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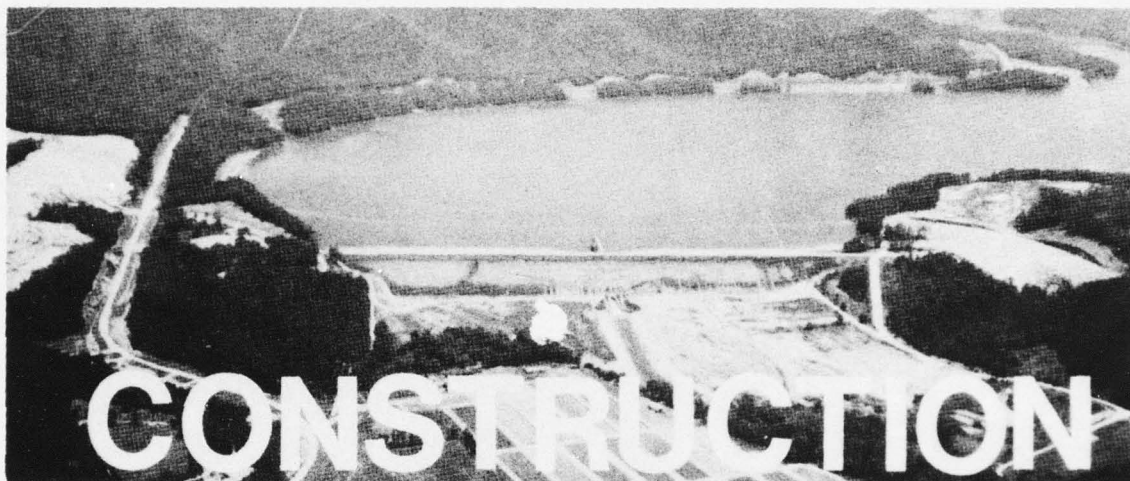
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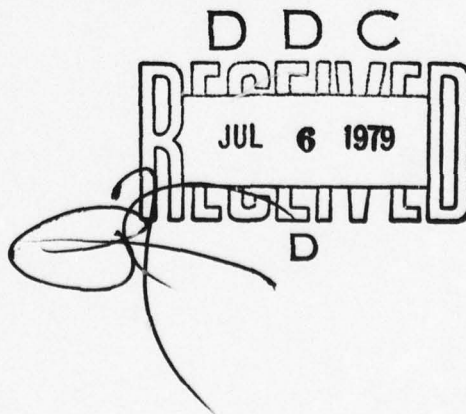
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LEVEL II IMPACT OF DAM AND LAKE



ON RURAL ECONOMIES

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IMPACT OF DAM AND LAKE
CONSTRUCTION ON RURAL ECONOMIES

A Report Submitted to:

U.S. Army Engineer Institute for Water Resources
Kingman Building
Fort Belvoir, Virginia 22060

Prepared by:

U.S. Army Engineer
Missouri River Division

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FOREWORD

↙ This report is an assessment of the social and economic impact of five dam and lake projects constructed by the Corps of Engineers. Four of the lake projects are located in Kansas, and one in Missouri. Factors used to examine the impact were land use, population, employment, and taxes.

The study area includes project counties, or counties containing the dam and all or part of the lake; and control counties, or counties which reflect the prevailing social and economic conditions and trends in the rural areas of northeastern and southwestern Missouri. The time frame is focused on three distinct phases of project land acquisition and development. ↗

There is little evidence that government land acquisition for the project had any adverse effects on the economics of the counties. Furthermore, the projects introduced a new basic industry to the project counties' recreation.

The study is divided into four parts: study parameters, land use, people, and government. Eleven tables illustrate the phases of land area changes and stages of project development for the project and control counties, as well as related information.

This report is based on an extensive data collection and analysis effort undertaken by William Drake, Jr., economist of the U.S. Army Engineer Division, Missouri River, Omaha, Nebraska. David Gjesdahl, a planner for Missouri River Division, wrote a summary report while participating in the Planning Associate Program of the Rivers and Harbors Board, U.S. Army Corps of Engineers. Editing and preparation of the report for final publication was accomplished at the Institute for Water Resources, Corps of Engineers, Kingman Building, Fort Belvoir, Virginia, 22060.

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IMPACT OF DAM AND LAKE CONSTRUCTION ON RURAL ECONOMIES

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INTRODUCTION

Social and economic impact assessment is a mandatory component of the planning process. The decision to invest in water and related resource development projects depends primarily on whether national economic development benefits exceed costs. However, measurement and projection of both benefits and impacts often suffer from insufficient data collection and from inadequate evaluation techniques. For example, although the Corps of Engineers estimates visitation at water-oriented recreation developments, relatively little effort has been expended in measuring what the recreational activity means to the local economy. Furthermore, the effect of project visitation on public services and regional facilities is seldom quantified.

This study examines the impact of several multipurpose dam and lake projects located in rural areas of Kansas and Missouri on the local economic structure. Elements of land use, population and employment, and government and taxes are evaluated as indicators of the social and economic impacts of the projects.

STUDY PARAMETERS

Projects. Five dam and lake projects constructed by the Corps of Engineers were selected for study. Four are located in northeastern Kansas: Perry, Pomona, Tuttle Creek and Milford. The fifth project, Pomme de Terre, is located in southwestern Missouri. Each of these projects has potential for considerable recreation development and each lake is between 30 and 150 miles of the Kansas City metropolitan area. In addition, the Kansas projects are near the Topeka metropolitan area and Pomme de Terre is near Springfield, Missouri. Since the Kansas lakes are relatively close together, they must compete with each other for recreation visitors. The Pomme de Terre lake in Missouri must compete with several larger lakes outside of this study area.

All of the projects considered in this study were constructed over a relatively brief time period through the 1950's and 1960's. Figure 1 displays some significant dates in project development along with the acreage of the multipurpose lake.

