Wisconsin Extended	60.8%	61.9%	57.4%
Basin/United States	1.8%	1.1%	1.4%



TABLE 6 (Cont.)--NUMBER OF FARMS BY TYPE  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	VEGETABLES, FRUIT, NUTS OTHER FIELD CROPS		
	1964	1959	1954
	----- NUMBER -----		
Basin	1,416	1,215	1,719
1. Menominee-Peshtigo	74	17	40
2. Wolf-Fox	501	428	547
3. Minor Tributaries	362	306	505
4. Milwaukee-Fox	285	306	363
5. Rock	194	158	264
Wisconsin Extended	2,912	1,791	2,471
United States	115,593	121,663	482,410
Basin/Wisconsin Extended	48.6%	67.8%	69.5%
Basin/United States	1.2%	.9%	.4%

AREAS	MISCELLANEOUS & UNCLASSIFIED		
	1964	1959	1954
	----- NUMBER -----		
Basin	12,706	13,200	9,860
1. Menominee-Peshtigo	1,114	1,513	1,439
2. Wolf-Fox	3,538	3,567	2,626
3. Minor Tributaries	2,411	2,501	1,547
4. Milwaukee-Fox	2,430	2,481	3,325
5. Rock	3,213	3,138	1,555
Wisconsin Extended	22,530	26,976	20,641
United States	1,472,415	1,814,182	2,017,652
Basin/Wisconsin Extended	56.4%	48.7%	49.6%
Basin/United States	.9%	.7%	.5%

AREAS	TOTAL		
	1964	1959	1954
	----- NUMBER -----		
Basin	62,089	68,940	80,756
1. Menominee-Peshtigo	3,034	3,684	5,221
2. Wolf-Fox	17,630	19,648	22,889
3. Minor Tributaries	11,863	12,909	14,518
4. Milwaukee-Fox	8,414	9,469	12,415
5. Rock	21,148	23,230	25,713
Wisconsin Extended	123,406	136,643	160,243
United States	3,157,857	3,710,503	4,783,021
Basin/Wisconsin Extended	51.2%	52.9%	50.6%
Basin/United States	2.1%	1.9%	1.7%

Compiled from U. S. Census of Agriculture, 1964, 1959, and 1954





TABLE 7--NUMBER OF FARMS BY ECONOMIC CLASS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	COMMERCIAL FARMS		
	1964	1959	1954
	NUMBER		
Basin	51,896	56,430	71,183
1. Menominee-Peshtigo	2,063	2,316	3,910
2. Wolf-Fox	15,399	16,169	20,320
3. Minor Tributaries	9,736	10,464	13,051
4. Milwaukee-Fox	6,387	7,153	9,976
5. Rock	18,311	20,328	23,926
Wisconsin Extended	102,135	110,903	140,743
United States	2,165,712	2,416,000	3,327,617
Basin/Wisconsin Extended	52.2%	50.9%	50.6%
Basin/United States	2.5%	2.3%	2.1%

<u>ECONOMIC CLASS</u>	BASIN		
	1964	1959	1954
	NUMBER		
Class I	1,336	718	1,156
Class II	6,200	3,386	11,177
Class III	17,298	15,546	25,053
Class IV	15,636	21,549	20,746
Class V	9,148	12,777	9,884
Class VI	2,278	2,451	3,166
OTHER	10,193	12,473	9,592

Compiled from U. S. Census of Agriculture 1964, 1959, and 1954



TABLE 8--RURAL FARM POPULATION AND AGRICULTURAL EMPLOYMENT  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1960, 1950, AND 1940

AREAS	POPULATION		
	1960	1950	1940
	----- THOUSANDS -----		
Basin	290.4	380.4	448.6
1. Menominee-Peshtigo	14.1	26.1	34.9
2. Wolf-Fox	84.2	107.7	126.6
3. Minor Tributaries	56.1	68.3	78.2
4. Milwaukee-Fox	37.4	61.5	76.2
5. Rock	98.6	116.8	132.7
Wisconsin Extended	573.9	755.1	916.6
United States	13,449.2	23,048.4	30,216.2
Basin/Wisconsin Extended	50.6%	50.4%	48.9%
Basin/United States	2.2%	1.7%	1.5%

AREAS	AGRICULTURAL EMPLOYMENT		
	1960	1950	1940
	----- NUMBER -----		
Basin	91,005	135,199	146,356
1. Menominee-Peshtigo	3,396	7,371	8,088
2. Wolf-Fox	26,147	38,278	42,586
3. Minor Tributaries	16,031	24,194	27,859
4. Milwaukee-Fox	12,873	21,019	22,700
5. Rock	32,558	44,337	45,123
Wisconsin Extended	173,498	261,489	283,298
United States	4,256,734	6,917,731	8,430,663
Basin/Wisconsin Extended	52.4%	51.70%	51.6%
Basin/United States	2.1%	2.0%	1.7%

Population Figures Compiled from U. S. Census of Population, 1940, and  
The County and City Data Book, 1952, and 1962  
Employment Figures Compiled from Growth Patterns in Employment by  
County, 1940-1950 and 1950-1960





TABLE 9--OPERATORS WORKING OFF FARMS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	1964	TOTAL	1954
		1959	
	-----	NUMBER	-----
Basin	25,192	27,215	30,700
1. Menominee-Peshtigo	1,587	1,891	2,661
2. Wolf-Fox	7,243	8,002	8,412
3. Minor Tributaries	5,387	5,939	6,367
4. Milwaukee-Fox	3,609	3,957	5,058
5. Rock	7,366	7,426	8,202
Wisconsin Extended	51,657	55,852	63,149
United States	1,462,183	1,663,841	2,153,737
Basin/Wisconsin Extended	48.8%	48.7%	48.6%
Basin/United States	1.7%	1.6%	1.4%

