ECONOMIC & FISCAL IMPACTS

of the PINELANDS COMPREHENSIVE MANAGEMENT PLAN

July 1983

NEW JERSEY PINELANDS COMMISSION

FOREWORD

The Pinelands Commission has been collecting and analyzing economic data for the Pinelands region for nearly two years, and this report represents the culmination of that effort. The primary staff members responsible for conducting this study are Lisa Rosenberger and Susan Sullivan. Robert E. Coughlin of the University of Pennsylvania prepared the analysis of agricultural financing contained in Chapter V. The Commission would also like to acknowledge the invaluable assistance of Robert Johnston of the New Jersey Department of the Treasury, Division of Taxation and the following municipal tax assessors: Dorothy Montag (Galloway Township), Joseph Perella (Hamilton Township), Warren Murphy (Hammonton Town), Henry Haines (Medford Township), Walter Kosul (Pemberton Township), John Keller (Woodland Township), Stephen Kessler (Winslow Township), Walter Robinson (Dennis Township), Edward Carlisle (Maurice River), Bruce Coyle (Monroe Township), John Coan (Jackson Township), and Joyce Jones (Manchester Township).

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EXECUTIVE SUMMARY

The Comprehensive Management Plan for the New Jersey Pinelands, implemented on January 14, 1981, seeks to protect and enhance the land and water resources of the Pinelands while providing for economic growth and residential development consistent with the objectives of the Pinelands Protection Act of 1979. To achieve these goals, the Plan limits development in most of the undeveloped portions of the 934,000-acre Pinelands Area, and directs future growth to fringe areas, which had already begun to develop at the time of the Plan's adoption. Municipalities are required to revise their master plans and zoning ordinances to be consistent with the objectives of the Plan. To date, 35 of the 52 municipalities in the Pinelands Area have been conditionally or unconditionally certified by the Pinelands Commission as being in conformance with the Plan.

The implementation of comprehensive land use controls in the Pinelands has generated considerable public controversy. Political opposition to the Comprehensive Management Plan has focused primarily on its perceived negative economic impacts. Since very little research has been devoted to the economic effects of land use regulation and since the Pinelands are unique in many respects, it was not known to what extent the CMP would influence land markets and economic growth in the region. An economic analysis of the CMP, prepared for the Pinelands Commission prior to the

Plan's adoption, predicted that land values and associated tax assessments would be affected positively in some areas and negatively in others, depending upon pre-existing levels of development pressure and the amount of growth permitted under the Plan. Similarly, the Plan's impacts on the regional economy were expected to differ by industry, benefiting those which are dependent upon the natural resources of the area, while constraining the expansion of growth-related industries in restricted areas. Since the Plan reinforces existing patterns of development, its implementation was not expected to have major economic consequences for the region as a whole.

The current study analyzes the short-term impacts of the Comprehensive Management Plan on land markets, housing markets, employment, resource industries, and the fiscal condition of municipalities throughout the region. The data analyzed cover a period of no more than two years after the enactment of the Plan, during which time all or most of the towns had not yet been certified as being in conformance with the Plan. Therefore, the results of the analysis must be considered preliminary. As the Plan is implemented at the local level and as more time elapses, more definitive conclusions about the Plan's impacts can be drawn.

A major focus of the study is the effect of the Plan on land values in the Pinelands. Statistical analyses of data on land transactions in fifteen municipalities from 1976 to 1982 show that the CMP has apparently had little or

no overall effect on prices per acre in the Protection Area, at least during the limited time period studied. Relative to land prices outside the Pinelands Area, prices in the Forest Area, Agricultural Production Area, Rural Development Area, and Pinelands Towns and Villages dropped during the "moratorium" period (1979-1980), while prices rose somewhat in the Regional Growth Areas. After the Comprehensive Management Plan went into effect, however, these trends were reversed, with none of the management areas showing a decline in relative prices. Results for the Preservation Area were not statistically significant; however, only four private market transactions occurred there in 1981 and 1982 in the towns analyzed, indicating a significant decrease in market activity.

Analyses of residential sales throughout the 52 Pinelands towns show no discernable effect on the overall level of housing sales or on housing prices in the Pinelands. However, new construction, as gauged by the number of residential building permits issued, dropped rather sharply during the moratorium period, both in absolute terms and in relation to the region and the state. Since the adoption of the Plan, the total number of permits issued in the Pinelands communities has continued to decline, but at a slower rate than in the seven-county region as a whole. Therefore, this decline seemingly reflects general economic conditions rather than restrictions on development imposed by the Plan.

No significant shifts in overall employment trends have been observed since the implementation of the Plan, nor have any major impacts on the resource extraction industry and agriculture been identified. Farm Credit Associations and the Farmers Home Administration office in the Pinelands Area report that no farmer has thus far been unable to obtain the farm loans needed because of a reduction in land values caused by Pinelands regulations. In addition, a survey of all counties in the U.S. that were known to have agricultural zoning ordinances as of 1980 shows that not one has reported that agricultural zoning has caused credit problems. It is the practice of lending institutions to lend enough money to meet the business needs of a farmer with the expectation that he will pay off the loan through the income generated from his farming operations, not by selling the farm at high development values. Therefore, the Plan should not cause major farm credit problems in the future.

Since the adoption of comprehensive land use controls in the Pinelands, some landowners have successfully appealed their tax assessments, and several municipal assessors have conducted across-the-board reassessments of vacant properties in the restricted areas. In addition, the Department of Environmental Protection has purchased large amounts of land in the Pinelands since 1980. These factors have resulted

[1]To date, land values in Agricultural Production Areas have not decreased in the thirteen towns studied.

in a reduction in the assessed value of vacant land in some parts of the Pinelands Area. In general, however, the effects of these reductions on total assessed valuation has been minor (two percent or less). Instead, the primary cause of increased tax bills in the region is increased public spending for municipal functions, schools, and county services. Only Woodland Township, which is located in the heart of the Preservation Area, has lost a significant portion of its ratable base due to Pinelands-related tax appeals and acquisitions, and has suffered large increases in residential tax bills as a result.

Fiscal and economic trends in the Pinelands should continue to be monitored, so that longer-term impacts may be identified. In terms of public policy, it is recommended that the state legislature adopt a payment in lieu of tax program to reimburse towns for all tax revenues lost as a result of state acquisitions of land in the Pinelands. In addition, a program to provide financial assistance to towns which have lost significant portions of their ratable bases due to Pinelands-related tax appeals and reassessments should be adopted.

I

Introduction

The New Jersey Pinelands encompasses an area of nearly one million acres in parts of seven counties in Southern New Jersey (Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Ocean). While much of the Pinelands remains essentially undeveloped, a variety of economic activities and residential land uses are found in the region, particularly in fringe areas. In 1980, the population of the 52 municipalities which are located wholly or partly within the Pinelands Area was 494,999, 50 percent higher than in 1970. The number of housing units in these towns increased by 79 percent during the 1970s, compared to only a 16 percent increase statewide. Thus, the Pinelands region has been one of the fastest growing areas of the state. The thirteen Ocean County municipalities as a group have absorbed the largest amount of population growth, increasing from 64,725 in 1970 to 142,476 in 1980. Seventy percent of the region's population is located in Atlantic, Burlington, and Ocean Counties.

The current program of planning and management of the Pinelands originated with the National Parks and Recreation Act, signed into law by President Carter in November 1978. This legislation delineated the Pinelands National Reserve and authorized the establishment of a Commission to prepare a Comprehensive Management Plan for the Reserve. Pursuant to this legislation, Governor Brendan T. Byrne issued Executive Order 71 on February 8, 1979, which

created the Pinelands Planning Commission to prepare the Comprehensive Management Plan. In addition, most development in the Pinelands was made subject to review and approval by the Commission.

In June 1979, the Pinelands Protection Act was passed by the state legislature. This law essentially confirmed the establishment of the Pinelands Commission and endorsed the powers of the Commission to plan for the long-term management of the Pinelands in order to protect the area's natural resources, and to regulate development in the Pinelands Area. The Pinelands Area as designated in the Pinelands Protection Act is slightly smaller than the Pinelands National Reserve, and includes a 368,000-acre Preservation Area and a 566,000-acre Protection Area.

The period from the issuance of Exectuve Order 71 in February of 1979 until the Comprehensive Management Plan was implemented in January of 1981 is commonly referred to as the "moratorium" period. In fact, this term is a misnomer, since development in the region was not halted during this time, but rather was made subject to interim rules and regulations adopted by the Pinelands Commission. In some ways, these regulations were less restrictive than those later adopted under the Comprehensive Management Plan; for example, single-family residences on single lots of greater than one acre in the Protection Area were exempt from the Commission's application review process. At the

same time, some of the standards applied were more stringent, particularly in certain areas, than those later adopted under the Plan. Perhaps most importantly from an economic standpoint, the moratorium represented a period of uncertainty for potential investors and developers. It could therefore be expected to have a temporary dampening effect on land and housing markets in the region.

The Preservation Area Plan was adopted by the Pinelands Commission in August 1980 and the Comprehensive Management Plan for the entire Pinelands National Reserve was adopted in November of the same year. The Comprehensive Management Plan went into effect following its signing by the U.S. Secretary of the Interior in January 1981. The Plan designates eight Pinelands Management Areas, as follows:

- Preservation Area
- Forest Areas
- Agricultural Production Areas
- Special Agricultural Production Areas
- Rural Development Areas
- Pinelands Villages and Pinelands Towns
- Regional Growth Areas
- Military and Federal Installation Areas

The Pinelands Commission exercises regulatory powers in those parts of each management area which are located within the Pinelands Area (excluding parts of the National Reserve outside the Pinelands Area).

The minimum standards for development in each of these areas are presented in Appendix A. In general, new development is highly restricted in the Preservation, Special Agricultural Production, Forest, and Agricultural Production Areas, while growth is to be channeled to the Rural Development, Pinelands Towns and Villages, and especially the Regional Growth Areas. In the Preservation Area and Special Agricultural Production Districts, the only permitted residential development is housing for persons with a cultural or economic link to the essential character of the Pinelands. Limited numbers of housing units may be built in the Forest Area, averaging one unit per 15.8 acres of upland, while in the Agricultural Production Areas residential dwellings are permitted at a density of one unit per 10 acres, provided that the dwelling is accessory to an active agricultural operation. In Rural Development Areas and Pinelands Towns and Villages, residences are permitted on lots of 3.2 acres, and in Regional Growth Areas, allowable densities range from 1 to 3.5 dwelling units per acre, contingent upon the existence of public sewerage systems.

The standards contained in the Plan may be waived if prospective developers can demonstrate extraordinary economic hardship or compelling public need. In the first two years following the enactment of the Comprehensive Management Plan, about two-thirds of the approvals represented economic hardship waivers. A grandfather

clause was also in effect for one year following the Plan's enactment. Under this clause, the construction of a dwelling unit as the primary residence of the applicant was permitted on a lot of one acre or more.

An important component of the Comprehensive Management Plan from an economic standpoint is the establishment of the Pinelands Development Credit (PDC) program. Essentially, this program authorizes the transfer of value associated with the development potential of land from the Preservation and Agricultural Production Areas to the Regional Growth Areas, in order to promote a concentrated pattern of growth. PDC's are allocated to property owners in the Preservation and Agricultural Production Areas based on the physical characteristics and use of their land. The PDC's may be bought by property owners in the Regional Growth Areas to increase the allowable densities of development there. In order to facilitate implementation of the PDC program, Burlington County established a Pinelands Development Credit Exchange Board in 1982. The Board may purchase credits from qualified landowners at a fixed price of $10,000 per credit and later resell them at auction. To date, the Board has bought 10.25 credits at a total price of $102,500. On the private market, 5½ credits have been sold at a price of $110,000, or $20,000 per credit. The value of PDC's can help to offset any decline in land values which occur in the Preservation and Agricultural Production Areas.

While the regulations adopted under the Comprehensive Management Plan went into effect in January 1981, the final stage of implementation is not yet complete. Under the Plan, municipalities are required to revise their master plans and zoning ordinances to conform to the standards contained in the Comprehensive Management Plan. In the process, towns may adjust the boundaries of the management areas and adopt regulations specific to each jurisdiction, provided that they are consistent with the overall intent of the Plan. As of this writing, 30 of the 52 towns have been unconditionally certified by the Pinelands Commission as being in conformance with the Plan. For the period analyzed in this report, at most only eleven towns were certified. Thus, this period must be considered a transitional one, subject to at least some degree of uncertainty about the future on the part of investors.

The economic and fiscal impacts of Pinelands land use regulations have been the subject of considerable controversy since their inception. Prior to the adoption of the Plan, an economic analysis was conducted for the Pinelands Commission to determine its potential impacts.[1] Among other things, the analysis indicated that land values could be affected both negatively and positively, depending

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[1] Economic Analysis of the Pinelands Comprehensive Management Plan, prepared for the Pinelands Commission with the assistance of Gloria L. Christian, James C. Nicholas, and Joan E. Towles, November 20, 1980.

on the level of pre-existing growth pressure and amount of development permitted under the Plan. In addition, municipal ratable bases would be impacted to the extent that the value of privately owned vacant land and associated assessments are changed by the implementation of the Plan. Effects on economic growth in the region were expected to be relatively minor, although the impacts would differ by industry.

The data and analysis presented in this report represent an attempt to document the actual effects of land use regulation in the Pinelands on a variety of economic parameters during the moratorium and the period immediately following the adoption of the Comprehensive Management Plan. The basic method used is to compare pre-moratorium, moratorium, and post-Plan adoption trends in the Pinelands with trends outside the Pinelands or throughout the seven-county region and the state. Due to the nature of the data which is available, the "Pinelands" is often defined as the 52 municipalities as a whole, including those parts of towns which are located outside the Pinelands Area. In the analysis of land values, however, transaction data for selected municipalities are broken down by management area and by Pinelands vs. non-Pinelands sales. While the conclusions drawn in this study must be considered preliminary, due to the extremely limited time frame analyzed and the fact that the Plan has not yet been fully implemented,

the study is broad in scope and relatively thorough in its attempt to account for numerous factors which affect the local economy, particularly land values. It should therefore provide a solid foundation upon which to base future studies of the Plan's economic impacts.

The remainder of this report is divided into six chapters. Chapter II briefly reviews studies of the economic impacts of regional land use control programs in other areas of the U.S. and Canada. Chapter III contains an analysis of land markets in the Pinelands region, focusing on the number and volume of sales throughout the 52 towns and on changes in prices per acre in a sample of towns. Trends in building permit activity and residential sales throughout the region are examined in Chapter IV, and employment data is analyzed in Chapter V. Chapter V also contains a discussion of the Plan's effects on sand and gravel mining and agriculture in the Pinelands, including an analysis of the impact of agricultural zoning on the ability of farmers to obtain credit. The fiscal impacts of the Plan are reviewed in Chapter VI, with an emphasis on selected towns which have experienced large tax increases in recent years. Finally, Chapter VII contains a summary of the study's findings and includes recommendations for public policy and future studies.

II

Economic Studies of Land Use Control Programs In Other Regions

A. Introduction

The land use controls adopted as part of the Pinelands Comprehensive Management Plan have precedents in other parts of the United States and Canada. As background for the present study, a survey of state and regional land use control programs was undertaken to determine the types of economic analysis that have been used to evaluate other comprehensive regulatory programs. It is noteworthy that comparatively little research has been devoted to the analysis of the economic impacts of land use control programs. The review of available literature and contacts with other state and regional land use agencies unearthed few relevant studies. In addition, those studies which have been undertaken to date are relatively limited in scope. The absence of more comprehensive analysis reflects in part the difficulty in obtaining data for the appropriate geographical area and over a sufficiently long time period as well as methodological problems associated with attempting to control for extraneous variables and trends.

This chapter provides a summary of economic impact studies conducted for other jurisdictions, including brief descriptions of the analytic techniques used as well as the principal findings of each study. The land use control programs analyzed are the British Columbia Agricultural Land Reserves, the Adirondack Park Land Use and Development

Plan, the Oregon Urban Growth Boundaries, and the Florida Keys Area of State Critical Concern. All of these programs date from the period 1972 to 1975.

B. British Columbia Agricultural Land Reserve Program

In response to a growing problem of loss and fragmentation of agricultural lands, the government of British Columbia imposed a freeze on the subdivision of agricultural land in December 1972. Subsequently, a Land Commission was established to implement a policy for the creation of Agricultural Land Reserves. This program represents the first comprehensive attempt in Canada to prevent the loss of high quality agricultural land due to uncontrolled development.

The Agricultural Land Reserves (ALR's) include all land suitable for farm use over 2 acres in size, excluding sufficient land to accomodate approximately five years of urban expansion. Plans for ALR's were prepared by each of the Province's 28 regional districts under guidelines set by the Land Commission and subject to the review and approval of the Commission. A total of 11,661,600 acres (4.9% of the Province) were included in the initial designation of Agricultural Land Reserves.

The Lands Directorate of Environment Canada, an agency of the national government, conducted a study[1] of the impacts of the British Columbia Agricultural Land Reserve Program as part of its continuing research on land use issues in Canada. Published in November 1978, the study is based on interviews with over 800 randomly selected landholders in 12 study areas throughout the Province, including both Reserve and non-Reserve areas.

The questionnaire used for the survey covers 151 variables. Interviews were conducted between January and March 1977. Selected results from the analysis of the questionnaires are summarized below:

- Re: Land Values. In general, a higher percentage of properties outside the ALR's fell in higher per acre value categories while within the ALR's a higher percentage of properties were in the middle and lower value categories. More pronounced differences in land values between ALR and non-ALR areas occurred in urban influenced districts, indicating demand for land for non-agricultural uses in these areas.

- Re: Changes in Tenure and Use, 1972-1977. There was a significant difference in transaction activity between ALR and non-ALR areas. Land purchases (shown to be mostly for farms) were more frequent within the ALR boundaries. Leasing for farm activity was also more frequent within the ALR's. Census data indicated a reversal in the decline in the number of farms and the amount of acreage in farms and also a higher rate of growth in buildings and capital equipment than during the previous five years.

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[1] Edward W. Manning and Sandra S. Eddy, The Agricultural Land Reserves of British Columbia: An Impact Analysis, Ottawa Lands Directorate of Environment Canada, November 1978.

- Re: Impact on Landholders. Over 20% of respondents said they had been prevented from some form of land market activity by the ALR's and nearly 20% had contacted the Land Commission regarding a land use change or sale. A majority reported that land values had been affected. At the same time, 80% supported the ALR's in principle.

- Re: Farm Sector Viability. ALR's alone are not deemed sufficient to ensure long-term viability of the agricultural sector. In many areas where developers held ALR land, the land remains idle. An increase in hobby farms, particularly in areas where parcel size tended to be small (under 25 acres) reflects continuing problem of a fragmentation of farmland ownership.

C. The Adirondack Park Land Use and Development Plan

The Adirondack Park covers an area of approximately six million acres in northeastern New York State. About 3.7 million acres, or 62 percent of the total Park, are in private ownership; the remainder of the Park consists predominantly of state forest lands.

The Adirondack Park Land Use and Development Plan went into effect in May 1973 and governs the use and development of all privately owned land within the Park boundaries. Six types of land use areas are established for private land within the Park. In the Rural Use and Resource Management Areas, which together make up 87 percent of the region, residential uses are limited to one unit per 8.5 acres and one unit per 42.7 acres, respectively. More intensive development is permitted only in and around existing hamlets and industrial areas.

Concern over the economic impact of the Plan was a major source of controversy at the time of the adoption of the Plan. Local residents, in particular, feared that the land use controls would affect the region's economy adversely by restricting industrial growth and that land values in the more restrictive zones would decline and undermine the local tax base.[1]

Since the mid-seventies, a series of studies has been undertaken by different groups and individuals to document the economic effects of the Adirondack Plan. Each of the studies is summarized below to indicate the general approach and methodology used as well as the nature of the findings. The studies are presented in chronological order.

- Adirondack Park Agency, Adirondack Park Economic Profile. Phase One: Population Characteristics and General Economic Factors, Februrary 1976. Phase Two: Recent Trends and Factors Affecting the Adirondack Real Estate Market, August 1976

The Phase one report represents a cooperative effort of several state agencies, including the Adirondack Park Agency, the New York Department of Commerce and the Governor's Office. The report does not address directly the issue of the Plan's impact but describes the labor force and industry characteristics of the region based on 1970 Census data and assesses prospects for future economic growth. The scattered

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[1] G. Gordon Davis and Richard A. Liroff, Protecting Open Space, Land Use Control in the Adirondack Park, Cambridge, Mass.: Ballinger Publishing Co., 1982, p. 128 and p. 147.

and sparse population, low skill levels and lack of business related services in the area are cited as principal barriers to attracting industrial development. The strongest sectors of the economy are founded on the natural resource base, including mining, forestry and the tourist industry.

The real estate and construction industry is identified as the fourth largest employer in the Adirondack Park area, and the Phase Two report focuses on trends affecting this key industry. The analysis covers the 1971 through 1975 period and is based principally on real estate transfer data[1] and housing start data for the region as a whole. Trends for the Adirondack counties are compared to statewide trends and data for the Catskill region. In addition, comparisons are made for the portions of the Adirondack counties inside and outside the Park boundaries. Based on these data, it was found:

- For all areas the number of transfers declined during the post-1973 period due to general economic factors.
- Both the Adirondacks and the Catskills experienced a similar rate of decline over the 1973 to 1975 period of about 23%.
- The decline was greater in the Adirondacks and the Catskills than in the state as a whole, reflecting a greater decline in rural as opposed to urban transfers.
- Sales in uncontrolled areas in the Adirondack counties declined at approximately the same rate as those within the Park boundaries, 21% versus 23%.

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[1]Real estate transfer data include sales of both vacant and improved properties.

Examination of housing start statistics revealed the same general downward trend in the Adirondacks, Catskills and the State as a whole.

- State Board of Equalization and Assessment, Adirondack Park Real Property Tax Base Study Final Report, 1978

The 1973 legislation which adopted the Adirondack Park Plan also directed that the State Board of Equalization and Assessment conduct certain studies of the Plan's fiscal and economic impacts. The studies were to have been completed by January 1976, and a total of $350,000 was appropriated to finance the cost during the 1974 and 1975 fiscal years. Subsequently, the reporting date was extended to January 1978, but no additional funds were made available. Due to the lack of further funding, the intended studies were never completed. The Board issued the Final Report as a summary of available information on land sales and tax problems in the Adirondack area.

The report includes an analysis of property market values based on an extremely limited time frame and data base. Specifically, it uses data obtained from the Board's annual appraisals of randomly selected properties for 1973 and 1974, collected for the purpose of establishing local equalization rates. The data show that market values of private property in the 63 towns contained wholly within the Adirondack Park rose by an average of 21.39% from January 1, 1973 to July 1, 1974. This compares to a rise of 24.30%

for towns wholly within the Catskill park and a statewide average of 14.77%. No detail for individual towns is presented and no indication is provided as to the location of properties vis a vis the Plan's land use areas. The Board considered the results of the study inconclusive as to the effect of the Park's restriction.

The report also contains an examination of assessment practices and inequities in the Adirondack region from which the following conclusions were drawn:

- There exist in the Adirondack region levels of property tax inequities significantly above average levels for the rest of the state.

- Subsequent to the adoption of the Plan only 11 of the 90 towns within the Park have reported any significant changes in their assessments to the State Board. It would, therefore, appear safe to assume that with the exception of these 11 towns, the Land Use Plan has had little or no bearing on the principles and techniques used in assessing private property in the Park.

- Robert C. Anderson and Roger C. Dower. "Land Price Impacts of the Adirondack Park Land Use and Development Plan." Amercian Journal of Agricultural Economics. Vol. 62, No. 3 (August 1980), pp. 543-48.

At the outset of this study the authors set forth tentative hypotheses regarding the impact of the Adirondack Park Plan on land values based on the nature of the limitations it places on development options in the different land use districts. They anticipated that hamlet land and already existing small parcels would increase in relative value as the expected supply of these parcels decreases, and that

relative values for large parcels in the most restrictive use classifications should fall as development expectations are revised downward.

To test these hypotheses, the authors constructed land price indices for the respective land use areas. Pairs of transaction prices for the same parcel of land were identified through an examination of land deeds for five representative towns within the Park and one town outside the Park. A total of 471 in-Park observations over the 1950-1976 period were included in the analysis, and a simple regression model was used to estimate average annual changes in real estate prices for the respective land use areas.

The statistical results of the analysis tend to support the initial hypotheses. Following enactment of the Plan, land prices in hamlets and other development areas increased at a faster rate than in preceding years, while prices rose at a slower rate in the rural use area and dropped in the resource management area. The authors conclude that a shift in land values took place after 1973, with the less restricted areas showing relative gains compared to other areas of the Park.

- Charles I. Zinser, The Economic Impact of the Adirondack Park Private Land Use and Development Plan, State University of New York Press, Albany, New York, 1980.

The principal source of information used in this study is a series of questionnaires and personal interviews completed in the summer of 1976. Four groups were surveyed, including

local government officials, realtors, employers, and developers who had filed subdivision applications with the Adirondack Park Agency for five or more lots. Pre-existing economic data from the state and federal governments also is used to document trends and verify the survey results. The latter data consist primarily of real estate transfer and housing start data similar to that contained in the reports cited above.

The major findings of the study are as follows:

- A large number of the key community persons who were interviewed concluded that the Plan had no significant negative economic impact, despite the fact that they personally opposed the APA and the Plan.

- Many of those interviewed believed that the major economic impact of the Plan had been a slowdown in real estate and construction activity.

- Land values in resource management areas decreased by about 50% and in rural areas by approximately 15-25%. Hamlet lands were reported to have increased in price by 5-20%.

- Other types of impacts identified include: a) a change in the types of property buyer (speculators have been driven out of the Park by the Plan); b) a halt in most large leisure home subdivisions; and c) an increase in development immediately outside the Park boundary.

What is likely to be the most comprehensive study of the impact of the Adirondack Park Plan on the land market in the region is being undertaken currently by the Department of Rural Sociology and Agricultural Economics at Cornell University.

The study has been funded by the state legislature and is addressing a series of questions relating to patterns of land use and property transfers. The methodology used for the study employs historical data on land sales in the region and a supplemental questionnaire to 1000 Adirondack landowners. Completion of the work is scheduled for the summer of 1984. The land market study project is one of several complementary studies of the Adirondack region now being conducted at Cornell University. Other related research includes an analysis of local tax structures and an examination of landowner attitudes.

D. Oregon Urban Growth Boundary

In 1973, the State of Oregon enacted legislation creating the Oregon Land Conservation and Development Commission (LCDC) and setting in motion a process for the implementation of state-wide land use control policies. The LCDC was granted the power to establish land use goals and guidelines which were required to be adopted as part of local government master plans. One goal mandated by the Commission required the delineation of Urban Growth Boundaries (UGB's) by local government to identify and differentiate potential urban land from rural land.

C. Russell Beaton, an economist on the faculty of Willammette University, has conducted a study of the economic impacts of the Urban Growth Boundaries on housing in

Oregon.[1] Completed in August 1982, the study examines the relationship between land and housing costs and the UGB, an issue which had been a subject of considerable controversy since the UGB provision was adopted. In setting forth a conceptual framework for the study, the author describes theoretical determinants of land values at the urban fringe and uses the term "speculative override" to define the gap between the value of land in rural use and the anticipated value from a future conversion to urban use. According to Beaton, the effect of the UGB designation is to remove speculative override outside the urban growth area and, possibly, to increase speculative activity within the area.

The study focuses primarily on the direct estimation of land and housing costs inside and outside the urban growth boundary in the Portland metropolitan area. A multiple regression analysis of over 900 land sales in the Portland metropolitan area (from September 1979 to August 1980) is used to identify the relative influence of different variables on land price. The data indicate that land prices averaged $11,000 per acre more inside the UGB than outside. No attempt is made, however, to trace relative changes in land prices over time, i.e. before and after the implementation of state-mandated land use controls. From an examination of cost data, Beaton also concluded that the costs incurred by

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[1] C. Russell Beaton, An Examination of Relationships Between Land Use Planning and Housing Costs in Oregon, 1970-1980: Focus on the Urban Growth Boundary, Willamette University, August 1982.

developers due to the development approval process resulted in somewhat higher building lot prices. No significant impacts on housing prices were found.

E. The Florida Keys Areas of Critical State Concern

The Florida Environmental Land and Water Management Act of 1972 established a program for the designation and protection of Areas of Critical State Concern (ACSC). Three types of areas were eligible for this designation, including:

1) areas containing significant environmental, historical, natural or archaeological resources,

2) areas of special significance to major public facilities or areas of public investment, and

3) areas of major development potential, as identified in a state master plan.

A maximum limit of 5% of the state's land areas, approximately 1.7 million acres, could be designated under the ACSC program. The Florida cabinet, consisting of the governor and other independently elected commissioners, was assigned responsibility for the designation of critical areas and for the establishment of boundaries and principles for guiding development. Once an area had been designated, the local government for the area was required to adopt regulations for the protection of the state's interest.

The Florida Keys were designated as Florida's third Area of Critical State Concern in April of 1975. The Keys are a chain of 97 islands extending for about 130 miles from the tip of Florida into the Gulf of Mexico. At the time of the designation, rapid and uncoordinated growth had overburdened the area's essential services -- water, roads and waste disposal. Development controls and major public investments were needed to alleviate health and safety problems.

An impact analysis of the Florida Keys critical areas designation has been prepared by the Joint Center of Environmental and Urban Problems of Florida Atlantic University/ Florida International University.[1] The fiscal analysis seeks to identify the possible effects of the designation on Monroe County, which includes the entire Keys as well as a part of the mainland. Economic trends in Monroe County are compared to trends in another similar but unregulated county (Charlotte County). It is assumed that in the absence of the critical area designation, Monroe County would have experienced the same business and economic trends as the comparison county and the state as a whole. Projections based on the latter growth rates are compared to actual growth in Monroe County to identify possible areas of impact. Principal conclusions from the analysis are as follows:

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[1] Florida Atlantic University/Florida International University Joint Center for Environmental and Urban Problems, Florida Keys Critical Areas Designation Impact Analysis, STAR Project #81-013, Fort Lauderdale, Florida, August 1982.

- Property values - No significant differences between actual and forecasted changes.

- Per capita income - Pre-1980, no significant differences between actual and forecasted income levels, but the 1980 recession had greater impact in Monroe County.

- Unemployment - No significant differences.

- Employment - Charlotte County outpaced Monroe and the state as a whole, indicating a possible area of impact.

- Building permits - Actual per capita value of building permits was greater than forecasted value in Monroe County. In terms of total permits, however, state based forecasts exceeded the actual volume of permits, indicating a possible area of impact.

- Public finances - Monroe experienced about the same increase in revenues as Charlotte County, but higher rates of growth in ratables and expenditures.

F. Summary

The studies of the economic impacts of land use controls reviewed in this chapter are summarized in Table II-1. As a group, these reports tend to focus on impacts on real estate markets. Three basic types of methodological approaches are used. These are as follows:

. Simple comparative analyses of economic trends in the study area and other similar but unregulated areas or a larger geographical entity, such as the state. The Florida Keys study and three of the Adirondack studies employ this approach. No systematic attempt is made in these studies to evaluate the role of non-regulatory factors in altering relative growth rates over time.

Table II-1

Studies of the Economic Impacts of Other Land Use Control Programs - Overview

AREA/STUDY	DATE OF CONTROLS	DATE OF STUDY	FOCUS	METHOD OF ANALYSIS	SOURCES OF DATA
British Columbia Agricultural Land Reserves Impact Analysis	1972	1978	Land values and farm viability	Statistical analysis of questionnaire responses from land-holders	Question-naires, 1977
Adirondack Park Adirondack Park Economic Profile	1973	1976	Real estate transfer and housing starts	Comparison of growth rates (Adirondack region vs. Catskills and State	Pre-existing State and Federal data, through 1975
Real Property Tax Base Study		1978	Real estate values and assessment practices	Comparison of esti-mated changes in market values (Adirondack region vs. Catskills and State	Pre-existing State data, 1974
Anderson & Dower, Land Price Impacts		1979	Land price changes	Computation of land price indices (simple regression analysis)	Land sales through 1975
Zinser, Economic Impact		1980	Public perception of economic impacts	Statistical analysis of responses to questionnaires	Question-naires, 1976
Oregon Urban Growth Boundaries Impact Analysis	1973	1982	Housing and land costs	Examination of housing and land price deter-minants (multiple linear regression analysis)	Housing in-dustry data and land sales data, 1970-1980
Florida Keys Critical Areas Designation Impact Analysis	1975	1982	General economic impacts	Comparative trend lines for Keys, other county and state (simple regression analysis)	Pre-existing State and Federal data

- Multivariate statistical analysis to quantify the effects of location vis a vis zoning districts, while "controlling" for other relevent variables. The Oregon study uses this technique to analyze land prices inside and outside the Urban Growth Boundary; however, the model used is static and does not trace changes in relative prices over time.

- Questionnaires to determine local perceptions of economic impacts by landowners, realtors, developers, employers, local government officials, and others who are affected by land use regulations. The British Columbia study and the Zinser study of the Adirondack Park Plan apply this approach.

The current study relies primarily on two of the analytic techniques used in previous analysis: comparative trend analysis and, in the case of land values, multivariate statistical analysis in conjunction with a comparison of trends. In terms of scope, the Pinelands analyses address most of the potential impacts identified by the other studies as a group, and also include investigations of issues of special concern in the Pinelands, such as agricultural lending and the effects of tax appeals and state acquisitions on vacant land ratable bases of municipalities. Like most of the other studies, the findings in this report are drawn from analyses of data over a limited time period after the adoption of comprehensive land use controls.

III

Land Market Trends In The Pinelands

A. Introduction

Perhaps the most controversial and potentially significant impact of the Comprehensive Management Plan is its effect on land markets in the Pinelands region. The regulations imposed under the Plan may affect both the volume of sales and prices per acre in each management area and also outside the Pinelands Area. The economic analysis of the draft Comprehensive Management Plan noted that "the land use patterns envisioned by the Plan...are expected to bring about some shifts, both positive and negative, in the relative values of properties."[1] The value of property depends in part on the permitted use which yields the highest rate of return to the owner, often called the "highest and best use." Permitted uses on vacant and farm land have been limited significantly in the Preservation, Forest and Agricultural Production Areas, and therefore land prices may be adversely affected. However, land values also depend on the degree of speculative and development pressure which exists for a given location, as well as the physical characteristics of each site. For parcels which are distant from developing areas or which are unsuitable for development (e.g. wetlands), the effects of new land use regulations will be small. Therefore, to the extent that the Comprehensive Management Plan reinforces the development patterns which already existed at the time of its adoption, the impacts on land values will be minimized.

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[1] "Economic Analysis of the Pinelands Comprehensive Management Plan," prepared for the Pinelands Commission, November 20, 1980, p. 54.

Another potential impact of the Comprehensive Management Plan is that the value of developable lands in Regional Growth Areas and perhaps beyond the boundaries of the Pinelands Area may be enhanced. The magnitude of this effect depends upon the degree to which the total supply of building sites within the restricted areas is limited, thereby diverting development pressure to growth areas and beyond. Another factor affecting land prices is the distribution and value of Pinelands Development Credits (PDC's). Initially, PDC's should add to the Value of land in the Preservation and Agricultural Production Areas, where they are assigned to landowners on the basis of the physical characteristics of each parcel (i.e. upland vs. wetland and vacant vs. active agricultural land). PDC's may be sold by landowners to developers, who can use them to increase permitted housing densities in Regional Growth Areas. Therefore, the market value of PDC's depends on the demand for housing in the Regional Growth Areas, which is expected to change over time. In the long run, the PDC program will serve to transfer value associated with development potential from the Preservation and Agricultural Production Areas to the Regional Growth Areas.

The impact of the CMP on land values throughout the Pinelands region is an issue of central importance to the Pinelands Commission. Not only are individual landowners affected by changes in land prices, but since comparable sales often form the basis for assessments,[1] the ratable bases (and hence the

[1]Assessments are, however, sometimes adjusted on the basis of criteria other than comparable sales, such as the anticipated effects of a zoning change. See Chapter VI for a full discussion of the fiscal impacts of the Comprehensive Management Plan.

tax rates) of Pinelands communities will also be impacted. Thus, the analysis of land values presented in this chapter represents perhaps the key component of the economic study of the Pinelands Plan. The next section examines general trends in the number and volume of vacant land transactions throughout the 52 Pinelands municipalities. A detailed analysis of land sales in thirteen municipalities over seven years is presented in Section C, in an attempt to identify the effects of the moratorium and the CMP on market prices to date.

B. Vacant Land Sales - Regional Totals

1. Description of Data

The number and value of vacant land sales are indicators of the level of speculative and development pressure which exists in a given community. Information on vacant land sales are compiled for individual municipalities by the New Jersey Division of Taxation[1] for fiscal years, which extend from July 1 to June 30. The data are used to compute equalization (sales/assessment) ratios, which are applied to aggregate assessed valuations in each taxing district in order to compute the "true", or market value of taxable property. The calculation of true value of property forms the basis for the distribution of state school aid and the apportionment of county taxes.

True value is intended to reflect market value as accurately as possible, and the transactions used in the computation of the equalization ratio must have sales prices which bear a logical

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[1] State of New Jersey, Department of the Treasury, Division of Taxation, Table of Equalized Valuations, Section D, "District Weighted Ratio - One Year Study," October 1, 1972 - October 1, 1982.

relationship to the assessed value. Thus, many transactions are deemed "nonusable" for the purposes of equalization, and hence are excluded from the compilations of sales in each township. A complete listing of the categories of "nonusable" transactions is presented in Appendix B. In analyzing total sales volume, this screening process enhances the validity of the data insofar as all nonmarket transactions, such as sales between members of the immediate family, are excluded. Certain valid market transactions, however, are also omitted, simply because sales prices are inconsistent with assessments. The most notable examples of "nonusable" sales which may represent valid market transactions are sales of property conveying only a portion of the assessed unit (split-offs), sales of property which have undergone zoning changes not reflected in the assessments, and sales occurring within the sampling period but prior to a reassessment or revaluation. The omission of these types of transactions will cause the data to underestimate the actual number and volume of sales in a given year, and the effect is not necessarily uniform across all years. Therefore, the data must be interpreted with caution.

2. Number and Volume of Sales

The dollar volume of vacant land sales in the 52 Pinelands municipalities in fiscal 1982 was $15.1 million. Sixty-seven percent of the total volume was concentrated in ten municipalities (see Table III-1). Upper Township, in Cape May County, had almost $2.5 million in land transactions (16 percent of sales in the region), more than any other township. Other

Table III-1

Volume of Vacant Land Sales - Top Ten

Pinelands Municipalities, 1982

Rank	Municipality	Dollar Volume of Sales	Percent of Sales in All Pinelands Municipalities
1	Upper	$ 2,424,000	16.1
2	Lacey	1,355,000	9.0
3	Stafford	986,000	6.5
4	Jackson	916,000	6.1
5	Galloway	845,000	5.6
6	Little Egg Harbor	831,000	5.5
7	Egg Harbor Twp	804,000	5.3
8	Berkeley	792,000	5.2
9	Hamilton	621,000	4.1
10	Evesham	598,000	4.0
		10,172,000	67.4

municipalities with high volume of sales include Lacey, Stafford, Jackson, Little Egg Harbor and Berkeley Townships in Ocean County, and Galloway, Egg Harbor and Hamilton Townships in Atlantic County. Thus, speculative pressures appear to be highly concentrated in the coastal areas of the Pinelands region.[1]

Historical data on the volume and number of vacant land transactions in the Pinelands municipalities, the seven-county region, and the State of New Jersey are presented in Tables III-2 and III-3. In all cases sales activity peaked first in 1974 and again in 1979, and has since dropped rather dramatically. In the Pinelands municipalities, the total volume of sales declined by nearly 50 percent between 1979 and 1982. The number of transactions has fluctuated over the years, with the largest number of sales occurring in 1973 and the smallest number in 1982. Transactions have decreased steadily since 1978, both in the Pinelands and throughout the state.

In order to determine whether or not land market activity has declined at a more rapid pace in the Pinelands communities than elsewhere in the seven-county region or the state, a "share" analysis can be employed. The term "share" as used here refers to the percentage of the dollar volume of sales or the number of transactions occurring throughout the state (or the seven-county region) which took place within the 52 Pinelands municipalities. In this way, changes unique to the municipalities can be observed while "controlling" for more widespread trends characteristic of

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[1] See Appendix Tables E-1 and E-2 for complete listings of the number and volume of vacant land sales in each Pinelands municipality from 1972 through 1982.

Table III-2

Total Volume of Vacant Land Sales

YEAR	Pinelands Municipalities	Pinelands Counties	New Jersey
		(million dollars)	
1982	15.1	57.0	154.5
1981	22.6	76.5	184.4
1980	21.3	74.6	184.5
1979	28.3	96.4	218.2
1978	25.8	69.1	166.5
1977	21.3	54.6	154.6
1976	16.6	37.5	97.1
1975	14.1	30.8	93.6
1974	20.4	49.2	138.8
1973	21.3	56.1	154.4
1972	14.8	42.7	121.1

Table III-3

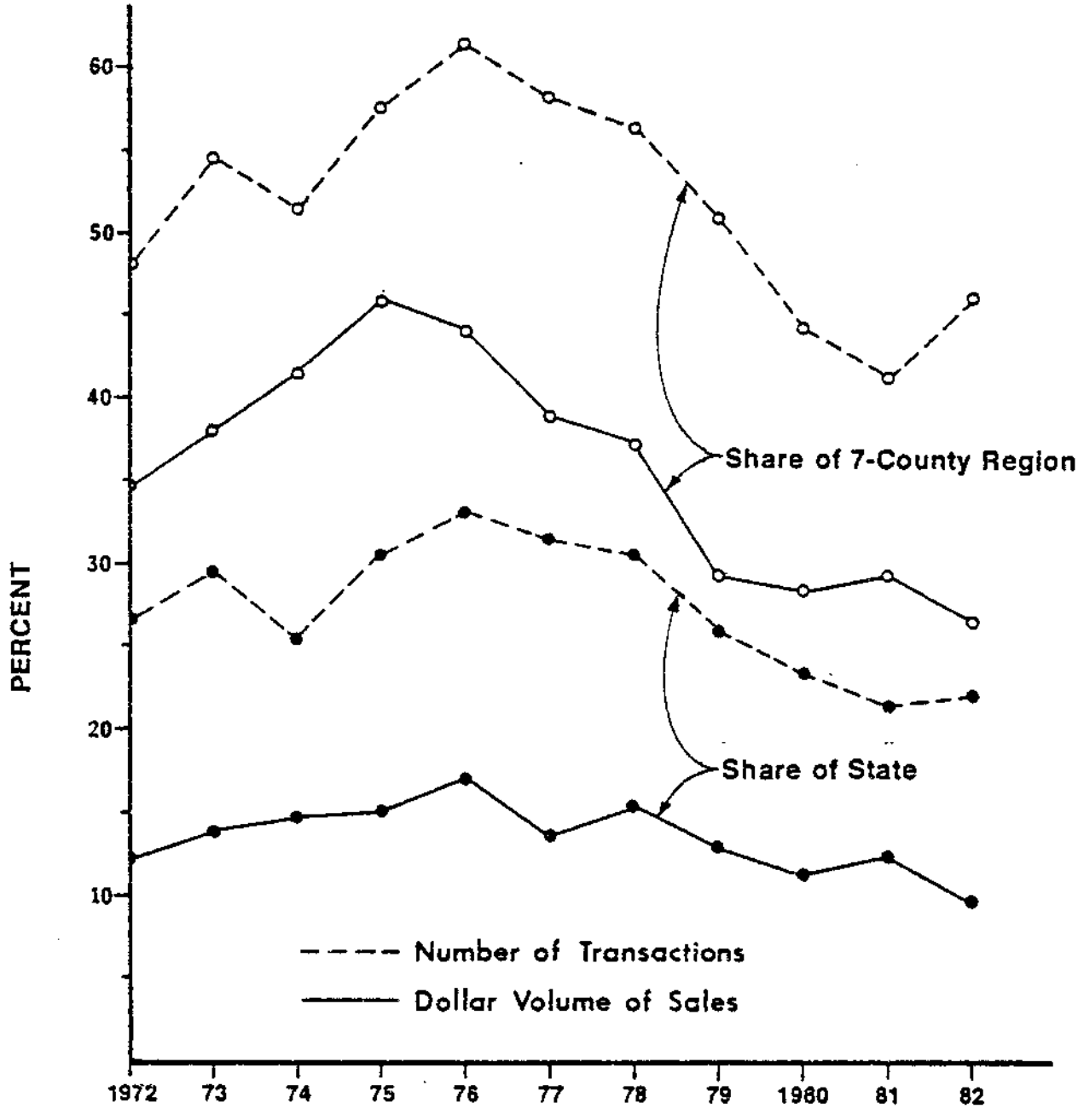
Total Number of Vacant Land Transactions

Year	Pinelands Municipalities	Pinelands Counties	New Jersey
1982	915	1,979	4,136
1981	1,179	2,857	5,479
1980	1,457	3,275	6,174
1979	2,007	3,936	7,691
1978	2,623	4,645	8,508
1977	2,599	4,457	8,194
1976	2,177	3,544	6,575
1975	1,926	3,337	6,265
1974	2,161	4,206	8,540
1973	3,420	6,272	11,582
1972	2,918	6,088	10,922

the state (or the region). For example, if vacant land sales are declining throughout the state due to the recent recession, and they are declining at the same rate in the Pinelands towns, the graph representing the share of the state would be a straight horizontal line. This situation would indicate that the drop in sales observed in the Pinelands merely reflects general economic conditions. On the other hand, if the graph of the share decreases (or increases) over time, then sales are declining (or growing) more rapidly in the Pinelands than elsewhere in the state, indicating that one or more factors which are unique to the Pinelands municipalities are influencing trends. If a shift in the slope of the trend line is observed after 1978, then the possibility that the Pinelands moratorium or the CMP is responsible for at least part of that shift cannot be ruled out without further investigation.

The Pinelands municipalities shares of both the number and volume of vacant land sales from 1972 to 1982 are depicted in Figure III-1. In 1982, the 52 towns accounted for 9.8% of the volume of sales throughout the state, and 22.1% of the number of transactions. Out of the seven-county region, the Pinelands municipalities share of volume of sales stood at 26.5% in 1982, and the share of transactions was 46.2%. The Pinelands municipalities have much larger shares of the number of transactions (shown as dashed lines in the graph) than of the volume of sales, because the average sales price per transaction is lower in the Pinelands communities than in the region or the state as a whole. In 1982, the average price per transaction was $16,503 for the

PINELANDS MUNICIPALITIES SHARES OF VACANT LAND SALES



SOURCE: N.J. Division of Taxation

Pinelands municipalities, $28,802 for the seven-county region, and $37,354 for the state.

