

# WILL COUNTY PUBLIC WATER SUPPLY STUDY

PHASE I REPORT

POPULATION  
AND  
WATER USAGE PROJECTIONS

JANUARY, 1984



METCALF & EDDY, INC. / ENGINEERS

January 20, 1984

J-8538

Mr. John R. Gallagher, Jr.  
Director of Development  
Will County Regional Planning Commission  
501 Ella Avenue  
Joliet, Illinois 60433

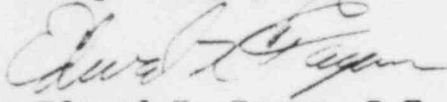
Dear Mr. Gallagher:

We are pleased to submit this report on Phase I of the Will County Public Water Supply Study.

As required by our contract, Phase I addresses the subject of Population and Water Usage Projections for a 25 year planning period.

We are prepared to meet with you and the Will County Regional Planning Commission to discuss this report.

Very truly yours,



Edward K. Fagan, P.E.  
Associate

WILL COUNTY PUBLIC WATER SUPPLY STUDY

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JANUARY, 1984

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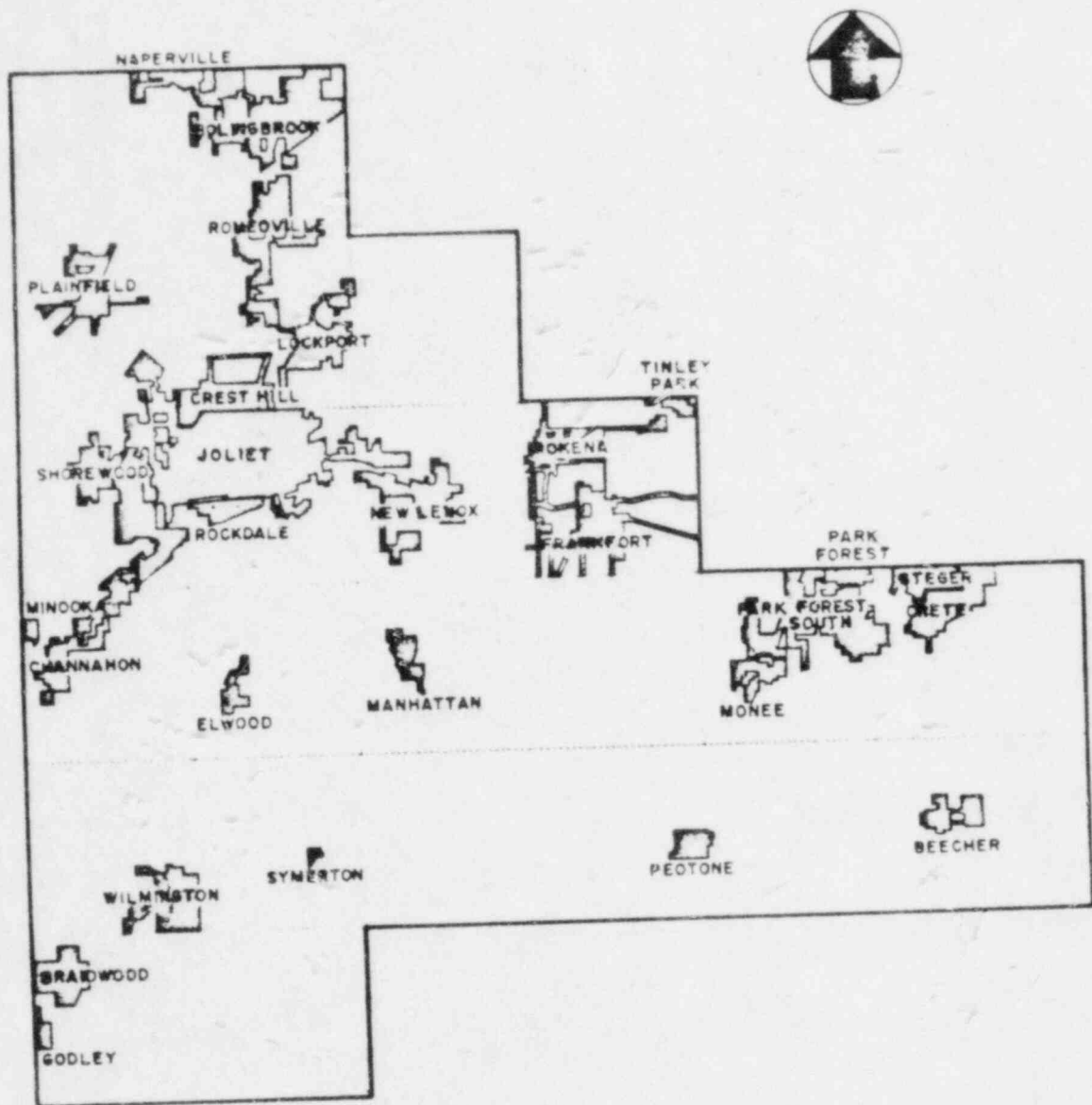


EXHIBIT 3-3

WILL COUNTY MUNICIPALITIES



WHEATLAND	DUPAGE				
PLAINFIELD	LOCKPORT	HOMER			
TROY	JOLIET	NEW LENOX	FRANKFORT		
CHANNAHON	JACKSON	MANHATTAN	GREEN GARDEN	MONEE	CRETE
WILMINGTON	FLORENCE	WILTON	PEOTONE	WILL	WASHINGTON
REED	WESLEY CUSTER				

EXHIBIT 3-2

WILL COUNTY TOWNSHIPS

## CHAPTER 1

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This report summarizes population and water use projections for Will County municipalities, water service areas and significant industries. It constitutes the Phase I portion of the Will County Water Supply Study. Phases II and III which will follow will address Water Supply System Alternatives (Phase II) and Economic Evaluation (Phase III).

#### Summary

We reviewed historical population and water use data and projections by others including NIPC and independent projections by municipalities. The report considers past projections and is based on these along with more recent data to provide updated projections. The report considers all Will County municipalities, the larger nonmunicipal water service areas and industries and institutions likely to be served by a Will County regional water system.

Considered in our analysis of water demand projections were factors including high and low growth and water use projections of others, water conservation, water accountability, per capita use, commercial use, industrial use, and the relationship of maximum day to average day water use.

Discussion of water demand projections for maximum and average day, including discussion of the effects of conservation and improved water accountability are presented in Chapter 4. These water demand projections including the impacts of high and low

water utilization will be considered along with possible ranges in system capacity and staging of construction in the later phases of the study.

Collecting data on water quality and hydrology for the Kankakee River and obtaining costs on the operation and maintenance of existing wells for use in Phases II and III was also accomplished as part of Phase I work.

Grouping of municipalities into regional service areas and summarizing projected populations and water demand for these areas will be part of the Phase II Report - Water Supply System Alternatives - which will follow. The Phase III Report - Economic Evaluation - will complete the study.

#### Conclusions

Past total domestic water use has been determined and is projected for Will County as follows:

Year	Population	Domestic Water Use - MGD	
		Average	Maximum
		<u>Day</u>	<u>Day</u>
1980	324,460	36	63
1990	400,000	45	78
2000	455,700	52	90
2020	500,000	58	100

Industrial water use has been projected separately for industries which could conceivably connect to a regional system and these selected industries could add to capacity requirements as follows:



	Average Day	Maximum Day
	<u>MGD</u>	<u>MGD</u>
1980	9	14
1990	9	14
2000	8.5	13.5
2010	8	13

The potential effect of industrial projections on any regional water system will be considered in later reports.

The population and water use projections made in this report serve as an adequate data base for the later phases of the study. They will be used to consider alternative regional system configurations and costs.

Periodic review of the projections will be necessary as additional information becomes available through the passage of time. A more detailed study of municipal systems, individual water service areas and other users will be necessary before final design and construction of any water system proceeds.

#### Recommendations

The development of alternative regional water supply systems should proceed based on the water use projections presented herein. The present water source for virtually all Will County municipalities, water service areas and those industries and institutions considered herein is groundwater from deep and shallow wells. Continued use of the groundwater source is dependent on the ultimate effect of the current "mining" of this resource as reflected by declining water levels and quality, increased pumping costs and the potential requirement for additional treatment.

The projected future source for any regional water system involving all or some of those considered is the Kankakee River.

The economics and delivered quality of surface water compared to groundwater will determine the configuration and timing of any regional system. The system would be sized based on projection of amount and geographic location of water use, economics of system capacity, storage and staging of construction to achieve adequate periods of use before expansion is required, while not investing in facilities which will remain unused for long periods of time.

Determination of system capacity to be constructed and staging of construction must consider the probability of increased capacity. The economic effect of such system capacities will be considered in the Phase III report. However, the cost of systems to meet higher future demands must be paid for based on the lower average day pumpages anticipated in the near term future.

The proposed regional water supply system must consider points of connection to municipality distribution systems, location of storage and system pressures. Storage volumes in the regional system must also be considered.

## CHAPTER 2

### BACKGROUND AND SCOPE OF WORK

#### Background Information

Will County, located in Northeastern Illinois, has historically used wells as the primary source of water for both domestic and industrial needs. Decades of overpumping those wells has created a groundwater mining situation, in which water withdrawn from the aquifer exceeds the capacity of the aquifer to replenish itself. Undesirable effects arising from this mining have included declining water levels in wells, increased water withdrawal costs, and deteriorating water quality. In response to this situation, several studies have been conducted to evaluate various water sources and needs, and to recommend alternate water supply systems. Little action has been taken on these past studies.

Although a water shortage of crisis proportions has not yet occurred, the continued overpumping of wells in Will County and the surrounding Chicago metropolitan area will result in a progressive deterioration in quality and availability of well water. A reliable water supply system should be identified and its utilization planned in order to meet the anticipated future needs of the County.

#### Scope of Work

Metcalf & Eddy, Inc., along with its subcontractor Geotech, Inc., has been engaged by Will County to conduct a Public Water Supply Study. Work is being coordinated by the Will County Regional Planning Commission.

This study is divided into three phases: Phase I - Population and Water Usage Projections; Phase II - Water Supply System Alternatives; and Phase III - Economic Evaluation. Phase I - Population and Water Usage Projections is the subject of this report.

The goal of the three phases is to update and reevaluate selected proposals made by previous studies and to avoid duplication of past work. Phase I of the study analyzes present water consumption, and projects future water consumption.

Phase I - Population and Water Usage Projections. The Phase I report develops a reliable water consumption projection based upon current projections of population, per capita water usage, and industrial growth. Projections are made for a 25 year planning period, extending to the year 2010. The tasks involved in this phase are summarized as follows:

1. Collect historical population data and population projections for all communities in Will Co.
2. Collect historical water pumpage and metered usage data from all communities and public water systems in the County.
3. Collect historical water usage data for major industries and other large water users. Also, collect data on projections of future industrial water usage.
4. Tabulate current population projections and compare to previous projections. Consult with County and local officials to develop projections to be used for this study.

5. Correlate historical population growth data to historical water consumption to develop trends of per capita water usage. Also, determine water usage peaking factors.
6. Tabulate the projected water usage of major industry and other large water users.
7. Develop projected total water usage for a 25 year planning period for all communities in the County and for major industry.

In addition to the tasks listed above, data on the water quality and hydrology of the Kankakee River and data from water system operators on the operating and maintenance cost of existing wells were collected for analysis in Phases II and III, respectively.

## CHAPTER 3

### POPULATION

To estimate the future requirements of any public water system it is necessary to collect and analyze statistics such as population land use, industrial growth and commercial development. This chapter addresses population projections. Projections of future population growth are combined with projected water use patterns to estimate future water requirements in Chapter 4.

#### County Population

A projection of future County population growth was developed by examination of historical population data and current population forecasts by the Northeastern Illinois Planning Commission (NIPC). Historical county census data were obtained for the period from 1870 to 1980. The current official NIPC forecast, revised in November 1981, estimated that Will County population will be 455,700 in the year 2000. Interpolation to the year 1990 and extrapolation to the year 2010 estimated County population to be 400,000 and 500,000, respectively. These estimates of population for the County are shown on Exhibit 3-1 as "NIPC 1981(1)".

Previous population projections examined were those from the NIPC, August 1976 projection and the State of Illinois Bureau of the Budget (IBOB) 1976 and July 1982 projections. The 1976 NIPC and 1982 IBOB projections also appear on Exhibit 3-1.

NIPC is presently in the process of revising its population forecast for Will County. The new forecast, to be finalized by

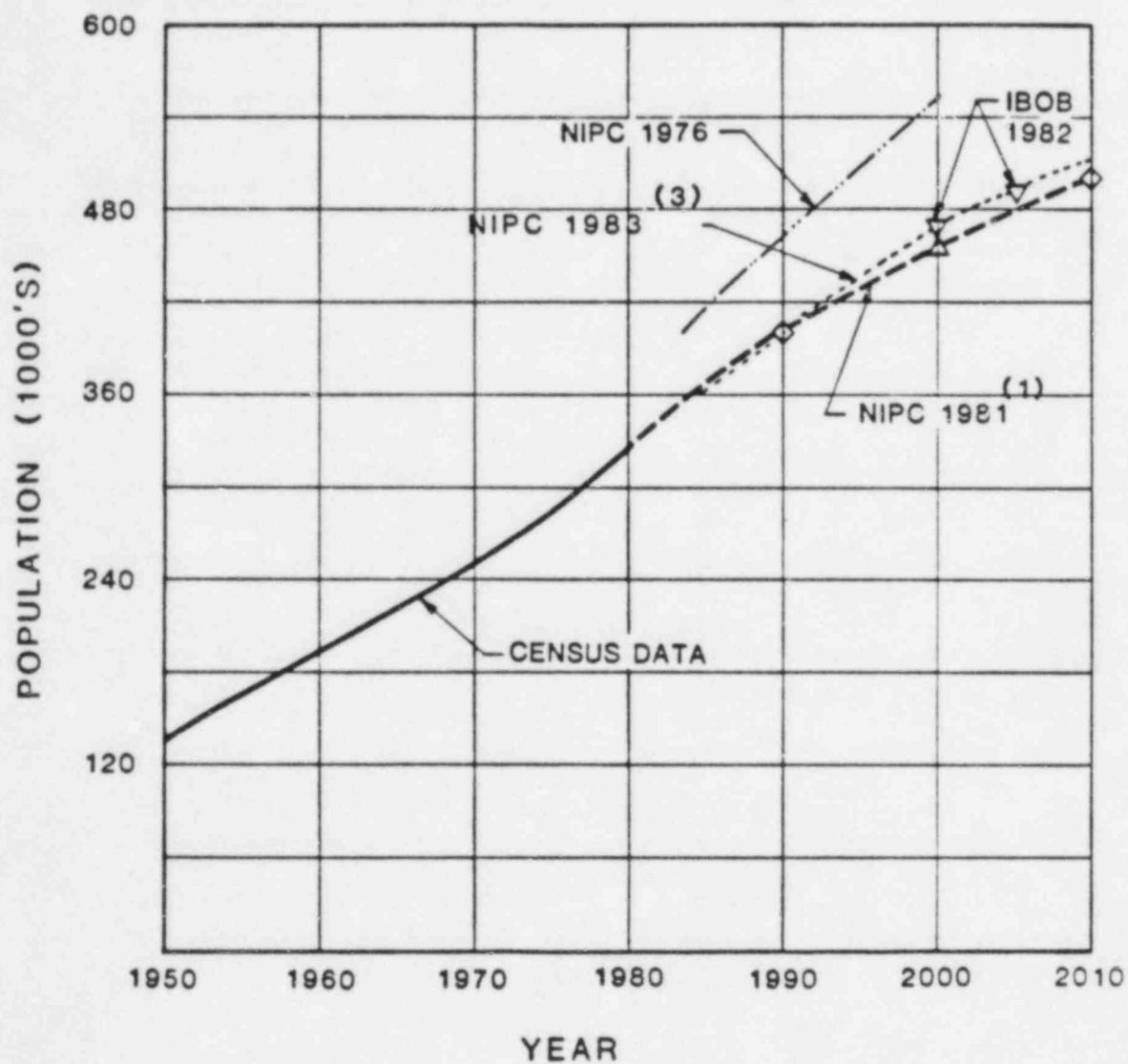


EXHIBIT 3-1

POPULATION PROJECTIONS  
WILL COUNTY



A preliminary forecast, released in July 1983, appears on Exhibit 3-1 as "NIPC 1983<sup>(3)</sup>". This forecast is also presented in Table 3-1. A more recent preliminary forecast was released in October 1983, and is also presented in Table 3-1. The October preliminary forecast is within 0.15 percent of the interpolated projection for the year 1990. The preliminary forecast for year 2000 represents a 2.7 percent increase over the 1981 NIPC forecast. The October projection for the year 2005 was approximately 5000 less than the July forecast. A similar decrease applied to the July forecast for the year 2010 results in an estimated population within 1.2 percent of the extrapolated projection. The projection presented on Exhibit 3-1 and in Table 3-1 is within 1.2 percent of the October NIPC forecast.

#### Township Populations

Census data for Will County townships was obtained for the period from 1920 to 1980 and appears in Table 3-2. The location of Will County townships are shown on Exhibit 3-2.

Township forecasts were projected by NIPC for the year 2000. These unofficial forecasts were obtained by combining municipal forecasts and forecasts for the unincorporated portions of each township. Minor discrepancies were reconciled to balance the municipal township and county projection.

Projections of 1990 township populations were determined by interpolating between 1980 census data and the adjusted year 2000 NIPC forecasts. Totals for the County and for each township were reconciled so as to balance. Projections for 2010 populations were determined by extrapolating census data and 1990 and 2000 projections. Projected township populations appear in Table 3-3.



### Municipal Populations

The location of municipalities within Will County are shown on Exhibit 3-3. Census data for Will County municipalities was obtained for the period from 1920 to 1980 and is presented in Table 3-4. The relationship between individual municipal growth and county growth was examined to identify correlations and trends. These were then compared to projected populations for each municipality and the County as forecast by NIPC. For the majority of Will County municipalities the 1981 NIPC revised municipal forecasts for the year 2000 were incorporated into the municipal projections used in this study. For Godley and Minooka, both of which extend into Grundy County and have relatively small Will County populations, the 1983 NIPC preliminary forecast represented a significant change from the 1981 NIPC forecast, and was used in its place.

Projections for the year 1990 were obtained by interpolation and for the year 2010 by extrapolation. Individual municipal population projections were compared with projected county population to verify consistent trending.

Projections of municipal populations are presented in Table 3-5 along with the 1980 census data. Projected and historical population for individual communities are shown on Exhibits 3-4 through 3-32.

Other projections of population by NIPC (1976) and Consoer, Townsend & Associates (1972) are illustrated for comparison. Any individual municipal population projections are also illustrated for comparison. The key and notes for the exhibits follow the exhibits.