Study Area. Since most published statistical data is available on a county basis, counties were chosen as the base unit for much of the comparative analysis in the study. Those counties containing the dam and all or part of the lake have been labeled project counties. In addition the county containing the dam and the major portion of the permanent lake has been labeled a primary project county. In order to determine if the observed changes in socio-economic indicators in project counties are related to dam and lake effects, control counties have been selected for comparison. No rigorous criteria or detailed analyses were used in selecting control counties. It is not intended that they should precisely reflect the "without project" condition since it is recognized that most impacts are

not restricted by the relatively arbitrary limits of a political boundary. Rather, the control counties were selected to reflect the prevailing social and economic conditions and trends in the rural areas of northeastern Kansas and southwestern Missouri. Figure 2 shows the counties that comprise the study area.

Time. This study will focus on three distinct phases of project development:

1. The year of, or the year before initial land acquisition. This point in time will be used to indicate the relative conditions in the vicinity of the project before construction.
2. The year when the land acquisition is essentially complete, the lake has been filled to operational level, and water oriented recreation activities begin. At this point in time, impacts of both land acquisition and construction are evident.
3. A recent year during project operation. It is during this period that impacts of recreation activity become evident in the economies of the local communities. The year 1970 is a convenient point since it is the most recent year for which social and economic data are available from the decennial United States population census.

LAND USE

Analysis of changes in land use and land ownership caused by dam and lake construction is critical to a study of local economic structure. Table 1 summarizes changes in land area during the period of project land acquisition. According to the U.S. Census of Agriculture, loss of land area is a result of an increase in the number or size of reservoirs, lakes and streams. It is significant that the loss of land area, as shown in Table 1, closely coincides with the size of the reservoir.

Project lands consist mostly of land acquired in fee. Land acquired in fee ranges from 2 to 11 percent of total land area in project counties. In addition, some land is held in easement. Easement land is generally located in the upper reaches of the pool area and is used for floodwater storage. It is evident from Table 1 that the loss in land area as recorded by the Census of Agriculture is a good parameter for distinguishing project counties from control counties. This is important because this study will depend upon similar county level data to evaluate other social and economic impacts of the dam and lake projects. The remaining sections of this analysis will attempt to trace the effects of this loss of land acreage and the consequent impact of a shift to a new and broader economic base.