As a share of the state, the dollar volume of sales in the Pinelands increased from 1972 to 1976, and declined thereafter, except in 1978 and 1981. The share of transactions followed a similar although not identical pattern, since the average value of the transactions varies somewhat from year to year. The regional shares exhibited a very pronounced downward trend after 1975. The regional share of sales volume dropped from a high of 45.8% in 1975 to only 26.5% in 1982, while the share of transactions fell from 61.4% in 1976 to 46.2% in 1982. In all cases, however, the total decrease from 1976 to 1979 exceeded that which occurred from 1979 to 1982, indicating that the overall trend was precipitated by factors other than Pinelands regulations.

In fact, the large drop in the regional share from 1976 to 1979 was due not to an absolute decline in the Pinelands but rather to a dramatic jump in sales activity in the Atlantic City area, which is within the seven-county region but outside the Pinelands. The total volume of sales in Atlantic County grew from $3.7 million in 1976 to $32.7 million in 1979, nearly a ten fold increase. The Atlantic City boom also contributed to the downward trend in the state share, although its effects are diluted when comparing the Pinelands municipalities to the state as a whole.

After 1979, vacant land sales activity slowed in Atlantic County, and the Pinelands municipalities regional and state

shares of sales leveled off somewhat. Nevertheless, the overall direction of the graphs from 1979 to 1982 is downward, in contrast to the trends exhibited in the early 1970s. Also, current shares are in all cases lower in 1982 than in 1972, the starting point of the analysis. Therefore, it is possible that Pinelands regulations have dampened land speculation and sales of building lots to the extent that the overall volume of sales in the 52 towns has been affected. Also, it is interesting to note that from 1981 to 1982, the shares of volume of sales declined while the shares of number of transactions increased. The cause of this phenomenon was a drop in average price per transaction in the Pinelands towns from $19,169 to $16,503, while the average price increased in the seven-county region and throughout the state. This drop could be attributable to a decrease in either the average acreage per sale or the average price per acre or both, although it is impossible to tell from the available data since the Division of Taxation compiles no information on acreage. Therefore, the Pinelands Commission has assembled detailed land transaction data for a subsample of Pinelands communities in order to try to determine the effects of the CMP on land prices within each management area. The results of this analysis are discussed in the next section.

C. Analysis of Land Values

1. Overview of Study

This section traces land values in each Pinelands management area relative to values outside the Pinelands

Area in three time periods: the three years immediately preceding implementation of Pinelands regulations, during the Governor's moratorium, and after the adoption of the Comprehensive Management Plan. Data were collected for all market sales of vacant and farmland involving parcels one acre or larger in thirteen of the 52 Pinelands municipalities, plus two towns located entirely outside the Pinelands. The data include information describing the location, acreage and selling price of each parcel as well as certain attributes of each site which affect its value, such as road frontage and the availability of public water and sewer. Changes in relative prices per acre were then statistically analyzed over time in order to determine the effects of location in each management area while controlling for other important variables affecting price.

2. Collection of Data

a. Selection of Townships

Given the limited resources available to conduct this study and the substantial amount of data collection required, it was necessary to limit the number of municipalities included in the analysis. Several criteria were used in the selection. First, the towns were to be spread throughout the Pinelands region rather than concentrated in one sector, so that the overall effect of the Plan could be analyzed. Accordingly, three townships each were chosen from Atlantic, Burlington and Ocean Counties, and one each from Camden, Cape May, Cumberland and Gloucester Counties. Second, it was important to ensure that

all management areas were adequately represented, and that the sample also included a significant number of transactions which took place outside the Pinelands Area, since these were used as the basis for comparison. Thus, most of the townships chosen have areas both within and outside the boundaries of the Pinelands Area, and two rural townships in Cumberland County were also included.

Finally, it was necessary to have the cooperation of the local tax assessors in each Pinelands town, since the assessors spent in some cases considerable amounts of time checking the data and providing information not readily available from secondary sources. Since the members of the Wetlands and Pinelands Committee of the State Association of Municipal Assessors expressed a strong interest in the study, many of the towns they represented were included. The Committee also offered helpful suggestions in selecting additional municipalities and were instrumental in obtaining the cooperation of the assessors in those towns. The exact nature of the technical assistance provided by the assessors is discussed in more detail below.

Thus, using these criteria, land sales were compiled and analyzed for the following towns:

Galloway Township	(Atlantic County)
Hamilton Township	(Atlantic County)
Hammonton Town	(Atlantic County)
Medford Township	(Burlington County)
Pemberton Township	(Burlington County)
Woodland Township	(Burlington County)
Winslow Township	(Camden County)
Dennis Township	(Cape May County)
Maurice River Township	(Cumberland County)
Monroe Township	(Gloucester County)
Barnegat Township	(Ocean County)
Jackson Township	(Ocean County)
Manchester Township	(Ocean County)
Downe Township	(Cumberland County)
Lawrence Township	(Cumberland County)

It is important to note that the sales analyzed in these municipalities do not constitute a random sampling of land transactions in the Pinelands for statistical purposes. Therefore, strictly speaking, the results of the analysis should not be generalized to the entire region, but apply only to the towns under study. Since, however, broad coverage of various parts of the region has been achieved, the trends exhibited by land prices in these areas, taken together, can be considered indicative of the average trends throughout the region.

Another conceptual problem with the geographical context of the analysis involves the use of areas outside the Pinelands as the basis for comparison. Ideally, the changes in land prices in the Pinelands districts should be compared to changes in other areas which are not subject to Pinelands-related impacts but which are similar to the Pinelands in terms of physical characteristics and degree of development pressure. Using those parts of the Pinelands municipalities which are outside the Pinelands Area does not meet these criteria particularly well, since such areas generally tend to be more highly urbanized and were in many cases developing more rapidly than much of the Pinelands Area during the 1970's. Furthermore, it is possible that locations proximate to the Pinelands Area may themselves be indirectly affected by the Pinelands regulations. If new construction is restricted in the Pinelands Area to the extent that the demand for housing is not being adequately met, then development could be diverted to areas outside the Pinelands Area, driving up land prices there. This spillover effect means that trends in the

"control" area are not necessarily independent of trends in the Pinelands.

These concerns, however, are perhaps not as serious as they may appear at first glance. First of all, while the areas outside the Pinelands included in the analysis may be in general more urbanized than those inside, neither region is by any means homogenous in terms of development pressure. Furthermore, the inclusion of the two rural non-Pinelands townships in Cumberland County adds areas which may be somewhat comparable to the more remote parts of the Pinelands such as Woodland and Maurice River Townships. As for the potential spillover effects of the Pinelands regulations, the analysis of the housing market in Chapter IV indicates that development approvals granted by the Pinelands Commission in the past two years outnumber building permits issued throughout the 52 municipalities by over two to one. Therefore, it is highly unlikely that construction has so far been sufficiently curtailed in the Pinelands to result in a significant displacement of new housing.[1] The major factor, however, which determined the use of locations adjacent to the Pinelands Area as the basis for comparison of trends was the simple lack of any other comparable regions in the state. At the very least, the areas selected are subject to the same general economic influences which are found throughout southern New Jersey and have similar topography and soils; therefore, they are not expected to differ greatly in their response to

[1]However, the possibility that speculative activity, which is tied to perceptions of future growth, may have begun to shift beyond the borders of the Pinelands cannot be discounted.

changing land markets absent the Pinelands Plan.

b. Data Sources

The primary source of data on land transactions was the New Jersey Division of Taxation (Department of Treasury). Computer printouts listing "usable" sales (i.e. usable for the purposes of equalization of assessments) were obtained for each of the 15 townships for fiscal years 1976 through 1982. These printouts list the recording date of each sale, the name of the seller, the block and lot numbers of the parcel(s) sold, the selling price, and the assessed value. Information on all sales listed as "Class 1" (vacant land) were compiled into a preliminary data base.

In addition to the usable sales, some of the transactions classified as "nonusable" by the Division of Taxation actually represent market transactions, as discussed previously. In some cases, these sales constitute a significant proportion of the total transactions in a given municipality. In order to include these sales in the sample, it was necessary to search through the Division of Taxation files containing the SR-1A forms filed by local assessors. (Assessors are required to submit a form for every deed transaction in their municipalities, regardless of whether it is usable or nonusable. The information on the forms is then verified by the Division of Taxation.) Vacant land transactions which fell into the following nonusable categories[1] from 1976 to 1982 were then added to the preliminary data base:

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[1]See Appendix B for a complete listing of the categories of nonusable deed transactions.

Category Number	Description
6	Sales of property conveying only a portion of the assessed unit, usually referred to as apportionments or split-offs.
10	Sales by guardians, trustees, executors, and administrators.
16	Sales of property assessed in more than one taxing district.
24	Sales of property, the value of which has been materially influenced by zoning changes where the latter are not reflected in current assessments.
27	Sales occurring within the sampling period but prior to a change in assessment practice resulting from the completion of a recognized revaluation or reassessment program.

Sales of farmland qualifying for farmland assessment (Class 3b, Nonusable Category 26) were also included, provided that no improvements were included in the sales price.

The next step in the data collection process was to determine the acreage of each parcel sold. Data on acreage for all lots by municipality are contained in the Real Estate Atlas, leased by Real Estate Data, Inc. (Miami, Florida). The block and lot(s) included in each sale were gleaned from the Atlas (using past editions where necessary) and the acreage involved in each

transaction was computed. The information collected thus far was then recorded on real estate transaction data sheets developed by the Pinelands Commission.[1] Transactions involving lots of less than one acre were eliminated from the sample to expedite further data collection.

The third step was to determine the location of each sale in relation to the Pinelands Management Areas. To accomplish this task, the lines delineating the management areas on in-house maps[2] were transferred to the municipal tax maps, and listings were compiled of the blocks and lots contained within each management area and outside the Pinelands Area. Using these listings, the location of each sale was determined and the appropriate district was noted on the real estate transaction data sheets.

With the block, lot, recording date, grantor name, assessed value, sales price, acreage, and Pinelands Management Area for each sale listed on the real estate transaction data sheets, the sheets were mailed to the local tax assessors. The assessors then checked the data to ensure its accuracy, and filled in the information concerning road access, the availability of public water and sewer and zoning.[3] They also provided comments concerning

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[1]A copy of the real estate transaction data sheet is presented as Appendix C.

[2]U.S. Geological Survey 7.5 minute Quadrangles.

[3]The information on road access and public utilities for Barnegat Township (Ocean County) and Downe and Lawrence Townships (Cumberland County) was obtained from in-house maps.

any important factors affecting the sales price, such as the proposed use of the property, whether the buyer owned an adjacent lot, whether Pinelands Commission approval to build had been obtained prior to the sale, and whether the sale was a bona fide market transaction. Some of the assessors also provided data on acreage in cases where the Pinelands Commission staff was unable to pinpoint the area involved in a given transaction, either because some lots were missing from the usable sales listings or because the lot numbers listed did not correspond to those found in the Real Estate Atlas or municipal tax maps.

When the data sheets were returned by the assessors, a final screening of the transactions was conducted. Sales which the assessors indicated did not reflect true market conditions were eliminated. Also, in some cases sales were rejected because a final determination of the acreage involved could not be made. Finally, sales in which the price per acre was less than $100 or more than $30,000 were removed from the sample, since they are not typical of the land market in the Pinelands region and may have involved errors in recording. The final sample includes 2,226 transactions, beginning on January 1, 1976 and ending June 30, 1982, the last day of fiscal 1982.

3. Descriptive Statistics

This section presents some general quantitative information describing the sample of land transactions. These statistics show the temporal and geographic distribution of the sales and give numerical averages and ranges for the data

on prices and acreages.[1] Due to the high level of variation in the sample and the large number of variables involved, it is difficult to draw meaningful conclusions about the effect of Pinelands regulations on land markets from these average statistics. Rather, their purpose is to generally characterize the sample, which is then subjected to detailed statistical analysis described in Section 4 below.

a. Frequency Distributions

The distribution of transactions by municipality and by calendar year is presented in Table III-4. The top number in each cell shows the actual number of transactions by year and by municipality, while the bottom figure gives the column percent, or the percentage of all transactions in a given year which took place in each municipality. Overall, the number of transactions peaked in 1978 at 505, and steadily declined in each succeeding year, presumably due to the general economic recession. The largest number of transactions took place in Hamilton Township (568), followed by Jackson Township (402), Galloway Township (321), Dennis Township (173), Monroe Township (162), Manchester Township (139), and Medford Township (109). Together, these seven municipalities dominate the sample, accounting for over 80 percent of all the sales. The least number of sales are found in Downe, Lawrence and Barnegat Townships, which together make up only four percent of the sample.

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[1] Appendix D presents more detailed data on the number of transactions, the volume of sales, and the acres sold by year for individual municipalities and Pinelands management areas. The management area data are broken down by class (vacant land vs. farmland).

Table III-4

Land Transactions - Frequency Distributions

Municipality by Year

Number of Sales Column Percent	YEAR							Row
	1976	1977	1978	1979	1980	1981	1982[1]	Total
MUNICIPALITY								
Galloway	35 9.6	58 14.0	65 12.9	78 20.0	50 19.1	25 11.9	10 6.0	321 14.2
Hamilton	113 31.1	108 26.2	164 32.5	62 15.9	40 15.3	47 22.4	34 20.5	568 24.8
Hammonton	5 1.4	8 1.9	10 2.0	6 1.5	5 1.9	7 3.3	6 3.6	47 2.0
Medford	10 2.8	26 6.3	22 4.4	23 5.9	12 4.6	8 3.8	8 4.8	109 4.7
Pemberton	15 4.1	14 3.4	7 1.4	4 1.0	4 1.5	2 1.0	8 4.8	54 2.2
Woodland	19 5.2	27 6.5	8 1.6	9 2.3	1 0.4	4 1.9	4 2.4	72 3.1
Winslow	12 3.3	7 1.7	16 3.2	11 2.8	10 3.8	13 6.2	8 4.8	77 3.3
Dennis	15 4.1	22 5.3	43 8.5	38 9.7	34 13.0	17 8.1	4 2.4	173 7.7
Maurice River	10 2.8	14 3.4	12 2.4	17 4.4	18 6.9	11 5.2	16 9.6	98 4.0
Downe	3 0.8	0 0.0	4 0.8	6 1.5	4 1.5	6 2.9	0 0.0	23 1.0
Lawrence	1 0.3	0 0.0	11 2.2	5 1.3	7 2.7	4 1.9	0 0.0	28 1.3
Monroe	30 8.3	29 7.0	29 5.7	20 5.1	14 5.3	20 9.5	20 12.0	162 6.8
Barnegat	2 0.6	4 1.0	9 1.8	10 2.6	6 2.3	3 1.4	2 1.2	36 1.6
Jackson	75 20.7	73 17.7	77 15.2	72 18.5	44 16.8	29 13.8	32 19.3	402 17.4
Manchester	18 5.0	23 5.6	28 5.5	29 7.4	13 5.0	14 6.7	14 8.4	139 5.9
Column Total	363 100.0	413 100.0	505 100.0	390 100.0	262 100.0	210 100.0	166 100.0	2,309 100.0

[1]Since transaction data were available only for the first half of 1982, the number of sales in this column are doubled to maintain comparability across years. This has no effect on the column percentages.

NOTE: Column percents may not add due to rounding.

The distribution of sales by management area is shown in Table III-5 One-third of all the sales occurred outside the Pinelands Area. Another 21 percent of the sales took place in the Rural Development Areas, 15 percent in the Forest Areas, 12 percent in the Regional Growth Areas, 11 percent in Pinelands Towns and Villages, five percent in the Agricultural Production Areas, and only two percent in the Preservation Area. The share of total transactions occurring within the Pinelands Area dropped during the moratorium period in 1979 and 1980, and then rose in 1981 and again in 1982. The Forest Area in particular exhibited a significant drop in both absolute and relative numbers of sales during the moratorium, but in 1982 its share of sales was higher than in any preceding year. The Agricultural Production Area showed gains in the relative proportion of total sales after 1978, as did the Pinelands Towns after 1980. The Regional Growth Area's share of total sales fluctuated from 1978 to 1982, showing no consistent trend. Only in the Preservation and Rural Development Areas were the proportions of sales in the post-Pinelands years consistently lower than in the 1976-1978 period. The absolute number of sales dropped in all areas after 1978 due to general economic conditions.

b. Summary Statistics

Table III-6 shows summary statistics for price per sale, acres per sale, and price per acre for the entire sample of transactions, including both the pre- and post-Plan periods. Two different averages, the median and the mean, are shown. The median is that numerical value which represents

Table III-5

Land Transactions - Frequency Distributions

Management Area by Year

Number of Sales Column Percent	YEAR							
	1976	1977	1978	1979	1980	1981	1982[1]	Row Total
MANAGEMENT AREA								
Preservation	21	9	7	8	2	3	2	52
	5.8	2.2	1.4	2.1	0.8	1.4	1.2	2.3
Forest	60	59	101	36	36	30	34	356
	16.5	14.3	20.0	9.2	13.7	14.3	20.5	15.2
Agricultural Production	22	21	21	18	12	12	10	116
	6.1	5.1	4.2	4.6	4.6	5.7	6.0	5.0
Rural Development	84	103	114	70	46	36	30	483
	23.1	24.9	22.6	17.9	17.6	17.1	18.1	21.0
Regional Growth	52	55	57	50	25	28	14	281
	14.3	13.3	11.3	12.8	9.5	13.3	8.4	12.3
Pinelands Towns	26	57	57	45	21	22	18	246
	7.2	13.8	11.3	11.5	8.0	10.5	10.8	10.6
Outside Pinelands Area	98	109	148	163	120	79	58	775
	27.0	26.4	29.3	41.8	45.8	37.6	34.9	33.5
Column Total	363	413	505	390	262	210	166	2,309
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Since transaction data were available only for the first half of 1982, the number of sales in this column are doubled to maintain comparability across years. This has no effect on the column percentages.

NOTE: Column percents may not add due to rounding.

Table III-6

Land Transaction Data - Summary Statistics For All Years

District	Median	Mean	Standard Deviation	Minimum	Maximum
		PRICE PER TRANSACTION			
Preservation	11,000	37,788	68,056	1,000	325,000
Forest	7,499	19,467	53,099	1,000	829,50[illegible]
Agricultural Production	11,500	30,973	64,588	800	600,0[illegible]
Rural Development	7,800	16,670	30,923	300	252,000
Regional Growth	17,993	89,428	430,241	800	6,600,6[illegible]
Pinelands Towns	9,001	15,151	21,080	1,200	179,2[illegible]
Outside Pinelands Area	13,998	37,533	115,042	900	1,610,000
Total	11,000	34,078	169,253	500	6,600,6[illegible]
		ACRES PER TRANSACTION			
Preservation	9.6	36.2	93.1	1.4	500.[illegible]
Forest	7.0	16.7	36.2	1.0	414.8
Agricultural Production	8.9	14.4	18.2	1.0	120.
Rural Development	5.0	7.6	14.9	1.0	211.
Regional Growth	3.0	18.2	70.0	1.0	818.5
Pinelands Towns	1.8	4.3	6.3	1.0	52.[illegible]
Outside Pinelands Area	3.2	11.5	28.3	1.0	352.
Total	5.0	12.2	36.9	1.0	818.[illegible]
		PRICE PER ACRE			
Preservation	1,234	2,582	4,843	125	28,13[illegible]
Forest	1,120	1,718	2,003	100	17,85
Agricultural Production	2,000	2,438	1,891	121	9,615
Rural Development	2,000	3,151	3,817	190	29,818
Regional Growth	5,926	6,860	5,078	290	27,27
Pinelands Towns	5,333	5,690	4,083	213	21,81[illegible]
Outside Pinelands Area	4,348	5,856	5,149	111	29,167
Total	2,941	4,518	4,636	100	29,81

the middle case in the entire range of values observed for a given variable, meaning that there are an equal number of values in the sample which are both higher and lower than the median. The mean, on the other hand, is calculated by summing the values across all cases and dividing by the number of cases. While the mean is more commonly used as an average, it can be distorted by the presence of a few very high or very low values. The median therefore is often a better indicator of the middle range of values in the sample.

In addition to the two averages, three measures of the variation or dispersion of the values around the average are shown in Table III-6. The standard deviation measures the "average" degree of variation from the mean which the values in the sample exhibit. In other words, if one were to choose values from the sample at random, on the average they would tend to differ from the mean by a magnitude equal to the standard deviation. The minimum and maximum values show the outer limits of the values observed in the sample.

For the land transactions as a group, the median sales price per transaction is $11,000, while the mean stands much higher at $34,078, due to the presence of a number of very large sales. The standard deviation is $169,253, nearly five times as large as the mean, indicating an extremely high level of variation. Prices per sale range from a low of $500 to a high of $6,600,609. The highest median prices are found in the Regional Growth Areas ($17,993) and outside the Pinelands

Area ($13,998), while the lowest are found in the Forest Area ($7,499) and the Rural Development Area ($7,800). Mean selling prices per transaction are at a maximum in the Regional Growth Area ($89,428), although the standard deviation and the range are very large, indicating an extreme degree of variation. The lowest mean price is in the Pinelands Towns ($15,151).

The price per transaction is, of course, a function of both the price per acre and the number of acres sold. The acreages involved in the transactions analyzed range from 1 to 818.5, with a mean of 12.2 acres and a standard deviation of 36.9 acres. On the average, the largest parcels sold are located in the Preservation Area, where the median acreage is 9.6 and the mean is 36.2. Relatively large tracts are also found in the Forest and Agricultural Production Areas, while the median size is only 1.8 acres in the Pinelands Towns, 3.0 acres in the Regional Growth Areas, and 3.2 acres outside the Pinelands Area. Overall, half the transactions included in the sample are between 1 acre (the minimum used) and 5 acres (the median).

The median price per acre for the entire sample stands at $2,941 and the mean is $4,518, with a range of between $100 and $29,818. The highest median prices per acre are in the Regional Growth Area ($5,926), followed by the Pinelands Towns ($5,333), and the areas outside the Pinelands ($4,348). Not surprisingly, the lowest median prices are in the Forest Area ($1,120), and the Preservation Area ($1,234). It is interesting to note, however, that the mean price in the Preservation Area exceeds the mean in both the Forest and Agricultural Areas, and

the standard deviation is very high ($4,843). The prices observed in the Preservation Area range from $125 per acre to $28,133 per acre.

Average prices per acre in the various management areas, broken down by time period, are presented in Table III-7.[1] As noted in the introduction to this section, these figures should not be used as conclusive indicators of Pinelands-related impacts, since varying numbers of parcels of differing size and physical characteristics are included in each category, and no attempt is made here to "control" for this variation. Nevertheless, the data do give an indication of the general trends in land prices over the time period analyzed.

Outside the Pinelands Area, the average price per acre in the pre-moratorium period (1976-1978) was $2,653. Prices rose by over 60 percent during the moratorium period (1979-80) to $4,273 and then dropped rather precipitously in 1981 and 1982 to $2,584, less than in the pre-moratorium period. Thus, if any "spillover" effects of the CMP associated with land speculation have so far occurred, they are not evident from the data collected in this study. Rather, the trend in the post-CMP period has been for average land prices to significantly deflate, even absent any Pinelands regulations on land use.

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[1]The mean prices in this table are calculated by first summing the dollar value of sales and the total acres sold in each management area, and then dividing the total sales volume by the total acreage. In Table III-6, the means were computed by first calculating sales price per acre for each transaction, then summing all the prices per acre and dividing by the number of transactions. Thus, this table shows a "per acre" average while Table III-6 shows a "per transaction" average.

Table III-7

Average Prices Per Acre by

Management Area and by Time Period

	Pre-Moratorium (1976-1978)	Moratorium (1979-1980)	Post-CMP (1981-1982)
Preservation Area	$1,592 (37)	$1,821 (10)	$ 425 (4)
Forest	$1,067 (220)	$1,384 (72)	$1,381 (47)
Agricultural Production	$1,792 (64)	$2,662 (103)	$2,124 (17)
Rural Development	$1,713 (301)	$2,966 (116)	$3,302 (51)
Regional Growth	$2,715 (164)	$7,127 (75)	$5,202 (35)
Pinelands Towns	$3,219 (140)	$3,541 (66)	$4,414 (31)
Outside Pinelands Area	$2,653 (355)	$4,273 (283)	$2,584 (108)

NOTE: Numbers in parentheses indicate the total number of sales in each category.

All the Pinelands management areas demonstrate the same general trend of increasing land prices between the pre-moratorium and moratorium periods. Interestingly enough, however, except for the Preservation Area, prices in the post-CMP period are in all cases higher than pre-moratorium prices, despite the fact that this does not hold true for the areas outside the Pinelands. Furthermore, although the Preservation, Forest, Agricultural Production, and Regional Growth Areas show declines in prices when comparing the post-CMP to the moratorium periods, only the Preservation Area (based on data from only 4 sales in 1981 and 1982) exhibits a higher percentage decrease than the areas outside the Pinelands. Therefore, these gross averages show no evidence of a market impact of the Pinelands Plan on land prices, except in the Preservation Area.[1] A more detailed analysis of the data aimed at separating out the "Pinelands" variables from other important factors affecting price is presented below.

4. Statistical Analysis of Land Values

a. General Method

In this section, the effects of location in the various management areas are analyzed over time while controlling for other variables which affect price, such as road access and the availability of public sewer. The analytical technique used is multiple linear regression. Regression analysis is a method for demonstrating the

[1] Land purchases made by the New Jersey Department of Environmental Protection in the Preservation Area are not included in the sample, since they do not represent private market transactions.

relationships between a "dependent" variable and one or more "independent" variables, and for testing the significance of these relationships. In this study, the dependent variables include acreage, location, year of sale, land use, road access, sewer, and zoning, among others. If the independent variables can "explain" a significant amount of the variation in prices per acre found in the sample, then the effects of location in each time period can be measured quantitatively.

The basic assumption of regression analysis is that a linear relationship exists between the dependent variable and each of the independent variables. The general form of the regression equation is as follows:

$$Y^1 = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots + b_k X_k$$

Where: Y is the estimated value of the dependent variable;

a is a constant added to each case;

b_i (b_1, b_2, ...b_k) are regression coefficients, or the constants by which the values of the independent variables (X_i) are multiplied; and

X_i (X_1, X_2...X_k) are the values of the independent variables.

The first regression coefficient, b_1, gives the "expected" change in Y which occurs with a change of the unit in X_1, when the other independent variables (X_2, X_3...X_k) are held constant. Likewise, b_2 is the expected change in Y with a unit change in X_2, controlling for effects of X_1 and the other independent variables, and so on. The effects of the regression coefficients

are additive, that is, if both X_1 and X_2 are changed by one unit, the expected change in Y would be $b_1 + b_2$. The constant term a represents the value of Y if all the independent variables equal zero, and is termed the "y intercept."

The regression model used in this analysis is a "stepwise" regression model, in which independent variables are entered one at a time and only if they meet certain statistical criteria. In the model employed, each variable entered must be statistically significant at the five percent level[1], meaning that there is only a five percent probability that the variable does not "explain" some of the variation observed in the dependent variable, in this case price per acre. The final equation includes all the variables which are statistically significant.

A statistic called the R^2 tests how well the data in the sample actually fit the regression equation. The R^2 is a number from 0 to 1 which represents the percent of the variation in the dependent variable which is explained by the independent variables, taken together. An R^2 of zero would mean the independent variables account for none of the variation, while an R^2 of one would indicate that all of the variation can be explained by the factors included in the equation.

Regression analysis can be used as both a descriptive and a predictive tool. Strictly speaking, since the data used in this study do not constitute a random sampling of land trans-

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[1]The test of statistical significance is a function of the level of correlation between the dependent variable and the independent variable and the number of cases in the sample. The higher the correlation and the larger the sample, the greater is the significance of the independent variable.

actions in the Pinelands, the regression equations should not be used to "predict" land values in other parts of the Pinelands. Rather, the analysis presented here is intended to describe quantitatively the observed differences in the effects of the independent variables over three time periods. The use of variables describing location relative to the Pinelands Management Areas will make it possible to discern if the regulation of land use under the moratorium and the CMP has altered land prices significantly. General conclusions about Pinelands-related impacts to date can then be drawn.

b. Variables Included

A listing of the variables used in the regression analyses is presented in Table III-8. The dependent variable is sales price per acre (PPA). The independent variables describe factors which exert a potentially significant influence on land prices. Perhaps the most important of these is acreage. In general, the larger the parcel sold, the lower the price per acre. For this analysis, acreage is expressed in terms of common logarithms (LG ACRES). The common logarithm is the exponent applied to a base of 10 which equals, in this case, the actual number of acres. For example if LG ACRES = 1, then ACRES (the actual acreage) = 10 (10^1) and if LG ACRES = 2, ACRES = 100 (10^2). Since the range of acreage in the sample is 1 to 818.5, LG ACRES has a range of 0 to 2.91. The reason for using logarithms instead of actual numbers is that the relationship between acreage and price is not expected to be linear. Rather, increasing acreage would presumably reduce the price

TABLE III-8

Regression Variables

VARIABLE NAME	DESCRIPTION
PPA	Sales Price per Acre
LG ACRES	Common Logarithm (Base 10) of Acres
P	Located in Preservation Area
F	Located in Forest District
AP	Located in Agricultural Production District
RD	Located in Rural Development District
RG	Located in Regional Growth District
PT	Located in Pinelands Town or Village
Y77	Sold in 1977
Y78	Sold in 1978
Y80	Sold in 1980
Y82	Sold in 1982
CLASS	Active Farmland
NUlO	Sold by Guardian, Trustee, or Executor
ACCESS	Access to a Paved Road
SEWER	Public Sewer
ZONE	Zoned Commercial or Industrial
MULT	More Than One Lot Included in Sale
SUBDIV	Subdivision Approval Obtained Prior to Sale
ADJ	Buyer Owns Adjacent Lot(s)
PCAPP	Pinelands Commission Approval to Build Obtained Prior to Sale

per acre more sharply in the lower acreage ranges than in the high ranges[1]; e.g., the difference in price per acre between a one acre lot and a 10 acre lot is probably greater than the difference in price between a 200 acre lot and a 210 acre lot. Using logarithms expresses this type of non-linear relationship in the linear terms required by the regression model.

All the independent variables used other than LG ACRES are "dummy" variables, meaning that they have a value of either zero or one. These variables are used to examine the effects of the presence (1) or absence (0) of a given characteristic of each site or transaction. The six location variables (P, F, AP, RD, RG, PT) indicate in which Pinelands Management Area each transaction occurred. If, for example, a sale took place in the Forest Area, its value for F would be one and its value for the other five location variables would be zero. The seventh location category, outside the Pinelands Area, is called the "reference" category, because it constitutes the base against which the coefficients for the other variables can be compared. The location variables are the focal point of the analysis, since changes in their regression coefficients over time could indicate Pinelands-related impacts.

The remaining dummy variables are intended to control for variations in land prices due to factors other than location. The year-of-sale variables are included to account for the

[1]This assumption was borne out empirically when both LG ACRES and ACRES were tested in the regression equations.

effects of price inflation or deflation within each of the three time periods analyzed. In the pre-moratorium regression model, 1976 is the reference year, and 1977 and 1978 (Y77 and Y78) are used as dummy variables; for the moratorium period, 1979 is the base year and 1980 (Y80) is a variable, and in the post-CMP model, 1981 is the reference and 1982 (Y82) is a variable.

The CLASS variable is included to indicate whether or not the parcel sold was under farmland assessment (Class 3b) at the time of the sale. In some areas, active farmland may be more valuable than vacant land, either because of its value as a farm or because it is often less expensive to develop and has soils suitable for building. The variable NU10, which refers to the Division of Taxation's nonusable transaction code, controls for any overall difference in prices between those sales involving a guardian, trustee, or executor and all other transactions.

If a property sold had access to a paved road at the time of sale, it was given a value of one for the ACCESS dummy variable. Similarly, if it had public sewer service available, it was assigned a value of one for SEWER[1]. Both of these variables are expected to have significant effects on land prices. Another factor which can have a major influence on values is local zoning, particularly if a property is zoned

[1]A WATER variable, indicating access to a public water supply, was included in the initial models but had to be discarded because it was highly correlated with SEWER. When two or more independent variables are intercorrelated (a situation known as multicollinearity), statistical problems of interpretation result.

for intensive use. The variable ZONE is used to measure the effects of commercial or industrial zoning, while SUBDIV is used to show the effects of prior residential subdivision approval on per acre land prices.

The final three independent variables used in the analysis are MULT, ADJ and PCAPP. When more than one lot is included in a sale (other than in a residential subdivision), the MULT variable is used. This variable is included because the price per acre may be higher if, for example, three ten-acre lots are sold rather than one thirty-acre lot. The variable ADJ is used to indicate price effects when the purchaser owns an adjacent lot or lots. This situation may give rise to inflated prices, if the buyer needs the adjacent property for economic reasons (e.g., expanding a farm) or to meet zoning requirements. Since the Pinelands regulations require relatively large building lots, particularly in the Forest Area, the ADJ variable may be indicative of Pinelands-related increases in land values. Similarly, PCAPP is included to test whether lots for which approval to build was secured from the Pinelands Commission prior to sale tend to bring higher prices than those which do not have such approval.

Of course, it is not expected that the independent variables alone can explain all the observed variations in land prices. Certain physical and locational characteristics of each site (e.g., its suitability for on-site sewage disposal, aesthetic attributes, proximity to developed areas, distance to places of employment, etc.) affect its value on the open market. This

type of site-specific information, however, cannot be obtained from available secondary sources. The degree to which the variables included do determine land prices in the sample municipalities is discussed in the following analysis.

c. Regional Regression Models

Regression models are presented for the pre-moratorium (1976-78), moratorium (1979-80), and post-CMP adoption (1981-82) periods in Table III-9, for the 15 sample municipalities combined. The number of transactions included in the pre-moratorium study is 1,281, while 652 moratorium sales and 293 post-CMP sales are analyzed. As discussed previously, all variables entered are statistically significant at the five percent level. A coefficient with a positive sign indicates that the variable adds value to the price per acre, holding all other variables constant, while a minus sign means that prices are negatively correlated with the variable. The magnitude of the positive or negative effect is measured by the size of the coefficient. To determine the potential impact of the moratorium and the CMP on land values, the coefficients associated with the location variables will be compared across time periods.

In the pre-moratorium model, the constant term (a) is 4,638. This represents the average PPA (price per acre) if the value of all the independent variables is zero.[1] The first independent variable is LG ACRES, whose coefficient of

[1]If LG ACRES equals zero, then acres equals one.

Table III-9
Land Value Regression Coefficients

All Transactions

Variable	Pre-moratorium	Moratorium	Post-CMP
LG ACRES	-3,296	-3,965	- 4,263
P	NS	NS	NS
F	-1,641	-3,567	- 1,416
AP	-1,600	-2,792	NS
RD	-1,736	-2,220	- 1,673
RG	+1,320	+1,988	NS
PT	NS	-1,999	NS
Y77	+ 782	NA	NA
Y78	+ 812	NA	NA
Y80	NA	NS	NA
Y82	NA	NA	NS
CLASS	+1,527	NS	NS
NU10	+1,773	NS	NS
ACCESS	+1,034	+1,436	+ 2,077
SEWER	+3,110	NS	+ 7,926
ZONE	+2,140	+2,860	+ 2,927
MULT	+1,463	NS	+ 2,115
SUBDIV	NA	+2,986	+ 3,153
ADJ	NS	NS	+12,943
PCAPP	NA	NS	NS
(constant)	(4,638)	(8,184)	(6,975)
R^2	.371	.349	.411
Number of Cases	1,281	652	293

NS : Not statistically significant at the 5 percent level
NA : Not applicable

-3,296 means that $3,296 is subtracted from the PPA for every unit increase in LG ACRES, all other variables being the same. In other words, the PPA of a ten acre lot is, on the average, $3,296 less than the price of a one acre lot, and the PPA of a 100 acre lot is $3,296 less than that of a 10 acre lot, assuming that the lots have similar characteristics. Other significant non-Pinelands variables include the presence of road access (ACCESS), which adds $1,034 to the price per acre, and zoning for commercial or industrial use (ZONE) which adds another $2,140. Sewered lots (SEWER) are worth an average of $3,110 more per acre than lots with no access to public sewer. When more than one lot is included in a sale (MULT), the PPA is increased by $1,463, and land which is being actively farmed (CLASS) is worth an additional $1,527 per acre. Inexplicably, sales involving a trustee or executor (NU10) exhibit higher prices than other transactions. The Y78 and Y77 variables show the effects of time on land prices, all other factors being equal. In 1977, prices were $782 higher than in 1976, while in 1978 they were $812 higher than in 1976.

The Pinelands Regional Growth Area variable (RG) also has a positive coefficient, indicating that properties located in these areas were worth an average of $1,320 per acre more than properties with similar characteristics located outside the Pinelands Area (the reference category). Since this effect is observed prior to the implementation of any Pinelands regulations, it reflects only the location of the sales in relation to the existing patterns of land speculation and

development. In other words, the areas which were designated for Regional Growth under the Comprehensive Management Plan were those which were already subject to development, and this development pressure is reflected in higher land prices.

Other than RG, three of the Pinelands location variables are statistically significant in the pre-moratorium period, and all have negative coefficients of about the same magnitude. Prices per acre in the Rural Development Area are an average of $1,736 less than outside the Pinelands Area, $1,641 less in the Forest Area, and $1,600 less in the Agricultural Production Area, holding all other variables constant. The lower values indicate that these areas were generally subject to less development pressure than other parts of the region before the Pinelands regulations were implemented.

The Preservation Area (P) and the Pinelands Towns (PT) variables are not statistically significant location variables in the pre-moratorium period. Referring back to the information contained in Table III-6 can shed some light on why land values in this area do not differ conclusively from values outside the Pinelands Area. In the case of the Pinelands Towns, the mean PPA is simply very close in value to the mean PPA outside the Pinelands Area. In the Preservation Area, the extremely high variation in prices (as exhibited by an overall standard deviation which is nearly twice the mean), combined with a relatively small number of sales, make it difficult to distinguish statistically between prices there and prices outside the Pinelands Area.

The total R^2 of the pre-moratorium regression model is .371, meaning that only 37 percent of the variation in land prices in the sample is explained by the equation. Clearly, other site-specific factors not accounted for by the independent variables used are more important determinants of value in the Pinelands. Since the explanatory power of this equation is relatively low, and since the model is not based on a random sample, it should not be used to estimate the value of individual parcels of land. The coefficients do, however, demonstrate meaningful relationships among the variables included, and can be used as a basis for analyzing trends.

The effects of the moratorium on land values in the Pinelands Area can be discerned by comparing the regression coefficients associated with the Pinelands variables in the moratorium and pre-moratorium models. In the moratorium model, the RG variable is again positive, and its coefficient is +1,988, compared to +1,320 in the pre-moratorium period. Thus, it appears that land values increased in the Regional Growth Areas relative to values outside the Pinelands Area, despite the temporary regulations on land development. In the Forest, Agricultural Production, and Rural Development Areas, prices dropped in proportion to prices outside the Pinelands Area. The moratorium coefficient for F is -3,567, more than double the pre-moratorium value. The AP coefficient of -2,792 is 75 percent higher than the pre-moratorium coefficient, and the Rural Development coefficient of -2,220 is 35 percent larger than in the 1976-1978 period. In addition, the Pinelands Towns show a negative corre-

lation with PPA, whereas in the preceding period prices were not significantly different from prices outside the Pinelands Area. The Preservation Area is again a statistically insignificant variable.

It therefore appears that the moratorium had a major dampening effect on land prices in many parts of the Pinelands Area. Compared to the pre-moratorium period, prices per acre relative to the areas outside the Pinelands Area were, on the average, $1,926 per acre less in the Forest Area, $1,192 less in the Agricultural Production Area, $484 less in the Rural Development Area, and $1,999 less in the Pinelands Towns and villages.[1] At the same time, values were enhanced by $668 in the Regional Growth Areas. No clear trend in PPA in the Preservation Area is evident, although only ten transactions occurred there during the moratorium. Other significant variables in the moratorium model include LG ACRES, ZONE, ACCESS, and SUBDIV. The total R^2 is .349. Thus, this model is no better a predictive tool than the pre-moratorium model.

While the moratorium sales show a measurable impact on land values in the Pinelands Area, the post-CMP regression model suggests that this temporary effect has been reversed since the adoption of the Pinelands Plan. Only two location variables are statistically significant (RD and F) and both have coefficients which are less negative in this model than

[1]Since it was not known during the moratorium where the management area boundary lines would be drawn or what regulations would be adopted, these changes in the individual location coefficients do not reflect differing levels of restriction on development. Rather, the moratorium regulations were uniform across management areas.

in the pre-moratorium model. In the Rural Development Area, the PPA in 1981 and 1982 was $1,673 less than the PPA outside the Pinelands Area, whereas during the moratorium, prices were $2,220 less, and prior to any regional land use regulation, prices were $1,736 lower. Similarly, Forest Area prices are only $1,416 less than prices outside the Pinelands Area in the post-CMP period, while they were $3,567 less during the moratorium and $1,641 less before the moratorium. Land values in the other management areas exhibit no statistically significant differences from values outside the Pinelands Area. Since the RG and AP variables were included in the pre-moratorium equation, their absence in the post-CMP model indicates that relative values have perhaps decreased in the Regional Growth Areas and increased in the Agricultural Production Areas.

The most important variables affecting price in the post-CMP period are non-location variables. The coefficient for LG ACRES is -4,263, while ACCESS, ZONE, and MULT each add between $2,000 and $3,000 to PPA. The existence of public sewer or an approved residential subdivision plan increases prices by about $8,000 per acre. The post-CMP model is the only one of the three in which the variable ADJ, meaning that the buyer owns one or more adjacent lots is introduced as a significant variable. Its coefficient of +12,943 is larger than any other coefficient, meaning this characteristic adds more value to the price per acre than any other single factor. This phenomenon may be at least partially a Pinelands-related impact. Under the Plan, persons applying to the Pinelands Commission for permission to build may be required to purchase

adjacent property in order to meet the minimum lot size standards in certain management areas. Since the buyer in such cases represents a "captive market," price inflation may result.

The total R^2 for the post-CMP model is .411, slightly higher than in the preceding periods, but nevertheless making this equation a relatively poor predictor of land prices. In the next section, post-CMP models are presented for each Pinelands muncipality, in order to measure localized impacts of the Plan and to observe geographical differences in the ability of the independent variables to explain variations in land prices.

d. Post-CMP Township Models

Post-CMP regression models for each of the thirteen Pinelands municipalities included in the study are shown in Table III-10. It is apparent from observing the R^2 statistics that there are huge differences among the townships in the ability of the independent variables to account for variation in land prices. At one extreme is Medford Township, where acreage and the presence of road access alone explain fully 97 percent of the variance. At the other extreme, none of the variables can explain price differences within Woodland, Winslow, Maurice River, and Barnegat Townships. In these townships, factors other than those measured by the list of independent variables shown in Table III-8 are the primary determinants of value in the sales analyzed. The lack of statistically significant variables in these townships is also attributable to the relatively small number of sales.

TABLE III-10

Land Value Regression Models by Township

Post - CMP Adoption

Township	Number of Sales	Equation	R^2
Galloway	30	12,222 (CONSTANT) +22,653 SEWER - 7,173 LG (ACRES)	.49
Hamilton	64	5,452 (CONSTANT) + 7,456 RG - 4,021 LG (ACRES) + 1,267 ACCESS	.66
Hammonton	10	16,206 (CONSTANT) -10,752 LG (ACRES)	.70
Medford	12	12,067 (CONSTANT) - 7,803 LG (ACRES) + 4,999 ACCESS	.97
Pemberton	6	7,310 (CONSTANT) - 4,180 LG (ACRES)	.81
Woodland	6	No Significant Variables	0
Winslow	17	No Significant Variables	0
Dennis	19	7,570 (CONSTANT) -3,116 LG (ACRES)	.37
Maurice River	19	No Significant Variables	0
Monroe	30	6,144 (CONSTANT) +12,056 CLASS - 3,124 LG ACRES - 1,710 RD	.70
Barnegat	4	No Significant Variables	0
Jackson	45	6,788 (CONSTANT) - 5,260 LG (ACRES) + 5,590 CLASS - 3,911 RD + 2,864 ACCESS	.58
Manchester	21	7,153 (CONSTANT) + 3,175 PT + 8,429 ZONE - 3,527 LG (ACRES)	.81

Note: All variables are significant at the five percent level

The variable LG ACRES occurs in all of the nine equations shown. In Hammonton, Pemberton and Dennis, LG ACRES is the only significant variable, and it wields considerable explanatory power in Hammonton (R^2 = .70) and Pemberton (R^2 = .91). Acreage is also the single most important independent variable in Medford and Jackson Townships. In all cases there is a negative relationship between acreage and price per acre, as expected. ACCESS shows a positive effect on land prices in three townships (Hamilton, Medford and Jackson) and CLASS is a significant variable in Jackson and especially Monroe Township. In Galloway Township, the most important variable is SEWER, which adds over $22,000 per acre to land prices. The only other significant non-location variable in an individual township is ZONE, which increases land prices in Manchester Township.

Pinelands-related location variables are significant in only four townships, and the effect is positive in two cases and negative in the other two. In Hamilton Township, location in the Regional Growth Area adds nearly $7,500 to the price per acre. In the pre-moratorium period, the RG variable is also significant, although the magnitude of the coefficient is much smaller (+1,659). Similarly, in Manchester Township, location in the Pinelands Village (Whiting), adds $3,175 to PPA, compared to only $1,304 in the pre-moratorium period. Thus, land values in developable parts of these townships appear to have been enhanced by the implementation of the Comprehensive Management Plan. The regression equations for these two townships explain most of the variance in the samples; the R^2 is .66 for Hamilton

and .81 for Manchester.

Negative relationships between PPA and location in the Rural Development Areas are demonstrated in Monroe and Jackson Townships. In Monroe Township, the post-CMP coefficient of -1,710 is 35 percent greater than the pre-moratorium value of -1,264. The post-CMP Rural Development coefficient in Jackson Township is -3,911, while neither RD nor any other Pinelands-related variable is statistically significant in the prior time periods. The data therefore indicate that land prices in the Rural Development Areas may have been adversely affected by the Pinelands Plan in these two townships.

