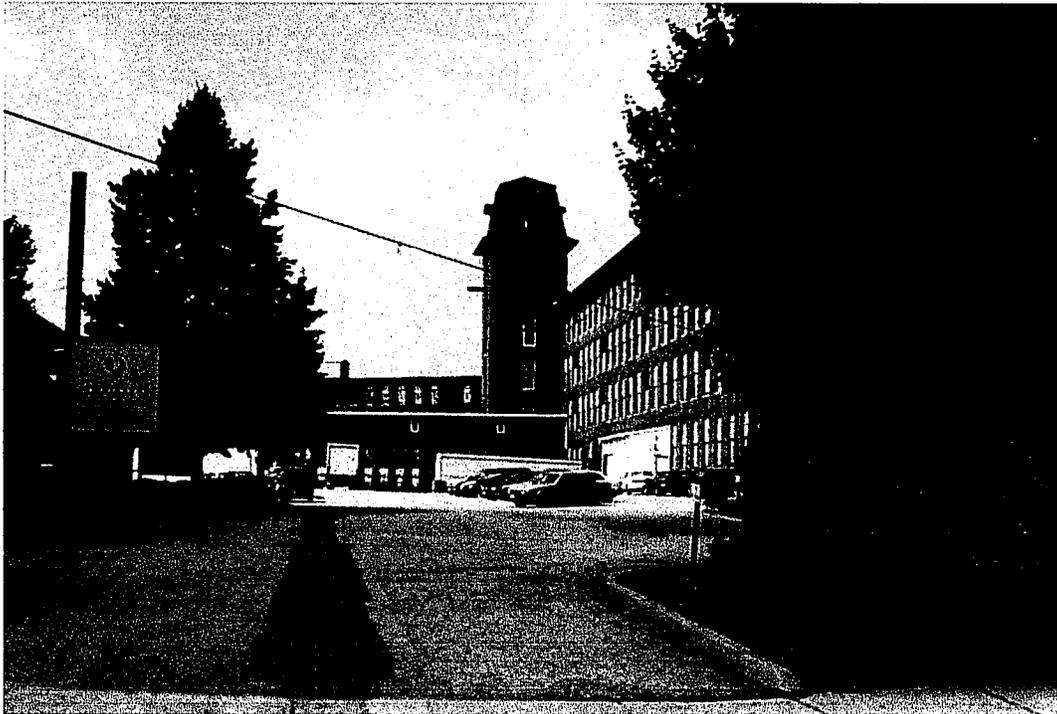


STATE GUIDE PLAN ELEMENT 212
REPORT NUMBER 100

INDUSTRIAL LAND USE PLAN

August 2000
As revised August 2001



STATEWIDE PLANNING PROGRAM
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ABSTRACT

TITLE: *Industrial Land Use Plan*

SUBJECT: State-level goals and policies for industrial land use and development for Rhode Island

DATE: August, 2000

AGENCY: Rhode Island Statewide Planning Program

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ABSTRACT: This plan discusses various trends in industrial land use from the 1970s to the 1990s and their implications for long-range goals and policies. It updates the original *Industrial Land Use Plan*, published in 1990, in several ways. An inventory of industrial-zoned land that appeared in that plan is made current to 1999, and population and employment, along with their impacts on industrial land use, are projected to the year 2020. The plan organizes Rhode Island municipalities into eight discrete regions called substate growth areas, and presents detailed data on industrial sites collected with the assistance of local officials. Programs proposed in the 1990 plan are evaluated, including those that have already been established and those that have yet to be tried. Policies and recommendations address the need to improve the process of assembling quality industrial sites in light of the latest inventory and projected need.

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***Industrial Land Use Plan*
REVISIONS PURSUANT TO SHOWCASE STATE INITIATIVE**

The State of Rhode Island has been involved, with several private sector partners, in the Showcase State Initiative for Natural Disaster Resistance and Resilience. The purpose of the Initiative is to help Rhode Island communities reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters. Part of this effort is to prevent, to the greatest extent possible, natural hazard events from escalating into disasters. These natural hazard events include hurricanes, floods, and ice storms.

The *Industrial Land Use Plan*, an element of the State Guide Plan, has been revised to include language pertaining to the mitigation of natural hazard events, including an explanation of hazard mitigation and why it is important when making economic development or land use decisions. These policies are intended to help implement the principles of the Showcase State Initiative. The State Planning Council formally adopted these revisions on August 9, 2001.

Please substitute the attached pages for the corresponding pages in this element. The revisions may also be downloaded from the Statewide Planning Program website, www.planning.state.ri.us.

PREFACE

This revision of State Guide Plan Element 212, the *Industrial Land Use Plan*, has the same overarching goal as its predecessor: *to keep enough land in Rhode Island in industrial use to sustain the state's economy*. As the "New Economy" takes root and grows, we remain committed to Element 212's principal purpose, encouraging prudent public and private investment programs to provide the land and facilities necessary to create the conditions that foster economic growth.

In the *Industrial Land Use Plan* published in 1990, the staff of the Statewide Planning Program observed that "the availability of 'good' industrial land is being threatened by competition from the residential housing market, undercapitalization, and the lack of specific direction from the public sector. These circumstances must be addressed before any policies to reserve land for industry can be implemented, or even proposed." Progress has been made in this regard, through the comprehensive planning process and its link to the State Guide Plan, the "brownfields" rehabilitation program launched by the R.I. Department of Environmental Management, and the mill building reuse initiative undertaken by the Enterprise Zone Council and the R.I. Economic Development Corporation. These programs are discussed in this plan.

As in 1990, Statewide Planning enlisted the help of planners in the 39 cities and towns of Rhode Island to compile and revise local information and maps of industrial parcels. A big improvement was the use of Maptitude®, a mapping program developed specifically for the personal computer. Revisions to maps of industrial-zoned land were incorporated into the plan with far greater speed and accuracy than ever before.

Many staff members responsible for the former plan were involved in this one. This amendment was prepared by Mr. Bruce F. Vild, Supervising Planner, Mr. Everett Carvalho, Senior Planner, and Ms. Joyce Karger, Senior Planner, of the Economic Development Planning Section of Statewide Planning. They performed this task under the supervision of Mr. John P. O'Brien, Chief of Statewide Planning. Mr. Carvalho prepared maps and other graphics, and was responsible for assembling, revising, and maintaining the Industrial Site Inventory. Mr. John D. Stachelhaus, Rhode Island Geographic Information System Coordinator, assisted in identifying active sites on the state CERCLIS (Comprehensive Environmental Recovery, Compensation, and Liability Information System) list.

Very much appreciated also is the patient assistance of local planners in revising the data we had compiled about industrial sites. The staff would particularly like to thank Burrillville's Town Planner, Ms. Katia Balassiano, for updating information on water, sewer, and transportation infrastructure. We also received valuable help from Mr. Paul Zwolenski, Town Planner from North Smithfield; Mr. Charles Gricus, Planning Director for the Town of Coventry; Ms. Kathryn Maxwell, Hopkinton Town Planner; Ms. Marilyn F. Cohen, Town Planner for North Kingstown; Mr. Clarkson A. Collins, Community Development Director for the Town of Narragansett; Mr. Robert W. Gilstein, Portsmouth Town Planner; Mr. Joseph Lombardo, Town Planner for

Richmond; Ms. Rosemary Eva, Chair of the Tiverton Planning Board; Mr. Raymond Goff, West Greenwich Town Planner; Ms. Nancy Hess, Town Planner for Charlestown; Mr. Anthony W. Lachowicz, Director of Planning for South Kingstown; Mr. Kevin Flynn, Planning Director for Cranston; Ms. Kathleen Crawley, Lincoln Research Analyst; and Mr. L. Vincent Murray and Mr. Lee Whitaker of the Town of East Greenwich, all of whom updated our files on local industrial sites.

Also offering assistance were Ms. Katherine Trapani of the R.I. Economic Development Corporation's Quonset Division planning staff, and Mr. Richard E. Greenwood, Project Review Coordinator of the state Historical Preservation and Heritage Commission.

The cover photograph is of the Paramount Cards plant in Pawtucket, R.I., an example of an active mill building. The shot was taken by Niverio Carvalho, an intern at the Statewide Planning Program during the summer of 2000.

This plan was written and prepared for publication under Task 2101 as described in the work program of the Statewide Planning Program for Fiscal Years 1998-2000. It was supported by state funds and by grants from the Economic Development Administration of the U.S. Department of Commerce, under Section 203(a) of the Public Works and Economic Development Act, as amended.

Report Organization

The *Industrial Land Use Plan* is divided into parts and chapters each with a number designation. For example, Part Two, Chapter Three is headed **02-03**. Each part is paginated separately. Page numbers appear at the bottom of each page, the part number first, then a decimal point, and then the page number. Thus the second page of Part Two is numbered **2.2**.

Tables and figures follow a convention established by Statewide Planning whereby each is keyed to the State Guide Plan by a hyphenated numbering system. A three-digit number preceding the hyphen corresponds to one of the following categories of the Guide Plan:

| | |
|------------|---|
| 000 | State Guide Plan Overview |
| 100 | Resources Management and Utilization |
| 200 | Economic Development |
| 300 | Environmental Programs |
| 400 | Human Services |
| 500 | (Reserved) |
| 600 | Transportation Systems |
| 700 | Utility Systems |
| 800 | (Reserved) |
| 900 | (Reserved) |

The *Industrial Land Use Plan* falls within the Economic Development category and is numbered **212**. The numbering system for each table and figure therefore

designates, for example, the second table in Part Two as **Table 212-02(2)**. The number **212** also appears before each part number (e.g., **212-01, 212-02**).

This report incorporates a system of citing sources that should relieve some of the congestion common to footnotes in this type of document. Numbers enclosed by double parentheses indicates citations in the text. The authors credit a direct quotation by using the reference number from the Bibliography, followed by the number of the page on which the quotation is found in the reference. Thus, quoted or paraphrased material from page 22 of the ninth reference listed in the Bibliography will be cited **((9:22))**. Narrative that relies on significant portions of one or more references, and footnotes that clarify the text, will be identified by reference number only (e.g., **((9))**).

Adoption

This report was adopted by the State Planning Council as Element 212 of the State Guide Plan on August 10, 2000. It replaced the older version of the *Industrial Land Use Plan*, also designated Element 212, on that date.

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212-01: INTRODUCTION

01-01: The Need for an Industrial Land Use Plan

Will Rhode Island, the smallest state in the union, have enough land to support itself in the twenty-first century?

The Statewide Planning Program first posed this question in the *Industrial Land Use Plan* in 1990, and it remains relevant today. Rhode Island's economic strategy is calling for the provision of tens of thousands of new jobs to maintain levels of employment comparable to regional and national levels; the "New Economy," composed of leading edge manufacturing and service industries, is touted as a paradigm, and trade associations are stirring their members to improve worker skills and modernize. To maintain the momentum, Rhode Island must have suitable sites for development, or refurbishing and redevelopment as the case might be — and this will always be a critical concern in a state with limited land resources.

Typically speaking, a site properly suited for industry has good transportation access, the availability of utilities, and limited physiographic constraints to development. For labor-intensive or specialized industries, access to a qualified workforce is also important. A cursory look at an inventory of the state's industrial-zoned land might give the impression that sufficient acreage exists for the future: in 1997, Statewide Planning estimated that almost half of our industrial-zoned land (some 47 percent) was vacant. However, we need to take a closer look to see if that acreage truly is suitable and able to meet industrial requirements.

Recent Statewide Planning forecasts based on Census data, employment trends, and in-house regression analyses indicated that, in the year 2020, the state's economy will support 375,251 private-sector jobs covered by unemployment insurance and likely to be located on industrial-zoned land. ((1)) This represents an increase of more than 85,000 jobs from the 1995 level. Most of this growth is expected to be in the service sector. Rhode Island demographics — to wit, the tendency of the median age to creep upward — is expected to favor health service growth, while traditional manufacturing such as jewelry and textiles will shrink.

Service industries may or may not be sited on industrial land. Health services is an example. Health service providers may be located in special "institutional" districts, like hospitals, or in areas zoned mixed residential or commercial. On the other hand, some of the state's older industrial properties, particularly those with the imposing mill buildings found throughout Rhode Island, might prove ideal for health services because of their proximity to population centers.

Other service industries may also be drawn to mill buildings for esthetic reasons, low rents, urban locations, or tax incentives to refurbish and reuse those

facilities. Reconfigured or specialized manufacturing industries might locate in different areas of the same building. Such a mix of services and manufacturers often result in synergies that were difficult in the "old" economy, and should be encouraged in the "new."

So, although manufacturing employment is declining relative to the service sector, it is important to assess, assemble, and reserve industrial sites now for the next century. This must be done prudently, as there will be pressures in the opposite direction to conserve open space and agricultural land, sparing them — Rhode Island's "greenfields" — from development into industrial parks. Industrial land will nonetheless remain very significant to our economic future. How much industrial land will we need in, say, 2020?

Planners can estimate the amount of industrial land required to support job growth by considering *employment densities*, the number of employees that typically occupy a unit of space (here, an acre) in a given industry. Different industries have different employment densities.

The 1975 *State Land Use Policies and Plan* derived a cross-industry average density of 15 employees per acre. Using this number, one can get a "quick and dirty" estimate of future land needs. For example, of the 375,251 jobs expected in 2020, Statewide Planning anticipates that 260,151 will be located on industrial-zoned land (Table 212-02(01), page 2.6). This means that 17,343 acres of industrial land will be needed (because $260,151 \text{ persons} \div 15 \text{ persons/acre} = 17,343 \text{ acres}$). That may be a good starting point for discussion, with the caveat that more refined and site-specific data may alter that number significantly.

Once planners are comfortable with their acreage estimates, can they be confident that there will be sufficient industrial land to support economic expansion? There are several basic reasons for developing a long-range state industrial land use plan to address that question:

1. *Industrial zoning does not necessarily mean industrial use.* Nationwide expansion of the economy and low interest rates are having an effect on Rhode Island, cutting into our reserve of prime industrial sites and placing development pressures on that reserve from less demanding uses. Vacant mill buildings have been converted to upscale residences or housing for the elderly, and even some industrial-zoned land in the suburbs has been subdivided into house lots or rezoned for commercial use (small shopping plazas, for example).
2. *More localized projections are needed.* Estimates of the industrial acreage needed statewide to support long-term economic development may not reflect *true* acreage requirements due to local ordinances or site limitations based on parcel size or topography. Additional acreage needed for future expansion may be underemphasized and neglected in calculations. Buffer zone requirements and environmental constraints may not be addressed.

3. *Forecasts are only educated guesses.* The reserve of industrial sites must be well above the bottom line of an employment forecast — simply because of the nature of a forecast. A forecast is the best estimate that can be made at the time, but it is *only* an estimate, and it may be proven wrong later. In preparing this report we had to revise many figures that went into calculations in the 1990 *Industrial Land Use Plan*. If subsequent versions of this plan are written we have no doubt those figures will be revised again to reflect the current reality. Each time, as in 1990, those numbers will be based on the best information available, but again it will be the best available *at that time*.
4. *The development environment is very competitive.* The demand for land is driven by the private sector. Companies require sites with special characteristics, locations, and costs. A reserve of land is needed to ensure that a variety of options are available to meet those requirements. Otherwise the companies will locate elsewhere, and any benefit to the state and the local community from their presence and growth will be lost.

01-02: Approach to Long-range Industrial Land Use Planning

This plan begins by examining existing state plans that have an impact on industrial land use, such as *Land Use 2010* (State Guide Plan Element 121, 1989) and the *Economic Development Strategy* (State Guide Plan Element 211, 1986). The staff also reviewed the R.I. Economic Policy Council's 1997 report, *Meeting the Challenges of the New Economy*, to discern trends in industry expansion and employment. Parts Two and Three of this plan draw extensively on those documents, as well as on contemporary economic development programs in other states, to propose comprehensive goals and policies.

This is followed by an in-depth analysis of the current status of Rhode Island's industrial land resources. Information on industrial sites is presented for each municipality, but in the context of the substate areas developed for analytical purposes in the first *Industrial Land Use Plan*. This report refers to them as "Substate Growth Areas," the growth being in terms of both population and employment. Our analysis is based on an Industrial Site Inventory that was assembled by Statewide Planning with the assistance of the 39 cities and towns and the R.I. Economic Development Corporation (EDC).

Projections of industrial land use in 2020 are presented in Part Five. They are constrained by the limits of current zoning designations and do not propose any areas for industrial development that are not currently zoned for such use. In other words, what is portrayed in the 2020 industrial land use projections is the industrial development *potential* of the state's existing inventory of industrial sites. Rhode Island's long-term capacity to support economic expansion cannot be assessed without a systemic approach that explores this potential and improves the possibilities.

The implementation mechanisms proposed in Part Six attempt to resolve the ultimate question of capacity by setting forth a series of programs that are both responsive to the issues and flexible enough to adjust to periods of financial austerity. These implementation mechanisms focus on methods that can be employed by both the private and public sectors. In some instances they review and expand upon existing and innovative programs, while in others they recommend and re-emphasize proven techniques for planning and resource management.

01-03: What this Plan Does *Not* Do

Part Four was intended to examine, in some detail, both the quality and the quantity of Rhode Island's industrial acreage. It was *not* intended, however, to prioritize or even to recommend the development of sites that happen to have high development potential.

The Inventory was derived from descriptions of industrial sites given by the respective municipalities or the EDC. It is merely an assessment of the infrastructure and physiographic characteristics to be considered in the process of "matching the plant to the land," as we advocate throughout the plan. The guiding principle is that sites should be conserved to ensure their wisest and most appropriate use. This can mean locating lighter industrial uses on industrial land with less than the full suite of utility services whenever they can be reasonably accommodated.

There is, therefore, no policy or schedule in the plan to upgrade all medium- or low-potential sites by infrastructure improvement or site preparation. In some instances, that would encourage unfavorable patterns of land use ("sprawl") and be contrary to other elements of the State Guide Plan.

Putting together the Industrial Site Inventory and the Part Four analysis meant dealing with a moving target. The acreage data presented in this plan are only a snapshot, though we believe this was a reasonable approach considering the level and purpose of our analysis. We needed to start and stop somewhere to assemble a useful database. We chose the period 1997-1999, which gave us time to construct the Inventory and to go back to local officials for their comments and corrections. Certainly not all, but some of our data may already be out of date. This plan cannot be claimed to be as current or as accurate as the latest information from those who constantly monitor properties, such as commercial and industrial real estate agents. Anyone contemplating development on an industrial site needs to contact them and the local officials for that information.

212-02: GOALS FOR INDUSTRIAL LAND USE

02-01: Introduction

From Rhode Island's *Economic Development Strategy* ((2)) come the following goals, underscoring the need to reserve sufficient land of adequate quality for industrial expansion:

- *Diversify the industrial base.* "Capitalize on the wide range of the state's resources to build an industrial base..."
- *Promote "urban industry."* "Relate industrial development to overall land use...and general industrial development in accord with sound land use policy."
- *Provide optimal infrastructure.* "Transportation, utilities, goods, water, energy, and waste processing..." ((2:3.7-3.9))

With the state's limited land resources, it is becoming increasingly difficult to find "ideal" parcels of land — with no constraints to development, and having a full suite of amenities, including water, sewer, gas, and rail access — for industrial expansion. Some industrial parks have reached capacity, or cater to specialized firms and exclude others. Older parcels may have the amenities, but some have a questionable environmental legacy or an obsolete configuration. This is not to say that Rhode Island lacks developable sites, but it does suggest that we need to re-define what is meant by the "ideal" site.

The planner's desire is to match the plant with the land, that is, to determine what the plant requires of the land to operate efficiently, and to see whether a company is willing to forgo an amenity absent from a site to take advantage of other favorable aspects. The definition of "ideal" thus becomes relative. A company may be willing to engineer its own wastewater treatment, for example, to locate a plant in an unsewered area that has good highway access or a cheap and convenient energy supply.

It is also the planner's desire to maintain Rhode Island's quality of life, which itself is a magnet for economic development. Polls of executives responsible for corporate location decisions frequently cite quality of life as a determining factor. Our state's beaches, quaint villages, sailing activities and other recreational opportunities all bespeak a high quality of life that has been protected by land use policies. While these features are certainly not unique to Rhode Island, what sets us apart from the rest of the country is that they are all accessible within a small geographic area. Tourism boosters are not bashful about promoting this aspect of the state. But a balance must be struck between development and potentially competing uses. Growth and conservation are *both* essential to the Rhode Island economy.

The Statewide Planning Program has attempted to strike this balance in *Land Use 2010: State Land Use Policies and Plan* and the *Economic Development Policies and Plan* (which has superseded the *Economic Development Strategy*).

02-02: Goals of *Land Use 2010*

The overall goal of *Land Use 2010* is taken directly from a 1978 Act of the Rhode Island General Assembly, "State Environmental Rights" (R.I.G.L. 10-20):

...[T]o create and maintain within the State of Rhode Island conditions under which man [sic] and nature can exist in productive harmony in order that present and future generations may enjoy clean air and water, productive land, and other natural resources with which this state has been endowed.

As *Land Use 2010* observes, "Very similar statements are contained in numerous legislative acts and in the Constitution of the State of Rhode Island and Providence Plantations... It is considered a consensus goal to which the people of Rhode Island have been and remain committed." ((3:2.1)) Indeed, the goal is an elegant restatement of the need to preserve the state's quality of life, while taking advantage of its "productive land."