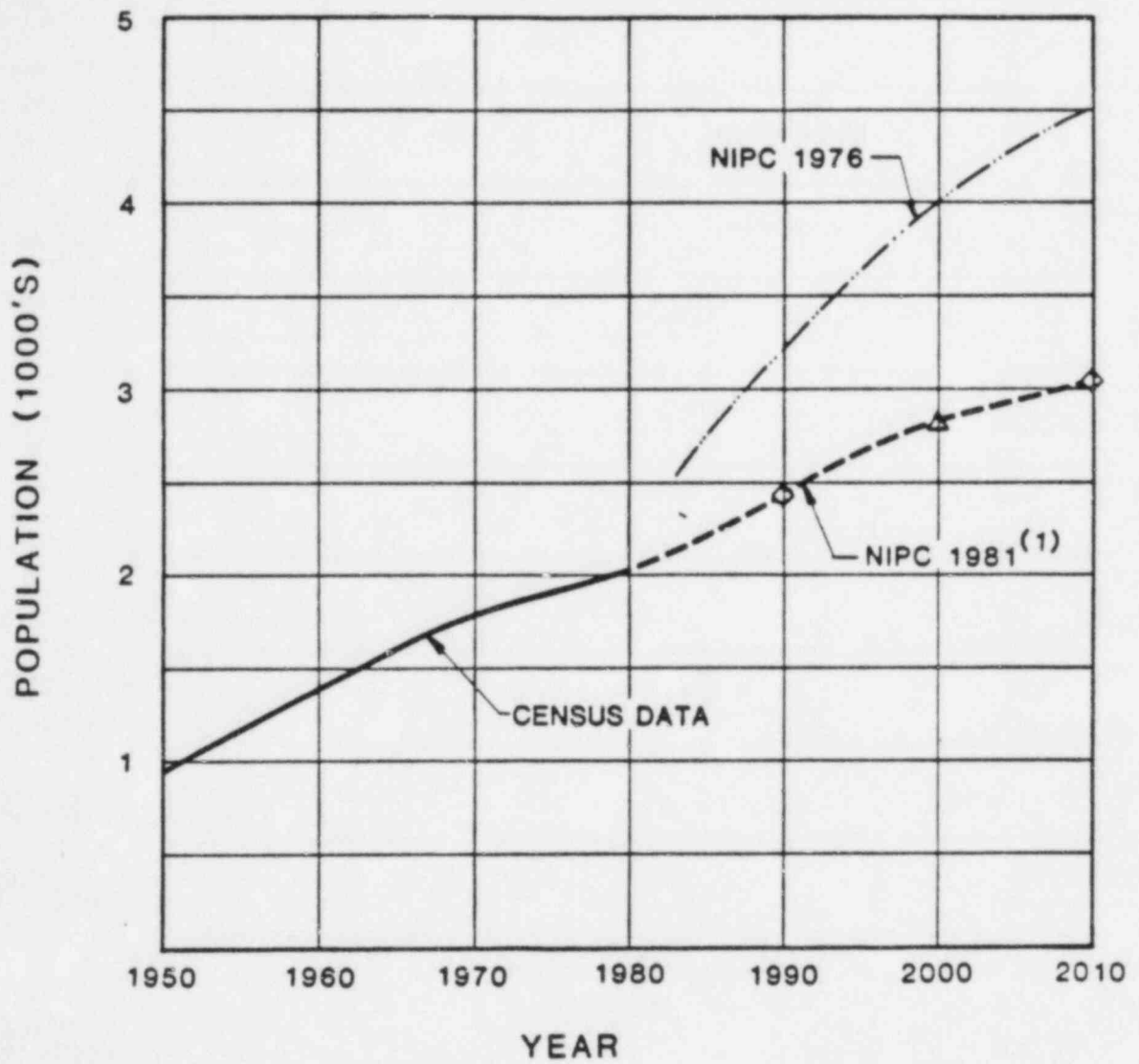


EXHIBIT 3-4

POPULATION PROJECTIONS  
VILLAGE OF BEECHER

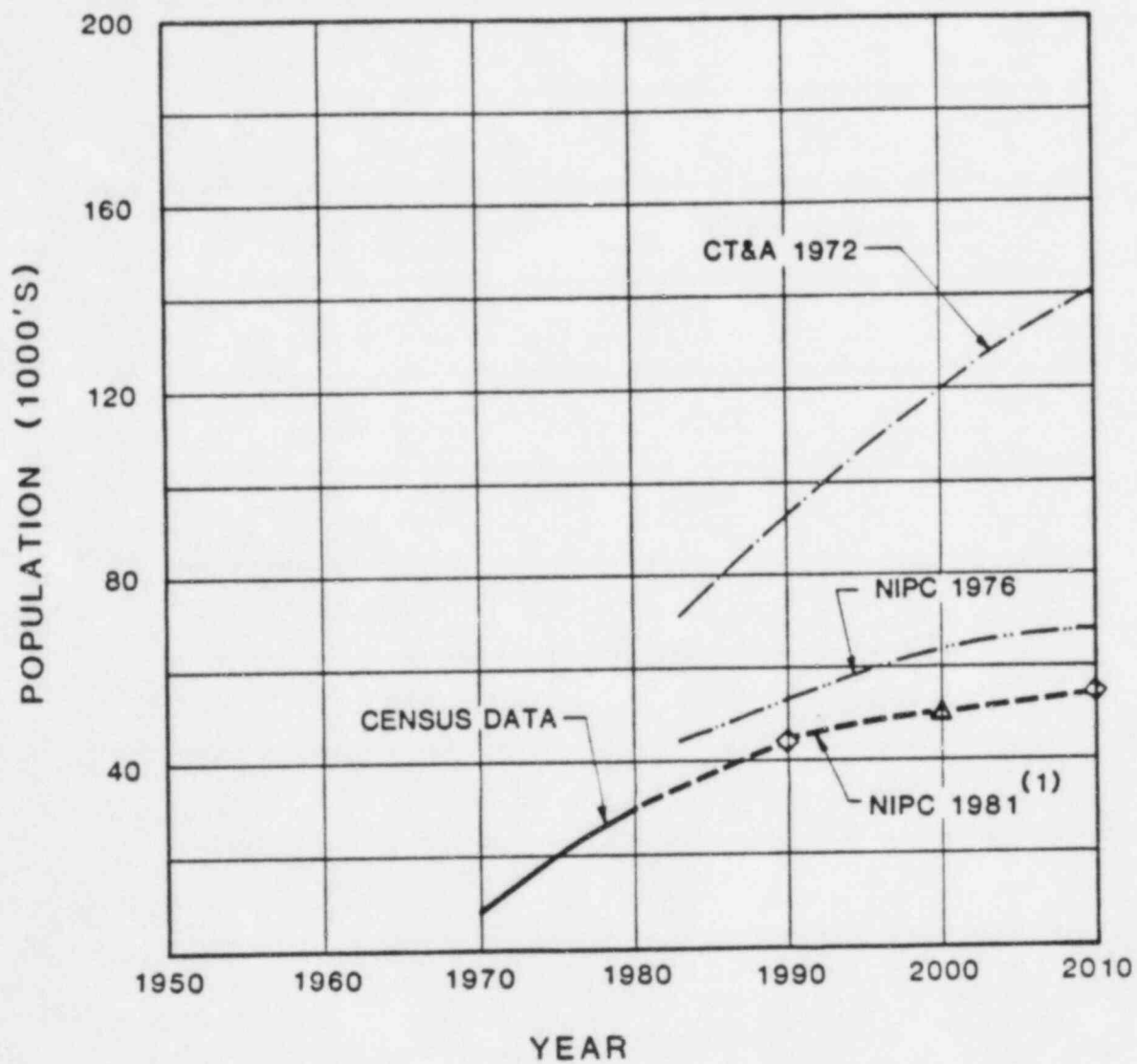


EXHIBIT 3-5

POPULATION PROJECTIONS  
VILLAGE OF BOLINGBROOK  
(WILL COUNTY PORTION)