Thus, at the local level, the Plan appears to have both postive and negative effects on land values. Interestingly, however, the Preservation, Forest, and Agricultural Production Areas are not significant determinants of prices in individual townships in the post-CMP period. Of course, since these models are based on the limited number of sales which took place during the first year and a half of implementation, the results can hardly be considered conclusive. It will be necessary to monitor land sales over a period of several years in these and perhaps other towns to determine the full range of effects of the Plan, both at the local and regional levels.

IV

Trends in the Housing Market

A. Introduction

Closely tied to land prices is the market for new housing in the Pinelands. The development value of land depends in large part upon the current demand for new housing and the ability of the land to serve as a source of building sites to meet that demand. Similarly, speculative value is a function of the expected demand and supply at some time in the future, and in general, the shorter the time horizon, the greater the speculative value. To the extent that the Pinelands regulations inhibit the current and future supply of building sites in the Pinelands, land prices in restricted areas will be driven down. Thus, while the analysis in the preceding chapter shows no major impact on land values since the CMP was adopted, it is important to examine the housing market in the Pinelands as an indicator of potential future changes in the land market. In addition, housing prices may themselves be affected by limitations on supply, which could serve to increase the value of existing dwelling units.

According to the 1980 census, there were 182,623 dwelling units in the 52 Pinelands municipalities. Since January of 1981, when the Comprehensive Management Plan went into effect, the Pinelands Commission has issued approvals and waivers of strict compliance for the construction of over 14,000 additional units in the Pinelands Area. Clearly,

therefore, the Plan has not halted construction in the Pinelands. In fact, the aim of the Plan is not to curtail development throughout the region, but rather to reinforce the trends which existed at the time of its adoption. Thus, areas which were already undergoing urbanization during the 1970's were generally designated as Regional Growth or perhaps Rural Development Districts, while areas more remote from development pressures were designated for protection from future urban encroachment. The following analysis focuses on the extent to which the overall level of building activity and average housing prices throughout the region have been affected by the CMP. Since the most disaggregate housing data available are at the level of the municipality, the area comprising the 52 Pinelands municipalities is used as the region for analysis. While localized effects on housing supply are expected to occur, it is beyond the scope of the current study to identify specific sites where development has been curtailed by Pinelands regulations. Rather, the emphasis here is to determine whether or not the regional demand for housing is being met under the Plan.

B. Residential Building Permits, 1972-1982

Information on the number of residential building permits issued in each municipality are published on a monthly and annual basis by the New Jersey Department of Labor. The data presented in this section were obtained from annual reports for 1972 through 1981, and from monthly reports for 1982.

Because the data in the monthly reports are sometimes incomplete, the 1982 figures must be considered preliminary and subject to revision at a later date. The number of dwelling units authorized by building permits is a good indicator of construction activity in the near future. Therefore, it is a useful predictor of the effects of the CMP on the market for new housing in the Pinelands.

The issuance of building permits for new homes in Pinelands communities is highly concentrated in a small number of municipalities. The ten municipalities with the largest number of building permits issued in 1982 account for 78 percent of all permits issued in the region (see Table IV-1). These municipalities, however, are more geographically dispersed throughout the region than are the towns which dominate the vacant land market (refer to Table III-1). Five of the most active towns (in terms of total residential units authorized) are located in Ocean County, although Evesham Township in Burlington County ranked first with 18.2 percent of the regional total (526 permits), and Galloway (Atlantic County), Winslow (Camden County), Medford (Burlington County), and Franklin (Gloucester County) are also in the top ten. Thus, building activity is concentrated on both the eastern and western edges of the Pinelands.

Preliminary 1982 data show that a total of 2,883 residential building permits were issued in the 52 towns in 1982, fewer than in any of the ten preceding years (see

Table IV-1

Total Residential Building Permits Issued, 1982

Top Ten Pinelands Municipalities

Rank	Municipalities	Number of Permits Issued[1]	Percent of Permits in All Pinelands Municipalities
1	Evesham	526	18.2
2	Berkeley	495	11.0
3	Manchester	316	17.2
4	Galloway	197	6.8
5	Winslow	187	6.5
6	Lacey	143	5.0
7	Little Egg Harbor	136	4.7
8	Medford	94	3.3
9	Jackson	81	2.8
10	Franklin	76	2.6
		2,451	78.1

[1]Based on preliminary monthly reports issued by the New Jersey Department of Labor, Division of Planning and Research

Table IV-2).[1] The largest number of permits were authorized in 1972 (10,456). Construction activity then dropped by more than 50 percent during the 1974-75 recession, peaked again in 1978, and dropped dramatically by 1980, with no recovery yet evident by 1982. This pattern characterizes not only the Pinelands towns, but also the seven-county region and the state as a whole. In order to determine whether the recent drop in permits in Pinelands towns merely reflects general economic conditions or is perhaps indicative of Pinelands-related impacts, it is necessary to examine trends in the Pinelands municipalities in relation to those at the regional and state levels.

Figure IV-1 shows total residential and single family dwelling units authorized in the 52 Pinelands municipalities as shares of the regional and state totals from 1972 to 1982. The shares of single family permits are in all cases higher than the shares of total residential permits, since relatively little multi-family housing is built in the Pinelands towns.[2] In 1981, the most recent year for which data on single family permits is available, the 52 towns accounted for 16.1 percent of all residential permits issued statewide, and 19.7 percent of single family permits. The regional shares stood at 39.1 percent of all permits and 45.9 percent of single family permits.

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[1] See Appendix Table E-4 and E-5 for listings of total and single family residential building permits by municipality, 1972-1982.

[2] In 1981, 72 percent of all residential permits in the Pinelands communities were for single family dwellings, compared to 61 percent for the seven-county region and 59 percent statewide.

Table IV-2

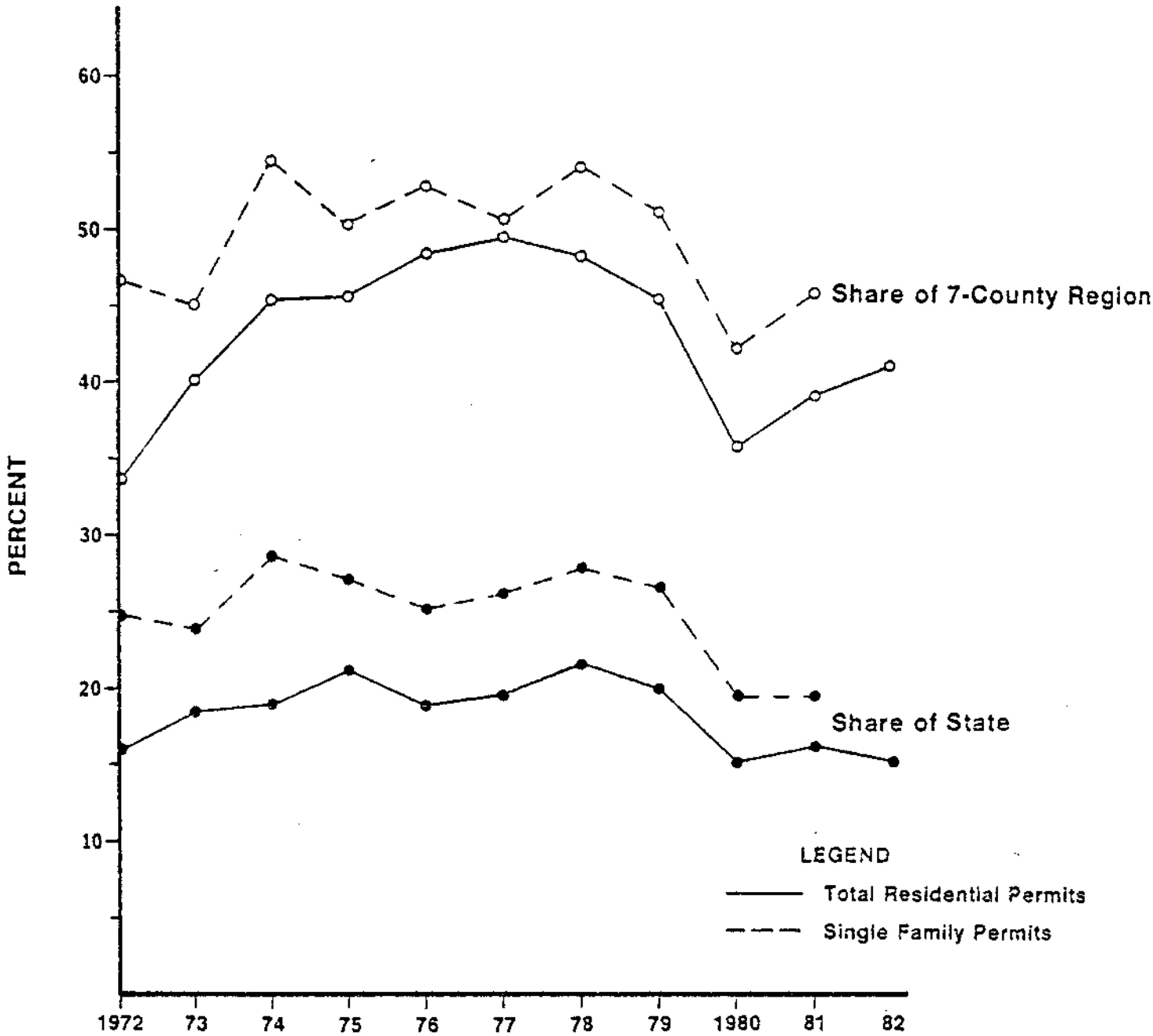
Total Residential Building Permits Issued

Year	Pinelands Municipalities	Pinelands Counties	State of New Jersey
1982	2,883[1]	7,028[1]	19,064[1]
1981	3,424	8,768	21,293
1980	3,367	9,404	22,257
1979	6,977	15,328	34,908
1978	8,456	17,540	39,058
1977	6,809	13,794	34,887
1976	6,158	12,738	32,528
1975	4,938	10,840	23,215
1974	4,894	10,804	25,878
1973	9,610	24,005	52,145
1972	10,456	31,032	65,539

[1]Based on preliminary data

SOURCE: N.J. Department of Labor, Division of Planning and Research

PINELANDS MUNICIPALITIES BUILDING PERMIT SHARES



SOURCE: N.J. Department of Labor

Overall, the state share of total permits increased from 16 percent in 1972 to 21.6 percent in 1978, then fell rather sharply to 15.1 percent in 1980. Since the adoption of the CMP, the share increased slightly in 1981 and then dropped back to 15.1 percent in 1982. The regional share also increased over the 1972-1978 period, from 33.7 percent to 48.2 percent, then plummeted to 35.8 percent in 1980, and has since risen to 41.0 percent in 1982. The shares of single family permits roughly parallel these trends, although not as consistently, particularly at the regional level. After 1978, however, the pattern was one of decline until 1980, and then growth in the regional share and a leveling off in the state share (1982 data for only single family permits are as yet unavailable).

The marked downward shift in the shares in 1979 and 1980 is evidence that the temporary "moratorium" on building in the Pinelands Area could have had a significant effect on residential construction in the Pinelands region. Since the adoption of the CMP, however, the indications are mixed. As a share of the seven-county region, building activity in the Pinelands municipalities appears to be rebounding from its earlier slump, although the share in 1982 is still significantly lower than during the mid-1970's. The state share also remains at a level below that which prevailed in the years preceding the moratorium. While it is possible that factors other than the Pinelands regulations have

contributed to this trend, the controls on development instituted during the moratorium and after adoption of the Comprehensive Management Plan can not be ruled out as a potential cause.

Whether the level of building activity in the 52 Pinelands municipalities relative to other parts of the state will increase or decline in the future is uncertain. In 1981 and 1982, over two-thirds of the housing units authorized by the Pinelands Commission were for waivers of strict compliance due to economic hardship. Many economic hardship waivers have been granted under the provisions of the CMP which allow a prospective developer to qualify if (1) he has made expenditures under the requirements of the Plan (Section 4-505.A.2.) or (2) he holds a valid final subdivision approval under the Municipal Land Use Law which was in effect on February 7, 1979 (Section 4-505.A.3.). Waivers will be approved under the first provision until January 1984 (since preliminary municipal approvals are valid for three years), and under the latter provision waivers were granted only until January 1983. Thus, as approvals under these provisions come to an end, it is possible that the recent growth in the Pinelands municipalities regional shares of building permits will eventually level off or decline.

On the other hand, the approvals granted by the Pinelands Commission in 1981 and 1982 outnumber all the building permits issued throughout the 52 municipalities by a ratio of more than two to one. Thus, many houses can be built in the future in the Pinelands Area based on approvals already granted. Also, in addition to the growth permitted in Regional Growth and Rural Development Areas, some towns have designated lands in Rural Development Areas as Municipal Reserve Areas in their master plans and zoning ordinances. These areas may be developed at Regional Growth Area densities when adjacent buildable land in the Regional Growth Areas has been substantially developed, all essential public services are available, and the amount of vacant developable land in the Regional Growth Areas is insufficient to meet projected growth in the next five years (Section 5-503). Thus, provisions have been made under the Plan to accomodate projected new construction, at least in the short run. Future building activity in Pinelands communities should be monitoried in order to determine the extent to which these provisions are sufficient to meet the long-term demand.

C. Residential Sales, 1972-1982

While building permits are an indicator of new residential construction, historical data on the volume of residential sales can be used to examine the overall health of the housing market. It is not expected that the Pinelands Plan will have a major impact on the total level of

housing sales in Pinelands communities, except insofar as the availability of new units is restricted. Table IV-3 shows the dollar volume of residential sales in the 52 Pinelands municipalities, the seven-county region, and the state from 1972 to 1982. The data were obtained from the New Jersey Division of Taxation and include all "usable" sales in each fiscal year.[1] Sales in the 52 towns and throughout the state peaked in 1979 and have since declined due to the general economic recession. In the seven-county region the value of sales in 1981 exceeded that in any preceding year, although in 1982 sales dropped off significantly.

These data can be translated into Pinelands municipalities shares, as depicted in Figure IV-2. The 52 towns have steadily increased their share of statewide housing sales, from 3.7 percent in 1972 to 6.0 percent in 1982. This trend shows no sign of leveling off or reversing since the adoption of the Pinelands Plan. The share of the seven-county region fluctuated somewhat, both before and after the Pinelands regulations. However, the share increased from 16.9 percent in 1972 to 20.2 percent in 1978, and to 24.0 percent in 1982. Thus, the overall trend has been for the Pinelands towns to claim increasing proportions of housing sales in the region, both in the pre- and post-Pinelands periods.

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[1] See Appendix Tables E-6 and E-7 for listings of the number and volume of residential sales by municipalities and by year.

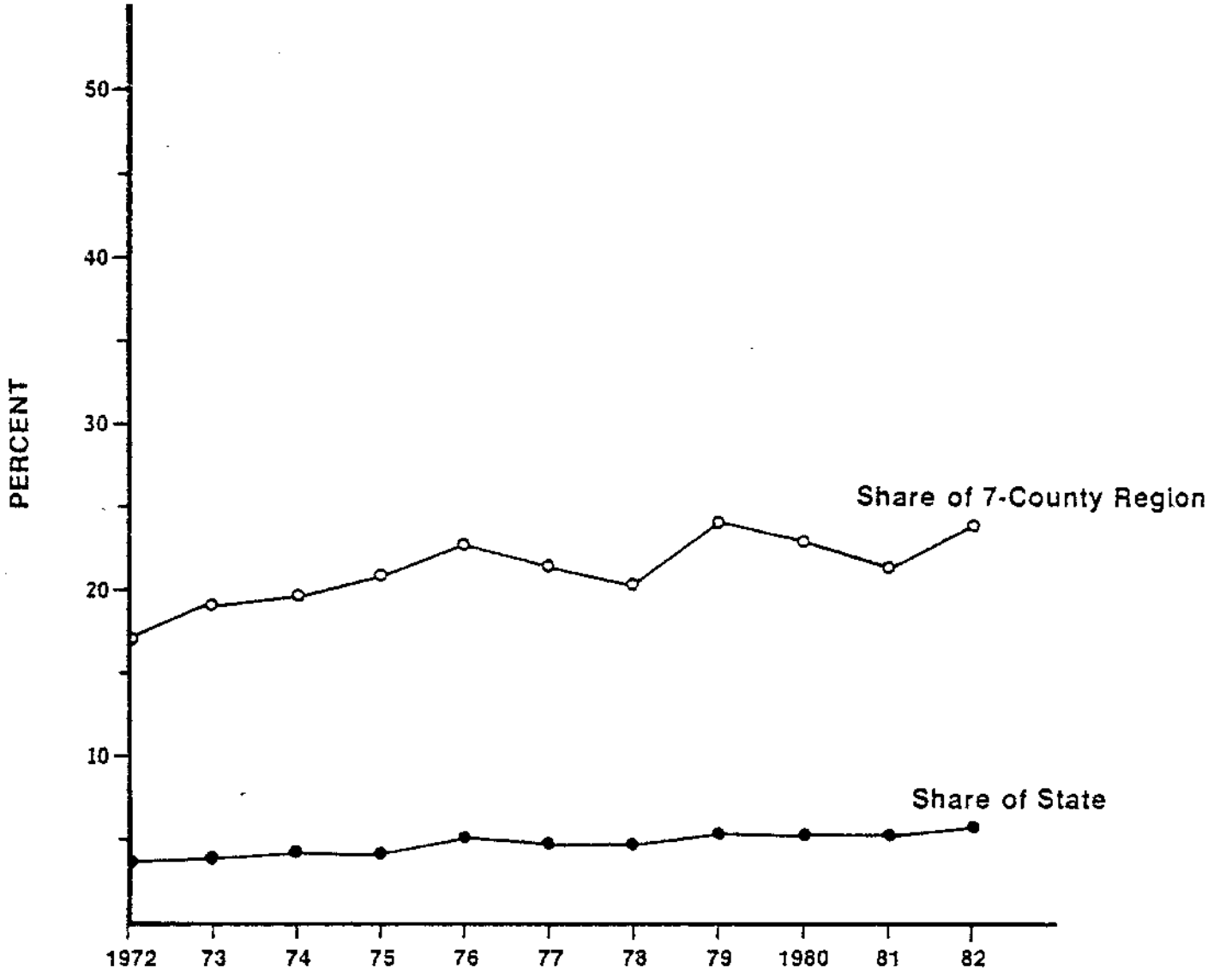
Table IV-3

Total Volume of Residential Sales

Fiscal Year	Pinelands Municipalities	Pinelands Counties	New Jersey
	(million dollars)		
1982	205.9	857.8	3455
1981	241.2	1131.7	4295
1980	249.7	1087.0	4365
1979	270.2	1114.9	4651
1978	204.4	1009.6	4140
1977	162.1	761.8	3335
1976	135.7	592.9	2632
1975	94.5	452.4	2241
1974	105.4	534.3	2431
1973	107.5	565.0	2602
1972	73.0	432.9	1950

SOURCE: N.J. Division of Taxation

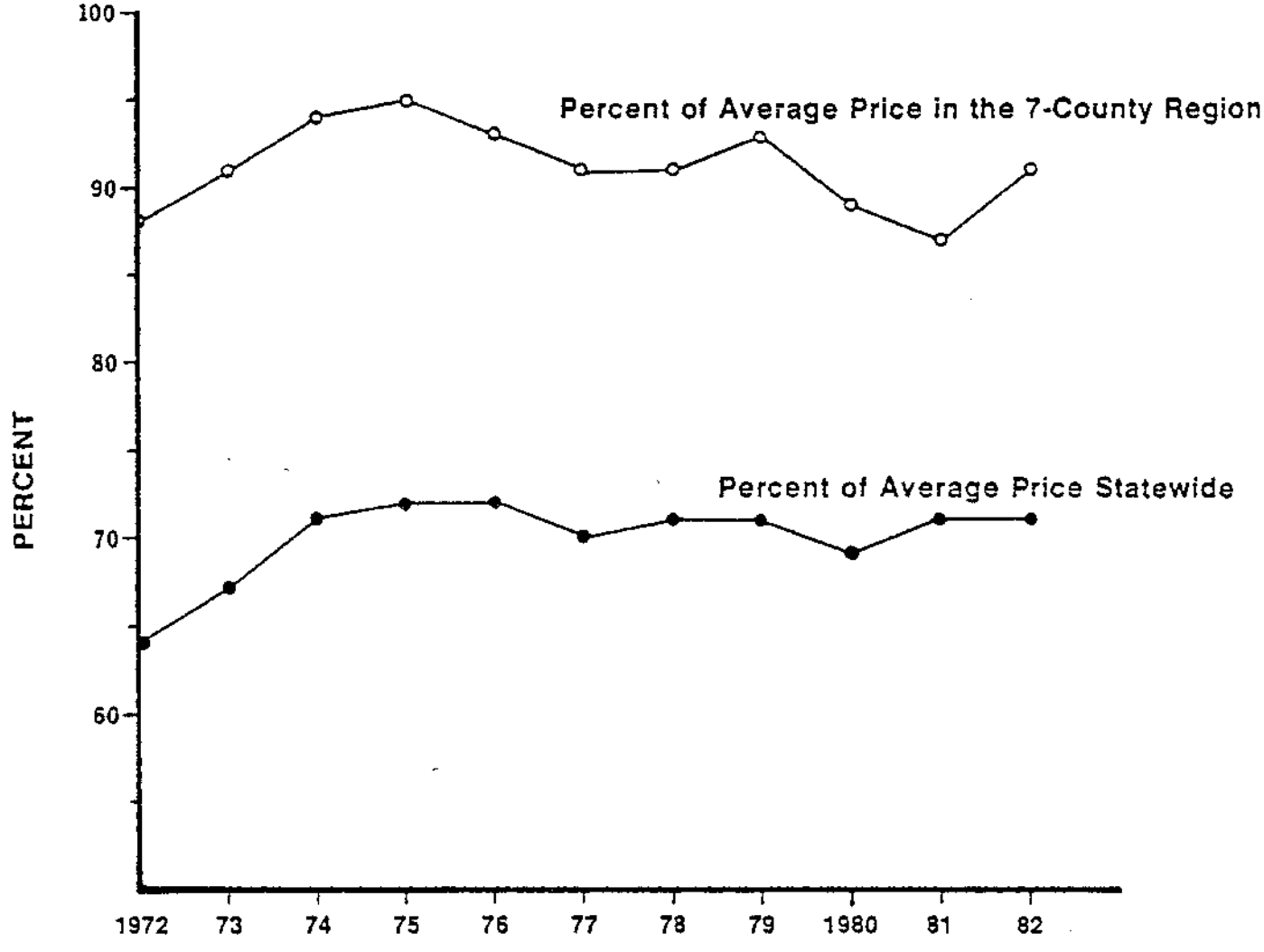
PINELANDS MUNICIPALITIES SHARES OF RESIDENTIAL SALES



SOURCE: N.J. Division of Taxation

One potential impact of the Plan on the existing housing market is that prices could be inflated due to limitations on supply. In 1982, the average selling price for a residential property in the Pinelands communities was $53,122, compared to $58,405 throughout the seven-county region and $74,461 statewide. This price differential between the Pinelands and other parts of the state has existed throughout the 10-year period, however. In Figure IV-3, the ratio of the Pinelands average selling price and the regional and state prices are plotted over time. As a percent of the average price statewide, the Pinelands communities have remained fairly stable at about 70 percent since 1974. The percent of the regional price has fluctuated more, but stood at 91 percent in 1982, the same as in 1977 and 1978. Therefore, the CMP has thus far had no apparent impact on housing prices in the Pinelands municipalities.

PINELANDS TOWNS AVERAGE RESIDENTIAL SELLING PRICE
PERCENT OF REGIONAL AND STATEWIDE PRICES



SOURCE: N.J. Division of Taxation

V

Employment and Resource Industry Trends

A. The Economic Base of the Pinelands Region

1. Employment in the Seven-County Region

The seven-county region which encompasses the Pinelands Area supports a wide assortment of economic activities.[1] In terms of employment, the region's largest industries are services (including amusements) and retail trade, which together account for 45 percent of the total work force (see Table V-1). Much service and retail employment is concentrated in and around Atlantic City, as a result of the rapid growth of the casino industry in recent years. Retailing and services also dominate the economic bases of Cape May and Ocean Counties, due to the substantial numbers of seasonal visitors and retirement homes. Several commercial centers serving a relatively large regional population are found in Camden and Burlington Counties.

Manufacturing is less important in the seven-county region than in the state as a whole; however, the region does support a variety of manufacturing industries. Cumberland County has the highest proportion of manufacturing jobs (42 percent of total employment), and half of these jobs are in the glass industry. Manufacturing is also

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[1] While a variety of economic activities are found in the Pinelands Counties, the region as a whole is not a major center of employment. A substantial number of residents, especially in the western counties (Burlington, Camden, and Gloucester), commute to jobs in Philadelphia and elsewhere. In 1980, the region had only 26 jobs for every 100 residents, compared to a statewide average of 34 jobs per 100 residents.

Table V-I

Covered Employment[1] by Major Industry Groups - 1981

Industry Group	Pinelands Counties		New Jersey	
	Employees	Percent of Total	Employees	Percent of Total
Mining & Agriculture	10,363	1.7	41,643	1.3
Contract Construction	23,615	3.9	116,817	3.8
Manufacturing	106,076	17.7	779,533	25.3
Wholesale Trade	28,871	4.8	212,604	6.9
Retail Trade	127,442	21.2	489,678	15.9
Transportation	13,948	2.3	110,648	3.6
Communications & Utilities	12,872	2.1	81,892	2.7
Services & Amusements	143,264	23.8	594,416	19.3
Finance, Insurance, & Real Estate	29,177	4.9	162,410	5.3
Government	105,240	17.5	494,981	16.0
Total	600,868	100.0	3,084,662	100.0

[1]Covered employment" means all jobs covered under the New Jersey Unemployment Compensation Law.

Source: New Jersey Department of Labor, Covered Employment Trends - 1981

relatively important in Gloucester, Camden, and Burlington Counties, all of which have diversified industrial bases. Throughout the region, the largest manufacturing sectors (in terms of employment) are electrical goods, glass products, food products, printing and publishing, apparel, chemical products, fabricated metals, and machinery.

The Pinelands counties have a higher proportion of total employment in government than does the State as a whole, despite the fact that state government offices are concentrated outside the Pinelands, in Trenton. The major difference lies in the proportion of local government employees, which account for 13.7 percent of the work force in the Pinelands Counties (82,000 employees), compared to only 10.7 percent statewide. The federal government employs 2.4 percent of the region's work force, slightly more than the statewide proportion. Major federal installations include Fort Dix, McGuire Air Force Base, Lakehurst Naval Air Station, and the Federal Aviation Administration Technical Center, all of which are located in the Pinelands Area.

Contract construction, mining and agriculture are relatively more important in the region than elsewhere in the state; however, mining and agriculture together account for only 1.7 percent of regional covered employment (10,363 workers), while construction industries employ only 3.9 percent of the labor force (23,615 workers). Since self-employed persons and certain agricultural workers are excluded from

Thus, employment opportunities in the region are found primarily outside the Pinelands Area; and within the smaller region comprising the 52 municipalities, most jobs are concentrated in a few towns. A 1980 report to the Pinelands Commission identified only sixteen facilities employing 100 or more workers in the Pinelands National Reserve, and only two minor regional shopping centers (in Evesham and Hammonton). The report states that, "... economic activity of the sort linked to present or potential development is limited in the extreme within the Pinelands Area. Furthermore, it would appear that a substantial part of the residential development in the Pinelands is linked to economic activity taking place outside the boundaries of the Pinelands region."[1]

In many parts of the Pinelands Area, economic activity is limited to resource-related industries (e.g. agriculture, sand and gravel mining, forestry) and small commercial establishments serving the local population. The federal government is also a major employer, as noted previously, and construction may be an important source of jobs in developing areas.

B. Trends in Employment

1. Potential Impacts of the CMP

In the following sections, an attempt will be made to determine whether and to what extent the moratorium and the CMP have affected the overall level of economic

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[1]Alan Mallach Associates, "Growth Shapers," February 1980, p. 3.

unemployment compensation coverage, the total number of persons employed in construction and resource-related industries is underestimated by the covered employment data. Nevertheless, in the seven-county region as a whole, these industries are much less important in providing jobs than are retail activities, services and manufacturing.

2. Employment in Pinelands Municipalities and the Pinelands Area

Annual employment data at the municipal level are limited to total counts of private sector covered employment, and no data exist at the sub-municipal level. Therefore, industry breakdowns are not available for the 52 Pinelands municipalities, and it is impossible to determine exactly how many jobs are located within the boundaries of the Pinelands Area. Certain general statements about the economic base of the Pinelands can, however, be made. First of all, of the seven-county region's 495,700 private sector covered jobs in 1981, only 87,100 (17.6%) are located in the Pinelands municipalities.[1] Furthermore, almost one-quarter of all private sector jobs in the Pinelands municipalities are found in one city, Vineland, and these jobs are located in the developed portion of the city, which is outside the Pinelands Area. The ten towns with the largest number of workers account for 66 percent of total employment in the Pinelands towns (see Table V-2).

[1] In contrast, 32.5% of the region's population resides in Pinelands communities.

Table V-2

1981 Private Sector Covered Employment - Top Ten Pinelands Municipalities

Rank	Municipality	Covered Employment	Percent of Employment in all Pinelands Municipalities
1	Vineland	21,125	24.2
2	Hammonton	6,234	7.2
3	Egg Harbor Twp.	5,528	6.3
4	Evesham	4,789	5.5
5	Medford	3,986	4.6
6	Jackson	3,919	4.5
7	Galloway	3,734	4.3
8	Hamilton	3,066	3.5
9	Winslow	2,918	3.4
10	Berlin Borough	2,508	2.9
		57,807	66.4

Source: N.J. Department of Labor

activity in the Pinelands, using historical data on covered employment. Trends exhibited by the Pinelands counties are compared to statewide trends, and employment growth in the 52 Pinelands municipalities are analyzed in relation to county and state growth patterns. As noted in the "Economic Analysis of the Pinelands Comprehensive Management Plan,"[1] the effects of the CMP on the regional economy are expected to differ by industry. While the expansion of manufacturing and commercial activities is limited in the more restrictive management areas, the bulk of this type of development has always occurred in the regional growth areas and especially outside the Pinelands, where it can continue relatively unfettered. Similarly, the overall level of construction activity in the region is not expected to be severely affected, since development is not prohibited by the CMP, but rather is redirected from Preservation, Forest, and Agricultural Production Areas to Rural Development and Regional Growth Districts. Since labor is generally mobile, at least within the confines of a region the size of the Pinelands Area, local shifts in employment growth are not of major concern. Furthermore, since the CMP tends to reinforce the development patterns already established in previous years, the magnitude of these shifts will probably be small.

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[1]Report to the Pinelands Commission, November 20, 1980.

Federal government employment, which accounts for a significant proportion of jobs within the Pinelands Area, will be unaffected by the CMP. No impacts on local government employment are expected, either, except in cases where municipalities suffer fiscal stress as a result of losses of ratables. On the positive side, tourism and recreation in the Pinelands may be enhanced by the implementation of the Plan, and industries which depend on the supply of clean water, such as shellfishing and cranberry growing, should be protected. The effects of the Plan on agriculture and resource extraction is discussed in Section C below.

Any changes in the level of output of a given industry will have associated indirect, or "multiplier," effects on income and employment. For example, if construction activity is dampened, not only will the income of contractors be reduced (the direct effect), but the contractors will purchase fewer materials (e.g. plumbing equipment) from wholesalers, which in turn means that the wholesalers will buy fewer manufactured inputs (e.g. piping), and the manufacturers will buy fewer raw materials (e.g. copper), and so on. By the same token, if farming expands, farmers will purchase more equipment, and the farm machinery industry will purchase more fabricated metals, etc. Thus, multipler effects magnify initial changes

in demand, output and employment,[1] and the impacts can be both positive and negative. The relative importance of the multiplier effects depends upon the type of industry affected and the extent to which inputs are provided by firms located within the region. Such effects can be predicted using complex econometric or input-output models. In analyzing aggregate employment trends, any shifts which are attributed to the CMP (or any other "exogenous" factor) will embody both direct and multiplier effects, although it will be impossible to separate the two.

2. Data Problems

Unfortunately, the covered employment data, which are the only data available for municipalities on an annual basis, are not ideally suited to use for impact analysis. First, as already noted, only workers who are covered under the New Jersey Unemployment Compensation Law are included in the counts, which excludes self-employed persons and certain agricultural workers, among others. In addition, as the publication itself states, "municipality level statistics may be unreliable for trend analysis,"[2] due to incomplete or erroneous information reported by employers.

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[1] Employment is, of course, directly correlated with industry income; and losses or gains in wages and salaries will set into motion a related set of "household" multiplier effects felt primarily in the retail and service sectors.

[2] New Jersey Department of Labor, Covered Employment Trends - 1981, p. 101.

Government employees are not included in the data for municipalities, and inconsistencies in the historical information are introduced by changes in the definition of "covered employment" over time. For example, in 1978 certain domestic and agricultural workers were added, and in 1981 employees of elementary and secondary schools operating under a church charter were dropped from unemployment insurance coverage. A final problem is that, as of this writing, the data for municipalities are available only through September of 1981, less than one year after the CMP was adopted. Therefore, it is extremely difficult at this time to determine what, if any, effect the Plan has had on employment growth in the Pinelands. Bearing these shortcomings and difficulties in mind, a discussion of trends in the region and a preliminary assessment of the Plan's implacts to date are presented below. Clearly, however, additional research will be needed before any firm conclusions can be drawn.

3. Trends in the Seven-County Region

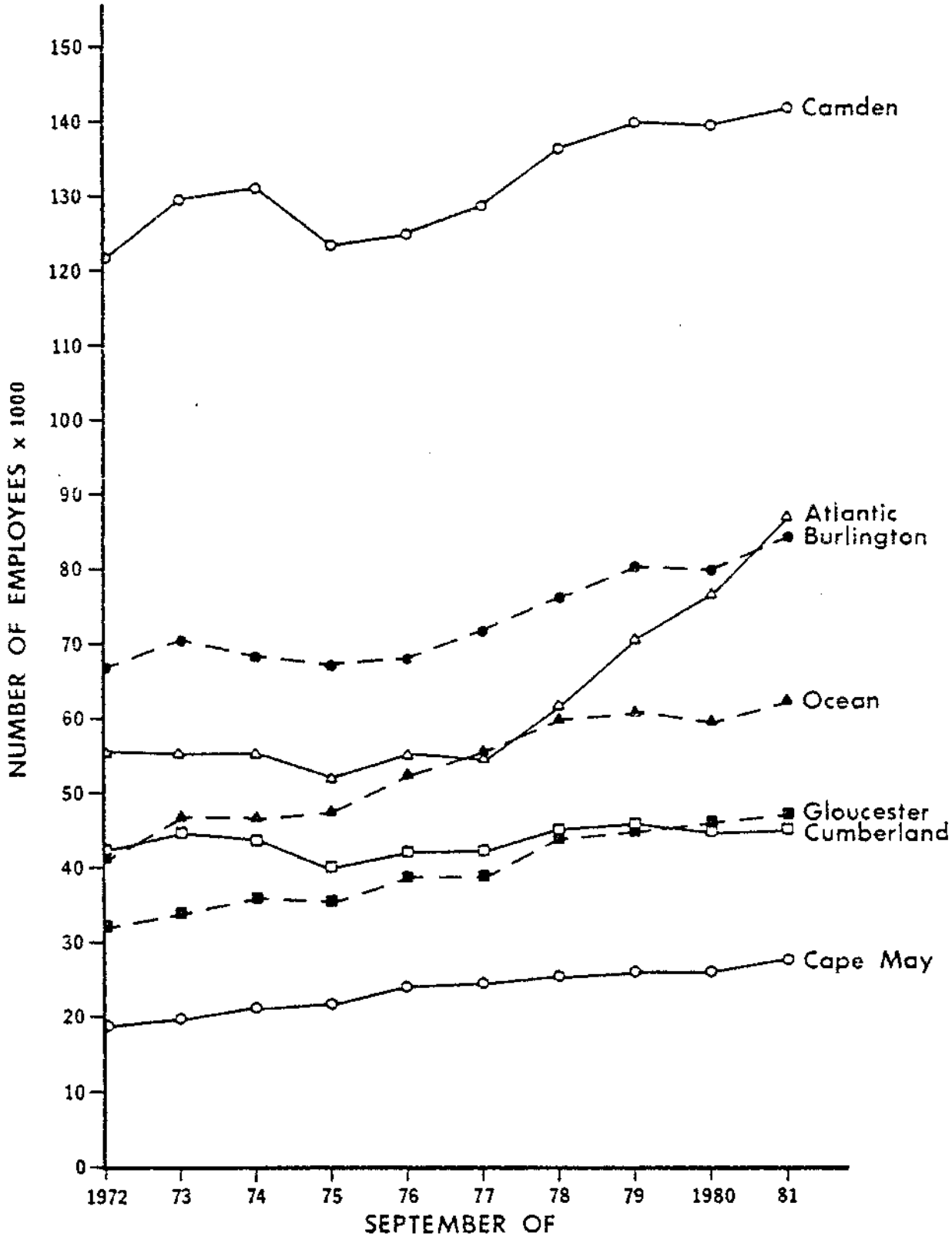
Total private sector covered employment in the seven-county region increased from 378,000 in 1972 to 496,000 in 1981, a 31 percent increase. Growth in employment, however, has not occurred at a steady rate, nor is it distributed evenly throughout the region. Most of the

counties experienced a decline or leveling off in the number of jobs during the 1974-75 recession, with subsequent increases in employment (see Figure V-1). Camden County, which has the largest number of jobs, demonstrates this pattern most sharply, losing nearly 10,000 jobs in 1974-75, and then gaining almost 20,000 by September of 1981. Burlington County added over 13,000 jobs from 1975 to 1981, after successive declines in 1974 and 1975.

The most dramatic increase in employment occurred in Atlantic County, due to the economic boom associated with the development of the casino industry in Atlantic City. Between 1977 and 1981, the number of jobs in Atlantic County rose by sixty percent, causing it to surpass Burlington County as the second largest source of employment among the Pinelands counties. Ocean, Gloucester, and Cape May Counties have exhibited moderate employment growth since the mid-1970's. Only economically depressed Cumberland County experienced a net loss of jobs from 1978 to 1981.

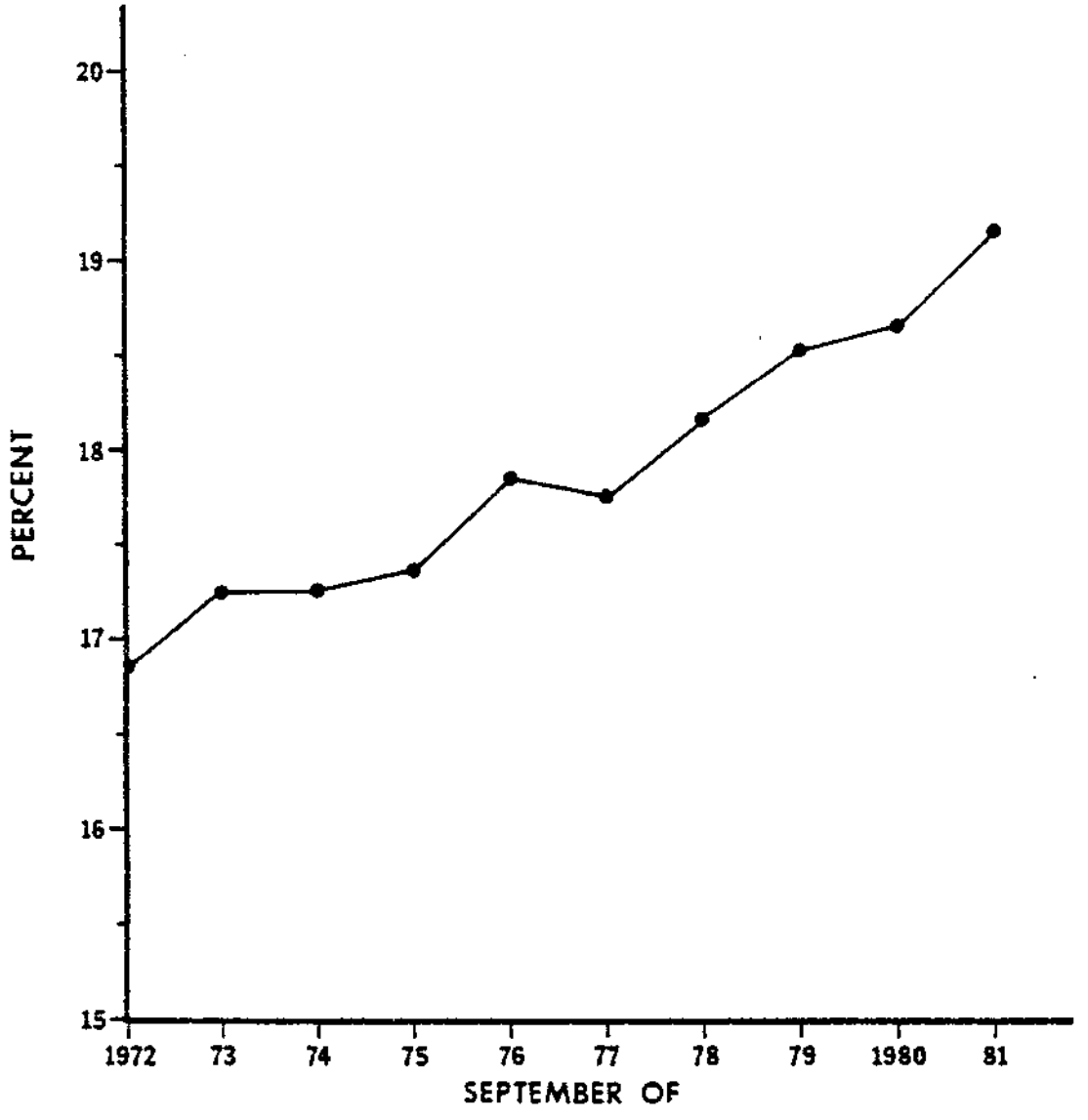
Compared to the State as a whole, the Pinelands counties have fared quite well. The region's share of state-wide employment rose from 16.8 percent in 1972 to 19.1 percent in 1981 (see Figure V-2). From 1978 to 1981, the period during which the moratorium and the CMP were operating, the region's share increased a full percentage point, faster than in any preceding three-year period. Therefore, it appears

PRIVATE SECTOR COVERED EMPLOYMENT TRENDS



SOURCE: N. J. Department of Labor

PINELANDS COUNTIES SHARES OF STATE COVERED EMPLOYMENT



SOURCE: N. J. Department of Labor

that, taking the seven-county region as a whole, the Pinelands Protection Act has had no adverse effects on the general level of economic activity. Covered employment in Pinelands counties continues to expand at a faster rate than in other parts of New Jersey.

4. Trends in the Pinelands Municipalities

The number of covered employees in the Pinelands municipalities increased by more than 50 percent from 1972 to 1981, from 56,400 to 87,100 (see Table V-3).[1] Seven thousand new jobs were added between 1978 and 1981. Therefore, the implementation of the moratorium and the CMP did not precipitate a net loss of employment in the 52 municipalities. Nor have these towns lost ground in relation to the state (see Figure V-3). The Pinelands share of statewide employment increased from 3.2 percent in 1978 to 3.4 percent in 1980, and then remained stable in 1981.[2] The overall rate of increase from 1978 to 1981 was slightly less than in preceding years, although growth occurred quite sporadically prior to 1979. Most of the overall expansion of employment can be attributed to large increases in 1973, 1976, and 1978. During the 1974-1975 recession, total employment declined in the Pinelands municipalities, and

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[1] Refer to Appendix Table E-8 for a listing of covered employment by municipality, 1972-1981.

[2] The Pinelands share of state employment is only half the share of state population (6.7% in 1980), reflecting the fact that this region is used more as a place to live than as a place to work.

the share of statewide employment remained unchanged at 2.8 percent, indicating an inability on the part of the region to sustain job growth during an economic slowdown. This phenomenon may account for the similar leveling off of the share in 1981.

The Pinelands share of employment in the seven-county region has followed a similar although much more pronounced pattern (see Figure V-3). Significant increases in the share were achieved in 1973, 1976, and 1978, while relative growth leveled off in 1974-75 and 1979-80 and declined in 1977 and 1981. Because growth in the total share has been so sporadic, it is difficult to establish a clear baseline trend against which to compare the post-Pinelands trend. Nevertheless, it is evident that from 1978 to 1981, employment expanded more rapidly in that part of the seven-county region which is located outside the Pinelands. This finding is not surprising, in light of the large number of jobs provided in Atlantic City during this period. If, in fact, Atlantic County is removed from the calculations, the Pinelands share of regional employment actually increased from 15.3 percent in 1978 to 15.8 percent in 1981. The decline in the share is therefore more a function of the large influx of jobs to Atlantic City than a slowing of growth in the Pinelands towns.

In sum, it appears that, within the limited time frame presented, the Pinelands Plan has had no major impact on aggregate employment in the Pinelands region. This finding does not preclude the possibility of significant effects on individual industries. In the next section, the viability of agriculture and sand and gravel mining, two important resource-related industries in the Pinelands, is examined in greater detail.

C. Agriculture and Resource Extraction Industries

Since the basic intent of the Comprehensive Management Plan is to protect the natural resources of the Pinelands, resource-related industries should continue to thrive in the region. Such industries include tourism, recreation, agriculture, forestry, gathering, shell fishing, and sand and gravel extraction. The CMP does, however, impose certain minimum requirements for the operation and reclamation of resource extraction operations, and limits the expansion of sand and gravel mining in the Preservation Area. Also, while agriculture is permited in all management areas and is specifically protected from competing land uses in the Agricultural Production Districts, representatives of the farming community in the Pinelands have expressed concern that the implementation of the CMP has adversely affected the economic viability of farming. This section documents recent trends in mining and farming in the Pinelands, and discusses the possible impacts of the CMP on the economic health of these industries.