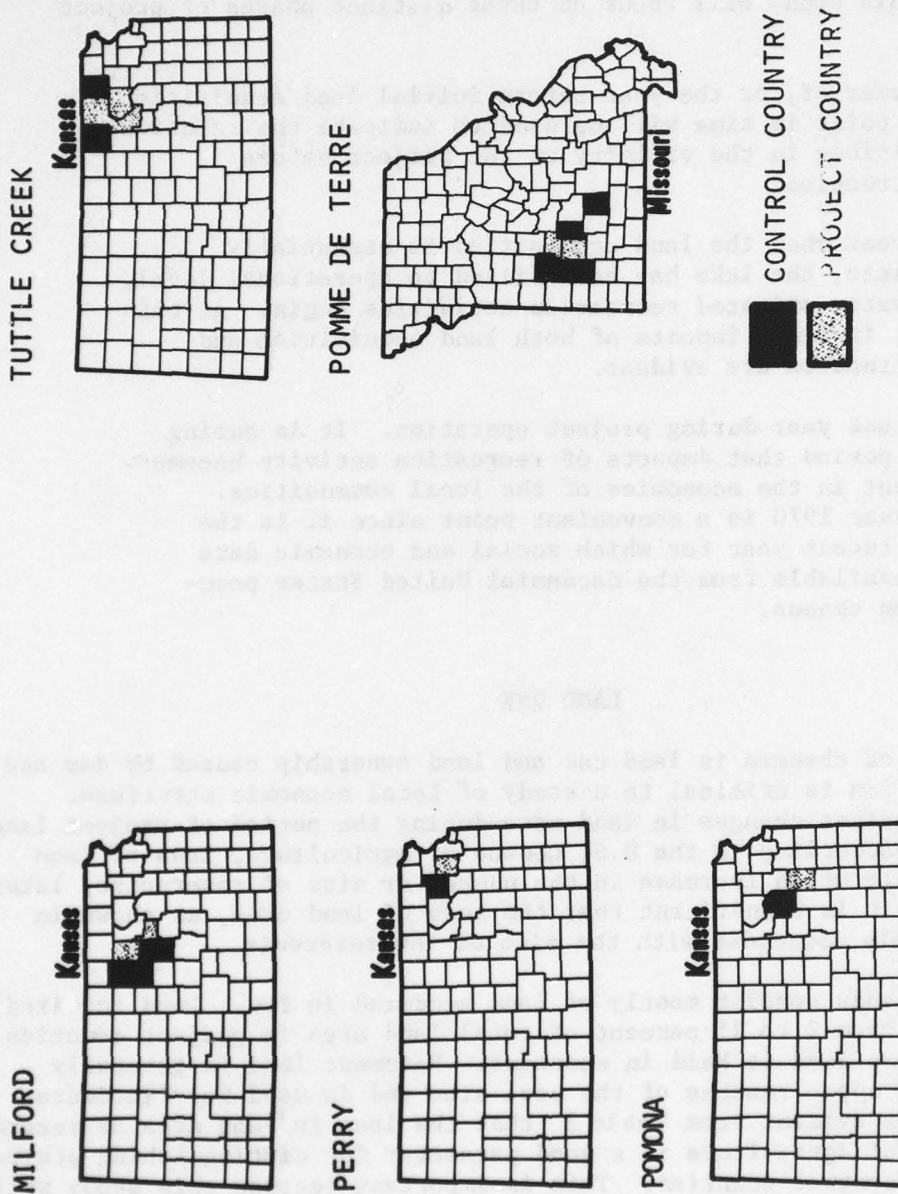


FIGURE 2
STUDY AREA BY COUNTY

TABLE 1

COUNTY LAND AREA CHANGES

<u>Project</u> (Acquisition Period Full- Pool Acreage)	<u>County</u>	<u>Land Area Loss</u> ¹ <u>During Acquisition</u>		<u>Project Lands</u> ² <u>Acres In:</u>	
		<u>Acres</u>	<u>Percent</u>	<u>Fee</u>	<u>Easement</u>
Milford 1959-1969 32,300	<u>Project Counties</u>				
	Clay	14,725	3	17,935	4,476
	Geary	16,005	6	24,529	190
	<u>Control Counties</u>				
	Cloud	0	0	0	0
	Dickinson	197	0	0	0
	Ottawa	261	0	0	0
Perry 1964-1969 25,000	<u>Project Counties</u>				
	Jefferson	24,965	7	39,329	3,130
	<u>Control Counties</u>				
	Jackson	133	0	0	0
Pomme de Terre 1964-1969 16,100	<u>Project Counties</u>				
	Hickory	21,125	8	13,958	596
	Polk	3,200	1	4,392	1,566
	<u>Control Counties</u>				
	Cedar	0	0	0	0
	Dade	0	0	0	0
	Dallas	0	0	0	0
	St. Clair	1,152	0	0	0
	Wright	0	0	0	0
Pomona 1959-1964 8,600	<u>Project Counties</u>				
	Osage	8,965	2	10,505	1,696
	<u>Control Counties</u>				
	Wabaunsee	891	0	0	0
Tuttle Creek 1950-1964 53,700	<u>Project Counties</u>				
	Marshall	17,733	3	6,304	16,304
	Pottawatomie	19,077	4	14,651	3,671
	Riley	17,541	4	0	0
	<u>Control Counties</u>				
	Nemaha	581	0	0	0
	Washington	0	0	0	0

1. Census of Agriculture 1950, 1954, 1959, 1964, 1969

2. Kansas City District, Cadastral Survey

3. Riley also has land in Milford Project (565 Ac. Fee; 172 Ac. Easement)

Agriculture. The predominant pre-project use of project land was for agricultural purposes which includes cropland, pasture, woodlots, and farmsteads. Acreage in farms may increase due to the sale of public land. On the other hand, a decrease in farm acreage may result from a variety of land use conversions; however, there are no rapidly growing cities in the study area that would cause substantial conversion from farm to urban use. Generally, the percent of land in farms, the acreage of cropland harvested, and the number of farms have declined rapidly over the past several decades in this part of the country. This is amply illustrated in Table 2. Marshall County, Kansas, is an example of an apparent exception. There appears to be an increase in farmland area even after acquisition of project land. This irregularity is probably a result of the census reporting procedures which permit the reporting of individual farm acreages in the county where the farm headquarters is located rather than where the land actually is located.

Table 2 shows that the amount of cropland harvested has declined even faster than the loss in farmland. A large percentage of project land is valuable cropland that tends to be concentrated in the river valleys. The data, however, do not conclusively demonstrate that project counties suffered an inordinate loss in cropland. In fact, the lake projects do not seem to be the dominant reason for the decline in farmland or cropland since the losses have been equally large in the control counties.

Geary County appears to be an exception. A 30 percent loss in cropland was reported during the years of project acquisition. Based on the actual number of acres lost, however, only Ottawa County of the counties in the Milford area, lost fewer acres of cropland. It should be observed that Geary is the smallest of the project counties and is, therefore, more vulnerable to erosion of her economic base. In Missouri, Hickory lost a significantly larger share of farmland between 1959 and 1969 than the associated control counties. The actual loss in cropland, however, over the same time period was no greater in Hickory County than the other Pomme de Terre control counties.

The reduction in the number of farms documented in Table 1, likewise, does not seem to be positively correlated with project construction. The loss of farmsteads, however, could result in significant erosion of the county tax base.

The conclusion seems to be that even though the projects removed large amounts of land from agricultural use in project counties, erosion of the agricultural base has been equally large in the control counties over a comparable time frame.

Recreation. In project counties some land taken out of agricultural use has been converted to recreational use by creation of the lakes and development of associated facilities. Recreation visitation, as presented in Figure 3 is one indicator of the importance of recreation to the local

TABLE 2

TOTAL AGRICULTURAL LOSSES DURING PROJECT LAND ACQUISITION

Project (Acquisition Period)	County	Farm Acreage		Crop Acreage Harvested		Number of Farms	
		Loss/ Percent/		Loss	Percent	Loss	Percent
	<u>Project Counties</u>						
Milford	Clay	19,494	5	42,928	19	293	24
1959-	Geary	36,590	17	23,358	30	93	20
1969	<u>Control Counties</u>						
	Cloud	+18,364	+4	28,537	13	188	17
	Dickinson	+ 1,586	0	41,240	13	324	19
	Ottawa	+14,904	+4	17,197	9	146	17
	<u>Project Counties</u>						
Perry	Jefferson	35,009	11	21,991	16	116	9
1964-	<u>Control Counties</u>						
1969	Jackson	+ 559	0	14,628	11	58	4
	<u>Project Counties</u>						
Pomme de	Hickory	37,308	17	8,679	20	342	34
Terre	Polk	13,359	4	18,029	19	482	19
1954-	<u>Control Counties</u>						
1964	Cedar	9,730	4	21,347	26	418	25
	Dade	103	0	14,758	16	429	25
	Dallas	542	0	10,019	20	311	17
	St. Clair	32,202	9	19,869	18	531	31
	Wright	17,585	5	4,469	9	572	23
	<u>Project Counties</u>						
Pomona	Osage	9,543	2	11,849	7	273	18
1959-	<u>Control Counties</u>						
1964	Wabaunsee	564	0	5,833	5	120	12
	<u>Project Counties</u>						
Tuttle	Marshall	+18,745	3	54,050	19	723	31
Creek	Pottawatomie	5,986	1	26,348	15	553	34
1950-	Riley	7,366	2	15,319	12	448	38
1964	<u>Control Counties</u>						
	Nemaha	2,748	1	40,317	18	541	28
	Washington	3,728	1	46,508	16	814	30

+ Indicates gain, rather than loss, see text, p. 6 for explanation.