AREAS	1964	100 DAYS OR MORE	1954
		1959	
	-----	NUMBER	-----
Basin	17,180	17,056	16,759
1. Menominee-Peshtigo	1,184	1,286	1,627
2. Wolf-Fox	4,706	4,759	4,166
3. Minor Tributaries	3,916	3,940	3,676
4. Milwaukee-Fox	2,754	2,937	3,522
5. Rock	4,621	4,131	3,768
Wisconsin Extended	33,458	32,695	32,025
United States	1,013,200	1,107,606	1,333,725
Basin/Wisconsin Extended	51.3%	52.2%	52.3%
Basin/United States	1.7%	1.5%	1.3%

Compiled from U. S. Census of Agriculture, 1964 and 1959



TABLE 10--EMPLOYMENT ON FARMS BY TYPE  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	1964	REGULAR	
		1959	1954
	-----	NUMBER	-----
Basin	13,107	10,802	13,315
1. Menominee-Peshtigo	329	209	336
2. Wolf-Fox	3,224	2,626	3,302
3. Minor Tributaries	1,692	1,529	1,973
4. Milwaukee-Fox	2,907	2,389	3,122
5. Rock	4,955	4,049	4,582
Wisconsin Extended	22,260	18,462	21,849
United States	889,581	700,256	691,100
Basin/Wisconsin Extended	58.9%	58.5%	60.9%
Basin/United States	3.8%	3.3%	4.0%

AREAS	1964	SEASONAL	
		1959	1954
	-----	NUMBER	-----
Basin	*	5,243	17,197
1. Menominee-Peshtigo		272	1,161
2. Wolf-Fox		1,310	6,650
3. Minor Tributaries		818	2,652
4. Milwaukee-Fox		911	3,311
5. Rock		1,932	3,423
Wisconsin Extended		10,617	31,721
United States		883,900	2,038,600
Basin/Wisconsin Extended		49.4%	54.2%
Basin/United States		.6%	.8%

AREAS	1964	TOTAL HIRED	
		1959	1954
	-----	NUMBER	-----
Basin	*	16,045	30,512
1. Menominee-Peshtigo		481	1,497
2. Wolf-Fox		3,936	9,952
3. Minor Tributaries		2,347	4,625
4. Milwaukee-Fox		3,300	6,433
5. Rock		5,981	8,005
Wisconsin Extended		29,079	53,570
United States		1,584,153	2,729,650
Basin/Wisconsin Extended		55.2%	57.0%
Basin/United States		1.0%	1.1%

\* Not Available for 1964



TABLE 10 (Cont.)--EMPLOYMENT ON FARMS BY TYPE  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	FAMILY, INCLUDING OPERATOR		
	1964	1959	1954
	----- NUMBER -----		
Basin	*	116,801	138,725
1. Menominee-Peshtigo		5,199	9,080
2. Wolf-Fox		34,416	39,022
3. Minor Tributaries		23,907	27,961
4. Milwaukee-Fox		14,545	19,333
5. Rock		38,734	43,329
Wisconsin Extended		236,103	279,775
United States		4,748,300	6,867,700
Basin/Wisconsin Extended		49.5%	49.6%
Basin/United States		2.5%	2.0%

AREAS	TOTAL FARM WORKERS		
	1964	1959	1954
	----- NUMBER -----		
Basin	*	132,846	169,237
1. Menominee-Peshtigo		5,680	10,577
2. Wolf-Fox		38,352	48,974
3. Minor Tributaries		26,254	32,586
4. Milwaukee-Fox		17,845	25,766
5. Rock		44,715	51,334
Wisconsin Extended		265,182	333,345
United States		6,332,500	9,597,300
Basin/Wisconsin Extended		50.1%	50.8%
Basin/United States		2.1%	1.8%

Compiled from U. S. Census of Agriculture, 1964 and 1959

\* Not Available for 1964





TABLE 11--VALUE OF ALL FARM PRODUCTS INCLUDING FARM FOREST PRODUCTS SOLD  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	1964	TOTAL VALUE	
		1959	1954
	-----	1,000 DOLLARS	-----
Basin	644,168.2	572,931.8	486,452.2
1. Menominee-Peshtigo	16,951.7	14,825.3	13,858.3
2. Wolf-Fox	162,991.8	141,457.3	116,818.5
3. Minor Tributaries	104,929.4	85,807.7	70,126.1
4. Milwaukee-Fox	97,989.3	84,096.7	79,788.1
5. Rock	261,306.1	246,744.8	205,861.2
Wisconsin Extended	1,158,892.0	1,016,467.1	828,790.0
United States	35,465,950	30,680,186	24,772,845
Basin/Wisconsin Extended	55.6%	56.4%	58.7%
Basin/United States	1.8%	1.9%	2.0%

AREAS	1964	TOTAL VALUE	
		1959	1954
	-----	1,000 DOLLARS	-----
Basin	10,408	8,299	6,024
1. Menominee-Peshtigo	5,587	4,024	2,657
2. Wolf-Fox	9,351	7,200	5,104
3. Minor Tributaries	8,845	6,647	4,830
4. Milwaukee-Fox	11,646	8,788	6,427
5. Rock	12,356	10,622	8,006
Wisconsin Extended	9,387	7,439	5,172
United States	11,246	8,275	5,180
Basin/Wisconsin Extended	110.9%	111.6%	116.5%
Basin/United States	92.5%	100.3%	116.3%