Land Use 2010 advances other goals specific to population growth, land use, and environmental protection:

- Relate state land use policies to anticipated population growth in a manner that will maintain or enhance the distinction between urban and rural, and inland and shore environments.
- Facilitate land use and development that will sustain and promote economic growth consistent with the state's characteristics and environmental objectives.
- Guide the development of land and water to produce a healthful, efficient, and esthetically pleasing environment.

Land Use 2010 frames these goals and captures the essence of the land preservation problem by recognizing the need for "attractive industrial acreage" that is protected from being "gradually lost to residential and other purposes." At the same time, the plan cautions against having land that would be more appropriate for agriculture, open space, or recreation slip into an industrial or commercial use unsuitable for the location. The examples of prime farm soils and coastal areas are cited. ((3:2.3-2.4))

Land Use 2010 concludes that "[i]ndustrial and commercial development must occur in a manner consistent with regional resources and land uses in order to protect their own interests, and so that undesirable side effects will not outweigh the economic benefits for which they were sought." ((3:2.3-2.4))

02-03: The *Economic Development Policies and Plan*

The *Economic Development Policies and Plan (EDPP)* is more focused on the creation and sustenance of “wealth for the people of the state” than on land use, but its goals and policies are consistent with those of *Land Use 2010*. Both call for the revitalization of central cities, for example, and for industrial development in accord with sound land use policy. The *EDPP* responds to the “need for a clearly defined and specific state economic development goal for which policies and action programs can be formulated” ((2:3.12)), within the framework of the State Guide Plan, in similar fashion to the earlier *Economic Development Strategy*.

Upon examination of the policies proposed in the *EDPP* one notices obvious connections with *Land Use 2010*. Consider first the goal of the *EDPP*, and then the objectives that form umbrellas for each set of policies:

- *Goal*: Foster and maintain a vigorous economy able to provide an adequate number and variety of activities that generate wealth for the people of the state. ((102:3.1))
- *Objective A, Employment*: Provide at least 34,200 new employment opportunities for Rhode Island residents, achieving and maintaining full employment and reducing underemployment. ((102:3.2))
- *Objective B, Facilities*: Work with economic development practitioners to encourage sustainable industrial and commercial development that advances the long-term economic and environmental well-being of the state, and is consistent with...other applicable elements of the State Guide Plan. ((103:3.3))
- *Objective C, Climate*: Maintain a business environment conducive to the birth, sustenance, and growth of suitable industry and commerce. ((102:3.5))

Now consider some of the policies, first under Objective A, Employment:

- Promote and develop the use of public transit so as to eliminate spatial barriers to employment opportunities. Encourage development in densities high enough to facilitate the economic provision of mass transit.
- Encourage communities to plan for and to accommodate the socioeconomic impacts of industrial and commercial development, such by providing a variety of housing options to meet the needs of the local labor force. ((102:3.2))

Under Objective B, Facilities:

- Reclaim brownfields by environmental remediation and encourage use of the “built environment.”
- Conserve and enhance desirable existing industrial areas, office complexes, and concentrations of service activities so as to maximize the investment and utilization of existing infrastructure. New or expanded public sewer and water services and highways should be provided to industrial and commercial development only where such development is appropriate in terms of the natural constraints imposed by the land, air, and water in the immediate vicinity of such development...
- Encourage higher densities, mixed uses, careful design, transit- and pedestrian-friendly land use and development patterns, and location near existing hubs and corridors to avoid “sprawl.”
- Relate industrial and commercial development to overall land use by promoting the use of development controls and performance standards that mitigate conflicts with other land uses and activities.
- Encourage investment by the public and private sectors that will stabilize and improve housing and commerce in deteriorating urban areas.
- Contribute to the stabilization and redevelopment of central business districts through the provision of supporting services such as transportation access, parking, utilities, and police and fire protection, as well as the adaptive reuse of historic buildings...
- Select locations [for industrial and commercial development]... consistent with the general development patterns set forth in the state land use policies and plan element and with all other applicable elements or provisions of the State Guide Plan...[and] compatible with the scale, historic character, and other aspects of the surrounding community. ((102:3.3-3.4))

Finally, Objective C, Climate:

- Encourage reservation of prime industrial sites through protective regulation or acquisition, recognizing the importance of factors such as topography and soil characteristics, availability of water and sewer service, access to transportation facilities, proximity to water bodies, and availability of labor.
- Maintain public infrastructure, both structural (physical) and non-structural (social). Provide additional infrastructure when it is clearly demonstrated as necessary, and in a manner that will protect the long-term health of the state’s natural and fiscal resources. ((102: 3.5))

There are recurring themes in this list of policies: fitting the industrial activity to the land, rather than *vice versa*; reusing underutilized and perhaps deteriorating resources in the central cities; and providing new infrastructure, primarily public water and sewer service, where such amenities are absent, only if the improvements would “not promote wasteful use of resources.”

Amplifying *Land Use 2010, the Economic Development Policies and Plan* provides an excellent starting point for the *Industrial Land Use Plan*.

02-04: How Much Industrial Land Do We Need?

Planners base land use projections on workforce projections, employment densities, and the anticipated kind of industrial activity. Table 212-02(1) demonstrates one method of doing this.

First, Rhode Island’s private-sector industries were broken down into six groups: construction, manufacturing, transportation/communications/utilities, wholesale trade, finance/insurance/real estate (FIRE), and services. All these groups occupy industrial land, though in varying proportions. Some would be restricted to industrial zones, while others might be found in commercial or other zones as well.

Second, employment in each group was projected for the year 2020. This was based on employment figures for 1975, 1980, 1985, 1990, and 1995 that were subjected to a regression analysis to detect trends (increases or decreases) over a 15-year period. These trends were presumed to continue until 2020. The methodology is fully explained in Section 04-03-01 of this plan (p. 4.3).

Third, each group’s share of Rhode Island’s industrial-zoned land was entered into the table. Where “100” appears in this column, it was anticipated that all (100 percent) of the employment in that group would be sited on industrial land. Numbers less than 100 indicate that some or most of the employment was expected to be sited on industrial land, and the remainder in commercial or other zones. These proportions were based on the tendency of certain industries (such as business services) to locate in commercial or mixed residential areas as well as industrial zones.

Fourth, employment in industrial-zoned areas was calculated for each group by multiplying the workforce projection in the second column by the industrial land share in the third. This figure in turn was multiplied by the average employment density of each group (fifth column) to derive an estimate of each group’s required industrial acreage (column six).

This method brings more detail into land use projections than the use of a cross-industry employment density (see page 1.2). However, even though it examines industry groups individually, it still is dealing with *average* densities

and *average* land requirements within each group. Real-life situations with individual firms may deviate from the calculated "norm." On the other hand, the method is very useful for a broad, statewide approach.

Table 212-02(1) indicates that, in 2020, Rhode Island will need 13,607 acres of industrial land to site 260,151 private-sector employees. The cross-industry employment density on page 1.2 yielded an estimate of 17,343 acres. The discrepancy may be due to the updated employment estimates used in Table 212-02(1). In 1975, when the cross-industry average of 15 was determined, manufacturing accounted for most employment. Today, service industries of higher employment densities predominate. This change would move the cross-industry average upward, resulting in fewer acres needed to accommodate the total workforce.

In addition, factoring in employment density averages from each industry group corrects somewhat for wide deviations from a cross-industry average that are seen in some of the groups. Witness wholesale trade, for example, at six employees per acre, and FIRE, at 125 employees per acre. ((5))

Whether talking 13,607 acres or 17,343 acres, planners must eventually inquire as to the availability of on-site public water, sewers, electricity, gas, and rail access, and investigate constraints such as wetlands, unfavorable topography, or unmarketable size or configuration. The reality is that many acres will fall short of their ideal. Just as important, some "industrial" sites will be occupied by other uses.

**TABLE 212-02(1):
INDUSTRIAL ACREAGE PROJECTIONS: YEAR 2020**

| Industry | Employment 2020 | Industrial Land Share (%) | Employment in Industrial Areas | Employment Density (Per Acre) ¹ | Required Acreage |
|----------------|--------------------|------------------------------|--------------------------------------|--|---------------------|
| Construction | 21,576 | 100 | 21,576 | 5 | 4,315 |
| Manufacturing | 49,227 | 100 | 49,227 | 20 | 2,461 |
| Transportation | 12,526 | 100 | 12,526 | 10 | 1,253 |
| Communication | 3,013 | 75 | 2,260 | 40 | 57 |
| Utilities | 2,362 | 100 | 2,362 | 30 | 79 |
| Wholesale | 24,849 | 75 | 18,637 | 6 ² | 3,106 |
| FIRE | 34,556 | 50 | 17,278 | 125 ^{2,3} | 138 |
| Services | 227,142 | 60 | 136,285 | 62 ^{2,4} | 2,198 |
| TOTAL | 375,251 | | 260,151 | | 13,607 |

¹ Statewide Planning estimate unless otherwise indicated.

² From Gruen Gruen & Associates estimate. ((5))

³ Estimate for "office" workers. ((5))

⁴ Estimate for "industrial service" workers, as opposed to "commercial service" workers. ((5))

Will the state have 13,607 acres available to support industrial employment projections in 2020? Table 212-02(2) takes a look at what is available at present in light of projected needs for the next century. This table draws on state and local sources for the inventory of industrial land prepared as part of this *Industrial Land Use Plan*.

In 1999, there were 32,455 acres zoned for industry statewide. Accepting the 13,607-acre forecast, that would appear to offer a surplus of 21,480 industrial acres — a comfortable margin. It is incorrect to assume this for several reasons. First, not all industrial-zoned land is in industrial use. In 1999, 6,113 acres of industrial land were used for commercial or residential purposes. This left 26,342 acres to sustain present and future industrial activity. Second, among these acres, there were 15,224 that were vacant (undeveloped), but only 1,485 that had the infrastructure and physiographic attributes (favorable soils and topography) to be considered “prime.” Finally, industrial zoning at present does not automatically preclude non-industrial uses in the future, through rezoning. Rhode Island’s industrial acreage has not remained constant over the years. In 1988, the total was 35,186 acres.

Moreover, some prime sites that would ordinarily be considered leading candidates for future industrial development may be burdened by lingering environmental problems due to previous use. Wherever industrial properties are contaminated, or suspected of being contaminated, questions arise about responsibility for cleanup and liabilities being transferred from previous owners. Industrial-zoned sites that truly are construction-ready become few and far between.

**TABLE 212-02(2):
INDUSTRIAL USE vs. INDUSTRIAL ACREAGE**

| | |
|--|--------|
| Acreage zoned industrial, statewide ¹ | 32,455 |
| Industrial acreage in uses other than industrial ¹ | 6,113 |
| Industrial acreage remaining for industrial use ¹ | 26,342 |
| | |
| Projection of required industrial acreage in 2020 | 13,607 |
| Industrial acreage already committed to industrial use (1999) ¹ | 11,116 |
| Industrial acreage needed for expansion of industrial use in 2020 | 2,491 |
| | |
| Vacant (undeveloped) industrial acreage ¹ | 15,224 |
| Vacant (“prime”) industrial acreage, w/public water, sewer, no physiographic constraints ¹ | 1,485 |
| Apparent shortage of prime acreage for industrial use in 2020 ^{2,3} | 1,006 |

¹ Statewide Planning Program Industrial Land Inventory, 1997-99.

² Prime industrial land is presumed constant for the purposes of this exercise from 1999 to 2020.

³ Presumes all prime industrial land is construction-ready.

It will be noticed that the projection used in Table 212-02(2) for industrial acreage in 2020 is an increase of about 2,500 acres from what was actually in industrial use in 1999. Considering the trend of growth in industries of higher employment density (services) than existed previously (manufacturing), this suggests a significant expansion in the Rhode Island economy in the next 20 years. Rhode Islanders must be prepared for that expansion and how quickly it will occupy the prime industrial sites we have left. The table suggests there will be a shortage of prime land in 2020 amounting to 1,006 acres.

It is clear that Rhode Island's industrial sites must not be squandered and lost to non-industrial uses; that mixed-use zoning should be considered wherever possible to stretch the resource; that opportunities for more efficient utilization of existing sites should be exploited; and that extension of infrastructure to sites lacking public water or sewers to make them prime should remain on the agenda.

It is critical to remember that the 13,607 acres cited above are the minimum desired for the year 2020, based on our analysis. It is therefore practical to think of a "margin of safety" beyond this minimum to ensure that Rhode Island does indeed have this land available for industrial use in the future. The staff has kept its projections as conservative as possible, and there are limitations to regression analysis (see page 4.4).

Additionally, some of the vacant land listed as prime in Table 212-02(2) may not be practical to develop. There may be individual parcels that are too small or of too odd a shape to be attractive to industry even though those parcels are labeled prime because of the presence of infrastructure and the absence of slope, floodplain, or poorly drained soils. The figure in the table for prime industrial land is a *total*. It considers only the sum of the parts, not the parts themselves, and quantity, not quality.

It must also be remembered that our land use projections are based on average employment densities. Employment densities vary not only from industry group to industry group, but *within* an industry group. Actual densities may be lower than originally anticipated, requiring more space than expected.

Finally, our projections do not and cannot address what the future might hold regarding rezoning, "greenfields" vs. "brownfields" development, or requirements for open-space buffers within industrial developments. Nor does it account for employment projections derived from other sources that could differ significantly, not in the trends they portray but in numbers. ((7))

It is clear that *something must be added to our figures to give us the assurance that we will have sufficient industrial land for the future.* Some direction in this is provided by *Land Use 2010*, which recommends adding a reserve of "at least 8,000 acres" to the total of vacant prime industrial land and industrial land currently occupied, with the presumption that the latter will not be surrendered to non-industrial uses in the future.

More than 13,000 acres comprise the pool of vacant, non-prime industrial land that might be considered for upgrading with utilities in the future. However, it is not just a matter of extending infrastructure to make some sites construction-ready. Physiographic constraints exist on 11,032 of those vacant acres – requiring considerable site preparation, and suggesting difficulty in getting permits.

How, then, can Rhode Island planners ensure future access to high-quality industrial land, and where would it come from?

02-05: A Variety of Industrial Settings for the Future

When assessing the need for industrial space, some planners and developers prefer to use ranges of employment density rather than static, average values. Carl H. Buttke of the Institute of Transportation Engineers, for example, has used a “typical land-use density” for all manufacturing of 18.5 employees per acre ((8:28)). Harold Marks of the Transportation Research Board, on the other hand, divides manufacturing into categories, e.g., “highly automated industry” at five employees per acre, or “industrial tracts” at 20 to 100 employees per acre. ((9:112))

An approach similar to Marks’ is taken by Donald C. Lochmoeller and his co-authors in their *Industrial Development Handbook* ((10:168)), where they categorize 21 separate manufacturing concerns in a hypothetical community by employment density (labor intensity): *intensive*, at 26 employees per acre; *intermediate extensive*, at 12 per acre; and *extensive*, at six per acre. Lochmoeller’s table, which lists the manufacturing types within each of these classes, is reproduced as Table 212-02(3).

Because employment densities vary, there is room for flexibility in matching industrial concerns to industrial settings. For one company, an urban setting might be best; an old mill might be just the thing to renovate, given the number of employees and the nature of the work. For another company in basically the same field but using different technology, that same building might be obsolete. That firm might want to look elsewhere. A good industrial land use plan should set forth policies that accommodate both companies.

02-05-01: Industrial Parks

A very significant addition to the planner’s repertoire is the industrial, research, office, or business park. These parks are especially appealing to non-energy-intensive, relatively non-polluting, and high-growth industries, for esthetic reasons and efficient layout. In the case of insurance or business services, proximity to prospective clients, or even the prestige attached to the location, may be a critical siting criterion. ((9)) The possibility also exists for real benefits from commingling different subsidiaries of the same company — administration with research and development, for example.

Industrial parks can accommodate firms with different employment densities. The Howard Industrial Park in Cranston, for example, has among its

**TABLE 212-02(3):
"LABOR INTENSITY" OF SELECTED INDUSTRIES**

| Industry Use Group | Major Industry Group (2- or 3-digit SIC) | Employees per Acre |
|---|--|-------------------------------|
| <i>Intensive</i> (<i>< 200 sq. ft./employee</i>) | Electrical Equipment and Supplies Transportation Equipment Instruments and Related Products Apparel and Other Textile Products Printing and Publishing | 26 |
| <i>Intermediate Extensive</i> | Ordnance and Accessories Lumber and Wood Products Furniture and Primary Fixtures Fabricated Metal Products Industrial and Commercial Machinery Miscellaneous Manufacturing Food and Kindred Products Textile Mill Products Paper and Allied Products Chemicals and Allied Products Rubber and Plastic Products | 12 |
| <i>Extensive</i> (<i>>1,000 sq. ft./employee</i>) | Stone, Clay, and Glass Products Tobacco Products Petroleum and Coal Products Leather and Leather Products Wholesale Trade | 6 |

Source: Lochmoeller *et al.* (1975) ((10:168))

tenants companies that vary from three employees per acre (involved in smelting) to 92 employees per acre (involved in jewelers' findings and materials, and lapidary work). The average employment density at Howard is 21 per acre. In other industrial parks around the state, average employment densities range from less than five to 28 employees per acre.

Several Rhode Island industrial parks have mixed tenants, like Howard. Others are 100 percent manufacturing, or, in the case of the Newport Corporate Park in Middletown, 100 percent services. ((11)) Industrial parks have the following characteristics in common:

- Ample off-street parking
- Landscaping to provide small islands of open space
- Few or no constraints to construction
- Low traffic densities relative to downtown areas
- High visibility

These advantages can make an industrial park highly desirable to almost any industrial concern. However, some companies drawn to the attractive

suburban surroundings that characterize many fully serviced industrial parks may not really require all the amenities. Their work may put relatively little demand on the land, perhaps so little that they could just as easily locate in an industrial area in the inner city, on land zoned industrial but not prime, or in an area of mixed use governed by performance standards. The marketing of sites within a park must be tempered by the recognition that these sites, and indeed all prime industrial land, are a finite resource that must be apportioned judiciously. In addition, the construction of new industrial parks must be tempered by "smart growth" considerations that direct future development to existing, underutilized properties – and encourage transportation options other than the automobile, which are not always available in suburban, rural, or "greenfield" situations.

02-05-02: Brownfields

Modern land use policies are built around the concept of *sustainable development*. The redevelopment of *brownfields* is key to sustainable development in Rhode Island. These abandoned or underutilized industrial properties offer the opportunity to optimize the use of existing resources and help prevent the waste of another resource (greenfields, i.e., undeveloped land) that could and should be reserved for future generations. Brownfields typically are fully serviced industrial sites; public water, sewers, and utilities are available. They may not have the immediate cachet of a well-landscaped industrial park, but with proper redevelopment, they can become industrial showplaces of their own.

Statewide Planning has contributed to the efforts of the Northern Rhode Island Economic Development Partnership, the R.I. Department of Environmental Management (DEM), and the R.I. Economic Development Corporation (EDC) to rehabilitate and reuse old mill buildings as commercial and industrial sites. ((12)) Statewide Planning's Economic Development Planning Section was instrumental in drafting legislation to initiate a mill building reuse program that authorizes tax incentives to property owners, tenants, and lenders for the restoration of such facilities. On the environmental side, the DEM launched a remediation program addressing crucial liability issues that were discouraging the lending community from participating.

To date (2000), two pilot programs from the U.S. Environmental Protection Agency (EPA) have been given to the State of Rhode Island for brownfields study and remediation. These have been focused on two old factory sites in Providence that are key parcels in a planned 4.4-mile "greenway" along the watersheds of the Woonasquatucket and Blackstone Rivers. ((76)) This revitalization effort is designed to restore green space and urban amenities along the riverbank and the surrounding neighborhoods of Manton, Hartford, Olneyville, Valley, and Smith Hill, increase recreational opportunities, and stimulate economic development. ((77)) This is but one creative use resulting from the brownfields program.

The complementary mill building reuse program is linked to the state's enterprise zone program, and under the authority of the Enterprise Zone Council. The Council includes representatives of the EDC, the Urban League, and the League of Cities and Towns. It is to the Council that the municipalities go to get

these properties certified to be eligible for state tax incentives. The municipalities contribute to the process by offering property tax breaks, fast-track permitting, technical assistance, and other inducements to redevelopment.

The Council's and DEM's brownfields initiatives are intended to prevent a rush into the greenfields that could form the core of a reserve of industrial land. If successfully reused, brownfields that were formerly dormant and a temptation to vandals and arsonists could resume their contribution to local tax bases and restore employment opportunities in our oldest communities. For these reasons, the mill building reuse program can be a critical component of sustainable development and deserves Rhode Island's support.

02-06: Siting "Light" and "Heavy" Industry

Traditional zoning ordinances may have more than one industrial category, usually broken down into "light industrial" and "heavy industrial" zones. They are distinguished by the impact expected from "light" or "heavy" industry. These distinctions move beyond employment density and the labor intensive or extensive groupings of Lochmoeller *et al.* They deal with the commitment of land to the industrial *process*, not just to the number of workers there.

There are certain industries, as Lochmoeller and his colleagues noted, that "require extensive sites to accommodate a multiplicity of industrial processes[,],... specialized transportation links which frequently include both water and rail access[,],...[and] the availability of natural resources and an adequate power supply." ((10:54)) Examples include primary metals, chemicals, and petroleum. These would fit the general category of heavy industry.

Heavy industry is seen in the huge steel manufacturing complexes of the Midwest, the chemical refineries of New Jersey, and the textile mills of New England. Similar locational factors influence the siting of such enterprises: proximity to workers and suppliers, proven markets, and access to appropriate modes of transportation (highways, railroads, or shipping). Cheap and convenient sources of power also play a role, like hydropower along the Blackstone River. The steel mill, refinery, and textile mill illustrate the single-use, single-corporation relationship in land use. On one tract of industrial land, there is a single factory.