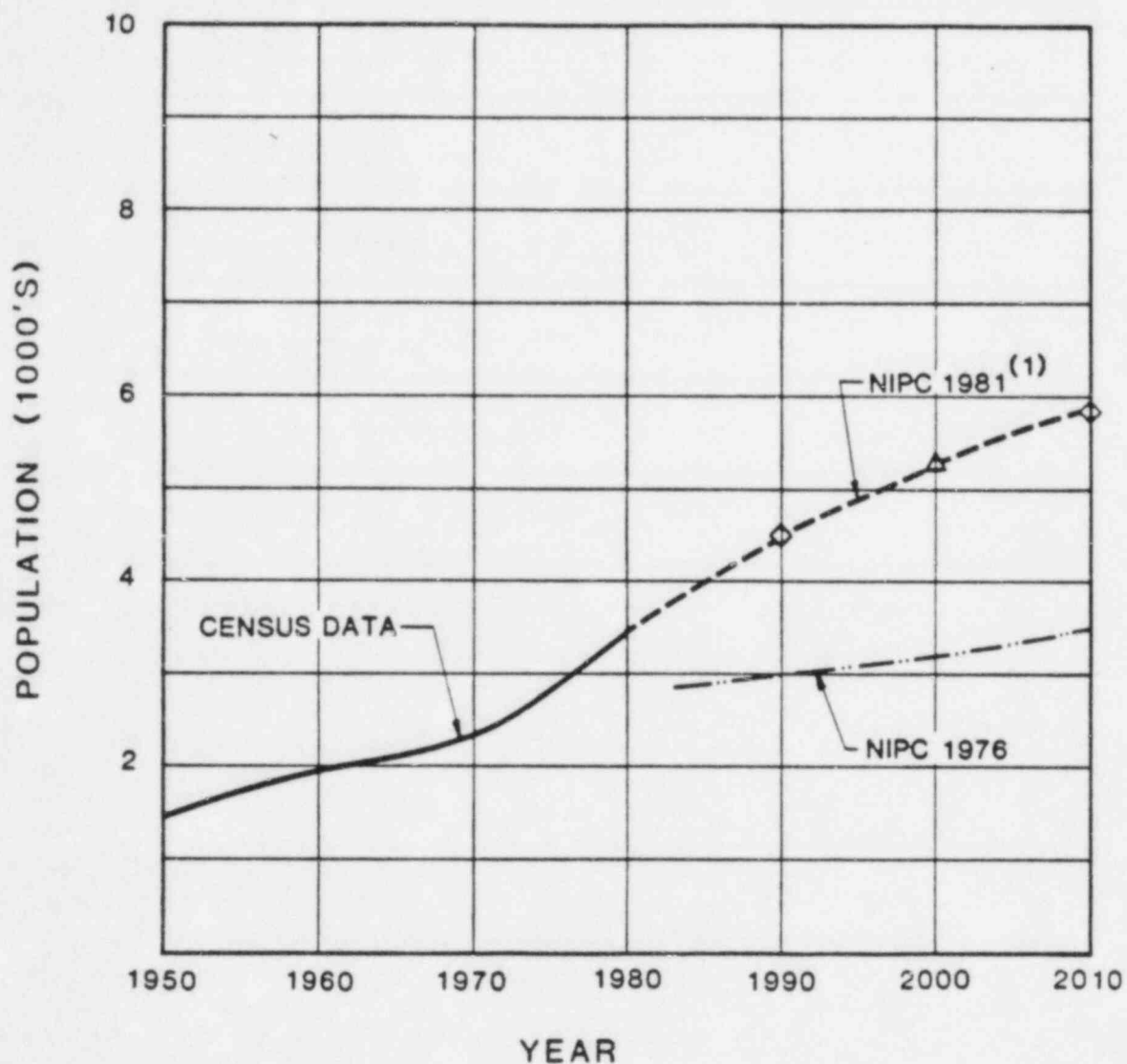


EXHIBIT 3-6

POPULATION PROJECTIONS  
CITY OF BRAIDWOOD

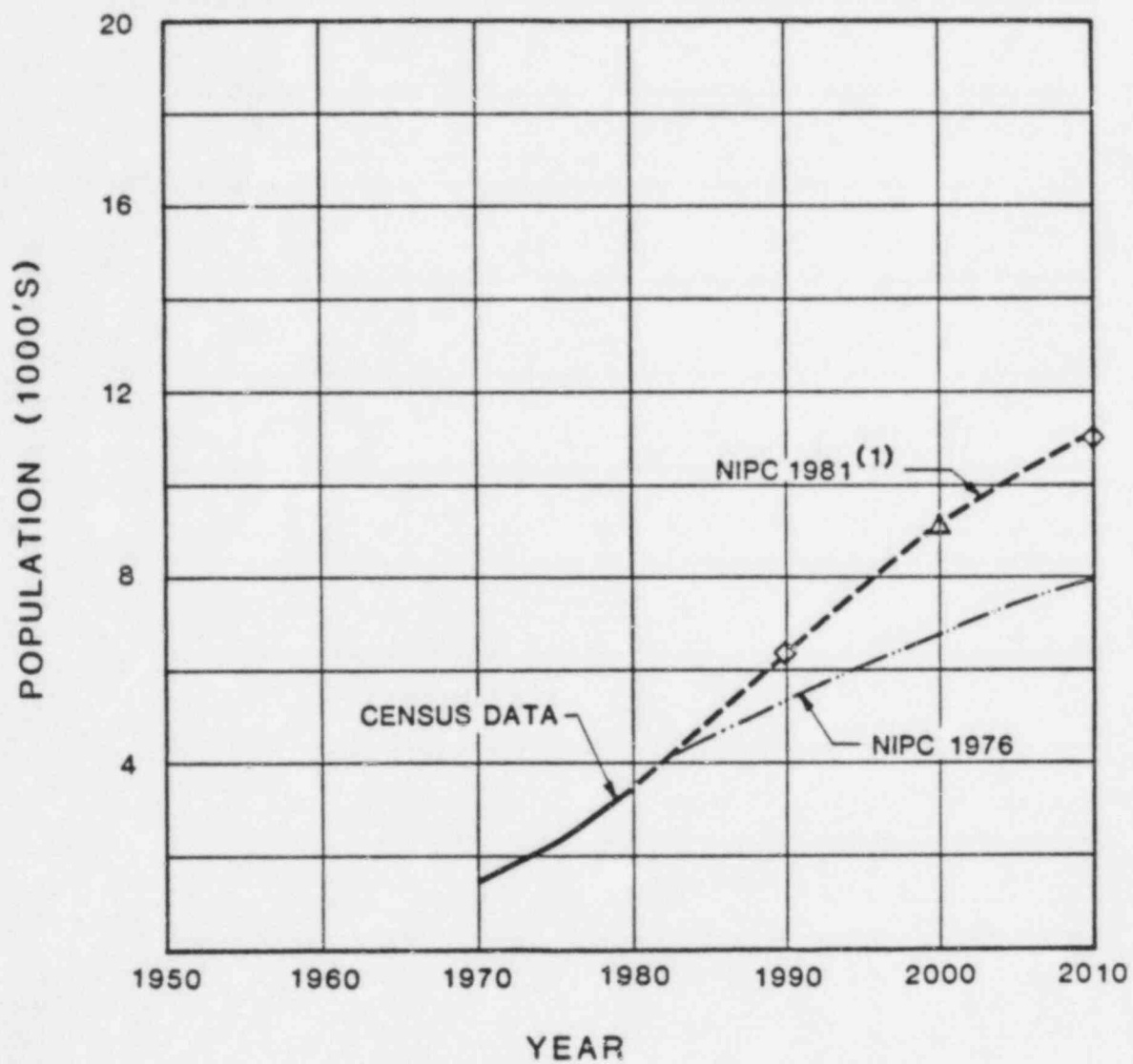


EXHIBIT 3-7

POPULATION PROJECTIONS  
VILLAGE OF CHANNAHON

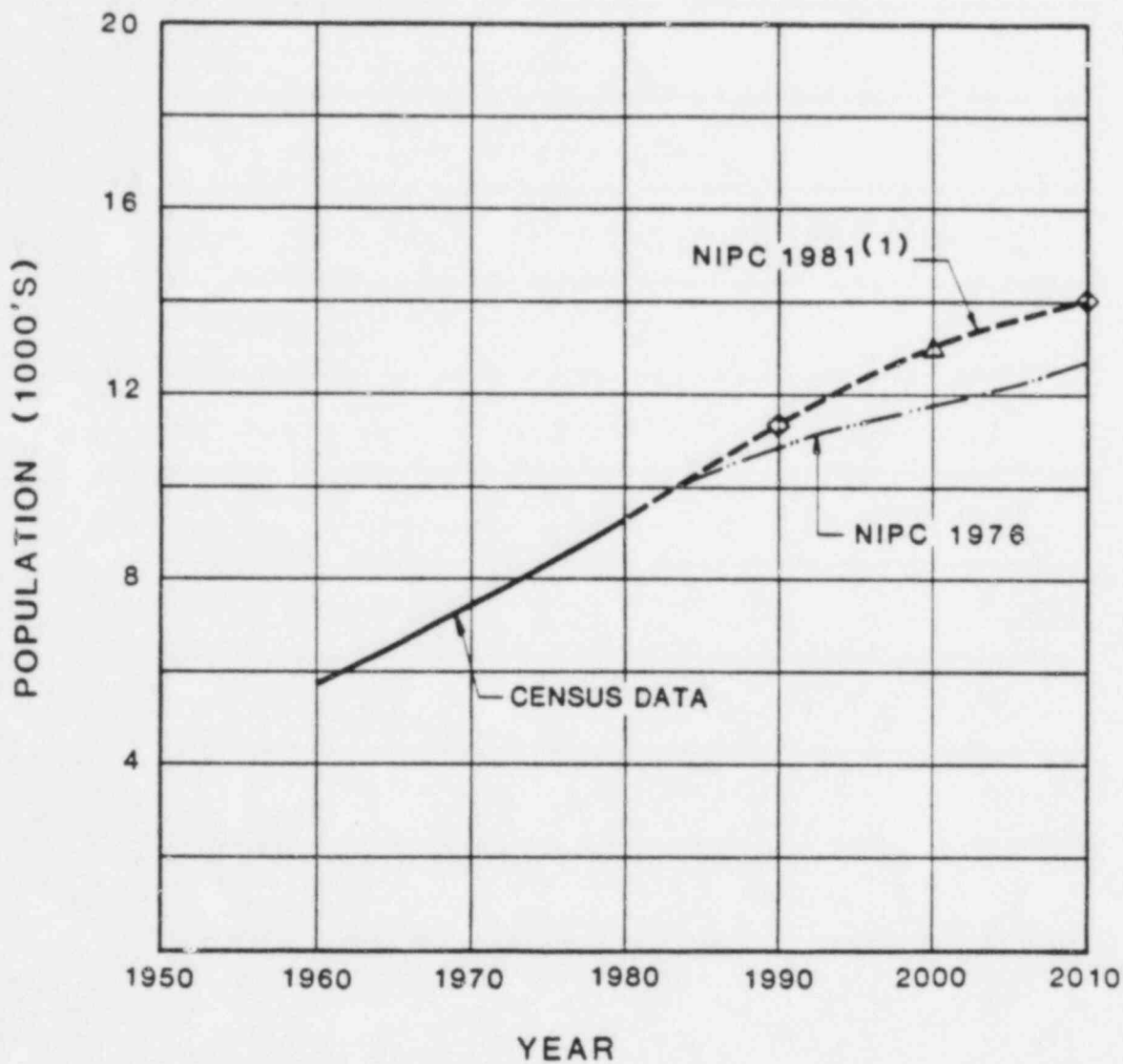


EXHIBIT 3-8

POPULATION PROJECTIONS  
CITY OF CREST HILL

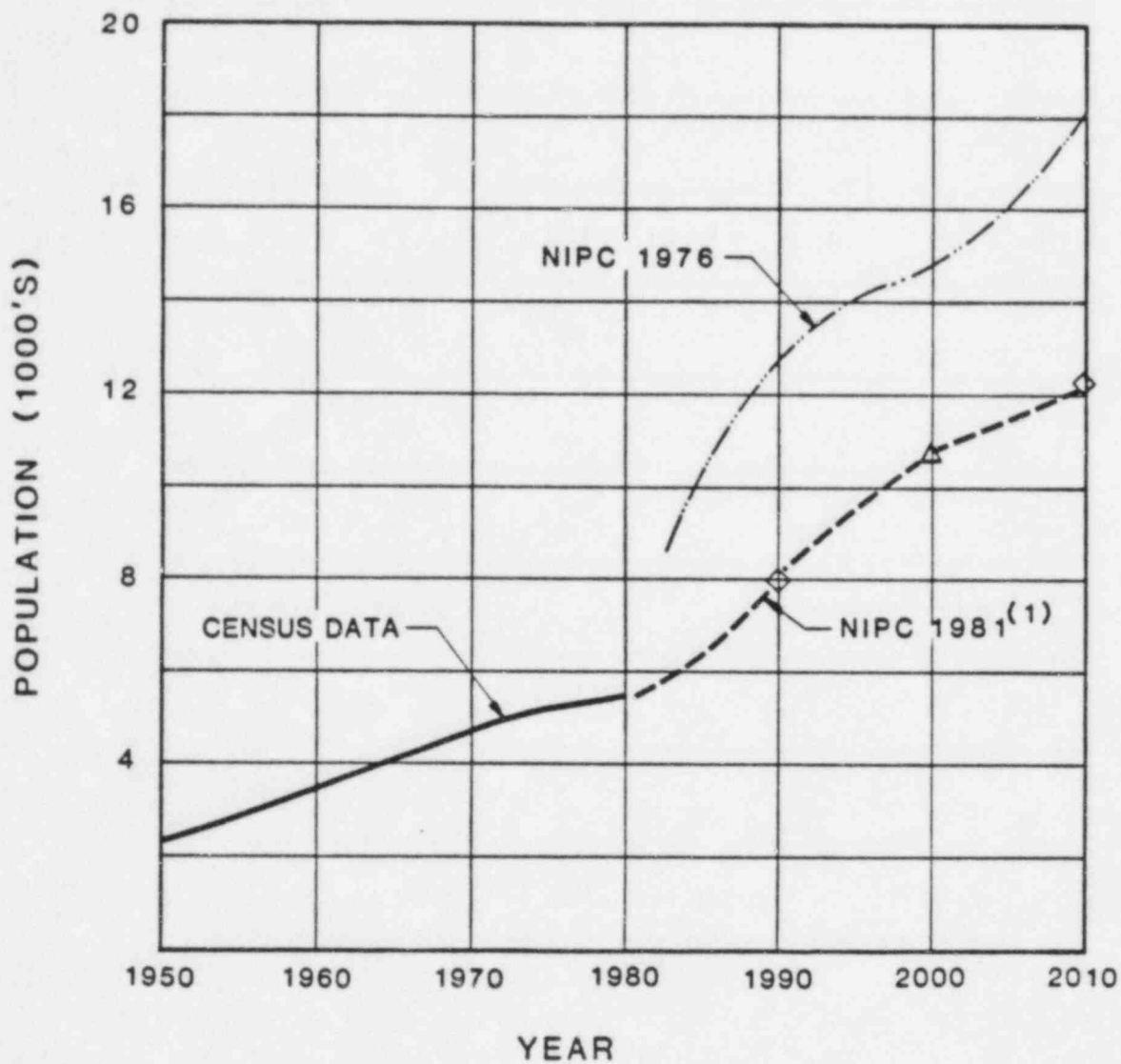


EXHIBIT 3-9

POPULATION PROJECTIONS  
VILLAGE OF CRETE

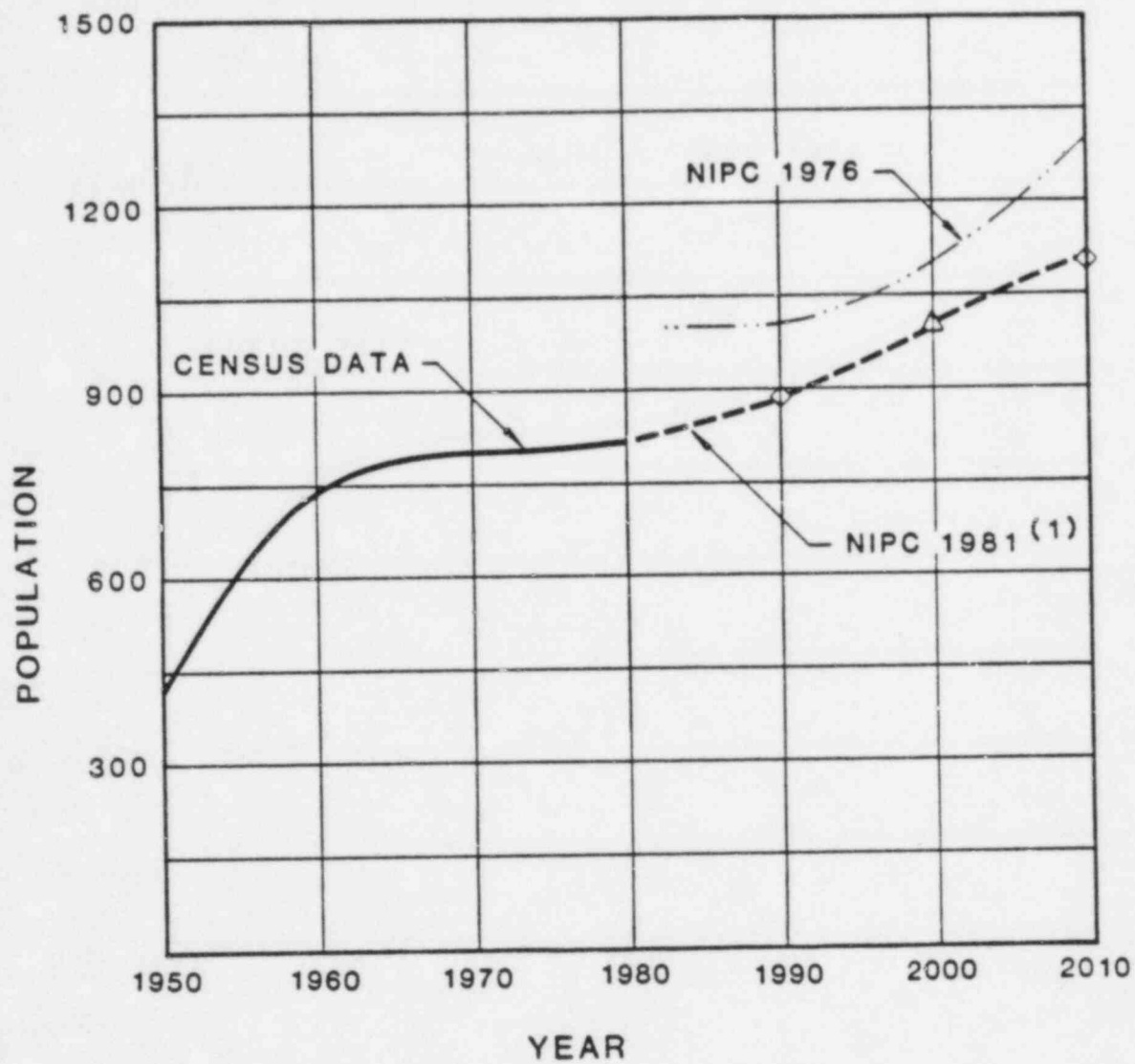


EXHIBIT 3-10

POPULATION PROJECTIONS  
VILLAGE OF ELWOOD



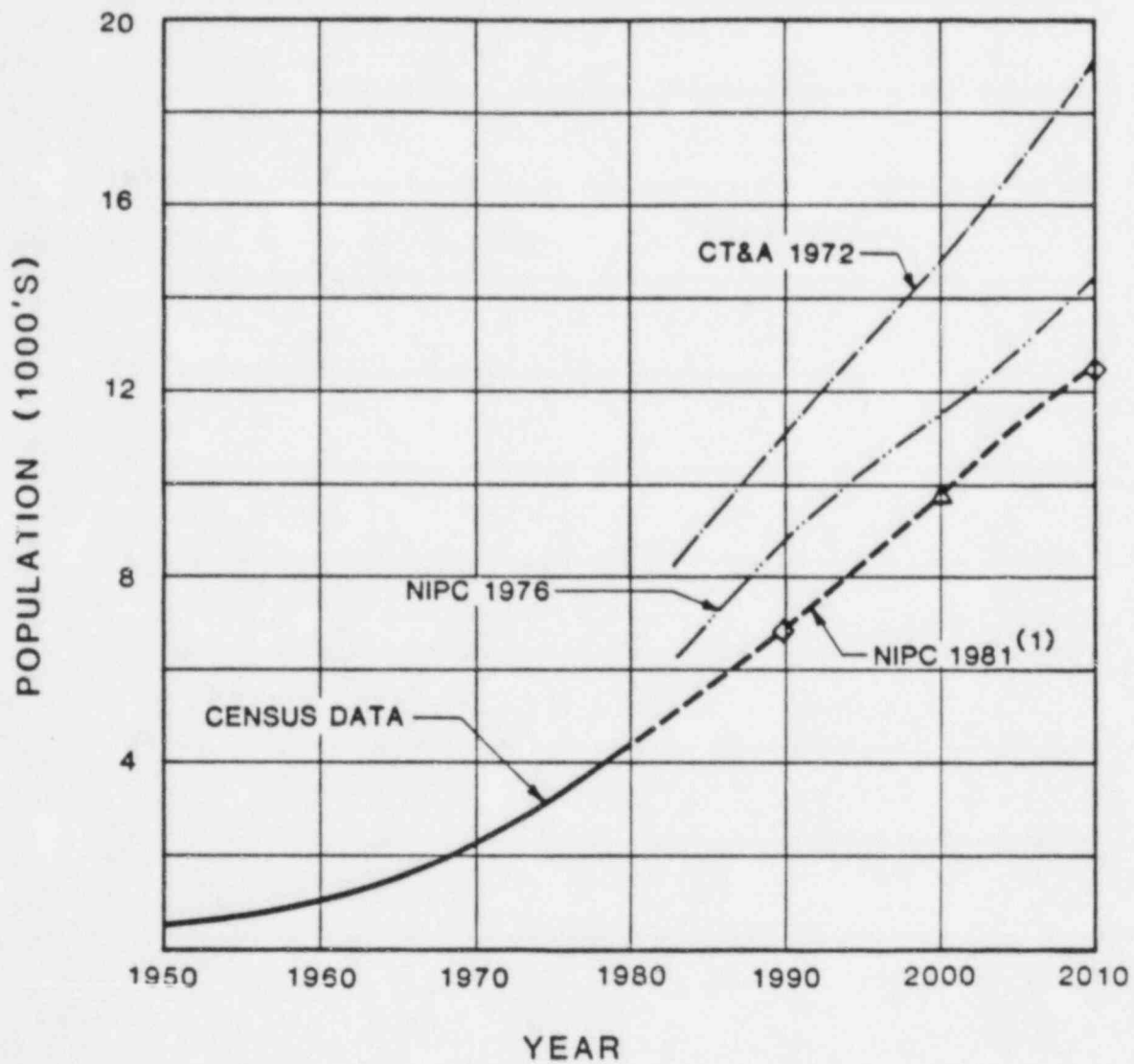


EXHIBIT 3-11

POPULATION PROJECTIONS  
VILLAGE OF FRANKFORT

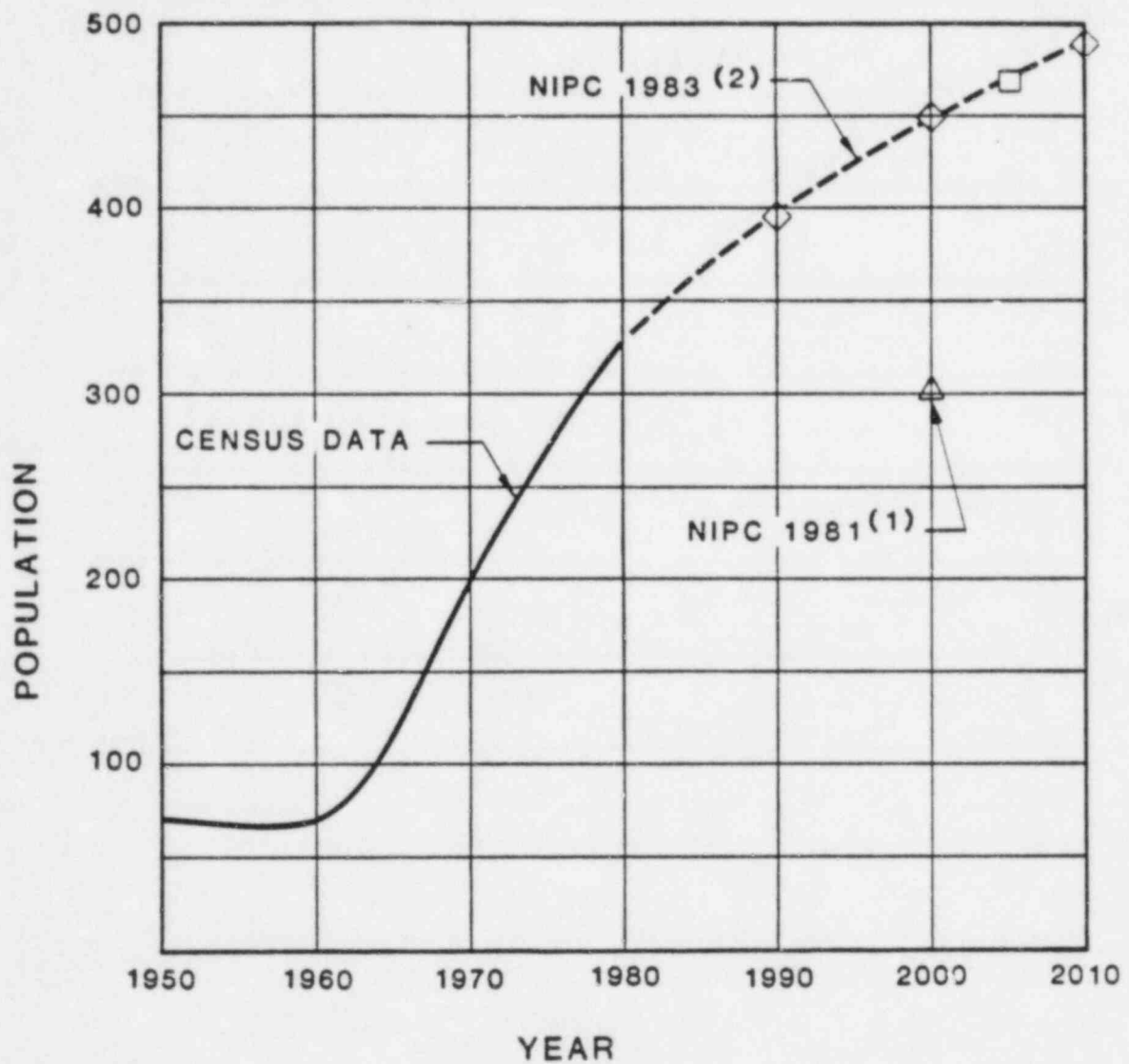


EXHIBIT 3-12

POPULATION PROJECTIONS  
VILLAGE OF GODLEY  
(WILL COUNTY PORTION)

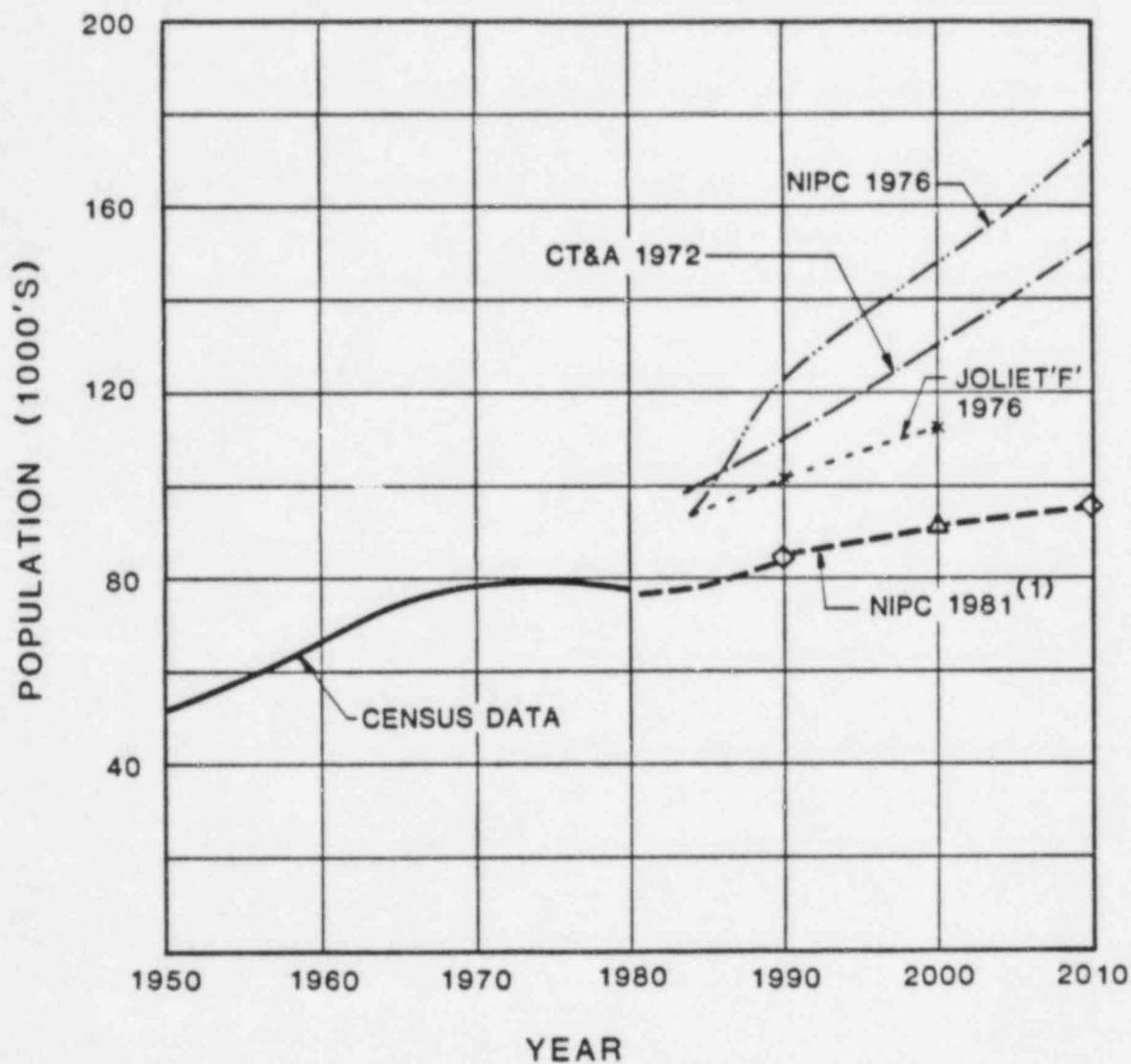


EXHIBIT 3-13

POPULATION PROJECTIONS  
CITY OF JOLIET

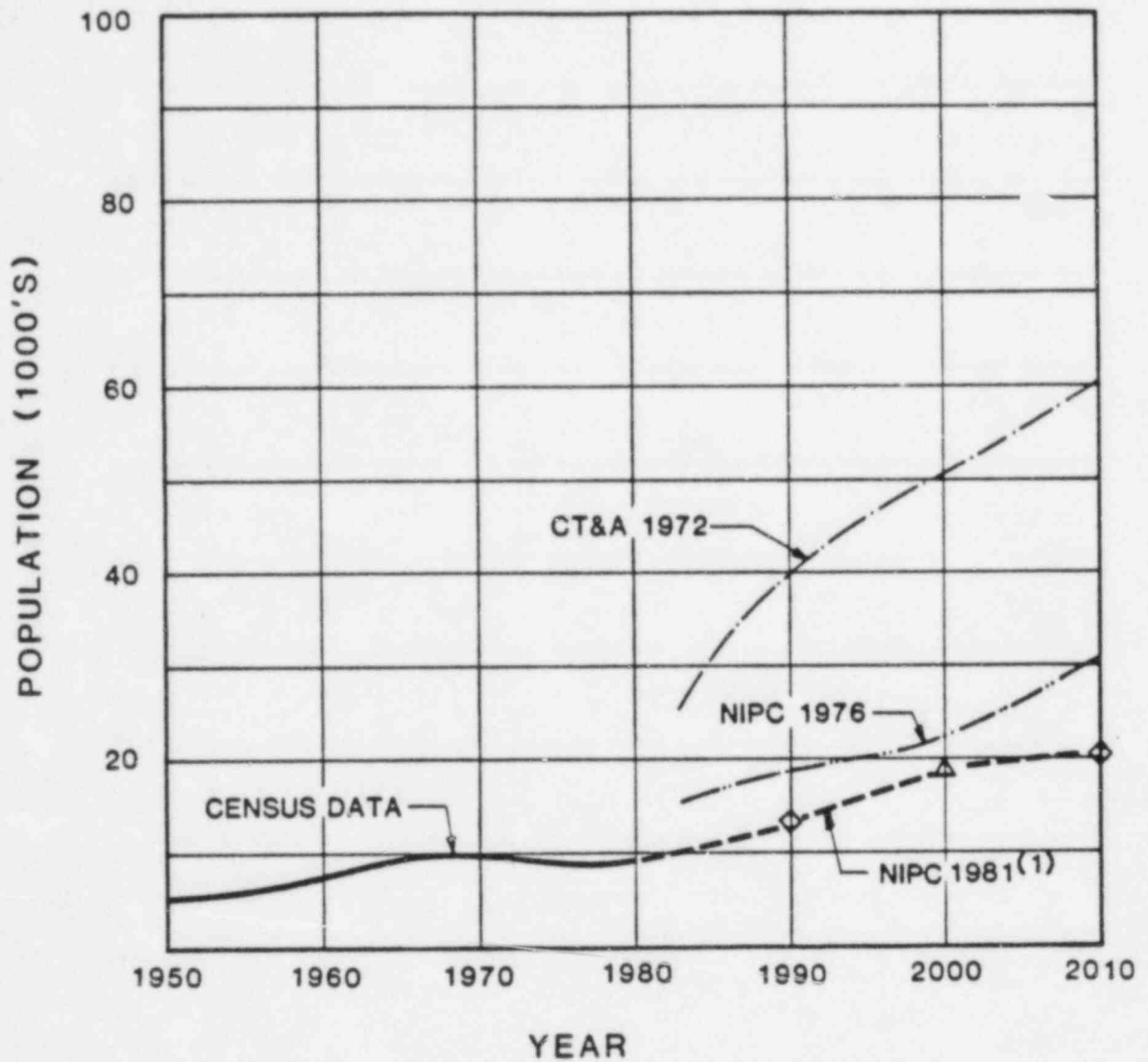


EXHIBIT 3-14

POPULATION PROJECTIONS  
CITY OF LOCKPORT

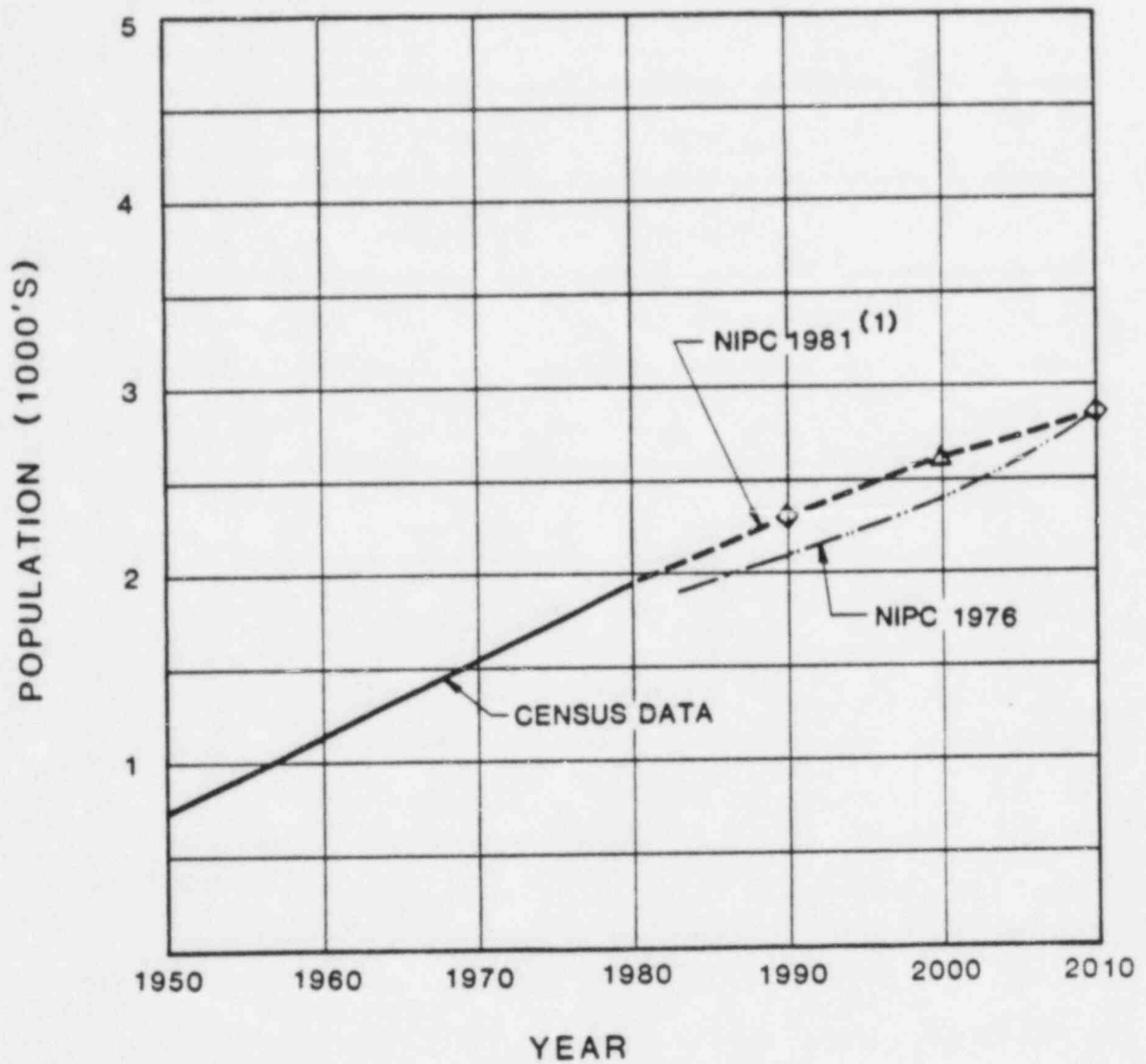


EXHIBIT 3-15

POPULATION PROJECTIONS  
VILLAGE OF MANHATTAN

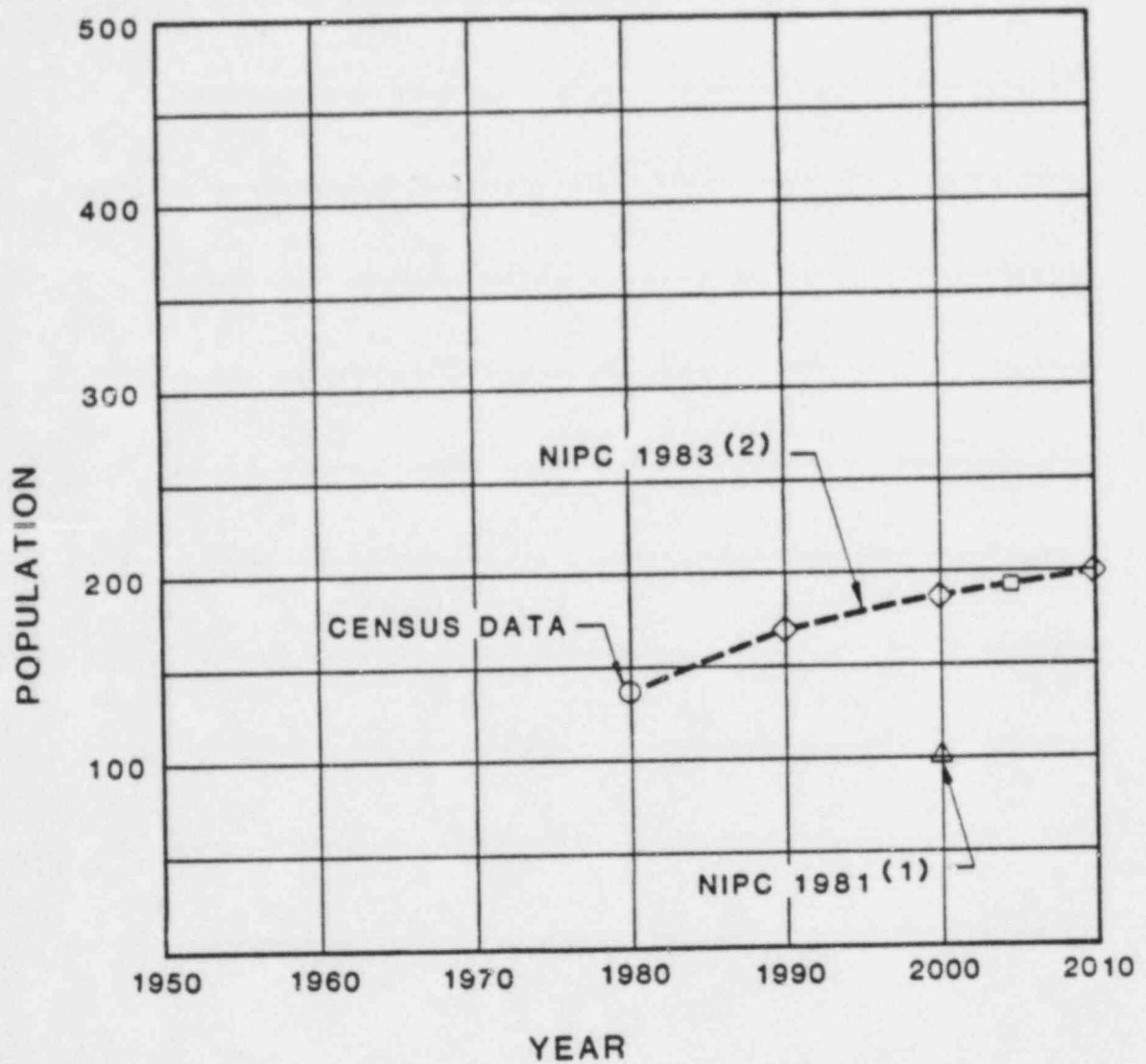


EXHIBIT 3-16

POPULATION PROJECTIONS  
VILLAGE OF MINOOKA  
(WILL COUNTY PORTION)