Source: Census of Agriculture 1950, 1954, 1964, 1969.

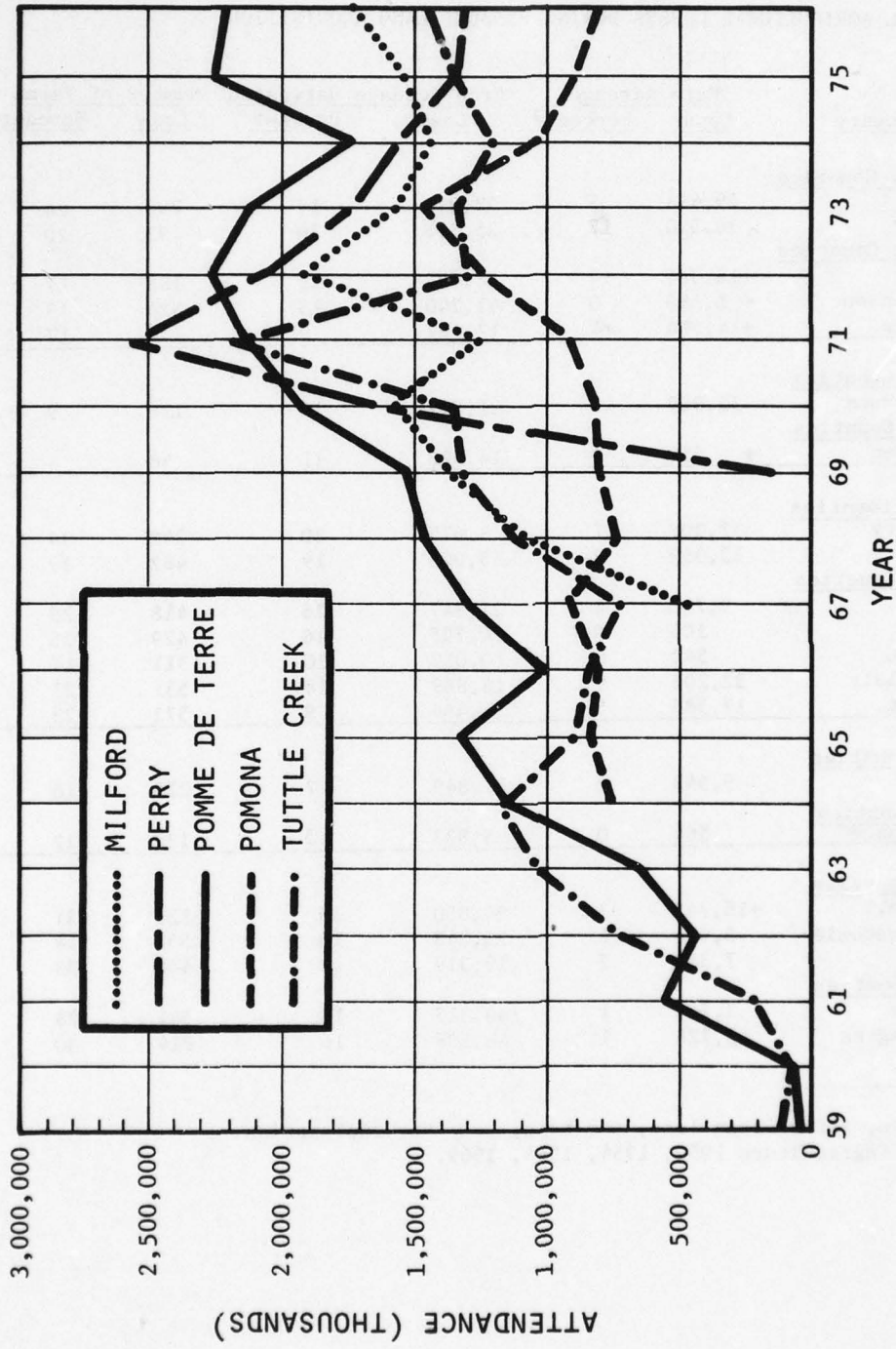


FIGURE 3
PROJECT RECREATION ATTENDANCE

economy. The large numbers of visitors make it evident that there are many people enjoying the new waterbased recreation opportunities. Disruptions in the trends generally can be traced to droughts and resulting low water levels or else to extremely high lake levels that flood recreation facilities. Despite the large visitation, the question remains, however, whether the recreation industry measurably and significantly contributes to the economic base of the counties in the project area.

To partially answer that question, an onsite land use survey of recreation development was conducted in the project counties during the spring of 1972. The intent was to document the number and value of recreation homes and homesites together with other recreation oriented development in the project counties. The survey made no distinction between seasonal and year-round homes.

Table 3 shows that the impact of recreational home development was greatest in Hickory County. Over 1,100 units with a value in excess of \$9 million have been constructed. The average value, about \$8,000 is, however, less than half the average value of new homes at the Kansas projects. Homes at the Perry, Pamona, and Tuttle Creek projects average between \$18,000 to \$20,000 per unit. Although Geary County had the least home building activity, the average value is nearly \$30,000.

Another part of the field survey was a tabulation of the number of overnight accommodations constructed in the vicinity of the lakes. Undoubtedly, there is a relationship between this type of development and the distance to the visitors' homes. Hickory County, the furthest from large urban areas, consequently has far more development of this type (Table 4).