In contrast, light industry "is less tied locationally to raw materials, low utility rates, large pools of labor, and quantities of water for operational purposes." ((13:39)) Light industry can be accommodated in multiple-use industrial parks, alongside warehouses and offices. As researchers at the Urban Land Institute have observed, light industry has "none of the noxious side effects that have limited the location of older heavy industries" in such settings. ((13:39-40))

As industrial processes have changed over the years and generally gotten "cleaner," the distinction between light and heavy industry has blurred. The traditional descriptors in zoning ordinances covering heavy industry's impacts — "noxious," "offensive," and "objectionable" — are now being recognized as

obsolete, vague, and subjective, and more difficult to apply consistently. The single use/single corporation situation is less commonplace, especially in the mill buildings. Modern zoning is adapting by an increasing reliance on *performance standards* in industrial siting. Performance standards, ideally, will classify industries according to *quantifiable* environmental impact and fashion prohibitions accordingly. ((14:1)) Being based on quantifiable terms, the standards can be consistent, replicable, and equitable.

There will always be industries which, like the sprawling steel mill, will not be able to fit anywhere but in an area set aside for heavy industry. Our definition of "heavy" will be modified, however, by performance standards. Through performance standards an estimate of the degree of "heaviness" in an industry can be ascertained. Performance standards may even permit some commingling of lighter uses with heavy industry — something that would not ordinarily be allowed under a permitted/prohibited use list system of zoning — if the numbers show that conflicts will be minimal. Performance standards can thus play a very important role in securing the most efficient use possible of industrial-zoned land.

It is critical, however, that planners have sufficient confidence in performance standards to begin phasing out their old use lists. As the following section explains, compliance must be adequately monitored for that to happen.

02-06-01: Performance Standards in Rhode Island

Rhode Island's Zoning Enabling Act (*R.I.G.L. 45-24-27 et seq.*) granted the cities and towns the legal status to use performance standards in zoning ordinances. ((14:1)) Performance standards are similar in most communities. Typically, they cover smoke, particulate matter, odor, toxic matter, noise, vibration, fire hazards, heat, glare, waste discharges, and radiation. Industries are encouraged to conform to performance standards because the reward for conformance is a greater flexibility in the choice of sites, as long as the standards can be met. ((14:2))

Planners need to recognize that, in practice, performance standards have not yet reached their full potential in Rhode Island. Even communities with performance standards tend to use them in tandem with their old use lists, and occasionally grant special exceptions that are in direct conflict with the principles behind performance standards. In addition, performance standards may cite outdated regulations and obsolete or otherwise incorrect agencies. They may not cite technical sources for the standards. They may not address an adequate range of impacts, nor be kept sufficiently up-to-date to be effective. (On this score, it is interesting to note that in many cases performance standards are not updated when zoning ordinances are amended.) ((14:18-19))

A 1992 study of performance standards done by the Statewide Planning Program observed that regular monitoring of industries to gauge compliance with performance standards is virtually non-existent. Among the Rhode Island cities and towns interviewed, a lack of trained staff and equipment was the single most common problem associated with monitoring. Monitoring is often triggered by

complaints from nearby residents rather than done proactively and routinely, and state agencies or engineering firms are called in to do the job. Some municipalities have implemented self-monitoring, but that entails the usual problems with self-policing: suspicions that the reports are slanted to make companies “look good,” equipment that is tampered with, and a dearth of comprehensive reporting. ((14:20))

The same report did endorse the concept of performance standards, and so contained recommendations for improvement. These included having communities conduct a periodic review of their performance standards to ensure that they reflect current regulations and technology, aided by a special standards commission and by regular contact with relevant federal and state agencies, such as the DEM. The report suggested addressing a broader range of possible impacts, such as soil erosion, electrical interference, and stormwater runoff.

The report also recommended a phase-out of the old use lists, and their replacement with criteria and development standards that were more compatible in principle with performance standards. Among these criteria were employment density, size of buildings, type of industrial process, type of machinery, and intensity of land use. The development standards included setbacks, buffers, and landscaping. ((14:21))

02-06-02: Hazard Mitigation

Rhode Island is vulnerable to coastal and riverine flooding, high winds, ice, and coastal erosion. These are known as natural hazards. Under extreme conditions, such as hurricanes and nor’easters, they can become natural *disasters* with severe impacts: deaths and injuries, damage to property and infrastructure, factory and business closings, and a prolonged disruption of community life.

Proper planning for natural hazard events can help prevent their escalation into disasters by reducing such losses and limiting environmental impacts. Land use regulation, as a sustained action in support of public welfare, can be part of a hazard mitigation strategy. Parcels of industrial land prone to natural hazard events, such as floodplains and areas of coastal erosion, can be identified and avoided when siting industry. Such areas may be better kept as open space if they presently are undeveloped. Where this is obviously not practical, uses can be limited to those requiring location in the hazard area – for example, marine-related industries sited along the waterfront. In these instances, appropriate mitigating measures can be taken according to the building code and best engineering practices.

Fortunately, Rhode Island is no stranger to hazard mitigation. Several municipalities — including Charlestown, Narragansett, Providence, and Pawtucket — have already identified their own natural hazards and written

strategies for mitigation to be implemented through their Comprehensive Plans. There is a State Hazard Mitigation Committee that includes among others the R.I. Emergency Management Agency (RIEMA), the State Building Code Commissioner, the State Fire Marshal, and the University of Rhode Island.

Warwick, Pawtucket, and Providence are also part of the Federal Emergency Management Agency's (FEMA's) "Project Impact" program, the intent of which is to make communities "disaster resistant" and able to respond quickly and effectively to natural hazard events. Part of Warwick's involvement has been to use its Geographic Information System (GIS) capabilities to map flood hazards citywide, identify vulnerable structures, and plan mitigation. The city has also worked with Home Depot to develop a community training and education program to retrofit and floodproof houses. ((105))

In addition to these local efforts, a statewide hazard mitigation plan is under development by RIEMA according to federal guidelines. Elements of the State Guide Plan are also being revised to acknowledge the importance of hazard mitigation and set forth appropriate policies. In this report, for example, the Industrial Site Inventory (Appendix B) lists flood hazard concerns and other "environmental" or "physiographic" constraints to new construction, while the land use goals at the end of this part and the policies at the end of Part 212-03 include hazard mitigation.

02-07: Commingling and Clustering Industries

Commingling works best with related industries. One company may provide materials that are essential to the manufacturing of a product of another company, or be the second company's research and development arm. A third company might be the trucking outfit that links the first two companies with markets in nearby metropolitan areas. A fourth company might provide computer consulting or inventory management. The possibilities for cooperation among these firms could manifest themselves in business incubators if start-up companies are involved, or in specialized "technology parks" or business parks where one type of good or service is produced. Cooperation may extend into training, technology transfer, and marketing.

Industry clustering takes commingling a step further. Clustering is more specialized in that it involves cooperation among would-be competitors within a single industry. Clusters may take in only one Standard Industrial Classification (SIC) group, or can be spread more broadly, depending on the nature of the industry. The production process, or means of providing their service, will govern the cluster's development.

Factors supporting clustering include the capacity for research and development, compatible workforce skills, proximity to suppliers, access to

specialized services, intensity of networking, social infrastructure, entrepreneurial energy, and a shared vision. ((15:24)) Clustering can enable participants to achieve economies of scale essential to production by aggregating purchasing power for raw materials, rationalizing the manufacturing process, and marketing products in common.

The R.I. Economic Policy Council recently identified nine key industrial sectors that might be expected to form clusters easily and distinctly benefit from them. These industries included “mature” sectors that have been losing jobs lately as well as newer, more “high-tech” examples, in manufacturing as well as services. Jewelry (SIC 391, 395, 396) and boat building (SIC 3732) were included; also electronics and instruments (SIC 357, 362, 366, 367, 369, 38), software (SIC 737, 8711), tourism (SIC 45, 58, 70, 79, 84), precision metalworking (SIC 349, 354, 355, 356, 359), seafood products (SIC 0273, 091, 0921, 2091, 2092, 5146), financial services (SIC 60, 63, 67), and biomedical industries (scattered SIC groups, taking in manufacturing, research, and service provision). ((15:23-24))

Interestingly, there are firms that do not cluster for the same reasons the industries described above do, but form associations with nearby research institutions — resulting in what the Economic Policy Council calls *incubation clusters*. These too can result in considerable economic activity and industry growth. The medical instruments industry in Minneapolis, for example, grew out of spinoffs from a manufacturer of cardiac pacemakers and the University of Minnesota Medical School. ((15:23))

Most Rhode Islanders are familiar with the Jewelry District in Providence and the concentration of recreational boat building in the East Bay. As in any cluster scenario, the proximity of leading actors and players to each other is critical for the desired synergy to occur. If industrial land can be properly assembled where clusters are developing, and development of the participating industries can be focused there rather than scattered around the state, there will be an enormous benefit to Rhode Island. This will not only be the economic benefit to the companies resulting from their clusters, but the benefit of more proactive land use management than ever before.

It is while assembling such industrial parcels for an anticipated industrial, business, or technology park that developers need to ask themselves the following questions:

- Will the park’s location and configuration lend themselves to commingling and clustering? If an incubation cluster is anticipated, will the park be close enough to likely business partners, research centers, or product markets?

- Are the target industries looking to expand their operations in the area, so that they will be interested in locating in the park?
- Can the park be supported in the local economy, considering prevailing rents, the cost of energy, and the character and intensity of competition?
- Particularly in the case of a specialized facility such as a research park, can the intended use be sustained, even during economic downturns?
- Will the terms of the park covenant be consistent with zoning and environmental regulations?

This process requires the usual market study, but also consultation with state and local authorities as well as prospective clients. Planners may contribute during the earliest stages of development through site plan review and by assisting developers with the park covenants to ensure consistency with state and local ordinances. These contacts should be maintained after the park is built, occupied, and running successfully. Improvements to the park will be required periodically, whether in response to the changing needs of the tenants or to new regulations. ((11))

02-07-01: Commingling Inputs and Outputs: the Eco-industrial Park

As the concept of sustainable development matures, it will probably become feasible to commingle industries not just around a single product or service, but to optimize production efficiency and eliminate, or at least greatly reduce, industrial waste. This is the principle behind the *eco-industrial park*.

An eco-industrial park is a true sustainable development system. Firms in the park are encouraged to manage the park's environment and energy resources cooperatively, with components of the waste stream of one tenant being used as raw material for another. "Probably the best example of an eco-industrial park," wrote commentator David Salvesen in 1996, "lies along the coast of Denmark, in an industrial region called Kalundborg." The park, he explained, involved a web of waste and energy exchanges between and among the city, a refinery, a power plant, a fish farm, a pharmaceutical manufacturer, and a wallboard maker.

The exchange works something like this: the power company pipes residual steam to the refinery and, in exchange, receives gas (which used to be flared as waste). The power plant burns the refinery gas to generate electricity and steam. It also sends excess steam to a fish farm, the city, and a biotechnology plant that makes pharmaceuticals. Sludge from the fish farm and pharmaceutical

processes becomes fertilizer for nearby farms. Surplus yeast from the biotechnology plant's production of insulin is shipped to farmers for pig food. Further, a cement company uses fly ash from the power plant, while gypsum produced by the power plant's desulfurization process goes to a company that produces gypsum wallboard. Finally, sulfur generated by the refinery's desulfurization process is used by a sulfuric acid manufacturer. ((16))

Salvesen noted that these different enterprises came together voluntarily to help reduce waste treatment and disposal costs. They soon realized further savings from the efficiencies of planned and organized material and energy exchanges.

A broad-based acceptance of sustainable development is needed for business, civic, and government leaders to embrace eco-industrial parks. The best way to instill support may be to promote eco-industrial parks as a means of reducing waste streams that are expensive to treat. The concept could be introduced at a public workshop on sustainable development, beginning with the basics, showing examples already prevalent in Rhode Island (e.g., the recycling of trash, and rehabilitated and reused mill buildings), and moving on to more advanced concepts such as coordinating inputs and outputs in eco-industrial parks. The state's business community should be afforded an opportunity to learn from the experiences of colleagues from other parts of the country or world who have experimented successfully with eco-industrial parks. ((17))

02-08: Business Incubators

A business incubator, true to its name, will nourish young enterprises until they are mature enough to make it on their own — whereupon they will "graduate" and set up shop elsewhere. Nourishment comes from sharing building space, equipment, and even clerical staff, with significant cost savings realized from pooling resources. Money is "freed" for pursuits other than administrative costs in this cooperative environment. As development capital typically is a problem for new and strongly entrepreneurial businesses, a business incubator could prove crucial to their survival.

Incubators may be situated on university campuses, in industrial parks, in urban industrial centers, or in inner-city neighborhoods. Typically, a minimum of 15,000 sq. ft. of usable space is needed to permit some expansion as the incubator tenants mature, and to achieve economies of scale in administrative cost. ((18:25)) Incubators have the potential to revive economically depressed areas by promoting local and minority-owned businesses and by generating new jobs in new industries. Volunteered consulting services, export promotion, and opportunities for venture capitalization and technology transfer can enhance the incubator's business environment.

One of the most extensive studies of incubators dates back to 1988 and the work of Candace Campbell and her associates. While touting incubators as “a logical and efficient approach to support new enterprises,” they warned about placing too much reliance on incubators for *job creation* in such firms. ((19:3)) Employment was higher in incubator firms that sold to large, local corporations and governments and had developed substantial market experience — and therefore were ready to leave the incubator — than in the businesses that were just starting and were still rather dependent on the incubator environment. ((19:6)) When significant job generation does come to an incubator firm, it is usually after the firm has left the incubator and established itself on the outside. In other words, it does not happen immediately. ((20:14))

What business incubators do best, then, is to help start-ups survive until they are ready to stand on their own. From the experience of the incubator, start-ups can also learn the value of inter- and intra-industry collaboration, which seems to be essential to the development of the New Economy.

David N. Allen and Janet Hendrickson-Smith of Pennsylvania State University urge “a different calculus from just counting jobs” to measure an incubator’s success. They suggest looking at certain “incubator milestones” instead:

- Completion of initial tenant space.
- Arrangement of shared office services.
- Reaching the occupancy level necessary for the incubator to break even financially.
- Creation of a responsive business assistance network.
- Development of interfirm trade relations.
- Graduation of the incubator’s first tenant.
- Admission of primarily new ventures, not relocated, previously established firms.
- Expansion into new, larger quarters to accommodate new or expanding tenants. ((18:29-30))

These milestones, they said, “do not always occur in a sequential order, but for the incubator to make a contribution, each milestone must be eventually passed.” ((18:30)) Sharing office services and networking are particularly important in fostering successful industry clusters and joint ventures. The hoped-for job generation should follow.

The relatively small size required for business incubators makes them ideally suited to renovated buildings in urban industrial areas, such as Rhode Island’s old mills. Allen and Hendrickson-Smith found that in nine of the twelve cases they studied, the initial idea for the incubator came out of “the desire to do something productive” with “an old building in a state of moderate disrepair.”

((18:7)) On the other hand, the costs of renovation and maintenance of such a building should not be so high that the owners and managers of the incubator are forced to charge high rents or to reduce the services they provide. If rents become prohibitive for start-up businesses, the incubator function will suffer, and the incubator may actually cease being an incubator — becoming just another office park, where management is more concerned with real estate than with helping start-ups grow.

Incubators obviously have to be planned carefully to do the job intended. Tenancy must be managed to encourage firms to leave the incubator once their businesses have grown and matured, so that space will become available for new companies. Raising rents after so many years of tenancy is one way of doing this. Fortunately, experience has shown that most tenants understand the purpose of business incubators and accept the notion that eventually they have to move on for the incubator to remain an incubator. ((18:17))

Perhaps one of the most important things by which to gauge incubator performance is its effect on the local business climate. Campbell *et al.* discovered that new companies often won greater acceptance from lenders, investors, and real estate agents by participating in an incubator than by going it alone. The risks in bankrolling research, development, and other phases of start-up, and in providing office and industrial space for fledgling enterprises, seemed fewer when backed by the incubator. The firms gained legitimacy from the incubator. ((19:5))

In 1998, the R.I. General Assembly authorized the establishment of an “urban business incubator” to be located in one of the state’s enterprise zones. It was described as “a multi-tenant, mixed-use facility serving companies in a variety of industries including, but not limited to: services, distribution, light manufacturing, or technology-based businesses.” A “range of services” would be shared among the tenants, such as “flexible leases, shared office equipment, use of common areas such as conference rooms,” and “easily accessible business management, training, financial, legal, accounting, and marketing services” would be directly or indirectly provided. The incubator was to be run as a tax-exempt, non-business corporation. ((89)) In 1999, a group called Urban Ventures established the incubator in South Providence. This is described in detail in Part 212-06, “Implementation Mechanisms,” pp. 6.7-6.8.

Experiments with business incubators in Rhode Island bear watching. If the motivating force in the New Economy is the entrepreneur, the services provided to the entrepreneur in an incubator could be key to future economic development.

02-09: Summarized Land Use Goals

From this review of needs and options, and from Rhode Island's experience, an industrial land use plan must encourage the public and private sectors to:

1. *Place sufficient land in reserve to sustain economic growth without compromising the state's quality of life.* Arriving at an appropriate number of acres for this purpose involves forecasting economic activity to the year 2020 and the demands on industrial land this activity will make. The forecast must then be compared with our current inventory of industrial-zoned land. We recommend following the lead of *Land Use 2010* and the original *Industrial Land Use Plan* and reserving land now in industrial use, land that is currently vacant and considered prime, and an additional 8,000 acres from the inventory of vacant but non-prime land, for industrial use in the future. This can be accomplished by discouraging uses incompatible with industry on land that is presently zoned industrial.

We also should not only consider the quantity of industrial land when we set our goals, but also the quality. We must recognize the need for parcels that are of sufficient size and appropriate configuration to be marketed to industry, as well as serviced with utilities. Keeping the industrial land inventory current is a prerequisite. It is the best means we have of monitoring the use of industrial land and its availability for the future. It is also an important tool for working with the local communities to "match the plant to the land," reuse underutilized industrial properties, track changes in employment densities as the New Economy takes hold, and prevent sprawl or conversion of greenfields.

Where possible, land reconfiguration to suit the needs of modern industry should be encouraged wherever it leads to more efficient use of the limited industrial land resource, in harmony with the surrounding environment. Natural hazards should be avoided to the extent possible, although it should be recognized that some industries may require a location in a hazard-prone area. In such instances, industrial development or redevelopment must comply with building code standards and appropriate mitigating measures. In addition, as development and reconfiguration occur, certain environmental concerns such as stormwater runoff should also be recognized as natural hazard issues, insofar as they have the potential for threatening life and property with flooding, structural damage, etc.

2. *Employ "mixed use" as a strategy for industrial land use wherever economically and environmentally feasible,* using industrial performance standards to commingle related industries while at the same time protecting neighboring uses.

3. *Assure to the maximum extent possible the appropriate use of prime industrial land* by matching an industry's needs to available parcels (what we discussed above as "matching the plant to the land"). An automobile assembly plant, for example, will require much more than a software development firm.
4. *Promote sustainable development.* Waste control and the appropriate reuse of older industrial facilities can be the cornerstones of a much broader sustainable development program. Rhode Island's recycling program and mill building rehab legislation are excellent first steps; combining elements of both in eco-industrial parks is an exciting possibility that needs to be explored.

We expect the extension of infrastructure to continue to be necessary to provide construction-ready sites for industrial expansion. However, such improvements should be done judiciously and in full accordance with local comprehensive plans so that development can be reasonably guided and controlled.

5. *Encourage business partnerships that can nurture growing companies with much potential,* strategically locating them wherever the natural tendency of related industries to cluster, network, and synergize is likely to occur.

212-03: POLICIES FOR INDUSTRIAL LAND USE

03-01: Introduction

Allocation of industrial land should follow three basic principles: consideration of the historical, primarily geographical factors that have influenced siting decisions; a collaborative role for the private and public sectors; and sound planning based on optimal utilization of infrastructure, minimal environmental impact, and consistency with state growth policies.

This part of the *Industrial Land Use Plan* will explore different ways to help preserve Rhode Island's quality of life and the character of its communities while giving industry the chance to site facilities in locations it considers desirable, providing the employment opportunities the state will need as we enter the next century.

03-02: Historical Factors Influencing Industrial Location

Geography greatly influenced industrial development in the late 18th and early 19th centuries. Seaports grew and prospered as cities because they were bases for whaling activities and maritime trade. Inland industrial communities were built near sources of power to run machinery. The economic health of both types of cities depended on moving goods to market, whether it was by ships, barges, or wagons.

The first forges and mills in Rhode Island were powered by waterfalls along the Blackstone River. ((22:3)) The construction of railroads, providing a conduit for manufactured goods to major markets, brought in a new source of energy: coal. Industries were thus freed from having to locate on crowded riverfronts. Within a few generations of Samuel Slater's time, Rhode Island became the most highly industrialized state in the union. ((23:9))

Some inducements for siting industries have not changed over the years: a good transportation network, a source of cheap and reliable power, and a pool of skilled and unskilled workers.

03-02-01: Energy

Aside from some modest hydropower projects, Rhode Island does not have an indigenous resource, such as coal, oil, or natural gas, to exploit for energy. The state therefore has some of the highest energy prices in the country, being literally at the end of the pipeline.