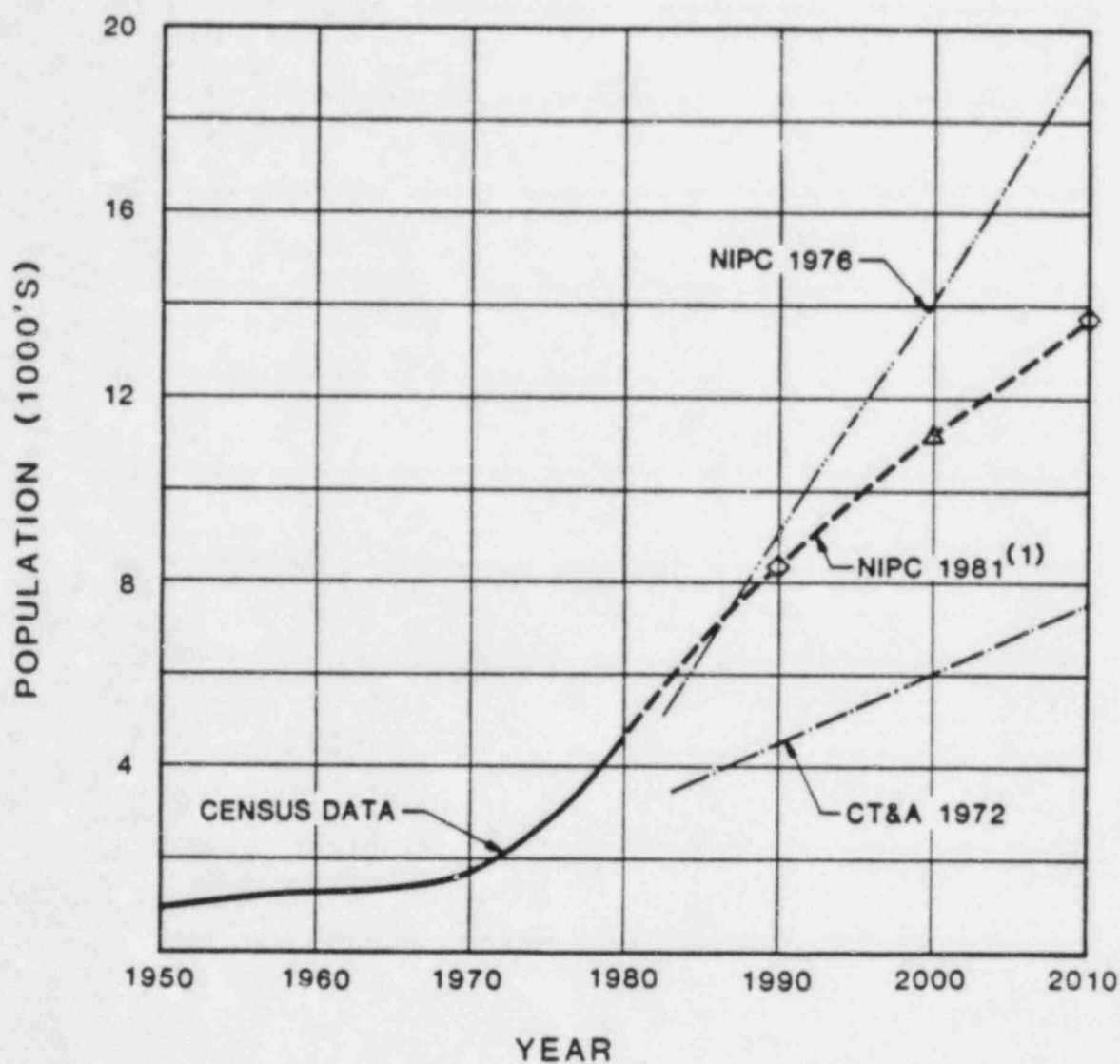


EXHIBIT 3-17

POPULATION PROJECTIONS  
VILLAGE OF MOKENA

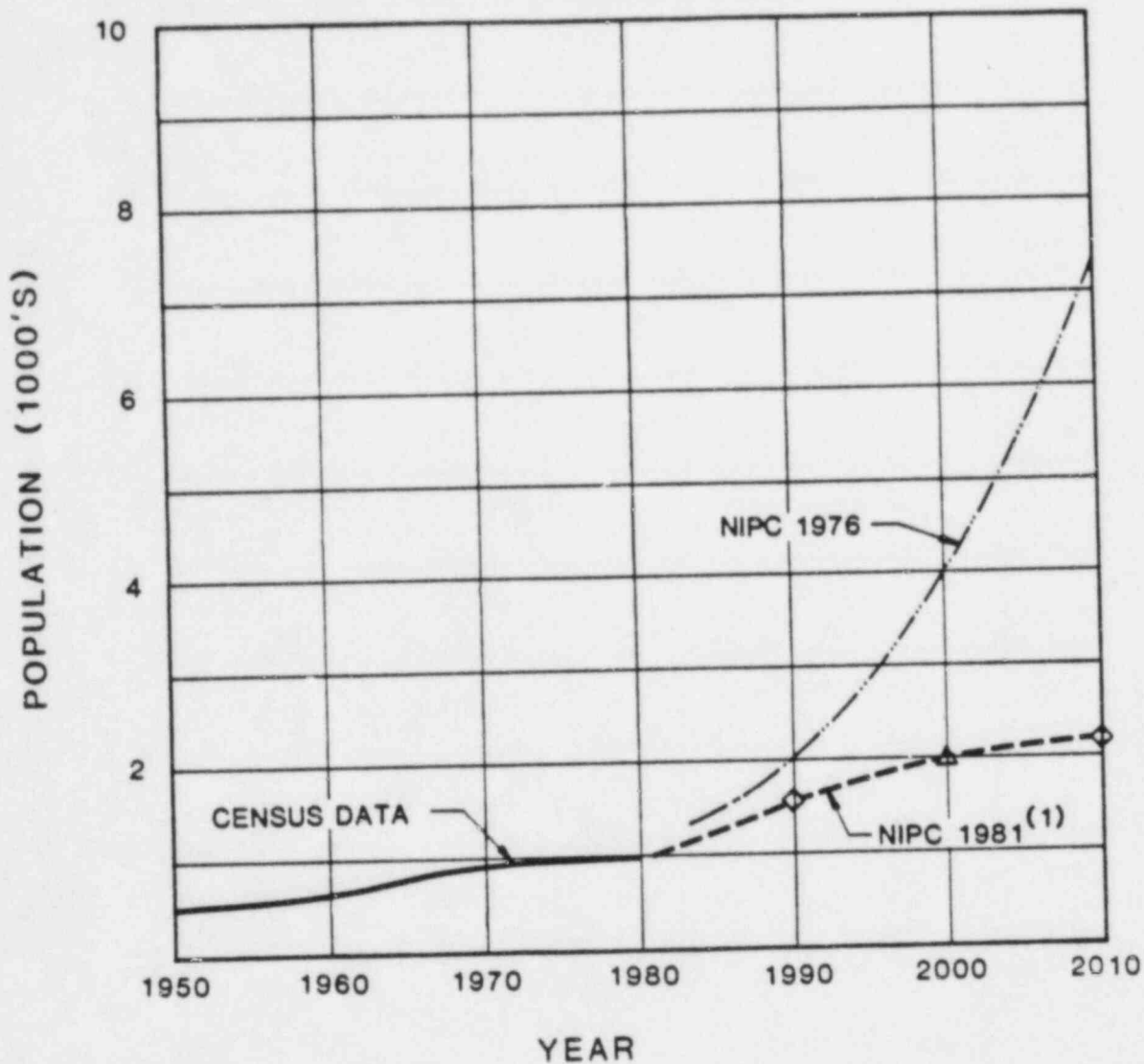


EXHIBIT 3-18

POPULATION PROJECTIONS  
VILLAGE OF MONEE



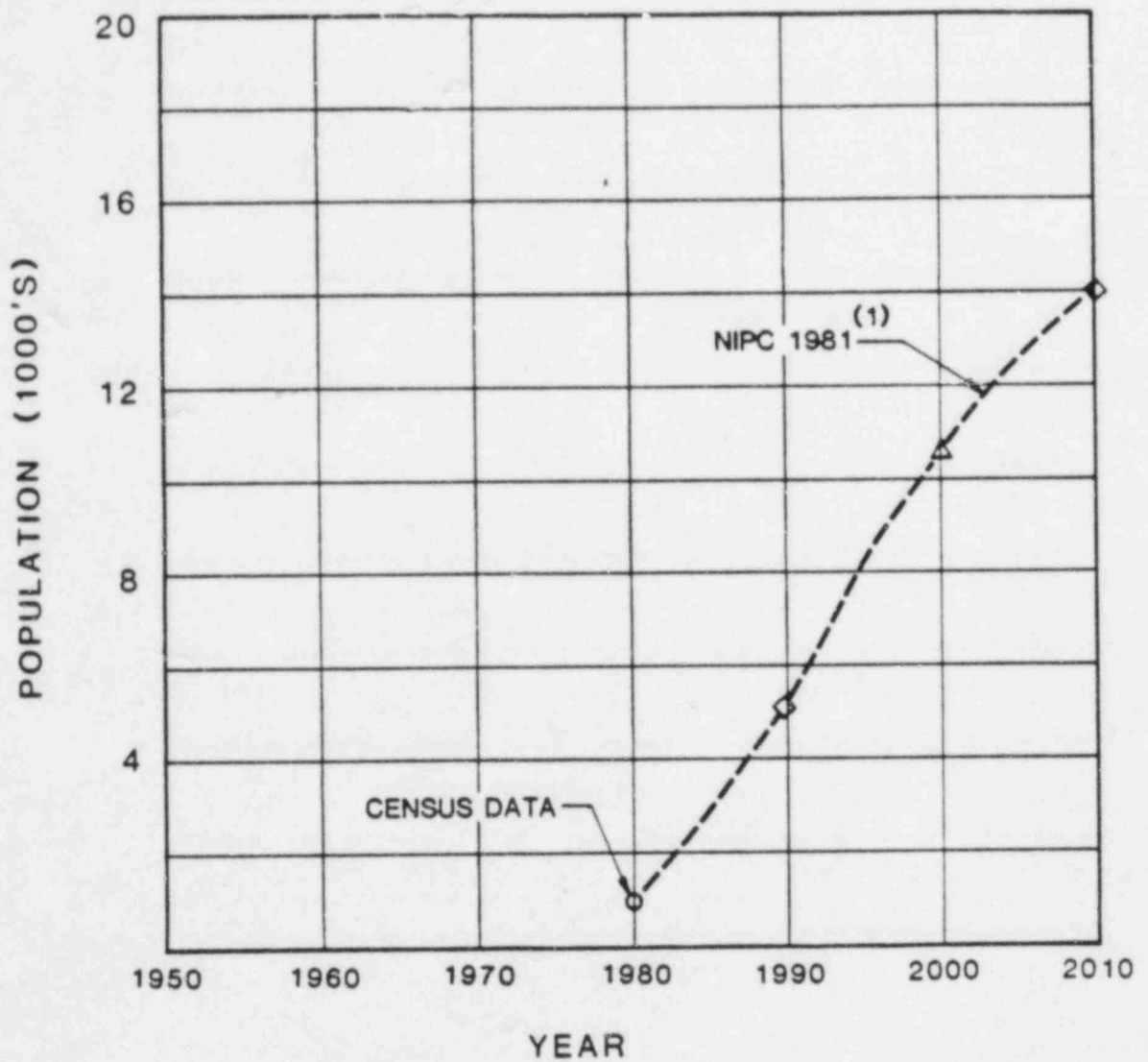


EXHIBIT 3-19

POPULATION PROJECTIONS  
CITY OF NAPERVILLE  
(WILL COUNTY PORTION)

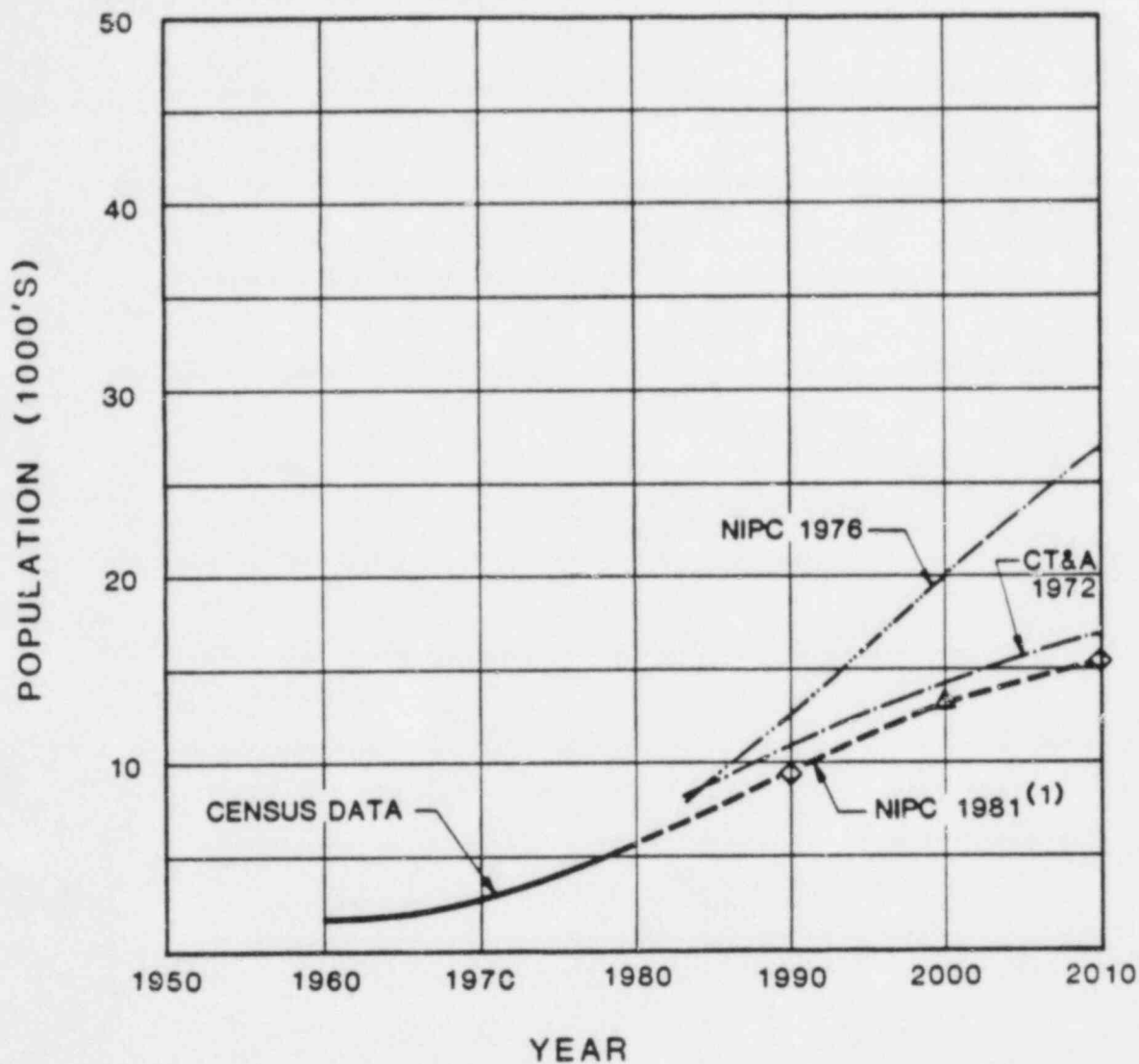


EXHIBIT 3-20

POPULATION PROJECTIONS  
VILLAGE OF NEW LENOX

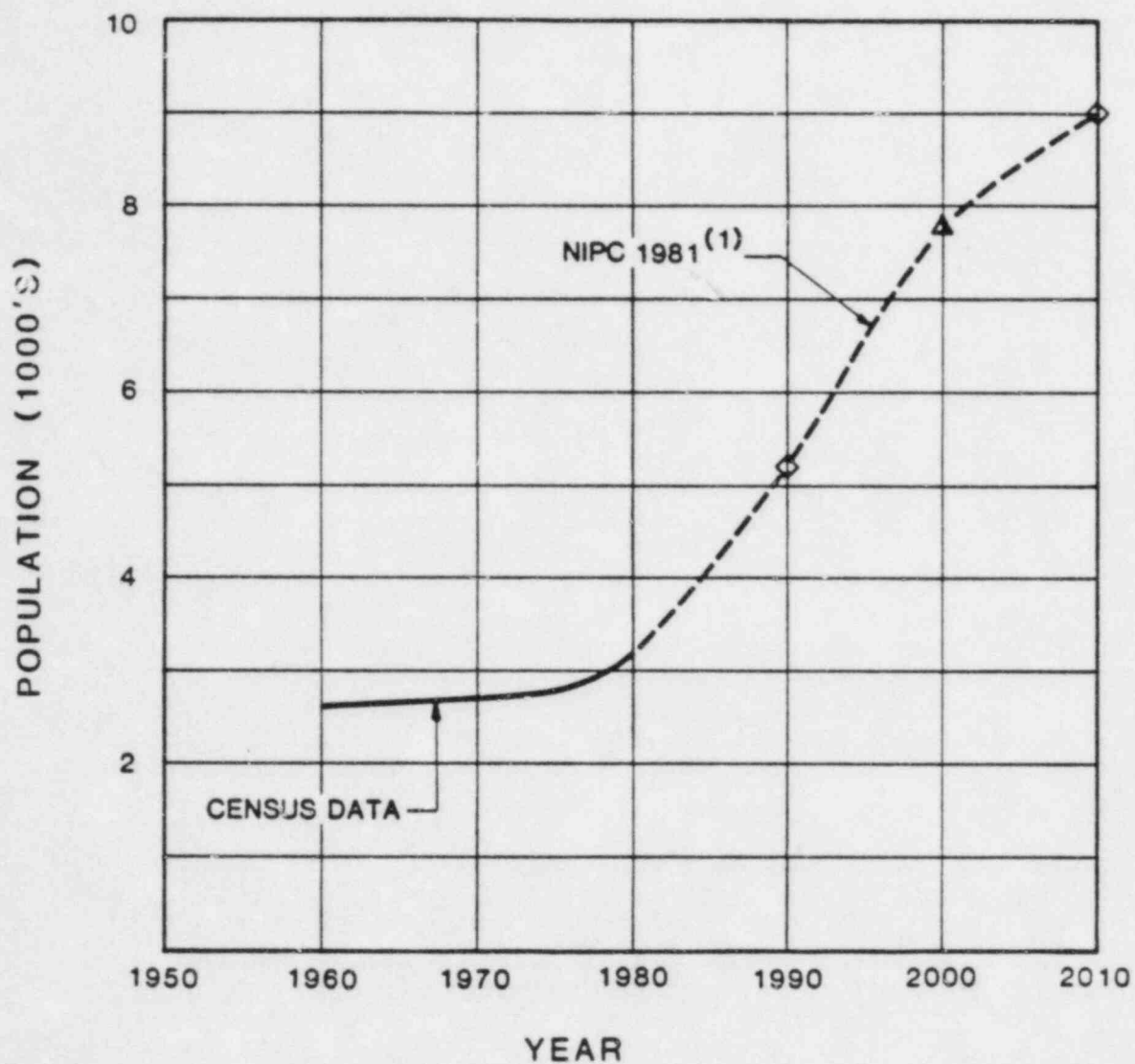


EXHIBIT 3-21

POPULATION PROJECTIONS  
VILLAGE OF PARK FOREST  
(WILL COUNTY PORTION)