The land use survey also attempted to measure the type and capital value of privately-owned facilities serving visitors at the recreation areas. This type of investment enhances the local tax base by offsetting the losses resulting from displacement of agriculturally oriented facilities. Table 5 lists the boat storage sheds, marinas and boat shops that have been constructed in the project area. Scout camps and golf courses have also been built as part of the recreational development.

Concession investment is located exclusively on Corps of Engineers administered land. A portion of this type of investment is made by state and local agencies. The relatively large investment at Hickory County reflects the steady long-term growth of recreation visitation at Pomme de Terre Lake.

Purchase of fishing licenses is another indicator of recreation interest. Resident sportsmen may purchase licenses in the county where they live, where they fish, or somewhere in between. Nonresidents may purchase licenses in any county in the state where they fish. State laws, therefore, do not insure that fishermen will purchase licenses in project counties, but there should be a tendency for sportsmen to buy their licenses near their destination. Table 6 reports fishing license sales

TABLE 3

RECREATION HOMES AND HOMESITES 1972

<u>Project</u>	<u>County</u>	<u>RECREATION HOMES</u>		<u>HOMESITES</u>		
		<u>Number</u>	<u>Total Value</u>	<u>Number Platted</u>	<u>Number Sold</u>	<u>Value</u>
Milford	Geary	26	\$ 763,000	175	83	\$ 296,000
Perry	Jefferson	187	3,782,400	4290	1051	5,688,300
Pomme de Terre	Hickory	1139	9,119,100	5287	3417	3,400,650
	Polk	109	1,037,000	400	270	258,500
Pomona	Osage	110	2,035,000	1077	643	887,940
Tuttle Creek	Pottawatomie	30	544,000	452	331	188,200
	Riley	292	5,153,400	2500	1680	2,637,550

Table 4

OVERNIGHT ACCOMMODATIONS 1972

<u>Project</u>	<u>County</u>	<u>Number of Units</u>	<u>Value</u>
Pomme de Terre	Hickory	170	\$1,257,000
Pomona	Osage	9	36,000
Tuttle Creek	Riley	23	115,000

Table 5

OTHER RECREATION-ORIENTED DEVELOPMENTS 1972

<u>Project</u>	<u>County</u>	<u>Private Developments</u>	<u>Market Value</u>	<u>Concessionaire Public</u>	<u>Investment Private</u>
Milford	Geary	Boat storage sheds, marinas, bait shops	\$ 64,000	\$539,644	\$135,000
Perry	Jefferson	Boat storage sheds, ser- vice stations, restaurants, Grange Hdq., Boy Scout camp	531,000	586,948	309,538
Pomme de Terre	Hickory	Boat storage sheds, gen- eral stores, bait shops, sporting goods, cafes	703,000	NA	451,650
Pomona	Osage	-	-	456,285	288,618
Tuttle Creek	Riley	Boat storage sheds, ser- vice station, grocery store, dairy store, bait shop, 9-hole golf course, Girl Scout camp	152,200	723,178	70,000
	Pottawatomie	Boat storage sheds	35,000	NA	NA

TABLE 6

KANSAS FISHING LICENSE SALES

<u>Project</u>	<u>County</u>	<u>RESIDENT</u>		<u>NON-RESIDENT</u>	
		<u>1960 (Begin)</u> <u>Acquisition)</u>	<u>1970</u>	<u>1960 (Begin)</u> <u>Acquisition)</u>	<u>1970</u>
Milford	<u>Project Counties</u>				
	Clay	1,362	2,272	7	232
	Geary	3,624	9,793	10	581
	<u>Control Counties</u>				
	Cloud	1,439	1,672	8	56
	Dickinson	2,638	2,686	6	47
	Ottawa	888	724	20	18
Perry	<u>Project Counties</u>				
	Jefferson	765	1,807	2	238
	<u>Control Counties</u>				
	Jackson	1,138	1,185	7	25
Pomona	<u>Project Counties</u>				
	Osage	1,153	5,140	5	631
	<u>Control Counties</u>				
	Wabaunsee	1,006	725	2	30
Tuttle Creek	<u>Project Counties</u>				
	Marshall	1,893	1,707	11	256
	Pottawatomie	999	1,383	0	78
	Riley	1,903	8,448	3	858
	<u>Control Counties</u>				
	Nemaha	1,168	995	9	26
	Washington	867	872	0	134

Source: Kansas Forestry, Fish and Game Commission

in Kansas counties for two key years; 1960, initiation of acquisition, and 1970, beginning of recreation. The rapid increase in sales in project counties is clearly distinguishable from the rather static sales in control counties.

Pre-project fishing license sale figures are not available for Missouri. However, in 1970 alone, Hickory County had over twice as many sales as the other Pomme de Terre project counties or any of the Pomme de Terre control counties.

To this point, documents indicate that a new basic industry--recreation--has developed to a modest extent in the vicinity of the lakes. Next, this report will examine the impact of this economic change on the people in the project area.

PEOPLE

Population. Estimated 1975 population and trends since 1940 for both project and control counties are presented in Table 7. Each county is located in a rural area dominated by an agricultural economy. As Table 2 shows, the number of farms has been declining much faster than the amount of land in farms. These data reflect the fact that individual farms are getting larger. At the same time, population has been declining for most of the past 30 years. Due to increased farm mechanization, the larger farms can be operated by the smaller population.

Population growth is primarily dependent upon employment opportunities. The infusion of basic industry such as recreation has not been sufficient to offset the decline in agricultural and farm related employment. Between 1960 and 1970, most of the counties showed a decrease in the number of people between 18 and over 65. This trend indicates outmigration of the employable segment of the population due to a lack of employment opportunity.