The energy market now truly functions as a market, with price controls having been lifted from oil, natural gas, and electric power generation. Regarding electricity, industrial customers now have their choice of generating companies, although distribution is still handled by a local, regulated utility (such as

Narragansett Electric or Blackstone Valley Electric). It was anticipated that the freer market would lead to lower prices through competition among power generators, as with oil or natural gas; but also as with oil or gas, there is no guarantee of that in an unregulated market, and some industrial customers have actually seen their electric bills go up. ((24))

Energy prices are obviously not the sole determinant of industrial siting, but from this discussion it is evident that they are particularly important in Rhode Island. Some strategies have been adopted by industrial consumers to stretch their energy budgets. There are many examples of industries and institutions that have tapped the state's hydropower potential, while others have used cogeneration. ((25)) Some have also practiced fuel switching where natural gas-fired furnaces can be switched to oil if price or availability warrant.

Another option is *district heating*, which dates back to the turn of the century and deserves special attention. Neighboring facilities, whether in a modern industrial park (e.g., Quonset) or an older manufacturing district, can benefit from the economies of scale inherent in having a single heating system that is centrally located and can serve customers in an entire district. It has been suggested that district heating be resumed in the older buildings located along the Providence River that were designed to accommodate it so many years ago.

Conservation is a relatively low-cost option whose contribution should not be underestimated. Retrofitting older buildings with more energy-efficient lighting, windows, air conditioning, and boiler units should become commonplace as mill buildings are renovated under the mill building reuse program. Whenever the prices of electricity and fuel rise, the payback time for energy improvements lessens.

03-02-02: A Skilled Workforce

People follow jobs, and jobs follow people. Statistics show that young professionals are quite willing to go where the jobs are. Then, in areas where the professionals become concentrated, new jobs arise, as spin-off companies get started and other firms are attracted to the area. Mark Satterthwaite of Northwestern University explained this phenomenon, using high technology as an example:

Fast-growing high-tech firms must be able to recruit specialized, experienced, and skilled professionals who can meet specific requirements. Being a part of a large, local, intra-industry pool makes this far easier. Identifying, evaluating, and hiring candidates can be done quicker and less expensively when it is done locally rather than nationally...

In a city with a concentration of rapidly growing firms in an emerging, dynamic industry, there is almost inevitably a flow of new ideas and possibilities that cuts across all firms... Smart people are even more so when surrounded and interacting with other smart people... The

effect is that firms locating within a city with a high concentration of firms in the same industry have higher productivity from critical professionals and lower costs overall than they would otherwise ((26:9)).

Studies indicate that the level of skills and education among Rhode Island's industrial workers is low compared to the rest of New England. Some of those skills — for example, electroplating and the assembly of small components — can be easily transferred from traditional industries, such as jewelry, to electronics and related high technology. However, the broadening and improvement of skills within Rhode Island's mature industries should not be overlooked.

New, industry-wide apprenticeship programs have recently been reported in *Providence Business News*. Partnerships such as the newly developed Samuel Slater Technology Corporation, which encourages industry clustering and technology transfer among government, educational institutions, and companies, also shows promise. ((15:37-40, 234-235))

The trend toward two-income families, with the related issues of child care and affordable housing, needs to be addressed in conjunction with training programs. Affirmative action for women and minority workers must ensure not only that they have adequate training and can market their skills effectively, but also that they will be able to work with peace of mind and live within commuting distance of their jobs.

On-site training facilities and child care, local and regional networking, and technology transfer are logical outgrowths of the industry clustering phenomenon. Industrial siting in the future is likely to draw upon this natural process.

03-02-03: Infrastructure

"Quality of life" has always figured prominently in location decisions about a company headquarters. Appropriate infrastructure (including electronic infrastructure), however, determines the site of a plant. ((27:150; 28:4-5))

Infrastructure considerations are therefore very important in any industrial land use plan. For the purposes of the discussion that follows, we will just concentrate on infrastructure in the traditional sense — rail and highway access, water supply, and wastewater treatment.

In Rhode Island's most urbanized areas, we expect basic infrastructure to be in place, though conditions may require updating or improvement. Public water and sewers are available, having been provided decades ago for previous tenants of industrial property; utility hook-ups are easy, highways are nearby or at least accessible, and rail sidings may be adjacent to the site. Infrastructure availability would seem to make these areas — taking in old, vacant or underutilized mills and factories in places like Woonsocket and Pawtucket — ideal sites for industrial redevelopment. Unfortunately, the solid base of infrastructure may be

undermined by historical land-use patterns that have resulted in severe limits on expansion and accessibility, particularly in the old milltowns.

As textiles and related industries grew in the late 18th and early 19th centuries, workers settled as close to their places of employment as possible, often in housing built by their companies. Their homes generally were on parcels adjacent to the mills, without a buffer between the two. This made the workplace very accessible to the workers; it was an easy walk to the mill. In an automobile-free environment, such settlement made sense. However, it also resulted in an enduring patchwork of industrial land surrounded by houses and commercial establishments, sometimes with little or no access for large trucks, and no room for enlarging the industrial space or providing sufficient parking. These are severe constraints to modern industrial expansion, and an inducement for the conversion of these industrial lands to other uses. In some cases, that may be the only alternative to no use at all.

On the other hand, we cannot lose sight of our goal to promote industrial reuse wherever feasible. Industries should have a "right of first refusal" when industrial land is in danger of conversion. While some of the urban industrial properties may be cramped for certain applications, they may be just fine for others requiring less space. Remembering that infrastructure is a powerful draw to industrial sites, we should presume that its availability will be ever more attractive to smaller companies that simply cannot afford a large capital outlay for private wells and wastewater treatment systems to provide amenities that already exist with public water and sewers.

The fiscal logic in promoting urban industrial sites is plain. The public sector, as the agent providing and maintaining infrastructure, is always mindful of the substantial investment required to extend sewer and water lines, roads, etc., to new sites. These costs compete with others in a city's budget, making it an absolute necessity to capitalize on what already exists and is available for use. Infrastructure requires periodic maintenance and improvement, also at considerable public expense.

It has become obvious in recent years that there is an environmental logic behind this policy as well. Reuse of underutilized industrial sites steers development away from "greenfields" that may serve a more important function to society as open space. Reuse requires cleanup, which can remove threats to groundwater from toxic materials stored or used at the facility. Reuse enhances the esthetics of the surrounding areas. And reuse cancels the invitation to vandalism and arson that so many of these properties extend to the youth of the community.

03-03: Public Sector Influence on Locational Factors

"Influence" can mean many things in an industrial land use plan, but in this section it will apply to public policies and actions. The public institutions examined are the various units of federal, state, and local government, public

corporations for economic development, and public colleges and universities. Technology centers and partnerships with business will be covered in Chapter 02-03, where we discuss initiatives of the private sector.

Regulation and taxation are familiar forms of public sector influence. Regulation includes zoning, performance standards, building and fire codes, and environmental permitting. Through regulation, a government can limit the size of a facility, the extent of its operations, and even the viability of a proposed industrial site. A government can also influence site development or redevelopment through tax incentives, such as those provided by the Mill Building and Economic Revitalization Act (*R.I. General Law 42-64.7*, discussed under Section 03-03-04-02 below). A quasi-public corporation, for example the R.I. Economic Development Corporation (EDC), can do the same by providing industrial revenue bonds for construction, extension of infrastructure, or technical assistance.

Often the single most important incentive to local government in designating a site for industrial development is the perceived contribution that the developed site will make to the local tax base. Rhode Island municipalities' reliance on the property tax to finance local government has contributed to the designation of industrial and commercial sites in virtually every community. The absence of *regional* approaches to broadening the tax base has fostered competition amongst neighboring communities for some form of economic development. Sometimes this simply redistributes existing development within the region as firms move from one community to another, with no net benefit to the region as a whole.

Table 212-03(1) summarizes public sector responsibilities and programs that are intimately connected to the purchase, disposal, and ultimate use of industrial land. These are reviewed below.

03-03-01: Zoning, Comprehensive Plans

Rhode Island's enabling acts for zoning (Title 45, Chapters 24 and 24.1) and the subdivision of land (Title 45, Chapter 23) pass the authority for regulating specific types of land use from the state to the cities and towns. As discussed in Part One, single-lot zoning and maintaining separate residential, commercial, and industrial districts, each with its own list of "prohibited activities," are out of fashion and favor with many planners, though still on the books. Preferred are performance standards, which can allow mixed-use cluster developments. Most communities have enacted performance standards. ((14)) Some also have incorporated overlay districts to protect environmentally sensitive areas, such as aquifers.

All cities and towns are now required to develop and implement a Comprehensive Plan that takes in, among many other things, land use and economic development. This is a significant advance from where these communities stood in 1990, when the first *Industrial Land Use Plan* was written. The Comprehensive Plans must be consistent with the *State Guide Plan*, of which

**TABLE 212-03(1):
PUBLIC AGENCIES OR INSTITUTIONS WITH ROLES IN INDUSTRIAL SITING
DECISIONS**

Agencies or Institutions

Policies or Functions Affecting Siting

Federal government

- | | |
|---|--|
| <ul style="list-style-type: none"> • Congress (Cong.) • Dept. of Agriculture <ul style="list-style-type: none"> — Rural Development Administration (RDA) • Dept. of Commerce <ul style="list-style-type: none"> — Economic Development Administration (EDA) — Small Business Administration (SBA) • Environmental Protection Agency (EPA) • Dept. of the Treasury <ul style="list-style-type: none"> — Internal Revenue Service (IRS) — Office of Comptroller of the Currency (OCC) • Regulation • Federal Reserve Board (Fed.) | <ul style="list-style-type: none"> • Taxation, tax incentives (Cong., IRS) • Financial assistance <ul style="list-style-type: none"> — Economic Development grants (HUD, EDA, RDA) — Low-interest loans (SBA) — Loan guarantees (HUD, SBA) • Technical assistance <ul style="list-style-type: none"> — Planning (EDA) — Implementation (EDA) — Environmental policy, permitting (EPA) — Restrictions on lending institutions (Fed., OCC) |
|---|--|

State government (R.I.)

- | | |
|--|--|
| <ul style="list-style-type: none"> • General Assembly (GA) • Coastal Resources Management Council (CRMC) • Dept. of Administration <ul style="list-style-type: none"> — Div. of Taxation (Tax.) — Office of Municipal Affairs (OMA) — Statewide Planning Program (SPP) • Dept. of Environmental Management (DEM) • R.I. Economic Development Corporation (EDC; quasi-public) <ul style="list-style-type: none"> — Industrial Facilities Corporation (RIIFC) — Industrial-Recreational Building Authority (IRBA) • R.I. Public Pension Fund (PPF) • State academic institutions <ul style="list-style-type: none"> — Community College of R.I. (CCRI) — Rhode Island College (RIC) — University of R.I. (URI) | <ul style="list-style-type: none"> • Taxation, tax incentives (GA, Tax.) • Financial assistance <ul style="list-style-type: none"> — Passthrough of federal grants, loans (DEM, EDC, OMA, SPP) — Industrial revenue bonds (RIIFC) — Tax-exempt construction financing (EDC) — Small Business Revolving Loan Fund (EDC, PPF) — Mortgage guarantees (IRBA) — Marketing (EDC) • Technical assistance <ul style="list-style-type: none"> — Planning (OMA) — Implementation (EDC, DEM, SPP) — Research, academic training (CCRI, RIC, URI) • Regulation or review <ul style="list-style-type: none"> — Environmental permitting (DEM, CRMC) — State Guide Plan review (SPP) |
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Local government

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|---|---|
| <ul style="list-style-type: none"> • Mayor or Town Manager (M/TM) • City or Town Council (C/TC) • Tax Assessor (TA) • Planning Board (PB) • Zoning Board (ZB) • Building Inspector (BI) | <ul style="list-style-type: none"> • Taxation/tax incentives (M/TM, C/TC, TA) • Financial assistance <ul style="list-style-type: none"> — Implementation of federal and state grants, loans (M/TM) • Regulation <ul style="list-style-type: none"> — Zoning, performance standards (C/TC, PB, ZB) — Building and fire codes (BI) — Building permits (BI) |
|---|---|

the *Industrial Land Use Plan* is an element. Statewide Planning Program staff review these plans to confirm this.

Moreover, in their Comprehensive Plans, the communities must describe their intentions for future development, which include plans for industrial expansion. An inventory of industrial land, and residential and commercial land, figures prominently in each Comprehensive Plan, and serves as a recognizable locus for future industrial activity. Spot zoning and conversion of industrial land in response to upticks in the residential real estate market are avoided, at least in principle, by framing and executing the land use portions of the Comprehensive Plans. This is not to say that these plans provide an ironclad guarantee against the squandering of industrial land, but they do put the issue in the proper perspective and encourage sound land use policies to emerge.

Some regions of the state are beginning to use the comprehensive planning process to identify those sites in the region that are best suited to accommodate economic development. This evaluation may lead to the conclusion that not all of the region's communities have such developable sites. Furthermore, a recognition that the growth impacts of developing such sites are not limited to the host community may encourage a strong incentive for sharing both the costs and rewards of developing fewer, but better sites that truly benefit the entire region.

03-03-02: Environmental and Other Permitting

Environmental permits set forth conditions to mitigate environmental impacts where such impacts are likely. They are mandated by laws which presume that protection of the environment is within the government's purview to prevent harm to public health, safety, and welfare. Permitting has been defended successfully on that basis.

Some federal permitting authority has been delegated to the states. One example is the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act, which the U.S. Environmental Protection Agency has delegated to the R.I. Department of Environmental Management (DEM). ((29:3)). The state has the option of requiring more stringent standards than those in the federal regulations, but the standards cannot be made more lenient.

The DEM may arrange "pre-application" meetings between developers and regulators to explain requirements and procedures and to prevent conflicts and omissions in a permit application. ((29:2)) These meetings are held to introduce the parties to each other and to identify potential problem areas.

On the local level, environmental permitting of a sort takes place within the office of the building inspector. He or she is often invited to DEM's pre-application meetings, along with representatives of the local conservation commission, city or town planner, and the municipal chief executive. The state's other permitting agencies, such as the Coastal Resources Management Council,

depend on the building inspector's judgment as to whether a proposed building complies with the building code and relevant local ordinances.

03-03-03: The State Guide Plan

Regulation frequently is written in terms that discourage or limit certain uses of property. But a state or local government can also *encourage* something to happen without "regulating" *per se*. White papers, reports to the Governor, executive orders, strategic plans, and policy documents may prescribe specific actions pertaining to land use, housing, transportation, airports, air quality, water resources management, energy facility siting, etc.

Rhode Island's *State Guide Plan* contains long-range goals and policies addressing, in separate "elements," natural resources, transportation, housing, economic development, and energy use. Detailed internal review and final approval by the R.I. State Planning Council ensures each element is consistent with the others, though approaching growth and development within the state from different perspectives. Each element is periodically updated, incorporating new information and extending the planning horizon. The *Industrial Land Use Plan* is an element of the *State Guide Plan*.

The express purpose of the *State Guide Plan* is to guide growth and development in Rhode Island. Consistency with the *State Guide Plan* is mandated under the *R.I. General Laws* for plans and projects of the EDC, programs of the Coastal Resources Management Council, and the Comprehensive Plans of every city or town. ((30:01.01 *et seq.*)) Also, projects receiving federal funding or located in Quonset Point/Davisville are subject to a review for *State Guide Plan* consistency. Consistency reviews are conducted by Statewide Planning Program staff. Obviously, this process can have a direct bearing on many activities of the private sector, and is a good example of how government can encourage things to happen. At the city and town level, issues involving industrial land use can be held to the consistency requirement through the local Comprehensive Plan.

03-03-04: Public Financing

One of the strongest forms of encouragement, however, is money. Public financing can be in the form of a grant, bond, tax incentive, or low-interest loan. All have been tried, with varying degrees of success, in programs designed to improve Rhode Island's economy. Several schemes with direct impacts on industrial land use are reviewed below.

03-03-04-01: Urban Renewal

The theory of urban renewal, particularly as it was practiced in the 1950s and 1960s, is simple: condemn and clear dilapidated urban properties to make way for new development. In Rhode Island, local redevelopment authorities are empowered by statute to eliminate and prevent "blighted and substandard areas" and replace them "through redevelopment by well-planned, integrated, stable, safe, and healthful neighborhoods." ((31)) One of the three enabling acts, Chapter

31 of Title 45 of the *R.I. General Laws*, contains the following criteria for a determination of a “blighted” or “substandard” area:

- “[D]ilapidation, deterioration, age, or obsolescence” of buildings.
- “[D]efective design or insanitary [*sic*] or unsafe character or condition of physical construction...”
- “[D]efective or inadequate street and lot layout...”
- “[D]eterioration of site improvement, inadequacy of utilities, diversity of ownership of plots, or tax delinquencies...[which are] unduly costly [to remedy]...through the ordinary operations of private enterprise and impair...the sound growth of the community.”
(32)

Urban renewal projects encompassed industrial and commercial redevelopment as well as slum clearance and the construction of public housing. In Rhode Island, the costs of urban renewal included the cost of relocating families and businesses displaced by redevelopment. Project areas typically included several city blocks. The scale of those projects nowadays seems daunting, but in the 1960s, the federal government paid as much as three-quarters of the cost. That level of support is no longer available. Maintenance of public housing was an early casualty, and its reduction to squalor and crime a consequence.

While communities did report some success with urban renewal, many growing industries clearly preferred the suburbs, with their more prestigious locations, lower taxes or rents, and room for parking and expansion. Another problem was that urban renewal became urban *removal*, with simple economics often arguing against redevelopment after commercial and residential structures had been demolished. Despite the good intentions, urban renewal in many places around the country left vacant lots, razed historic structures, ran highways through neighborhoods, and “blighted” rundown areas even further.

Rhode Island’s enabling legislation for local redevelopment authorities can provide for a socially conscious urban renewal program that judiciously uses the power of eminent domain for land assembly and site preparation. This would appear to make it an excellent vehicle for the reclamation of underutilized or neglected industrial land in the inner cities. However, the power of eminent domain must be used judiciously. The “public good” in pursuing redevelopment must be demonstrated — not merely to remove “blight,” but to promote and conserve a valuable resource, industrial land.

Local redevelopment authorities cannot presume that once a site is prepared to their own specifications, it will be attractive to desirable industries. Extensive consultation with developers and would-be tenants is necessary from the earliest planning stages to ensure that the appropriate redevelopment will occur.

The problem of "environmental legacy" and liability for the cleanup of disused industrial sites is being addressed by the DEM's "brownfields" program, which limits liability, provides for cleanup, and establishes covenants not to sue after the DEM determines a site is clean. This program works in tandem with the U.S. Environmental Protection Agency's (EPA's) Comprehensive Environmental Recovery, Compensation, and Liability Information System (CERCLIS), which identifies sites with likely contamination, conducts investigations, and sets the agenda for cleanup through a National Priority List — the "Superfund" process.

In 1997, more than 300 sites were under investigation by the EPA, DEM, and private parties. ((33)) By September, 1999, 126 sites on EPA's CERCLIS list (about 40 percent of the total) were archived, i.e., removed from the "active" list (being investigated or on the NPL) because remediation was complete and the sites no longer posed a threat to public health.

Hopefully, as liabilities on brownfield properties are clarified and responsible parties identified, and the sites undergo environmental remediation, the process will encourage private lending institutions to become more responsive to industrial redevelopment at the older urban sites than they have in the past. The stigma of foreclosing on a property and inheriting liability has been a major deterrent to such investment.

Augmenting CERCLIS and the state program, the EPA and the Department of Housing and Urban Development (HUD) have separate brownfields initiatives. Among the EPA's activities are grants for pilot programs, including \$200,000 technical assistance grants and \$350,000 grants for revolving loan funds; clarifying liability and cleanup issues; and establishing partnerships with community colleges, nonprofit development corporations, and government agencies for workforce development and job training at brownfields. Meanwhile, HUD is using Economic Development Initiative (EDI) grants "to improve the viability" of brownfields projects funded under its Section 108 loan guarantee program. ((34))

03-03-04-02: Tax Incentives

With the postwar flight of some companies to suburban industrial parks, boosters of the declining cities urged municipal governments to respond by offering "investment incentives" of various types to lure industry back. Sadly, history is rife with examples of abuse of those incentives, as when an industry would leave the community as soon as the incentives expired. Cities and towns around the country have responded by limiting the old tax holiday approach or scrapping it entirely. One alternative is to institute incremental reductions in tax abatements over time, with the abatement being phased out entirely within five or ten years. Another is to require a "clawback" of abated taxes if the beneficiary relocates out of the community within a certain time frame, say within ten years of the end of the abatement.

Some communities have come to favor incentives that specifically satisfy economic and land use goals, and carry with them an increased commitment to

the community. Two of those incentives are *geographic targeting* and *age-specific tax breaks*. Like any other business catalyst involving public money, either policy must have real social value, and not just provide windfalls to companies that would have settled or stayed and invested in the community anyway. ((35:16))

The typical geographically-targeted investment incentive is aimed at "areas of economic distress." ((35:16)) Applicant eligibility is typically determined by thresholds of unemployment, population growth, per capita income, investment levels, and state and local GDP (gross domestic product). ((35:17)) An enterprise zone program is an example of such an incentive, and the State of Rhode Island has such a program in place. At this writing, there are nine enterprise zones, located in such diverse communities as Portsmouth and Woonsocket.

Age-specific tax incentives are geared more specifically to older buildings. They must be strong enough to counteract depreciation allowances that give a greater credit for depreciation of new structures than for rehabilitating old ones. ((35:19))

The federal government enacted preservation tax incentives for historic buildings in 1976, administered by the National Park Service (NPS) in partnership with the Internal Revenue Service and State Historic Preservation Officers. Besides achieving the obvious aesthetic benefit of converting eyesores into pleasant looking, functional buildings, these tax incentives can lure new private investment in traditionally distressed areas, generate jobs, enhance property values, and get abandoned industrial and commercial properties back on the tax rolls.