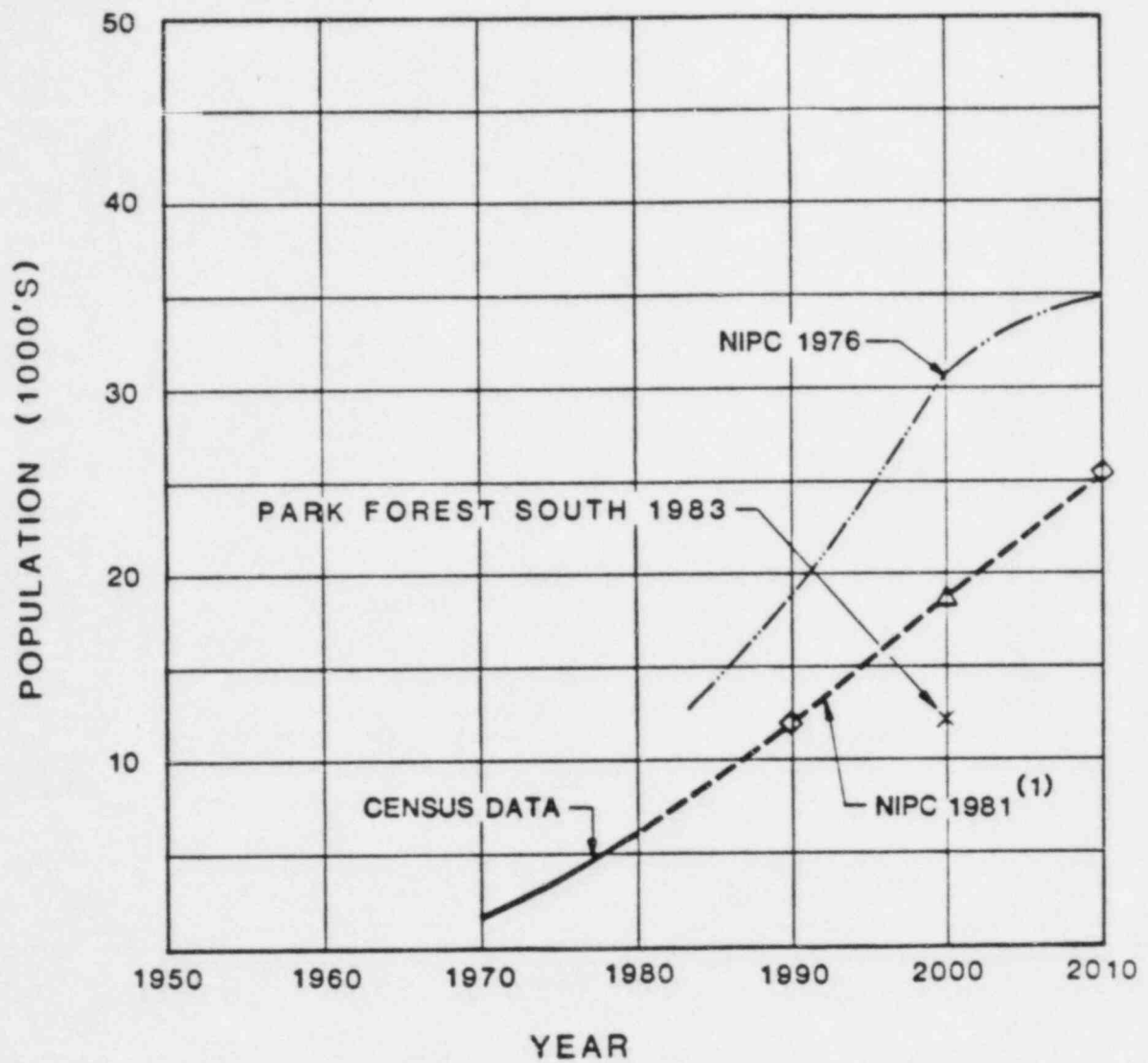


EXHIBIT 3-22

POPULATION PROJECTIONS  
VILLAGE OF PARK FOREST SOUTH

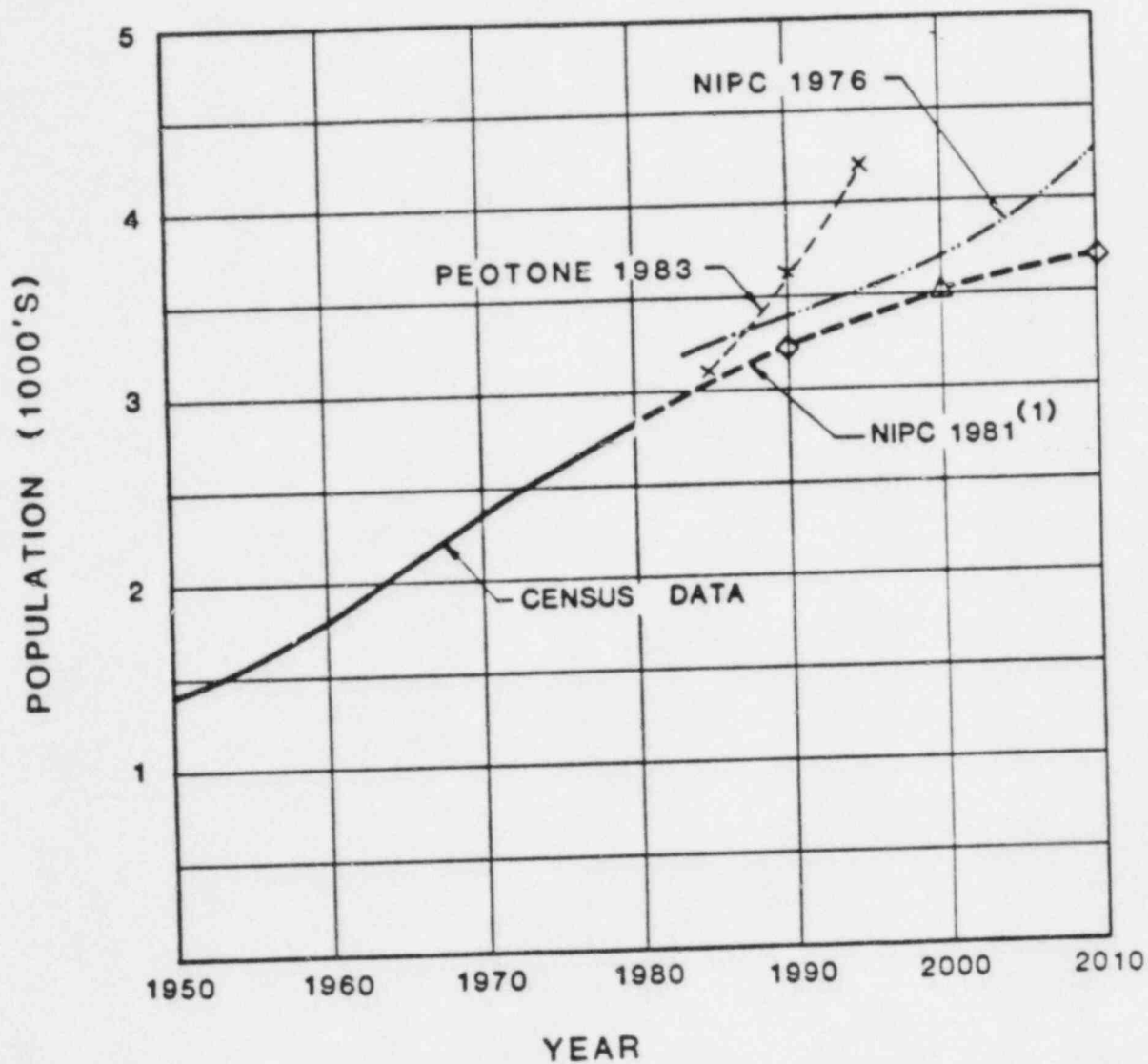


EXHIBIT 3-23

POPULATION PROJECTIONS  
VILLAGE OF PEOTONE

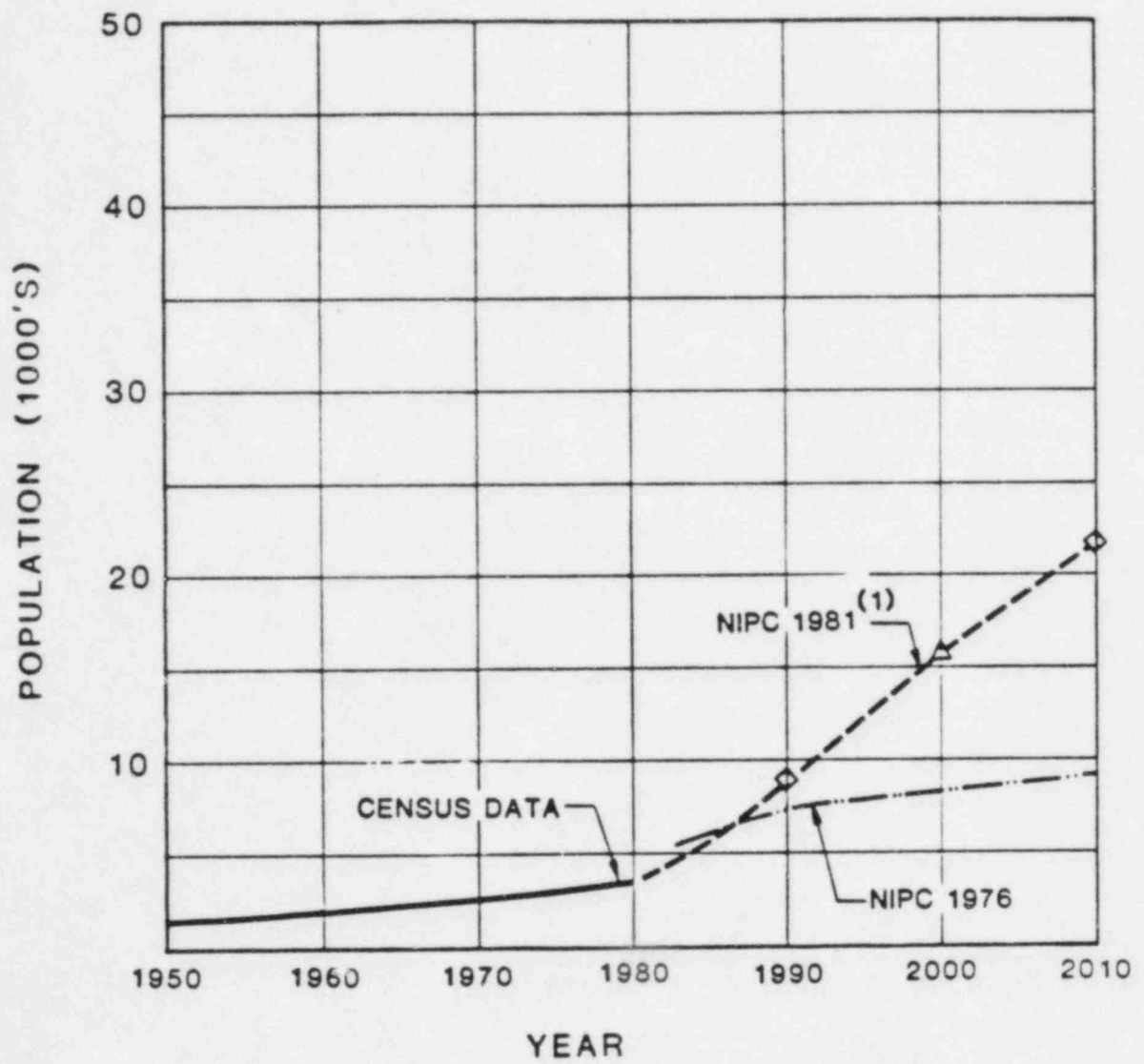


EXHIBIT 3-24

POPULATION PROJECTIONS  
VILLAGE OF PLAINFIELD

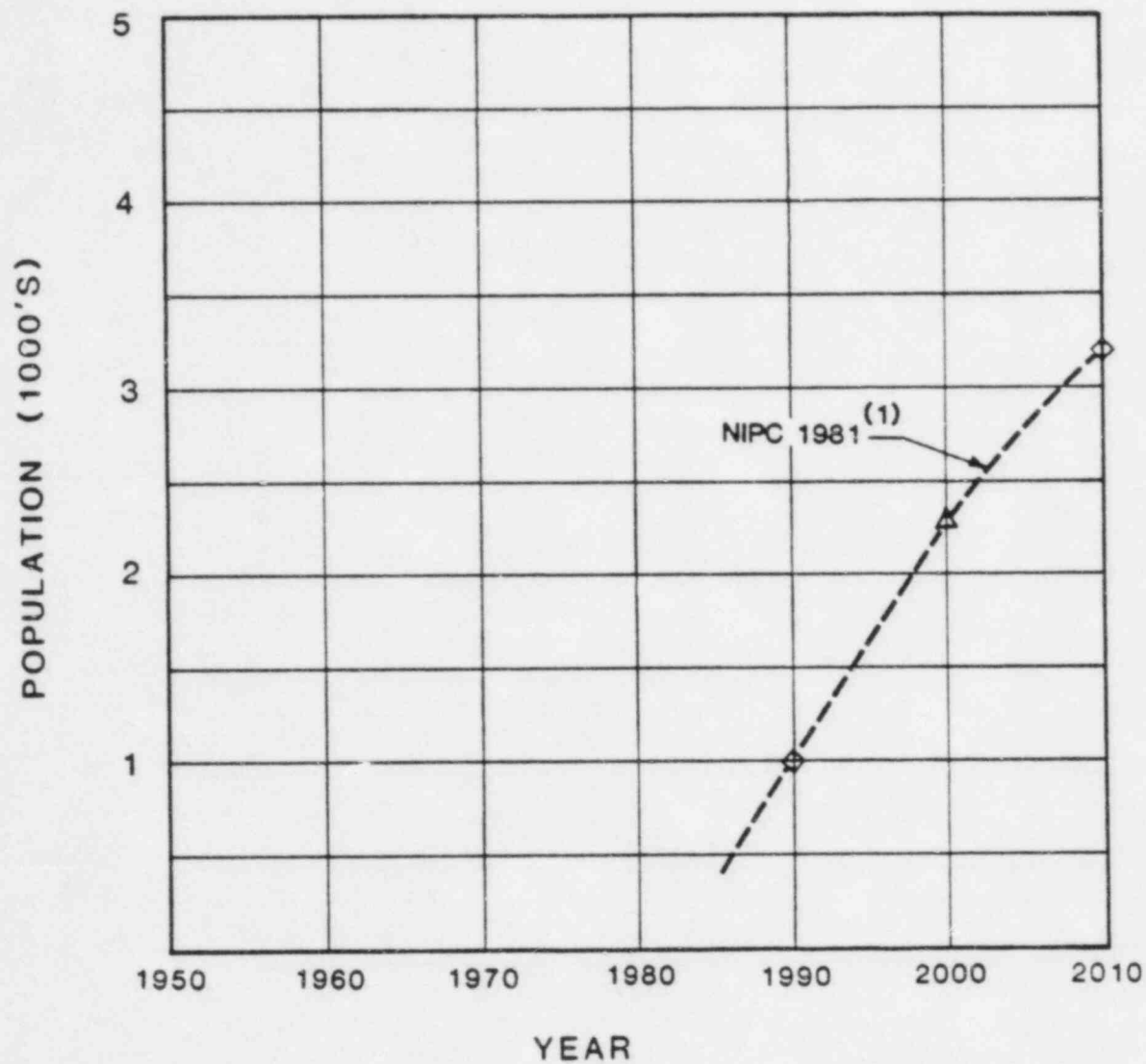


EXHIBIT 3-25

POPULATION PROJECTIONS  
VILLAGE OF RICHTON PARK  
(WILL COUNTY PORTION)