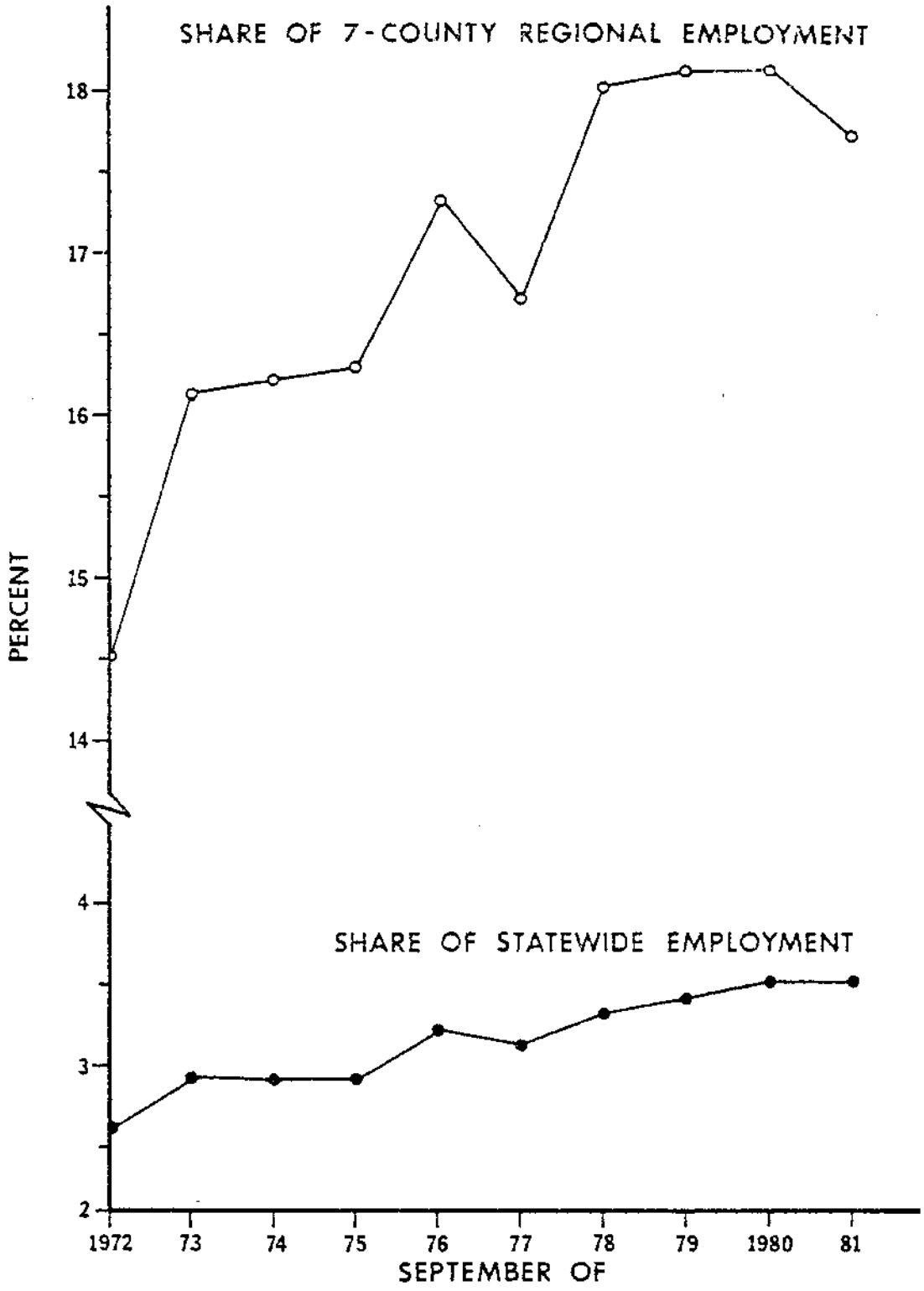
Table V-3

Total Private Sector Covered Employment

Year	Pinelands Municipalities	Pinelands Counties	New Jersey
September of:		- thousand employees -	
1981	87.1	495.7	2,590
1980	85.1	472.3	2,531
1979	84.4	468.2	2,529
1978	80.2	448.4	2,469
1977	68.9	414.7	2,335
1976	69.6	405.5	2,270
1975	62.5	385.2	2,217
1974	64.7	401.4	2,325
1973	64.1	400.4	2,323
1972	56.4	378.1	2,244

Source: New Jersey Department of Labor

PINELANDS MUNICIPALITIES COVERED EMPLOYMENT SHARES



SOURCE: N.J. Department of Labor

1. Sand and Gravel Mining in the Pinelands

The resource extraction industry employed a total of 824 covered employees in the seven Pinelands Counties in 1981, most of which were in Cumberland and Ocean Counties. Production statistics for sand and gravel in the Pinelands are lacking, since operators are not required to report such information to either the state or federal government. The U.S. Bureau of Mines, however, does collect data on the sale and use of sand and gravel. According to a representative of the Bureau of Mines, sales are a good proxy for production, since the high cost of transporting these materials usually means that consumption takes place at or near the point of production.[1] Table V-4 shows the total amount of sand and gravel sold or used in the seven Pinelands counties in 1980. Cumberland County's output accounts for over half the tonnage produced in the region, and almost 80 percent of the value. Ninety-three percent of the state's industrial sand, which has a very high value per ton compared to construction sand, is produced in Cumberland County.[2] Camden and Ocean Counties are important sources of construction sand and gravel. Overall, the seven-county region produces 63 percent of New Jersey's sand and gravel tonnage, and 73 percent of its total value of output.

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[1]Conversation with William Kebblish, U.S. Bureau of Mines, April 5, 1983.

[2]Kebblish, William and Robert J. Tuchman, "The Mineral Industry of New Jersey." Minerals Yearbook, U.S. Department of Interior, 1980.

Table V-4

Total Sand and Gravel Sold or Used, 1980, by County

	Quantity (thousand short tons)	Value (thousand dollar
Atlantic	150	626
Burlington	10	25
Camden	1,218	3,121
Cape May	611	1,776
Cumberland	2,719	26,235
Gloucester	25	112
Ocean	674	1,472
Region Total	5,407	33,367
(percent of state total)	(62.9%)	(73.3%)

SOURCE: U.S. Department of the Interior, Bureau of Mines, Minerals Yearbook

A recent inventory conducted by the National Park Service[1] has identified 91 sand and gravel mining operations in the Pinelands National Reserve, covering more than 17,000 acres (see Table V-5). The Forest and Rural Development Areas contain the largest number of operations (27 and 26, respectively), and these sites encompass over 10,000 acres. Seventeen mining sites covering nearly 5,000 acres are located in the Preservation Area, where no new resource extraction operations are permitted under the CMP. Operations which existed in the Preservation Area on August 8, 1980 may be continued, provided that they are authorized by a valid registration certificate issued by the New Jersey Department of Labor prior to February 8, 1979, and that the area of extraction is limited to the existing boundaries by the registration certificate.

According to the preliminary data collected by the National Park Service, thirteen operations in the Preservation Area are actively mined and are registered with the Department of Labor. Approximately 800 acres have already been mined out of a total of 4,600 acres which are authorized by valid registration certificates, leaving 3,800 acres which can still be utilized in years to come. While over sixty percent (2,400 acres) of the area available for expansion is concentrated in two operations, all but one of the 13 operators in the Preservation Area can at least double the area which they have

[1] To be published as "Technical Report #6: An Inventory of Sand and Gravel Operations in the Pinelands National Reserve."

Table V-5

Sand and Gravel Mines in the Pinelands National Reserve

Management Area	Number of Operations	Total Acreage
Preservation	17	4,864
Forest	27	5,905
Agricultural Production	2	153
Rural Development	26	4,330
Regional Growth	19	2,153
Total	91	17,405

SOURCE: U.S. Department of the Interior, National Park Service

already mined. In the Protection Area, new mines may be opened and existing mines expanded, provided that they are operated and reclaimed in accordance with the regulations contained in the CMP. Thus, the acreage restrictions in the Preservation Area impose no short-term constraints on the future expansion of the industry as a whole nor on the vast majority of individual operators.

All proposed (i.e. new or expanding) resource extraction operations in the Pinelands Area are subject to certain operating and reclamation standards. The operating requirements (found in Section 6-606 of the CMP) were developed in cooperation with representatives of the mining industry. One mine representative has noted that the buffer requirements (excavation activities are prohibited within 200 feet of any property line, and within 500 feet of any existing residential or commercial structure) may cause some problems for small operations which do not have large areas in which to expand.[1] In general, however, no major economic problems associated with the CMP's operating standards have been identified.

In addition, the CMP has reclamation requirements for resource extraction operations which are designed to ensure that areas put into mining use after the Plan's adoption are restored to their original condition to the maximum extent

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[1]Conversation with Gordon Strout, Clayton Sand Co., April 4, 1983.

possible. The regulations, contained in Section 6-607, require that mined areas be restored within two years of completion of mining. Restored areas must be graded to conform to the natural contours of the parcel, and topsoil and surface drainage must be restored to approximate pre-existing conditions. Vegetation must be re-established through the planting of a minimum of 1,000 pitch pine seedlings per acre, stabilization of exposed areas, and cluster planting of characteristic Pinelands oak species and shrubs.

Reclamation of mining sites, while an environmentally sound practice, necessitates some expenditures on the part of the mine operator. Costs of reclamation can be roughly divided into two categories: the cost of grading, and the costs of stabilizing the soil and planting seedlings. The cost of stabilization and planting are relatively uniform across sites. The New Jersey Department of Environmental Protection estimates that the spreading of seed to stabilize the soil costs about $100/acre, while 1,000 pitch pine seedlings can be purchased through the state's reforestation program for $70 and planted for another $40. Adding in the costs of fertilizer, lime, and planting seedlings of other native species could bring the total expenditures for stabilization and planting to as much as $300 per acre.[1]

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[1]Conversation with George Pierson, Bureau of Forest Management, March 30, 1983.

Grading costs are much more difficult to estimate, since the cost per acre varies dramatically from one site to another. The Clayton Sand Company has undertaken several reclamation projects in the Pinelands in recent years. Based on this experience, the company has discovered that grading costs are primarily a function of the methods of mining which are employed.[1] Using front end loaders tends to leave a very uneven topography, which may cost $1500-$1800 per acre to grade. In one extreme case, Clayton spent $3500/acre to grade a small parcel which had been mined by another operator and left in an almost unrecoverable condition. Using a more advanced machine called a scraper results in much less disturbance to the land surface. Gradings costs following extraction using a scraper range from $500 to $700 per acre, or about one-third as much.

Another company which has extensive experience in reclamation of sand and gravel mining sites is ASARCO, Incorporated. A 1979 report on a reclamation project in Manchester Township[2] lists the various reclamation costs per acre as follows:

Reclamation Procedure	Cost/Acre
Topsoil Stripping	$235
Topsoil Spreading	232
Fertilizing	41
Grass Planting	54
Raking out Topsoil	11
Tractor Maintenance	5
	$698

[1]Conversation with Gordon Strout, Clayton Sand Company, April 4, 1983.

[2]Mullikin, Lloyd G., "Land Reclamation Report - ASARCO Incorporated, Manchester Unit," Progress Report No. 5, December, 1979.

This figure does not include the planting of pitch pine seedlings or other characteristic Pinelands species, which would bring the total to slightly over $800/acre. An earlier progress report notes that a "substantial reduction" in reclamation costs can be achieved through a "carefully thought out tailing placement program in which tailing is put back in such a manner that a minimal amount of land preparation is required before the land can be retopsoiled and planted."[1] Thus, advance planning can minimize the overall cost of reclamation. Since the CMP regulations apply only to pits which are created after the adoption of the CMP, mine operators should be able to plan for reclamation in a manner which avoids unnecessary or exorbitant expenditures.

No data are available which describe the long-term revenues and costs for a typical sand and gravel operation in the Pinelands, so it is not known how the costs of reclamation affect the overall profitability of the industry. Recent data (see Table V-6) show that the total amount of construction sand and gravel sold or used in New Jersey declined rather dramatically from 1979 to 1981, but this decline can be attributed to a loss of markets precipitated by a 33 percent drop in the construction of new homes as well as a four percent decrease in the value of state road

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[1] Mullikin, Lloyd G., "Land Reclamation Report - ASARCO, Incorporated, Manchester Unit," Progress Report No. 3, November, 1977.

Table V-6

Sand and Gravel Sold or Used in New Jersey

	Construction		Industrial		Total	
	Quantity	Value	Quantity	Value	Quantity	Value
1981	5,800	19,400	2,305	26,438	8,105	45,838
1980	5,829	18,578	2,766	26,957	8,595	45,535
1979	8,277	21,590	2,504	23,092	10,781	44,682

Units = Thousand short tons (quantity) and thousand dollars (value)

SOURCE: U.S. Department of the Interior, Bureau of Mines, Minerals Yearbook

contracts.[1] It is doubtful that any decrease in production over this limited time frame can be traced to Pinelands regulations.

Gordon Strout of the Clayton Sand Company notes that over the long run, small operators are more likely to be adversely affected by the reclamation requirements of the CMP than large ones. Only large companies can afford expensive equipment such as the scraper,[2] which is more efficient not only from an operating standpoint but also for purposes of reclamation. Thus, the regulations may tend to magnify the competitive advantage which the large operators already enjoy. The potential cost disadvantage to small miners can perhaps be lessened through available programs of technical assistance administered by the New Jersey State Soil Conservation Committee, the Soil Conservation Districts, the South Jersey Resource Conservation and Development Council, the Cooperative Extension Service County Agents and Resource Specialists at Cook College, the New Jersey Department of Environmental Protection, and non-profit conservancies such as the Natural Lands Trust, the New Jersey Conservation Foundation, and the Nature Conservancy. These agencies provide technical information and expertise in techniques of reclamation, the economic viability of conservation re-uses such as forestry and

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[1] Kebblish & Tuchman, op. cit., p. 359.

[2] One vehicle costs approximately $300,000.

recreation, and the tax benefits of donations of land or interests in land.[1] Such programs can help mine operators to devise cost-effective plans for reclamation and re-use of mining sites.

In sum, while the Comprehensive Management Plan is not expected to have major negative economic effects on the sand and gravel industry, some regulations may result in a decline in the profitability of certain operations, particularly small ones. Many potential problems can perhaps be averted through foresight and planning on the part of the mine operators and the provision of technical assistance by public and non-profit organizations. In addition, the industry should be carefully monitored in the future so that any economic problems which arise from the implementation of the CMP can be identified early. Despite the fact that resource extraction operations employ relatively few people, Ellen Nugent of the Mining Association notes that its interrelationships with other sectors of the economy, especially construction and glass manufacturing, make it an important part of the regional economy.[2] She also noted that the economic future of the industrial sand

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[1]For detailed information concerning these programs, see U.S. Department of the Interior, National Park Service, "A Handbook for Restoration and Reclamation of Sand and Gravel Mining Areas in the Pinelands," 1983.

[2]Conversation with Ellen Nugent, President, Mining Association, April 7, 1983.

industry appears to be bright, due to expanding markets associated with new wastewater treatment technology. Since industrial sand is mixed primarily in Cumberland, outside the Preservation Area, Pinelands regulations should create no barriers to the future expansion of this industry.

2. Agriculture in the Pinelands

a. Overview of Regional Trends

Farming in the Pinelands is an important land use as well as an integral part of the regional economy. In 1978, about 58,000 acres of active agricultural land lay within the boundaries of the Pinelands Area, of which 27,000 acres were in field crops, 15,000 acres were in berries and fruit, 12,000 acres were planted to vegetables, and another 3,000 acres produced ornamentals. Total value of production amounted to approximately $61 million in 1978, or 17 percent of gross farm income throughout the state.[1] Approximately 93,181 acres of cropland were harvested in the 52 Pinelands municipalities in 1982.[2]

The acres harvested of various crops in the seven Pinelands counties in 1981 are shown in Table V-7. In terms of total acreage field crops, particularly soybeans and

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[1] New Jersey Pinelands Comprehensive Management Plan, p. 131.

[2] Farmer Certificate Data Summary, prepared by John M. Hunter, Department of Agricultural Economics and Marketing, Cooperative Extension Service, Cook College, New Brunswick, N.J., December 1982.

Table V-7

Acres Harvested of Selected Crops, 1981

	Pinelands Counties	New Jersey	Regional Share
Corn	30,650	169,000	18.1
Soybeans	69,900	168,000	41.6
Wheat	17,200	56,000	30.7
Barley	7,350	17,000	43.2
Hay	22,550	110,000	20.5
Potatoes	3,300	8,100	40.7
Sweet Potatoes	2,100	2,500	84.0
Tomatoes	6,400	12,000	53.3
Asparagus	1,000	1,500	66.7
Cabbage	2,150	3,400	63.2
Lettuce	2,450	2,900	84.5
Sweet Corn	5,400	10,100	53.5
Onions	460	650	70.8
Peppers	4,150	6,500	63.8
Blueberries	7,000	7,800	89.7
Strawberries	500	900	55.6
Cranberries	2,900	2,900	100.0

SOURCE: New Jersey Crop Reporting Service, New Jersey Agricultural Statistics

corn, are the region's largest crops, followed by blueberries, tomatoes, sweet corn, and peppers. As a percent of statewide acreage, the region's most important crops are cranberries, blueberries, lettuce, sweet potatoes, and other vegetables. Fully 100 percent of New Jersey's cranberries[1] and 90 percent of the state's blueberries are grown in the Pinelands Counties, primarily within the Pinelands Area.

Recent trends in acres harvested of various field crops throughout the region are shown in Table V-8. Changing market conditions have caused the relative importance of individual crops to fluctuate over time. Overall, land used for field crops increased from 135,150 acres in 1976 to 150,200 acres in 1979, and then dropped slightly to 147,650 acres in 1981. Since only about 28 percent of the cropland in the region is located in the Pinelands Area,[2] no firm conclusions can be drawn about the economic health of field crop agriculture in the Pinelands from these data. Unfortunately, historical data for municipalities are lacking.

Since almost all of the state's blueberry and cranberry production takes place in the Pinelands Area, state-level data can be used as an indicator of trends in the Pinelands. Table V-9 shows acres harvested and production of berries from 1976 to 1981. Blueberry production dropped

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[1] New Jersey is the nation's third largest cranberry producer, following Massachusetts and Wisconsin.

[2] Economic Analysis of the Pinelands Comprehensive Management Plan, p. 31.

Table V-8

Acres Harvested of Field Crops -
Seven-County Region, 1976-1981

Year	Corn	Wheat	Barley	Soybeans	All Hay	Total
1981	30,650	17,200	7,350	69,900	22,550	147,650
1980	28,700	12,200	6,150	80,200	21,050	148,300
1979	27,700	9,300	5,900	82,900	24,400	150,200
1978	31,200	6,000	5,900	75,300	25,500	146,550
1977	33,800	10,700	5,100	60,800	22,650	135,700
1976	37,650	13,600	8,100	52,000	23,800	135,150

SOURCE: New Jersey Crop Reporting Service,
New Jersey Agricultural Statistics, 1982

Table V-9

Blueberry & Cranberry Production in New Jersey, 1976-1981

BLUEBERRIES

	Acres Harvested	Production (thousand lbs.)	Pounds Per Acre	Value of Production (thousand dollars)
1981	7,800	28,000	3,590	18,200
1980	8,100	26,000	3,210	15,860
1979	7,800	23,400	3,000	13,806
1978	7,800	22,308	2,860	15,482
1977	7,700	22,869	2,970	13,514
1976	7,600	26,334	3,465	11,970

CRANBERRIES

	Acres Harvested	Production (thousands barrels)	Barrels Per Acre	Value of Production (thousand dollars)
1981	2,900	228	78.6	9,052
1980	2,900	245	84.5	8,134
1979	3,000	253	84.3	6,806
1978	3,000	223	74.3	4,839
1977	3,000	157	52.3	2,952
1976	3,100	276	89.0	3,726

SOURCE: New Jersey Crop Reporting Service, New Jersey Agricultural Statistics

from 1976 to 1978 and then rose steadily through 1981. Acres harvested remained stable at 7,800 from 1978 to 1981, except that an additional 3,000 acres were harvested in 1980. Yields per acre and value of production increased from 1979 to 1981.

Cranberry production fluctuated during the six-year period, due primarily to varying yields per acre. Total acres harvested declined slightly, from 3,100 in 1976 to 3,000 in 1977, and then to 2,900 in 1981. Total value of production has risen steadily since 1977, and totalled over $9 million in 1981. Thus, no major shifts in trends are observable following the implementation of the moratorium or the CMP.

b. The Effects of the CMP on the Ability of Farmers to Borrow Money

Representatives of the agricultural community in the Pinelands have expressed concern that agricultural zoning restrictions imposed under the CMP have caused the value of farmland to drop, thereby reducing the total value of assets against which farmers can secure loans. It is feared that this situation may threaten the economic viability of agriculture in the Pinelands. The analysis of land values in thirteen Pinelands municipalities, presented in Chapter III, shows no adverse impacts on land values in the Agricultural Production Areas during the first year and a half following

implementation of the Plan. The average price per acre in the Post-CMP period was $2,124, compared to $1,792 during the pre-moratorium period (1976-1978). Nevertheless, it is too early to make a definitive statement about the effects of the Plan on land values; furthermore, it is not known how the perceived impacts of the regulations have affected the policies and practices of agricultural lending institutions in the area.

To shed light on this issue, the National Park Service has commissioned a study[1] which examines the effects of agricultural zoning on farm lending in other areas of the country, and which also investigates potential credit problems in the Pinelands, based on interviews with officials of farm lending institutions. The findings of this study are presented below.

1) Lenders Serving Agriculture

Agricultural lenders may be classified into four major groups: Farm Credit System establishments, Federal agencies (such as Farmers Home Administration), banks and insurance companies, and individuals and others. The Farm Credit System was established by Congress in 1916 and has evolved into a system consisting of Federal Land Banks, which make

[1] Coughlin, Robert E., "The Effects of the Pinelands Comprehensive Management Plan on the Ability of Farmers to Borrow Money," A Report to the National Park Service, June 1983.

long-term, first mortgage, farm, and rural home real estate loans; Federal Intermediate Credit Banks and Production Credit Associations, which provide short and intermediate term credit; and Banks for Cooperatives, which provide complete credit services for farm cooperatives, whose function is to supply marketing, purchasing and business services to farmers and ranchers. The Farm Credit System is regulated by Congress and supervised by the Farm Credit Administration, but since 1968, when the last of government capital was repaid, it has been completely owned by farmers and ranchers. The United States is divided into 12 Farm Credit System districts, each of which has a District Federal Land Bank, a District Federal Intermediate Credit Bank, and a Bank for Cooperatives. New Jersey falls within District I. The district is headquartered at Springfield, Massachusetts (and is usually referred to as the Springfield District), but loans are actually negotiated and granted by local associations. The Pinelands counties of Burlington, Camden, and Gloucester are served by the Farm Credit Service of Moorestown, and Atlantic, Cape May, and Cumberland Counties are in the service area of the Production Credit Association of Bridgeton.

Federal providers of farm credit include the Farmers Home Administration (F.M.H.A.), which accounts for the largest share of farm loans by Federal agencies, and the Small Business Administration, which is a weak second. F.M.H.A., within the U.S. Department of Agriculture, provides supervised credit to farmers unable to obtain adequate credit

at reasonable rates and terms from commercial lenders or from a Farm Credit Service association, which is a privately owned bank without government subsidy and must protect stockholders against undue risk. The Small Business Administration provides farm credit for small farms and agri-businesses, but only if they are unable to obtain adequate financing from commercial lenders and are not eligible for F.M.H.A. help.

In addition to the Farm Credit System and the Federal agencies, commercial banks and insurance companies play a significant role in providing farm credit. In part because of their ability to respond quickly and efficiently, banks play a relatively important role in providing non-real estate credit. But in New Jersey the role of the private sector is not as large as it is in the U.S. overall.

Few data are available on the role played by individuals in providing farm credit, but many individuals are related to the borrowers and therefore, their criteria for making loans may not be solely economic.

In New Jersey, real estate debt accounts for four-fifths of all farm debt. The Federal Land Banks are by far the largest institutional provider of farm real estate loans (see Table V-10). They account for about 40 percent of farm real estate debt. Individuals "and others" provide

Table V-10

FARM DEBT IN NEW JERSEY
($000)

A. Summary

	Real Estate Debt	Non Real Estate Debt	Total Debt
1981	336,433 (85%)	58,891 (15%)	395,324 (100%)
1980	282,107 (83%)	55,479 (17%)	329,001 (100%)
1979	237,890 (82%)	53,307 (18%)	291,197 (100%)
1978	237,648 (81%)	54,494 (19%)	292,146 (100%)

B. Real Estate Farm Debt by Lender

	Federal Land Banks	Farmer's Home Admin.	Life Insurance Companies	Banks	Individuals & Others	Total
1981	130,362 (39%)	29,164 (9%)	4,000 (1%)	27,796 (8%)	145,111 (43%)	336,433
1980	116,400 (41%)	25,313 (9%)	4,500 (2%)	14,798 (5%)	121,096 (43%)	282,107
1979	100,734 (42%)	12,252 (5%)	4,700 (2%)	15,762 (7%)	104,442 (44%)	237,890
1978	100,232 (42%)	10,973 (5%)	4,712 (2%)	16,299 (7%)	105,432 (44%)	237,648

C. Non Real Estate Farm Debt by Lenders

	Production Credit Assiciations	All Banks	Total
1981	49,439 (84%)	9,452 (16%)	58,891 (100%)
1980	45,267 (82%)	10,212 (18%)	55,479 (100%)
1979	41,927 (79%)	11,380 (21%)	53,307 (100%)
1978	44,480 (80%)	11,014 (20%)	55,494 (100%)

Source: U.S. Department of Agriculture, Agricultural Statistics

approximately the same share of farm real estate loans as do Federal Land Banks. Farmers Home Administration, commercial banks, and insurance companies in total account for less than 20 percent.

Operating and production loans account for less than one fifth of farm debt in New Jersey. Farm Credit Associations provide the vast majority of it.

Farm Credit Associations held 188 loans valued at $20,500,000 in the Pinelands area in 1981 (see Table V-11). Real estate loans accounted for 61 percent of total value.

2) The Effect of Agricultural Zoning on Collateral Value

The effect that a reduction in the market value of farmland would have on collateral value depends upon how land is appraised for collateral purposes. Interviews with Federal Land Bank officials and commercial bankers indicate two important facts. First, when banks make farm loans for the purchase of land they appraise the land at only moderately above farm value. Second, banks will not normally make farm real estate loans for land whose price is so much higher than farm use value that its cost cannot be justified by the expected earnings of the farmers.

A reduction in land value from full development value to somewhat above farm use value, which might be caused by agricultural zoning, therefore, would have relatively less

Table V-11

Outstanding Farm Loans In Pinelands Area
Held By
Farm Credit Associations, 1981*

	Bridgeton Association	Moorestown Association	Total
All Loans			
Number	135	53	188
Dollar Value	$12,000,000	$8,500,000	$20,500,000
Real Estate Loans			
Number	85	46	131
Dollar Value	$ 4,750,000	$7,800,000	$12,550,000
Non Real Estate Loans			
Number	104	7	111
Dollar Value	$ 7,000,000	$ 665,000	$ 7,665,000

*Some loans are for a combination of real estate and non real estate. In this table a combined loan is counted as both a real estate and a non real estate loan. Under "All Loans," a combined loan is counted only once. The dollar values of All Loans are rounded to the nearest $100,000.

Source: Letter from Clifford E. Busekist, Senior Administrative Vice President, Farm Credit Banks of Springfield, to Anthony J. Esser, New Jersey Pinelnads Commission, May 27, 1981.

effect on collateral value. Officials of Farm Credit Service of Moorestown reported to us that they make loans only for land which is to be kept in agriculture. About 95 percent of their loans are to farmers and about 5 percent to investors who sign longterm leases (for example, a 10 or 15 year lease with a fruit tree farmer). Farmers and investors purchase land only if its price is at or moderately above farm use value. Farm Credit Service does not make loans to speculators or developers, who typically are prepared to pay higher prices for land.

Farm Credit Service of Moorestown has typically appraised agricultural land for whose purchase it is loaning money by analyzing comparable sales, that is sales of other agricultural tracts which were bought for continuation in farming. As a result of general economic conditions (among these being high interest rates), there have been so few farmland sales recently that Farm Credit Service of Moorestown is now in the process of shifting over primarily to the capitalization of farm income to determine the appraised value of farmland. They indicate that appraised values range widely -- roughly from $1,200 - $1,400 to $2,400 - $2,600 per acre -- and that they have not changed much since the imposition of the land use restrictions.

PCA of Bridgeton also has been appraising at farm use value during the last couple of years. Now that the market has had a chance to react to the Pinelands program, it appears to PCA staff that farmers are willing to pay more than farm use value -- but less than development value -- for lands restricted by Pinelands agricultural zoning. In very rough terms, they are willing to pay more than farm use values of $1,000 - $1,500 and less than development values of $2,000 - $2,500 per acre. Staff suggests that the reasons farmers are willing to pay more than farm use value for restricted land may include (1) the fact that most purchases are for additions to existing farms so that their higher cost can be averaged in with the cost of the farmer's existing land, and (2) a belief that the agricultural zoning may be softened somewhat in the future.

FMHA generally will lend money to purchase farmland only if the land will generate enough farm income to cover the loan, according to staff of its Mt. Holly office. Thus FMHA does not provide loans for land whose market price is substantially higher than its farm use value.

In summary, both past and present practices of the Farm Credit Associations and the FMHA serving the Pinelands indicate that farmland is generally appraised for collateral purposes at, or moderately above, farm use value. Our interviews with commercial bankers lead to the same conclusions. The effect of agricultural zoning on the value of land as

appraised for collateral purposes, therefore, is relatively minor. At most it could reduce value from moderately above farm use value to farm use value.

3) Major Factors that Determine Loan Decisions

Interviews with agricultural loan officers of commercial banks and Federal Land Banks indicate that in considering a loan the most important factor is normally the character of the lender and particularly his reputation for repaying debts on time. The second most important factor normally is the borrower's ability to repay the amount borrowed out of the income from his farm. The third most important factor is the availability of sufficient collateral to cover the loan should it become necessary to foreclose. Reduction in available collateral, therefore, is generally a secondary consideration in the context of the other two factors, but it is always a consideration.

Real estate loans are typically secured by the collateral value of the real estate itself. In contrast, operating or production loans are typically secured by the potential value of the crop, and equipment loans are secured by the value of the equipment. Any reduction in real estate collateral, therefore, would have a direct influence on real estate loans. For many operating

loans a reduction in the available real estate collateral would be unimportant, but for some marginal loans, it might be significant.

The Credit Office of the Baltimore district of the Federal Land Bank has reported to us that even with agricultural zoning holding down the value of the land, the bank can lend more than farmers can afford to pay from farm income. Agricultural zoning has not restricted a farmer's ability to borrow, because the constraint is farm income, not collateral. As he put out, "Farmers are collateral rich and cash poor".

4) Policy on Loan as Percent of Collateral

Prior to 1971, loans made by the Federal Land Banks (and Production Credit Associations) were limited to 65 percent of the appraised value of the financed real estate, and value was defined as normal agricultural value. The appraisal thus was linked to the net income expected from farm use of the property. The Farm Credit Act of 1971 increased the loan limit for a farm mortgage borrower to 85 percent of appraised value and changed the definition of value from farm to market value. Thus, federally governed lenders were able to offer significantly larger loans and loans that are based on market value.

In the short run, the policy makes it possible for the hard pressed farmer to borrow more, but in the long run the policy is inherently contradictory. The ultimate recourse for a loan which cannot be repaid is to sell the farm for development, an act which cannot be in the interest of maintaining and strengthening the agricultural economy. The dangers of following such a policy to its allowed limits have been demonstrated in the Agricultural Finance Review by C.B. Baker & D.J. Dunn. Based on a large sample of loans provided by 11 of the 12 regional Federal Land Banks, they computed probabilities of deliquency, refinancing, and foreclosure for various types, on specification that the loan commitment is at the maximum of (1) the pre-1971 loan limit (65 percent of normal agricultural value) and (2) the post-1971 loan limit (85 percent of market value).

Average appraised value per acre for loans made by the Federal Land Bank varies from year to year depending on the particular loans made. For New Jersey, the average appraised value was $1,112 per acre in 1980 and $1,767 in 1981 -- values which lie within the upper part of the range of farm use value (see Table V-12). Loans averaged 56 percent of collateral in 1980 and 62 percent in 1981. On average in 1981, large loans were made to smaller farms that had higher appraised value per acre. Despite the considerable variation between the two years, it is evident that the average percent of appraised value is substantially below the 85 percent maximum allowed by federal law.

Table V-12

Average Loans Made By Federal Land Banks In New Jersey And Appraised Value, 1980 and 1981

	1980		1981	
	Total	Per Acre	Total	Per Acre
Appraised Value				
Land	$128,000	1,112	$154,000	1,767
Buildings	95,000	825	105,000	1,204
Total	$223,000	1,937	$259,000	2,971
	(Area = 115 A.)		(Area = 87 A.)	
Total Appraised Value	$223,000		$259,000	
Loan	124,000		162,000	
Loan/Appraised Value	56%		62%	

Source of data: Table 21, Characteristics of Federal Land Bank Loans, 1980, 1981, Statistical Bulletin 27, December 1981 and Statistical Bulletin No. 30, October 1982. (Washington, D.C.: Economic Analysis Division, Farm Credit Administration).

In summary, although Federal regulations permit lenders to lend up to 85 percent of the market value of a property, in practice lenders restrict loans to a much lower percentage. This finding, combined with the earlier observation that value for collateral purposes is typically appraised closer to the value for farm use than for development, reflects a basic fact: lenders make loans with the expectation that they will be repaid from normal income producing capacity of the borrower. That is, they make loans of a size which is consistent with the income producing capacity of the farm, not with its value for development. The income producing capacity of a farm is not reduced by agricultural zoning. On the contrary, agricultural zoning increases the long-run income producing capacity of a farm by preventing development of nearby properties, which would increase the difficulty and cost of farming.

5) The Experience of Counties and Municipalities in the U.S. That Have Adopted Agricultural Zoning Ordinances

As part of the research for this study, a telephone survey was conducted of all counties and municipalities in metropolitan areas of the U.S. that had enacted agricultural zoning ordinances as of December 1980. Jurisdictions in non-metropolitan areas were not surveyed

because, in general, development values are lower there, and therefore, any possible reduction in value caused by agricultural zoning would be smaller. The purpose of the survey was to determine to what extent the zoning ordinances had actually resulted in credit problems for farmers. The density limitations of nearly all of the ordinances are much more restrictive than the Pinelands regulations; median density is close to 1 dwelling unit per 40 acres, as compared with 1 dwelling unit per 10 acres in the Pinelands. The Pinelands regulations, however, also restrict occupants of new non-farm dwellings to people with a cultural relationship to the Pinelands.

The planner, zoning officer, or other government official in each jurisdiction who is responsible for administering the zoning ordinance was interviewed. In a number of cases, an officer of the local Federal Land Bank or a commercial bank was also interviewed. A majority of the respondents said they had never heard the credit argument raised in their jurisdiction. A large number stated that they had heard the argument when adoption of an agricultural zoning ordinance was being discussed, but had not heard any such complaints after adoption. One respondent indicated that it was people looking for issues to raise against agricultural zoning who raised the credit argument. Another reported that in his jurisdiction it was

the developers and realtors, not the farmers, who argued that farm credit would be a problem if agricultural zoning were adopted. Another noted that the argument had been raised by some owners who wished to subdivide but not owners who intended to continue in agriculture.

Not one respondent indicated that landowners had complained of an increased difficulty in obtaining farm credit after the institution of agricultural zoning restrictions.

A planning officer from the Maryland-National Capital Park and Planning Commission summarized the Commission's experience in Montgomery County, Maryland, a county under heavy development pressure from both Washington and Baltimore:

> Since our preservation program involved a massive down zoning of some 89,000 acres, we were seriously concerned about the effect of such an action on the financial solvency of our agricultural community; our objective was to preserve both farmland and farming. As a result, we thoroughly investigated this issue.
>
> Initially, we were led to believe that farmers received loans based on existing and often on proposed zoning: essentially the speculative value of the farmland. Since the issue was important to the success of the program, we interviewed the primary lenders to the agriculture community in the region. The results are as follows:

> Loans are based on the ability of the farmer to repay and not on zoning. Banks consider indebtedness and overall financial solvency the farm operation when considering a loan. Banks are conservative institutions concerned with the repayment of a loan rather than the future speculative value of a farm.[1]

It seems likely, and a number of respondents told us, that if agricultural zoning had resulted in credit problems, then public officials responsible for the zoning program would have heard many strong complaints from farmland owners. If agricultural zoning had made it more difficult to get loans or to maintain existing loans -- that is, if it had made it more difficult to remain in farming or had even forced some farmers out of business -- the credit problem would have been a burning public issue. Yet not one respondent reported that it was even a minor concern.

A number of respondents, in fact, stated that agricultural zoning had had a positive effect on farm credit. Respondents from Wisconsin and Minnesota, especially, indicated that by reducing uncertainty about the future of farming in the area, agricultural zoning had raised farm use values, and made lenders more confident about making farm loans.

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[1]Letter from Melissa Banach, Coordinator, Community Planning North Division, Maryland Capitol Park and Planning Commission, dated May 12, 1983.

In addition to the telephone survey of local officials described above, a letter was sent to the secretary of agriculture of each of the 23 states where at least one local jurisdiction was known to have had agricultural zoning or where there had been a purchase of development rights program. Not one indicated that they were aware of any farm credit problems resulting from agricultural zoning. The Rhode Island official responded that no rights had yet been purchased under this program and that as a result they could not judge whether such a program would affect a farmer's ability to borrow money. Rhode Island's letter went on to say:

> We have seen examples of farms being lost for the opposite reasons. That is, when farmers borrow beyond the farm's value as farmland. If the land is foreclosed the lending institution can only recoup its investment by selling the land for development.[1]

The official answering for the Massachusetts Department of Food and Agriculture stated that both the Farm Credit Bank and the Farmers Home Administration have been willing to lend to farmers purchasing farmland restricted by development easements. He reported no knowledge of loan amounts being limited on such properties. He went on to observe:

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[1]Letter from Stephen G. Morin, Assistant to the Director, Department of Environmental Management, State of Rhode Island, June 10, 1983.

> Bankers are performing a disservice (if they lend) farmers more money than the farm business can possibly repay. The burden of a mortgage that cannot be paid out of farm income will force unnecessary foreclosure. If bankers follow a strict loan policy that bases financing on repayment capacity from farm income, then the implementation of farmland protection strategies should not have any effect on the borrowing capacity of farm landowners.[1]

6) The Reaction of Lending Institutions in the Pinelands Region

The Farm Credit Associations of Moorestown and Bridgeton report relatively little loan activity since the institution of agricultural zoning in the Pinelands Area. This reflects the quiescent condition of the land market which has been observed throughout the nation in recent years and which is a result of many factors including high interest rates and low profitability from farming. Most purchases of agricultural land in the Pinelands area have been for small additions to existing farms.

Staff of the Farm Credit Association of Moorestown reported to us that they have renewed about two dozen outstanding loans since the Pinelands Plan was adopted and have granted about a dozen new loans. They have not had to curtail real estate or operating credit to anyone because of restrictions on development imposed by the Pinelands Comprehensive Management Plan. Staff of the Moorestown Association have stated to us that the proportion of loan

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[1] Letter from William H. King, Division of Land Use, Department of Food and Agriculture, the Commonwealth of Massachusetts, June 2, 1983.

applicants they have had to refer to Farmers Home Administration has not changed much since the imposition of agricultural zoning. Staff of PCA of Bridgeton, however, report that since enactment of agricultural zoning, they have been unable to extend as much operating credit as requested by some farmers who were already heavily burdened with debt. PCA of Bridgeton has sent such applicants to Farmers Home Administration "earlier than they would have liked."

Staff of the Mt. Holly office of FMHA report that they have experienced an increase in the number of applications for credit in the past couple of years. This experience has been typical in most regions of the U.S., while the farming sector has been suffering economic difficulties. Most of these requests to the Mt. Holly office came from farmers to whom FMHA had already lent money. According to staff, the Mt. Holly office of FMHA has not had to refuse credit to any applicant solely because of a reduction in land value caused by agricultural zoning, and none of the applicants claimed that the reduction in value was the major cause of their problem.

Despite the fact that, to date, agricultural zoning has resulted in little if any actual curtailment of credit to farmers in the Pinelands Area, staff of PCA of Bridgeton, PCA of Moorestown, and the Mt. Holly FMHA office express some concern about the effects which reduction in the value

of land could have on future credit. They are concerned that if Pinelands farmers have several bad years in a row, lenders will have to take the market value of land into account in determining whether to grant excessive amounts of credit to keep the farmer from going bankrupt. And should foreclosures become necessary, the lending institutions may not be able to recover their money if they have lent more than the amount that the market will then pay for land which cannot be developed because of the agricultural zoning ordinance. They are concerned about whether they would be able to provide sufficient credit for a farmer wishing to construct a large capital facility, such as a cold storage plant. A loan for a facility might exceed the value of the farmer's land as restricted by agricultural zoning and land would have to provide the security for such a loan. In the event of a foreclosure, land might be the only saleable asset, because it might be difficult to find a buyer for a specialized and immovable asset such as a cold storage facility. Lenders are also concerned that a drop in land values could reduce the farmer's economic options. As a hypothetical example, a farmland owner who in the absence of agricultural zoning might have been required to put up as collateral five of the ten tracts he owned, might be required to put up all ten tracts if his land had been devalued sufficiently by zoning restrictions. Thus,

the farmer's future borrowing would be limited. In short, staff of the lending institutions conclude that although there have been few difficult problems so far, the agricultural zoning has, in general, made farmers less credit worthy.

In viewing the concerns of officials and farmers in New Jersey, one must bear in mind that farmland protection has been promoted vigorously in New Jersey over the past twenty years. Almost from the beginning, the state Department of Agriculture has taken the position that farmers should be fully compensated for any restrictions put on the possible future development of their land. The doctrine has been adopted enthusiastically by farmers and local public officials. Over these many years of debate, agricultural zoning has often been denounced as unfair and unacceptable. As a result, farmers, public officials, and lenders may be unduly apprehensive about problems that may be associated with it.

In contrast to the uneasiness expressed by lending officers in the Pinelands area, available data on land purchases suggest an increase in the confidence of farmers in the future of agriculture in the region. For the five counties which include most of the land zoned for agriculture, the total acreage bought by farmer increased in each successive year with one minor exception from

fiscal 1976-1977 through 1980-1981.[1] The percent of all farmland sold which was purchased by farmers also generally increased year by year. In 1976-1977 farmers bought nearly 39 percent of all farmland sold in the Pinelands counties, and in 1980-1981 they purchased 64 percent. In contrast, for New Jersey as a whole, the percentage generally went steadily downward. No firm conclusion can be drawn from these data because they include all sales of farmland in the five Pinelands counties, but they do suggest that farmers have shown increasing confidence in the future of agriculture in the Pinelands as the Comprehensive Management Plan has gone into effect.

7) Conclusions

Any effect of agricultural zoning on the ability of farmers to borrow money would come about because the zoning had reduced the market value of land, and the reduction in value had resulted in reduction in the farmer's collateral value, and because of the lower collateral value, lenders would be less willing to make new loans and might recall existing loans. The effective reduction in collateral, however will in most cases be considerably less than the reduction in the market value of the land, because farm

[1] Rural Advisory Council, New Jersey Department of Agriculture, "Agricultural Land Sales in New Jersey -- Five Year Trend."

lenders generally appraise land at the price paid by farmers when they purchase land in the area for continuation in farming, not at the generally higher price developers are willing to pay. Usually lending institutions limit loans to a percentage of appraised value that is substantially below the maximum of 85 percent of fair market value set for Federal Land Banks by Federal regulations. Thus, while a reduction in appraised value of land will raise the percentage of loan to appraised value, in many cases it will not prevent a loan by raising it above the maximum allowable percentage.

It is the general practice of lending institutions to lend enough money to meet the business needs of a farmer with the expectation that he will pay off the loan through the income he expects to generate from his farming operations. Generally, a lender will not lend money to a farmer to purchase land at high development values unless, where such land is averaged in with the farmer's other land, all the land of the farm would be appraised at or below farm use value. It is not the practice of lenders to make loans which could be repaid only by selling the farm at high development values. Since this practice is generally followed in the absence of agricultural zoning, its enactment does nothing to change the practice.

A survey of all counties in the U.S. that were known to have agricultural zoning ordinances as of 1980 shows that not one has reported that agricultural zoning has caused credit problems. Most officials interviewed reported that, to their knowledge, the complaint had never been raised. Some reported that the argument had been made prior to adoption of the agricultural zoning ordinance, but that it had not been heard since.

Farm Credit Associations and the Farmers Home Administration office in the Pinelands area reported that no farmer has been unable to obtain the farm loans needed because of reduction in land value caused by agricultural zoning. They have expressed uneasiness about possible credit problems in certain situations which could arise and have indicated that they are concerned about any program which might reduce the value of a farmer's land. In light of economic theory and banking practices and of experience throughout U.S. and in the Pinelands area, farm credit problems caused by agricultural zoning appear to be relatively minor.

On the postive side, if zoning is maintained consistently, it should secure the land resource base of the farming economy, reduce uncertainty in the land and credit markets, and help maintain the price of agricultural land at a level which is consistent with the income producing level of the land in agriculture and, therefore, at a level which entering

farmers can afford. Agricultural zoning not only can protect the land from development, but also can strengthen the agricultural economy by preventing intrusions into the farming area which would make it difficult and more costly to continue ordinary farming practices. While it prevents scattered development which is both costly to the public and disruptive to the agricultural economy, it also helps to concentrate new development in areas planned and zoned for growth.

VI

Fiscal Impacts of the Comprehensive Management Plan

A. Potential Fiscal Effects

Any effects of the CMP on land values, housing values, spatial patterns of development, or economic growth will have ramifications for local government finances in Pinelands communities.[1] In the Economic Analysis of the Pinelands Comprehensive Management Plan, prepared for the Pinelands Commission prior to the adoption of the Plan, several potential impacts are identified. Assessments on privately owned vacant lands in the restricted management areas (Preservation, Forest, Agricultural Production) may be reduced through tax appeals, reassessments, or revaluations. Such reductions may be granted on the basis of comparable sales or, where comparable sales are lacking, the presumed effects of the development restrictions on the value of land. Land values and hence assessments may also be increased in those areas where development is permitted, i.e. Regional Growth Areas, Rural Development Districts, and Pinelands Towns and Villages. The net effect of changes in land values on the ratable base of each municipality depends upon the percent of aggregate assessed valuation which is vacant land and the relative proportions of vacant land in the restricted areas, development districts, and outside the Pinelands Area.

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[1] See Appendix F for definition of terms relating to public finance used in this chapter.