Current (1999) tax incentives for preservation, as provided by Internal Revenue Code Section 47, include a 20-percent tax credit for the certified rehabilitation of certified historic structures (i.e., buildings), and a 10-percent tax credit for rehabilitating non-historic, non-residential buildings built before 1936. The two credits are mutually exclusive: only one applies to a given project. Which credit applies depends on the building, not the owner's preference. ((36))

Under the terms of this program, a "certified historic structure" is a building listed individually in the National Register of Historic Places, or located in a registered historic district and certified by the NPS as contributing to the historic significance of that district. A "certified rehabilitation" is one approved by the NPS as consistent with the historic character of the property and, where applicable, with the district in which it is located. While some alteration is permitted to provide for efficient use, the project must not damage, destroy, or cover materials or features, whether interior or exterior, that help define the building's historic character. ((36)), ((99))

While buildings listed in the National Register of Historic Places may be eligible for the 20-percent credit as "certified historic structures," they are not eligible for the 10-percent, "non-historic" credit. They may include residential uses, whereas structures eligible for the 10-percent credit must be non-residential. There is no formal review for the rehab of "non-historic" structures. ((36))

The NPS has claimed that "[t]hrough this program, abandoned or underused schools, warehouses, factories, churches, retail stores, apartments, hotels, houses, and offices throughout the country have been restored to life in a manner that maintains their historic character." Long-term economic benefits result from the requirement that the rehabbed property be *depreciable*, i.e., "used in a trade or business or held for the production of income. It may not serve exclusively as the owner's private residence." ((36))

Rhode Island established its own age-specific tax incentive program with the *Rhode Island Mill Building and Economic Revitalization Act*, an adjunct to its enterprise zone program. Tax credits under the mill building legislation follow a building's "substantial rehabilitation," equal in cost to at least 20 percent of its market value. The building's owner can take a specialized investment tax credit equal to 10 percent of the rehab, granted in the year the building is first placed into service. Businesses located in the building may qualify for a credit equal to 100 percent of wages paid to new employees, up to a maximum of \$3,000 per employee. Lenders to these businesses may take a credit equal to 10 percent of the interest earned on the loans. They may also take a credit equal to 100 percent of the interest on loans they make to building owners for the rehab.

To qualify for the mill building program, the structure to be rehabilitated must have been constructed before 1950, be of the two-or-more-story configuration typical of old factories, be intended for manufacturing or commercial reuse, and be at least three-quarters vacant. It must be nominated by its home community for "certification," and pass the above tests to the satisfaction of the R.I. Enterprise Zone Council. ((37:4)) Diverse sources developed these criteria: the Northern Rhode Island Economic Development Partnership, Statewide Planning, the R.I. Division of Taxation, the EDC, and members of the General Assembly.

The mill building legislation also has a geographically-targeted component. If the building to be renovated is located in an enterprise zone, business tenants may qualify for an additional credit equal to 50 percent of wages paid to their employees, with a maximum of \$10,000 per employee. The cities and towns, which are limited as to the number of certified buildings they may have under the program, are entitled to additional buildings if these buildings are located in enterprise zones.

Like the DEM's brownfields program, the mill building revitalization initiative is relatively new and untested, but with a great deal of promise. Communities have already become very much involved, being well aware of the opportunity the legislation presents. The cities and towns will be responsible for promulgating their own ordinances and regulations in support of the program, as mandated by the legislation, such as providing favorable property tax treatment for certified buildings, expediting the granting of building permits, and waiving permit fees. At this writing, some have already stepped forward and nominated buildings for inclusion in the program. ((38))

03-03-04-03: Bonds and Tax Increment Financing

Bonds have been used to finance all sorts of development projects, from reservoirs to industrial parks to highways. Bonds have been floated to provide sole-source funding, matches for grants, "gap financing," or seed money for revolving loan funds. ((34:53))

Two types of bonds used extensively in Rhode Island are *general obligation bonds* and *revenue bonds*. General obligation bonds are secured by the taxing power of the government. Revenue bonds are not, being secured instead by a specific source of revenue expected to be generated by the project being financed. ((39:37-38)) General obligation bonds require government to pledge future revenue to debt service and must be used judiciously. ((40:8-9))

In Rhode Island, the Industrial Facilities Corporation (RIIFC) has financed qualified commercial and industrial projects through the issuance of industrial revenue bonds. The interest earned on these bonds was either exempt from both federal and state taxes ("tax-exempt") or state but not federal taxes ("taxable" — i.e., by the federal government).

The tax-exempt issues are for manufacturing projects. ((41)) Participating banks purchase the bonds from the RIIFC as tax-exempt loans. Because the interest they receive on these loans is not taxed, the banks can afford to lend the money to developers at below-market rates. Once the project is completed, it is expected to generate sufficient revenue to cover the principal of the loan.

The dollar limit per project under this program is \$10 million. This money may be used to acquire land, buildings, machinery, equipment and other fixed assets. Borrowers may obtain an exemption from the state's sales tax for building materials or equipment purchased with this money. Normal terms of repayment are 15 years for real estate, and eight to 10 years for equipment.

The RIIFC has also developed a bond/loan program that takes in commercial as well as manufacturing projects, including travel and tourist facilities. The interest the banks earn from loans made under this program is exempt from state taxes, but not federal taxes. Because participating banks do not get the federal tax break, these loans usually have less of an interest-rate savings than issues that are tax-exempt.

Tax increment financing (TIF) is another option. The principle is based on the presumption that improvements to property will result in a higher property tax assessment, yielding more revenue for the city or town. The anticipated increase (the "tax increment") can be used — before the improvements take place and the new taxes are collected — to back special obligation bonds to finance infrastructure expansion or public works projects to support or facilitate improvements to the property.

Chapter 33.2 of the *R.I. General Laws* provides for tax increment financing of land acquisition projects, land assembly, infrastructure improvements, and building demolition, removal, or rehabilitation. The bonds are exempt from state taxes. Under certain conditions imposed by the Tax Reform Act, they may also be exempt from federal taxes. Corliss Landing in Providence, a mixed residential-commercial rehab of an old factory complex, is one example of TIF.

Although there is an element of risk to investors because TIF bonds are not backed by the full faith and credit of the state or the local community, tax increment financing presents considerable possibilities for industrial land assembly as well as in building renovation. Where development pressure already exists, there is less of a risk. There is also an obvious benefit to the community in reviving moribund industrial parcels with TIF that might be lost to other uses. ((11:3.14))

03-03-04-04: Grants

The subject of public sector influence on industrial land use cannot be done justice without mentioning federal grants and loans.

The *Community Development Block Grant (CDBG) Program* is administered by the U.S. Department of Housing and Urban Development (HUD). At 24 CFR Part 570.2, CDBG specifically advocates "a more rational utilization of land and other natural resources and the better arrangement of residential, commercial, industrial, recreational, and other needed activity centers," and "the stimulation of private investment and community revitalization in areas with population outmigration or stagnating or declining tax base." ((42:A-1-A-2)) The block grants are designed "principally for persons of low to moderate income" ((42:A-1)), and therefore seem perfectly suited to the revitalization of Rhode Island's urban areas, including the reuse of inner-city industrial properties.

The Department of Housing and Urban Development makes CDBG money available to large and small urban areas according to the following formula. Seventy percent of the funds go directly from the federal government to the large cities, which are called "entitlement communities," while the remaining 30 percent goes to the state, to be awarded on a competitive basis to the smaller communities through a "small cities program."

Some of the communities in Rhode Island have used this money in very creative ways that have stretched the dollars significantly. The City of Woonsocket, for example, an entitlement community, typically includes an annual contribution from its CDBG grant to capitalize a Small Business Revolving Loan Fund, "for the purposes of providing affordable financing to stimulate new business start-ups, business expansions, and [to] help retain existing industry." ((43:not paginated)) As the older loans are paid off, that money is recycled in the fund.

Woonsocket's revolving loan fund favors projects from manufacturing firms. However, the majority of CDBG funds in Rhode Island have gone to the

non-industrial sector. On the other hand, projects eligible for the small cities program include comprehensive plans, community development plans, and functional plans, such as plans for land use, energy, and transportation. These have a more obvious application to industrial land use.

The "catch" to using CDBG funds is that with any project it must be demonstrated to HUD that it yields a *direct benefit* to low and moderate income families. The amount of recordkeeping required to do this has been the limiting factor in the use of CDBG for industrial planning and development. ((44:3-4)) It is difficult to document a direct "low/mod" jobs benefit from general economic development activities such as marketing and technical assistance, for example, making those activities essentially unfundable by CDBG. ((44:4))

Another source of grant money is the Economic Development Administration (EDA) in the U.S. Department of Commerce. Through EDA's Public Works and Development Facilities Program, grants are provided to help "distressed communities" attract new industry, encourage business expansion, diversify local economies, and generate long-term, private-sector jobs.

Among the types of projects EDA has funded are water and sewer facilities primarily serving industry and commerce; access roads to industrial parks or sites; port improvements; and business incubator facilities. In fact, there are few industrial parks in Rhode Island that have *not* received EDA assistance. The proposed projects must be consistent with the redevelopment area's *Comprehensive Economic Development Strategy (CEDS)*, which is revised annually.

In Rhode Island, the redevelopment area is the entire state. Responsibility for composing and updating the *CEDS* rests with the Statewide Planning Program. The State Planning Council is recognized as the "CEDS Committee," functioning as a citizens' advisory group that approves or proposes changes to the *CEDS*. Every five years, Statewide Planning completes an extensive *CEDS Update*, the most recent having been done in 1997 (under *CEDS*' former name, the Overall Economic Development Program, or OEDP). ((45)) The *Update* reviews economic data, such as population and employment, per capita income, industry mix, and infrastructure. It is supported by annual reports that keep the statistics current and track "distress" in impacted communities.

Each *CEDS Update* and annual report contains a list of projects the State Planning Council/*CEDS* Committee has determined is consistent with the *State Guide Plan* and recommended for EDA funding. These projects are proposed by departments or divisions of state government, cities and towns, Indian tribes, special-purpose units of government (e.g., sewer and water authorities), and public or private non-profit development organizations.

The 1999 *CEDS Annual Report* listed several projects for the improvement or reuse of industrial property, among them the West Side Master Plan (Portsmouth, Middletown, and Newport), Highland Corporate Park Infrastructure Improvements (Woonsocket), Cornforth Industrial Park Water System Expansion (North

Smithfield), Collyer Wire Reuse Project (Lincoln), and Manville-Jencks Mill Complex Rehabilitation (Pawtucket).

03-03-04-05: Enterprise Zones

An enterprise zone is usually defined as an area, typically in an economically depressed neighborhood, where a package of financial and other incentives is offered to attract and retain business. This is intended to be a boon to the inner city, stimulating new and indigenous businesses, and providing new jobs to city residents. The enterprise zone is distinguished by tax credits not available elsewhere, and by "regulatory relief."

Many economists and labor leaders initially opposed enterprise zones. Some criticized offering tax credits in the zones, saying they would only be a windfall to big business, and not be available to community-oriented, unincorporated enterprises or non-profit corporations. ((46:341)) Others feared for the health and safety of workers within enterprise zones, being mindful of proposals to suspend minimum wage laws and "simplify" building codes and zoning laws in the name of regulatory relief. ((46:340-341)) Still others questioned whether enterprise zones would truly have an impact on those neighborhoods they were expected to help.

The actual legislation authorizing enterprise zones in the various states seems less strident in waiving regulations than was originally supposed, and many former opponents now give conditional support. Some relaxation of zoning restrictions, for example, may occur on an *ad hoc* basis, but an early HUD report found that "in no case...were these efforts central to the local program." ((47:vi)) Extremely controversial suggestions, such as minimum wage waivers, have been rejected.

Most states, including Rhode Island, and the District of Columbia now have legislation authorizing enterprise zones. Most of the incentives offered are, in terms of actual dollars, modest. Some have interesting and unique features, however. The enterprise zone program in Indiana, for example, offers a 30 percent income tax credit for purchasing equity in start-up or expanding enterprise zone businesses. Utah grants a tax credit of 50 percent (to a \$100,000 maximum) for cash contributions to private nonprofit corporations engaged primarily in community and economic development. Oregon's Strategic Investment Program is very targeted, directed at the semiconductor industry, and claims it will stimulate \$4-9 billion in new investment and up to 13,000 new jobs over the next 15 years. ((48))

Figures and findings from HUD suggest that the salutary effect the financial incentives have on industrial relocation is limited. Among ten enterprise zones HUD surveyed, "only 30 percent of the 263 businesses investing [there]...had operated outside the enterprise zone prior to its designation, and many of these firms decided to invest in the zone for reasons other than the zone incentives." ((47:x)) (The report did not give those other reasons, however.) The report continued, "In most cases, spokespersons for these firms were not fully aware of

all the incentives available in the zone, including some of the very basic financial incentives such as property tax abatements and income tax credits" ((47:x)), again casting doubt on the value of such incentives in relocation decisions.

On the other hand, anecdotal evidence presented to the R.I. Enterprise Zone Council, primarily from the City of Providence, suggests that businesses *have* relocated in neighborhoods within enterprise zones to take advantage of the tax benefits. It seems that while the presence of an enterprise zone was not the sole determinant of their decision, these businesses did know about enterprise zones and the tax credits and modifications obtained from the program. Among the businesses that have taken advantage of these credits and modifications are manufacturing concerns, law offices, accounting firms, medical centers, and banks.

Rhode Island's enterprise zone program is authorized by Chapter 42-64.3 of the *R.I. General Laws*, known as the "Distressed Areas Economic Revitalization Act." This law, drafted by Statewide Planning Program staff, was passed in 1982 and has been subject to a number of reenactments. The first enterprise zones were designated in 1992, two years after the original *Industrial Land Use Plan* was published. (The plan recommended approaching the subject of enterprise zones "cautiously" to prevent abuse by "involving local business, labor, and community groups to assure that none of their interests are unduly compromised.") ((11:3.31))

Under the law, each enterprise zone in Rhode Island is limited in size to "not more than five (5) contiguous United States census tracts or portions thereof" ((49)), with relatively high levels of poverty and unemployment. Zone businesses must be certified by the Enterprise Zone Council before they qualify for tax benefits. They must be recertified every year, based on their ability to increase their payrolls by five percent over the previous year's baseline.

Among the benefits available are a wage differential credit, a resident business owner credit, two types of interest income credits for lenders to zone businesses, and a donation tax credit for any cash donation to public-supported improvement projects in an enterprise zone. ((50))

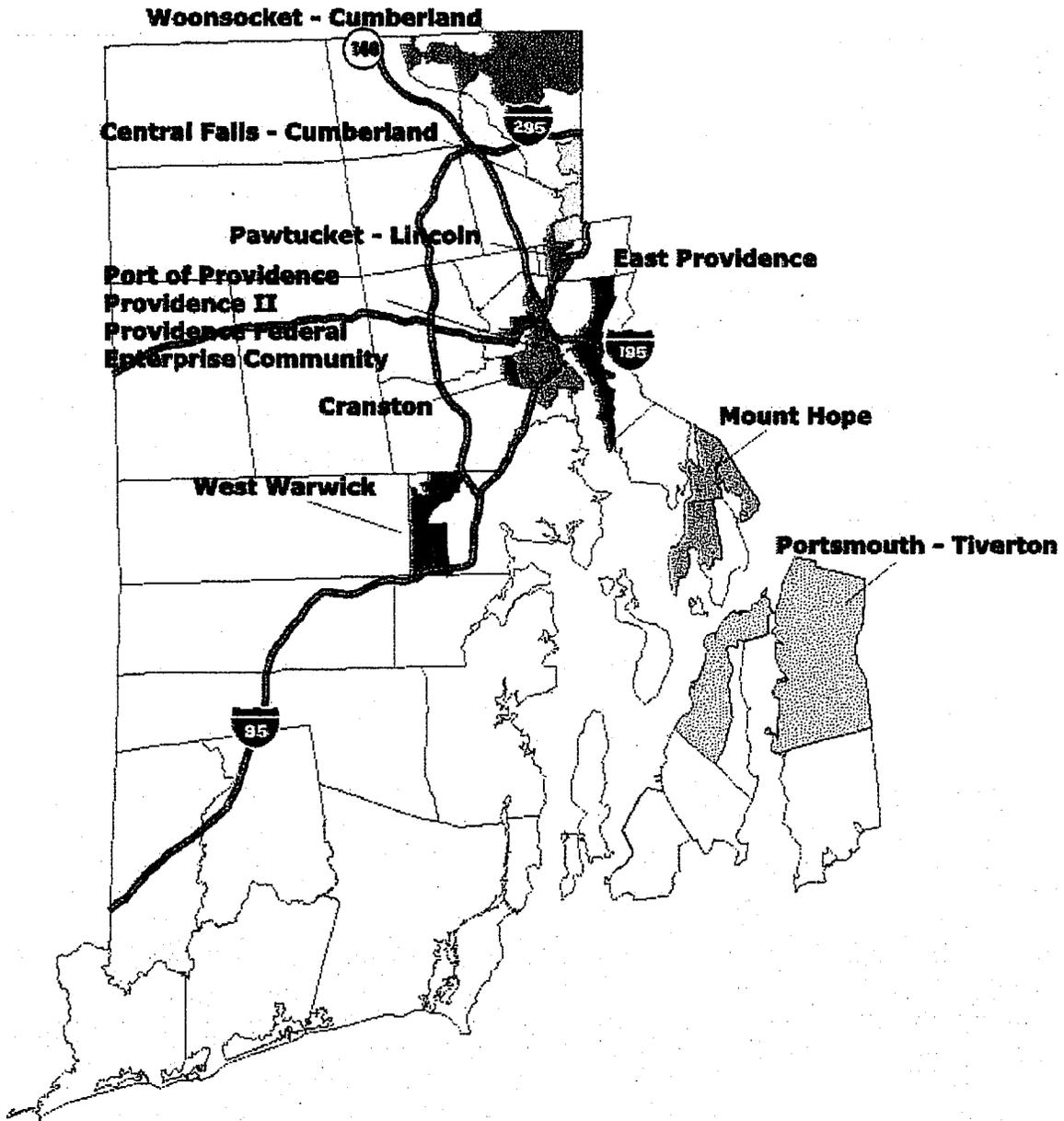
More intimately connected with industrial land use is the credit allowed lenders against taxes for interest earned on loans to zone businesses for rehabilitation, construction, or expansion of industrial or commercial property. The lender is allowed a 100 percent credit, up to \$20,000 per year. Rehab projects must receive approval from the Enterprise Zone Council before they commence, however.

There are now ten enterprise zones in Rhode Island, indicated in Figure 221-03(1).

03-03-04-06: Bank Community Development Corporations

The Economic Development Administration has helped establish a new type of lending institution, the Bank Community Development Corporation —

**FIGURE 212-03(1):
RHODE ISLAND'S ENTERPRISE ZONES**



Source: R.I. Economic Development Corporation (1999)

"Bank CDC" for short — that can play a role in the development or reuse of industrial land in Rhode Island's inner cities. Bank CDCs are sponsored by commercial banks, groups of banks, or bank holding companies. In return for taking initiatives to finance community development (a public sector goal), the banks are permitted to make equity investments in real estate and businesses in poor neighborhoods that ordinarily would be prohibited by law. ((51:1)) This allows Bank CDCs more flexibility and, one would assume, less risk in investing in economically depressed areas than would be expected with conventional loans, making the funding of projects within those areas more tenable. ((51:1))

A very strong inducement for forming a Bank CDC is the Community Reinvestment Act. The Act requires good-faith efforts on the part of lending institutions to contribute to redevelopment in poor neighborhoods, and makes the banks' expansion plans subject to a demonstration of those efforts. Thanks to successful agitation by community groups, the Act has been directly responsible for bank loans to non-profit housing corporations and minority-owned businesses, and considerable investment in inner-city infrastructure.

Bank CDCs have established impressive track records around the country. The Seagate Community Development Corporation in Toledo, Ohio, for example, accounted for \$237 million in new investment in the city, including hotels, a convention center, and a waterfront festival market. ((52:not paginated)) A CDC in Norwalk, Ohio, provided funds to new businesses that expanded and cut the local rate of unemployment in half. ((52:not paginated)) Fleet Bank has an active CDC in Rhode Island that has primarily served clients in the retail and service sectors of the economy.

03-03-04-07: Land Banking

If Rhode Island is to set aside nearly 22,000 acres for industrial use by 2020, land banking should be considered. A land bank can simply be a "bank of land," where properties are acquired by a public agency, managed, disposed of, and developed for a public purpose. ((53:1)) A land bank can also be a bank in the more conventional sense, which —instead of acquiring and managing land—makes money available to non-profit and for-profit development corporations to acquire and develop land. Either definition presupposes heavy public sector involvement in development. Even in the latter case, it is assumed that any disposition of property occurs with a specific public purpose in mind, such as providing new jobs for area residents.

Local planners might look at the example of Prince William County, Virginia, which has established the Economic Development Land Bank "to enhance economic development" and to "control costs associated with [the] management and disposition of land." ((54)) The land bank maintains due diligence, requiring environmental assessments and business plans for land to be conveyed, and consistency with the county's land use policies and related planning and zoning regulations. Policies govern acquisition and disposition, including purchase and sale of land, leasing of land, land swaps, joint ventures

with commercial real estate developers, and the right of first refusal by the county in any subsequent resale of the land by the initial purchaser; accountability; the retirement of funding obligations through net proceeds from the sale of land; infrastructure construction; and reporting progress through an annual review tendered to the Board of County Supervisors.