Compiled from U. S. Census of Agriculture, 1964 and 1959



TABLE 12--VALUE OF CROPS, LIVESTOCK AND LIVESTOCK PRODUCTS  
INCLUDING DAIRY, POULTRY AND POULTRY PRODUCTS,  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	CROPS SOLD		
	1964	1959	1954
	----- 1,000 DOLLARS -----		
Basin	138,191.8	88,804.7	78,128.3
1. Menominee-Peshtigo	2,820.7	3,197.8	2,157.6
2. Wolf-Fox	32,621.9	20,580.2	17,933.2
3. Minor Tributaries	16,084.7	11,210.8	11,332.0
4. Milwaukee-Fox	23,817.8	21,012.9	18,930.7
5. Rock	62,846.7	32,803.0	27,774.8
Wisconsin Extended	194,761.3	136,888.4	117,194.5
United States	16,441,771	13,458,000	18,079,257
Basin/Wisconsin Extended	71.0%	64.9%	66.7%
Basin/United States	.8%	.7%	.4%

AREAS	LIVESTOCK PRODUCTS SOLD		
	1964	1959	1954
	----- 1,000 DOLLARS -----		
Basin	460,926.6	464,348.7	408,324.1
1. Menominee-Peshtigo	13,481.1	12,281.3	11,700.7
2. Wolf-Fox	106,384.7	115,499.4	98,885.4
3. Minor Tributaries	86,462.5	72,779.2	58,794.2
4. Milwaukee-Fox	64,859.1	59,468.2	60,857.3
5. Rock	192,739.2	204,320.6	178,086.5
Wisconsin Extended	907,955.7	825,894.5	721,595.8
United States	11,980,956	11,593,703	12,292,424
Basin/Wisconsin Extended	50.8%	56.2%	56.6%
Basin/United States	3.8%	4.0%	3.3%

AREAS	POULTRY AND PRODUCTS SOLD		
	1964	1959	1954
	----- 1,000 DOLLARS -----		
Basin	19,659.1	21,778.3	28,604.5
1. Menominee-Peshtigo	651.5	346.2	675.5
2. Wolf-Fox	4,210.0	5,377.7	5,897.0
3. Minor Tributaries	2,223.3	2,817.7	4,002.9
4. Milwaukee-Fox	4,057.9	3,615.5	7,740.7
5. Rock	8,516.4	9,621.2	10,288.4
Wisconsin Extended	54,936.7	53,440.9	53,808.9
United States	3,062,913	2,257,000	1,918,936
Basin/Wisconsin Extended	35.8%	40.8%	53.2%
Basin/United States	.6%	1.0%	1.4%

Compiled from U. S. Census of Agriculture, 1964 and 1959





TABLE 13--DISTRIBUTION OF LAND USE  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	LAND IN FARMS		
	1964	1959	1954
	----- 1,000 ACRES -----		
Basin	9,677.4	10,144.0	10,716.4
1. Menominee-Peshtigo	613.9	700.3	853.7
2. Wolf-Fox	2,856.3	3,019.3	3,225.8
3. Minor Tributaries	1,470.0	1,523.6	1,566.3
4. Milwaukee-Fox	1,114.3	1,177.7	1,340.6
5. Rock	3,622.9	3,723.1	3,730.0
Wisconsin Extended	21,260.6	22,093.1	23,544.0
United States	1,110,187	1,123,000	1,158,192
Basin/Wisconsin Extended	45.5%	45.9%	45.5%
Basin/United States	.9%	.9%	.9%

AREAS	CROPLAND HARVESTED		
	1964	1959	1954
	----- 1,000 ACRES -----		
Basin	5,222.3	5,488.9	5,593.0
1. Menominee-Peshtigo	174.5	189.0	215.3
2. Wolf-Fox	1,370.9	1,445.8	1,487.5
3. Minor Tributaries	887.1	897.7	900.4
4. Milwaukee-Fox	694.3	760.2	833.5
5. Rock	2,095.5	2,226.2	2,156.3
Wisconsin Extended	9,503.9	10,100.5	10,356.4
United States	286,892.0	313,637.0	332,870.5
Basin/Wisconsin Extended	54.9%	54.3%	54.0%
Basin/United States	1.8%	1.8%	1.7%

AREAS	CROPLAND		
	1964	1959	1954
	----- 1,000 ACRES -----		
Basin	6,716.2	6,871.7	7,132.0
1. Menominee-Peshtigo	260.8	279.0	328.7
2. Wolf-Fox	1,815.2	1,867.7	1,973.2
3. Minor Tributaries	1,123.4	1,147.3	1,172.5
4. Milwaukee-Fox	858.2	894.3	1,001.8
5. Rock	2,658.6	2,683.4	2,655.8
Wisconsin Extended	12,644.4	12,872.9	13,310.1
United States	434,232.2	450,247.0	459,649.0
Basin/Wisconsin Extended	53.1%	53.4%	53.6%
Basin/United States	1.5%	1.5%	1.6%



TABLE 13 (Cont.)--DISTRIBUTION OF LAND USE  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	CROPLAND USED FOR PASTURE		
	1964	1959	1954
	----- 1,000 ACRES -----		
Basin	854.7	1,062.9	1,269.9
1. Menominee-Peshtigo	56.9	61.9	83.7
2. Wolf-Fox	254.4	301.9	375.5
3. Minor Tributaries	173.8	215.7	247.0
4. Milwaukee-Fox	65.0	94.4	121.5
5. Rock	304.6	389.0	442.2
Wisconsin Extended	1,843.3	2,084.6	2,374.1
United States	57,418.9	65,516.0	66,069.8
Basin/Wisconsin Extended	46.4%	51.0%	53.5%
Basin/United States	1.5%	1.6%	1.9%