A municipality's tax rate is computed by dividing the total tax levy by the aggregate assessed valuation of property; therefore, to the extent that changes in vacant land assessments affect the total ratable base, tax rates will also be affected. The total amount of tax monies to be raised, however, is not altered by changes in assessments.[1] Instead, a net loss in vacant land ratables would shift the total tax burden from vacant land to residential, commercial, and farm properties. If the value of existing residential properties is enhanced under the Plan as a result of limits on the supply of housing, the proportion of taxes paid by residential property owners could increase even further. Increases in land values in the development districts, however, would have the reverse effect of transferring the tax burden from residential and other developed uses to vacant land.

Another factor affecting municipal ratable bases is the acquisition of ecologically significant lands in the Pinelands. Lands are acquired with state and federal funds by the N. J. Department of Environmental Protection, based on recommendations made by the Pinelands Commission. When land is acquired, it is removed from the tax rolls; however,

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[1] This is not strictly true for towns in which significant numbers of property owners successfully appeal their assessments. Taxes must be refunded or cancelled in such cases, which affects the town's tax collection percentage, which is used to compute the Reserve for Uncollected Taxes (an expenditure category) in the following fiscal year. This is, however, a temporary effect which reverses when the appeals begin to subside.

revenues are not immediately affected. Under the state Green Acres program, payments in lieu of taxes are made to municipalities over a thirteen year period. In the first year of acquisition, the municipality receives 100 percent of the taxes which would otherwise be paid on the property, and in each succeeding year the payment is reduced by eight percentage points, until it reaches zero in the fourteenth year. To date, 22,578 acres have been purchased in the Pinelands since the enactment of the Pinelands Protection Act, at a cost of $14.1 million. Total funding for the acquisition program is about $38 million.

The overall level of residential development, as well as the type of housing built and its spatial distribution, will affect both municipal ratable bases and expenditures for public services and facilities. Growth in ratables will be associated with residential development, although capital and operating costs for schools, roads, and other public facilities will also increase. Whether such development results in a net fiscal benefit or cost to the community depends partly upon the type and density of the units built. Typically, however, new housing does not "pay its way" in terms of the ratio of tax revenues generated to increased demand for public services. Evidence of this can be found by comparing average equalized tax rates among municipalities

of differing levels of development, as measured by overall population density. In the Pinelands communities in 1980, those municipalities which are most developed (with a density of less than one acre per person) had a combined average tax rate of $2.60 per $100 of true value, compared to $2.12 in moderately developed towns (one to four acres per person) and only $1.87 in highly rural municipalities (more than four acres per person).

The total amount of residential development is not the only determinant of public expenditures and associated tax rate. For a given number of houses, density can also have an important effect on service costs. A comprehensive study funded by the federal government in 1974 documented the relationship between patterns of development and a variety of economic and noneconomic costs. The report concluded that "for a fixed number of households, "sprawl" is the most expensive form of residential development in terms of economic costs, environmental costs, natural resource consumption, and many types of personal costs."[1] In comparing public expenditures required to service high density clustered development versus low density sprawl development, the study found that total capital costs borne by local governments could be reduced by as much as 62 percent with high density development,

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[1]Real Estate Research Corporation, The Costs of Sprawl, U.S. Government Printing Office, April 1974.

and operating costs could be lowered by as much as 73 percent. Since the Comprehensive Management Plan encourages the clustering of new homes in designated areas, it should have a beneficial effect on public expenditures over the long run.

In 1982, the Pinelands Commission commissioned an independent consultant to analyze the fiscal impacts of the CMP on selected municipalities.[1] The focus of the study was to quantify the possible negative effects of the Plan under the most extreme conditions; therefore, those municipalities which had the highest tax rate increases and/or the largest drop in ratables in 1981 and 1982 were selected for analysis. The townships included in the study were: Hamilton Township (Atlantic County), Washington and Woodland Townships (Burlington County), and Lacey Township (Ocean County). It was found that in all but one of these municipalities, the primary factors responsible for increased taxes or lost ratables were unrelated to Pinelands regulations. In Hamilton and Lacey Townships, large increases in expenditures for schools, roads improvements, and municipal services precipitated sudden and substantial jumps in tax rates; while in Washington Township the loss of a major industry caused a significant drop in ratables.

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[1] Government Finance Associates, Inc., An Analysis of the Fiscal Impact of the Comprehensive Management Plan on Selected Municipalities, Report to the Pinelands Commission, September 2, 1982.

Only in Woodland Township, which is located in the heart of the Preservation Area and has large amounts of privately owned vacant land, did Pinelands-related reductions in assessments exert a significant negative impact on the township's tax base. Vacant land assessments were lowered by nearly $3 million in 1981 and 1982 due to Pinelands-related tax appeals, and Pinelands acquisitions removed another $2.5 million from the tax rolls, resulting in a loss of 19 percent of the township's ratable base.

Thus, the results of the preliminary study indicate that while the CMP can have adverse impacts on municipal finances, the effects do not appear to be significant on a widespread basis. In this chapter, fiscal trends in municipalities throughout the Pinelands are analyzed in relation to trends at the regional and state levels, both before and after implementation of the Plan. In addition, the causes of increased taxes in selected towns are investigated. Tentative conclusions about the effects of regional land use regulation on municipal finances can then be drawn.

B. Fiscal Trends in the Pinelands

1. Average Tax Bills

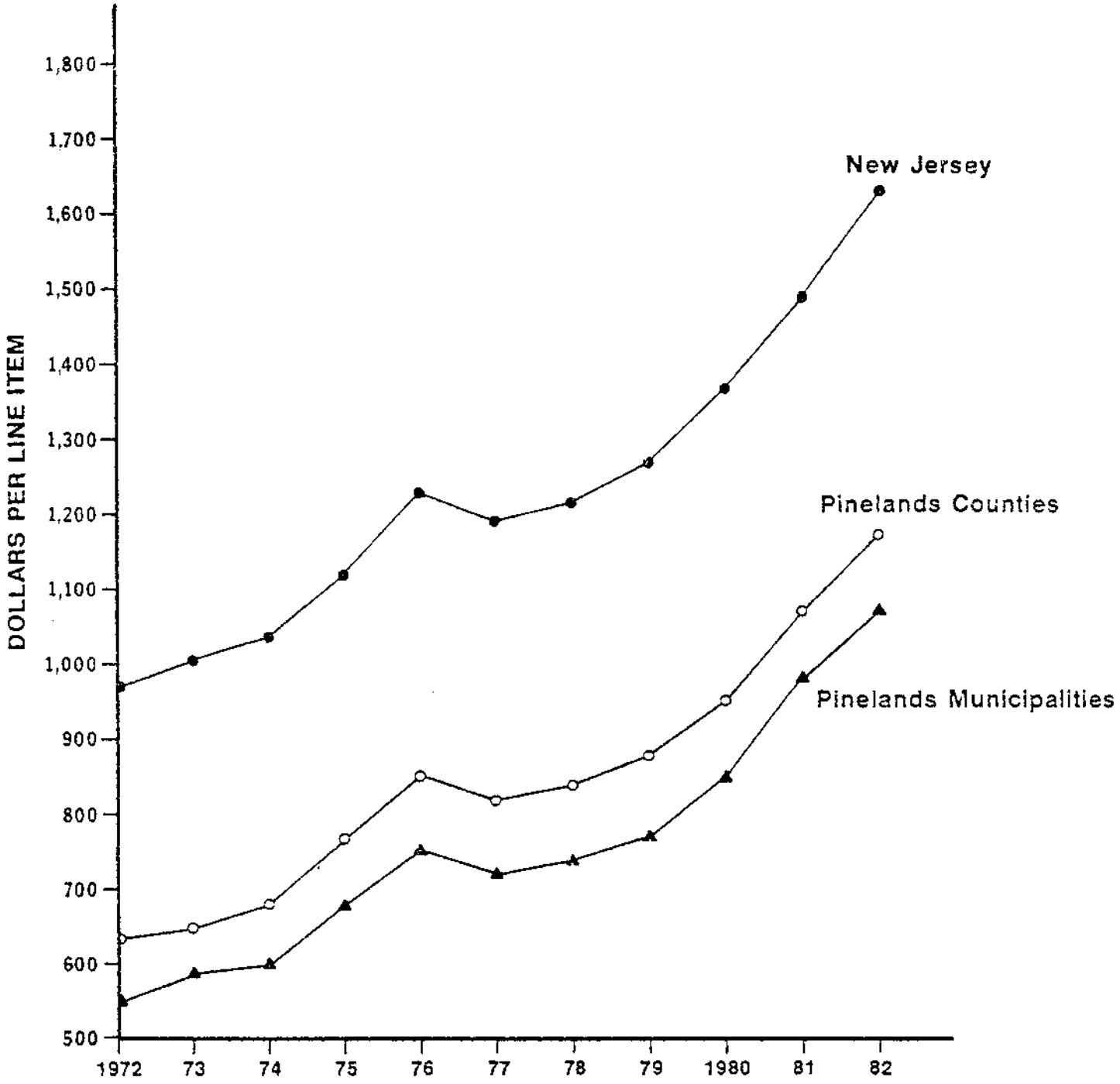
In 1982, the average tax rate in the 52 Pinelands municipalities was $2.97 per $100 of assessed value, compared to $3.27 in the seven-county region and $3.84 statewide. These rates translate into an average residential tax bill of $1,072 in the Pinelands, which is eight percent lower than the regional average of $1,169 and 34 percent less than the

statewide average of $1,613. Thus, in general, Pinelands residents pay significantly lower property taxes than residents of other parts of the state. Tax rates and average residential tax bills, however, vary greatly among the 52 municipalities (see Appendix Tables E-9 and E-10 for data by municipality from 1972 to 1982). Medford, Medford Lakes, Shamong, and Berlin Borough exceed the State average in taxes per household, while tax bills average less than $700 per year in Upper, Woodbine, Maurice River, and Stafford.

Average residential property tax bills are plotted over time for the Pinelands municipalities, the Pinelands counties, and the State of New Jersey in Figure IV-1. Taxes have increased steadily in all cases, except in 1977 when the state income tax and the Homestead Rebate program were instituted. Proportionately, the tax burden on residential properties has grown at a slightly faster rate in the Pinelands towns than elsewhere in the region and the State. In 1978, the average Pinelands tax bill was only 61 percent of the State average, compared to 66 percent in 1982. Similarly, the ratio of taxes in the Pinelands communities to taxes in the seven-county region rose from 89 percent in 1978 to 92 percent in 1982. Despite these relative gains, residential property taxes in the Pinelands remain well below the State average.

FIGURE VI-1

AVERAGE RESIDENTIAL PROPERTY TAX BILL

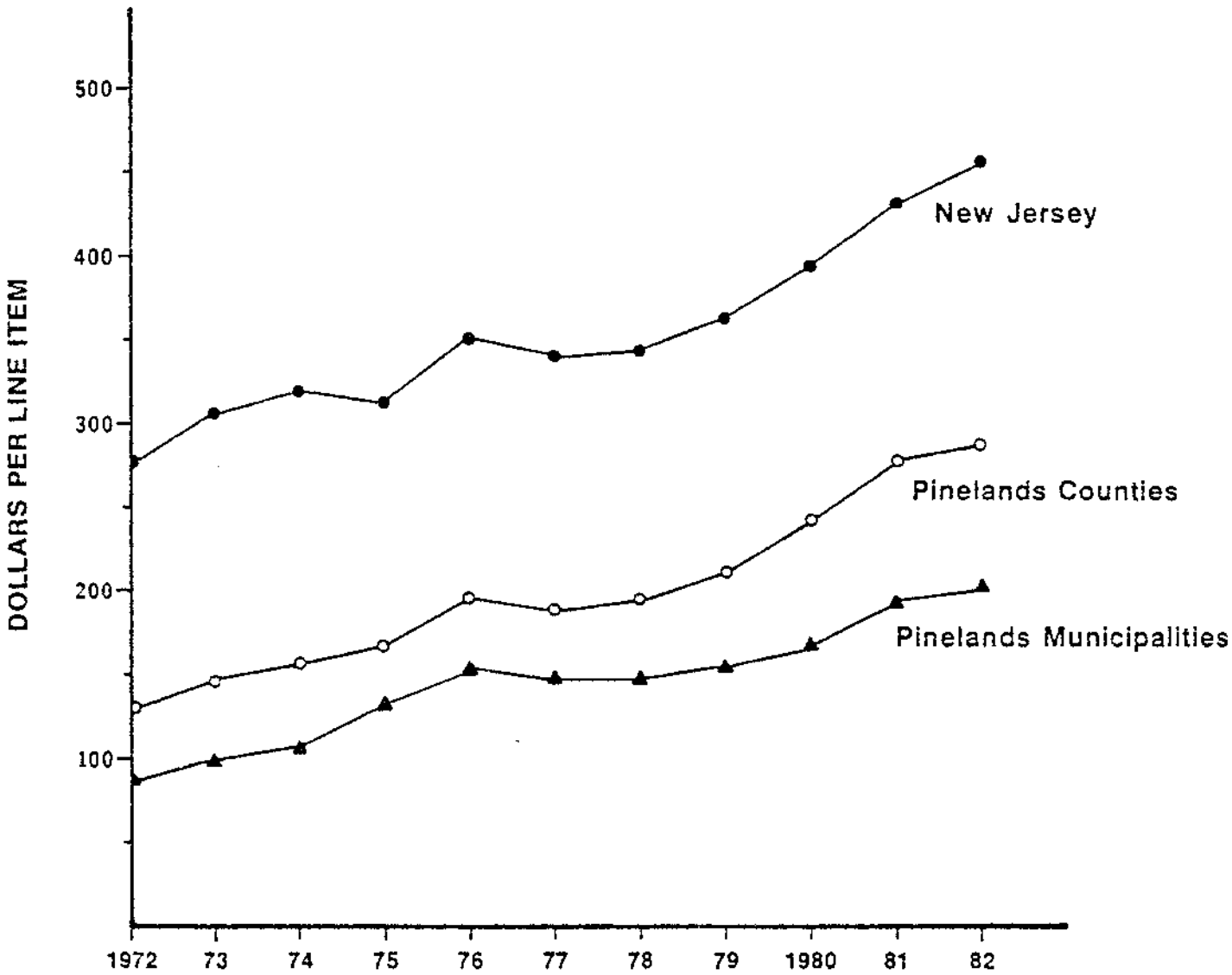


SOURCE: N.J. Division of Taxation

Examination of trends in taxes on vacant land throughout the Pinelands can help to determine if recent rises in residential taxes are indicative of a general shift in the tax burden from landowners to homeowners. In 1982, the average tax bill for a parcel of vacant land in the Pinelands communities averaged $200, compared to $286 throughout the seven counties and $456 statewide. Figure VI-2 shows that vacant land taxes in the Pinelands and elsehwere rose continuously from 1978 to 1982, although the rate of growth in the Pinelands leveled off somewhat in 1982. The ratio of the average tax bill in the Pinelands municipalities to the average tax bill in the State increased slightly, from 43 percent in 1978 to 44 percent in 1982, indicating that the vacant land taxes grew at a somewhat faster rate in the Pinelands than in other parts of the State. These data must be interpreted with caution, however, since the taxes per parcel are a function of the average size of parcels as well as the average taxes per acre, both of which are affected by subdivisions of land.

The trends in residential and vacant land tax bills for the 52 Pinelands municipalities therefore do not show a significant shift in taxes from vacant to residential properties on a regional scale, at least within the limited time frame presented. Nevertheless, residential tax bills increased by 45 percent over the 1978-1982 period. Whether the rise in taxes is primarily attributable to losses of ratables or increases in public expenditures is discussed below.

AVERAGE VACANT LAND TAX BILL



SOURCE: N.J. Division of Taxation

2. Property Assessments

In 1982, the aggregate assessed value of real property in the 52 Pinelands municipalities stood at over $7.5 million, almost four times the value in 1972.[1] Growth in total assessed valuation occurred continuously throughout the 10-year period, both in the Pinelands and other parts of the State (see Table VI-1). Thus, in absolute terms, the Pinelands communities as a whole have suffered no net loss in ratables since the adoption of the Comprehensive Management Plan.

Figure VI-3 shows the growth the ratables in the 52 Pinelands towns relative to growth in the seven-county region and the State. The Pinelands share of total assessed valuation in the State rose fairly rapidly in the early 1970's, from 3.9 percent in 1972 to 5.5 percent in 1975, then stabilized at slightly less than six percent during the middle of the decade. The regional share followed a similar pattern, increasing from 18.7 percent in 1972 to 24.4 percent in 1975, and leveling off until 1978. After Pinelands land use regulations were first instituted in 1979, assessed valuation grew faster in the Pinelands towns than in the region or State in two successive years, followed by a drop in the shares in 1982.

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[1] Data for individual municipalities are presented in Table E-12.

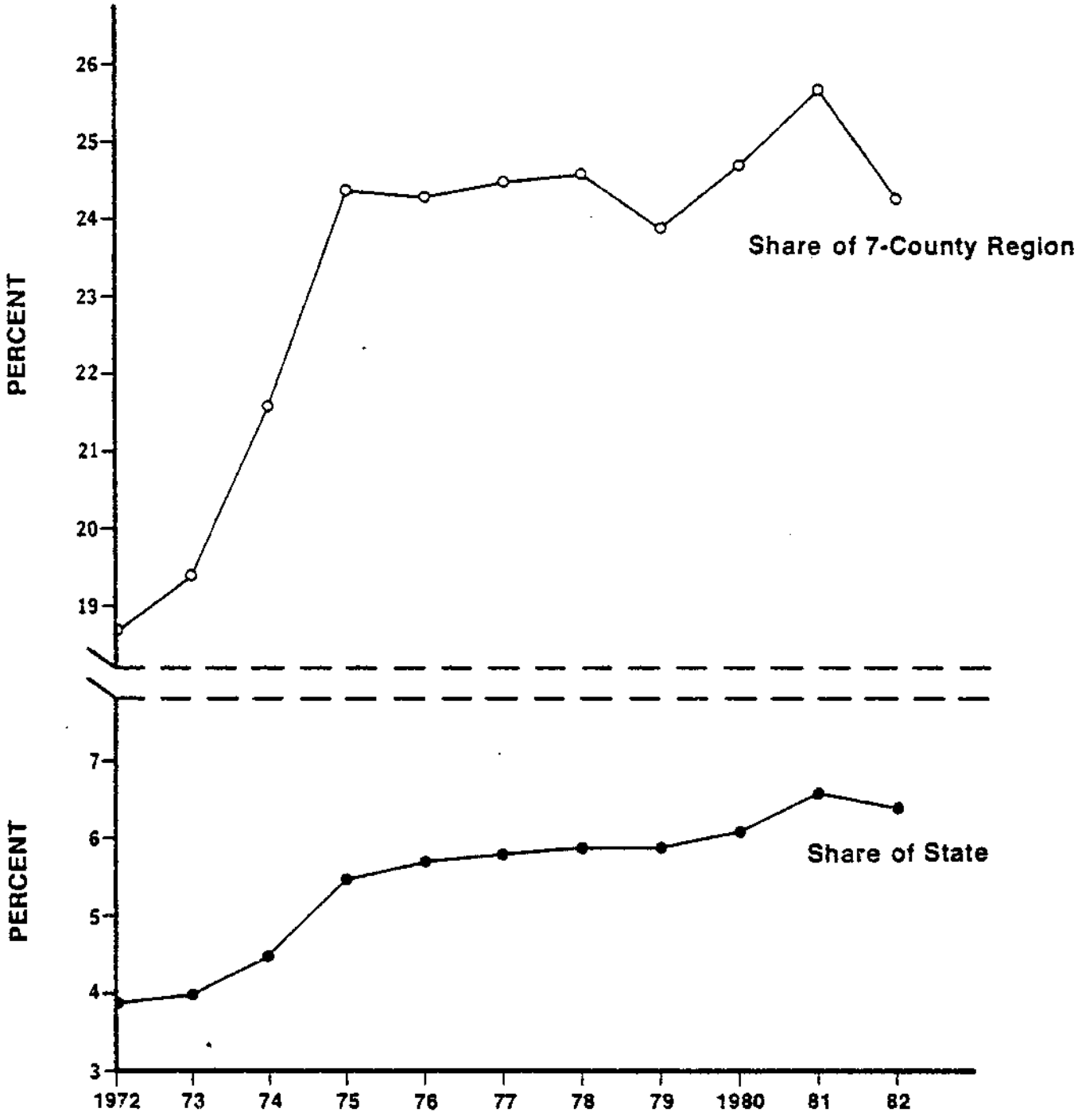
Table VI-1

Aggregate Assessed Valuation of Real Property

Year	Pinelands Municipalities	Pinelands Counties	New Jersey
	- million dollars -		
1982	7,543	31,100	118,600
1981	7,195	28,000	109,200
1980	6,256	25,300	101,800
1979	5,617	23,500	95,200
1978	5,240	21,300	88,100
1977	4,784	19,500	81,900
1976	4,426	18,200	77,000
1975	3,912	16,000	71,600
1974	2,939	13,600	65,600
1973	2,348	12,100	58,700
1972	1,963	10,500	50,400

Source: N.J. Department of the Treasury
Division of Taxation

PINELANDS MUNICIPALITIES SHARES OF TOTAL ASSESSED VALUATION



SOURCE: N.J. Division of Taxation

It is difficult to draw any meaningful conclusions about the impacts of the moratorium and the CMP on property values from these data, since aggregate assessed valuation is probably influenced more by the number of towns which have undergone revaluations and reassessments in a given year than by any other single factor. In 1982, the Pinelands municipalities accounted for 24.3 percent of the total assessed value of real property in the seven-county region, and 6.4 percent of assessed valuation statewide.

Table VI-2 shows the assessed value of vacant land over time in the Pinelands municipalities, the Pinelands counties, and the State.[1] Vacant land assessments in New Jersey and in the seven-county region rose continuously over the ten-year period. In the Pinelands municipalities, the value of vacant land more than tripled from 1972 to 1981, and then declined by $14 million in 1982. Thus, the decline in the Pinelands towns shares of aggregate assessed valuation in 1982 can be at least partly attributable to losses of vacant land ratables. Some of this loss is due to the conversion of vacant land to residential and other land uses. The purchase of $6.4 million worth of property in the Pinelands by the Department of Environmental Protection in 1980 and 1981 is also a major contributing factor, although acquisition results in little reduction in revenues to the towns in first few years. The primary cause of the decline

[1] See Appendix Table E-13 for data by municipality.

Table VI-2

Assessed Value of Vacant Land

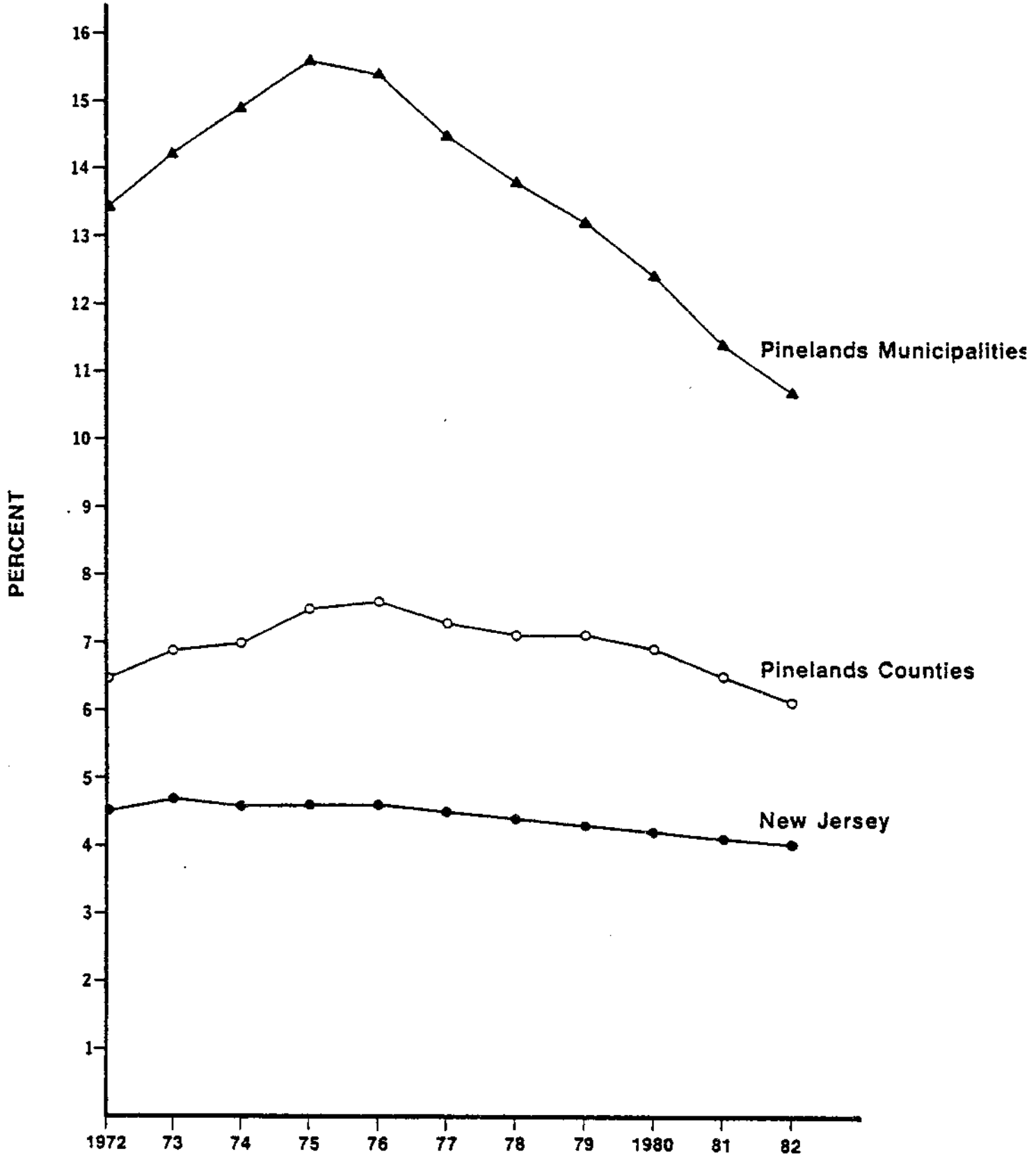
Year	Pinelands Municipalities	Pinelands Counties	New Jersey
	- million dollars -		
1982	808.8	1905.8	4720.1
1981	822.8	1827.9	4425.2
1980	774.8	1740.1	4238.5
1979	740.2	1660.6	4087.7
1978	724.0	1505.7	3857.0
1977	693.3	1419.2	3679.5
1976	682.2	1377.3	3576.6
1975	610.3	1192.0	3297.7
1974	436.5	956.6	2997.0
1973	333.9	834.0	2735.8
1972	263.5	684.1	2262.1

Sources: N.J. Department of Community Affairs, Division of Local Government Services; N.J. Department of Treasury, Division of Taxation

in vacant land ratables, however, is Pinelands-related tax appeals. In Burlington County alone, vacant land assessments in the Pinelands were reduced by $7.3 million in 1980 and 1981.

The percentage of the total ratable base which is vacant land is plotted over time in Figure VI-4. Not surprisingly, the Pinelands municipalities have historically been much more dependent on property tax revenues from vacant parcels than towns in other parts of the region or the State. The proportion of ratables accounted for by vacant land has plummeted in recent years; however, this trend began as early as 1976, four years before any Pinelands-related impacts would be evident. In part, the decline in the importance of vacant land as a source of property tax revenues reflects State and regional trends, and is a function of the conversion of vacant land to developed land uses. Also, in the Pinelands, land subdivisions have played a significant role in determining assessments. Between 1972 and 1975, when vacant land increased its share of total assessed valuation of vacant land, the number of line items (individual properties) increased by 17.7 percent, from 3,398 to 4,588. This indicates a high rate of subdivision, which causes per acre property values to inflate, sometimes dramatically. From 1975 to 1978, however, the total number of lots increased by only 3.5 percent, to 4,747, and the number

VACANT LAND AS PERCENT OF TOTAL RATABLE BASE



SOURCE: N.J. Department of Community Affairs

remained virtually unchanged in 1982 (4,745). At the same time, the assessed value of non-vacant properties continued to grow. Thus, a drop in the rate of subdivision beginning in the mid-1970's partly explains the trend depicted in Figure VI-4.

Finally, Pinelands acquisitions and Pinelands-related tax appeals and reassessments contributed to the relative decline in the importance of vacant land ratables in 1981 and 1982. The total assessed value of real property in the 52 Pinelands communities has nevertheless continued to grow through 1982. Furthermore, increases in residential taxes are clearly a function of not only changing assessments but also growth in municipal expenditures. In the next section, trends in tax levies and related expenditures are analyzed.

3. Tax Levies and Expenditures

Property taxes levied in the 52 Pinelands municipalities totalled $224.3 million in 1982, ten percent higher than in 1981. This levy includes tax revenues to be raised for municipal functions, as well as for school and county taxes. Taxes have grown inexorably over the ten year period from 1972 to 1982, both in the Pinelands[1] and in other

[1]See Appendix Table E-14 for data by municipality.

Table VI-3

Total Property Tax Levy

Year	Pinelands Municipalities	Pinelands Counties	New Jersey
	- million dollars -		
1982	224.3	1018	4559
1981	203.1	925	4192
1980	172.4	796	3794
1979	151.9	715	3328
1978	139.7	670	3493
1977	133.6	651	3257
1976	136.2	674	3346
1975	118.9	594	3021
1974	96.0	521	2762
1973	90.9	489	2585
1972	80.0	449	2442

Source: N.J. Department of the Treasury, Division of Taxation

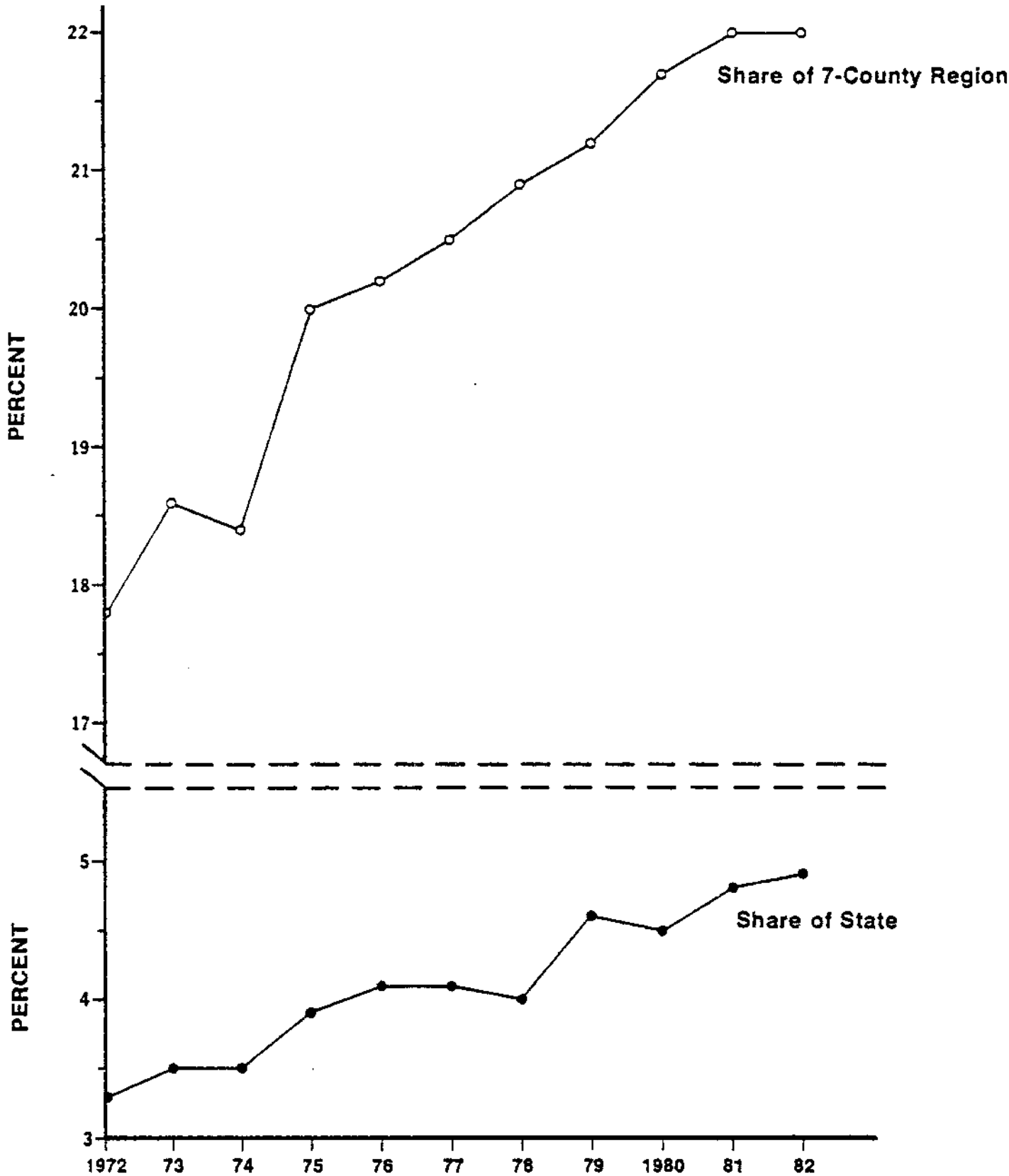
parts of the State and the seven-county region. To show comparative rates of growth between the Pinelands and other areas, Figure VI-5 depicts the Pinelands shares of growth in regional and state taxes. As a share of the seven-county region, taxes levied in the Pinelands communities jumped from 17.8 percent of the regional total in 1972 to 22 percent in 1981 and 1982. Growth in the state share was not as dramatic nor as consistent; however, the overall share increased from 3.3 percent in 1972 to 4.9 percent in 1982. Shares increased both before and after the implementation of Pinelands regulations, although the data for 1982 suggest a leveling off of this trend, particularly at the regional level.

The total tax levy is computed on the basis of the funds which must be raised by municipalities to cover expenditures for municipal functions, school district taxes and county taxes.[1] Expenditures for municipal functions over time are shown in Table VI-4, and data on school and county tax requirements are presented in Table VI-5.[2] Between 1972 and 1978, municipal expenditures rose at an extremely rapid annual rate of 16.9 percent in the Pinelands

[1] In New Jersey, the municipalities collect all property taxes and then distribute funds as required to the school districts and counties.

[2] Data for 1982 are not yet published.

PINELANDS MUNICIPALITIES SHARES OF TOTAL TAXES LEVIED



SOURCE: N.J. Division of Taxation

Table VI-4

Expenditures for Municipal Functions

Year	Pinelands Municipalities	Pinelands Counties	New Jersey
	- million dollars -		
1981	94.2	452.7	2211
1980	90.9	422.1	2062
1979	80.6	386.9	1920
1978	73.6	363.0	1849
1977	62.9	322.3	1663
1976	55.0	290.7	1525
1975	52.2	272.5	1473
1974	44.0	242.2	1316
1973	35.0	202.5	1119
1972	28.8	174.1	989
	Average Annual Percent Change		
1978-81	+ 8.6	+ 7.6	+ 6.1
1972-78	+16.9	+13.0	+11.0

Table VI-5

School and County Taxes

Year	Pinelands Municipalities	Pinelands Counties	New Jersey
	- million dollars -		
1981	182.4	748.9	3300
1980	152.9	657.2	2990
1979	134.5	590.3	2760
1978	125.2	552.0	2602
1977	117.8	532.1	2538
1976	116.2	529.5	2541
1975	103.1	477.9	2328
1974	85.9	416.7	2155
1973	80.4	394.7	2035
1972	70.1	352.8	1890
	Average Annual Percent Change		
1978-81	+13.4	+10.7	+8.2
1972-78	+10.2	+ 7.8	+5.5

towns. The annual rate of growth during this period for the seven-county region was 13.0 percent, and only 11.0 percent for the State. After 1978, the average rate of increase in local purpose outlays was cut nearly in half in the Pinelands, to 8.6 percent, although the 52 towns still outpaced the region and State.

Expenditures for school and county taxes in the Pinelands were nearly double the outlays for municipal services in 1981. School and county expenditures increased at a slower rate than municipal expenditures from 1972 to 1978, although the rate of growth accelerated significantly after 1978, to 13.4 percent per year, on the average. The trend toward increasing school and county costs is also evident at the regional and State levels. Between 1978 and 1981, however, school and county taxes rose by 46 percent in the Pinelands towns, compared to a 36 percent increase throughout the seven-county region and only 27 percent in the State as a whole.

Clearly, therefore, most of the blame for increased residential tax bills throughout the Pinelands in recent years can be traced to large increases in expenditures for schools and other public facilities needed to serve the expanding population, rather than any large-scale losses of ratables. A region-wide analysis may, however, mask

significant localized impacts on municipal finance, and a previous study has already identified at least one municipality, Woodland Township, which has been adversely affected by reductions in vacant land assessments. Therefore, the following section briefly analyzes the causes of increased residential tax bills in selected municipalities.

C. Analysis of Selected Municipalities

In this section, increases in average residential tax bills from 1978 to 1982 in selected Pinelands municipalities are analyzed in relation to changes in total tax levies and vacant land assessments in the same period. Increases in tax bills may be caused by growth in public expenditures and/or reductions in non-property tax revenues, both of which are reflected in the total tax levy and are assumed to be unrelated to Pinelands land use regulations. If, however, rises in residential taxes are associated with declines in vacant land assessments, Pinelands-related tax appeals and reassessments may be at least partly responsible for a shift in the tax burden from landowners to homeowners.

The municipalities selected for analysis are those ten municipalities which experienced the largest percentage increases in average residential tax bills from 1978 to 1982. They are shown in Table VI-6 in descending order of the

Table VI-6

Increases in Residential Tax Bills, 1978 - 1982

Top Ten Municipalities

Municipality	Rank[1]	Average Tax Bill, 1978	Average Tax Bill, 1982	Absolute Increase	Percentage Increase
Lacey	1	$401	$ 890	$489	121.9
Shamong	2	850	1,727	877	103.2
Hamilton	3	512	1,040	528	103.1
Upper	4	219	430	211	96.3
Port Republic	5	735	1,430	695	94.6
Galloway	6	668	1,292	624	93.4
Tabernacle	7	834	1,586	752	90.2
New Hanover	8	575	1,093	518	90.1
Woodland	9	456	859	403	88.4
Dennis	10	460	835	375	81.5

[1]Ranked according to percentage increase; out of a total of 52 municipalities

overall percentage increase. Among these ten towns, the proportionate increase in tax bills over the four-year period ranges from 81.5 percent (Dennis Township) to 121.9 percent (Lacey Township), while the absolute increase ranges from $211 per household (Upper Township) to as much as $877 per household (Shamong Township).

Three of the towns listed (Lacey, Hamilton and Woodland) were the subject of intensive financial analyses in the 1982 report prepared by Government Finance Associates, Inc. for the Pinelands Commission. As noted previously, the report found that Pinelands-related tax appeals in Lacey and Hamilton had a minor effect on tax rates; in 1981 and 1982 however, the chief causes of increased taxes were expenditures for schools (in Lacey Township), and road improvements and other municipal services (in Hamilton Township). In Woodland Township, reductions in vacant land assessments were the primary, although not the sole, factor responsible for local tax hikes.

Examination of trends in total tax levies, which represent the revenues needed to fund municipal, school district and county budgets, reveals that nine of the ten towns where residential tax bills rose the fastest are also among the top ten towns in terms of growth in expenditures (see Table VI-7). Woodland Township is the only exception. Shamong, Tabernacle, and Lacey exhibited the largest rates of growth in tax levies,

Table IV-7

Increases in Total Tax Levies, 1978 - 1982

Municipality	Rank[1]	Absolute Increase	Percentage Increase	Percent of Increase in Residential Tax Bill Caused by Tax Levy Increase
		(thousand dollars)		
Lacey	3	5,025	133.9	97.3
Shamong	1	1,494	160.8	91.5
Hamilton	8	3,681	108.6	83.3
Upper	5	895	122.8	94.0
Port Republic	9	275	97.5	95.9
Galloway	7	4,155	112.7	92.9
Tabernacle	2	1,909	148.3	88.0
New Hanover	6	201	114.9	100.0
Woodland	28	280	47.8	61.6
Dennis	10	863	92.4	88.1

[1]Ranked according to percentage increase; out of a total of 52 municipalities

and seven of the towns had more than a 100 percent increase from 1978 to 1982. Thus, increases in residential tax bills are highly correlated with increased public spending, which is primarily a function of population growth and the level of services demanded.[1] The percentage of the growth in residential tax bills which can be attributed solely to rising tax levies exceeds 80 percent in all townships except Woodland.

The relationship between changes in vacant land assessments from 1978 to 1982 and increases in residential tax bills is not evident on a broad scale. Five of the ten townships had absolute increases in the assessed value of vacant land, and one remained unchanged. Four of the townships, however, exhibited losses of vacant land ratables. In Shamong Township, vacant land assessments decreased by 7.1 percent ($0.6 million); in Tabernacle by 24.1 percent ($2.7 million); in Woodland Township by 38.3 percent ($6.7 million); and in Dennis by 1.1 percent ($0.1 million). Woodland and Tabernacle had the largest and third largest losses of vacant land ratables among the 52 Pinelands towns.

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[1] As noted previously, however, increases in the amount of money allocated to cover uncollected taxes may rise as a result of Pinelands-related tax appeals.

To some extent, "losses" of vacant land ratables merely reflect the reclassification of vacant land to other categories, particularly residential, when properties are developed. Construction of new housing may be a factor in causing the decline of vacant land assessed value in Shamong, Tabernacle, and Dennis Townships, where the numbers of building permits issued between 1978 and 1981 were 334, 506, and 226, respectively.

An important cause of vacant land ratable loss in Tabernacle, Woodland and Dennis Townships was the acquisition of land in the Pinelands by the Department of Environmental Protection (see Table VI-8). In 1980 and 1981, DEP purchased lands assessed at nearly $900,000 in Tabernacle Township, which represents one-third of the total decline in vacant land valuation. Acquisitions worth $2.5 million in assessed valuation were made in Woodland Township in these two years, again accounting for about one-third of the total loss in ratables. In Dennis Township, the assessed value of the lands purchased by the State was $86,780, almost exactly equal to the overall decline in vacant land assessed value. The effect of these losses of ratables on township revenues is small in the first few years following acquisition, due to in lieu of tax payments made by the State under the Green Acres program; however, these payments decline steadily over a thirteen-year period until they reach zero.

Table VI-8

Losses of Vacant Land Ratables, 1978-1982

Township	Total Decline in Assessed Value of Vacant Land	Assessed Value of Pinelands Acquisitions	Reduction in Assessments Due to Pinelands Area Tax Appeals
		- thousand dollars -	
Shamong	644.5 (0.7)	0	1,098.4 (1.2)
Tabernacle	2,670.2 (2.1)	900.0 (0.7)	791.7 (0.6)
Woodland	6,654.7 (28.7)	2,500.0 (10.8)	2,964.6 (12.8)
Dennis	85.2 (0.2)	86.8 (0.2)	0

Numbers in parentheses indicate the percentage of the total 1982 ratable base

Another factor influencing vacant land assessed valuation in Woodland, Tabernacle and Shamong is Pinelands-related tax appeals and reassessments.[1] According to Burlington County Tax Board records, in Tabernacle Township, 74 tax appeals were filed on Pinelands vacant land properties in 1980 and 1981, resulting in a total reduction of $791,650 in assessed value. Reassessments also resulted in a downward adjustment of other vacant properties. There were 40 Pinelands appeals in Shamong Township in 1980 and 1981, and the total reduction in assessments amounted to $1,098,385. Part of this decline was offset by increases in value in other parts of the Township. Woodland Township had the largest drop in ratables due to tax appeals in 1980 and 1981; 92 appeals were filed and assessments were reduced by $2,964,555. No appeals have been filed in Dennis Township.

These data show that Pinelands acquisitions and tax appeals have contributed to net losses of vacant land assessed value in four townships. However, in Tabernacle, the total reduction in assessed value amounts to only 2.1 percent of the total ratable base in 1982; in Shamong, the total loss in ratables is only 0.7 percent of aggregate assessed valuation; and in Dennis, only 0.2 percent of the ratable base was lost due to acquisitions. Therefore, it

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[1] Tabernacle and Shamong Townships conduct reassessments on annual basis.

was large jumps in expenditures, as reflected in the total tax levies, rather than losses of vacant land ratables, which were by far the primary causes of increasing residential tax bills in these three townships. In Woodland Township, however, the $6.6 million decline in assessed value represents 28.7 percent of the 1982 ratable base, and some of this loss is attributable to Pinelands tax appeals, which had a significant impact on township revenues.

In 1983, Woodland Township has been completely reassessed, and the value of vacant land has been reduced to $5.5 million, compared to $10.8 million in 1982. Vacant land in Woodland Township now accounts for only 21 percent of the total ratable base, compared to 61 percent in 1980. Therefore, the tax burden has shown a major shift from vacant land to residential properties. In 1983, the average residential tax bill in Woodland Township is $1,392, compared to $859 in 1982.

In sum, of the ten Pinelands towns which experienced large increases in residential tax bills from 1978 to 1982, only in Woodland Township have Pinelands-related tax appeals and reassessments been a major cause. While the 1983 reassessment is having a significant impact on tax bills in Woodland, the assessor expects few appeals in the future. Elsewhere in the Pinelands, tax appeals have also been dropping. In Burlington County, total

Pinelands appeals resulted in a net reduction of $2.2 million in 1982, compared to $2.9 million in 1981 and $4.4 million in 1980.[1] In Atlantic County, the decline has been even more dramatic. Assessments throughout the County were reduced on 26 parcels in 1982 (resulting in a loss of $330,000 in ratables), compared to 44 in 1981 and 281 in 1980.[2] If these trends continue, the future effects of Pinelands regulations on municipal finances should be small.

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[1] Burlington County Times, "Tax Appeals Tapering Off in Pinelands", December 3, 1982.

[2] Alantic City Press, "Pines Tax Appeals Take Sharp Drop", November 27, 1982.

VII

Conclusions and Recommendations

A. Summary of Major Findings

1. Land Markets

The number of land transactions occurring in the 52 Pinelands municipalities and throughout the state has decreased steadily since 1978, due largely to general economic conditions. As a proportion of regional and statewide sales, land transactions in the Pinelands towns dropped from 1976 to 1981. Much of the decline in the Pinelands "shares" during this period can be attributed to the dramatic increase in sales activity in the Atlantic City area. Pinelands regulations may have also dampened land speculation and the sale of building lots from 1979 to 1981. In 1982, however, the proportion of transactions occurring in the Pinelands towns increased relative to the region and the state, indicating a possible reversal of earlier trends.