The Massachusetts Government Land Bank (MGLB) is more of a development bank, providing needed capital to implement projects with a demonstrable public benefit. Created by an act of the Massachusetts legislature in 1975, the MGLB describes itself as an independent state agency that uses the proceeds of general obligation bonds to give mortgages and development assistance to local communities, non-profit organizations, and for-profit developers for a variety of residential, commercial, and industrial projects “which serve a clear public purpose but which lack sufficient public and private investment.” ((56)) The MGLB’s project portfolio includes industrial, commercial, and residential development, such as the Boston Shipyard in East Boston, “Head of the Harbor” in Gloucester, the Westover Industrial Airpark in Chicopee, the Boston Marine Industrial Park in South Boston, the Old Public Library in Lawrence, and scattered site housing in Somerville. ((56))

Rhode Island has some experience with land banking, too. In 1969, Marcom Incorporated prepared a study, *Statewide Industrial Land Bank Program*, calling for the establishment of a public land development agency empowered to acquire and hold land for industrial purposes. The acquisition program would be undertaken in concert with economic development plans. “Excess state-owned land” would be transferred to the land bank agency to give the agency enough collateral to initiate the program. ((53))

Implementing legislation for the Rhode Island program was enacted in 1970 — the Rhode Island Land Development Corporation Act — but was repealed two years later after its constitutionality was successfully challenged in court. ((53:11)) Even so, bits and pieces of the Marcom proposal have been implemented:

- “Excess state-owned land” deeded from the federal government to the state at Quonset Point and Davisville has been put to industrial purposes by lease or outright sale by the EDC.
- The state capital development program can specify and prioritize public financing for a particular purpose, including land acquisition to provide an attractive site for a target industry. This tool can be used along with tax incentives, such as the recently enacted credit for research and development.

The R.I. Housing and Mortgage Finance Corporation (RIHMFC) has its own Land Bank Program. Along the lines of the Massachusetts Government Land Bank, it provides loans at below-market rates. Non-profit corporations and government agencies are eligible to apply. The loan program is designed as a revolving fund, and each loan carries a maximum term of 36 months. Approval is

contingent upon, among other things, "responses to statewide, municipal, and neighborhood housing objectives." ((57))

Given a political climate more disposed toward a bank dealing in money rather than directly in land, RIHMFC's program could serve as a model for an industrial land bank. A financing mechanism based on revolving loans with a relatively short payback schedule seems appropriate for such an initiative.

The one problem that might be encountered with a land bank based on short-term revolving loans is that the land may not be developed and sold quickly enough to pay back a loan. Some consultation with RIHMFC would be necessary before such an arrangement was established to see how that agency deals with that possibility. Alternatively, the state might consider using net proceeds from state industrial land sales to finance other projects.

Of course, coordination with local and state plans and public oversight of those funds — whether they were handled directly within government or by a quasi-public corporation such as the EDC — would be necessary. The *State Guide Plan* could play an important role in any land bank program, along with the comprehensive plans of the affected cities and towns. The establishment of a land bank board of directors, with adequate representation from business, labor, government, and community activists, would assure that the need for public oversight is satisfied.

03-03-04-08: Infrastructure Investment

Surveys have indicated that industry executives consider infrastructure the prime determinant in selecting an industrial site within a region or state. ((27:150)) The term "infrastructure" takes in traditional (utilities and transportation networks), relatively new (fiber optic systems), and relatively intangible amenities (access to leading technologies, synergies with forward-thinking companies in the same or in a closely related industry, presence of investor-friendly lending institutions, and an otherwise favorable business climate).

Where the public sector extends or improves infrastructure, industrial development will probably follow. Infrastructure investment thus amounts to a public subsidy supporting growth. There also needs to be public *control* of that growth, so that sprawl and unnecessary greenfield development are discouraged. To that end, investment in new infrastructure should be tempered by the goals and objectives of industrial reuse programs, such as those covering mill buildings and brownfields. Advocates of sprawl control, such as the Grow Smart Rhode Island movement, need to be involved. ((58))

Rhode Island has a grant program in place called the *Water Facilities Assistance Program* for the extension of public water facilities, either within a single system or serving two or more systems. Construction of these facilities, acquisition of land or rights-of-way, and necessary engineering and design costs are covered up to 25 percent for single systems and up to 50 percent for intersystem arrangements. The program is managed by the state Water Resources

Board. Applications are co-reviewed by the Rhode Island Division of Public Utilities and Carriers to determine whether the benefits to consumers outweigh the costs, and by Statewide Planning to establish whether they are consistent with the *State Guide Plan*. Only municipalities and quasi-municipal water agencies are eligible for the program. ((59))

The *Aqua Fund*, established by a bond referendum approved by Rhode Island voters in November, 1988, instituted a revolving loan fund for cities and towns for the pretreatment of industrial wastes, pretreatment facilities, and pretreatment equipment. Aqua Fund money may also be used for monitoring equipment and the administration of pretreatment facilities. Pretreatment is an important infrastructure improvement. With pretreatment, less strain is put on public wastewater treatment systems that may otherwise be reaching capacity because of new development. Pretreatment can allow industries to co-exist with less use-intensive and less-polluting neighbors, and draw industries back to older, underutilized industrial sites that are beginning redevelopment as mixed-use complexes.

It is crucial that whenever improvements to public water or wastewater treatment are suggested, planning and financing are coordinated between and among neighboring communities. Priorities need to be established through their respective comprehensive plans. For example, wherever cities and towns are consciously trying to control growth, the growth implications of expanding the infrastructure must be carefully evaluated.

Rail, highway, and airport access is another critical element of public infrastructure. Nowhere is this more evident than in the "third track" and highway improvements being considered to support development of Quonset Point/Davisville, R.I., into a vital intermodal port. The "third track" system design would alleviate traffic along the existing Amtrak Shoreline Route from Quonset north to the Boston Switch in Central Falls, a route currently shared by passenger and freight trains. Concurrent with this development would be renovations along the route to solve possible clearance problems presented by modern double-stack and triple-stack freight cars, and either a new 4.5-mile highway or improvements to existing roadways to link Quonset to I-95 via R.I. Route 4.

Federal funds are supporting the transportation improvements linking Quonset with markets in the north, south, and west, along with state money from a bond referendum. Political leaders need to keep focused on these improvements as they truly are critical to the success of Quonset as a port, no matter what shape and role the port may ultimately assume.

Rail, highway, and airport access remains important to other industrial areas where goods are manufactured or distributed. While federal funds have always played a role in improving or maintaining transportation infrastructure, the state needs to move toward self-sufficiency — first to provide sufficient funds for the match requirements of the federal programs, and second to cover contingencies above and beyond the infrastructure budget. Part of that effort could be concentrated at the local level. A revolving loan program to the cities

and towns, capitalized initially by a budget outlay from the General Assembly or a bond, could be pegged to local road and bridge improvements, and to simple maintenance (filling potholes, fixing frost heaves, etc.). A prioritizing scheme run on a statewide basis could identify and implement the most urgent or crucial projects. A program that was self-sustaining by being centered around low-interest revolving loans would be preferable to one that relied solely on annual appropriations from the General Assembly.

03-03-05: Marketing and Developing Sites

The public sector influences industrial location by marketing and developing sites. "Image marketing" is very widely practiced. A state or locality's scenic and manmade attributes are touted as natural extensions of the area's "business climate." Descriptions of a beautiful coastline, world-class golf courses, good schools, well-maintained highways, cultural attractions, etc., are aimed right at the lifestyle of the corporate executive, and shrewdly so: "quality of life" — the attractiveness of the area as a place to live — is among the top three considerations of business people contemplating a move. ((27:150))

Towns, cities, counties, and states all have different approaches in marketing sites, however. States and counties, for obvious political reasons, need to be particularly cautious to avoid the appearance of playing off one community against another, or favoring one over the other. They must also ask themselves how deeply they want to get involved in real estate development. How would a marketing campaign enhance or work against the free market in the choice of a site? And given the "public health, safety, and welfare" mission of government, how would success be measured — by the gross amount of land sold or leased, as an agent in the private sector would do it, or by the quality of industry attracted to the area, as public policy might dictate?

(And as a corollary to that, how would "quality of industry" be determined? By the number of jobs generated? By higher-than-average wages? By environmental friendliness? By easy matching of jobs with existing skills within the Rhode Island workforce? By the training programs available to fit the workforce to the jobs?)

The 1990 *Industrial Land Use Plan* presumed "that it is appropriate for the State of Rhode Island, in the absence of county governments and regional planning commissions, to market industrial sites." The precedent for statewide planning and policymaking, the plan added, was established long ago. ((11:3.25))

The state, or the quasi-public EDC acting on its behalf, might consider the following guidelines:

- A site marketing program should be designed to match a client with a property, based on the industry's particular needs — just as a private real estate broker would — and should consider the entire state (except those communities that have no industrial-zoned land).

- Statewide marketing must be coordinated with state and local economic development goals and plans (i.e., the *State Guide Plan* and city and town comprehensive plans).
- Even the appearance of a conflict of interest within the agency or organization doing the marketing must be avoided.
- The public purpose in marketing industrial sites — maximizing employment opportunities and making the best use of industrial land — must not be lost in the real estate dealings done on behalf of the state.
- Priority should be placed on reusing urban/developed sites (rather than greenfield sites) when public resources, including both EDC marketing staff and public financing, are allocated to promote development.

The EDC is the most appropriate agency to conduct statewide marketing. The EDC maintains files and maps of industrial parks, both publicly and privately owned, and other areas conducive to industrial development. Local data are available from the department. These materials may be accessed upon request or through the Internet, and are valuable marketing tools as well as good sources of information.

With a statewide approach to marketing, policies promoting industrial land use based on operational needs and the reuse of underutilized urban properties can be balanced against the EDC's desire to provide modern, "construction-ready" sites to industry.

The EDC should also consider entering into partnerships with private non-profit developers to renovate older industrial parks and other industrial properties elsewhere in the state. These sites may be "fully serviced" by utilities such as sewer and water, but challenged by a lack of access to fiber optic networks that are crucial to modern telecommunications. Such shortcomings can be identified by partnerships with developers. The Corporation's system of account executives serving different sectors of the economy or geographic areas seems ideally suited to forming these partnerships. The cities and towns — many of which have their own economic development offices, in addition to their own development agendas — must continue to be involved directly as well, in a manner consistent with their comprehensive plans.

Finally, the EDC should maintain its leadership role in the state enterprise zone program. Location of an industrial site within one of Rhode Island's nine enterprise zones has been shown to be an attraction to business. The Enterprise Zone Council resides within the EDC, meets at EDC headquarters, and is staffed by employees of the EDC. ((60)) This is an important bridge between the state and its economically disadvantaged communities, and is a proven method for expanding businesses in those communities. It is also the principal means of certifying mill buildings for rehab and reuse credits, satisfying a major objective of this *Industrial Land Use Plan*.

03-04: Private Sector Influence on Locational Factors

Private industry ultimately determines the success of all economic development programs, whether state-run, quasi-public, or entirely private sector-driven. Corporate executives decide whether one site is more attractive than another, the needed skills reside in the area, the infrastructure is adequate, a financing package can be put together, the tax incentives (if any) justify the move, and so on.

By serving on committees that help determine public policies affecting industrial siting, business people can contribute enormously to all these concerns. (Representatives of organized labor should also be included to provide some balance to their recommendations.) In addition, industry lobbying groups and local chambers of commerce can affect the course of regulation and public financing, workforce training, and labor relations.

The private sector in Rhode Island has been active. A major conduit of private sector opinion is the Economic Policy Council, funded 50-50 by private sector participants and the state, and co-chaired by the Governor and the Chief Executive Officer of a major corporation. Nine corporate executives are Council members, including the Co-Chairman.

Nationwide, bankers in inner-city areas have begun to reverse the effects of redlining by working with community activists in poor neighborhoods through Bank CDCs. Entrepreneurship has been fostered in traditionally disadvantaged groups by organizations such as the Women's Economic Development Corporation in St. Paul, Minn. ((61:5)) Microenterprise development in Rhode Island is being promoted through the Elmwood Neighborhood Housing Corporation.

Private colleges and universities are also important players. In addition to their primary mission of educating future managers, engineers, and technicians, many have special programs to stimulate technology transfer, research and development, and entrepreneurship.

The respective Presidents of Brown University and the University of Rhode Island have seats on the Economic Policy Council. Bryant College provides business consulting services and runs seminars and training programs through its Rhode Island Small Business Development Center and Export Assistance Center. The Brown Venture Forum sponsors panel discussions highlighting the problems and promise of new companies with high growth potential, bringing together entrepreneurs, venture capitalists, experienced business executives, and others who share the goal of starting and expanding businesses.

Last but certainly not least are the private development corporations, both non-profit and for-profit. Like their counterparts in the public sector, they use both image marketing and site marketing to bring in new industry. It is important for government to keep in regular contact with developers to have a sounding

board for public policy, and to get their perspective on changes in the economy that will affect how industrial land will be disposed.

03-05: Policies for Industrial Land Use

Having reviewed all these initiatives, programs, and incentives, we can now set forth a series of policies. These policies will be used to frame the implementation mechanisms in Part Five.

A. Energy

1. Encourage district heating in industrial parks and urban manufacturing districts, wherever a centrally located heating/cooling system can handle several companies' energy needs effectively and more efficiently.

2. Encourage industrial land use patterns that can take advantage of district heating, particularly in the older central cities within clusters of factory buildings.

3. Encourage use of endemic and renewable sources of energy in industrial buildings.

4. Provide site layouts that encourage the use of mass transit.

B. Proximity to a Skilled Workforce

1. Continue encouraging the expansion of dynamic industries that can benefit from proximity to institutions of higher learning and other sources of training and technology transfer, and build upon the existing skills of the state's workforce.

2. Encourage private efforts such as Bryant College's Small Business Development Center and the Brown Venture Forum, and blue-collar and white-collar training and retraining programs.

3. Establish training facilities and day care in industrial parks and revitalized mill complexes.

C. Infrastructure

1. Promote industrial sites and facilities within the older central cities that already have a full complement of public services.

2. Promote a regional approach to new industrial site development to include sharing of the financing of such sites and the regional sharing of the tax receipts from these sites.

3. Stimulate industrial growth through infrastructure extension and improvements only when consistent with state and local laws, policies, and plans. Recommendations for infrastructure extension and improvements should require discussion of the negative impact they may have, e.g., encouraging “sprawl” and unnecessary greenfield development. Proposals to extend or improve infrastructure in natural hazard areas should include appropriate mitigation measures, such as siting utility service underground where feasible, and assuring flood protection to sewage treatment plants and water supply and transmission lines.

4. Where extension and improvements occur, coordinate infrastructure financing between and among the federal government (where appropriate), the state, the communities, developers, and industry.

5. Recognize the need for information technology infrastructure, as well as “traditional” infrastructure including public water, sewers, transportation access, etc.

6. Balance the principle of “matching the plant to the land” against the desire to attract industry to “construction-ready” sites that are fully serviced but in limited supply and largely done “on spec.” Avoid the underutilization of infrastructure.

7. Where possible, schedule infrastructure improvements to coincide with promotional campaigns for urban industrial sites.

D. Zoning

1. Encourage cities and towns to make greater use of modern zoning tools, such as performance standards and mixed-use districts.

2. Promote regional analysis of industrial site development potential and discourage inappropriate zoning that contributes to uncontrolled growth.

3. Encourage planners and zoning boards to reserve industrial-zoned land with high development potential for industrial use, consistent with local comprehensive plans.

4. Discourage the use of public financing for industrial or commercial development that is not sited in appropriate areas.

E. Environmental Permitting

1. Encourage better communication to avoid procedural delays through pre-application meetings of developers, regulators at all levels of government, and interested representatives of community groups. Include the Economic

Development Corporation when EDC-managed monies or personnel are involved with the project.

2. Expedite the permitting process with adequate staffing and improved communication.

3. Foster “one-stop shopping” at key permitting agencies, such as the DEM and the Coastal Resources Management Council, so that a single contact with the agency can inform the developer of the permits that will be required, application procedures, etc.

4. Implement brownfields assessment and cleanup programs so that abandoned industrial land can be brought quickly into reuse, and permitting of the use of the land can be expedited.

F. Public Financing

1. Discourage tax incentives that are merely tax holidays requiring little commitment by industry to communities once they expire.

2. Maintain state sales tax exemptions on “taxable” bond issues used to capitalize low-interest loans to developers for the purchase of land and equipment.

3. Encourage communities to establish revolving loan funds if feasible.

4. Continue to use the state enterprise zone program with the mill building revitalization program to key economic incentives to the reuse of abandoned industrial property in the inner cities, involving local business, labor, and community groups as a sounding board for the Enterprise Zone Council.

5. Encourage the formation of Bank CDCs for industrial development, and support the Community Reinvestment Act as an essential part of this process.

6. Develop an industrial land bank modeled after the housing land bank started by the Rhode Island Housing and Mortgage Finance Corporation, with appropriate public oversight.

7. Establish a state industrial infrastructure fund as a combined grant/ revolving loan fund program, coordinating both industrial expansion and growth management according to state and local plans, policies, and laws.

8. Encourage regional economic development organizations, such as the Greater Providence Chamber of Commerce and the Central Rhode Island Economic Development Corporation, to participate in the Comprehensive Economic Development Strategy (CEDS), the first step in securing financial

assistance from the U.S. Economic Development Administration, for projects of regional economic benefit.

9. Encourage a policy of full public disclosure of all public financing associated with a project and the full costs related to such financing.

G. Marketing and Developing Sites

1. Encourage the EDC to continue the marketing of sites statewide, emphasizing the principle of “matching the plant to the land” (the client’s needs to the property), and coordinating with local and regional marketing efforts.

2. Maintain “public purpose” in marketing and developing sites, maximizing employment opportunities, making the best use of industrial land, emphasizing the “built environment,” discouraging “sprawl,” avoiding or mitigating natural hazards, encouraging transportation options other than the automobile, and maintaining Rhode Island’s quality of life.

3. Upgrade state and local information on existing and potential industrial sites, utilizing the latest technology available, including applications related to the R.I. Geographic Information System (RIGIS), to evaluate market feasibility and to display sites.

H. Private Sector Influence on Locational Factors

1. Encourage meaningful business and labor participation in public policymaking bodies such as the Economic Policy Council.

2. Consult and work with centers, forums, and institutes affiliated with colleges and universities to foster research and development, technology transfer, and entrepreneurship, being mindful of their impacts on industrial land use.

3. Keep in close contact with private development corporations, especially those building and managing industrial, office, or research parks. Identify key players in those organizations for their perspectives on economic trends that can affect industrial land use.

4. Recognize there are strategies in predominantly private-sector groups concerned with responsible land use and sustainable economic development that support and enhance Statewide Planning’s objective to “fit the plant to the land.” Work with such groups to emphasize the importance of public and private sector cooperation in many fields of endeavor – including the drafting of legislation, collaboration at conferences, design charettes, and actual development projects – as they pertain to industrial land use.

212-04: ANALYSIS OF CURRENT INDUSTRIAL LAND USE

04-01: Introduction

Industrial land use is enabled by zoning, a local government responsibility. However, industrial development potential transcends municipal boundaries and is affected by regional factors such as population, labor force, infrastructure capacity, and employment mix. Planners can define "region" in different ways; what we prefer for the purposes of this *Industrial Land Use Plan* is the *Substate Employment Growth Area*, a discrete unit made up of neighboring communities that share certain characteristics defining an economic base. The Substate Growth Areas take in communities normally associated with regions of Rhode Island, such as the Blackstone Valley, the West Bay, or Aquidneck Island.