AREAS	OTHER CROPLAND		
	1964	1959	1954
	-----1,000 ACRES -----		
Basin	639.2	292.6	269.1
1. Menominee-Peshtigo	29.4	28.1	29.7
2. Wolf-Fox	189.9	119.9	110.2
3. Minor Tributaries	62.5	33.9	25.1
4. Milwaukee-Fox	98.9	39.7	46.8
5. Rock	258.5	71.0	57.3
Wisconsin Extended	1,297.2	687.8	597.6
United States	89,921.4	71,094.0	60,708.6
Basin/Wisconsin Extended	49.3%	42.5%	45.0%
Basin/United States	.7%	.4%	.4%

AREAS	WOODLAND PASTURED		
	1964	1959	1954
	----- 1,000 ACRES -----		
Basin	698.9	850.9	1,149.1
1. Menominee-Peshtigo	98.7	118.2	196.3
2. Wolf-Fox	250.8	308.2	432.3
3. Minor Tributaries	76.4	97.1	124.4
4. Milwaukee-Fox	60.2	74.1	111.2
5. Rock	212.8	253.3	284.4
Wisconsin Extended	2,864.5	3,184.5	3,927.5
United States	82,209.7	92,568.0	121,151.6
Basin/Wisconsin Extended	24.4%	26.7%	29.3%
Basin/United States	.9%	.9%	.9%



TABLE 14--COMMERCIAL FERTILIZER AND FERTILIZER MATERIAL USED  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	ACRES APPLIED		
	1964	1959	1954
	-----	1,000 ACRES	-----
Basin	2,348	2,342	2,348
1. Menominee-Peshtigo	71	72	67
2. Wolf-Fox	653	594	612
3. Minor Tributaries	225	186	188
4. Milwaukee-Fox	337	369	403
5. Rock	1,062	1,121	1,078
Wisconsin Extended	4,048	4,242	4,071
United States	150,651	133,260	122,809
Basin/Wisconsin Extended	58.0%	55.2%	57.8%
Basin/United States	1.6%	1.8%	1.9%

AREAS	FERTILIZER USED		
	1964	1959	1954
	-----	1,000 TONS	-----
Basin	310	278	273
1. Menominee-Peshtigo	11	9	9
2. Wolf-Fox	88	78	75
3. Minor Tributaries	28	22	23
4. Milwaukee-Fox	49	50	55
5. Rock	134	119	111
Wisconsin Extended	525	491	454
United States	23,286	19,809	18,869
Basin/Wisconsin Extended	59.0%	56.6%	60.1%
Basin/United States	1.3%	1.4%	1.4%

Compiled from U. S. Census of Agriculture, 1964 and 1959





SOUTHEAST WISCONSIN RIVERS BASIN  
SUMMARY OF CONSERVATION PRACTICES INSTALLED  
1965 AND 1968

	Economic Subarea 1		Economic Subarea 2		Economic Subarea 3	
Unit	1965	1968	1965	1968	1965	1968
Conservation Cropping System						
Contour Farming	74,918	83,492	402,776	509,694	185,606	231,397
Diversion	9,922	10,404	49,616	59,674	15,526	24,616
Farm Pond	63,067	62,747	1,607,866	1,695,391	354,738	415,338
Field Windbreak	244	375	804	1,727	247	460
Floodwater Retarding Structure	10,680	25,580	1,753,087	1,956,185	54,220	92,070
Grade Stabilization Structure	--	--	3	19	3	3
Grassed Waterway or Outlet	182	186	2,179	2,614	1,676	2,098
Land Clearing	3,939	4,606	1,630	5,545	1,000	2,550
Livestock Exclusion	35,521	40,530	94,026	126,627	55,886	72,788
Drainage Main or Lateral	10,732	25,637	3,977,809	3,077,293	266,831	392,916
Pasture & Hayland Renovation	9,936	11,382	63,648	44,020	27,917	32,287
Streambank Protection	15,920	17,240	161,700	374,413	29,477	34,802
Stripcropping, Contour	11,529	11,522	51,073	53,988	23,546	26,473
Drainage, Field Ditch	655,766	762,970	14,729,765	18,434,970	3,940,435	4,773,553
Terrace, Gradient	35,580	30,500	2,333,360	2,180,900	141,325	115,900
Tile Drain	160,059	211,846	7,204,499	10,827,341	14,507,874	16,391,555
Tree Planting	82,427	86,906	78,214	96,232	13,923	18,200
Wildlife Habitat Preservation	4,114	8,699	22,230	42,427	7,409	9,739
Wildlife Wetland Preservation	5,330	8,666	42,711	51,250	18,844	23,748



SOUTHEAST WISCONSIN RIVERS BASIN  
SUMMARY OF CONSERVATION PRACTICES INSTALLED  
1965 AND 1968

Economic Subarea 4		Economic Subarea 5		Total All Subareas		Estimated Costs of Practices based on 1968 Prices	
1965	1968	1965	1968	1965	1968	1965	1968
103,668	155,682	600,275	837,860	1,367,243	1,818,125	1,367,243	1,818,125
17,810	21,112	241,205	367,882	334,079	483,688	334,079	483,688
488,992	537,352	2,376,959	2,622,235	4,891,622	5,333,063	733,743	799,959
562	1,002	577	863	2,434	4,427	2,677,400	4,869,700
11,350	131,170	695,784	664,644	2,525,121	2,869,649	1,136,304	1,291,342
24	25	141	142	171	189	427,500	472,500
44	51	563	685	979	1,232	979,000	1,232,000
817	964	4,993	6,316	9,847	12,178	1,969,400	2,435,600
103	271	778	722	7,450	13,694	745,000	1,369,400
49,317	74,418	81,518	108,131	316,268	422,494	1,897,608	2,534,964
632,306	699,450	3,095,545	3,100,298	7,983,223	7,295,594	5,987,417	5,471,696
10,778	12,171	41,407	39,888	153,686	139,748	6,147,440	5,589,920
30,781	567,611	56,285	71,437	294,163	1,065,503	88,249	319,650
22,362	24,213	312,252	357,212	420,762	473,408	1,535,781	1,727,939
690,881	907,888	982,317	1,132,503	20,999,164	26,011,834	1,259,950	1,560,710
128,690	129,780	3,357,773	3,277,237	5,996,728	5,734,327	238,669	229,373
6,419,385	8,122,795	26,113,399	28,307,132	54,405,216	63,860,669	19,041,826	22,351,234
12,089	14,679	13,498	16,509	200,151	232,526	7,005,285	8,138,410
8,348	13,677	243	421	42,344	74,963	2,117,200	3,748,150
13,251	16,965	36,306	41,684	116,442	142,313	5,822,100	7,115,650
				TOTAL		61,511,194	73,560,010