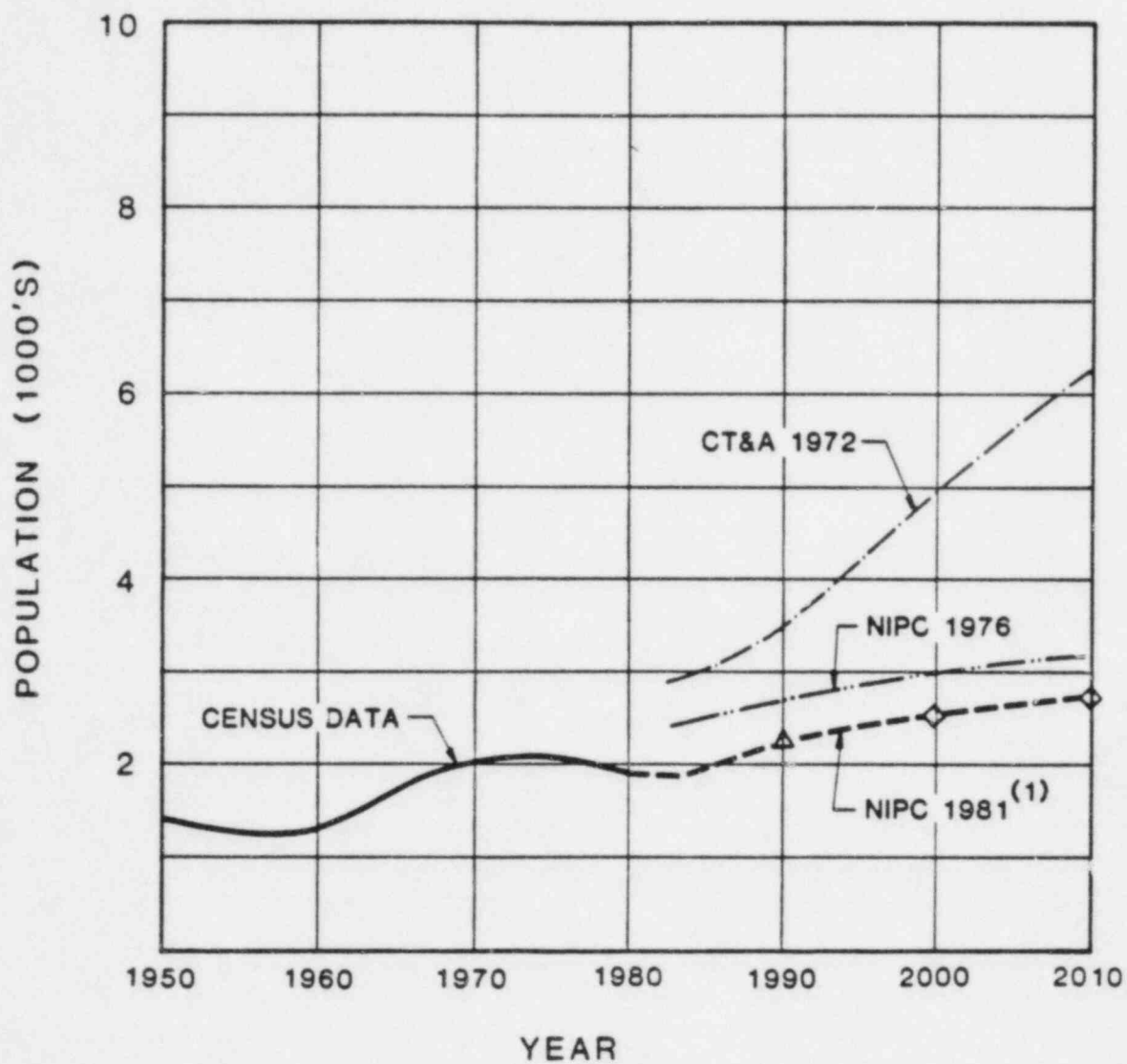


EXHIBIT 3-26

POPULATION PROJECTIONS  
VILLAGE OF ROCKDALE



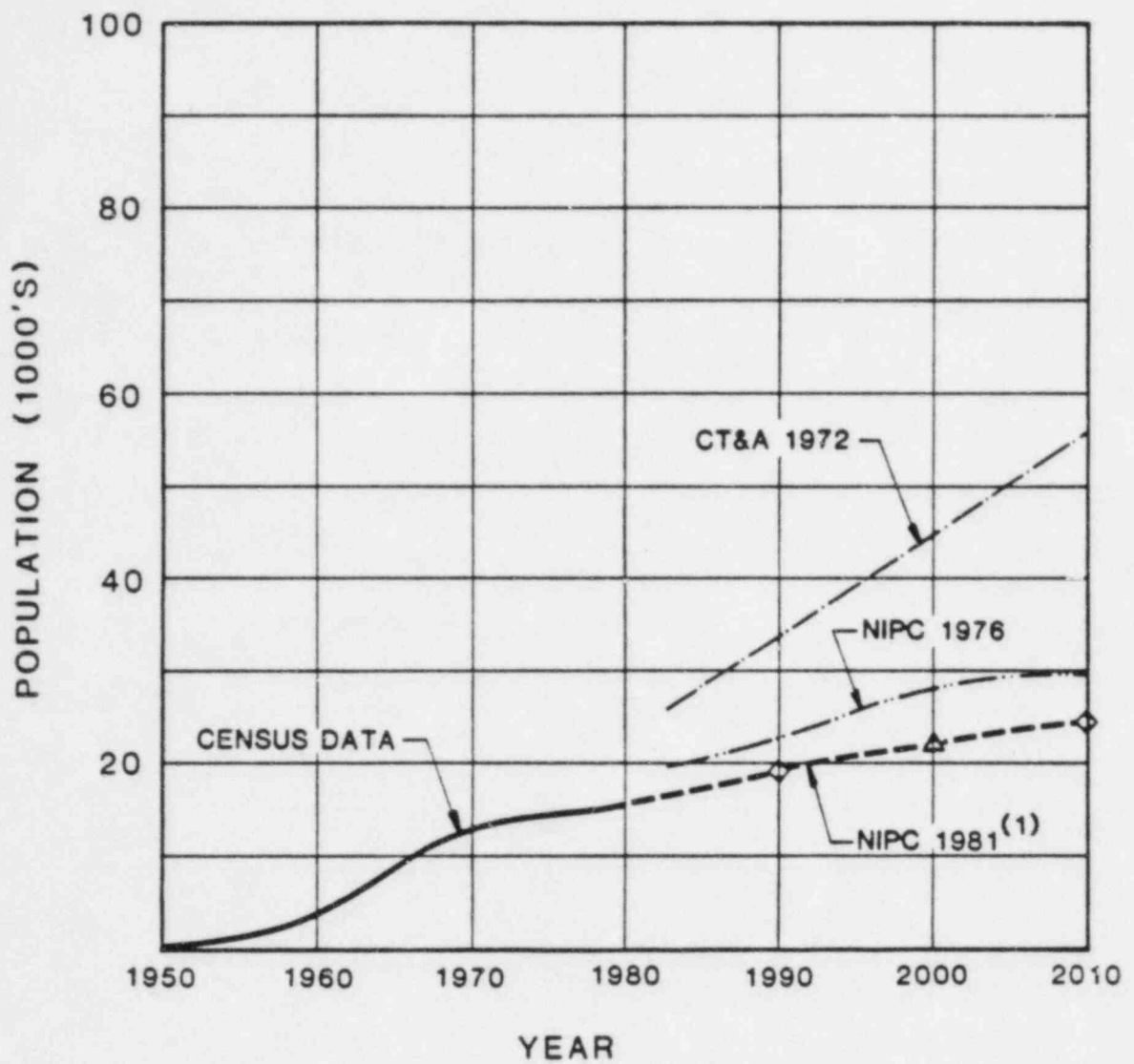


EXHIBIT 3-27

POPULATION PROJECTIONS  
VILLAGE OF ROMEOVILLE

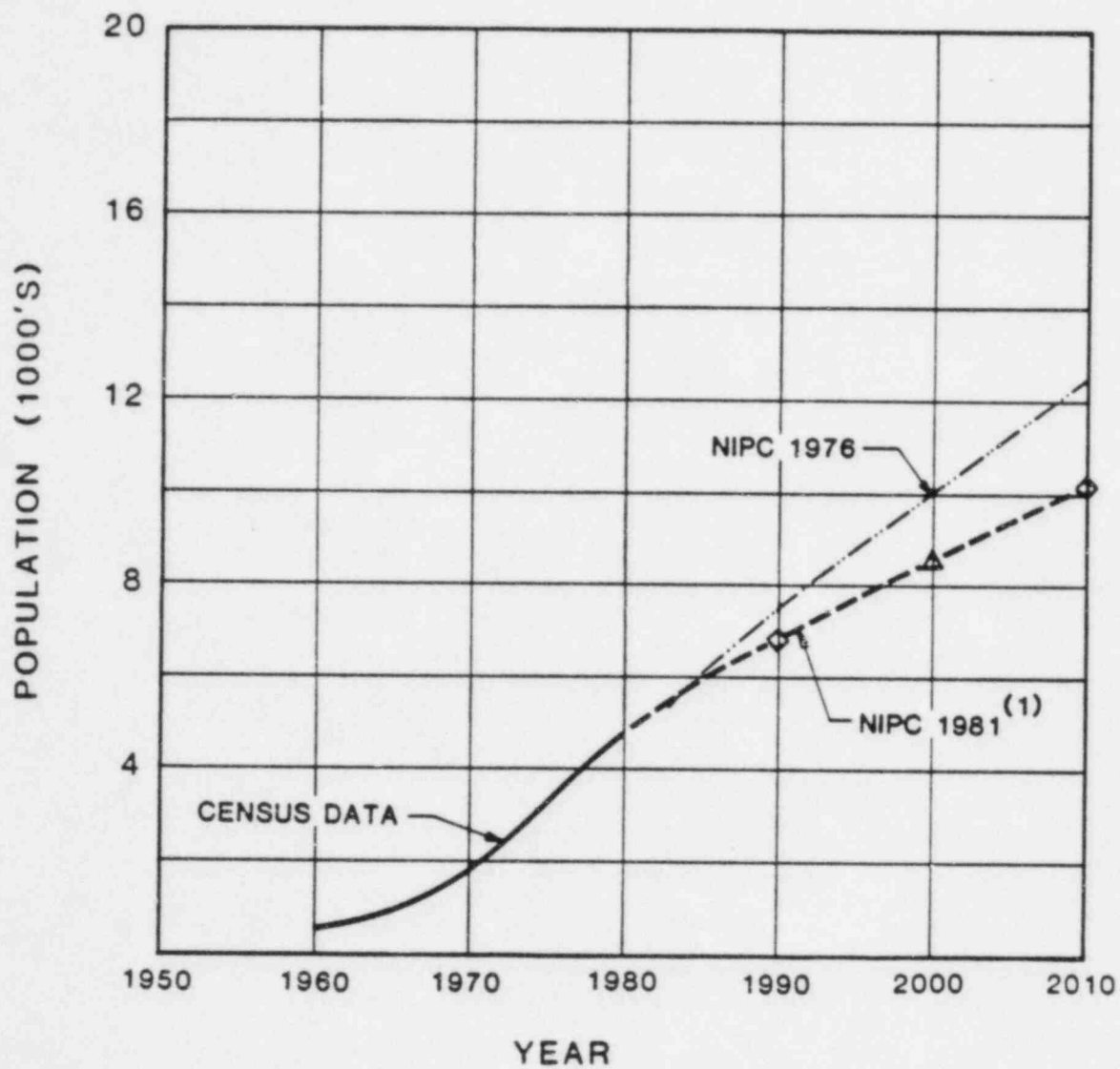


EXHIBIT 3-28

POPULATION PROJECTIONS  
VILLAGE OF SHOREWOOD

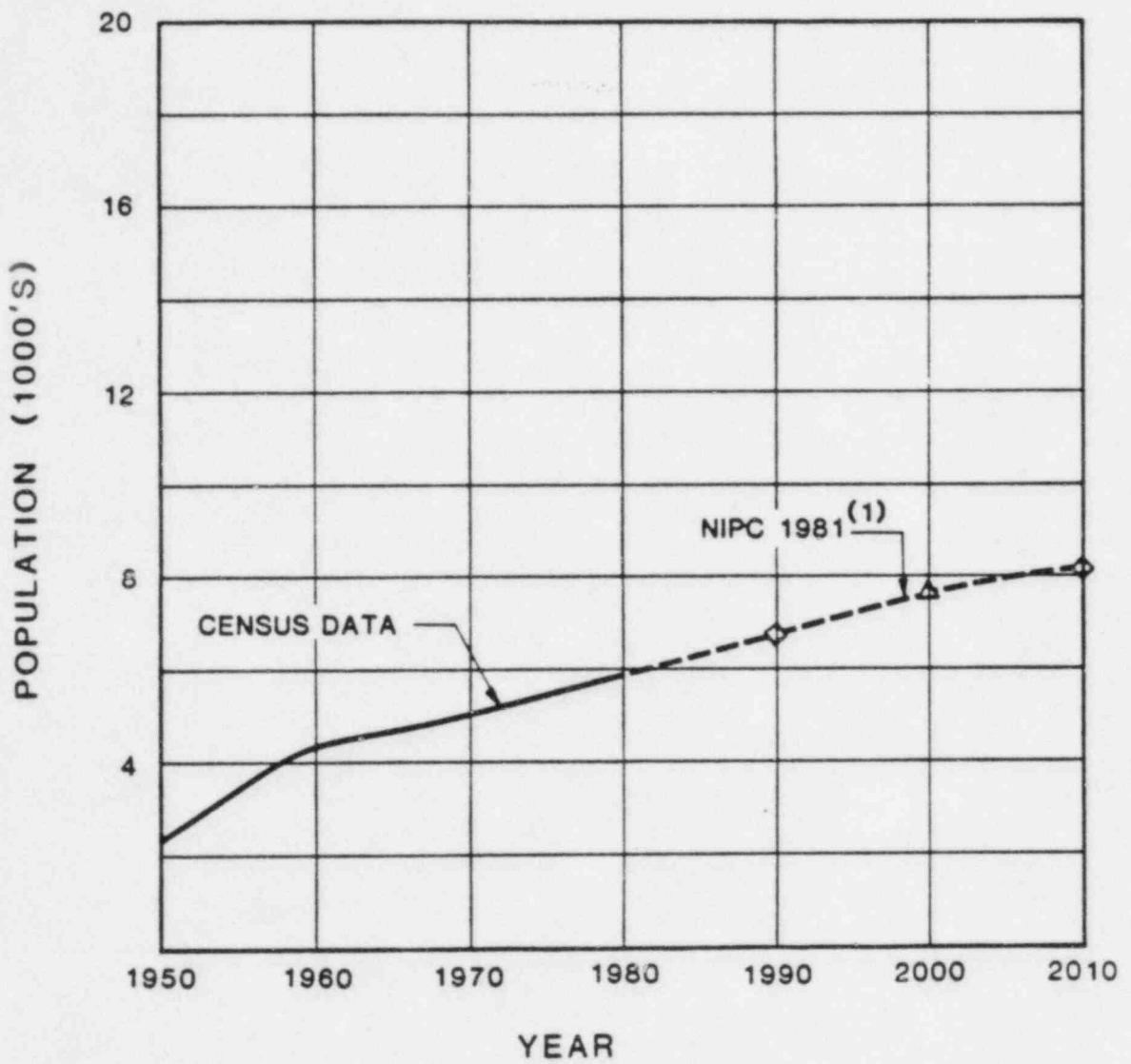


EXHIBIT 3-29

POPULATION PROJECTIONS  
VILLAGE OF STEGER  
(WILL COUNTY PORTION)

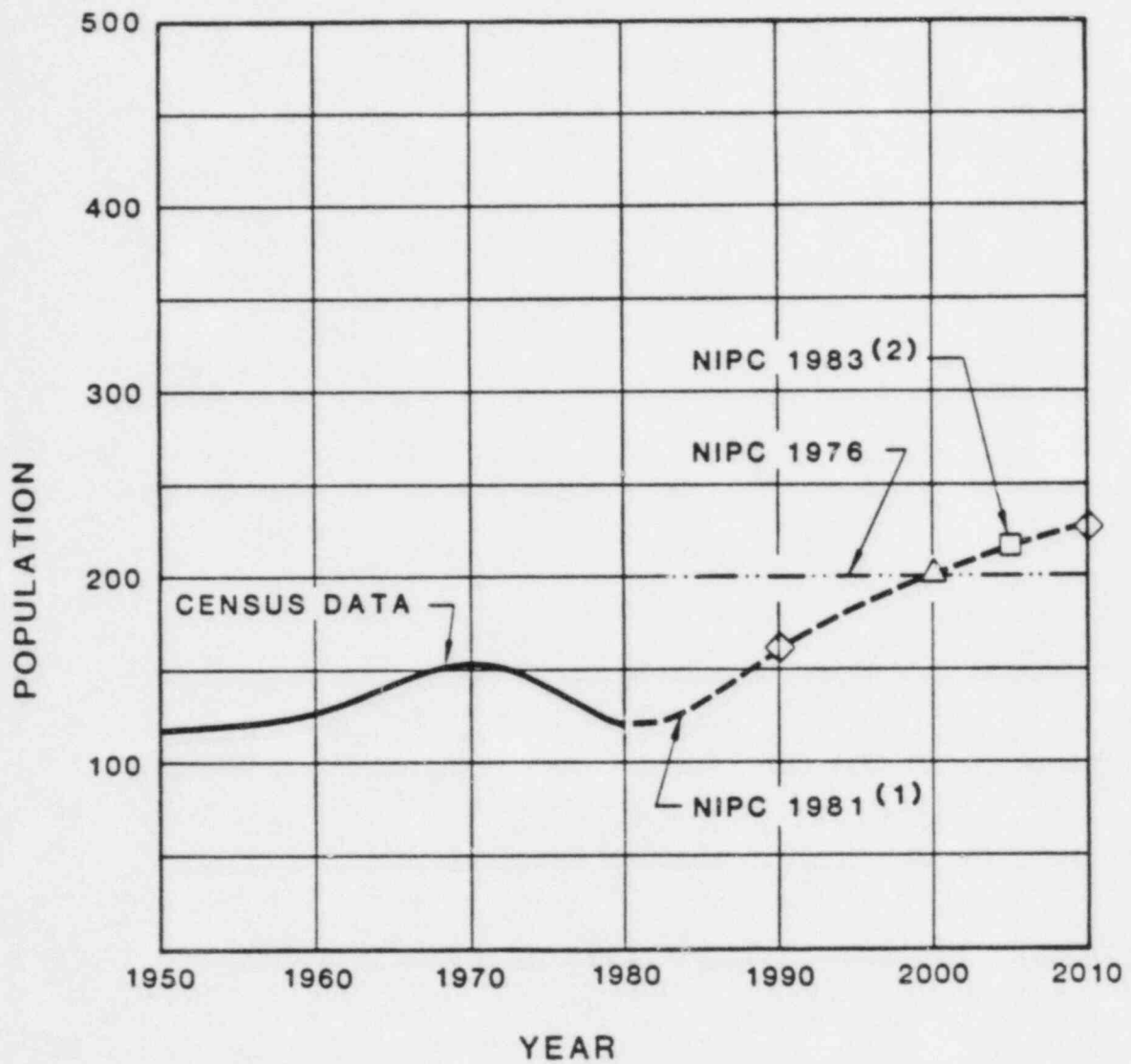


EXHIBIT 3-30

POPULATION PROJECTIONS  
VILLAGE OF SYMERTON

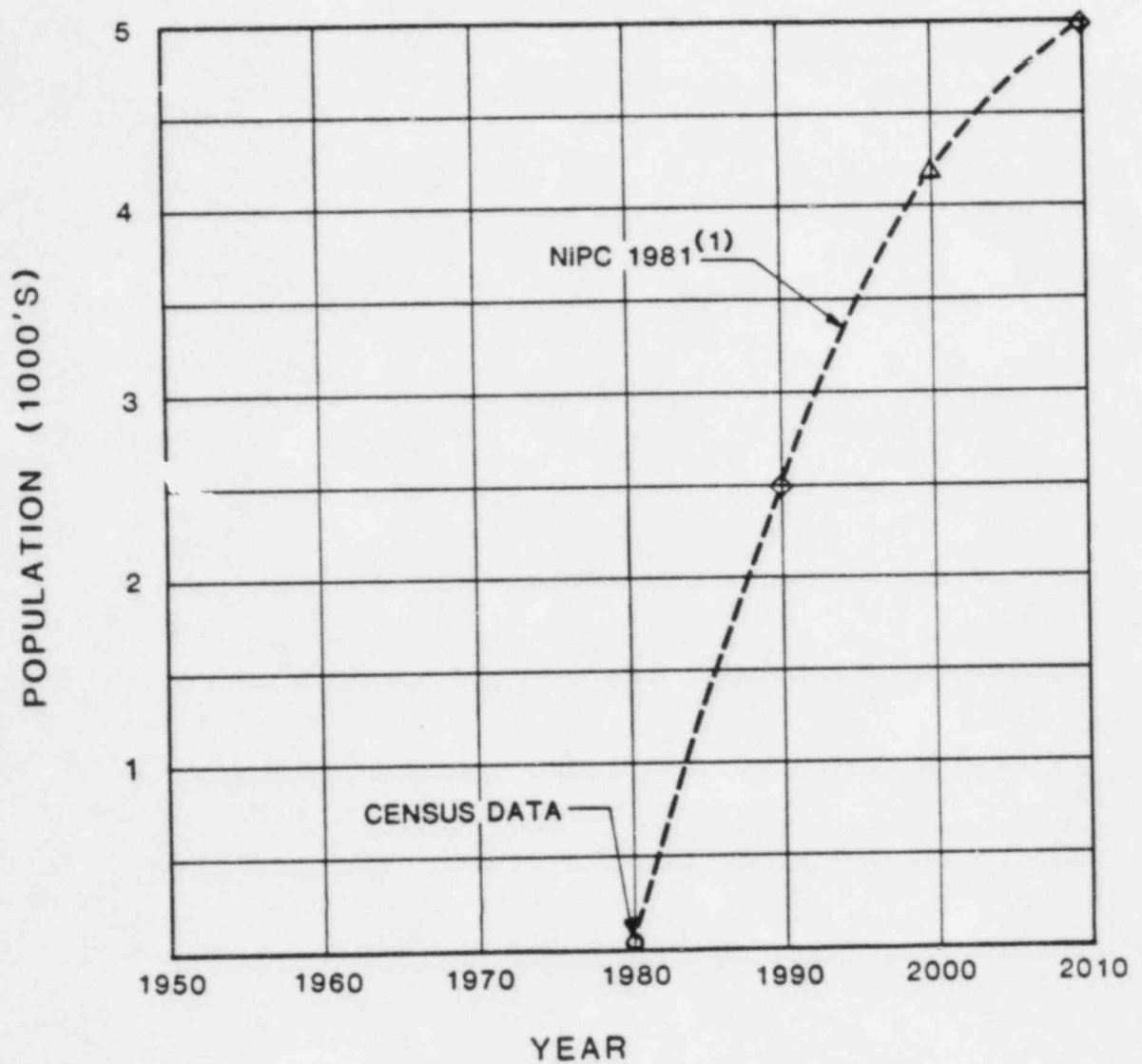


EXHIBIT 3-31

POPULATION PROJECTIONS  
VILLAGE OF TINLEY PARK  
(WILL COUNTY PORTION)

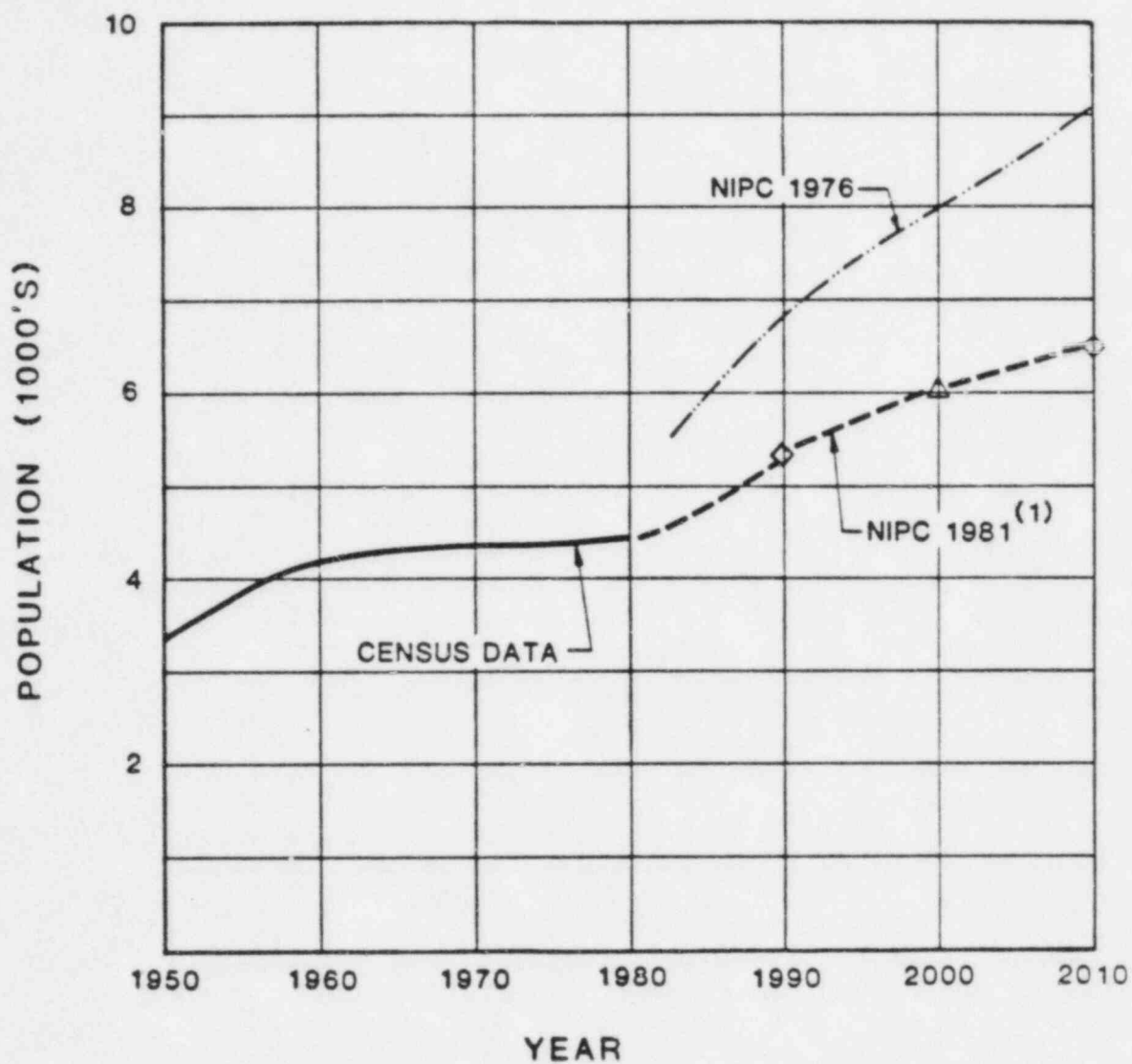


EXHIBIT 3-32

POPULATION PROJECTIONS  
CITY OF WILMINGTON

KEY TO CHAPTER 3 EXHIBIT SYMBOLS

- ,O Census data
- ◇— Metcalf & Eddy interpolation, extrapolation
- △ NIPC 1981
- NIPC 1983(2)
- NIPC 1983(3)
- ...— NIPC 1976
- ▽ IBOB 1982
- .-— CT&A 1972
- x-- Municipal population projections

NOTES FOR CHAPTER 3 EXHIBITS

- (1.) NIPC 1981 - Population projection consisting of the Northeastern Illinois Planning Commission Revised Population Forecast, November 1981, and Metcalf & Eddy interpolation to 1990 and extrapolation to 2010.
- (2.) NIPC 1983 - Population projection consisting of the Northeastern Illinois Planning Commission Preliminary Municipal Forecast, October 1983, and Metcalf & Eddy interpolation to 1990 and 2000 and extrapolation to 2010.
- (3.) NIPC 1983 - Preliminary population forecast by the Northeastern Illinois Planning Commission, July 1983.
- (4.) NIPC 1976 - Population forecast by the Northeastern Illinois Planning Commission, August 1976.
- (5.) IBOB 1982 - Preliminary projection by the Illinois Bureau of the Budget, July 1982.
- (6.) CT&A 1972 - Population projections appearing in "Preliminary Engineering Report on Kankakee River Water Study..." by Consoer, Townsend and Associates, June 1972.
- (7.) Joliet "F" 1976 - Population projection "F", appearing in "Executive Summary: Population and Employment Characteristics and Projections", City of Joliet, March 1976.