To determine the impacts of Pinelands regulations on land prices, detailed information was collected for all market sales of vacant and farmland involving parcels one acre or larger in thirteen Pinelands municipalities, for the period from January 1, 1976 to July 30, 1982. Price trends in each management area were then compared to trends

in those areas of the towns which are located outside the Pinelands Area, plus two non-Pinelands towns. Comparisons of average prices per acre, summed across all transactions, show that prices outside the Pinelands Area were slightly lower in the post-CMP period (1981-82) than in the pre-moratorium period (1976-1978), despite the fact that land in these areas is not subject to Pinelands regulations. Conversely, prices in all Pinelands Management Areas except the Preservation Area showed increases following the enactment of the CMP, compared to the pre-moratorium period. In the Preservation Area, only four private market transactions occurred after the adoption of the CMP in the towns analyzed, and the average price per acre was $425, considerably less than in preceding years.

Transactions in the thirteen towns were analyzed using regression analysis to control for many of the variables which affect land prices, including acreage, road access, public sewer, zoning, and land use. Regression models were constructed for the pre-moratorium, moratorium, and post-CMP periods, and the effects of location vis a vis the Pinelands Management Areas were compared across time periods. It was found that, relative to land prices outside the Pinelands Area, prices in the Forest Area, Agricultural Production Area, Rural Development Area, and Pinelands Towns and Villages dropped significantly during the moratorium, while

prices rose somewhat in the Regional Growth Areas. After the Comprehensive Management Plan went into effect, however, these trends were reversed, with none of the management areas showing a drop in relative prices. (Data for the Preservation Area were not statistically significant, due to the small number of sales and the large variations in prices there.) Thus, the CMP has apparently had little or no overall effect on land prices in the Protection Area during the limited time period studied. Analyses for individual townships show a positive effect on prices in the Regional Growth Area of Hamilton Township and the Pinelands Village in Manchester Township, and a negative effect on Rural Development Areas in Monroe and Jackson Townships.

2. Housing Markets

Analyses of residential sales throughout the 52 Pinelands towns show no discernable effect on the overall level of housing sales or on housing prices in the Pinelands. However, new construction, as gauged by the number of residential building permits issued, dropped rather sharply during the moratorium period, both in absolute terms and in relation to the region and the state. After the adoption of the CMP, the total number of permits issued in the Pinelands communities continued to decline;

however, the Pinelands share of regional permits increased and the state share stabilized, indicating a possible strengthening of local markets.

It is not clear whether or not these recent trends are likely to persist under the CMP. About two-thirds of the housing units approved by the Pinelands Commission in 1981 and 1982 were economic hardship waivers granted under provisions of the Plan which effectively expire in January 1984. On the other hand, approvals already granted by the Commission outnumber all building permits issued in the 52 towns by more than two to one. Therefore, many new homes can be built in the Pinelands in the future based on approvals already granted. Some townships have also established Municipal Reserve Areas to accomodate additional growth as the Regional Growth Areas become fully developed.

3. Employment

Total employment in the seven Pinelands counties increased at a faster rate than employment throughout New Jersey from 1972 to 1981, and the region's share of statewide employment grew at a faster rate from 1978 to 1981 than in preceding years. Therefore, Pinelands regulations have apparently had no adverse impact on the general level of economic activity and associated employment opportunities in the region as a whole. Employment in the 52 municipalities

also increased from 1972 to 1981, both in absolute terms and as a share of the state. Seven thousand new jobs were created in Pinelands towns between 1978 and 1981. Since the data analyzed cover a period of less than one year after the adoption of the CMP, no firm conclusions about the Plan's impacts can be drawn. It appears, however, that the Plan has had no significant effect on aggregate employment.

4. Resource Extraction

While CMP regulations prohibit the opening of new sand and gravel mines in the Preservation Area, only 800 acres have already been mined there out of a total of 4,600 acres which are authorized by valid registration certificates. All but one of the thirteen operators in the Preservation Area can at least double the area which they have already mined. In the Protection Area, new mines may be opened and existing mines expanded, provided that they are operated and reclaimed in accordance with the regulations contained in the CMP. Thus, the acreage restriction in the Preservation Area impose no short-term constraints on the future expansion of the industry as a whole nor on the vast majority of individual operators.

According to representatives of the mining industry, the requirements for reclamation of mining sites contained in the Plan impose additonal costs on mine operators. These costs may be more burdensome for small operators than large ones, because the less expensive equipment typically used in small operations tends to cause more land disturbance than more technologically advanced machinery. Studies of reclamation conducted by ASARCO, Inc., however, show that substantial reductions in reclamation costs can be achieved through careful planning and management during the mining process. Mine operators can obtain technical assistance regarding reclamation techniques from a variety of public and non-profit organizations.

5. Agriculture

Available data show no significant loss of active agricultural land in the Pinelands region since the enactment of the CMP. An issue of major concern to farmers is their ability to obtain sufficient credit to maintain viable operations, assuming that land prices have been adversely affected by Pinelands regulations (an assumption which has not been borne out empirically to date). Interviews with officials of the Farm Credit Associations, the Farmers Home Administration, and commercial banks throughout the country reveal that it is the practice of lending institutions to lend enough money to meet the business needs of a farmer with the expectation that he will pay off the loan through the income he

generates from his farming operations. Generally, lenders do not make loans which could be repaid only by selling the farm at high development values. Since this practice is generally followed in the absence of agricultural zoning, its enactment does nothing to change the practice.

A survey of all counties in the U.S. that were known to have agricultural zoning ordinances as of 1980 shows that not one has reported that agricultural zoning has caused credit problems. Most officials interviewed reported that, to their knowledge, the complaint had never been raised. Some reported that the argument had been made prior to adoption of the agricultural zoning ordinance, but that it had not been heard since.

Farm Credit Associations and the Farmers Home Administration office in the Pinelands area reported that no farmer has been unable to obtain the farm loans needed because of reduction in land value caused by agricultural zoning. They have expressed uneasiness about possible credit problems in certain situations which could arise and have indicated that they are concerned about any program which might reduce the value of a farmer's land. However, in light of banking practices and of experience throughout U.S. and in the Pinelands area, farm credit problems caused by agricultural zoning appear to be relatively minor.

6. Fiscal Impacts

Property taxes in Pinelands municipalities have historically been much lower than taxes in other parts of the state. In 1982, the average residential property tax bill in the 52 towns was $1,072, compared to $1,613 for the State as a whole. Nevertheless, taxes have risen rapidly in recent years, and at a slightly faster overall rate in the Pinelands than statewide. The primary cause of increased taxes in the Pinelands has been large increases in public spending for schools and municipal services. From 1978 to 1981, expenditures for municipal functions rose at an average annual rate of 8.6 percent in the Pinelands, compared to 6.1 percent throughout the State. School and county taxes in the Pinelands increased by 13.4 percent per year compared to 8.2 percent statewide. Increased expenditures are primarily a function of the demand for services by a growing population, rather than any Pinelands-related restrictions on development.

Pinelands communities rely more heavily on property tax revenues from vacant land than do towns in most other parts of the State. In 1982, vacant land accounted for 10.8 percent of the combined ratable bases of the 52 towns, compared to 4.1 percent statewide. Vacant land as a percent of total ratables has declined rather sharply in the Pinelands in recent years; however this trend began as early as 1975, five years before

Pinelands land use regulations could exert any influence. Two major factors underlying this trend were a significant drop in the rate of land subdivision after 1975 and the conversion of vacant land to developed uses. From 1980 to 1982, Pinelands acquisitions also contributed to a decline in vacant land assessed value, although the state reimburses towns for revenues lost as a result of acquisition over a period of thirteen years (payments drop by eight percent each year). Also, Pinelands-related tax appeals and reassessments accounted for a minor shift of the tax base from vacant land to residential and other types of properties from 1980 to 1982. The overall impact of CMP on vacant land ratables in the region, however, appears to be small.

Since a regional analysis may mask significant localized impacts of the Plan on municipal finances, the ten Pinelands towns which had the largest percentage increases in residential tax bills from 1978 to 1982 were analyzed. Increases in residential tax bills in these towns have been caused primarily by increased public spending, as reflected in the total taxes levied by each municipality to cover projected outlays. Only four of the townships had a net decline in vacant land ratables due to Pinelands acquisitions and reassessments, and in three of these townships (Shamong, Tabernacle and Dennis), the

decrease represents two percent or less of the total 1982 ratable base. Only Woodland Township lost a significant proportion of its ratable base as a result of tax appeals and acquisitions. Between 1980 and 1982, reductions in assessed value due to tax appeals amounted to $3.0 million (12.8 percent of the ratable base), and acquisitions removed another $2.5 million (10.8 percent of the ratable base) from the assessment rolls. Furthermore, in 1983 Woodland Township has been completely reassessed, and the vacant land now accounts for only 21.1 percent of the ratable base, compared to 46.6 percent in 1982. This drop has resulted in a significant rise in residential tax bills in the township. Thus, while the Plan has had a major impact on municipal finances in Woodland Township, it appears to be a unique case.

B. Policy Recommendations

Since the impacts of the CMP on land values, housing markets, and employment in the region appear to be relatively minor to date, no substantive policy recommendations pertaining to these topics are presented in this report. The Commission should, however, continue to monitor economic trends in the Pinelands to determine whether the CMP may have significant longer-term effects on the regional economy. (See Section C for specific recommendations concerning the continuing economic monitoring program.) The Plan has been

found to have localized short-term impacts on municipal tax bases, however, and in one case, Woodland Township, the loss of vacant land ratables has had a significant effect on property taxes. Thus, some general recommendations for alleviating the fiscal impacts of the Plan are presented below. In addition, recommended policies relating to agriculture are outlined.

1. Policies Relating to Fiscal Impacts

a. In Lieu of Tax Program

The Pinelands Commission, recognizing that the large-scale acquisition of ecologically significant lands in the Pinelands could have an adverse effect on the ratable bases of certain municipalities, recommended a payment in lieu of tax program in the Comprehensive Management Plan. Under the current Green Acres program, municipalities are reimbursed for property tax revenues lost due to state acquisitions for a period of thirteen years, with the payments starting at 100 percent and declining by eight percent per year. The Pinelands Commission has recommended that payments for acquisitions made in the Pinelands subsequent to the enactment of the Pinelands Protection Act be maintained at 100 percent of the revenues which would otherwise be realized if the property had remained in private ownership. A bill now pending in the state assembly (Assembly Bill 1977) provides for such an in lieu of tax program. It is estimated

that the payments made to municipalities under this bill would total $565,081 over the first five years of implementation (1983-1987), excluding Green Acres payments. Since Pinelands acquisitions have had a significant impact on the ratable base of Woodland Township, and are affecting several other Pinelands municipalities, it is recommended that the payment in lieu of tax program be enacted at the earliest possible date.

b. Reimbursement for Loss of Vacant Land Ratables

It is recommended that a program be adopted to alleviate any significant adverse effects on municipal finances caused by the implementation of the Comprehensive Management Plan. Such a program should consider two factors: (1) the extent to which the value of privately owned vacant land has decreased since the enactment of the Plan and (2) the level of "fiscal stress" which the municipality is experiencing. In calculating the net change in the value of vacant land from 1980 to the current year, properties which have been acquired by the state or which have been converted to farm, residential, commercial, or industrial uses in the interim should be omitted. In addition, payments should be based on "true", or market, value and associated equalized tax rates, as determined by the New Jersey Division Taxation, rather than assessed value and actual tax rates. Assessments represent rather artificial measures of value, since towns are assessed at varying percentages of true value.

Payments to municipalities could be based on changes in the value of vacant land throughout each municipality or on the basis of the value of lands located only within the Pinelands Area. Computing entitlements based on the value of vacant properties throughout each qualified municipality has two advantages. First, any "spillover" effects of the Comprehensive Management Plan on land values outside the regulated area will be accounted for, and second, the assessor need not examine every vacant land line item to determine its location vis a vis the Pinelands Area boundaries in determining the assessed value of vacant properties in each year. However, basing entitlements on the value of properties only within the Pinelands Area will serve to focus the program only on lands which are likely to have been affected by the Comprehensive Management Plan.

The second factor which should govern the amount of financial relief provided to municipalities is the level of fiscal stress which a town has suffered. The use of fiscal stress criterion may be especially important if funding for a tax reimbursement program is limited. In order to target aid only to those municipalities which are suffering financial hardship under the CMP, a set of "fiscal stress" indicators could be developed and each Pinelands municipality could be measured against this

set of indicators. Municipalities which exceed a certain threshold level of overall fiscal stess would be considered eligible for financial assistance. Examples of general fiscal stess indicators are: a high and rising rate of tax delinquency, a sudden and substantial decrease in assessed, a high ratio of own-source revenue to the full value of the taxable property base, a high ratio of local taxes to personal income, a high level of overall debt in relation to personal income, a high level of per capita local taxes, and high per capita expenditures for certain basic functions.[1]

A bill which would provide reimbursement to Pinelands municipalities based on the criteria outlined above (Senate Bill 1791 and Assembly Bill 2039) was passed by the Assembly in July 1983, and is awaiting final action by the Senate. The Pinelands Commission has endorsed this bill, and recommends its enactment at the earliest possible date.

c. Other Programs

In addition to the two programs outlined above, it is recommended that the Pinelands Commission assist municipalities in identifying financial problems which may arise, reducing the costs of providing public services, and increasing revenues. Examples of the types of assistance which could be provided are listed below:

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[1]Government Finance Associates, Inc., An Analysis of the Fiscal Impact of the Pinelands Comprehensive Management Plan on Selected Municipalities, Report to the Pinelands Commission, September 1982.

- Engage independent consultants to conduct detailed financial analyses of municipalities which are having fiscal problems, in order to identify ways to cut costs and/or increase revenues.

- Assist municipalities in developing cooperative agreements to pool certain municipal services, such as police and fire protection, so as to minimize costs. Counties may be appropriate public entities to coordinate such "pooling" efforts.

- Work with local business organizations and government agencies to encourage the establishments of new businesses in designated commercial districts to generate new ratables.

- Seek priority consideration for assistance from state and federal agencies that dispense grants and loans to encourage economic development.

- Develop a regional marketing approach designed to demonstrate the locational advantages of the Pinelands for new commercial and industrial development.

- Work with municipal assessors to develop a means by which the value of Pinelands Development Credits can be incorporated into vacant land assessments.

- Establish a clearinghouse for land sales and assessment data in cooperation with local tax assessors to facilitate consistent assessment practices in the Pinelands.

2. Policies Relating to Agriculture

Since it is the intent of the Comprehensive Management Plan to protect and enhance agriculture in the Pinelands region, several recommendations aimed at promoting the economic viability of farming are presented here. First,

it is recommended that the Pinelands Commission meet with farmer's organizations in order to provide information about the ownership of Pinelands Development Credits and other aspects of the Plan. The Commission should also work with real estate brokers to inform them about the PDC program and encourage the sale of PDC's on the private market. The Commission further supports the establishment of a state Pinelands Development Credit Bank to purchase PDC's from individuals in cases of economic hardship; to extend loan guarantees to lending institutions when PDC's are used as collateral to secure a loan; and to maintain a centralized registry of ownership and transactions of PDC's. A bill which would establish a Pinelands Development Credit Bank (Assembly Bill 1259) has been reported out of the Assembly Revenue, Finance, and Appropriations Committee.

It is also recommended that the Commission work with the New Jersey Department of Agriculture in the development of regulations pursuant to the Agricultural Retention and Development Act, so that the valuation of agricultural easements under the statewide program will reflect pre-Comprehensive Management Plan zoning. In addition, all proposed legislation and regulations should be monitored by the Commission in order to ensure that such laws will have no adverse effects on agriculture in the Pinelands.

C. Continuing Economic Monitoring Program

Clearly, it will be necessary to monitor economic and fiscal trends over a period of years in order to ascertain the full range and magnitude of the impacts of the Comprehensive Management Plan. The data bases developed in this study will be updated as new information becomes available, and reports documenting the impacts of the Plan will be issued on a regular basis. In addition, the analysis will be refined and expanded where possible. Future studies should include:

- Expansion of the land value analysis to include additional explanatory variables, such as distance to urban centers, and perhaps additional municipalities, to increase the size of the sample.

- Analyses of trends in building permits according to Pinelands Management Areas. The Commission will work with the New Jersey Department of Labor to try to obtain information on the exact location of each building permit issued.

- Detailed analyses of fiscal trends and Pinelands-related impacts in individual municipalities which are experiencing financial problems.

- Development of representative farm budgets in cooperation with agricultural economists at Cook College and the New Jersey Department of Agriculture to determine the economic viability of agriculture in the Pinelands.

- More detailed analyses of farm lending trends in the Pinelands, if such data are made available by credit institutions, to more specifically determine whether collateral values have been reduced, and, if so, what effects such reductions have had on the ability of farmers to borrow sufficient funds.

A P P E N D I C E S

APPENDIX A

ARTICLE 5

Minimum Standards for Land Uses and Intensities

INTRODUCTION

The Pinelands Protection Act provides in part that the Comprehensive Management Plan is to "encourage appropriate patterns of compatible residential, commercial and industrial development in or adjacent to areas already utilized for such purposes, in order to accommodate regional growth influences in an orderly way while protecting the Pinelands environment from the individual and cumulative adverse impacts thereof" and to "discourage piecemeal and scattered development" while protecting the Pinelands environment. Article 5 contains minimum standards for the development and use of land which the Pinelands Commission has determined are necessary to protect and maintain the essential character of the Pinelands environment and to accomplish the purposes of the Pinelands Protection Act and the Federal Act.

The provisions of this Article are intended to serve as minimum standards for the preparation and adoption of county and municipal master plans and land use ordinances. However, it is recognized that the specific provisions of this Article, including the management area delineations, can be refined at the local level provided that the objectives and goals the minimum standards represent will be achieved. In determining whether to certify a municipal master plan or land use ordinance under the provisions of Part 4 of Article 3 [CERTIFICATION OF MUNICIPAL PLANS] of this Plan, the Pinelands Commission will consider the extent to which the municipal master plan or land use ordinance ensures that all development of land will be in conformance with the minimum standards of this Article.

PART 1—STANDARDS OF GENERAL APPLICABILITY

Section 5-101.
Development in Accordance with this Plan

No development shall be carried out by any person unless that development conforms to the minimum requirements and standards of this Plan.

Section 5-102.
Expansion of Existing Uses

Notwithstanding the use restrictions contained in Part 3 of this Article, any lawful use other than those uses which are expressly limited in Article 6 [MANAGEMENT PROGRAMS AND MINIMUM STANDARDS] of this Plan, and which existed on the effective date of this Plan, may be expanded provided that:

A. The expansion of the use meets all of the minimum standards of Article 6 [MANAGEMENT PROGRAMS AND MINIMUM STANDARDS];

B. The area of expansion does not exceed 50% of the floor area, the area of the use or the capacity of the use, whichever is applicable, on the effective date of this Plan; or

C. The developer demonstrates that the ex-

pansion of the existing use in excess of 50% is necessary in order to maintain the economic viability of the existing use.

Section 5-103.
Map Status

The following maps, the originals of which are maintained at the offices of the Commission, are hereby designated and established as a part of this Plan and shall be as much a part of this Plan as if they were set out in full in this Plan:

A. Pinelands Area Jurisdiction Boundaries, Plate 1.

B. Surficial Geology, Plate 2.

C. NW-SE Geologic Cross-Section, Plate 3.

D. Hydrogeologic Features, Plate 4.

E. Surface Water Hydrology, Plate 5.

F. Agricultural Soils, Plate 6.

G. Depth to Seasonal High Water Table, Plate 7.

H. Hydrologic Soil Group, Plate 8.

I. Soil Factors Limiting Use for Septic Tank Absorption Fields, Plate 9.

J. Vegetation, Plate 10.

K. Wildland Fire Hazard Classification, Plate 11.

L. Watersheds Supporting Characteristic Pinelands Aquatic Communities, Plate 12.

M. Prehistoric Archaeologic Resources, Plate 13.

N. Historic, Archaeologic and Architectural Resources, Plate 14.

O. Cultural Subregions, Plate 15.

P. Land Use, Plate 16.

Q. Sewer Service Areas, Plate 17.

R. Water Service Areas, Plate 18.

S. Solid Waste Disposal Sites, Plate 19.

T. Transportation Systems, Plate 20.

U. Major Public Land Holdings, Plate 21.

V. Resource Extraction Areas, Plate 22.

W. Ecological Critical Area Importance Values, Plate 27.

X. Land Capability, Plate 28.

Section 5-104.
Height Limitations

A. In all Pinelands Management Areas other than Regional Growth Areas and Pinelands Towns no structure shall exceed a height of 35 feet, except as provided in Subsection B hereof.

B. The height limitation in Subsection A shall not apply to any of the following structures, provided that such structures are compatible with uses in the immediate vicinity and conform to the objectives of Part 10 of Article 6: silos, barns and other agricultural structures, church spires, cupolas, domes, monuments, water towers, fire observation towers, transmission towers, windmills, chimneys, smoke stacks, derricks, conveyors, flag poles, masts, aerials, solar energy facilities, and similar structures required to be placed above the roof level and not intended for human occupancy.

PART 2—PINELANDS MANAGEMENT AREAS

Section 5-201.
Purpose

In order to ensure that the development and use of land in the Pinelands meet the minimum standards of this Plan, the Pinelands Comission hereby finds that it is necessary to establish eight management areas governing the general distribution of land uses and intensities in the Pinelands. Except for Special Agricultural Production Areas and the Pinelands Villages, the boundaries of the management areas are set forth on the Land Capability Map identified in Section 5-103. Special Agricultural Production Areas and additional Agricultural Production Areas may be created as an element of a municipal master plan or land use ordinance under the provisions of Sections 5-204 and 5-205 of this Part. The boundaries of Pinelands Villages shall be delineated in accordance with the criteria in Section 5-206.

The boundaries of the management areas may be refined and/or adjusted in municipal master plans and land use ordinances provided that the Commission determines that the goals and objectives of this Plan will be implemented by the proposed municipal master plan or land use ordinance under the municipal plan certification procedures of Article 3.

Section 5-202.
Pinelands Management Areas Established

The following Pinelands Management Areas are hereby established:

A. Preservation Area District.

B. Forest Areas.

C. Agricultural Production Areas.

D. Special Agricultural Production Areas.

E. Rural Development Areas.

F. Pinelands Villages and Pinelands Towns.

G. Regional Growth Areas.

H. Military and Federal Installation Areas.

Section 5-203.
Goals and Objectives of Pinelands Management Areas

A. Preservation Area District.

The Preservation Area District is the heart of the Pinelands environment and is an area of significant environmental and economic values that are especially vulnerable to degradation. It is a large, contiguous area of forest, transected by a network of pristine wetlands, streams and rivers, all of which support diverse plant and animal communities. The area must be protected from development and land use that would adversely affect its long-term ecological integrity.

B. Forest Areas.

Forest Areas are undisturbed, forested portions of the Protection Area which support characteristic Pinelands plant and animal species. These areas are an essential element of the Pinelands environment and are very sensitive to random and uncontrolled development. Some parts of the Forest Areas are more suitable for development than others provided that such development is subject to strict environmental performance standards.

C. Agricultural Production Areas.

Agricultural Production Areas are areas of active agricultural use, together with adjacent areas of prime and unique agricultural soils or soils of statewide significance, which are suitable for expansion of agricultural operations.

D. Special Agricultural Production Areas.

Special Agricultural Production Areas are discrete areas within the Preservation Area District which are primarily used for berry agriculture or horticulture of native Pinelands plants. They represent a unique and essential element of the Pinelands economy and are a part of the essential character of the Pinelands.

E. Rural Development Areas.

Rural Development Areas are areas which are slightly modified and may be suitable for limited future development subject to strict adherence to the environmental performance standards of Article 6. They represent a balance of environmental and development values that is intermediate between the pristine Forest Areas and existing growth areas.

F. Pinelands Villages and Pinelands Towns.

Pinelands Villages and Towns are existing communities in the Pinelands which are appropriate for infill residential, commercial and industrial development that is compatible with their existing character.

1. Pinelands Villages are: (i) Bamber Lake, (ii) Belcoville, (iii) Belleplain, (iv) Blue Anchor, (v) Bricksboro, (vi) Brookville, (vii) Cassville, (viii) Chatsworth, (ix) Cologne-Germania, (x) Clermont, (xi) Corbin City, (xii) Cumberland, (xiii) Delmont, (xiv) Dennisville, (xv) Dorchester, (xvi) Dorothy, (xvii) Eldora, (xviii) Elm, (xix) Elwood, (xx) Estell Manor, (xxi) Folsom, (xxii) Goshen, (xxiii) Green Bank, (xxiv) Heislerville, (xxv) Indian Mills, (xxvi) Lake Pine, (xxvii) Landisville, (xxviii) Leesburg, (xxix) Legler, (xxx) Lower Bank, (xxxi) Milmay, (xxxii) Mizpah, (xxxiii) Nesco, (xxxiv) New Gretna, (xxxv) New Lisbon, (xxxvi) Newtonville, (xxxvii) North

Dennis, (xxxviii) Oceanville, (xxxix) Petersburg, (xl) Pomona, (xli) Port Elizabeth, (xlii) Port Republic, (xliii) Richland, (xliv) Smithville, (xlv) South Dennis, (xlvi) Swainton, (xlvii) Sweetwater, (xlviii) Tabernacle, (xlix) Tansboro, (l) Taunton Lake, (li) Tuckahoe, (lii) Vanhiseville, (liii) Warren Grove, (liv) Waterford Works, (lv) Weekstown, (lvi) Westcoatville, (lvii) West Creek, (lviii) Whiting, and (lix) Winslow.

2. Pinelands Towns are: (i) Buena, (ii) Egg Harbor City, (iii) Hammonton, (iv) Lakehurst, (v) Tuckerton, and (vi) Woodbine.

G. Regional Growth Areas.

Regional Growth Areas are areas of existing growth or lands immediately adjacent thereto which are capable of accommodating regional growth influences while protecting the essential character and environment of the Pinelands, provided that the environmental objectives of Article 6 are implemented through municipal master plans and land use ordinances.

H. Military and Federal Installation Areas.

Military and Federal Installation Areas are federal enclaves within the Pinelands. They represent a unique element of the Pinelands landscape and are a substantial resource to the region and the state, provided that their activities preserve and protect the unique natural, ecological, agricultural, archaeological, historic, scenic, cultural and recreational resources of the Pinelands.

Section 5-204.
Minimum Standards for Municipal Designation of Special Agricultural Production Areas

Special Agricultural Production Areas may be designated at the option of a municipality, or upon nomination to the Commission by an individual prior to certification, in the Preservation Area District in accordance with the following criteria:

1. The area to be designated is primarily agricultural in use and is of a size capable of sustained active agricultural operation taking into account adjacent and surrounding uses and the availability of agricultural support uses; and

2. The area may include land in an adjacent municipality also designated under this Section; and

3. The area is primarily comprised of lands used for active berry agricultural or active native horticultural use and lands which are essential to and held for the protection of active berry agricultural or active native horticultural uses.

Section 5-205.
Minimum Standards for Municipal Designation of Agricultural Production Areas

Agricultural Production Areas may be designated in the Protection Area at the option of a municipality or upon nomination to the Commission by an individual prior to certification, in accordance with the following criteria:

1. The area to be designated is primarily agricultural in use and is of a size capable of sustained active agricultural operation taking into account adjacent and surrounding uses and the availability of agricultural support uses; and

2. The area may include land in an adjacent municipality also designated under this Section; and

3. The area is primarily comprised of lands used for active agricultural use including lands which are held as buffers, water conservation areas or for other protection of active agricultural uses.

Section 5-206.
Minimum Criteria for Delineation of Boundaries of Pinelands Villages

In the preparation of municipal master plans and land use ordinances, municipalities should designate the boundaries of Pinelands Villages in accordance with the following criteria:

A. The village area should include the center of the village, typically located at or near the intersection of two roads, the developed lands contiguous to the village center, and other cleared lands not in active agricultural use.

B. In the Preservation Area District and For-

est Areas the village area should not contain more than 50% forested land.

C. In Agricultural Production Areas and Forest Areas the village area should not include active agricultural lands except for isolated areas of less than 10 acres.

D. Village boundaries along roads leading to and from the village center should not be extended more than 1/2 mile from the village center.

E. Village delineations should not intrude into wetlands vegetation associations.

F. Villages should include areas of high septic suitability (Hydrologic Soil Group B) contiguous to developed lands.

G. The designated village area should not contain more vacant land than built land, nor provide for an additional increment of development which is greater than the number of non-accessory structures that currently exist in the village. For the purposes of this Section built land for residential structures should be calculated as the existing lot size or 3.2 acres, whichever is less, and built land for non-residential structures should be calculated as the lot size required by existing zoning at the time of adoption of this Plan.

Section 5-207.
Incorporation of Pinelands Management Areas into Municipal Master Plans and Land Use Ordinances

In order to be certified under the provisions of Part 4 of Article 3 of this Plan (CERTIFICATION OF MUNICIPAL PLANS), a municipal master plan or land use ordinance must incorporate and implement the minimum standards of this Article governing the distribution and intensity of land uses.

Section 5-208.
Minimum Residential Allocation of Density in Wetlands

Each municipality shall allocate a minimum residential density to all wetlands that is at least one-fifth of the average gross residential density of uplands located in the same management area as the wetlands.

PART 3—MINIMUM STANDARDS FOR LAND USE DISTRIBUTION AND INTENSITIES

Section 5-301.
Purpose

In order to ensure the long-term integrity of the Pinelands environment while accommodating regional growth influences, the Pinelands Commission finds that it is appropriate and necessary to establish minimum standards governing the character, location and magnitude of development and the use of land in the Pinelands.

Section 5-302.
Minimum Standards Governing the Distribution and Intensity of Development and Land Use in the Preservation Area District

Use of land in the Preservation Area District shall be limited to the following:

A. Residential dwellings on lots of 3.2 acres, provided that:

(1) the dwelling unit will be the applicant's principal place of residence;

(2) the applicant has not developed a dwelling unit under this Section within the previous 5 years; and

(3) the applicant can demonstrate a cultural, social or economic link to the essential character of the Pinelands under the following tests:

(a) the parcel of land on which the dwelling is to be located was owned by the applicant or a member of his immediate family on February 7, 1979; and either

(b) the applicant is a member of a two-generation extended family that has resided in the Pinelands for at least twenty years; or

(c) the primary source of the applicant's household income is employment or participation in a Pinelands resource-related activity.

B. Agricultural employee housing as an element of, and accessory to, an active agricultural operation.

C. Berry agriculture and horticulture of native plants and other agricultural activities compatible with the existing soil and water conditions that support traditional Pinelands berry agriculture.

D. Forestry.

E. Beekeeping.

F. Fish and wildlife management.

G. Low intensity recreational uses, provided that:

(1) the parcel proposed for low intensity recreational use has an area of at least fifty acres;

(2) the recreational use does not involve the use of motorized vehicles except for necessary transportation;

(3) access to bodies of water is limited to no more than 15 linear feet of frontage per 1000 feet of water body frontage;

(4) the parcel will contain no more than 1 campsite per 2 acres, provided that the campsites shall not be clustered at a net density exceeding 6 campsites per acre;

(5) clearing of vegetation, including ground cover and soil disturbance, does not exceed 5 percent of the parcel; and

(6) no more than 1 percent of the parcel will be covered with impermeable surfaces.

H. Intensive recreational uses, provided that:

(1) the use was in existence on February 7, 1979 and the capacity of the use will not exceed two times the capacity of the use on February 7, 1979;

(2) the use is necessary to achieve recreational use of a particular element of the Pinelands environment, and

(3) the use is environmentally and aesthetically compatible with the essential character of the Pinelands and will not unduly burden available public services.

I. Public service infrastructure which is necessary to serve only the needs of the Preservation Area District uses.

J. Resource extraction operations.

K. Signs.

L. Accessory uses.

Section 5-303.
Minimum Standards Governing the Distribution and Intensity of Development and Land Use in Forest Areas

A. The following uses shall be permitted in a Forest Area:

1. Residential dwelling units on lots of 3.2 acres, provided that:

(a) the dwelling unit will be the applicant's principal place of residence;

(b) the applicant has not developed a dwelling unit under this Section within the previous 5 years; and

(c) the applicant can demonstrate a cultural, social or economic link to the essential character of the Pinelands under the following tests:

(i) the parcel of land on which the dwelling is to be located was owned by the applicant or a member of his immediate family on February 7, 1979; and either

(ii) the applicant is a member of a two-generation extended family that has resided in the Pinelands for at least twenty years; or

(iii) the primary source of the applicant's household income is employment or participation in a Pinelands resource-related activity.

2. Residential dwelling units at municipally designated densities provided that the total number of dwelling units authorized by a municipality for those portions of the municipality in Forest Areas does not exceed the following total number of dwelling units:

(a) In Barnegat Township—
459 dwelling units.

(b) In Bass River Township—
87 dwelling units.

(c) In Berkeley Township—
139 dwelling units.

(d) In Buena Vista Township—
163 dwelling units.

(e) In Corbin City—
64 dwelling units.

(f) In Dennis Township—
599 dwelling units.

(g) In Eagleswood Township—
80 dwelling units.

(h) In Egg Harbor City—
69 dwelling units.

(i) In Egg Harbor Township—
95 dwelling units.

(j) In Estell Manor City—
1065 dwelling units.

(k) In Evesham Township—
60 dwelling units.

(l) In Folsom Borough—
114 dwelling units.

(m) In Galloway Township—
110 dwelling units.

(n) In Hamilton Township—
1325 dwelling units.

(o) In Hammonton Town—
93 dwelling units.

(p) In Jackson Township—
264 dwelling units.

(q) In Lacey Township—
541 dwelling units.

(r) In Little Egg Harbor Township—
19 dwelling units.

(s) In Manchester Township—
638 dwelling units.

(t) In Maurice River Township—
1198 dwelling units.

(u) In Medford Township—
17 dwelling units.

(v) In Middle Township—
154 dwelling units.

(w) In Monroe Township—
111 dwelling units.

(x) In Mullica Township—
1027 dwelling units.

(y) In Ocean Township—
238 dwelling units.

(z) In Pemberton Township—
211 dwelling units.

(aa) In Plumsted Township—57 dwelling units.

(bb) In Port Republic City—
10 dwelling units.

(cc) In Shamong Township—
51 dwelling units.

(dd) In Southampton Township—
224 dwelling units.

(ee) In Stafford Township—
560 dwelling units.

(ff) In Tabernacle Township—
33 dwelling units.

(gg) In Upper Township—
674 dwelling units.

(hh) In Vineland City—
110 dwelling units.

(ii) In Waterford Township—
27 dwelling units.

(jj) In Weymouth Township—
376 dwelling units.

(kk) In Winslow Township—
187 dwelling units.

(ll) In Woodbine Borough—
31 dwelling units.

3. Agriculture.

4. Agricultural employee housing as an element of, and necessary to, an active agricultural operation.

5. Forestry.

6. Low intensity recreational uses, provided that:

(a) the parcel proposed for low intensity recreational use has an area of at least fifty acres;

(b) the recreational use does not involve the use of motorized vehicles except for necessary transportation;

(c) access to bodies of water is limited to no more than 15 linear feet of frontage per 1000 feet of water body frontage;

(d) clearing of vegetation, including ground cover and soil disturbance, does not exceed 5 percent of the parcel; and

(e) no more than 1 percent of the parcel will be covered with impermeable surfaces.

7. Intensive recreational uses, provided that:

(a) the use was in existence on February 7, 1979 and the capacity of the use will not exceed two times the capacity of the use on February 7, 1979;

(b) the use is necessary to achieve recreational use of a particular element of the Pinelands environment; and

(c) the use is environmentally and aesthetically compatible with the essential character of the Pinelands and will not unduly burden available public services.

8. Public service infrastructure which is necessary to serve the needs of the Pinelands.

9. Signs.

10. Accessory uses.

B. In addition to uses permitted under Subsection A of this Section, a municipality may, at its option, permit the following uses in a Forest Area:

1. Institutional uses, provided that:

(a) the use does not require or will not generate subsidiary or satellite development in the Forest Area;

(b) the applicant has demonstrated that adequate public service infrastructure will be available to serve the use; and

(c) the use is primarily designed to serve the needs of the Forest Area in which the use is to be located.

2. Pinelands resource-related industrial or manufacturing uses, provided that:

(a) the parcel proposed for development has an area of at least five acres;

(b) the principal raw material for the proposed use is found or produced in the Pinelands; and

(c) the use does not require or will not generate subsidiary or satellite development in a Forest Area.

3. Airport facilities and compatible light industrial uses, provided that the airport is publicly owned or serves a Pinelands Town.

4. Campgrounds, not to exceed 6 campsites per gross acre, provided that the campsites may be clustered at a net density not to exceed 10 campsites per acre.

5. Agricultural commercial establishments, provided that:

(a) the principal goods or products available for sale were produced in the Pinelands; and

(b) the sales area of the establishment does not exceed 5000 square feet.

6. Roadside retail sales and service establishments, provided that:

(a) the parcel proposed for development has roadway frontage of at least fifty feet;

(b) no portion of any structure proposed for development will be more than three hundred feet, measured along a line parallel to the roadway, from the closest part of a roadside retail sales and service establishment structure that was in existence on February 7, 1979; and

(c) the proposed use will not unduly burden public services, including but not limited to water, sewer and roads.

7. Resource extraction operations.

8. Landfills.

C. No residential dwelling unit shall be located on a lot of less than 3.2 acres.

Section 5-304. *Minimum Standards Governing the Distribution and Intensity of Development and Land Use in Agricultural Production Areas*

A. The following uses shall be permitted in an Agricultural Production Area:

1. Residential dwelling units on lots of 3.2 acres, provided that:

(a) the dwelling unit will be the applicant's principal place of residence;

(b) the applicant has not developed a dwelling unit under this Section within the previous 5 years; and

(c) the applicant can demonstrate a cultural, social or economic link to the essential character of the Pinelands under the following tests:

(i) the parcel of land on which the dwelling is to be located was owned by the applicant or a member of his immediate family on February 7, 1979; and either

(ii) the applicant is a member of a two-generation extended family that has resided in the Pinelands for at least twenty years; or

(iii) the primary source of the applicant's household income is employment or participation in a Pinelands resource-related activity.

2. Residential dwelling units at a density of 1 unit per 10 acres, provided that the dwelling unit is accessory to an active agricultural operation, and is intended for the use of the owners or employees of the agricultural operation.

3. Agriculture.

4. Agricultural employee housing as an element of, and accessory to, an active agricultural operation.

5. Forestry.

6. Low intensity recreational uses, provided that:

(a) the parcel proposed for low intensity recreational use has an area of at least fifty acres;

(b) the recreational use does not involve the use of motorized vehicles except for necessary transportation;

(c) access to bodies of water is limited to no more than 15 linear feet of frontage per 1000 feet of water body frontage;

(d) clearing of vegetation, including ground cover and soil disturbance, does not exceed 5 percent of the parcel; and

(e) no more than 1 percent of the parcel will be covered with impermeable surfaces.

7. Intensive recreational uses, provided that:

(a) the use was in existence on February 7, 1979 and the capacity of the use will not exceed two times the capacity of the use on February 7, 1979;

(b) the use is necessary to achieve recreational use of a particular element of the Pinelands environment; and

(c) the use is environmentally and aesthetically compatible with the essential character of the Pinelands and will not unduly burden available public services.

8. Agricultural commercial establishments, provided that:

(a) the principal goods or products available for sale were produced in the Pinelands; and

(b) the sales area of the establishment does not exceed 5000 square feet.

9. Agricultural products processing facilities.

10. Public service infrastructure.

11. Signs.

12. Accessory Uses.

B. In addition to the uses permitted under Subsection A of this Section, a municipality may, at its option, permit the following uses in an Agricultural Production Area:

1. Institutional uses, provided that:

(a) the use does not require or will not generate subsidiary or satellite development in the Agricultural Production Area;

(b) the applicant has demonstrated that adequate public service infrastructure will be available to serve the use; and

(c) the use is primarily designed to serve the needs of the Agricultural Production Area in which the use is to be located.

2. Pinelands resource-related industries, provided that:

(a) the parcel proposed for development has an area of at least five acres;

(b) the principal raw material for the proposed use is found or produced in the Pinelands; and

(c) the use does not require or will not generate subsidiary or satellite development in an Agricultural Production Area.

3. Airports and heliports which are accessory to agricultural uses and are used exclusively for the storage, fueling, loading and operation of aircraft as a part of an ongoing agricultural operation.

4. Airport facilities and compatible light industrial uses, provided that the airport is publicly owned or serves a Pinelands Town.

5. Fish and wildlife management.

6. Campgounds, provided that the parcel shall contain no more than 1 campsite per

gross acre and that the campsites are clustered at a net density of 10 campsites per acre.

7. Resource extraction operations.

8. Landfills.

C. No residential dwelling unit shall be located on a lot of less than 3.2 acres.

Section 5-305.
Minimum Standards Governing the Distribution and Intensity of Development and Land Use in Special Agricultural Production Areas

A. Use of land in a Special Agricultural Production Area shall be limited to the following:

1. Residential dwellings on lots of 3.2 acres, provided that:

(a) the dwelling unit will be the applicant's principal place of residence;

(b) the applicant has not developed a dwelling unit under this Section within the previous 5 years; and

(c) the applicant can demonstrate a cultural, social or economic link to the essential character of the Pinelands under the following tests:

(i) the parcel of land on which the dwelling is to be located was owned by the applicant or a member of his immediate family on February 7, 1979; and either

(ii) the applicant is a member of a two-generation extended family that has resided in the Pinelands for at least twenty years; or

(iii) the primary source of the applicant's income is employment or participation in a Pinelands resource related activity.

2. Berry agriculture and horticulture of native plants and other agricultural activities compatible with the existing soil and water conditions that support traditional Pinelands berry agriculture.

3. Agricultural employee housing as an element of, and accessory to, an active agricultural operation.

4. Beekeeping.

B. No residential dwelling unit shall be located on a lot of less than 3.2 acres.

Section 5-306.
Minimum Standards Governing the Distribution and Intensity of Development and Land Use in Rural Development Areas

A. Residential dwelling units at municipally designated densities, including provisions for the clustering of allocated dwelling units, shall be permitted in a Rural Development Area provided that the total number of dwelling units authorized by a municipality for a Rural Development Area does not exceed 200 dwelling units per square mile of private, non-wetland, undeveloped land.

B. In addition to the residential uses permitted under Subsection A, a municipality may permit any use which is compatible with the essential character of the Pinelands environment and is similar in character, intensity and impact to the following uses:

1. Agriculture;

2. Agricultural employee housing as an element of, and accessory to, an active agricultural operation;

3. Forestry;

4. Recreational facilities, other than amusement parks;

5. Agricultural products sales establishments;

6. Agricultural processing facilities and other light industrial uses;

7. Roadside retail sales and service establishments;

8. Resource extraction operations;

9. Landfills;

10. Public service infrastructure;

11. Institutional uses;

12. Signs; and

13. Accessory uses.

C. No residential dwelling unit shall be located on a lot of less than 3.2 acres.

Section 5-307.
Minimum Standards Governing the Distribution and Intensity of Development and Land Use in Pinelands Villages and Towns

A. Any use may be authorized in a Pinelands Village or Town, provided that:

1. Public service infrastructure necessary to support the use is available, or can be provided without any development in the Preservation Area District or a Forest Area; and

2. The character and magnitude of the use is compatible with existing structures and uses in the Village or Town.

B. No residential dwelling unit shall be located on a parcel of less than 3.2 acres if served by a conventional on-site septic waste water system, or a parcel of less than 1 acre if served by an alternative or innovative on-site waste water system.

Section 5-308.
Minimum Standards Governing the Distribution and Intensity of Development and Land Use in Regional Growth Areas

A. Any use may be permitted in a Regional Growth Area, provided that:

1. Except as provided in Subsections 2 and 3 of this Section and Part 4 of this Article, the total number of dwelling units authorized by a municipality for a Regional Growth Area shall be equal to and not exceed the following density per acre of developable land:

(a) In Barnegat Township—
2.0 dwelling units per acre.

(b) In Beachwood Borough—
3.5 dwelling units per acre.

(c) In Berkeley Township—
2.0 dwelling units per acre.

(d) In Berlin Borough—
2.0 dwelling units per acre.

(e) In Berlin Township—
2.0 dwelling units per acre.

(f) In Chesilhurst Borough—
1.5 dwelling units per acre.

(g) In Dennis Township—
1.0 dwelling unit per acre.

(h) In Dover Township—
3.5 dwelling units per acre.

(i) In Eagleswood Township—
2.0 dwelling units per acre.

(j) In Egg Harbor Township—
3.5 dwelling units per acre.

(k) In Evesham Township—
2.0 dwelling units per acre.

(l) In Galloway Township—
2.5 dwelling units per acre.

(m) In Hamilton Township—
3.5 dwelling units per acre.

(n) In Jackson Township—
3.0 dwelling units per acre.

(o) In Lacey Township—
3.5 dwelling units per acre.

(p) In Little Egg Harbor Township—
3.5 dwelling units per acre.

(q) In Manchester Township—
3.5 dwelling units per acre.

(r) In Medford Township—
1.0 dwelling unit per acre.

(s) In Medford Lakes Borough—
3.0 dwelling units per acre.

(t) In Monroe Township—
2.0 dwelling units per acre.

(u) In Ocean Township—
3.5 dwelling units per acre.

(v) In Pemberton Township—
2.0 dwelling units per acre.

(w) In Shamong Township—
1.0 dwelling unit per acre.

(x) In Southampton Township—
1.0 dwelling unit per acre.

(y) In South Toms River Borough—
3.5 dwelling units per acre.

(z) In Stafford Township—
3.5 dwelling units per acre.

(aa) In Tabernacle Township—
1.0 dwelling unit per acre.

(bb) In Upper Township—
1.0 dwelling unit per acre.

(cc) In Waterford Township—
—3.0 dwelling units per acre.

(dd) In Winslow Township—
1.5 dwelling units per acre.

For purposes of this Section, developable lands are those privately held, non-wetland

lands with a depth to seasonal high water table of greater than 5 feet. Where sewer systems are available, soils with a depth to seasonal high water table exceeding 1.5 feet may also be considered developable.