TABLE 16--IRRIGATED LAND IN FARMS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

AREAS	FARMS REPORTING		
	1964	1959	1954
	----- NUMBER -----		
Basin	386	302	240
1. Menominee-Peshtigo	17	12	18
2. Wolf-Fox	183	141	105
3. Minor Tributaries	37	34	32
4. Milwaukee-Fox	92	64	54
5. Rock	57	51	31
Wisconsin Extended	827	658	565
United States	297,387	308,000	320,236
Basin/Wisconsin Extended	46.7%	45.9%	42.5%
Basin/United States	.1%	.1%	.1%

AREAS	ACRES IRRIGATED		
	1964	1959	1954
	----- NUMBER -----		
Basin	30,559	15,401	7,310
1. Menominee-Peshtigo	897	235	252
2. Wolf-Fox	21,218	11,273	4,563
3. Minor Tributaries	1,008	908	661
4. Milwaukee-Fox	2,096	1,181	716
5. Rock	5,340	1,804	1,118
Wisconsin Extended	63,452	32,216	18,620
United States	37,056,083	33,163,000	29,552,155
Basin/Wisconsin Extended	48.2%	47.8%	39.2%
Basin/United States	.1%	.0%	.0%

Compiled from U. S. Census of Agriculture, 1964 and 1959



TABLE 17--ACREAGE OF PRINCIPAL CROPS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

	1964	BASIN TOTAL	
		1959	1954
	-----	1,000 ACRES	-----
Corn for Grain	1,075.6	1,245.7	1,009.7
Corn for Silage	515.9	519.8	594.0
Wheat for Grain	52.3	50.8	41.6
Oats for Grain	1,093.7	1,377.0	1,620.1
Barley for Grain	22.5	32.6	65.7
Rye for Grain	10.2	14.2	19.5
Soybeans	73.4	38.0	20.1
All Hay	1,940.6	1,974.0	1,954.4
Alfalfa & Mixtures	1,669.0	1,603.2	1,498.9
Other Hay	271.6	371.8	455.5
Irish Potatoes	27.4	27.7	26.3
Sugar Beets	0	7.4	11.6
Dry Beans	0	0	.4
Vegetables	202.5	176.5	176.3
Orchard Crops	16.7	21.0	22.5
Other Crops	204.4	32.0	59.4
Basin Total	5,222.3	5,519.1	5,592.8

	PERCENT OF BASIN TOTAL		
	1964	1959	1954
	-----	*Percent	-----
Corn for Grain	20.6	22.6	18.1
Corn for Silage	9.9	9.4	10.6
Wheat for Grain	1.0	.9	.7
Oats for Grain	20.9	24.9	29.0
Barley for Grain	.4	.6	1.2
Rye for Grain	.2	.3	.3
Soybeans	1.4	.7	.4
All Hay	37.2	35.8	34.9
Alfalfa & Mixtures	32.0	29.0	26.8
Other Hay	5.2	6.7	8.1
Irish Potatoes	.5	.5	.5
Sugar Beets	0	.1	.2
Dry Beans	0	0	0
Vegetables	3.9	3.2	3.2
Orchard Crops	.3	.4	.4
Other Crops	3.9	.6	1.1



TABLE 17 (Cont.)--ACREAGE OF PRINCIPAL CROPS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

	U. S. ACREAGE		
	1964	1959	1954
	----- 1,000 ACRES -----		
Corn for Grain	53,751	70,065	66,793
Corn for Silage	8,373	6,828	6,912
Wheat for Grain	47,958	49,567	51,362
Oats for Grain	18,836	26,573	37,921
Barley for Grain	9,805	14,199	12,556
Rye for Grain	1,640	1,392	1,450
Soybeans	30,351	23,070	18,243
All Hay	65,295	63,549	69,940
Alfalfa & Mixtures	28,211	26,107	26,008
Other Hay	37,084	37,442	43,932
Irish Potatoes	1,174	1,200	1,211
Sugar Beets	1,376	912	864
Dry Beans	1,338	1,414	1,455
Vegetables	3,334	3,491	3,740
Orchard Crops	4,412	4,311	4,193
Other Crops	40,572	44,508	54,131

	PERCENT OF U. S.		
	1964	1959	1954
	----- & PERCENT -----		
Corn for Grain	2.0	1.8	1.5
Corn for Silage	6.0	7.6	8.6
Wheat for Grain	.1	.1	.1
Oats for Grain	5.8	5.2	4.3
Barley for Grain	.6	.2	.5
Rye for Grain	.6	1.0	1.3
Soybeans	.2	.2	.1
All Hay	3.0	3.1	3.1
Alfalfa & Mixtures	5.9	6.1	5.8
Other Hay	.7	1.0	1.0
Irish Potatoes	2.3	2.3	2.2
Sugar Beets	0	.8	1.3
Dry Beans	0	0	0
Vegetables	6.6	5.1	4.7
Orchard Crops	.4	.5	.5
Other Crops	.4	.0	.1