The nearly universal trend of an increasing population in both the project and control counties since 1970 may simply reflect an overly optimistic 1975 estimate. On the other hand, the growth in these essentially rural counties may reflect the recent national trend of people moving away from the large urban centers. The rather large population increase in Geary and Riley Counties since 1940 is related to activity at Fort Riley.

Employment. An important indicator of a project's social and economic impact is employment. The two primary sources of employment data are the U.S. Census of Population and reports provided by the labor departments of state governments.

Census data have the unique value of providing a historical perspective and a comparability throughout the nation. Census data also have two inherent weaknesses. First, since employment is reported only during the first week in April, it is impossible to detect seasonal employment. Second, the census does not provide employment data based on the county where the employee works, but rather by the location of the employee's residence.

TABLE 7

COUNTY POPULATION

<u>Project</u>	<u>County</u>	<u>Population</u> <u>1975</u>	<u>Annual Percent Change in Population</u>			
			<u>1940/50</u>	<u>1950/60</u>	<u>1960/70</u>	<u>1970/75</u>
Milford	<u>Project Counties</u>					
	Clay	9,700	-1.35	-.96	-.79	-.4
	Geary	31,400	+4.24	+3.28	-.24	+2.0
	<u>Control Counties</u>					
	Cloud	13,100	-.71	-1.18	-.7	-.5
	Dickinson	20,700	-.82	+.18	-.79	+.6
	Ottawa	6,200	-2.7	-.72	-.57	+0.5
Perry	<u>Project Counties</u>					
	Jefferson	13,000	-1.4	-1.72	-1.14	+1.6
	<u>Control Counties</u>					
	Jackson	11,000	-2.1	-.77	+0.3	+1.1
Pomme de Terre	<u>Project Counties</u>					
	Hickory	6,000	-2.1	-1.9	-.08	+5.0
	Polk	17,800	-.83	-1.7	+1.2	+2.7
	<u>Control Counties</u>					
	Cedar	10,600	-.97	-1.7	+2.26	+2.2
	Dade	7,300	-2.1	-2.3	-1.1	+1.2
	Dallas	11,600	-1.1	-1.2	+7.9	+2.7
	St. Clair	9,400	-2.0	-2.0	-.9	+3.7
	Wright	14,700	-1.2	-1.0	-.34	+1.4
Pomona	<u>Project Counties</u>					
	Osage	13,700	-1.8	+0.6	+3.6	+5.0
	<u>Control Counties</u>					
	Wabaunsee	6,600	-2.8	-.85	-.39	+6.2
Tuttle Creek	<u>Project Counties</u>					
	Marshall	13,500	-1.7	-1.5	-1.9	+6
	Pottawatomie	12,600	-1.4	-.32	-.17	+1.4
	Riley	61,300	+6.2	+2.6	+3.6	+1.5
	<u>Control Counties</u>					
	Nemaha	11,400	-1.7	-1.1	-.91	-.7
	Washington	8,800	-2.3	-2.1	-1.6	-1.0

Source: 1/ Bureau of the Census "Population Estimates & Projections"
September 1977.

Employment data supplied by the states alleviates these problems. Employment is reported monthly by place of work rather than location of residence. State data, however, have other significant shortcomings. States only count employees covered under unemployment compensation laws and the extent of coverage has changed over time. Furthermore, the availability of data for years before the late 1960's is limited. State data then are not sufficient for a time series analysis of trends from initial land acquisition through the construction and operation periods for the projects considered in this report.

The comparability between the census and state employment figures was examined for those counties in the study area. The results indicate that the April values reported in the census are very similar to the average annual values reported by the states of Kansas and Missouri. The differences are less than three percent in each case. Certain sectors of employment, however, show considerably less agreement. The 1970 census count of trade employment is consistently higher than the state figures. Apparently, the states do not count a large number of people who work in small retail outlets and are not covered by unemployment compensation.

Table 8 displays seasonal trade employment as reported by the states. Several counties, both project and control, have a summer trade employment peak. Hickory County stands out as having both the most pronounced summer peak and also the smallest per capita trade employment. Most Hickory County residents evidently regularly trade in neighboring counties. Apparently, however, during the summer the recreation visitors significantly increase the trade employment opportunities. Aside from Hickory County, no significant distinction can be drawn between the project and control counties based on seasonality of employment.

The increase in per capita income during the 1960's is displayed in Figure 4. Again, despite the effects of project construction and operation, project counties show about the same trend as the control counties.

GOVERNMENT

State governments fund their services and facilities from several sources. These include: sales taxes, property taxes, and project lease-back funds.

Sales Tax Collections. A comparison of per capita sales tax collections for project and control counties is displayed in Table 9. It is informative to keep the employment figures discussed previously in mind when analyzing county sales tax collections. Some counties serve as regional trade centers. Cloud County is an example. It has the highest per capita sales tax collections and the largest per capita employment in the trade sector of any county in the study area. Some counties, Wright, for example, seem to be losing status as trade centers.