04-02: Delineation of Substate Employment Growth Areas

In the late 1980s, an Industrial Land Use Advisory Committee was assembled to help Statewide Planning identify industrial development opportunities and constraints related to land use. The Advisory Committee delineated Substate Employment Growth Areas from Statewide Planning's population projections and employment forecasts. ((4)) After considering a variety of past, current, and future labor and industry statistics, as well as the less quantifiable cultural and historical relationships among Rhode Island's 39 cities and towns, the Advisory Committee described eight such areas (see Figure 212-04 (1)). We have retained those eight designations in this version of the *Industrial Land Use Plan*. ((104))

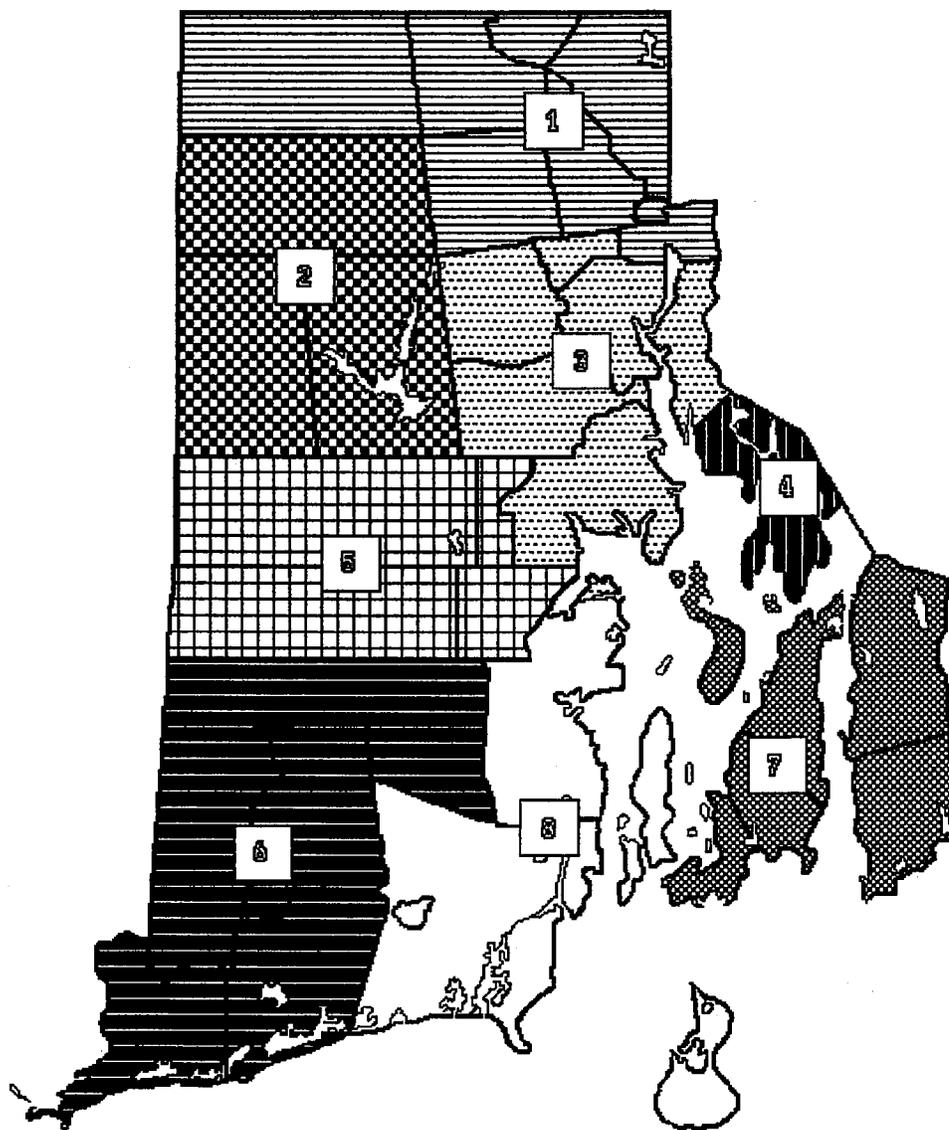
04-03: Methodology

Gathering the necessary information on industrial sites drew upon the inventory assembled for the original version of this plan. This was a cooperative effort between Statewide Planning staff and local planners.

The starting point was a technical paper, *Land Zoned for Industrial Use*, which depicted the configuration, use, size, and characteristics of 283 sites zoned industrial in Rhode Island as of 1977. ((62)) In the summer of 1988, the Division of Planning — as Statewide Planning was called at that time — reviewed the site maps with planning contacts in the communities to note necessary additions, deletions, or other corrections. In addition, every local planning department or planning board chairperson was sent a survey requesting information on the community's economic development goals, assets, and limitations. A similar survey was sent to over 30 local and regional economic development organizations.

Statewide Planning contacted the communities in 1996 and again in 1998 to update the industrial site inventory. Local planners were consulted, along with Statewide Planning's Local Planning Assistance Section (formerly part of the

**FIGURE 212-04(1):
RHODE ISLAND'S SUBSTATE EMPLOYMENT GROWTH AREAS**



Office of Municipal Affairs), and the communities' comprehensive plans were reviewed. As corrections were being made to the industrial site inventory, the revision of the *Industrial Land Use Plan* was begun.

Staff of the Economic Development Section of Statewide Planning produced maps of industrial sites depicting industrial development potential (IDP) according to a progressive classification system. Five IDP classifications were adopted:

- IDP-0(d): *Fully developed*. No vacant (undeveloped or cleared) land is available.
- IDP-0(r): *Recommended for rezoning (or already rezoned)*. Developed primarily with incompatible uses, e.g., residential, recreation, or landfill, or with predominant site features that cannot be reasonably mitigated by infrastructure. Such site features might include poor soils, presence of a primary recharge area, wetlands, flood hazard, presence of prime agricultural land, or presence of a unique natural area.
- IDP-1: *Low potential*. Development or expansion of existing use may be appropriate based on good highway access or other unique features, but is likely to be severely limited by very small available area, lack of infrastructure, and/or the presence of poor soils, groundwater aquifers, wetlands, or a flood hazard area.
- IDP-2: *Moderate potential*. Site may support development or expansion of existing use at a "light" or moderate level, as determined by the site's size, accessibility, and level of infrastructure, and the degree to which poor soils, aquifers, wetlands, and flood hazards can be avoided.
- IDP-3: *High potential*. Site has sizeable vacant parcels, public water, public sewer, good access, and no limiting physiographic features.

The staff used the R.I. Geographic Information System (RIGIS) and its PC-based counterpart, Maptitude®, to develop the maps. Eight maps resulted, one for each Substate Growth Area. These maps are included in the discussion of each area that follows.

The maps have a point overlay added to locate CERCLIS sites that are on the Department of Environmental Management's "active list" and sites that are on the Environmental Protection Agency's National Priority List (NPL). This includes properties at which environmental contamination is suspected or has been noted, but not yet remediated, thus presenting a likely delay in development. This does not preclude future use following remediation. In fact, elsewhere in this document, we presume remediation is feasible. Presenting the CERCLIS/NPL sites as an overlay labeled "Cerclis Sites" is intended to allow a peek below to assess site potential absent the contamination.

04-03-01: Population and Employment

For an assessment of population and employment trends in the individual Substate Growth Areas, staff used both published data and in-house regression analyses dating from 1975 and extending to 2020. Population projections beyond 1990 were derived from the May 1997 report, *Rhode Island Population Projections by Age, Sex, and Race 1995-2020 (Revised)*. Regression analyses for employment were based on data depicting private employment covered by Rhode Island's Employment Security Act provided by the R.I. Department of Labor and Training (DLT). The employment figures represent the number of jobs within a Substate Growth Area, *not* the number of residents of that Substate Growth Area with jobs. Some of the jobs so enumerated may be held by non-residents. An employment-to-population ratio was calculated as a measure of growth.

We made the decision to use "covered employment" because of the access we had to such information from the DLT on both a statewide and community basis, which was necessary for our analysis by Substate Growth Area. Using an in-house regression analysis kept the methodology simple and easy for others to replicate.

An alternative would have been to use data from the Bureau of Economic Analysis (BEA), a part of the U.S. Department of Commerce, which projected employment to the year 2045 that included the self-employed and government employees. We decided against using the BEA data for three reasons: first, because they were derived by a complex model over which we had no control and which did not generate employment data by community; second, the figures were rounded (presented "in thousands") so that small changes could not be discerned, even though, after a 25-year period, they could represent a significant trend; and third, they did not provide data back to 1975 that we felt were necessary to fit into the historical perspective of industrial land use described in the *Industrial Land Use Plan*. ((7))

A cautionary note is appropriate here regarding our projections of employment. Our regression analysis is based on employment numbers from the years 1975-1995. In some of the Substate Growth Areas, these numbers have established a downward trend in one sector, manufacturing, that in regression analysis theory would be expected to continue through 2020. If the trend in employment in a given sector is steadily downward, eventually it will disappear in the analysis — so in some cases it will even seem that beyond the year 2020 manufacturing employment will "zero out."

Regression analyses are based on historical data, not on options or possibilities that have not been fully realized. That is how the mathematical relationships in regression analyses are established that allow projections to be made. Regression analysis is therefore a reliable and easily replicable method of making a projection — in our case, future industrial land needs. This is a great strength of the method, but it is also a limitation. Regression analyses cannot account for circumstances that may reverse a trend until they actually occur.

Projections made by regression analyses therefore can never be considered etched in stone because circumstances can certainly change.

As more information becomes available over the years, it should be subjected to a new regression analysis so that any employment or population trend that will affect the industrial land use projections will be discovered. Even then, it will be important to remember that the trend will only reflect circumstances *at the time the analysis is made*. The analysis must always be kept fresh and current to have any claim of accuracy.

04-03-02: Site Suitability Analysis Using the Industrial Land Inventory

The staff's analysis of the industrial land inventory used the following procedure to evaluate sites in the eight Substate Growth Areas. Accessibility was characterized by a site's distance from state and interstate highways and state airports. The existence of rail lines or spurs was noted, although no effort was made to determine the status of rail service. Information on utility services was assessed to describe the availability of public water, sewerage, and natural gas at each site. (Electricity was assumed to be universally available.) Physiographic features were considered that would inhibit development, such as slope and wet or rocky soils, as well as wetlands and flood hazard areas.

A screen was applied to each industrial site with vacant acreage. Development potential was determined by the presence of utility service and the absence of physiographic, size, shape, or access constraints. *This was an "all-or-nothing" evaluation*. Even if just a small portion of the site had a sensitive environmental feature that at least theoretically could be avoided or mitigated, the *entire* site was considered constrained, and *all* its acreage was trapped in our screen. A site-by-site analysis was made subsequently in each Substate Growth Area to discuss other possibilities if more detailed information was available.

04-04: Results of the Preliminary Analysis

The inventory phase identified 336 industrial-zoned sites in 39 communities. The land area these sites encompassed was 32,455 acres. This represented an increase in the number of sites from 1977 (283 sites) and 1988 (328 sites), but a decrease in acreage (compared to 35,403 acres in 1977 and 35,186 in 1988). Refer to Figure 212-04(2).

The staff also determined that the amount of industrial-zoned land *in industrial use* has steadily increased since 1977, amounting to a gain of 4,360 acres over 20 years — even though manufacturing jobs traditionally associated with industrial areas have been lost. Industrial-zoned land in use other than industrial (e.g., commercial or residential) has decreased by 1,819 acres. Vacant industrial acreage has decreased by 5,485 acres. See Table 212-04(1). These trends suggest that the majority of the industrial acreage that was formerly vacant has gone into industrial use and the rest has been rezoned. Formerly vacant industrial land has apparently not fallen into other use by special exception. This follows a key

**TABLE 212-04(1):
INDUSTRIAL-ZONED LAND IN RHODE ISLAND
AND ITS USE, 1977-1999**

| | 1977 | | 1988 | | 1999 | |
|------------------------------|--------------|----------|--------------|----------|--------------|----------|
| Total sites zoned industrial | 283 | | 328 | | 336 | |
| | Acres | % | Acres | % | Acres | % |
| Total land zoned industrial | 35,403 | 100 | 35,186 | 100 | 32,455 | 100 |
| <i>Existing use:</i> | | | | | | |
| Industrial | 6,756 | 19 | 9,884 | 28 | 11,116 | 34 |
| Other | 7,938 | 22 | 7,720 | 22 | 6,113 | 19 |
| Vacant | 20,709 | 59 | 17,582 | 50 | 15,224 | 47 |

Source: Statewide Planning Program Industrial Land Inventory (1997-99). Totals may vary due to the rounding of fractions of acres to the nearest whole number.

recommendation of the first *Industrial Land Use Plan* for use to correspond properly with zoning.

04-04-01: Amenities at Industrial Sites

Finding that there is currently a total of 32,455 acres zoned industrial does not mean that all the acreage is conducive to industry. Vacant parcels may be shaped oddly or be too small to be viable as an industrial site; others may not be accessible by highway or airport; still others may lack public utilities, or may have unfavorable physiographic features. Some may be unremediated brownfields and/or CERCLIS sites, e.g., abandoned dumps.

Table 212-04(2) and Figure 212-04(3) present the results of our analysis of constraints to development on industrial-zoned land, and compare them to data from 1977 and 1988. There is clearly some double counting, with some sites showing both natural constraints and the absence of utilities.

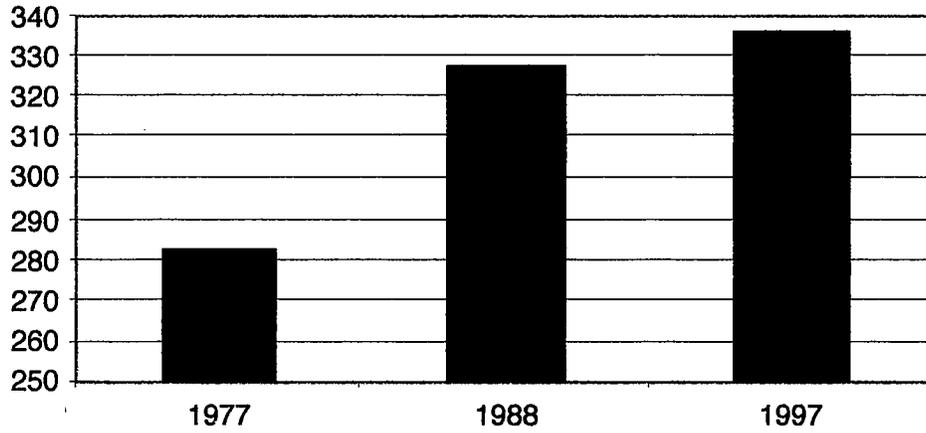
The staff found that only 1,485 vacant acres in total would fit the definition of prime industrial land, with public water, sewers, and no physiographic constraints to construction (soil, topographic or flood hazard concerns) or other site-specific problems, such as odd configuration or lack of access. See Table 212-04(3), p. 4.8. Of this total, six sites with 676 vacant acres in total had environmental liability concerns, with portions of the sites on the CERCLIS list.

04-04-02: What Do These Findings Mean?

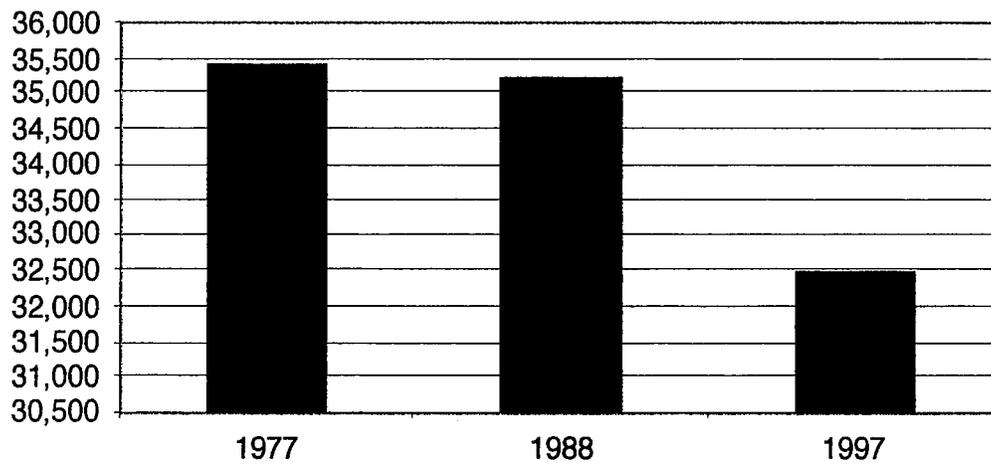
This level of analysis can present only a broad overview of the capabilities of Rhode Island's industrial land. It is intentionally conservative in its assessment

**FIGURE 212-04(2):
INDUSTRIAL-ZONED SITES AND ACREAGE IN RHODE ISLAND,
1977-1999**

Sites



Acres



**TABLE 212-04(2):
INDUSTRIAL SITE CONSTRAINTS, 1977-1999**

| | 1977 | | 1988 | | 1999 | |
|------------------------------|-------|--------|-------|--------|-------|--------|
| | Sites | Acres | Sites | Acres | Sites | Acres |
| Total sites zoned industrial | 283 | 35,403 | 328 | 35,186 | 336 | 32,455 |
| Without water | 50 | 9,719 | 57 | 6,774 | 54 | 4,277 |
| Without sewer | 113 | 18,365 | 123 | 17,224 | 119 | 11,429 |
| Without gas | 69 | 11,426 | 79 | 8,964 | 82 | 6,733 |
| Over 5 miles from highway | 86 | 13,162 | 126 | 13,214 | 1 | 114 |
| Over 5 miles from airport | 232 | 25,987 | 136 | 14,597 | 268 | 23,698 |
| Without rail access on site | 200 | 21,679 | 226 | 20,220 | 226 | 17,826 |
| Flood hazards | 102 | 10,416 | 138 | 18,193 | 87 | 10,710 |
| Major soil/topo. limitations | 69 | 17,306 | 122 | 24,121 | 96 | 18,456 |

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

of what constitutes a prime industrial site. At a greater level of detail, such an assessment might consider a site's suitability for certain types of development in spite of physical constraints or the absence of utilities. (For example, what is the nature of the industry? What would be the demand on the land? Would there be high or low employment densities? Could the developer compensate for the lack of infrastructure? Could utility service be expanded to those sites? Is it possible to regroup and configure fragmented parcels to utilize them more effectively?) Where possible, we make that analysis in the section that follows. We also presume that all CERCLIS sites can and will be remediated, making that constraint to development a temporary one – though something appropriate to flag to show that not all prime sites are construction-ready.

**TABLE 212-04(3):
VACANT SITE SUITABILITY ANALYSIS**

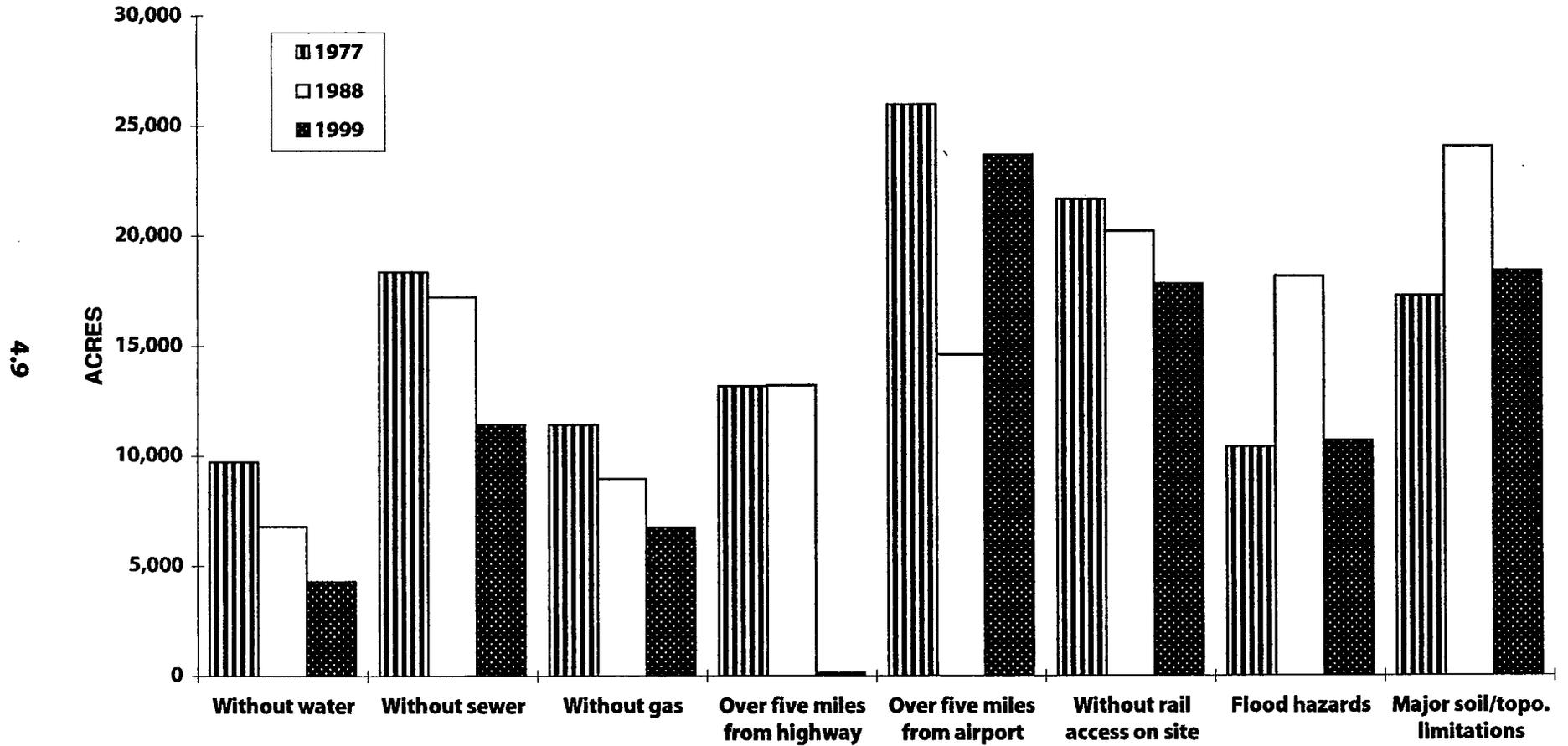
| | 1977 | | 1988 | | 1999 | |
|---|--------|-----|--------|-----|--------|-----|
| | Acres | % | Acres | % | Acres | % |
| All land zoned industrial | 35,403 | 100 | 35,186 | 100 | 32,455 | 100 |
| All vacant land zoned industrial ¹ | 20,669 | 58 | 17,582 | 50 | 15,224 | 47 |
| Vacant industrial land w/public water ² | 12,027 | 34 | 11,933 | 34 | 11,957 | 37 |
| Vacant industrial land w/public water & sewer ² | 6,852 | 19 | 5,134 | 15 | 7,727 | 24 |
| Vacant industrial land w/public water & sewer, no physiographic constraints ("prime") ² | 1,304 | 4 | 1,948 | 6 | 1,485 | 6 |
| Prime vacant industrial land on active CERCLIS sites ² | n/a | | n/a | | 676 | 2 |

¹ Where "vacant" is defined as *undeveloped* or *cleared*, as opposed to *abandoned*.