Compiled from U. S. Census of Agriculture, 1964 and 1959





TABLE 18--PRODUCTION OF PRINCIPAL CROPS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

	1964	BASIN TOTAL	
		1959	1954
	-----	1,000 UNITS	-----
Corn for Grain -Bu.-	84,325.4	93,956.5	64,772.2
Corn for Silage -Ton-	6,217.7	6,036.2	5,924.1
Wheat for Grain -Bu.-	1,798.7	1,581.6	1,141.2
Oats for Grain -Bu.-	60,162.2	71,908.1	79,055.7
Barley for Grain -Bu.-	1,038.4	1,329.3	2,507.2
Rye for Grain -Bu.-	213.8	243.0	285.9
Soybeans -Bu.-	1,764.9	1,001.9	428.1
All Hay -Ton-	4,896.0	4,973.3	4,281.3
Alfalfa & Mixtures -Ton-	4,388.2	4,334.9	3,657.3
Other Hay -Ton-	507.8	638.4	624.0
Irish Potatoes -Cwt.-	5,161.7	4,625.0	3,809.6
Sugar Beets -Ton-	0	98.6	141.5
Dry Beans -Cwt.-	0	0	6.2

	1964	U. S. ACREAGE	
		1959	1954
	-----	1,000 UNITS	-----
Corn for Grain -Bu.-	3,361,142	3,697,000	2,612,911
Corn for Silage -Ton-	79,340	57,067	49,425
Wheat for Grain -Bu.-	1,217,792	1,055,925	908,928
Oats for Grain -Bu.-	808,397	1,001,092	1,314,142
Barley for Grain -Bu.-	362,198	398,312	354,716
Rye for Grain -Bu.-	30,916	21,809	21,843
Soybeans -Bu.-	669,665	515,000	323,965
All Hay -Ton-	115,761	106,590	103,597
Alfalfa & Mixtures -Ton-	68,381	59,871	54,914
Other Hay -Ton-	47,380	46,719	48,683
Irish Potatoes -Cwt.-	368,244	373,567	340,188
Sugar Beets -Ton-	23,202	16,822	13,638
Dry Beans -Cwt.-	17,659	19,087	17,125



TABLE 18 (Cont.)--PRODUCTION OF PRINCIPAL CROPS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

	PERCENT OF U. S. TOTAL		
	1964	1959	1954
	-----	PERCENT	-----
Corn for Grain -Bu.-	2.5	2.5	2.5
Corn for Silage -Ton-	7.8	10.6	12.0
Wheat for Grain -Bu.-	.2	.1	.1
Oats for Grain -Bu.-	7.4	7.2	6.0
Barley for Grain -Bu.-	.3	.3	.7
Rye for Grain -Bu.-	.7	1.1	1.3
Soybeans -Bu.-	.4	.2	.1
All Hay -Ton-	4.2	4.7	4.1
Alfalfa & Mixtures -Ton-	6.4	7.2	6.7
Other Hay -Ton-	1.1	1.4	1.3
Irish Potatoes -Cwt.-	1.4	1.2	1.1
Sugar Beets -Ton-	.0	.6	1.0
Dry Beans -Cwt.-	0	0	0

Compiled from U. S. Census of Agriculture, 1964 and 1959





TABLE 19--PRODUCTION OF LIVESTOCK, POULTRY, AND RELATED PRODUCTS  
SOUTHEAST WISCONSIN RIVERS BASIN  
WITH COMPARISONS, 1964, 1959, AND 1954

	1964	BASIN 1959	1954
Dairy Cows (No. on Farms)	1,095,663	1,143,146	1,165,321
Milk (1,000 lbs. Sold)	9,813,099	9,113,954	8,233,374
Beef (No. Sold)	1,052,439	1,045,345	1,021,727
Hogs (No. Sold)	2,160,244	2,336,337	1,695,767
Sheep (No. Sold)	83,562	99,863	98,910
Broilers (No. Sold)	1,327,425	4,541,205	4,448,102
Chicken Eggs (1,000 doz. Sold)	46,466	55,032	54,522
Turkeys (No. Sold)	512,012	434,872	340,825

	1964	PERCENT OF U. S. 1959	1954
Dairy Cows	7.5	5.7	5.8
Milk	7.8	7.5	6.7
Beef	1.7	2.0	2.3
Hogs	2.6	2.9	3.0
Sheep	.4	.4	.4
Broilers	.1	.3	.6
Chicken Eggs	1.1	1.7	2.1
Turkeys	.5	.5	.5