TABLE 8

ANNUAL AND SEASONAL EMPLOYMENT

WHOLESALE AND RETAIL TRADE

Project	County	Peak Months(s) 1976	Average Annual Employment 1976	Percent of Population	Ratio of Summer Employment of Average Annual Employment ¹	
					1970	1976
Milford	<u>Project Counties</u>					
	Clay	Dec	725	7	1.02	.96
	Geary	May-July	2,140	7	1.03	1.03
	<u>Control Counties</u>					
	Cloud	Jul, Dec	1,190	9	.99	1.03
	Dickinson	Jun, Aug	1,660	8	1.05	1.04
	Ottawa	Apr-Sept	300	5	1.04	1.08
Perry	<u>Project Counties</u>					
	Jefferson	N/A	N/A	N/A	.99	N/A
	<u>Control Counties</u>					
	Jackson	Oct, Dec	640	6	1.0	1.02
Pomme de Terre	<u>Project Counties</u>					
	Hickory	July	98	2	1.17	1.28
	Polk	Dec	760	4	1.03	1.03
	<u>Control Counties</u>					
	Cedar	Oct	552	5	1.06	.99
	Dade	Aug	250	3	1.00	1.12
	Dallas	Sept	522	5	1.09	1.08
	St. Clair	Dec	415	4	1.03	1.05
	Wright	June	859	6	1.02	1.07
Pomona	<u>Project Counties</u>					
	Osage	N/A	N/A	N/A	1.04	N/A
	<u>Control Counties</u>					
	Wabaunsee	Oct, Dec	275	4	1.14	.91
Tuttle Creek	<u>Project Counties</u>					
	Marshall	Dec	850	6	1.04	1.00
	Pottawatomie	Aug, Sept	675	5	1.01	1.04
	Riley	Dec	4,075	7	.99	.98
	<u>Control Counties</u>					
	Nemaha	Dec	650	6	1.04	1.04
	Washington	June	625	7	1.05	1.04

¹Summer: June - August

Source: State Reports - See Text

TABLE 9

PER CAPITA SALES TAX COLLECTIONS

<u>Project</u>	<u>County</u>	<u>Collections (\$/Cap.)</u>			
		<u>Beginning of</u>		<u>1971</u>	<u>1976</u>
		<u>Acquisition</u>	<u>Recreation</u>		
Milford	<u>Project Counties</u>	(1960) ¹	(1967) ²		
	Clay	27.2	41.6	57.1	97.9
	Geary	18.5	29.3	54.5	74.9
	<u>Control Counties</u>				
	Cloud	27.0	43.1	58.4	106.9
	Dickinson	27.1	37.2	51.2	81.3
	Ottawa	18.2	26.2	37.3	61.7
Perry	<u>Project Counties</u>	(1962) ¹	(1969) ²	<u>1971</u>	<u>1976</u>
	Jefferson	15.8	28.1	32.7	46.1
	<u>Control Counties</u>				
	Jackson	19.3	32.1	37.4	59.4
Pomme de Terre	<u>Project Counties</u>	(1955) ¹	(1964) ²	<u>1971</u>	<u>1976</u>
	Hickory	5.0	13.4	25.8	33.3
	Polk	8.7	20.4	39.0	65.3
	<u>Control Counties</u>				
	Cedar	9.2	23.8	38.8	58.0
	Dade	8.1	17.3	26.4	45.7
	Dallas	7.5	18.4	29.3	47.2
	St. Clair	8.1	18.5	24.2	37.0
	Wright	8.8	20.5	36.3	44.5
Pomona	<u>Project Counties</u>	(1957) ¹	(1964) ²	<u>1971</u>	<u>1976</u>
	Osage	12.9	19.5	39.1	61.3
	<u>Control Counties</u>				
	Wabaunsee	11.0	16.0	29.9	41.3
Tuttle Creek	<u>Project Counties</u>	(1951) ¹	(1963) ²	<u>1971</u>	<u>1976</u>
	Marshall	14.8	27.7	51.4	87.3
	Pottawatomie	14.6	22.3	45.3	93.8
	Riley	14.1	21.5	43.1	67.3
	<u>Control Counties</u>				
	Nemaha	13.5	25.0	46.5	86.1
	Washington	11.2	20.2	38.7	74.5

¹ Start of Acquisition² Start of Recreation

Source: Kansas Department of Revenue; Sales Tax Division
Missouri Department of Revenue, Bureau of Sales Tax

Based on sales tax figures, the Pomme de Terre project counties seem to have experienced greater relative benefit than counties at the other study area project sites. Hickory and Polk have had a more rapid increase in tax collections than the control counties in the Pomme de Terre subarea.

Care must be exercised in comparing tax data between years and between counties in different states. Tax rates change over time and are not necessarily equal in two states at a given time.

Monthly sales tax data are available for each county in Kansas. Quarterly reports are published by Missouri. The variations in tax revenues by month are similar to the seasonal variations in trade employment described previously. Some project and some control counties show a summer peak in sales tax receipts. A summer peak may indicate that recreation activity is an important industry for a county. Generally, no significant impact of the dam and lake projects can be demonstrated by contrasting the seasonal peak in sales tax receipts for the project counties with the control counties. At the Pomme de Terre site, however, Hickory County, the primary project county, has a marked summer peak in sales tax collections. The neighboring control counties have a winter peak.

Property Taxes. Tangible real property taxes have traditionally been the major source of revenue for counties and other local governments. When a water resources project, particularly a dam and lake, is initiated in a relatively sparsely populated rural area, the tax base is eroded as property and removed from private ownership. Subsequently, the property tax base may remain in a depressed state unless recreation activity stimulates investment in the project area. The property tax is directly related to social and economic well being since revenues collected through local property taxes in the United States represent nearly one half of total local revenue.

Recent trends in property tax collections for project and control counties are shown in Table 10. Neither project construction nor subsequent recreation activity seems to have had a significant impact on property tax receipts. The rate of increase in collections in project counties is similar to that in control counties based on actual and per capita receipts.

Closely related to the property tax is land value. From initial land acquisition until 1971, the value of land in Hickory County has almost doubled. This is three times the average increase reported for other counties in the Pomme de Terre study subarea.