2. The land use element of a municipal master plan and land use ordinance shall include residential zoning districts which permit development within the following range of densities:

(a) less than .5 to .5 dwelling units per acre;

(b) .5 to 1 dwelling units per acre;

(c) 1 to 2 dwelling units per acre;

(d) 2 to 3 dwelling units per acre;

(e) 3 to 4 dwelling units per acre;

(f) 4 to 6 dwelling units per acre;

(g) 6 to 9 dwelling units per acre;

(h) 9 to 12 dwelling units per acre; and

(i) 12 and greater dwelling units per acre.

Municipal master plans or land use ordinances shall provide that development at a density which is greater than the lowest density in each range can be carried out if the increase in density is achieved through a density bonus for use of Pinelands Development Credits.

3. Nothing in this Subsection is intended to prevent a municipality, as a part of a certified master plan or land use ordinance, from employing additional density bonus or incentive programs, provided that such programs do not interfere with the required municipal program for use of Pinelands Development Credits.

B. No residential dwelling unit shall be located on a parcel of less than 3.2 acres if served by a conventional on-site septic waste water system or a parcel of less than 1 acre if served by an alternative or innovative on-site waste water system.

Section 5-309. *Minimum Standards Governing the Distribution and Intensity of Development and Land Use in Military and Federal Installation Areas*

Any use associated with the function of the federal installation may be permitted in a Military and Federal Installation Area, provided that:

A. The use shall not require any development, including public service infrastructure, in the Preservation Area District or in a Forest Area; and

B. All development substantially meets the standards of Article 5 of this Plan or an intergovernmental agreement entered into pursuant to Article 4, Part 4 of this Plan (PUBLIC DEVELOPMENT).

Section 5-310. *Minimum Standards for Clustering Residential Development Rights in Forest Area Municipalities*

As part of its master plan or land use ordinances a municipality with jurisdiction over land in Forest Areas must include a provision allowing the clustering of residential development rights from any parcel of land located in a Forest Area in the municipality to areas within the municipality that contain at least 500 acres of contiguous land which is accessible to areas of existing growth and development and which does not exhibit any of the following characteristics:

1. Wetlands as defined in Part 1 of Article 6;

2. Somewhat excessively and excessively drained soils as delineated on Plate 9;

3. Lands which recharge to ground water aquifers as identified by a depth of the unsaturated zone of 20-30 and 30-40 feet on Plate 4, except as underlain by a clay aquiclude;

4. Extreme fire hazard as depicted on Plate 11;

5. Active agricultural use with a preferential tax assessment under the provisions of the Farmland Assessment Act of 1964;

6. Depth to seasonal high water table of less than 5 feet as delineated on Plate 7;

7. Drainage basins of first order streams as identified on USGS 7-1/2' maps;

8. Basins of streams entering public lands which are managed for resource protection or recreation;

9. Active cranberry bogs and areas which drain to active cranberry bogs;

10. Unique plant communities or the min-

imum forest corridor area as delineated on the Special Areas Map (Figure 7.1); and

11. Flood-prone areas designated under the federal flood insurance programs.

Section 5-311.
Minimum Standards for Substandard Lots

A. Notwithstanding any other provision of this Plan, the owner of a parcel of land of an acre or more in any Forest Area, Rural Development Area or Agricultural Production Area in the Protection Area, excluding those lands governed by the New Jersey Coastal Wetlands Act, N.J.S.A. 13:9A-1 *et seq.*, shall be exempt from the density limitations of this Part for a period of one year from the effective date of this Plan, provided that:

1. The parcel was owned by the applicant or a member of his immediate family on February 7, 1979;

2. The dwelling unit will be the primary residence of the applicant;

3. The parcel was not in common ownership with a contiguous parcel on February 7, 1979; and

4. The development of the dwelling unit otherwise complies with the minimum standards of this Plan.

B. A municipality may, as a part of its master plan and land use ordinance prepared and certified under the provisions of Article 3 of this Plan, exempt the owners of parcels of land from the density limitations of this Part, provided that:

1. The municipality has identified each lot that will be exempt under the municipal exemption plan or has established a program of registration for the owners of such lots;

2. No lot of less than one acre will be exempt from the density provisions of this Part;

3. The dwelling unit will be the primary residence of the applicant;

4. No lot that was in common ownership with any contiguous land on February 7, 1979 is exempt from the density provisions of this Part; and

5. The development of the lots exempted from the density limitations of this Part will comply with all other minimum standards of this Plan.

PART 4—PINELANDS DEVELOPMENT CREDIT PROGRAM

Section 5-401.
Purpose

If land use and development of the Pinelands is concentrated in Regional Growth Areas, the Pinelands as a region can tolerate additional development without damaging the Pinelands environment. It is the purpose of this Part to facilitate such patterns of growth and development by providing landowners in the Preservation Area District, Special Agricultural Production Areas, and Agricultural Production Areas with an opportunity to secure an additional beneficial use of their land without the risk of damaging the essential ecological character of the Pinelands.

Section 5-402.
Pinelands Development Credit Program Required

In order to be certified under the provisions of Part 4 of Article 3 of this Plan, the master plan and land use ordinances of a municipality which has land in a Regional Growth Area shall include provisions implementing the Pinelands Development Credit Program.

Section 5-403.
Pinelands Development Credits Established

A. Except for land which is owned by a public agency on the effective date of this

Plan or land which is subject to an easement limiting the use of land to non-residential uses, every parcel of land in the Preservation Area District, an Agricultural Production Area or a Special Agricultural Production Area shall have a use right known as "Pinelands Development Credits" that can be used to secure a density bonus for lands located in Regional Growth Areas.

B. Pinelands Development Credits are hereby established at the following ratios:

1. In the Preservation Area—

(a) Uplands—1 Pinelands Development Credit per 39 acres;

(b) Wetlands—.2 Pinelands Development Credits per 39 acres; and

2. In the Agricultural Production Area and Special Agricultural Production Area—

(a) Uplands and areas of active agriculture, including berry agricultural bogs and fields—2 Pinelands Development Credits per 39 acres;

(b) Wetlands, other than berry agricultural bogs and fields—.2 Pinelands Development Credits per 39 acres.

C. The owners of parcels of land which are smaller than 39 acres shall have fractional Pinelands Development Credits at the same ratio established in Subsection B of this Section for the area in which the parcel is located.

D. Notwithstanding the provisions of subsections B and C hereof, the owner of record of .1-9.75 acres of land in the Preservation Area District, Agricultural Production Areas and Special Agricultural Production Areas, as of February 7, 1979, shall be entitled to at least .25 Pinelands Development Credits provided that the parcel of land is vacant and was not in common ownership with any contiguous land on February 7, 1979.

Section 5-404.
Limitations on Use of Pinelands Development Credits

A. No Pinelands Development Credit may be used to secure a density bonus unless the owner of the land from which the credit has been obtained has deed restricted the use of the land in perpetuity to those non-residential uses authorized by this Plan as of the date of the sale or conveyance of the credit by recorded deed restriction which is specifically and expressly enforceable by the Commission. The uses authorized by this Plan at the time of transfer shall be enumerated in the deed of conveyance.

B. The bonus density of a parcel of land on which Pinelands Development Credits are used shall not exceed the upper limits of the density range of the municipal zone or district in which the property is located.

Section 5-405.
Pinelands Development Credit Bonus Multipliers

Pinelands Development Credits which are used for securing a density bonus for parcels of land located in a Regional Growth Area shall yield a bonus of four dwelling units per credit.

Section 5-406.
Aggregation of Development Credits

Pinelands Development Credits may be aggregated from different parcels for use in securing a bonus for a single parcel of land in a Regional Growth Area provided that the density does not exceed the limits of the density range specified in the municipal district in which the property is located.

Section 5-407.
Recordation of Deed Restriction

No development involving the use of Pinelands Development Credits shall be carried out until the developer has provided the municipality with jurisdiction over the parcel of land from which the Pinelands Development Credits were obtained, the municipality in which the parcel of land to be developed is located, and the Commission with evidence of recordation of a restriction on the deed to the land from which the development credits were obtained.

PART 5—MINIMUM STANDARDS FOR MUNICIPAL RESERVE AREAS

Section 5-501.
Purpose

In order to enable counties and municipalities with jurisdiction over land in Rural Development Areas and Regional Growth Areas to plan for an orderly rate and pattern of growth within both areas, the Pinelands Commission hereby establishes a municipal option that may be incorporated in a municipal master plan or land use ordinance which allows a municipality to designate areas in a Rural Development Area as Municipal Reserve Areas. These areas would be eligible for development under the minimum standards established for development and land use in Regional Growth Areas, including use of Pinelands Development Credits.

Section 5-502.
Designation of Municipal Reserve Areas

A municipality may, in its master plan and land use ordinance, designate lands in Rural Development Areas that are adjacent to or contiguous with a Regional Growth Area or areas of existing growth and development located outside of the Pinelands as Municipal Reserve Areas, provided that the area designated:

1. Does not contain significant amounts of:

(a) Wetlands as defined in Part 1 of Article 6 of this Plan;

(b) Somewhat excessively and excessively drained soils as delineated in Plate 9;

(c) Active agricultural lands;

(d) Aquifer recharge areas as indicated by a depth of the unsaturated zone of 20-30 and 30-40 feet on Plate 4 and not underlain by a clay aquiclude;

(e) Extreme fire hazard areas as delineated in Plate 11; and

(f) Flood-prone areas designated under the Federal Flood Insurance Program.

2. Has a relatively uniform boundary which conforms to physical or environmental features;

3. Is geographically balanced around existing or planned community centers;

4. Is accessible to employment centers, and areas of commercial activity and recreation opportunities;

5. Is not contiguous with a Preservation Area District, Forest Area or Agricultural Production Area and preserves an adequate buffer of low intensity use between the Municipal Reserve Area and such districts;

6. Has available or is planned for full public services including sewer, water, roads, police and fire protection, and schools and libraries.

Section 5-503.
Development in Municipal Reserve Areas

A municipal master plan or land use ordinance that designates a Municipal Reserve Area shall include provisions ensuring that development of the reserve area at Regional Growth Area densities will occur only when all of the following conditions are met:

1. Adjacent developable land in the Regional Growth Area has been substantially developed in accordance with the land use and management programs provided in this Plan;

2. All essential public services are available; and

3. The amount of vacant developable land in all Regional Growth Areas in the municipality is insufficient to meet the growth needs of the county and the municipality projected for the next five years as determined or approved by the county in which the reserve area is located, as well as by the Pinelands Commission.

APPENDIX B

Categories of Non-Usable Deed Transactions

The deed transactions of the following categories are not usable in determining assessment-sales ratios pursuant to Chapter 86, Laws of 1954 (NJSA 54:1-35.1 et. seq.).

1. Sales between members of the immediate family.
2. Sales in which "love and affection" are stated to be part of the consideration.
3. Sales between a corporation and its stockholder, its subsidiary, its affiliate or another corporation whose stock is in the same ownership.
4. Transfer of convenience; for example, for the sole purpose of correcting defects in title, a transfer by a husband either through a third party or directly to himself and his wife for the purpose of creating a tenancy by the entirety, etc.
5. Transfer deemed not to have taken place within the sampling period. Sampling period is defined as the period from July 1 to June 30, inclusive, preceding the date of promulgation, except as hereinafter stated. The recording date of the deed within this period is the determining date since it is the date of officaial record. Where the date of deed or date of formal sales agreement occurred prior to January 1, next preceding the commencement date of the sampling period, the sale shall be nonusable.

6. Sales of property conveying only a portion of the assessed unit, usually referred to as apportionments, split-offs; for example, a parcel sold out of a larger tract where the assessment is for the larger tract.
7. Sales of property substantially improved subsequent to assessment and prior to the sale thereof.
8. Sales of undivided interest in real property.
9. Tax sales.
10. Sales by guardians, trustees, executors and administrators.
11. Judicial sales such as partition sales.
12. Sheriff's sales.
13. Sales in proceedings in bankruptcy, receivership or assignment for the benefit of creditors and dissolution or liquidation sales.
14. Quit-claim deeds.
15. Sales to or from the United States of America, the State of New Jersey, and/or any political subdivision of the State of New Jersey; including boards of education and public authorities.
16. Sales of property assessed in more than one taxing district.
17. Sales to or from any charitable, religious or benevolent organization.
18. Transfers to banks, insurance companies, savings and loan associations, mortgage companies, or any other lien holder, when the transfer is made in lieu of foreclosure.

19. Sales where purchaser assumes more than two years of accrued taxes.
20. Acquisitions, resale or transfer by railroads, pipeline companies or other public utility corporations for right-of-way purposes.
21. Sales of cemetary lots.
22. Transfer of property in exchange for other real estate, stocks, bonds, or other personal property.
23. Sales of commercial or industrial real property which include machinery, fixtures, equipment, inventories, goodwill when the values of such items are indeterminable.
24. Sales of property, the value of which has been materially influenced by zoning changes where the latter are not reflected in current assessments.
25. Transactions in which the full consideration as defined in the "Realty Transfer Fee Act" is less than $100.00.
26. Sales which for some reason other than specified in the enumerated categories are not deemed to be a transaction between a willing buyer, not compelled to buy, and a willing seller, not compelled to sell.
27. Sales occurring with the sampling period but prior to a change in assessment practice resulting from the completion of a recognized revaluation or reassessment program; i.e. sales recorded during the period July 1 to December 31 next preceding the tax year in which the result of such revaluation or reassessment program is placed on the tax roll.

Transfers of the foregoing nature should generally be excluded but may be used if after full investigation it clearly appears that the transaction was a sale between a willing buyer, not compelled to buy, and a willing seller, not compelled to sell, and that it meets all other requisites of a usable sale.

Source: State of N.J., Division of Taxation
Local Property and Public Utility
Branch

APPENDIX C

Real Estate Transaction Data Sheet

Municipality ____________ County ____________ Property Class ___

Block ________ Lot ________ Map No. ______ Recording Date ________
Street ________________ Pinelands Management Area ________
Grantor ________________ Grantee ________________
Assessed Value ________ Road Access
Sales Price ________ Paved ______ Water ______
AV/SP Ratio ________ Unpaved ______ Sewer ______
Acreage ________ Paper ______ Wetlands ______
Sales Price/Acre ________ None ______ Zoning ______
Comments ____

Block ________ Lot ________ Map No. ______ Recording Date ________
Street ________________ Pinelands Management Area ________
Grantor ________________ Grantee ________________
Assessed Value ________ Road Access
Sales Price ________ Paved ______ Water ______
AV/SP Ratio ________ Unpaved ______ Sewer ______
Acreage ________ Paper ______ Wetlands ______
Sales Price/Acre ________ None ______ Zoning ______
Comments ____

Block ________ Lot ________ Map No. ______ Recording Date ________
Street ________________ Pinelands Management Area ________
Grantor ________________ Grantee ________________
Assessed Value ________ Road Access
Sales Price ________ Paved ______ Water ______
AV/SP Ratio ________ Unpaved ______ Sewer ______
Acreage ________ Paper ______ Wetlands ______
Sales Price/Acre ________ None ______ Zoning ______
Comments ____

Block ________ Lot ________ Map No. ______ Recording Date ________
Street ________________ Pinelands Management Area ________
Grantor ________________ Grantee ________________
Assessed Value ________ Road Access
Sales Price ________ Paved ______ Water ______
AV/SP Ratio ________ Unpaved ______ Sewer ______
Acreage ________ Paper ______ Wetlands ______
Sales Price/Acre ________ None ______ Zoning ______
Comments ____

APPENDIX D

Detailed Land Transaction Data

Contents

TABLE D-1

Land Sales by Township

All Transactions

Township	Year	Number of Sales	Volume of Sales	Acres
GRAND TOTAL		2,226	75,859,404	27,254
GALLOWAY	1982	5	197,500	39
	81	25	1,165,000	202
	80	50	3,341,960	498
	79	78	6,771,962	1,564
	78	65	2,717,292	1,104
	77	58	728,279	527
	76	35	395,690	386
		316	15,317,683	4,320
HAMILTON	1982	17	302,400	195
	81	47	2,277,919	509
	80	40	7,426,709	1,132
	79	62	1,614,421	527
	78	164	3,190,459	2,273
	77	108	2,006,065	1,128
	76	113	546,720	806
		551	17,364,693	6,570
HAMMONTON	1982	3	93,000	31
	81	7	351,132	155
	80	5	136,740	75
	79	6	322,500	138
	78	10	291,872	115
	77	8	299,178	125
	76	5	67,100	32
		44	1,561,522	671
MEDFORD	1982	4	303,000	278
	81	8	557,952	210
	80	12	1,098,925	95
	79	23	3,104,027	593
	78	22	1,377,055	158
	77	26	546,735	53
	76	10	240,300	16
		105	7,227,994	1,402

TABLE D-1 (cont.)

Land Sales by Township

All Transactions

Township	Year	Number of Sales	Volume of Sales	Acres
PEMBERTON	1982	4	121,500	83
	81	2	30,000	16
	80	4	47,720	11
	79	4	146,400	15
	78	7	86,400	43
	77	14	198,420	108
	76	15	206,330	122
		50	836,770	398
WOODLAND	1982	2	130,000	506
	81	4	275,750	431
	80	1	6,160	6
	79	9	244,600	257
	78	8	97,481	49
	77	27	253,292	115
	76	19	655,711	363
		70	1,662,994	1,728
WINSLOW	1982	4	117,500	18
	81	13	648,454	127
	80	10	557,750	143
	79	11	2,062,361	277
	78	16	509,524	115
	77	7	275,340	96
	76	12	590,400	131
		73	4,761,329	907
DENNIS	1982	2	74,500	81
	81	17	1,580,520	422
	80	34	523,280	131
	79	38	575,511	213
	78	43	510,080	399
	77	22	317,160	139
	76	15	402,976	216
		171	3,984,027	1,600

Land Sales by Township

All Transactions

Township	Year	Number of Sales	Volume of Sales	Acres
MAURICE RIVER	1982	8	89,430	78
	81	11	251,784	117
	80	18	173,950	133
	79	17	177,175	143
	78	12	164,400	372
	77	14	66,684	102
	76	10	96,762	252
		90	1,020,185	1,197
DOWNE	1982	0	-	-
	81	6	300,000	254
	80	4	45,500	61
	79	6	31,137	96
	78	4	23,900	31
	77	0	-	-
	76	3	11,793	91
		23	412,330	533
LAWRENCE	1982	0	-	-
	81	4	23,500	69
	80	7	51,620	105
	79	5	114,238	409
	78	11	139,315	307
	77	0	-	-
	76	1	5,500	29
		28	334,173	919
MONROE	1982	10	254,500	62
	81	20	352,498	406
	80	14	174,700	97
	79	20	393,715	229
	78	29	399,550	154
	77	29	331,581	113
	76	30	591,335	223
		152	2,497,879	1,285

TABLE D-1 (cont.)

Land Sales by Township

All Transactions

Township	Year	Number of Sales	Volume of Sales	Acres
BARNEGAT	1982	1	2,500	2
	81	3	59,875	18
	80	6	1,340,000	137
	79	10	2,162,567	242
	78	9	861,890	534
	77	4	156,650	220
	76	2	43,265	83
		35	4,626,747	1,236
JACKSON	1982	16	718,329	277
	81	29	661,250	196
	80	44	1,356,447	303
	79	72	1,638,611	543
	78	77	1,502,680	457
	77	73	1,650,780	544
	76	75	1,414,346	468
		386	8,942,443	2,788
MANCHESTER	1982	7	131,921	174
	81	14	506,710	95
	80	13	595,400	102
	79	29	842,230	218
	78	28	819,538	187
	77	23	1,699,766	603
	76	18	713,070	322
		132	5,308,635	1,702

TABLE D-2

Land Sales by Management Area

Vacant Land Transactions

Management Area	Year	Number of Sales	Volume of Sales	Acres
GRAND TOTAL		2,134	69,709,980	24,672
PRESERVATION	1982	1	125,000	500
	81	3	270,000	430
	80	1	95,000	13
	79	8	423,300	269
	78	7	108,881	58
	77	8	159,100	45
	76	20	689,731	474
		48	1,871,012	1,789
FOREST	1982	17	282,021	341
	81	28	750,019	370
	80	36	510,700	349
	79	35	684,639	495
	78	101	1,765,609	1,858
	77	58	1,853,405	1,249
	76	60	547,459	807
		335	6,393,852	5,469
AGRICULTURE	1982	1	39,000	4
	81	5	89,300	29
	80	7	119,300	74
	79	13	958,440	280
	78	16	188,700	167
	77	14	156,746	110
	76	15	127,360	94
		71	1,678,846	758
RURAL DEVELOPMENT	1982	14	288,220	173
	81	35	765,798	155
	80	46	812,455	235
	79	68	1,724,539	523
	78	111	1,872,102	994
	77	99	860,475	613
	76	83	552,661	445
		456	6,876,250	3,138

TABLE D-2 (cont.)

Land Sales by Management Area

Vacant Land Transactions

Management Area	Year	Number of Sales	Volume of Sales	Acres
REGIONAL GROWTH	1982	7	262,180	37
	81	27	2,063,390	382
	80	25	7,761,584	985
	79	49	8,075,114	1,238
	78	57	3,232,939	1,277
	77	54	2,135,970	586
	76	49	678,270	373
		268	24,209,447	4,878
PINELANDS TOWNS	1982	9	109,000	48
	81	22	495,684	89
	80	21	326,050	92
	79	44	644,100	182
	78	57	631,350	196
	77	57	834,583	252
	76	26	503,979	164
		236	3,544,746	1,023
OUTSIDE PINELANDS AREAS	1982	22	649,559	290
	81	74	3,344,405	1,048
	80	117	6,323,152	1,126
	79	161	6,974,823	2,050
	78	144	3,770,843	1,533
	77	107	1,968,237	660
	76	95	2,104,808	911
		720	25,135,827	7,618

Land Sales by Management Area

Farm Land Transactions[1]

Management Area	Year	Number of Sales	Volume of Sales	Acres
GRAND TOTAL		92	6,149,424	2,582
PRESERVATION	1980	1	6,160	6
	77	1	30,000	32
	76	1	20,000	24
		3	56,160	62
FOREST	1981	2	165,000	156
	79	1	28,000	40
	77	1	12,420	4
		4	205,420	200
AGRICULTURE	1982	4	180,500	101
	81	7	313,732	159
	80	5	152,460	85
	79	5	268,500	124
	78	5	229,072	89
	77	7	291,378	156
	76	7	323,530	119
		40	1,759,172	933
RURAL DEVELOPMENT	1982	1	45,000	3
	81	1	60,000	20
	79	2	204,000	166
	78	3	277,000	42
	77	4	143,176	146
	76	1	196,000	37
		12	925,176	414
REGIONAL GROWTH	1981	1	93,464	46
	79	1	50,000	6
	77	1	20,000	6
	76	3	130,500	41
		6	293,964	99
PINELANDS TOWNS	1979	1	46,000	14
OUTSIDE PINELANDS AREAS	1982	7	555,600	325
	81	5	631,552	342
	80	3	770,000	66
	79	2	120,000	78
	78	4	614,940	84
	77	2	64,440	15
	76	3	107,000	50
		26	2,863,532	960

[1] These transactions are those which are classified "3b" by the New Jersey Division of Taxation, i.e. properties which qualify for agricultural use assessments under the Farmland Assessment Act of 1964 (Chapter 48, Laws of 1964).

APPENDIX E

Economic and Fiscal Data for Municipalities

TABLE E-1

Coding Identifications

Pinelands Municipalities

Case-N	ID	Municipality
1	101	Buena
2	102	Buena Vista
3	103	Corbin City
4	104	Egg Harbor City
5	105	Egg Harbor Twp.
6	106	Estell Manor
7	107	Folsom
8	108	Galloway
9	109	Hamilton
10	110	Hammonton
11	111	Mullica
12	112	Port Republic
13	113	Weymouth
14	201	Bass River
15	202	Evesham
16	203	Medford
17	204	Medford Lakes
18	205	New Hanover
19	206	North Hanover
20	207	Pemberton
21	208	Shamong
22	209	Southampton
23	210	Springfield
24	211	Tabernacle
25	212	Washington
26	213	Woodland
27	214	Wrightstown
28	301	Berlin Borough
29	302	Berlin Twp.
30	303	Chesilhurst
31	304	Waterford
32	305	Winslow
33	401	Dennis
34	402	Upper
35	403	Woodbine
36	501	Maurice River
37	502	Vineland
38	601	Franklin
39	602	Monroe
40	701	Barnegat
41	702	Beachwood
42	703	Berkeley
43	704	Eagleswood
44	705	Jackson
45	706	Lacey
46	707	Lakehurst
47	708	Little Egg Harbor
48	709	Manchester

TABLE E-1 (cont.)

Coding Identifications

Pinelands Municipalities

Case-N	ID	Municipality
49	710	Ocean
50	711	Plumsted
51	712	South Toms River
52	713	Stafford

TABLE 2

Number of Vacant Land Transactions

CASE-N	VLT72	VLT73	VLT74	VLT75	VLT76	VLT77	VLT78	VLT79	VLT80	VLT81	VLT82
1	0.	9.	2.	2.	1.	5.	5.	5.	10.	9.	1.
2	18.	39.	83.	95.	46.	60.	37.	32.	37.	37.	19.
3	0.	3.	1.	3.	0.	2.	4.	4.	2.	1.	1.
4	1.	1.	3.	1.	3.	3.	3.	3.	5.	1.	1.
5	87.	115.	102.	69.	54.	124.	141.	49.	121.	82.	42.
6	14.	36.	41.	37.	10.	28.	27.	20.	16.	9.	22.
7	14.	36.	42.	19.	7.	10.	8.	13.	1.	10.	4.
8	78.	139.	91.	60.	104.	111.	100.	105.	98.	111.	39.
9	30.	91.	51.	102.	126.	142.	189.	174.	23.	59.	35.
10	11.	16.	25.	10.	20.	16.	23.	26.	8.	18.	15.
11	16.	25.	34.	39.	22.	53.	84.	87.	34.	21.	19.
12	8.	14.	8.	6.	2.	4.	13.	3.	5.	3.	2.
13	8.	12.	16.	13.	15.	13.	7.	12.	5.	3.	2.
14	6.	5.	14.	10.	4.	8.	3.	1.	5.	5.	3.
15	69.	81.	39.	32.	16.	43.	24.	30.	0.	31.	20.
16	4.	10.	4.	8.	6.	7.	2.	5.	0.	31.	9.
17	82.	88.	50.	52.	73.	90.	102.	60.	30.	3.	0.
18	0.	1.	0.	1.	0.	8.	4.	0.	1.	0.	1.
19	9.	5.	7.	0.	12.	6.	4.	13.	3.	4.	0.
20	341.	437.	66.	139.	161.	109.	55.	77.	32.	25.	20.
21	26.	13.	4.	7.	18.	10.	6.	8.	3.	5.	6.
22	23.	29.	9.	27.	20.	17.	10.	4.	0.	3.	1.
23	5.	13.	11.	5.	3.	5.	0.	6.	4.	4.	0.
24	42.	50.	18.	40.	53.	32.	33.	17.	4.	15.	2.
25	0.	2.	2.	3.	0.	1.	1.	1.	1.	0.	2.
26	8.	12.	13.	3.	1.	1.	18.	20.	22.	2.	1.
27	0.	0.	0.	0.	0.	0.	0.	1.	2.	0.	0.
28	6.	8.	10.	7.	9.	5.	5.	5.	2.	6.	0.
29	9.	6.	13.	11.	3.	4.	4.	5.	0.	4.	0.
30	7.	5.	30.	50.	11.	8.	2.	3.	2.	0.	3.
31	18.	34.	10.	16.	9.	6.	6.	2.	4.	4.	1.
32	16.	25.	27.	31.	13.	25.	12.	9.	8.	8.	5.
33	19.	46.	30.	1.	20.	31.	50.	67.	59.	47.	30.
34	67.	42.	71.	71.	82.	95.	48.	85.	75.	60.	51.
35	0.	2.	5.	6.	3.	5.	6.	3.	8.	4.	1.
36	26.	24.	14.	21.	4.	9.	20.	17.	26.	16.	4.
37	193.	207.	38.	25.	59.	47.	24.	72.	52.	43.	9.
38	48.	85.	65.	41.	25.	66.	61.	73.	62.	63.	65.
39	94.	108.	78.	47.	54.	45.	51.	40.	32.	31.	25.
40	25.	14.	43.	13.	9.	22.	23.	36.	18.	6.	3.
41	198.	80.	98.	74.	110.	83.	26.	96.	76.	50.	42.
42	148.	93.	171.	122.	110.	137.	125.	106.	73.	24.	66.
43	15.	9.	14.	1.	5.	10.	6.	8.	8.	0.	5.
44	92.	114.	110.	12.	70.	92.	84.	88.	53.	40.	42.
45	692.	629.	125.	242.	322.	243.	193.	72.	84.	48.	55.
46	4.	1.	4.	3.	0.	1.	1.	3.	2.	2.	0.
47	58.	52.	99.	55.	60.	61.	72.	90.	143.	51.	51.
48	119.	221.	97.	75.	55.	201.	99.	112.	62.	42.	22.
49	22.	42.	32.	20.	11.	0.	18.	22.	14.	22.	38.
50	9.	18.	43.	26.	16.	23.	27.	10.	14.	16.	17.
51	1.	2.	1.	0.	1.	0.	1.	1.	1.	1.	0.
52	132.	259.	197.	159.	319.	512.	142.	198.	101.	85.	46.

TABLE E-3

Volume of Vacant Land Sales
(thousand dollars)

CASE-N	VLV72	VLV73	VLV74	VLV75	VLV76	VLV77	VLV78	VLV79	VLV80	VLV81	VLV82
1	0.	26.	4.	4.	48.	14.	24.	44.	86.	50.	35.
2	74.	220.	560.	369.	191.	290.	159.	291.	290.	215.	120.
3	0.	8.	1.	11.	0.	19.	11.	49.	8.	7.	6.
4	1.	10.	5.	13.	4.	7.	4.	8.	22.	1.	1.
5	422.	365.	453.	250.	269.	504.	934.	901.	2412.	2580.	604.
6	48.	121.	211.	177.	51.	253.	181.	153.	152.	80.	237.
7	42.	91.	183.	77.	21.	62.	88.	148.	23.	224.	36.
8	375.	519.	366.	324.	542.	693.	1134.	2146.	1783.	1651.	845.
9	102.	362.	289.	523.	528.	563.	1548.	2375.	236.	1026.	621.
10	89.	77.	141.	50.	118.	126.	175.	388.	103.	228.	274.
11	45.	121.	143.	217.	120.	219.	604.	1204.	278.	197.	222.
12	31.	119.	60.	33.	6.	30.	131.	38.	161.	61.	8.
13	86.	43.	71.	39.	55.	83.	50.	75.	43.	68.	12.
14	173.	67.	349.	128.	37.	122.	41.	20.	60.	80.	60.
15	449.	1270.	503.	1293.	376.	814.	1380.	1168.	0.	2447.	593.
16	34.	102.	43.	157.	75.	100.	44.	88.	0.	33.	347.
17	1327.	1496.	839.	617.	1333.	641.	2126.	2052.	1030.	818.	0.
18	0.	17.	0.	23.	0.	9.	25.	0.	0.	0.	45.
19	138.	53.	95.	0.	127.	20.	41.	192.	39.	62.	0.
20	651.	1270.	208.	598.	767.	579.	308.	549.	162.	131.	130.
21	182.	130.	46.	172.	349.	249.	58.	137.	46.	296.	187.
22	289.	380.	527.	561.	158.	152.	236.	161.	0.	60.	10.
23	53.	76.	85.	78.	26.	104.	80.	79.	76.	79.	0.
24	231.	434.	277.	508.	583.	382.	723.	286.	96.	305.	33.
25	0.	27.	6.	15.	0.	10.	52.	59.	4.	0.	8.
26	35.	510.	1435.	294.	75.	293.	97.	128.	195.	9.	6.
27	0.	0.	0.	0.	0.	0.	0.	4.	8.	0.	0.
28	19.	143.	60.	90.	141.	122.	67.	219.	49.	300.	0.
29	77.	57.	73.	66.	16.	17.	120.	45.	0.	43.	0.
30	9.	7.	75.	143.	29.	30.	6.	13.	5.	0.	11.
31	159.	253.	113.	109.	53.	49.	68.	70.	44.	33.	153.
32	197.	221.	107.	285.	129.	278.	82.	180.	130.	121.	49.
33	152.	645.	213.	41.	301.	310.	435.	1092.	793.	845.	465.
34	590.	536.	558.	926.	799.	1045.	1764.	1539.	2511.	2201.	2424.
35	0.	9.	0.	5.	23.	12.	64.	76.	21.	21.	11.
36	11.	76.	76.	212.	19.	37.	88.	115.	173.	115.	33.
37	1017.	1578.	249.	218.	692.	492.	231.	121.	102.	494.	94.
38	259.	453.	457.	336.	157.	373.	406.	634.	636.	612.	592.
39	240.	488.	453.	256.	125.	380.	413.	759.	561.	301.	387.
40	234.	165.	1566.	111.	153.	202.	221.	486.	261.	60.	16.
41	704.	374.	591.	196.	639.	480.	210.	961.	630.	414.	329.
42	1341.	550.	1094.	604.	849.	1053.	806.	1151.	701.	306.	732.
43	70.	48.	115.	33.	38.	126.	43.	87.	53.	74.	83.
44	1863.	1560.	2136.	90.	706.	1501.	1266.	1347.	874.	1154.	916.
45	1750.	2481.	555.	1197.	1590.	1507.	1279.	821.	936.	831.	1359.
46	56.	4.	9.	9.	0.	16.	50.	47.	89.	23.	0.
47	277.	586.	1221.	648.	468.	537.	596.	1175.	2479.	1024.	841.
48	308.	1232.	801.	450.	127.	2629.	1325.	1148.	418.	603.	191.
49	147.	365.	790.	124.	59.	0.	127.	197.	221.	221.	470.
50	48.	74.	231.	161.	111.	223.	273.	141.	115.	149.	280.
51	7.	7.	9.	0.	9.	0.	3.	20.	50.	23.	0.
52	997.	1458.	1927.	1005.	2317.	3539.	5490.	2598.	1585.	1772.	936.

Total Residential Building Permits

CASE-N	ID	TRBP72	TRBP73	TRBP74	TRBP75	TRBP76	TRBP77	TRBP78	TRBP79	TRBP80	TRBP81
1	101.	22.	23.	17.	25.	26.	17.	23.	14.	0.	0.
2	102.	62.	45.	65.	57.	38.	0.	32.	11.	6.	12.
3	103.	0.	2.	2.	0.	4.	1.	0.	1.	3.	3.
4	104.	10.	16.	12.	3.	11.	101	9.	15.	9.	5.
5	105.	370.	353.	180.	211.	203.	179.	220.	209.	99.	261.
6	106.	16.	10.	15.	13.	11.	21.	17.	6.	10.	11.
7	107.	40.	40.	97.	38.	9.	14.	19.	9.	4.	6.
8	108.	51.	140.	140.	111.	99.	98.	135.	237.	205.	621.
9	109.	289.	669.	114.	62.	105.	85.	111.	293.	214.	151.
10	110.	65.	71.	49.	39.	49.	44.	52.	28.	12.	18.
11	111.	42.	16.	41.	48.	47.	60.	71.	48.	26.	13.
12	112.	11.	14.	11.	5.	8.	6.	14.	8.	3.	2.
13	113.	13.	9.	9.	13.	13.	10.	12.	9.	9.	2.
14	201.	14.	11.	9.	5.	8.	5.	4.	4.	2.	2.
15	202.	405.	820.	356.	146.	58.	278.	562.	305.	156.	175.
16	204.	15.	14.	8.	9.	7.	5.	37.	12.	2.	1.
17	203.	460.	426.	123.	166.	284.	329.	498.	401.	139.	106.
18	205.	2.	14.	27.	14.	4.	6.	13.	0.	0.	2.
19	206.	0.	77.	15.	29.	13.	24.	24.	69.	16.	44.
20	207.	602.	392.	267.	499.	249.	170.	134.	81.	14.	28.
21	208.	43.	112.	75.	101.	146.	168.	141.	169.	19.	5.
22	209.	415.	250.	64.	122.	242.	165.	142.	464.	9.	23.
23	210.	25.	26.	20.	17.	17.	14.	15.	9.	9.	7.
24	211.	69.	185.	48.	76.	178.	254.	303.	125.	47.	31.
25	212.	1.	5.	5.	3.	5.	8.	2.	7.	1.	3.
26	213.	3.	11.	34.	27.	14.	30.	14.	9.	1.	0.
27	214.	8.	0.	0.	2.	0.	6.	52.	0.	3.	1.
28	301.	13.	10.	3.	22.	66.	31.	50.	13.	7.	3.
29	302.	16.	18.	7.	2.	7.	30.	84.	67.	19.	9.
30	303.	14.	34.	30.	0.	11.	5.	8.	3.	0.	0.
31	304.	63.	100.	168.	114.	137.	191.	459.	50.	27.	48.
32	305.	760.	324.	387.	293.	265.	272.	403.	569.	127.	157.
33	401.	46.	40.	54.	71.	47.	50.	63.	48.	75.	40.
34	402.	143.	117.	99.	154.	221.	133.	129.	190.	152.	65.
35	403.	121.	0.	4.	0.	5.	2.	1.	0.	3.	2.
36	501.	14.	16.	16.	15.	14.	14.	15.	8.	11.	5.
37	502.	381.	334.	172.	86.	73.	94.	216.	100.	68.	50.
38	601.	113.	120.	104.	180.	130.	142.	149.	136.	112.	85.
39	602.	378.	93.	139.	185.	114.	442.	245.	235.	123.	32.
40	701.	382.	1031.	280.	67.	44.	185.	178.	170.	62.	47.
41	702.	176.	153.	78.	119.	81.	62.	80.	141.	60.	31.
42	703.	970.	587.	354.	461.	832.	856.	809.	1020.	495.	441.
43	704.	12.	13.	7.	5.	1.	2.	7.	1.	5.	3.
44	705.	665.	160.	107.	104.	115.	148.	225.	149.	84.	54.
45	706.	692.	281.	160.	146.	150.	193.	206.	97.	92.	140.
46	707.	0.	0.	2.	0.	11.	1.	1.	0.	0.	0.
47	708.	471.	363.	81.	60.	99.	79.	132.	107.	102.	123.
48	709.	1550.	1621.	539.	674.	1488.	1279.	1287.	1060.	516.	380.
49	710.	247.	70.	9.	17.	10.	9.	39.	24.	19.	12.
50	711.	28.	41.	29.	27.	46.	37.	40.	20.	8.	12.
51	712.	0.	0.	9.	2.	2.	0.	80.	0.	0.	0.
52	713.	148.	325.	251.	293.	333.	531.	814.	210.	157.	152.

TABLE E-5

Single Family Building Permits

CASE-N	ID	SFBP72	SFBP73	SFBP74	SFBP75	SFBP76	SFBP77	SFBP78	SFBP79	SFBP80	SFBP81
1	101.	8.	15.	17.	25.	24.	17.	21.	19.	0.	0.
2	102.	62.	43.	65.	57.	38.	0.	32.	11.	6.	12.
3	103.	0.	2.	2.	0.	2.	1.	0.	1.	3.	3.
4	104.	10.	16.	12.	3.	9.	10.	9.	15.	9.	5.
5	105.	340.	353.	180.	211.	203.	179.	220.	163.	95.	61.
6	106.	16.	10.	15.	13.	11.	21.	17.	6.	10.	11.
7	107.	40.	40.	97.	38.	9.	14.	19.	9.	4.	6.
8	108.	51.	140.	140.	111.	99.	98.	135.	141.	141.	256.
9	109.	49.	61.	66.	62.	105.	69.	91.	127.	87.	151.
10	110.	65.	71.	49.	39.	49.	42.	44.	28.	12.	18.
11	111.	42.	16.	41.	46.	47.	60.	71.	48.	26.	13.
12	112.	11.	14.	11.	5.	8.	6.	14.	8.	3.	2.
13	113.	13.	9.	9.	13.	13.	18.	12.	9.	9.	2.
14	201.	14.	11.	9.	5.	8.	5.	4.	4.	2.	2.
15	202.	405.	413.	278.	146.	58.	278.	559.	305.	156.	175.
16	204.	15.	14.	8.	9.	7.	5.	37.	17.	2.	1.
17	203.	264.	224.	123.	166.	284.	329.	442.	401.	139.	106.
18	205.	2.	14.	27.	14.	4.	6.	13.	0.	0.	2.
19	206.	0.	29.	15.	29.	13.	24.	24.	21.	10.	4.
20	207.	538.	390.	267.	353.	249.	170.	134.	79.	14.	28.
21	208.	43.	112.	75.	101.	146.	168.	141.	169.	19.	5.
22	209.	387.	250.	64.	122.	242.	165.	142.	464.	9.	23.
23	210.	25.	26.	20.	17.	17.	14.	15.	9.	9.	7.
24	211.	69.	45.	48.	76.	178.	254.	303.	125.	47.	31.
25	212.	1.	5.	5.	3.	4.	6.	2.	7.	1.	3.
26	213.	3.	11.	28.	27.	14.	30.	14.	9.	1.	0.
27	214.	8.	0.	0.	2.	0.	6.	0.	0.	3.	1.
28	301.	9.	8.	3.	22.	38.	31.	50.	11.	7.	3.
29	302.	16.	14.	7.	2.	7.	36.	84.	65.	19.	9.
30	303.	14.	34.	30.	0.	11.	5.	8.	3.	0.	0.
31	304.	63.	100.	168.	114.	137.	191.	459.	56.	27.	37.
32	305.	308.	224.	387.	287.	248.	260.	373.	485.	87.	117.
33	401.	44.	40.	54.	71.	45.	50.	63.	48.	75.	40.
34	402.	141.	117.	99.	148.	167.	129.	121.	190.	150.	63.
35	403.	19.	0.	4.	0.	5.	2.	1.	0.	5.	2.
36	501.	14.	16.	16.	15.	14.	14.	15.	8.	11.	5.
37	502.	289.	294.	148.	82.	71.	92.	113.	98.	66.	48.
38	601.	84.	104.	104.	180.	128.	132.	141.	134.	108.	81.
39	602.	92.	93.	139.	185.	114.	442.	245.	235.	123.	32.
40	701.	382.	851.	157.	67.	42.	135.	151.	170.	60.	35.
41	702.	176.	153.	78.	119.	81.	62.	80.	141.	60.	31.
42	703.	936.	569.	354.	461.	832.	856.	889.	996.	495.	417.
43	704.	12.	11.	7.	5.	1.	2.	7.	1.	5.	3.
44	705.	275.	134.	107.	104.	115.	148.	213.	149.	84.	34.
45	706.	692.	281.	160.	146.	150.	193.	206.	97.	92.	140.
46	707.	0.	0.	2.	0.	11.	1.	1.	0.	0.	0.
47	708.	471.	356.	81.	60.	99.	79.	118.	103.	102.	99.
48	709.	354.	499.	225.	177.	666.	769.	954.	674.	297.	196.
49	710.	247.	70.	7.	17.	18.	9.	32.	24.	19.	12.
50	711.	28.	41.	29.	23.	46.	37.	40.	20.	8.	12.
51	712.	0.	0.	9.	2.	2.	0.	80.	0.	0.	0.
52	713.	140.	329.	253.	281.	314.	507.	740.	200.	157.	113.

TABLE E-6

Number of Residential Transactions

CASE-N	RT72	RT73	RT74	RT75	RT76	RT77	RT78	RT79	RT80	RT81	RT82
1	4.	20.	8.	18.	16.	23.	31.	31.	25.	41.	43.
2	36.	33.	71.	69.	39.	51.	73.	59.	70.	51.	43.
3	3.	5.	3.	7.	3.	2.	2.	2.	1.	5.	5.
4	12.	45.	21.	31.	15.	14.	28.	42.	39.	47.	35.
5	90.	107.	191.	92.	61.	232.	263.	133.	297.	216.	149.
6	2.	7.	11.	8.	2.	7.	9.	5.	13.	19.	10.
7	7.	16.	17.	10.	24.	21.	39.	25.	17.	24.	23.
8	57.	133.	119.	32.	100.	103.	141.	163.	158.	123.	100.
9	39.	62.	31.	59.	71.	77.	133.	146.	24.	110.	57.
10	13.	47.	51.	23.	50.	51.	63.	93.	60.	66.	43.
11	23.	31.	36.	28.	19.	40.	59.	71.	62.	43.	41.
12	3.	11.	6.	8.	2.	5.	12.	11.	5.	11.	5.
13	5.	14.	12.	8.	9.	14.	2.	8.	10.	17.	5.
14	13.	14.	22.	13.	14.	23.	8.	18.	26.	25.	14.
15	60.	239.	209.	244.	267.	359.	416.	512.	15.	320.	224.
16	171.	162.	146.	162.	165.	125.	293.	296.	208.	220.	200.
17	55.	145.	120.	105.	109.	111.	136.	141.	90.	81.	22.
18	2.	2.	1.	3.	2.	8.	4.	2.	2.	4.	0.
19	15.	13.	9.	4.	16.	6.	22.	18.	12.	6.	2.
20	268.	379.	172.	377.	390.	410.	170.	476.	459.	433.	259.
21	12.	5.	10.	8.	20.	19.	22.	26.	18.	15.	10.
22	61.	71.	18.	45.	79.	114.	63.	43.	15.	41.	39.
23	18.	24.	12.	2.	18.	18.	20.	28.	28.	13.	5.
24	36.	36.	25.	34.	30.	25.	18.	42.	15.	20.	22.
25	8.	5.	1.	4.	0.	5.	8.	2.	4.	8.	4.
26	9.	21.	13.	4.	9.	21.	18.	8.	14.	11.	6.
27	2.	5.	8.	9.	3.	5.	6.	4.	1.	0.	5.
28	51.	84.	61.	50.	63.	20.	80.	96.	45.	47.	30.
29	71.	51.	50.	42.	19.	46.	53.	54.	50.	27.	38.
30	8.	4.	3.	4.	13.	14.	3.	15.	10.	10.	8.
31	20.	61.	38.	40.	31.	50.	57.	37.	72.	63.	43.
32	52.	93.	111.	69.	229.	224.	281.	323.	325.	204.	168.
33	20.	42.	38.	14.	38.	46.	61.	61.	70.	48.	44.
34	77.	48.	81.	64.	83.	93.	59.	117.	116.	55.	25.
35	24.	27.	4.	17.	13.	8.	14.	26.	13.	19.	16.
36	41.	56.	38.	34.	13.	18.	31.	37.	40.	32.	13.
37	350.	409.	194.	148.	330.	422.	228.	480.	485.	359.	117.
38	97.	93.	94.	65.	22.	86.	101.	111.	105.	87.	56.
39	187.	145.	152.	59.	164.	176.	215.	243.	225.	162.	129.
40	33.	15.	30.	41.	119.	100.	125.	204.	197.	164.	151.
41	92.	83.	150.	65.	83.	115.	69.	166.	134.	103.	81.
42	247.	155.	296.	251.	270.	358.	406.	451.	395.	324.	308.
43	23.	9.	29.	8.	21.	23.	27.	30.	26.	16.	11.
44	344.	368.	298.	88.	264.	294.	432.	410.	285.	232.	175.
45	247.	409.	187.	236.	236.	292.	351.	352.	305.	161.	160.
46	35.	49.	32.	33.	15.	26.	42.	40.	30.	35.	32.
47	134.	145.	217.	187.	320.	318.	352.	348.	362.	93.	115.
48	79.	62.	62.	42.	21.	69.	119.	139.	135.	106.	105.
49	56.	117.	87.	62.	68.	37.	122.	164.	132.	107.	80.
50	39.	26.	38.	28.	15.	17.	50.	28.	45.	36.	30.
51	108.	113.	88.	22.	94.	37.	85.	55.	74.	30.	28.
52	190.	191.	178.	77.	175.	230.	275.	319.	284.	318.	260.