Compiled from U. S. Census of Agriculture 1964, 1959, and 1954



# SOUTHEAST WISCONSIN RIVERS BASIN LOCATION MAP

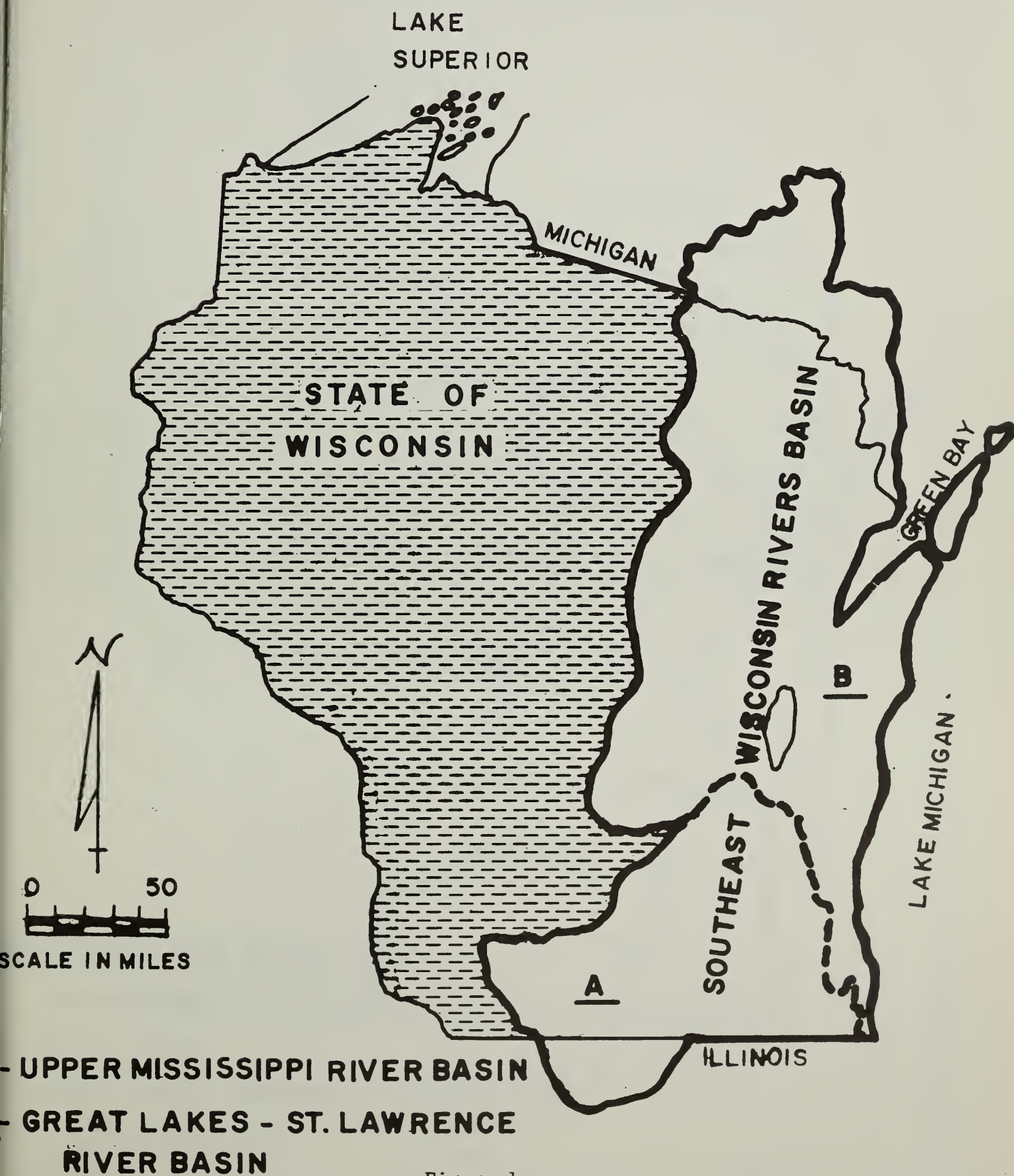
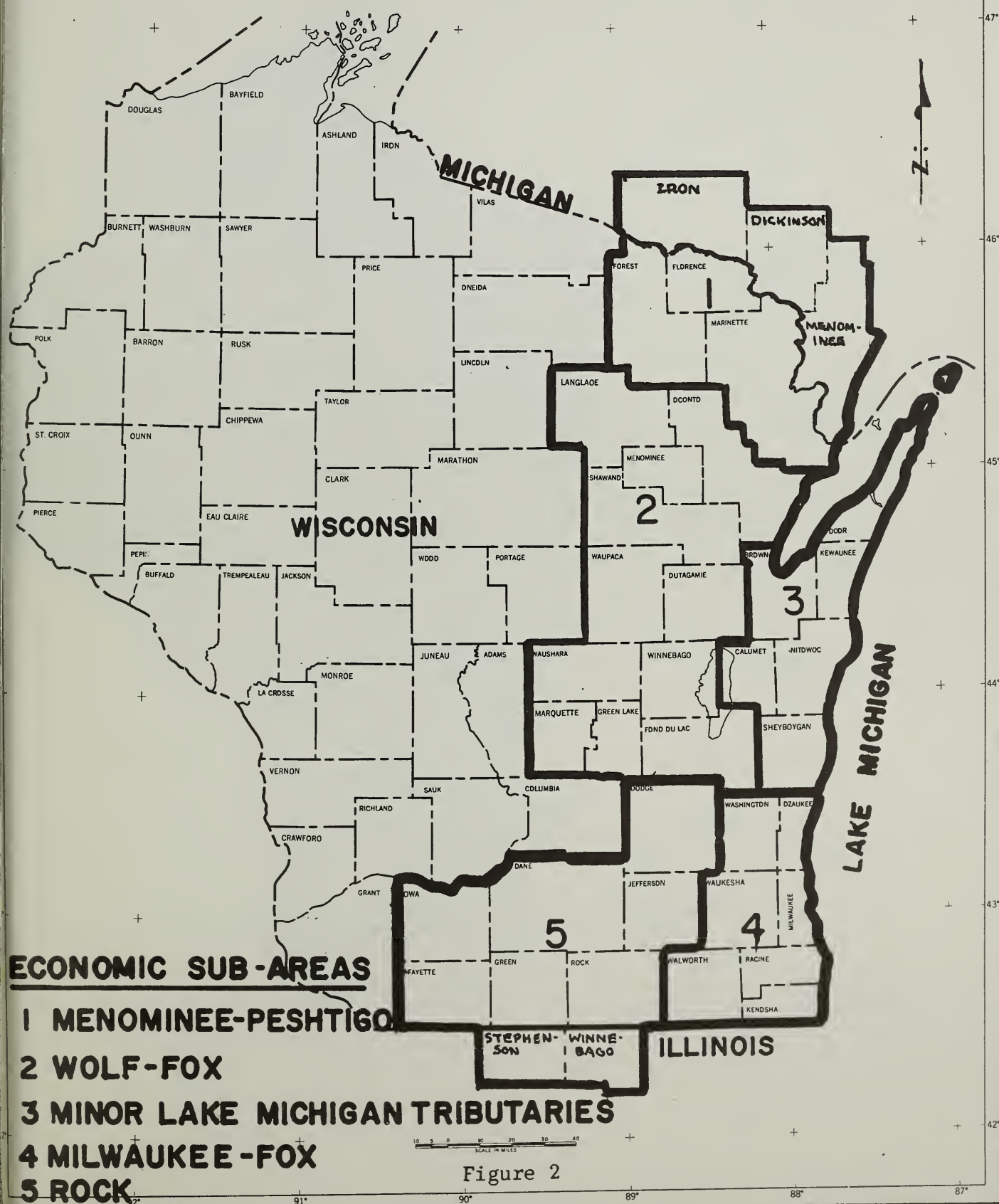