(8.) Park Forest South 1983 - Village population estimate by the Village of Park Forest South, 1983.

(9.) Peotone 1983 - Village population projection by the Village of Peotone, 1983.

### Other Population Projections

Populations for other water service areas were considered. Evaluation of population for those areas was made a part of the calculations for water use. The estimates for the other water service areas are included with discussion of those areas in Chapter 4 "Water Use".

## CHAPTER 5

### DEVELOPMENT OF CONCLUSIONS & RECOMMENDATIONS

This report has considered the various factors relating to projection of future water requirements in Will County. These factors have been analyzed, projections have been made and conclusions have been drawn. These are summarized below.

#### Population

Population growth has been considered in Chapter 3. In most cases, the revised 1981 NIPC forecasts were used for year 2000 population projections. Interpolation of census data and the NIPC forecasts for 2000 were used to project year 1990 populations. Extrapolation the NIPC forecasts for 2000 were used to project year 2010 populations.

Population projections developed for this study reflect anticipated growth trends. County population will continue to grow through the year 2010, but will do so at a continually declining rate. The degree to which township populations are projected to increase varies and is largely dependent on municipal growth. Municipal populations are projected to increase due to both growth within present municipal limits, and extension of municipal limits. Populations of incorporated portions of townships on a county-wide basis will decrease slightly as unincorporated land area decreases and municipal boundaries expand.

Population data and projections of population growth have been tabulated in Tables 3-1 through 3-5, and illustrated in Exhibits 3-1 and 3-4 through 3-32.

#### Water Use

Historical and projected water demand have been discussed in Chapter 4. Municipal water supplies, nonmunicipal water supplies, larger industries, and other large water users including institutions were contacted to obtain water use data. This data is tabulated in Tables 4-1, 4-2, 4-6, 4-7 and 4-10. Data was compared to supplemental information obtained from NIPC, ISWS and IEPA.

For any given water supply or user the available data was examined to identify trends in total and per capita water use. Current per capita water use ranges from 54 gpcd to 192 gpcd. Trends in the ratio of maximum day pumpage to average day pumpage were examined. Current ratios range from 1.2 to 3.9. Trends in water accountability (the percentage of water pumped which appears as metered usage) were examined. Accountability currently ranges from 61% to over 95% with the average being 79%.

For each domestic water supply, per capita use trends were used to project future per capita water use. Projected changes in per capita use followed trends established by NIPC. These were used in conjunction with projected service area population to determine average daily water demand. The average water demand was multiplied by the projected maximum day ratio to determine the projected maximum day water demand.

For unincorporated portions of townships, a future per capita demand of 80 gpcd was established to allow projection of average future water demands. Projected water demands for industrial and large water users were determined by extrapolating trends observed in available data. Projected future water demands are tabulated in Tables 4-3, 4-4, 4-5, 4-8, 4-9 and 4-10.

Projections of water requirements reveals significant trends. Increasing municipal population is chiefly responsible for the increased projections of municipal water demand. The increased demands from 1982 to 2010 range from approximately 25% for Joliet to 746% for the Will County portion of Naperville. Increased demand for nonmunicipal supplies is comparatively much smaller. Water requirements for industrial and large water users surveyed will, on the whole, decrease over the planning period, although the change varies from user-to-user.

APPENDIX I  
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## APPENDIX 2

### TERMINOLOGY

IBOB - Illinois Bureau of the Budget  
NIPC - Northeastern Illinois Planning Commission  
IEPA - Illinois Environmental Protection Agency  
ISWS - Illinois State Water Supply  
MGD - Million Gallons per Day  
GPCD - Gallons per Capita per Day

Maximum Day Ratio - Ratio of Maximum daily water demand to average daily water demand.

## CHAPTER 4

### WATER USE

Future water requirements may be estimated by considering present and past water pumpage along with projections of population, commercial growth and industrial development. Water demands have been projected to the year 2010 based on analysis of present and past demand together with projected populations, per capita and industrial use. Projected water system accountability and the possible effect of water conservation practices are considered separately.

#### Municipal Water Use

Water use data was obtained from municipalities by sending them questionnaires and concurrent telephone inquiries. Details regarding the following information were requested for the period 1950 to 1982:

- population served/number of customers
- number of wells
- pumpage
- metered usage

Information was also requested relating to system storage capacity, water quality data and individual well data.

Responses to questionnaires varied widely. Data obtained from municipal respondents was compared to water use information obtained from NIPC, the Illinois State Water Survey (ISWS), and the Illinois Environmental Protection Agency (IEPA). Any

discrepancies were resolved so as to provide the most useful data base. Table 4-1 shows water use data for 1980. Where data was unavailable, or where conflicts existed in data, 1981 figures are shown. Table 4-2 shows water use data for 1982.

For each municipality, projected population growth, projected per capita use, and the projected ratio of maximum daily demand to average daily demand (hereafter referred to as the Maximum Day Ratio) were used to estimate future water consumption. Projected per capita water use was developed for each water service area based on historical water use and 1976 NIPC projections for per capita use. The NIPC projections were used to project change in rate of per capita use and adjusted to reflect more recent trends. The projected per capita use and the projected service area populations were used to project future water demands. Projections of future consumption for 1990, 2000 and 2010 are shown in Tables 4-3, 4-4, and 4-5 respectively.

Water use data and projections for each municipality are discussed separately as follows:

#### BEECHER

The Village of Beecher, located in Washington Township has a current water demand of 0.215 mgd or approximately 102 gpcd. 67 percent of the water pumped is accounted for, and the mean maximum day ratio is 1.7. The projected 2010 average water demand is 0.32 mgd or 105 gpcd, and the projected maximum day ratio is 1.7.

TABLE 4-1  
MUNICIPAL WATER USE DATA  
1980

MUNICIPALITY	POPULATION	PER CAPITA CONSUMPTION (GPCD)	WATER DEMAND (MGD)	
			AVE. DAY	MAX. DAY
(4) Beecher	2,060	104	0.212	0.356
(1) Bolingbrook	36,107	92	3.31	
Braidwood	3,429	94	0.322	
(2) Channahon	3,734	70	0.260	
Crest Hill	9,252	109	1.01	
Crete	5,417	80	0.435	
(4) Elwood	817	89	0.072	
Frankfort	4,357	146	0.634	
(1) (2) Godley	322	93	0.030	
(4) Joliet	78,800	139 (3)	11.0	14.6
Lockport	9,170	150	1.38	
Manhattan	1,944	79	0.154	0.179
(1) Minooka	138	114	0.016	
Mokena	4,578	86	0.393	
Monee	993	79	0.079	
(1) Naperville	901	168	0.152	0.263
New Lenox	5,792	122	0.708	0.745
(1) Park Forest	3,311	84	0.277	0.488
Park Forest South	6,243	159	0.999	
(4) Peotone	2,860	118	0.337	
Plainfield	3,767	163	0.613	
(4) Rockdale	1,960	216	0.423	0.480
Romeoville	15,519	92	1.42	
(2) Shorewood	4,714	66	0.311	
(1) Steger	5,855	115	0.673	
(2) Symerton	120	91	0.011	
Wilmington	4,424	121	0.536	

Notes:

- (1) Will Co. portion
- (2) Water Use estimated
- (3) Excludes Lockport Township Water Use
- (4) 1981 Data

TABLE 4-2

MUNICIPAL WATER USE DATA  
1982

MUNICIPALITY	POPULATION	PER CAPITA CONSUMPTION (GPCD)	WATER DEMAND (MGD)	
			AVE. DAY	MAX. DAY
Beecher	2,100	102	0.215	0.367
(1) Bolingbrook	37,700	99	3.72	
Braidwood	3,650	97	0.357	
(2) Channahon	4,250	69	0.292	
Crest Hill	9,690	83	0.802	
Crete	5,750	81	0.466	
Elwood	820	90	0.074	
Frankfort	4,760	130	0.619	
(1) (2) Godley	350	93	0.033	
Joliet	79,900	146 (3)	11.7	14.3
Lockport	9,860	114 (3)	1.12	
Manhattan	2,010	92	0.185	0.248
(1) Minooka	145	100	0.015	
Mokena	5,440	73	0.397	0.722
Monee	1,090	67	0.073	
(1) Naperville	1,700	168	0.285	0.431
New Lenox	6,460	92	0.595	0.823
(1) Park Forest	3,640	81	0.293	0.516
Park Forest South	7,140	106	0.755	
Peotone	2,890	117	0.337	
Plainfield	4,590	132	0.604	
Rockdale	2,010	192	0.386	0.560
Romeoville	16,250	100	1.62	2.72
(2) Shorewood	5,100	78	0.398	
(1) Steger	6,050	89	0.538	
(2) Symerton	135	91	0.012	
Wilmington	4,590	114	0.524	0.850

## Notes:

- (1) Will Co. portion
- (2) Water Use estimated
- (3) Excludes Lockport Township Water Use
- (4) 1981 Data

TABLE 4-3

## PROJECTED MUNICIPAL WATER CONSUMPTION - 1990

MUNICIPALITY	POPULATION	PER CAPITA CONSUMPTION (GPCD)	WATER DEMAND (MGD)	
			AVE. DAY	MAX. DAY
Beecher	2,440	103	0.251	0.427
*Bolingbrook	44,000	101	4.44	7.99
Braidwood	4,520	102	0.461	0.830
Channahon	6,400	74	0.474	0.853
Crest Hill	11,360	87	0.988	1.78
Crete	8,000	85	0.680	1.22
Elwood	880	97	0.085	0.153
Frankfort	6,920	140	0.969	1.74
*Godley	400	94	0.038	0.068
Joliet	84,000	153	12.9	18.1
Lockport	13,600	125	1.70	3.06
Manhattan	2,320	95	0.220	0.396
*Minooka	170	105	0.018	0.032
Mokena	8,400	85	0.714	1.28
Monee	1,600	75	0.120	0.216
*Naperville	5,000	170	0.850	1.53
New Lenox	9,600	105	1.01	1.52
*Park Forest	5,200	93	0.484	0.968
Park Forest South	12,000	130	1.56	2.81
Peotone	3,200	119	0.381	0.686
Plainfield	8,800	150	1.32	2.38
*Richton Park	1,000	87	0.087	0.157
Rockdale	2,240	204	0.457	0.686
Romeoville	19,160	100	1.92	3.26
Shorewood	6,800	80	0.544	1.47
*Steger	6,800	99	0.673	1.21
Symerton	160	91	0.015	0.027
*Tinley Park	2,500	113	0.283	0.509
Wilmington	5,320	120	0.638	1.02

\*Will County portion

TABLE 4-4

## PROJECTED MUNICIPAL WATER CONSUMPTION - 2000

MUNICIPALITY	POPULATION	PER CAPITA CONSUMPTION (GPCD)	WATER DEMAND (MGD)	
			AVE. DAY	MAX. DAY
Beecher	2,800	104	0.291	0.495
*Bolingbrook	50,000	102	5.10	9.18
Braidwood	5,300	102	0.541	0.974
Channahon	9,100	75	0.683	1.23
Crest Hill	13,000	88	1.14	2.05
Crete	10,600	85	0.901	1.62
Elwood	1,000	98	0.098	0.176
Frankfort	9,800	142	1.39	2.50
*Godley	450	94	0.042	0.076
Joliet	89,900	154	13.8	19.3
Lockport	18,600	126	2.34	4.21
Manhattan	2,600	95	0.247	0.445
*Minooka	190	106	0.020	0.036
Mokena	11,500	90	1.04	1.87
Monee	2,000	78	0.156	0.281
*Naperville	10,500	172	1.81	3.26
New Lenox	13,200	108	1.43	2.15
*Park Forest	7,800	93	0.725	1.45
Park Forest South	18,800	134	2.52	4.54
Peotone	3,500	119	0.417	0.751
Plainfield	15,700	151	2.37	4.27
*Richton Park	2,300	88	0.202	0.364
Rockdale	2,500	205	0.513	0.770
Romeoville	22,000	101	2.22	3.77
Shorewood	8,600	81	0.697	1.88
*Steger	7,600	100	0.760	1.37
Symerton	200	91	0.018	0.032
*Tinley Park	4,200	117	0.491	0.884
Wilmington	6,000	121	0.726	1.16

\*Will County portion



TABLE 4-5

## PROJECTED MUNICIPAL WATER CONSUMPTION - 2010

MUNICIPALITY	POPULATION	PER CAPITA CONSUMPTION (GPCD)	WATER DEMAND (MGD)	
			AVE. DAY	MAX. DAY
Beecher	3,050	105	0.320	0.544
*Bolingbrook	54,000	102	5.51	9.92
Braidwood	5,850	102	0.597	1.08
Channahon	11,100	76	0.844	1.52
Crest Hill	14,100	88	1.24	2.23
Crete	12,250	86	1.05	1.89
Elwood	1,100	98	0.108	0.194
Frankfort	12,500	144	1.80	3.24
*Godley	490	95	0.047	0.085
Joliet	95,000	156	14.8	20.7
Lockport	20,400	127	2.59	4.66
Manhattan	2,850	96	0.274	0.493
*Minooka	200	107	0.021	0.038
Mokena	13,750	90	1.24	2.23
Monee	2,200	81	0.178	0.320
*Naperville	14,000	172	2.41	4.34
New Lenox	15,500	110	1.71	2.57
*Park Forest	9,000	93	0.837	1.67
Park Forest South	25,500	135	3.44	6.19
Peotone	3,700	120	0.444	0.799
Plainfield	21,500	152	3.27	5.89
*Richton Park	3,200	88	0.282	0.508
Rockdale	2,750	205	0.564	0.846
Romeoville	24,000	101	2.42	4.11
Shorewood	10,150	82	0.832	2.25
*Steger	8,100	101	0.818	1.47
Symerton	220	91	0.020	0.036
*Tinley Park	5,000	120	0.600	1.08
Wilmington	6,500	122	0.793	1.27

\*Will County portion



## BOLINGBROOK

The Village of Bolingbrook, whose municipal limits extend into DuPage County, is located in DuPage Township in the Northern portion of the County. Two separate water supply systems serve Village residents. The Village itself provides water to residents in roughly the Northeastern portion of the Village, including those residents living in DuPage County. Citizens Utilities provides water to roughly the Southern and Western portions of the Village, and is interconnected with the Santa Fe Industrial District water supply.

Examining the Village as a single entity, current water demand for the Will County portion is 3.72 mgd or approximately 99 gpcd. 79 percent of pumped water is accounted for. The projected 2010 average water demand is 5.51 mgd or 102 gpcd for the Will Co. portion and the projected maximum day ratio is assumed to be 1.8 based on ratios in other Will County communities.

## BRAIDWOOD

The Village of Braidwood is located in Reed Township in the Southwestern corner of the County. Current water demand is 0.357 mgd or approximately 97 gpcd. The projected 2010 average water demand is 0.60 mgd or 102 gpcd, and the projected maximum day ratio is 1.8.

## CHANNAHON

The Village of Channahon is located in Channahon Township, with municipal limits extending into Troy Township. A small portion of the Village, Fairhaven Heights Subdivision, is served by a

public water supply system; other residents obtain water through individual wells. Current water demand including those on wells is 0.29 mgd or approximately 69 gpcd. Assuming a public water supply for the entire community, the projected 2010 average water demand is 0.84 mgd and 76 gpcd. The projected maximum day ratio is 1.8.

#### CREST HILL

The Village of Crest Hill is located in Lockport Township, with municipal limits extending into Joliet, Plainfield and Troy Townships. Current water demand is 0.80 mgd or approximately 83 gpcd, with 85 percent of pumped water accounted for. The projected 2010 average water demand is 1.24 mgd or 88 gpcd, and the projected maximum day ratio is 1.8.

#### CRETE

The Village of Crete is located in Crete Township in Eastern Will County. Current water demand is 0.47 mgd or 81 gpcd. The projected 2010 average water demand is 1.05 mgd or 86 gpcd, and the projected maximum day ratio is 1.8.

#### ELWOOD

The Village of Elwood is located in Jackson Township. Current water demand is 0.07 mgd or approximately 90 gpcd. The projected 2010 average water demand is 0.11 mgd or 98 gpcd, and the projected maximum day ratio is 1.8. Variations in weather such as wet and dry seasons could increase water use in Elwood by up to 5 gpcd for any year.

## FRANKFORT

The Village of Frankfort is located in Frankfort Township. The current water demand is 0.62 mgd or 130 gpcd, but has been typically higher in the recent past. The projected 2010 average water demand is 0.80 mgd or 144 gpcd, and the projected maximum day ratio is 1.8. Variations in weather could increase water use in Frankfort by up to 5 gpcd for any year.

## GODLEY

The Village of Godley, whose municipal limits extend into Grundy County, is located in Reed Township, in Southern Will County. As no public water system currently exists, all residents use individual wells. NIPC has estimated current usage to be 0.03 mgd or 93 gpcd for the Will County portion. The projected 2010 average water demand is 0.05 mgd or 95 gpcd, for the Will County portion and the projected maximum day ratio is 1.8.

## JOLIET

The City of Joliet, the largest city in Will County, is located on the Des Plaines River in Joliet Township. Municipal limits extend into Channahon, New Lenox, Plainfield and Troy Townships.

Over the past 14 years, the accountability of water pumped has varied between 62 percent and 74 percent. During the same period, the maximum day ratio has varied between 1.2 and 1.4, while water demand has varied between 120 gpcd and 168 gpcd. The relatively high per capita use is due, in part, to a large number of water-using industries. Current water demand is 11.7 mgd or 146 gpcd.

The projected 2010 average water demand is 14.8 mgd or 156 gpcd, and the projected maximum day ratio is 1.4. Variations in weather could increase water use in Joliet by up to 5 gpcd for any year.

#### LOCKPORT

The City of Lockport is located in Lockport Township. Approximately 61 percent of the water pumped is accounted for in customer billing. Current usage is 1.12 mgd or 114 gpcd deducting is made for water provided to Lockport Township. The projected 2010 average water usage is 2.59 mgd or 127 gpcd, and the projected maximum day ratio is to be 1.8. Variations in weather could increase water use in Lockport by up to 10 gpcd for any year. Lockport township is considered separately as a water service area.

#### MANHATTEN

The Village of Manhattan is located in Manhattan Township. Current water demand is 0.18 mgd or 92 gpcd and the present maximum day ratio is 1.34, although it has been as high as 1.77. The projected 2010 average water demand is 0.27 mgd or 96 gpcd, and the projected maximum day ratio is 1.8.

#### MINOOKA

The Village of Minooka, located in Eastern Grundy County, has municipal limits which extend into Channahon Township. Current water demand for the Will County portion is 0.015 mgd or approximately 100 gpcd. The projected 2010 average water demand for the Will County portion is 0.021 mgd or 107 gpcd, and the projected maximum day ratio is 1.8.

#### MOKENA

The Village of Mokena is located in Frankfort Township. The current water demand is 0.40 mgd or approximately 73 gpcd, although it has been as high as 129 gpcd in the past 5 years. The current maximum day ratio is approximately 1.8. The projected 2010 average water demand is 1.24 mgd or 90 gpcd, and the projected maximum day ratio is 1.8. Variations in weather could increase water use in Mokena by up to 5 gpcd for any year.

#### MONEE

The Village of Monee is located in Monee Township in Western Will County. Present water demand is 0.07 mgd or approximately 67 gpcd, but has been quite variable in the recent past. The projected 2010 average water demand is 0.18 mgd or 81 gpcd, and the projected maximum day ratio is 1.8. Variations in weather could increase water use in Monee by up to 5 gpcd for any year.

#### NAPERVILLE

The City of Naperville, located in DuPage County, has municipal limits extending into Northern DuPage and Wheatland Townships. NIPC has projected significant growth of Naperville's Will County portion. Current village-wide water demand is 168 gpcd; the maximum day ratio is presently 1.5 and approximately 88 percent of the water pumped is accounted for. Current demand for the Will County portion is 0.28 mgd. The projected 2010 average water demand for the Will County portion is 2.41 mgd or 172 gpcd, and the projected maximum day ratio is 1.8.

## NEW LENOX

The Village of New Lenox is located in New Lenox Township. Two storage and distribution systems serve residents. Combined current water demand is 0.60 mgd or approximately 92 gpcd; the present maximum day ratio is approximately 1.4. Accountability has averaged 95 percent for the past four years. The projected 2010 average water demand is 1.71 mgd or 110 gpcd, and the projected maximum day ratio is 1.5.

## PARK FOREST

The Village of Park Forest is located in Southern Cook County, with municipal limits extending into Monee and Crete Townships. NIPC has forecast little growth for the Cook County portion of the Village, but has forecast significant growth for the Will County portion.

Approximately 91 percent of the water pumped is accounted for. Current water demand for the Will County portion is 0.30 mgd or approximately 81 gpcd; the maximum day ratio has historically been roughly 1.8. The projected 2010 average water demand for the Will County portion is 0.84 mgd or 93 gpcd and the projected maximum day ratio is 2.0. Variations in weather could increase water use in Park Forest by up to 5 gpcd for any year.

## PARK FOREST SOUTH

The Village of Park Forest South is located in Monee and Crete Townships in Eastern Will County. Water demand is presently 0.76 mgd or 106 gpcd, with approximately 90 percent of the water pumped accounted for. The projected 2010 average water demand is 3.44 mgd or 135 gpcd, and the projected maximum day ratio is



1.8. Variations in weather could increase water use in Park Forest South by up to 10 gpcd for any year.

#### PEOTONE

The Village of Peotone is located in Peotone and Will Townships. Current water demand is 0.34 mgd or approximately 117 gpcd, with 73 percent of the water pumped accounted for. Projected 2010 average water demand is 0.44 mgd or 120 gpcd, and the projected maximum day ratio is 1.8.

#### PLAINFIELD

The Village of Plainfield is located in Plainfield Township in Northwestern Will County. Approximately 80 percent of the water pumped is accounted for. Current water demand is 0.60 mgd or 132 gpcd, but was as high as 163 gpcd in 1980. The projected 2010 average water demand is 3.27 mgd or 152 gpcd, and the projected maximum day ratio is 1.8. Variations in weather could increase water use in Plainfield by up to 10 gpcd for any year.