Leaseback Revenue. The Flood Control Act of 1954 provides that the Corps of Engineers should return to the states 75 percent of the monies received from leaseback of project land. The states then return the money to those counties having project land. These funds are turned over to the county in lieu of taxes lost because of taking land. The returned funds are then to be used for schools, roads, and administrative purposes

TABLE 10

TANGIBLE PROPERTY TAX - KANSAS

<u>Project</u>	<u>County</u>	<u>Percent Change</u>		<u>Per Capita Percent Change</u>	
		<u>Acquisition-</u> <u>Period</u>	<u>Recreation</u> <u>Period</u>	<u>Acquisition-</u> <u>Period</u>	<u>Recreation-</u> <u>Period</u>
Milford	<u>Project Counties</u>	(1960-1967)	(1967-1971)	(1960-1967)	(1967-1971)
	Clay	33.1	29.9	33.9	34.3
	Geary	35.3	25.1	36.8	26.9
	<u>Control Counties</u>				
	Cloud	54.9	24.3	62.1	28.0
	Dickinson	33.6	12.0	41.3	15.4
	Ottawa	36.1	8.6	41.7	17.0
Perry	<u>Project Counties</u>	(1962-1969)		(1962-1969)	
	Jefferson	35.3	14.5	45.6	17.3
	<u>Control Counties</u>				
	Jackson	45.1	17.5	44.7	17.2
Pomona	<u>Project Counties</u>	(1957-1964)		(1957-1964)	
	Osage	31.8	52.9	29.0	49.3
	<u>Control Counties</u>				
	Wabaunsee	31.3	41.2	36.6	45.4
Tuttle Creek	<u>Project Counties</u>	(1951-1963)		(1951-1963)	
	Marshall	57.0	37.4	86.3	57.0
	Pottawatomie	63.5	48.8	68.8	51.0
	Riley	133.7	62.8	72.0	29.1
	<u>Control Counties</u>				
	Nemaha	52.9	62.6	11.9	168.1
	Washington	53.0	63.6	88.6	88.5

Source: State of Kansas Property Valuation Department "Statistical Report of Property Assessment and Taxation"

and represent a relatively nominal percent of county expenditures varying considerably from year to year. Land is acquired for the project gradually and it takes several years for receipts to reach a maximum. Agricultural land acquired by the government is leased back until project construction has progressed to the point when impounded water creates a flood threat, thereafter leaseback funds decline rapidly.

As recreation visitation at the projects increases, concessionaire leases contribute toward the leaseback receipts. Based on the values in Table 11, however, concessionaire leaseback revenue appears to be minimal.

CONCLUSION

Five Corps of Engineers dam and lake projects have been examined to determine if the projects had a significant positive or negative effect on the local economic structure. Each project is located in a rural area dominated by an agricultural economy and relatively low population density.

Based on the parameters reviewed in this study, there is little evidence that government land acquisition for the dam and lake projects had a significant adverse effect on the economics of the project counties. Those people immediately touched by the acquisition of their land, however, undoubtedly suffered acute economic disruption and probably faced considerable social adjustment.

The county was used as the basic study unit because economic data is generally not compiled for smaller political subdivisions. Even though the dam and lake projects reviewed in this study represent large federal investments, the number of people affected and the number of acres of land purchased represent relatively small percentages of the county totals. Apparently, the social and economic forces at work at the county level have been sufficiently large and persistent to effectively mask much of the localized impact of project land acquisition and the consequent displacement of agricultural activity.

The dam and lake projects have introduced a new basic industry to the project counties. Recreation opportunities at the lakes have attracted large numbers of people. At the county level, however, it is difficult to detect a significant economic contribution by the recreation industry to the local economy. Furthermore, the lakes have stimulated relatively little capital investment. Only Hickory County, containing most of Lake Pomme de Terre, seems to show measurable economic stimulation from the new recreation industry. Of the projects in the study area, Pomme de Terre is farthest from the large metropolitan markets. Therefore, visitors to Pomme de Terre probably require more than a single day to visit the lake and enjoy the recreational opportunities. As a result, they spend more money and require more services. This stimulates economic activity.

TABLE 11

OUTLEASING RECEIPTS BY COUNTY

<u>Year</u>	<u>Milford</u>	<u>Perry</u>	<u>Pomona</u>	<u>Pomme de Terre</u>	<u>Tuttle Creek</u>
<u>1956</u>					\$14,684
<u>1957</u>					11,102
<u>1958</u>				\$ 443	49,762
<u>1959</u>				708	42,945
<u>1960</u>			\$ 150	3,075	27,748
<u>1961</u>			1,490	3,301	28,181
<u>1962</u>	\$ 83		9,245	2,739	21,780
<u>1963</u>	8,271		15,835	4,034	23,405
<u>1964</u>	49,183	\$ 251	13,028	3,301	14,414
<u>1965</u>	90,081	5,007	7,320	3,406	2,420
<u>1966</u>	80,733	29,723	7,613	5,097	3,259
<u>1967</u>	88,349	79,448	8,420	4,972	3,838
<u>1968</u>	48,531	95,722	9,241	4,603	3,806
<u>1969</u>	35,840	64,878	7,901	6,617	3,902
<u>1970</u>	32,531	55,253	6,821	4,663	5,434
<u>1971</u>	30,413	31,226	4,882	5,305	3,391
<u>1972</u>	23,353	17,536	5,111	5,556	3,741
<u>1973</u>	33,575	19,571	5,031	5,510	4,006
<u>1974</u>	16,411	21,636	6,663	5,007	4,218
<u>1975</u>	21,528	34,895	6,862	5,858	5,462

Source: Missouri Department of Revenue

A distinction probably should be made between those project counties containing the dam and the project counties containing the upper reaches of the lake. Both counties may have suffered considerable loss of prime agricultural land; however, the county containing the dam has a far more favorable location for recreational development and economic stimulation. The importance of location is illustrated by the differences in the impacts on Hickory County (containing the dam) and Polk County (in the upper reaches of the pool).

The fact that the project counties have been able to absorb the impact of a large construction project without significant economic disruption demonstrates the viability and stability of these counties as economic entities and as units of government. Also the fact that large positive economic effects cannot be measured in most project counties does not mean that recreation at Corps of Engineers projects fails to provide economic stimulus. Rather, the impact is probably too widespread to be confined to one or two project counties. The economic benefits are distributed throughout a larger region and reach, especially into the metropolitan cities, where many of the visitors live, work and shop.

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