TABLE E-7

Volume of Residential Sales

CASE-N	RV72	RV73	RV74	RV75	RV76	RV77	RV78	RV79	RV80	RV81	RV82
1	83.	321.	110.	377.	342.	504.	808.	933.	910.	1478.	485.
2	545.	627.	1553.	1506.	1009.	1210.	1990.	1771.	2580.	1830.	1637.
3	41.	63.	51.	121.	63.	43.	67.	64.	30.	255.	172.
4	193.	705.	407.	682.	338.	374.	821.	1301.	1329.	1141.	991.
5	1500.	1981.	6443.	2321.	1661.	7081.	8676.	5765.	15082.	12411.	8630.
6	12.	130.	135.	107.	22.	111.	264.	304.	493.	861.	541.
7	96.	446.	484.	259.	686.	675.	1016.	779.	732.	1066.	1219.
8	911.	2445.	2162.	861.	2710.	2750.	4190.	6299.	7070.	7378.	5525.
9	586.	896.	966.	1219.	1652.	1670.	3576.	4653.	1219.	6312.	4925.
10	298.	977.	1089.	567.	1460.	1598.	1996.	3164.	2264.	3229.	2318.
11	317.	325.	576.	418.	518.	965.	1581.	2502.	2423.	1715.	1071.
12	55.	289.	144.	208.	38.	202.	447.	563.	380.	1073.	349.
13	48.	165.	189.	197.	294.	270.	33.	282.	375.	909.	422.
14	176.	272.	585.	303.	371.	627.	246.	705.	963.	1195.	644.
15	1764.	6960.	7946.	9715.	11328.	14845.	18296.	25308.	1183.	20202.	15034.
16	5936.	6360.	6204.	8054.	9093.	6878.	18109.	19650.	16498.	19605.	12960.
17	1964.	5774.	5177.	4680.	5393.	5204.	7088.	8517.	5990.	6207.	1610.
18	53.	67.	9.	108.	76.	201.	131.	88.	111.	110.	0.
19	402.	359.	291.	177.	689.	761.	1090.	1068.	525.	291.	92.
20	4046.	7556.	4256.	9465.	10254.	11738.	5621.	15655.	16386.	15967.	14001.
21	252.	135.	363.	206.	819.	1025.	1159.	1435.	1262.	1196.	1196.
22	1300.	1653.	616.	1290.	3054.	3936.	2595.	1823.	699.	2115.	1806.
23	497.	617.	431.	24.	659.	658.	1029.	1377.	1899.	950.	251.
24	622.	815.	797.	1069.	1087.	1006.	783.	2229.	817.	1557.	1623.
25	150.	157.	23.	87.	0.	184.	305.	72.	150.	181.	193.
26	219.	337.	264.	93.	269.	620.	495.	295.	550.	507.	279.
27	30.	141.	271.	277.	95.	164.	213.	137.	35.	0.	189.
28	1460.	2634.	2130.	1841.	2550.	293.	3483.	2712.	2301.	2638.	1566.
29	1471.	1139.	1367.	1211.	539.	1258.	1807.	2113.	2122.	1145.	1925.
30	83.	88.	66.	58.	349.	391.	89.	499.	296.	381.	331.
31	424.	1543.	1029.	1177.	1067.	1783.	2109.	1518.	3630.	4312.	2658.
32	830.	2156.	2972.	2033.	7106.	7061.	9250.	11266.	12762.	8950.	8160.
33	357.	799.	692.	293.	859.	1180.	2081.	2267.	2909.	2624.	2629.
34	1492.	1440.	2221.	2169.	4926.	3600.	2522.	6160.	7255.	7054.	6096.
35	286.	359.	44.	309.	260.	177.	249.	548.	310.	565.	601.
36	321.	421.	347.	434.	194.	338.	435.	514.	891.	481.	234.
37	6539.	8870.	5153.	4098.	10538.	13508.	7541.	17833.	17360.	15261.	4777.
38	1529.	1652.	1817.	1457.	566.	2472.	3191.	3698.	3987.	3539.	3241.
39	3557.	2995.	3706.	1680.	4947.	5510.	7553.	9724.	9155.	8349.	6263.
40	649.	313.	780.	1301.	3641.	2793.	3967.	6898.	7217.	6861.	6451.
41	1950.	2120.	4300.	2547.	2565.	3546.	2254.	5977.	5509.	4565.	3368.
42	4784.	4255.	8317.	7386.	8713.	11218.	14606.	17631.	15997.	6186.	15779.
43	240.	141.	429.	144.	416.	519.	765.	841.	863.	609.	524.
44	8739.	10532.	10471.	3046.	9864.	11106.	17510.	19701.	14349.	13068.	9936.
45	5059.	11029.	3284.	7669.	7280.	9377.	12409.	14134.	13229.	5021.	9895.
46	472.	896.	790.	735.	455.	547.	1107.	1110.	930.	1132.	1058.
47	2340.	2937.	4959.	6268.	7792.	8328.	11166.	11619.	15573.	4629.	9305.
48	1382.	1226.	1620.	1234.	680.	2120.	4067.	5467.	6253.	10452.	9341.
49	1029.	2581.	2244.	1684.	2069.	1169.	4063.	6396.	5438.	4721.	1716.
50	679.	520.	1063.	663.	471.	1011.	1826.	1136.	2054.	1665.	1506.
51	1980.	2454.	2156.	574.	1225.	1062.	2173.	2813.	2438.	1180.	1911.
52	3253.	3850.	4269.	2007.	4692.	6292.	9457.	12071.	12335.	10681.	10953.

TABLE E-6

Total Covered Employment

CASE-N	ID	EMP72	EMP73	EMP74	EMP75	EMP76	EMP77	EMP78	EMP79	EMP80	EMP81
1	101.	0.	0.	459.	842.	799.	883.	1353.	1468.	1425.	1494.
2	102.	1407.	1874.	1568.	981.	1102.	1151.	1092.	1017.	951.	925.
3	103.	29.	22.	31.	48.	33.	21.	17.	18.	20.	28.
4	104.	1591.	1273.	1327.	815.	1161.	1318.	1034.	900.	834.	790.
5	105.	2259.	2539.	2919.	2816.	3317.	3072.	4778.	5290.	5091.	5528.
6	106.	21.	22.	28.	17.	26.	29.	53.	58.	68.	71.
7	107.	343.	485.	424.	375.	423.	422.	544.	665.	624.	595.
8	108.	2460.	2543.	2293.	2644.	2908.	2963.	3057.	3205.	3668.	3734.
9	109.	2661.	2864.	2575.	1695.	2095.	1659.	2434.	2559.	3231.	3066.
10	110.	4951.	4966.	5063.	4972.	4901.	5125.	6467.	6613.	6556.	6234.
11	111.	79.	126.	100.	85.	88.	84.	143.	152.	253.	132.
12	112.	17.	18.	27.	26.	22.	25.	29.	33.	29.	21.
13	113.	36.	53.	38.	40.	42.	58.	64.	68.	69.	59.
14	201.	144.	248.	191.	191.	228.	295.	277.	268.	245.	316.
15	202.	1757.	2961.	3117.	3336.	3853.	3846.	3513.	3859.	4303.	4789.
16	203.	2146.	2318.	2091.	2361.	2495.	2336.	2573.	3170.	3497.	3986.
17	204.	0.	0.	127.	99.	108.	113.	67.	91.	76.	56.
18	205.	626.	735.	1012.	750.	758.	823.	697.	843.	855.	900.
19	206.	93.	97.	104.	105.	106.	117.	181.	208.	165.	218.
20	207.	1259.	1479.	1251.	1343.	1345.	1441.	1522.	1426.	1406.	1567.
21	208.	73.	94.	101.	74.	72.	176.	253.	120.	121.	134.
22	209.	425.	577.	701.	732.	768.	904.	1180.	1361.	1254.	1231.
23	210.	116.	115.	119.	164.	190.	208.	245.	212.	218.	303.
24	211.	48.	53.	58.	58.	54.	71.	148.	196.	109.	204.
25	212.	463.	404.	85.	350.	495.	342.	487.	279.	104.	99.
26	213.	10.	41.	0.	36.	47.	64.	132.	112.	154.	162.
27	214.	1537.	1349.	1252.	1134.	1297.	1361.	1311.	1427.	1425.	1509.
28	301.	1341.	1538.	1694.	1807.	1865.	1676.	1928.	2296.	2355.	2508.
29	302.	1367.	1720.	1647.	1690.	1194.	1238.	1371.	1299.	1292.	1109.
30	303.	52.	61.	5.	10.	19.	22.	26.	28.	31.	27.
31	304.	827.	1022.	1129.	1108.	1056.	1008.	1527.	1909.	1568.	1425.
32	305.	1533.	1711.	1846.	2014.	2527.	2724.	3106.	3070.	2842.	2910.
33	401.	225.	295.	323.	224.	199.	418.	355.	415.	404.	486.
34	402.	909.	1026.	1074.	1033.	1081.	1272.	1162.	1421.	1466.	1552.
35	403.	417.	530.	242.	211.	239.	178.	176.	147.	136.	172.
36	501.	606.	729.	681.	1653.	993.	545.	564.	533.	462.	431.
37	502.	16921.	18209.	19646.	16985.	18767.	18073.	20913.	21160.	20823.	21125.
38	601.	511.	471.	543.	493.	563.	567.	1075.	1087.	1040.	979.
39	602.	1449.	1826.	1890.	1348.	1937.	1038.	2472.	2370.	2652.	2479.
40	701.	176.	169.	156.	214.	243.	234.	289.	289.	241.	313.
41	702.	445.	524.	391.	924.	369.	392.	507.	496.	509.	403.
42	703.	900.	1017.	1072.	1005.	1235.	1269.	1396.	1493.	1409.	1441.
43	704.	139.	115.	104.	110.	120.	109.	128.	119.	165.	156.
44	705.	927.	972.	1107.	845.	3203.	3189.	3419.	3903.	3957.	3919.
45	706.	919.	1074.	1065.	1011.	1247.	1268.	1039.	1547.	1560.	1876.
46	707.	500.	577.	518.	552.	510.	567.	622.	682.	801.	823.
47	708.	54.	42.	55.	53.	70.	124.	153.	158.	184.	172.
48	709.	424.	1062.	1269.	1098.	1165.	1019.	1036.	1160.	1175.	1308.
49	710.	239.	264.	290.	253.	297.	347.	542.	504.	418.	468.
50	711.	252.	369.	328.	331.	311.	328.	390.	302.	277.	272.
51	712.	214.	225.	147.	160.	181.	150.	213.	281.	265.	238.
52	713.	1936.	1920.	1499.	1323.	1489.	1495.	1685.	2072.	2213.	2208.

TABLE E-9

Actual Tax Rates

(Dollars per $100 assessed Value)

CASE-N	ACT72	ACT73	ACT74	ACT75	ACT76	ACT77	ACT78	ACT79	ACT80	ACT81	ACT82
1	4.32	5.61	2.89	3.22	3.63	3.39	3.36	3.65	3.23	3.43	4.32
2	4.57	3.85	3.49	4.02	4.14	3.86	3.57	3.31	3.03	3.42	3.84
3	4.82	5.07	5.28	5.92	2.20	2.19	2.14	2.01	2.74	3.09	3.54
4	6.45	6.44	6.82	7.36	8.04	2.84	2.90	2.85	2.93	3.20	3.62
5	3.35	3.27	3.30	3.33	2.61	2.63	2.41	1.95	2.16	2.38	2.54
6	2.85	2.96	3.84	4.97	3.24	2.69	2.67	2.68	2.82	3.28	3.38
7	3.76	3.79	4.19	5.35	4.62	4.20	4.44	4.44	3.91	4.63	5.08
8	5.51	5.50	5.65	2.40	2.88	2.82	2.74	2.88	3.17	3.68	4.71
9	4.57	4.82	3.91	4.11	5.12	4.31	3.67	3.66	2.02	2.98	3.30
10	4.00	4.28	4.52	4.71	5.05	4.43	4.74	4.98	5.10	5.71	5.84
11	4.75	5.43	4.92	5.55	2.94	3.04	3.06	3.41	3.77	4.39	4.00
12	2.42	2.72	3.00	3.24	3.77	3.59	3.70	3.95	4.34	5.31	6.98
13	2.71	2.94	3.04	3.93	3.96	3.27	3.07	3.64	3.04	4.11	4.04
14	4.13	2.35	2.67	2.73	3.12	3.54	2.48	2.65	3.20	3.15	3.53
15	2.78	3.14	3.28	3.86	4.27	4.02	4.00	3.95	2.06	2.30	2.45
16	3.48	3.91	4.07	4.64	5.21	2.52	2.69	2.64	2.83	3.15	3.36
17	3.25	3.49	3.53	3.89	4.25	3.77	3.72	4.02	4.20	4.55	2.71
18	1.17	1.32	1.32	2.35	2.55	1.77	1.88	2.13	2.26	2.38	2.41
19	2.50	2.34	2.04	1.50	1.63	1.65	1.86	1.88	2.40	2.13	1.87
20	3.63	3.91	1.79	2.88	2.83	2.81	2.18	2.36	2.55	3.20	2.94
21	3.00	3.20	2.61	2.93	3.22	2.26	1.88	2.54	2.54	2.58	2.58
22	4.04	3.88	1.93	2.26	2.85	2.74	1.90	1.86	1.86	1.90	1.75
23	3.48	3.67	3.49	2.49	2.91	2.70	2.76	2.83	2.97	3.32	2.58
24	4.97	6.06	2.05	2.87	3.33	2.32	2.15	2.56	2.54	2.54	2.45
25	4.39	4.33	3.20	1.91	5.53	3.06	3.17	3.35	3.59	4.25	4.49
26	3.60	3.35	3.72	1.70	2.25	2.04	2.08	2.46	2.67	2.83	3.65
27	1.94	2.27	2.63	2.54	3.17	2.02	2.84	3.62	4.16	2.58	2.86
28	4.75	4.78	5.07	5.71	6.36	2.67	2.83	2.87	3.00	3.44	3.83
29	8.06	7.49	7.47	7.93	2.74	2.74	2.81	2.81	3.49	4.22	4.40
30	6.62	6.95	6.10	6.12	7.24	6.83	2.53	2.65	2.99	3.41	3.92
31	3.72	3.76	3.67	4.32	4.76	4.25	4.54	2.20	2.68	3.08	3.46
32	5.36	4.99	4.71	2.16	2.56	2.54	2.51	2.60	2.75	2.97	3.16
33	4.15	4.60	5.20	1.83	2.21	2.13	2.14	2.25	2.59	3.12	3.44
34	1.33	0.65	0.75	0.77	0.92	0.89	0.58	0.70	0.81	0.90	1.06
35	7.76	7.41	2.32	2.63	2.80	2.50	2.72	2.80	3.54	3.17	3.84
36	5.67	5.57	5.69	7.00	6.25	4.07	4.24	4.07	5.29	5.63	2.46
37	4.46	4.86	3.77	3.26	3.21	3.13	3.08	3.13	3.10	3.44	4.55
38	5.64	5.35	4.69	5.20	2.41	2.72	2.46	2.55	3.02	3.40	3.47
39	5.88	5.87	5.92	2.01	2.31	2.38	2.43	2.88	2.94	3.04	3.24
40	3.43	2.95	3.48	2.34	2.75	2.45	2.48	2.45	2.92	3.66	3.63
41	5.06	3.21	3.31	3.73	3.90	3.96	2.55	2.78	2.88	3.12	3.35
42	4.16	2.48	2.64	3.01	3.02	2.97	2.97	3.02	3.16	1.81	2.00
43	4.86	3.53	3.81	2.05	3.31	3.19	3.16	3.15	3.99	2.22	2.46
44	5.44	5.41	5.23	2.57	2.88	2.73	2.77	2.75	3.12	3.48	3.72
45	2.03	2.03	1.20	1.78	1.76	1.47	1.51	1.53	1.57	2.08	1.96
46	5.17	4.90	4.83	5.93	3.16	3.12	3.18	3.15	3.13	3.12	3.45
47	2.56	1.66	2.38	2.77	2.90	2.88	3.01	3.26	4.10	2.06	2.41
48	3.38	3.29	2.94	2.94	1.53	1.76	1.56	1.96	1.90	2.19	2.52
49	1.97	2.56	2.49	2.56	3.00	2.01	2.34	2.22	2.74	3.15	3.26
50	3.87	2.91	2.95	3.57	2.42	2.24	2.20	1.76	2.14	2.14	2.44
51	3.40	3.49	3.77	2.38	2.84	2.79	2.98	3.16	3.25	3.50	3.48
52	2.19	2.11	2.01	1.82	2.12	2.01	2.04	2.14	2.47	2.71	3.05

TABLE E-10

Average Residential Tax Bill

(dollars per line item)

CASE-N	RTB72	RTB73	RTB74	RTB75	RTB76	RTB77	RTB78	RTB79	RTB80	RTB81	RTB82
1	497.	608.	611.	686.	784.	744.	761.	818.	737.	783.	990.
2	477.	654.	573.	709.	751.	707.	663.	539.	592.	680.	772.
3	368.	367.	374.	402.	425.	413.	404.	384.	542.	615.	721.
4	560.	580.	631.	689.	757.	701.	739.	738.	703.	872.	1003.
5	430.	445.	466.	531.	672.	701.	673.	552.	749.	834.	909.
6	250.	261.	344.	467.	642.	529.	543.	569.	624.	755.	787.
7	569.	601.	697.	899.	777.	711.	764.	778.	709.	851.	937.
8	517.	541.	574.	608.	604.	675.	660.	715.	809.	977.	1292.
9	436.	467.	477.	520.	680.	587.	512.	521.	594.	916.	1040.
10	570.	618.	666.	704.	767.	678.	735.	783.	822.	921.	947.
11	461.	531.	511.	594.	574.	608.	628.	725.	810.	947.	897.
12	407.	471.	532.	586.	717.	706.	735.	795.	878.	1105.	1430.
13	449.	400.	428.	562.	592.	504.	480.	585.	520.	729.	730.
14	378.	360.	421.	439.	512.	591.	751.	812.	961.	955.	1099.
15	748.	858.	916.	1085.	1226.	1162.	1151.	1137.	1198.	1345.	1642.
16	937.	1067.	1165.	1359.	1551.	1402.	1396.	1397.	1529.	1728.	1858.
17	1187.	1269.	1275.	1410.	1545.	1372.	1361.	1477.	1565.	1698.	1843.
18	246.	340.	329.	616.	766.	536.	575.	767.	859.	1009.	1093.
19	434.	415.	393.	538.	586.	607.	690.	699.	910.	818.	934.
20	367.	418.	400.	535.	649.	653.	687.	739.	801.	852.	924.
21	627.	762.	764.	935.	1067.	895.	850.	1258.	1361.	1590.	1727.
22	534.	535.	482.	574.	734.	713.	683.	703.	791.	926.	902.
23	563.	690.	664.	780.	921.	869.	898.	933.	981.	1098.	1322.
24	562.	751.	608.	841.	977.	815.	834.	1111.	1255.	1444.	1586.
25	407.	403.	504.	589.	730.	564.	617.	561.	726.	875.	1057.
26	318.	297.	312.	326.	433.	406.	456.	572.	631.	668.	859.
27	390.	434.	535.	533.	680.	614.	620.	730.	883.	996.	1091.
28	832.	861.	918.	1042.	1161.	1106.	1180.	1204.	1300.	1470.	1643.
29	779.	726.	739.	777.	796.	792.	838.	833.	1050.	1281.	1344.
30	710.	591.	618.	775.	909.	870.	760.	797.	914.	1037.	1197.
31	646.	658.	674.	826.	923.	840.	913.	923.	1144.	1317.	1496.
32	669.	658.	664.	635.	755.	753.	750.	812.	878.	966.	1040.
33	308.	354.	414.	376.	457.	447.	460.	501.	593.	735.	835.
34	135.	143.	169.	177.	214.	213.	219.	264.	311.	361.	430.
35	486.	401.	371.	413.	441.	396.	432.	445.	572.	515.	625.
36	346.	362.	365.	483.	456.	411.	439.	432.	582.	649.	646.
37	697.	702.	737.	893.	895.	881.	935.	978.	1044.	1127.	1254.
38	542.	526.	477.	542.	629.	691.	639.	673.	802.	912.	932.
39	588.	592.	600.	511.	596.	615.	645.	764.	815.	857.	920.
40	357.	376.	641.	688.	811.	718.	727.	721.	862.	1094.	1995.
41	630.	638.	666.	743.	779.	773.	671.	757.	930.	1063.	1143.
42	525.	516.	566.	663.	673.	677.	686.	707.	767.	845.	940.
43	324.	283.	312.	265.	441.	449.	445.	470.	598.	707.	799.
44	967.	991.	991.	906.	1021.	976.	999.	990.	1135.	1279.	1386.
45	264.	308.	300.	456.	458.	387.	401.	414.	432.	928.	890.
46	519.	505.	506.	626.	985.	816.	826.	820.	815.	815.	902.
47	276.	311.	461.	558.	594.	597.	633.	695.	887.	945.	1129.
48	393.	408.	396.	419.	431.	507.	470.	617.	627.	729.	857.
49	345.	452.	460.	479.	568.	610.	712.	683.	846.	976.	1019.
50	331.	394.	430.	495.	608.	569.	564.	548.	675.	677.	777.
51	490.	504.	547.	544.	653.	644.	650.	712.	754.	814.	809.
52	318.	367.	327.	359.	421.	493.	420.	434.	511.	580.	663.

TABLE E-11

Average Vacant Land Tax Bill

(dollars per line item)

CASE-#	V1072	V1073	V1074	V1075	V1076	V1077	V1078	V1079	V1080	V1081	V1082
1	71.	105.	105.	111.	120.	107.	109.	117.	76.	80.	99.
2	61.	109.	85.	100.	116.	96.	88.	77.	69.	78.	87.
3	21.	29.	25.	56.	93.	91.	89.	85.	114.	124.	135.
4	25.	33.	28.	30.	30.	28.	28.	29.	29.	37.	38.
5	68.	65.	64.	74.	107.	111.	121.	133.	157.	176.	184.
6	74.	72.	92.	118.	146.	121.	118.	120.	123.	143.	147.
7	83.	76.	85.	112.	102.	92.	96.	97.	86.	98.	113.
8	82.	82.	88.	141.	161.	142.	138.	144.	163.	190.	231.
9	62.	65.	98.	152.	140.	125.	106.	101.	135.	206.	222.
10	116.	120.	133.	133.	150.	130.	143.	150.	155.	169.	175.
11	139.	192.	124.	141.	138.	139.	136.	150.	159.	190.	165.
12	112.	132.	142.	155.	185.	174.	173.	190.	207.	252.	328.
13	153.	164.	169.	226.	228.	189.	177.	203.	169.	228.	225.
14	122.	227.	233.	239.	311.	304.	302.	323.	373.	352.	398.
15	279.	253.	256.	323.	334.	313.	303.	310.	369.	400.	434.
16	381.	306.	436.	398.	444.	580.	556.	538.	526.	610.	583.
17	180.	216.	208.	214.	226.	197.	191.	187.	172.	181.	299.
18	136.	133.	92.	118.	179.	123.	134.	149.	141.	231.	253.
19	121.	131.	106.	260.	283.	276.	292.	249.	307.	316.	289.
20	24.	25.	56.	70.	77.	79.	95.	93.	91.	103.	114.
21	200.	314.	170.	336.	325.	316.	296.	368.	364.	414.	404.
22	149.	193.	194.	196.	258.	253.	254.	249.	257.	281.	223.
23	247.	216.	229.	267.	297.	265.	273.	278.	296.	318.	350.
24	80.	99.	269.	294.	329.	246.	273.	320.	324.	347.	348.
25	44.	57.	104.	113.	216.	159.	166.	177.	181.	214.	219.
26	404.	231.	220.	175.	159.	139.	140.	155.	174.	157.	145.
27	159.	199.	221.	213.	241.	211.	213.	235.	260.	339.	367.
28	183.	183.	201.	227.	254.	296.	302.	317.	356.	453.	475.
29	93.	95.	84.	89.	356.	342.	340.	317.	409.	485.	511.
30	55.	76.	80.	93.	107.	101.	123.	127.	143.	163.	189.
31	169.	162.	167.	200.	216.	199.	212.	260.	332.	374.	420.
32	187.	158.	128.	295.	357.	349.	340.	327.	335.	358.	381.
33	62.	67.	76.	154.	166.	157.	152.	159.	181.	218.	235.
34	11.	26.	28.	29.	33.	31.	43.	53.	70.	82.	98.
35	69.	56.	93.	69.	73.	67.	73.	77.	97.	87.	107.
36	113.	114.	110.	138.	186.	109.	111.	103.	129.	155.	159.
37	189.	223.	257.	285.	273.	271.	269.	288.	296.	309.	303.
38	56.	59.	56.	62.	210.	175.	147.	153.	177.	196.	199.
39	63.	61.	61.	189.	214.	213.	207.	227.	234.	244.	262.
40	112.	210.	252.	163.	169.	149.	153.	140.	169.	209.	207.
41	38.	56.	56.	66.	67.	67.	103.	112.	116.	124.	133.
42	59.	67.	72.	86.	91.	103.	112.	113.	116.	141.	143.
43	72.	119.	125.	173.	258.	244.	232.	221.	396.	329.	356.
44	233.	240.	244.	376.	423.	384.	372.	342.	393.	431.	479.
45	31.	42.	64.	95.	96.	83.	82.	80.	81.	143.	130.
46	77.	91.	73.	95.	173.	231.	205.	212.	207.	189.	207.
47	72.	124.	166.	167.	175.	175.	181.	185.	217.	252.	292.
48	42.	58.	29.	30.	67.	79.	66.	95.	88.	101.	113.
49	110.	136.	127.	124.	145.	145.	215.	208.	259.	290.	156.
50	65.	77.	79.	95.	117.	136.	102.	117.	149.	146.	171.
51	422.	424.	353.	466.	515.	515.	555.	503.	529.	545.	535.
52	90.	98.	107.	117.	125.	123.	128.	137.	148.	162.	181.

TAB E-

Aggregate Assessed Valuation

(million dollars)

CASE-N	AA72	AA73	AA74	AA75	AA76	AA77	AA78	AA79	AA80	AA81	AA82
1	16.3	16.9	31.6	31.6	31.9	32.6	33.2	33.7	34.9	35.5	35.7
2	27.5	47.7	46.9	49.8	54.4	54.0	55.1	59.4	60.2	61.9	62.0
3	1.2	1.2	1.2	1.2	3.4	3.3	3.4	3.5	3.7	3.7	3.9
4	15.3	16.0	16.2	16.5	16.8	41.6	42.9	43.7	45.1	46.2	47.0
5	80.5	91.3	102.7	122.0	208.8	209.7	231.0	286.4	305.6	316.6	326.9
6	7.9	7.9	8.2	8.3	16.0	15.8	16.0	16.8	17.1	17.5	17.8
7	9.1	10.8	11.6	12.7	13.9	14.1	14.7	15.1	15.9	16.1	16.2
8	42.4	44.0	47.4	123.5	124.3	126.2	130.6	134.3	140.9	149.0	163.6
9	53.5	54.7	74.1	89.7	89.4	87.2	89.9	91.1	100.4	202.5	211.0
10	65.4	68.6	71.6	74.0	75.9	77.2	78.4	80.4	81.8	83.1	83.7
11	20.9	21.4	22.4	23.3	45.7	47.4	49.0	52.0	53.2	54.3	55.3
12	5.8	6.0	6.3	6.5	7.0	7.2	7.4	7.7	7.7	7.9	7.9
13	7.6	8.0	8.3	8.8	9.0	9.5	9.7	10.0	10.5	10.8	11.0
14	7.8	17.9	17.5	17.9	19.6	17.9	29.5	29.8	29.4	30.0	30.3
15	135.1	138.1	163.0	179.5	187.3	191.4	195.7	207.8	449.0	467.5	488.3
16	89.8	98.8	116.0	124.0	129.7	248.0	254.1	274.0	307.9	325.4	334.3
17	52.4	52.6	53.4	54.0	54.2	54.6	55.0	55.9	57.4	57.8	129.3
18	4.1	4.7	4.5	5.2	6.1	6.3	6.6	7.6	8.0	8.8	11.7
19	14.0	14.6	16.0	31.2	31.4	31.8	32.8	33.4	34.5	36.1	46.7
20	59.5	67.3	169.9	173.5	180.9	187.6	260.1	259.0	263.3	263.9	263.9
21	6.8	14.0	19.6	23.8	26.5	37.4	48.5	59.6	69.4	84.0	92.5
22	28.7	34.2	43.7	80.1	84.4	89.7	130.0	140.5	162.2	188.4	201.0
23	19.6	20.2	21.0	32.8	33.7	34.0	34.8	35.5	35.8	36.3	93.5
24	10.4	11.8	37.7	35.9	37.4	47.5	59.5	75.3	95.0	111.6	129.8
25	6.3	6.5	10.0	9.7	11.7	11.7	11.8	12.0	12.3	11.0	10.9
26	13.0	13.6	13.2	26.3	27.1	26.7	27.7	27.9	28.7	26.1	23.2
27	7.8	7.7	7.7	7.8	7.7	7.5	7.5	8.0	8.4	15.2	13.2
28	33.7	35.6	35.8	36.1	37.4	83.4	85.3	87.2	89.5	90.3	90.8
29	14.3	14.5	14.8	15.4	50.4	50.7	51.3	54.5	57.3	58.7	60.1
30	3.9	4.2	4.5	5.1	5.8	6.0	15.1	15.1	15.4	15.4	15.1
31	30.0	31.7	34.0	36.9	39.6	42.9	46.8	112.4	121.5	124.5	128.9
32	55.0	66.9	78.1	200.6	204.4	210.7	220.7	231.0	240.5	253.6	260.3
33	10.8	11.5	12.1	41.2	40.9	41.8	42.8	44.9	46.9	49.3	51.5
34	21.9	53.1	56.9	61.6	66.1	70.1	122.3	130.1	138.3	146.9	151.9
35	4.4	4.6	13.1	13.2	13.1	13.0	13.0	13.0	13.2	13.2	13.2
36	13.0	13.5	13.8	14.6	18.1	22.1	22.9	23.4	25.1	25.5	61.1
37	282.6	298.0	369.0	511.8	498.5	515.1	553.1	572.3	584.0	605.9	641.3
38	34.0	35.9	38.1	39.6	118.6	114.4	118.5	123.8	126.4	130.7	133.6
39	56.2	58.7	60.5	183.6	183.3	187.3	195.7	208.1	215.6	224.5	228.5
40	14.5	25.2	39.3	101.0	100.9	103.8	109.6	111.2	116.0	120.6	122.6
41	24.8	47.4	50.5	51.8	53.6	55.1	97.7	98.0	100.0	102.6	102.8
42	84.4	171.2	192.5	209.0	221.6	236.0	256.6	276.1	298.3	627.4	646.6
43	5.4	7.7	7.9	15.6	15.3	15.6	15.8	16.1	16.1	29.8	29.8
44	118.8	127.2	135.0	307.8	312.2	312.1	316.7	310.0	332.5	335.2	338.9
45	80.5	109.7	215.5	227.0	237.8	243.5	245.2	250.7	257.9	445.1	441.0
46	6.8	7.7	8.0	8.2	23.1	20.9	20.8	21.2	21.4	21.8	21.7
47	46.1	93.4	102.0	109.5	113.5	116.9	121.1	124.0	128.2	281.4	282.5
48	48.7	57.9	81.6	98.0	260.8	286.4	325.1	374.5	421.3	448.7	467.3
49	46.2	48.5	53.4	54.1	54.8	91.1	91.9	91.6	94.5	95.5	95.2
50	19.7	20.2	21.2	21.7	38.6	39.2	40.7	50.8	52.8	53.8	54.3
51	18.5	18.5	18.6	31.2	31.1	31.2	31.4	31.5	31.6	31.6	31.7
52	84.3	87.8	110.8	147.8	152.0	157.2	164.8	174.4	185.2	195.6	201.6

TABLE E-13

Assessed Value of Vacant Land

(million dollars)

CASE-N	VA72	VA73	VA74	VA75	VA76	VA77	VA78	VA79	VA80	VA81	VA82
1	0.4	0.4	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8
2	5.0	11.0	9.9	16.8	12.7	11.5	11.7	13.4	13.2	13.3	13.0
3	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5
4	0.4	0.5	0.4	0.4	0.4	0.9	0.9	1.0	0.9	0.9	0.9
5	15.8	15.0	14.8	17.0	31.4	29.8	35.3	47.9	49.8	50.4	51.9
6	4.7	4.7	4.7	4.7	9.0	8.6	8.5	8.5	8.2	8.2	8.1
7	1.9	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.5
8	5.6	5.7	6.4	26.1	25.6	24.7	24.9	24.6	25.2	25.4	27.6
9	8.9	9.2	10.0	26.9	21.9	20.5	20.4	19.7	51.5	53.0	52.0
10	2.9	2.8	2.9	2.9	3.0	2.9	3.0	3.0	3.0	2.9	2.9
11	5.2	5.2	5.1	5.4	12.0	11.8	12.0	12.2	12.0	12.5	11.9
12	1.1	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0
13	2.4	2.5	2.4	2.5	2.6	2.5	2.5	2.5	2.5	2.5	2.4
14	2.6	8.3	7.9	8.8	9.4	7.8	10.8	10.8	10.2	9.7	9.8
15	23.6	17.7	20.0	22.0	18.5	17.7	17.3	21.1	44.1	38.4	18.8
16	10.6	10.6	10.6	10.8	10.9	32.4	30.2	27.9	25.7	22.8	22.2
17	0.9	0.7	0.6	0.6	0.5	0.5	0.5	0.6	0.4	0.3	0.8
18	0.4	0.6	0.4	0.4	0.4	0.4	0.3	0.5	0.4	0.4	0.5
19	0.7	0.9	0.9	2.6	2.4	2.1	2.2	1.9	1.9	2.1	1.9
20	4.5	4.2	19.5	18.1	16.7	14.3	24.9	22.0	20.6	20.2	20.8
21	1.5	3.6	4.9	5.9	5.5	6.7	8.4	9.0	9.2	8.7	7.8
22	2.5	2.6	9.0	8.5	8.0	7.7	11.2	11.8	11.8	10.8	9.8
23	0.9	1.0	1.0	1.7	1.6	1.5	1.5	1.4	1.4	1.5	2.0
24	1.3	1.2	9.1	7.3	7.6	9.0	11.2	11.7	9.1	9.4	8.5
25	0.2	0.3	0.9	0.8	1.5	1.4	1.4	1.5	1.4	1.4	1.4
26	9.5	9.7	8.6	17.3	18.4	17.5	17.5	16.8	17.5	14.1	10.8
27	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.5	0.5
28	1.8	1.5	1.6	1.5	1.5	4.8	4.9	4.8	4.5	4.4	4.0
29	0.6	0.6	0.6	0.5	5.0	4.9	5.1	5.0	5.1	4.5	4.3
30	0.4	0.8	0.8	0.8	0.8	0.7	2.5	2.4	2.4	2.4	2.4
31	3.4	3.7	3.4	3.5	3.5	3.4	3.7	12.2	11.1	9.7	9.0
32	5.9	6.8	7.0	28.7	34.7	34.8	34.6	33.8	31.9	31.2	31.2
33	1.6	1.7	1.7	10.4	9.5	9.5	9.3	9.4	9.5	9.6	9.2
34	1.9	9.0	9.1	9.3	9.5	9.3	19.8	21.4	22.2	20.8	21.7
35	0.1	0.2	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1
36	3.0	3.3	3.4	3.8	6.2	6.3	6.5	6.6	6.9	7.0	17.4
37	12.6	12.7	18.9	22.6	21.3	21.8	21.3	22.2	21.5	21.6	20.3
38	2.6	2.8	3.0	3.1	22.4	17.0	15.8	15.8	15.4	15.0	14.6
39	2.5	2.4	2.4	22.0	21.1	22.0	21.3	21.7	20.5	19.1	18.5
40	4.9	13.7	16.1	39.4	33.7	32.8	32.1	28.7	28.6	26.9	25.9
41	2.2	6.6	6.2	5.6	5.3	5.1	9.2	9.1	8.6	8.6	8.1
42	16.1	36.5	36.5	35.1	31.7	33.4	31.8	31.2	30.1	60.2	54.0
43	1.4	2.9	2.9	7.3	6.7	6.7	6.5	6.3	6.2	9.0	8.8
44	20.7	20.4	20.2	60.0	59.9	56.4	55.2	52.0	51.5	49.5	45.1
45	18.3	22.8	58.6	58.1	58.2	58.0	55.7	52.3	51.7	69.9	68.6
46	0.3	0.2	0.2	0.2	1.5	0.9	0.7	0.7	0.7	0.6	0.6
47	7.4	21.6	19.8	16.5	16.1	16.1	15.8	15.7	15.8	37.3	36.3
48	9.2	8.6	9.4	9.7	47.9	44.2	43.9	46.8	45.6	41.9	39.9
49	8.7	8.6	8.5	8.0	7.9	14.4	14.6	14.9	14.4	14.1	13.9
50	0.5	2.0	2.0	2.0	3.5	3.4	3.3	4.7	4.9	4.9	4.9
51	0.6	0.6	0.6	1.6	1.4	1.3	1.4	1.5	1.5	1.4	1.4
52	22.9	22.8	60.8	55.0	50.7	48.9	47.3	46.1	39.1	38.8	37.5

TABLE E-1.

Total Tax Levy

(thousand dollars)

CASE-N	TL72	TL73	TL74	TL75	TL76	TL77	TL78	TL79	TL80	TL81	TL82
1	723.	977.	944.	1053.	1199.	1144.	1156.	1272.	1163.	1262.	1586.
2	1281.	1860.	1662.	2025.	2280.	2113.	1999.	1996.	1849.	2144.	2408.
3	59.	63.	65.	76.	76.	74.	74.	71.	101.	116.	139.
4	1043.	1081.	1158.	1276.	1412.	1229.	1290.	1294.	1375.	1533.	1771.
5	2831.	3116.	3526.	4208.	5391.	5677.	5719.	5716.	6757.	7681.	8407.
6	230.	239.	319.	419.	524.	431.	437.	458.	491.	582.	607.
7	366.	434.	511.	711.	671.	621.	682.	704.	648.	778.	857.
8	2393.	2518.	2735.	3000.	3674.	3662.	3686.	3967.	4573.	5568.	7841.
9	2523.	2692.	2966.	3763.	4691.	3852.	3191.	3431.	3891.	6140.	7072.
10	2727.	3055.	3360.	3626.	4022.	3575.	3881.	4165.	4394.	4913.	5039.
11	1025.	1196.	1131.	1327.	1371.	1473.	1533.	1805.	2037.	2384.	2276.
12	146.	171.	198.	221.	271.	266.	282.	308.	340.	429.	557.
13	211.	241.	259.	352.	365.	316.	307.	376.	327.	454.	454.
14	335.	430.	483.	499.	625.	648.	744.	806.	957.	960.	1087.
15	3814.	4407.	5436.	7028.	8120.	7817.	7956.	8338.	9332.	10908.	12153.
16	3191.	3943.	4801.	5833.	6882.	6355.	6951.	2253.	8839.	10379.	11353.
17	1706.	1840.	1091.	2105.	2312.	2067.	2053.	7342.	2420.	2636.	2856.
18	71.	89.	88.	176.	222.	159.	175.	225.	260.	296.	376.
19	356.	349.	332.	475.	520.	533.	620.	639.	843.	779.	881.
20	2212.	2693.	277.	4165.	5206.	5343.	5747.	6198.	6804.	7300.	7959.
21	355.	459.	523.	713.	871.	862.	929.	1537.	1790.	2201.	2423.
22	1196.	1365.	1456.	1848.	2456.	2507.	2535.	2682.	3085.	3664.	3584.
23	709.	771.	759.	842.	1009.	944.	987.	1029.	1092.	1237.	1415.
24	527.	727.	777.	1039.	1257.	1111.	1287.	1942.	2425.	2848.	3196.
25	295.	307.	336.	397.	485.	373.	390.	417.	455.	486.	511.
26	408.	463.	498.	455.	621.	556.	586.	694.	779.	754.	866.
27	192.	226.	265.	260.	323.	279.	279.	359.	420.	463.	459.
28	1654.	1758.	1897.	2155.	2484.	2309.	2511.	2607.	2867.	3214.	3618.
29	1163.	1095.	1114.	1230.	1351.	1399.	1452.	1545.	2013.	2494.	2652.
30	235.	214.	232.	318.	424.	414.	386.	405.	468.	531.	604.
31	1140.	1195.	1266.	1617.	1914.	1852.	2157.	2503.	3302.	3892.	4501.
32	3313.	3702.	4036.	4584.	5558.	5689.	5859.	6363.	7010.	7942.	8626.
33	463.	547.	645.	765.	918.	908.	934.	1030.	1236.	1561.	1797.
34	300.	353.	436.	485.	619.	646.	729.	923.	1134.	1343.	1624.
35	367.	368.	316.	358.	304.	342.	376.	387.	495.	446.	536.
36	757.	775.	782.	1047.	1164.	927.	998.	983.	1353.	1471.	1532.
37	12944.	14828.	14238.	17091.	16721.	16552.	17440.	18313.	19685.	21299.	23258.
38	1971.	1974.	1837.	2116.	2910.	3174.	2980.	3223.	3903.	4530.	4737.
39	3413.	3558.	3691.	3793.	4374.	4606.	4908.	6165.	6537.	7020.	7611.
40	516.	770.	1394.	2388.	2824.	2586.	2763.	2772.	3457.	4535.	4570.
41	1264.	1533.	1681.	1946.	2100.	2195.	2502.	2737.	2896.	3221.	3467.
42	3603.	4331.	5162.	6371.	6783.	7114.	7711.	8443.	9523.	11453.	13068.
43	269.	280.	306.	325.	513.	503.	504.	513.	651.	667.	740.
44	6545.	6990.	7144.	7976.	9067.	8625.	8866.	8885.	10489.	11811.	12781.
45	1648.	2246.	2608.	4072.	4215.	3613.	3794.	3867.	4108.	9375.	8779.
46	386.	412.	419.	523.	766.	695.	709.	716.	728.	770.	849.
47	1260.	1621.	2541.	3198.	3407.	3487.	3792.	4205.	5440.	5884.	7004.
48	1684.	1942.	2439.	2944.	4036.	5119.	5140.	7440.	8109.	9969.	11932.
49	912.	1217.	1115.	1355.	1653.	1844.	2163.	2089.	2606.	3022.	3127.
50	642.	620.	654.	803.	962.	906.	928.	936.	1177.	1200.	1370.
51	636.	651.	708.	748.	889.	879.	946.	1005.	1040.	1119.	1117.
52	1933.	2149.	2341.	2811.	3349.	3279.	3550.	3858.	4688.	5458.	6307.

APPENDIX F

Glossary of Municipal Finance Terms

Actual Tax Rate: the tax rate, expressed in dollars per 100 dollars of assessed value, which is applied to all taxable property to determine each property's tax bill. It is derived by dividing the total tax levy (including local purpose, school district, and county taxes) by the assessed valuation of all taxable property in each municipality.

Assessed Valuation: the proportional value of property as determined by the municipal tax assessor for taxing purposes.

Average Residential Property Tax Bill: the mean amount of property tax paid by residential property owners. It is calculated by multiplying the total assessed valuation of residential property by the actual tax rate, and dividing by the number of residential parcels.

County Tax Levy: the amount of taxes levied in support of the county budget. Each municipality's share of county taxes is based on its adjusted equalized value of taxable property.

Equalization Ratio: the ratio of assessed to true value of real property. It is based on the actual ratio of assessed value to sales price of properties sold in the two most recent sampling periods (sampling periods run from July 1 to June 30).

Equalized Tax Rate: the equalized tax rate is the tax rate which would apply if the property taxed were assessed at true value. It is computed by multiplying the actual tax rate by the equalization ratio.

Local Purpose Tax Levy: the amount of taxes levied in support of the municipal budget. It is determined by subtracting anticipated revenues (other than property taxes) from the total appropriations for municipal services and debt service.

Qualified Farmland: farmland which is assessed at its value for agricultural purposes only, rather than at market value, under the Farmland Assessment Act of 1964.

Ratable: a taxable parcel of real property.

Reassessment: an important change in assessment practice, other than a revaluation, which results in a significant difference in aggregate assessed value, and which alters the assessed value of a large number of properties. A reassessment program is carried out by the municipal assessor.

Reserve for Uncollected Taxes: an appropriation in the municipal budget which is designed to compensate for expected losses of revenue due to tax delinquency or tax abatements and cancellations. It is computed by multiplying the current tax levy by the percentage of the previous year's levy which was uncollected.

Revaluation: the mass reappraisal of all real property within a taxing district for the purpose of spreading the tax burden equitably among property owners. The revaluation is carried out by an outside professional appraisal firm in contract with the municipality.

School and County Taxes: an expenditure category which represents the amount paid by the municipality to the county, school districts, and special districts for the municipal share of these taxes.

Surplus: the current fund balance as calculated by subtracting cash liabilities and reserves for receivables from total cash and other assests.

True Value of Real Property: the market value of real property, calculated by dividing the assessed value by the equalization ratio. The true, or equalized, value of property is used as the basis on which state school aid is distributed.

For further information, contact the Pinelands Commission,
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