Figure 1



# SOUTHEAST WISCONSIN RIVERS BASIN ECONOMIC SUB-AREAS







## SOUTHEAST WISCONSIN RIVERS BASIN

## PL-566 WATERSHED LOCATION MAP

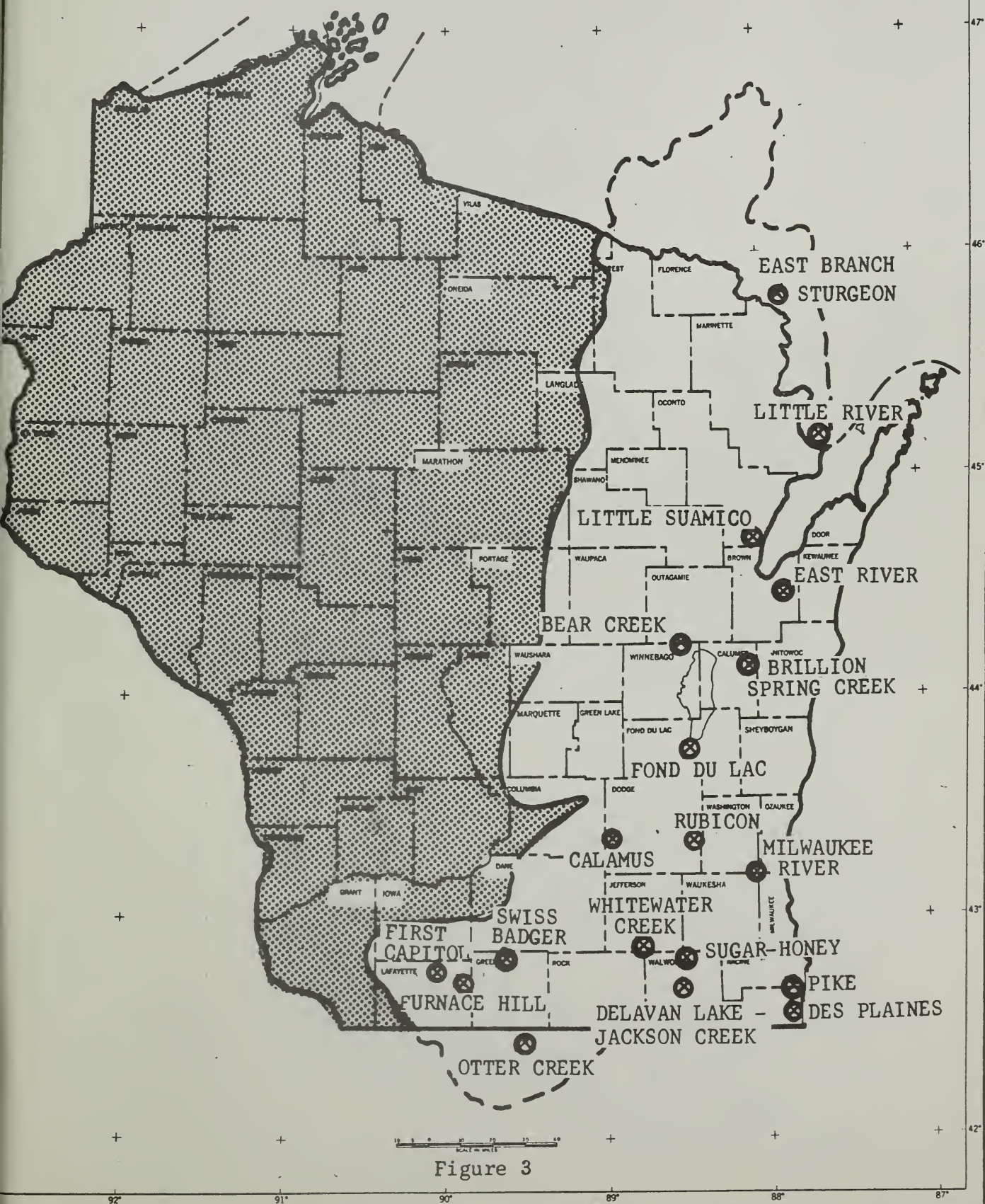
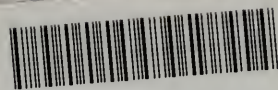
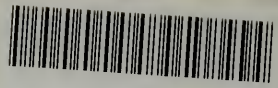


Figure 3





R0001 160968



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