#### RIGHTON PARK

The Village of Richton Park is located in Southern Cook County, but is forecast by NIPC to expand over county lines into Monee Township. NIPC has projected a 2010 average water demand of 88 gpcd or 0.28 mgd for the Will County portion. The projected maximum day ratio is 1.8.

#### ROCKDALE

The Village of Rockdale is located in Joliet Township in central Will County. A small portion of Rockdale residents have water

provided by the City of Joliet; the majority are serviced by the Village. Current water demand is 0.39 mgd or 192 gpcd; the present maximum day ratio is 1.45. Like Joliet, the large per capita demand is due to industrial water users.

The projected 2010 average water demand is 0.56 mgd or 205 gpcd, and the projected maximum day ratio is 1.5. Variations in weather could increase water use in Rockdale by up to 10 gpcd for any year.

#### ROMEDEVILLE

The Village of Romeoville is located west of the DuPage River in DuPage and Lockport Townships. Three separate distribution systems serve residents. Current water demand is 1.62 mgd or approximately 100 gpcd, and the present maximum day ratio is approximately 1.7. The projected 2010 average water demand is 2.42 mgd or 101 gpcd, and the projected maximum day ratio is 1.7.

#### SHOREWOOD

The Village of Shorewood, located in Troy Township, has approximately 70% of its residents served by the Will County Water Company. The balance of its residents use individual wells. All residents including those on wells and on Will County water currently use approximately 0.40 mgd or 78 gpcd; the current maximum day ratio is 2.5. Similar usage data is assumed to apply to those on individual wells. The projected average 2010 water demand is 0.83 mgd or 82 gpcd, and the projected maximum day ratio is 2.7.



#### STEGER

The Village of Steger is located in Crete Township, with municipal limits extending into Southern Cook County. Current Will County water demand is 0.54 mgd or approximately 89 gpcd, although past demand has typically been higher. 72 percent of the water pumped is accounted for. The projected 2010 Will County average water demand is 0.82 mgd or 101 gpcd, and the projected maximum day ratio is 1.8. Variations in weather could increase water use in Steger by up to 10 gpcd for any year.

#### SYMERTON

The Village of Symerton is located in Florence Township. As in Godley, all residents obtain water from individual wells. NIPC has estimated usage to presently be 91 gpcd or 0.012 mgd. The projected 2010 water demand is 0.020 mgd at 91 gpcd, and the projected maximum day ratio is 1.8.

#### TINLEY PARK

The Village of Tinley Park is located in Cook County, but has municipal limits which extend into Frankfort Township. Although the 1980 Will County portion of the Village was quite small, significant growth is forecast for the area. NIPC has projected an average 2010 Will County water demand of 120 gpcd or 0.60 mgd, and the projected maximum day ratio is 1.8.

#### WILMINGTON

The City of Wilmington is located on the Kankakee River in Wilmington Township. Current water demand is 0.52 mgd or 114 gpcd, and the current maximum day ratio is approximately 1.6.

The projected 2010 average water demand is 0.79 mgd or 122 gpcd, and the projected maximum day ratio is 1.6. Variations in weather could increase water use in Wilmington by up to 5 gpcd for any year.

#### Nonmunicipal Water Use

Water use data was obtained for the larger nonmunicipal water service areas supplied by both utility companies and semi public systems such as service districts and homeowners associations. An inventory of these non-municipal supplies was obtained from the IEPA Division of Public Water Supplies and suppliers serving communities with a 1980 population greater than 500 were contacted. Water system information was requested for the period 1950 to 1982. All information received was considered in making projections. Water use for 1980 and for 1982 is shown in Tables 4-6 and 4-7, respectively.

With the single exception of Lockport Township, which obtains water from the cities of Joliet and Lockport, all service areas contacted obtain water from their own wells. Prestwick Utility Co. is the only community contacted which is not entirely in Will County.

Using available population and water usage data, projections of future water consumption for the 17 water service areas examined were made. These projections are shown in Table 4-8.

Other users of water for domestic purposes include those residents served by smaller water supply systems, and using individual wells. These are not included in the previously discussed water service areas. Population projections and

TABLE 4-6  
NONMUNICIPAL WATER USE DATA  
1980

WATER SERVICE AREA	POPULATION	PER CAPITA CONSUMPTION (GPCD)	WATER DEMAND (MGD)	
			AVE. DAY	MAX. DAY
Bonnie Brae-				
Forest Manor	2,000	71	0.141	0.229
Chickasaw Hills	3,402	99	0.336	0.800
Citizens Utilities -				
Arbury Hills	1,291	116	0.149	
College View	600	72	0.043	
Crystal Lawns	1,442	88	0.127	
Derby Meadows	3,900	83	0.324	0.400
Eastmoreland	--	--	--	
Ingalls Park	--	--	0.048	0.062
			(1975)	
Kankakee Water Co. -				
Dixie Dells	540	70	0.038	
Willowbrook Estates	830	131	0.109	
Lakewood Shores	885	80	0.071	0.085
	(1978)			
Lockport Heights	1,000	83	0.083	
Lockport Township	2,800	61	0.170	
Preston Heights	1,870	93	0.173	
Utilities, Inc.:				
Cherry Hill	800	70	0.056	
	(1981)			
Frankfort Square	4,690	74	0.350	0.460
	(1979)			
Prestwick	--	--	--	

TABLE 4-7  
NONMUNICIPAL WATER USE DATA  
1982

WATER SERVICE AREA	POPULATION	PER CAPITA CONSUMPTION (GPCD)	WATER DEMAND (MGD)	
			AVE. DAY	MAX. DAY
Bonnie Brae-				
Forest Manor	2,000	73	0.145	
Chickasaw Hills	3,685	92	0.340	1.20
Citizens Utilities -				
Arbury Hills	1,300	120	0.156	0.613
College View	600	72	0.043	
Crystal Lawns	1,442	67	0.097	
Derby Meadows	--	--	0.350	
Eastmoreland	625	67	0.042	
Ingalls Park	759	72	0.055	0.070
Kankakee Water Co. -				
Dixie Dells	550	75	0.041	
Willowbrook Estates	850	151	0.129	0.393
Lakewood Shores	750	55	0.041	
Lockport Heights	1,000	80	0.080	
Lockport Township	3,060	54	0.166	
Preston Heights	1,860	102	0.189	
Utilities, Inc.:				
Cherry Hill	805	99	0.079	
Frankfort Square	5,096	80	0.407	
(1) Prestwick	1,327	84	0.111	

(1) Will County portion

TABLE 4-8

## PROJECTED NONMUNICIPAL WATER CONSUMPTION

WATER SERVICE AREA	1990			2000			2010		
	POPULATION	AVE. DAY DEMAND	MAX. DAY DEMAND	POPULATION	AVE. DAY DEMAND	MAX. DAY DEMAND	POPULATION	AVE. DAY DEMAND	MAX. DAY DEMAND
Bonnie Brae - Forest Manor	2,000	0.146	0.248	2,000	0.146	0.248	2,000	0.146	0.248
Chickasaw Hills	4,000	0.372	1.30	4,200	0.391	1.37	4,400	0.409	1.43
Citizens Utilities:									
Arbury Hills	1,350	0.162	0.632	1,380	0.166	0.647	1,400	0.168	0.655
College View	600	0.043	0.060	600	0.043	0.060	600	0.043	0.060
Crystal Lawns	1,400	0.094	0.188	1,350	0.090	0.180	1,300	0.087	0.174
Derby Meadows	3,800	0.315	0.410	3,700	0.307	0.399	3,650	0.303	0.394
Eastmoreland	650	0.044	0.088	650	0.044	0.088	650	0.044	0.088
Ingalls Park	850	0.061	0.079	900	0.065	0.085	900	0.065	0.085
Kankakee Water Co.:									
Dixie Dells	600	0.044	0.088	630	0.047	0.094	660	0.049	0.098
Willowbrook Estates	900	0.131	0.393	950	0.138	0.414	1,000	0.145	0.435
Lakewood Shores	700	0.042	0.050	650	0.039	0.047	650	0.039	0.047
Lockport Heights	1,050	0.084	0.126	1,100	0.088	0.132	1,150	0.092	0.138
Lockport Township	3,000	0.168	0.336	2,500	0.140	0.280	2,000	0.112	0.224
Preston Heights	1,900	0.186	0.261	1,950	0.191	0.268	2,000	0.196	0.274
Utilities Inc.:									
Cherry Hill	820	0.074	0.148	820	0.074	0.148	820	0.074	0.148
Frankfort Square	5,300	0.424	0.551	5,350	0.428	0.556	5,400	0.432	0.562
*Prestwick	1,450	<u>0.126</u>	<u>0.164</u>	1,550	<u>0.135</u>	<u>0.176</u>	1,600	<u>0.139</u>	<u>0.181</u>
Totals		2.516	5.122		2.532	5.192		2.543	5.241

\*Will County portion

estimates of per capita usage were used to develop future water consumption projections for those county residents not included in the preceeding usage estimates. Water use projections by township for those residents appear in Table 4-9. Any areas where significant water use is projected will be considered in the analysis of alternate regional water systems.

#### Industrial and Institutional Water Use

Industrial participation can have significant impact on the planning of a regional water system. Several Will County industries and companies and other institutions were contacted to obtain water use information. Based on contacts made with industries and information obtained from the ISWS, larger water users were requested to furnish current and historical water use data, as well as projected future water use.

Responses to questionnaires varied widely and with two exceptions, estimates for future water use were not provided. As a result, projections were developed by extrapolating available historical data. Where data did not show a growth trend, generally constant future water use was projected. Municipal water demand projections included those industries to which the municipality supplies water, and those industries are not included in this analysis.

Table 4-10 summarizes historical and projected water use for larger industrial and institutional water users. Water use shown for 1983 and prior years represent data provided by the user and/or the ISWS. Projected water use is shown for years following 1983.

TABLE 4-9

PROJECTED WATER CONSUMPTION FOR  
RURAL WILL COUNTY RESIDENTS

TOWNSHIP	AVERAGE PROJECTED WATER DEMAND (MGD)		
	1990	2000	2010
Channahon	0.126	0.127	0.128
Crete	0.645	0.663	0.679
Custer	0.112	0.116	0.133
DuPage	0.080	0.048	0.041
Florence	0.089	0.103	0.114
Frankfort	0.444	0.478	0.505
Green Garden	0.144	0.150	0.156
Homer	0.900	1.18	1.40
Jackson	0.196	0.214	0.228
Joliet	1.03	0.756	0.512
Lockport	0.538	0.281	0.201
Manhattan	0.128	0.135	0.140
Monee	0.118	0.113	0.089
New Lenox	0.880	0.802	0.732
Peotone	0.068	0.076	0.080
Plainfield	0.711	0.303	0.201
Reed	0.048	0.074	0.081
Troy	0.353	0.281	0.220
Washington	0.153	0.166	0.176
Wesley	0.164	0.129	0.121
Wheatland	0.352	0.272	0.220
Will	0.096	0.100	0.100
Wilmington	0.180	0.192	0.201
Wilton	<u>0.068</u>	<u>0.076</u>	<u>0.084</u>
Totals	7.62	6.84	6.54



TABLE 4-10

## INDUSTRIAL &amp; INSTITUTIONAL DATA &amp; PROJECTIONS

NAME	YEAR	WATER USE (MGD)		COMMENTS
		AVE. DAY	MAX. DAY	
Alcan Aluminum	1983	0.060	0.144	Ave. Day - ISWS Data Max. Day - Alcan Est.
	1990	0.060	0.144	
	2000	0.060	0.144	
	2010	0.060	0.144	
Amoco Chemicals	1975	2.12		
	1976	1.31		
	1977	1.28		
	1978	1.30		
	1979	1.25		
	1980	1.36		
	1981	1.45		
	1982	1.31		
	1983	--	--	
	1990	1.69		
	2000	1.36		
	2010	1.00		
Caterpillar Tractor	1975	0.932		Water obtained from wells & City of Joliet
	1976	0.917		
	1977	0.909		
	1978	0.989		
	1979	1.018		
	1980	0.995		
	1981	1.163		
	1982	0.965		
	1983	--	--	
	1990	1.00		
	2000	1.00		
	2010	1.00		
Chicago Joliet Livestock	1983		0.03	C-J Livestock Estimation
	1990		0.03	
	2000		0.03	
	2010		0.03	



TABLE 4-10 (Continued)

## INDUSTRIAL &amp; INSTITUTIONAL DATA &amp; PROJECTIONS

NAME	YEAR	WATER USE (MGD)		COMMENTS
		AVE. DAY	MAX. DAY	
Citizens Utilities - Santa Fe Industrial District	1975	0.023		
	1976	0.046		
	1977	0.076		
	1978	0.069		
	1979	0.124		
	1980	0.280		
	1981	0.430		
	1982	0.038	0.750	
	1983	--	--	
	1990	0.110	0.75	
	2000	0.120	0.75	
	2010	0.120	0.75	
Commonwealth Edison - Station 29	1982	0.351	0.516	Well water usage
	1983	--	--	
	1990	0.360	0.525	
	2000	0.360	0.525	
	2010	0.360	0.525	
Commonwealth Edison - Station 9	1977	0.211		Well water usage
	1978	0.188		
	1979	0.205		
	1980	0.174		
	1981	0.174		
	1982	0.212	2.296	
	1983	--		
	1990	0.200	2.30	
	2000	0.200	2.30	
	2010	0.200	2.30	
Commonwealth Edison - Will Co. Station	1975	0.532		Well water usage
	1976	0.562		
	1977	0.630		
	1978	0.692		
	1979	0.642		
	1980	0.594		
	1981	0.764		
	1982	0.615		
	1983	--	--	

TABLE 4-10 (Continued)  
INDUSTRIAL & INSTITUTIONAL DATA & PROJECTIONS

NAME	YEAR	WATER USE (MGD)		COMMENTS
		AVE. DAY	MAX. DAY	
Commonwealth Edison - Will Co. Station (Continued)	1990	0.700		
	2000	0.750		
	2010	0.750		
Desoto Chemical	1983	0.025		Desoto Estimation
	1990	0.025		
	2000	0.025		
	2010	0.025		
Dow Chemical	1983		0.050	Dow Estimation
	1990		0.050	
	2000		0.050	
	2010		0.050	
Elgin, Joliet & Eastern Railway Co.	1960	0.178	0.340	Water obtained from wells & City of Joliet
	1965	0.208	0.370	
	1970	0.244	0.330	
	1975	0.143	0.225	
	1976	0.146	0.250	
	1977	0.152	0.250	
	1978	0.156	0.330	
	1979	0.175	0.500	
	1980	0.164	0.300	
	1981	0.165	0.240	
	1982	0.123	0.250	
	1983	--	--	
	1990	0.140	0.250	
	2000	0.130	0.240	
	2010	0.120	0.230	
Glidden Durkee	1982	0.712		Durkee estimates constant usage from 1975 to 1982
	1983	--	--	
	1990	0.712		
	2000	0.712		
	2010	0.712		

TABLE 4-10 (Continued)

## INDUSTRIAL &amp; INSTITUTIONAL DATA &amp; PROJECTIONS

NAME	YEAR	WATER USE (MGD)		COMMENTS
		AVE. DAY	MAX. DAY	
Joliet Army Ammunition Plant	1975	0.647		Well water usage
	1976	0.647		
	1977	0.630		
	1978	0.630		
	1979	0.740		
	1980	0.740		
	1981	0.712		
	1982	0.740		
	1983	--	--	
	1990	0.740		
Joliet Correctional Center	2000	0.740		
	2010	0.740		
	1978	0.326		
	1979	0.296		
	1980	0.288		
	1981	0.280		
	1982	0.262		
	1983	--	--	
	1990	0.220		
	2000	0.200		
Joliet Park District - Pilcher Park	2010	0.190		Ave. Day - ISWS Data Max. Day - Park Est.
	1983	0.150	0.200	
	1990	0.150	0.200	
	2000	0.150	0.200	
	2010	0.150	0.200	
Joyce Beverages	1983	0.120		Joyce Estimation
	1990	0.120		
	2000	0.120		
	2010	0.120		
Lewis College	1982	0.108		
	1983	--	--	

TABLE 4-10 (Continued)  
INDUSTRIAL & INSTITUTIONAL DATA & PROJECTIONS

NAME	YEAR	WATER USE (MGD)		COMMENTS
		AVE. DAY	MAX. DAY	
Lewis College (Continued)	1990	0.108		
	2000	0.108		
	2010	0.108		
Manville Corp.	1982	0.216		Manville Estimation
	1983	--	--	
	1990	0.216		
	2000	0.216		
	2010	0.216		
Mobil Chemical	1983		0.045	Mobil Estimation
	1990		0.045	Mobil Projection
	2000		0.045	
	2010		0.045	
Mobil Corporation	1983	0.070		Well water usage
	1990	0.070		
	2000	0.070		
	2010	0.070		
Olin Chemicals	1975	2.397		
	1976	1.781		
	1977	1.628		
	1978	1.272		
	1979	1.068		
	1980	1.147		
	1981	0.967		
	1982	0.917		
	1983	--	--	
	1990	0.700		
	2000	0.600		
	2010	0.550		

TABLE 4-10 (Continued)

## INDUSTRIAL &amp; INSTITUTIONAL DATA &amp; PROJECTIONS

NAME	YEAR	WATER USE (MGD)		COMMENTS
		AVE. DAY	MAX. DAY	
Prairie State Paper	1983		0.720	Prairie Estimation Well water usage
	1990		0.720	
	2000		0.720	
	2010		0.720	
Peoples GL&C Co.	1978	0.958		
	1979	0.548		
	1980	0.350		
	1981	0.349	1.176	
	1982	0.422	1.475	
	1983	--	--	
	1990	0.350	1.20	
	2000	0.300	1.10	
	2010	0.300	1.00	
Stateville Correctional	1977	1.160	1.40	
	1978	1.035	1.20	
	1979	1.026	1.10	
	1980	0.863	1.00	
	1981	0.766	0.90	
	1982	0.801	0.90	
	1983	--	--	
	1990	0.500	0.600	
	2000	0.400	0.470	
	2010	0.350	0.400	
Stepan Chemical	1979	0.772		
	1980	0.885		
	1981	0.986		
	1982	0.861		
	1983	--	--	
	1990	0.860		
	2000	0.860		
	2010	0.860		

TABLE 4-10 (Continued)  
INDUSTRIAL & INSTITUTIONAL DATA & PROJECTIONS

NAME	YEAR	WATER USE (MGD)		COMMENTS
		AVE. DAY	MAX. DAY	
Union Oil Co.	1982	0.189		Well water usage
	1983	--	--	
	1990	0.190		
	2000	0.190		
	2010	0.190		

The possibility of participation by large industrial and institutional water users in a regional water system has been addressed in this report only as a basis for presentation of water use data. Industries and institutions currently using large amounts of well water were selected for inclusion of data. Industries using both surface water sources and wells where participation in a regional system is a possibility were also included. These are Commonwealth Edison Co., Mobil Oil Corp., Union Oil Co. and Joliet Army Ammunition Plant which maintains surface sources on a standby basis.

Other industries using surface water sources were considered as not likely to participate in any regional system.

The impact of industrial and institutional participation or nonparticipation in any regional water system will be considered in the analysis of alternate regional systems.

#### Water Accountability

Based upon information provided by Will County public water supply systems current water accountability in the County averages approximately 79 percent. This figure could increase in the future as a result of individual water system improvements. An evaluation of water system management to determine any improvement would include meter replacement or recalibration, hydrant improvement, valve maintenance, leakage detection and establishment of procedures to account for water used, but not metered. By taking actual measurements, or by using existing technology to make reasonable estimates of water uses such as fire fighting, system leakage, water main flushing, street cleaning, and use at Municipal buildings, it should be possible to reduce the unaccounted water usage to approximately 12-15 percent.

An assessment of factors involved in water accountability may be used as a guideline in order for each municipality or water service area to assess the extent to which the accountability of water may be increased.

A major item of unaccounted for water is meter inaccuracies. As the ordinary disc meter wears out, it under-registers, which is in favor of the customer.

Unrecorded municipal usage is another source of unaccounted water usage. Examples of this type of usage include sewer flushing, street draining, hydrant flushing, fire fighting, and unmetered municipal usage.

In every water distribution system there is a percentage of water lost because of detectable and non-detectable leakage. A continuing leak detection program either by staff or consultant service would locate leaks in mains so they can be repaired. Fire hydrants would be checked for leakage, proper shut off and auxiliary shut off valves. Valves are probably the most neglected part of the water system when it comes to preventive maintenance. Defects found by inspection of valves are of three types: the valves being inaccessible, inoperable, or closed. Because valves must be closed in the shortest possible time to prevent damage and loss of water from breaks, the importance of preventing these types of defects is apparent.

#### Water Conservation

A survey of water conservation policies and practices for public water suppliers was not performed for Will County. Significantly reduced usage could result if new conservation ordinances are initiated, or if existing ordinances are enforced where this is not now the case.



Possible conservation measures include:

- 1) Metering of all new water services.
- 2) Conducting leakage detection and control programs on all public water systems on an annual basis.
- 3) Establishing water rate structures at flat or increasing rates so as to discourage excessive water use.
- 4) Modifying local plumbing codes where necessary to ensure that new construction makes use of water conserving devices, fixtures and trim.
- 5) Discontinuing of sewer flushing with potable water.

Private utility companies may not be able to enforce any water conservation ordinances and would have to rely on the municipality in which their service is situated.

As discussed, improvement in water accountability would help to reduce water demand. The present range in water accountability is estimated to vary from 61 percent to over 95 percent. It might be expected that an increase in water accountability from an average of 79 percent to approximately 86 percent would not result in a similar full 7 percent reduction in water demand. Some of the newly identified use would become chargeable use, with the remainder reflecting actual loss reduction. We estimate the savings due to increased accountability would be 4 percent.

A 5 percent to 15 percent reduction in water demand may be achieved through conservation practices. Results may be expected to vary seasonally and between municipalities. However, a

reasonable average estimate of savings realized for the municipalities and water service areas considered would be 7 percent.

The total effect of these measures on reduction is estimated to average 11 percent. This is subject to variations in interpretation, along with the other considerations relating to variations in estimates included earlier in this chapter.