² Double counting occurs among these categories, yielding a sum greater than the total.

Source: Statewide Planning Program Industrial Land Inventory (1997-99); RIGIS (1999)

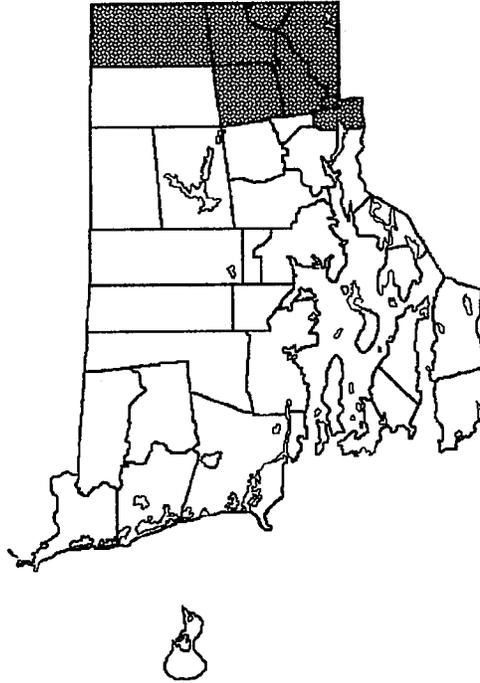
**FIGURE 212-04(3):
INDUSTRIAL SITE CHARACTERISTICS, 1977, 1988, 1999**



04-05: Analysis of Substate Employment Growth Areas

Eight Substate Employment Growth Areas have been delineated, drawing from the economic units identified in the 1990 version of the *Industrial Land Use Plan*. Growth in population as well as employment is analyzed.

04-05-01: Substate Employment Growth Area 1



Population and Employment Trends

| | <i>Population</i> | <i>Land area, acres</i> | <i>Employment</i> | <i>E/P</i> |
|-------------|-------------------|-------------------------|-------------------|------------|
| 1975 | 217,800 | 107,608 | 59,781 | 0.27 |
| 1980 | 218,153 | " | 71,760 | 0.33 |
| 1985 | 222,100 | " | 72,305 | 0.33 |
| 1990 | 227,131 | " | 74,300 | 0.33 |
| 1995 | 225,516 | " | 73,735 | 0.33 |
| 2000 | 227,603 | " | 79,511 | 0.35 |
| 2005 | 228,332 | " | 82,555 | 0.36 |
| 2010 | 228,676 | " | 85,600 | 0.37 |
| 2015 | 229,266 | " | 88,645 | 0.39 |
| 2020 | 230,713 | " | 91,690 | 0.40 |

04-05-01-01: Demographic Profile

Substate Employment Growth Area 1 is comprised of eight communities: Burrillville, Central Falls, Cumberland, Lincoln, North Smithfield, Pawtucket, Smithfield, and Woonsocket. It is one of the largest Substate Growth Areas, in terms of land area, at 107,608 acres.

This Substate Growth Area has a population density of 2.11 persons per acre, which is substantially more than the state's average. This reflects the urbanized nature of three of its constituent communities — Central Falls, Pawtucket, and Woonsocket. While these three cities have decreased in population from 1985 to 1995, the Substate Growth Area as a whole has gained and is expected to continue gaining population through 2020. This will occur, however, at a slower rate than the rest of the state; from 1995 to 2020, population will increase by 2.3 percent, or a mere 0.09 percent per year.

Employment, on the other hand, is expected to grow by nearly 18,000 jobs from 1995 to 2020, an increase of 24.4 percent over the 25-year period, or 0.97 percent per year. The ratio of employment by establishment in the substate area to resident population (E/P) will grow 21 percent from 1995 to 2020, or about 0.84 percent per year. This calculation is a convenient indicator of the status of Substate Growth Area communities as "bedrooms" for other areas (low E/P), or as economic engines themselves (high E/P). Our forecast predicts slow growth in the E/P after the 1980-1995 plateau, and a relatively high E/P by 2020.

04-05-01-02: Economy

The largest employment sectors in Substate Area 1 are manufacturing, wholesale and retail trade, and services. In the manufacturing sector, fabricated metal products (SIC 34) are a major industry; industrial and commercial machinery and computer equipment (SIC 35) and miscellaneous manufacturing (SIC 39) follow. Textile mill products (SIC 22) have been and remain a major player in the older industrial communities of Central Falls, Pawtucket, and Woonsocket. Primary metal industries (SIC 33) are strong in Lincoln and Pawtucket, chemical and allied products (SIC 28) in Cumberland, instruments and related products (SIC 38) in Smithfield, and rubber and plastic products (SIC 30) in Woonsocket.

In spite of an areawide strategy to retain and even expand manufacturing, the manufacturing sector is declining. Certain industries, however, are enjoying spurts of growth in individual communities: industrial and commercial machinery in Cumberland, rubber and plastic products in Pawtucket, food and kindred products (SIC 20) in Smithfield, and specialized textiles in Woonsocket. ((63))

Durable goods (SIC 50) dominate wholesale trade in Substate Growth Area 1. In retail, eating and drinking places (SIC 58) lead, followed by food stores (SIC 54) and miscellaneous retail (SIC 59). ((63))

Health services (SIC 80) account for the biggest share of services employment in Substate Growth Area 1, followed by business services (SIC 73). More modest numbers but pronounced growth is evident in engineering and related services (SIC 87). Amusement and recreation services (SIC 79) is high and apparently growing in Lincoln. ((63))

Statewide Planning's regression analysis of employment data from 1975 to 1995 projects manufacturing will decrease by 9,657 jobs from 1990 to 2020. Wholesale and retail trade will grow by slightly more than that amount, while services will account for the greatest job growth, at more than 14,500 jobs. The year 2000 will mark the date that services overtake wholesale and retail trade. Services will overtake manufacturing as the main source of employment in Substate Growth Area 1 in 2005. By 2010, manufacturing will be in third place behind wholesale/retail.

These trends are summarized by decade from 1990 to 2020 below. In the wholesale/retail mix, about 23 percent of the jobs will be in wholesale trade. ((64))

Major Employment Sectors

| Industry | 1990 | 2000 | 2010 | 2020 | Δ 1990-2020 |
|-------------------------|-------------|-------------|-------------|-------------|--------------------|
| Manufacturing | 31,310 | 27,756 | 24,704 | 21,653 | - 9,657 |
| Wholesale/retail | 18,089 | 22,322 | 25,190 | 28,059 | + 9,970 |
| Services | 17,724 | 22,563 | 27,427 | 32,290 | +14,566 |

04-05-01-03: Infrastructure

Substate Growth Area 1 takes in the Blackstone Valley. With its headwaters in Worcester, Mass., the Blackstone River flows southeasterly to its mouth in Pawtucket. It was at the Pawtucket Falls in 1790 that Samuel Slater harnessed the power of the Blackstone to mechanize a system for spinning cotton, catalyzing America's Industrial Revolution. Reflecting this heritage, the Blackstone Valley continues to be characterized by a series of mill villages. The area becomes more rural as one moves farther west of the river.

Transportation: The area has good access to interstate highways, with I-95 serving as the main north-south route and I-295 acting as a beltway around the Providence metropolitan area. Rhode Island Routes 146, 7, 116, 122, and 102 are also major roadways. A variety of land uses are supported along them.

The I-295/R.I. 146 interchange has been the focal point of extensive commercial and industrial development. In addition, R.I. Route 99 provides an artery between this interchange and the Cumberland/Woonsocket area, particularly the Highland Industrial Park that straddles the two communities.

Almost the entire Blackstone Valley is serviced by the Providence and Worcester Railroad. Freight service is provided off the P&W's mainline, which bisects the valley along the riverbed of the Blackstone.

The North Central State Airport is the area's general aviation facility.
((11:4.9))

Water: The area's utilities range from full service — or virtually full service, with the exception of isolated blocks — in Pawtucket, Central Falls, Lincoln, and Woonsocket, to limited service in smaller, less developed towns. There are ten public water systems serving the area.

The entire City of Pawtucket is served by the municipal water system, which also provides water to Central Falls and the southern portion of Cumberland. Woonsocket is also fully served by its own system, and provides water to Union Village in North Smithfield and to a small section of Cumberland. Smithfield has one private and two public water systems, all of which draw their supplies from the Providence system. These systems combine to serve the southern and central areas of the town.

Lincoln, like Smithfield, relies on the Providence system for its water supply but has expanded service to practically the entire town. Lincoln has a history of encouraging industries to supply their own process water; this was due originally to contaminated wellfields, but now serves as a conservation measure and to mitigate the relatively low pressure of the extended Providence system.

Cumberland operates its own system that serves a small area from both surface water and groundwater supplies. Burrillville has two water systems that serve the villages of Pascoag and Harrisville through wellfields of limited expansion potential. ((11:4.9-4.10))

Sewers: Like water, sewers are available to virtually all areas of Pawtucket, Central Falls, Lincoln, and Woonsocket; elsewhere in the Blackstone Valley, service areas are limited to the more populated villages. Burrillville's sewer service areas serve the central part of the town, i.e., the villages of Pascoag and Harrisville, and the Spring Lake area. North Smithfield has sewers in Slatersville and Union Village. Smithfield's southern villages are sewer service, as is a portion of the Smithfield Industrial Park. Cumberland's sewer service is limited to the southwestern portion of the town. ((11:4.10-4.11)), ((78))

The Blackstone Valley District Commission formerly operated the system that serves Pawtucket, Central Falls, Lincoln, and Woonsocket, and portions of Cumberland and Smithfield. It merged several years ago with the Narragansett Bay Commission.

04-05-01-04: Site Analysis

Reflecting its manufacturing history, Substate Growth Area 1 has 7,911 acres in total zoned for industrial use. This accounts for 24 percent of the state's total industrial-zoned land. The acreage actually in industrial use in the area — as opposed to residential or commercial use — represents 27 percent of the state's

land in industrial use. Both figures are disproportionately high for a region that encompasses but 16 percent of Rhode Island's land area.

More than half of the substate area's industrial-zoned land, 4,133 acres, is vacant (undeveloped). This represents a substantial portion, 27 percent, of the state's total vacant industrial land. In addition, this substate area possesses the largest share, 40 percent, of the state's vacant industrial land considered of *highest industrial development potential* — with utilities, sizeable parcels, and no physiographic or environmental constraints (e.g., floodplains or wetlands). ((65))

Table 212-04(4) summarizes these findings. A town-by-town analysis follows.

Burrillville: The Town of Burrillville, in the extreme northwest corner of the state, has 11 sites set aside for industrial development, totaling 530 acres. While five sites have vacant industrial acreage, three have soil or topographic constraints that may hinder development, and two lack public water (although they have sewers and are near public water lines).

Only one of the vacant sites is fully serviced and is not limited by a physiographic or environmental concern. That site contains four vacant acres suitable for expansion of existing use. It is mostly developed with old textile

**TABLE 212-04(4):
SUMMARY OF INDUSTRIAL-ZONED LAND,
SUBSTATE EMPLOYMENT GROWTH AREA 1**

| <i>City or Town</i> | <i>Total</i> ¹ | <i>Industrial use</i> | <i>Other use</i> | <i>Vacant</i> | <i>Vacant/high pot.</i> |
|--------------------------------|---------------------------|-----------------------|------------------|---------------|-------------------------|
| Burrillville | 530 | 105 | 84 | 341 | 0 |
| Central Falls | 111 | 81 | 28 | 2 | 0 |
| Cumberland | 1,023 | 480 | 198 | 345 | 135 |
| Lincoln | 1,406 | 748 | 123 | 535 | 92 |
| No. Smithfield | 593 | 245 | 11 | 337 | 303 |
| Pawtucket | 862 | 544 | 270 | 48 | 0 |
| Smithfield ² | 2,718 | 306 | 79 | 2,333 | 48 |
| Woonsocket | 668 | 465 | 11 | 192 | 18 |
| Total | 7,911 | 2,974 | 804 | 4,133 | 596 |
| State total | 32,455 | 11,116 | 6,113 | 15,224 | 1,485 |
| % state total | 24.38 | 26.75 | 13.15 | 27.15 | 40.13 |

¹ All values are in acres, with the exception of "% state total." Use totals may be greater than total acres due to rounding of fractional acreage to nearest whole number.

² Use data for the Town of Smithfield were incomplete. Statewide Planning Program staff derived these figures from plat maps provided by the town. See note in Table 212-04(5).

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

buildings, some of which contain vacant leasable space. Unfortunately, the site lacks adequate parking for full redevelopment of the existing buildings.

A second site, with two vacant acres — the Burrillville Industrial Park — lies over an aquifer recharge zone and within an overlay protection district. The park is about 95 percent occupied, and features a 10,000 sq. ft. "spec" building.

A third site with vacant acreage comprises the largest industrial zone in the town, some 258 acres, and is almost entirely vacant. Public water can be made available to the site from an abutting subdivision (Lynmar Estates). There are some wetlands in the front of the property. The site includes four 3-4 acre lots fronting on R.I. Route 102, one of which has a vacant/underutilized building.

Another largely vacant site is shared with the former landfill (now capped and closed), the sewage treatment plant, and the dog pound. This site is also very close to the public water supply, and the water line is likely to be extended onto the site. Access is somewhat restricted in that tenants will need to obtain the town's permission to use Clear Water Drive, a private way, to gain access to Route 102. Alternatively, the Town Council may be petitioned to accept Clear Water Drive as a public street. There are slopes on the site, but they may not constitute a serious constraint to development. ((72))

The fifth site is an abandoned excavation pit located on R.I. Route 7 (Douglas Pike), where a small building and excavation hardware remain. It is available for sale or lease. A small portion of the site is the former Western Sand and Gravel Superfund site but the remainder is redevelopable. Monitoring wells exist on-site to test for groundwater contamination.

Of the six fully-occupied sites, two sites are in full industrial use; one site is located on the Slatersville Reservoir, and is predominantly (almost fully) in non-industrial use; and the remaining site is split almost evenly between industrial and non-industrial uses. It has been recommended that the site in mostly non-industrial use be rezoned.

Central Falls: The City of Central Falls has only 111 acres zoned industrial, the least of the eight Blackstone Valley communities, but accounting for nearly one-sixth of the city's total land area.

Almost every industrial site in Central Falls is fully occupied. Four are devoted to full industrial use; three are predominantly industrial; one is predominantly non-industrial, and contains two vacant acres. Portions of the latter site have been redirected to "Urban Conservation" and "Planned Unit Development" zones, considerations viewed as impediments to further industrial development.

All of the city's industrial sites are fully serviced with excellent transportation access, and none have physiographic or environmental constraints.

However, the virtual unavailability of vacant acreage in the city is likely to limit industrial expansion to existing, underutilized buildings. ((8))

Cumberland: The Town of Cumberland has 15 industrial sites amounting to 1,023 acres. Nine of these sites are fully serviced and have excellent transportation access; natural gas is available at all sites but one.

Ten of the 15 sites are fully occupied, including five sites that are not sewered. Of these ten, nine are in full industrial use.

Each of the remaining five sites has from 15 to 120 vacant acres. Two sites are constrained by floodplains; one of them also has unfavorable soil and topographic conditions. A third site, with 120 vacant acres, has no such constraints but lacked both sewer and water until recently. This is the site of the "Highland II" complex, part of a large industrial park straddling Woonsocket and Cumberland on R.I. Route 122, near the terminus of Route 99. Highland II is now fully serviced, with sewer, water, and natural gas. ((68))

Two other sites have full utilities and no apparent environmental constraints: the Valley Gas Company headquarters site on Route 122 with 15 vacant acres, and a 157-acre site at the intersection of Route 122 and Angell Road with 110 vacant acres. The latter is home to a sand and gravel excavation business. Its development potential depends partly on what its condition would be if the excavation operation ended. ((8))

Lincoln: The Town of Lincoln has 1,406 industrial-zoned acres spread over eight sites, all of which are fully serviced and have good or excellent transportation access. Two of these sites are fully occupied, predominantly with industrial uses. The remaining six have vacant acreage ranging from 17 to 211 acres, and non-industrial as well as industrial uses.

The first of these six, located on Manville Road along the Blackstone River, has 42 vacant acres, but has been deemed impractical for industrial development because of its narrow configuration, occupation by a railroad right-of-way, and flood hazard. Another site, on R.I. Route 116 and offering 211 vacant acres, is characterized by rocky soils, limited access through a residential area, and prior use as a gravel pit that may add to development cost.

Floodplains or soil and topographic constraints limit development on three other sites in Lincoln that together account for 190 vacant acres. One of these sites has excellent highway access, however, being located at the intersection of Routes 116 and 146.

The one site most apparently favorable to development in Lincoln is actually an extension of the last site described above. It is being developed rapidly as a business park. The most recent estimate (1996-97) of vacant land at this site was 92 acres, all of which meet the qualifier in Table 212-04(04) of "high potential." Transportation access is outstanding among industrial sites, being

within one mile of state highway, interstate highway (I-295 leading to I-95), and North Central State Airport. ((8))

North Smithfield: The Town of North Smithfield has four industrial sites, only one of which is fully serviced. This site includes the Greater Woonsocket Industrial Park and is located at the intersection of R.I. Route 5 and School Street. It has 303 vacant acres, natural gas service, and rail access. Several manufacturing buildings exist on this site, one of which has approximately 120,000 sq. ft. of available space. Two other buildings need extensive renovation but could be rehabbed for industrial uses.

One of the remaining sites are fully occupied and in industrial use. Another site, measuring 10 acres, is entirely vacant, but constrained by flood hazard, soil and topographic limitations, poor access, and a lack of sewerage. This site is located just south and west of the intersection of Route 122 and the Massachusetts line.

The fourth site has moderate development potential, with sewer, electricity, and natural gas, and water in close proximity and soon to be extended to the site. All of the site's 24 acres are vacant and are being marketed for sale as land for "manufacturing."

North Smithfield's industrial sites, occupied and vacant, total 593 acres. ((8))

Pawtucket: The City of Pawtucket has 862 industrial-zoned acres located at 15 sites. Five of the 15 sites are fully occupied; all but one of the 15 sites is fully serviced (it lacks sewers). All Pawtucket sites are within 1-5 miles of state or interstate highways. Some have problems with access to and from the site, however, being surrounded by other, primarily residential uses. Parcels tend to be small. Altogether in the city there are only 48 vacant acres, about 5.6 percent of the total industrial acreage.

Three sites have soil and topographic constraints; one of these, located along the Moshassuck River, also has floodplain concerns. That site is known as the Moshassuck Valley, and encompasses an enterprise zone; its vacant land amounts to 14 acres. Another site (at the intersection of Roosevelt Avenue and East Street) has four vacant acres, but they are not considered developable.

The seven remaining sites have vacant acreage ranging from one to nine acres. At one of these sites, at the intersection of Pleasant and Division Streets, the vacant acreage is being considered for residential development. Most of the other sites suffer from fragmentation and the availability of only small parcels, making them suitable only for expansion of existing uses or very small-scale development. They are also likely to be surrounded by non-industrial and potentially conflicting uses. ((8))

Smithfield: There are seven industrial-zoned sites in Smithfield, nearly all with moderate or high development potential. With the exception of one site on

Farnum Pike (Plat 46/49), all have the full suite of utility services, including natural gas. None have rail access, however. One site, on Albion Road, is fully occupied.

Among the Smithfield sites is the largest industrial site in the state, located northeast of the intersection of Douglas Pike and R.I. Route 116. It measures 2,410 acres in total, with 155 acres in industrial use, 38 acres in non-industrial use, and 2,217 acres vacant. Conditions there range from fairly level and well drained to steeping sloping and swampy. The majority of the vacant acreage is rocky and would require considerable preparation. The site is therefore considered of moderate potential.

Other Smithfield sites have vacant acreages ranging from eight to 39 acres. Three sites are considered of high potential: Plat 17, Spragueville and Mountaindale Roads; Plat 25/16, Farnum Pike; and Plat 37, Cedar Swamp Road.

Woonsocket: The City of Woonsocket is known for its mill buildings, some of which form sprawling complexes in various states of use or disrepair, or in very creative reuse (such as the Museum of Work and Culture). Woonsocket has 668 industrial-zoned acres, only 11 acres of which are in non-industrial use. ((66))

The city has 14 industrial sites, three of which are fully occupied (including the Woonsocket side of the Highland Industrial Park). These three sites account for 270 acres. Of the remaining 11 sites, five have environmental constraints (two with flood hazard potential, one with wetlands, and two with steep slopes and rocky soils). Nearly all sites are characterized by the presence of mill buildings, and most offer the opportunity only for expanding existing uses rather than locating new ones because of small parcels and modest acreage. All are fully serviced, all are within a mile of a state highway, and five have rail access.

One site with what at first appears to have potential for new industrial development is the Cherry Brook area, with 25 vacant acres. However, this site is listed as possibly containing wetlands among its vacant acreage and so does not meet our criteria for high potential sites (which include no environmental constraints). Another site, along Cumberland Hill Road, offers 91 vacant acres, but features at least some rocky soils and steep slopes (soil/topography constraints).

Two other sites offer 18 and 20 acres respectively with no environmental constraints, but, again, feature small parcels located around existing mill buildings. Vacant parcels at the latter site, on Route 122, appear to have access problems as well. Unfortunately, siting problems at this level are not captured in our screen. ((8))

04-05-01-05: Summary of Industrial Land Use Potential

Substate Growth Area 1 is an interesting mix of communities, anchored by older urban areas with "mature" industrial buildings. These include not only the cities of Central Falls, Pawtucket, and Woonsocket, but also the distinct mill villages in each of the other towns. In these areas, the utility infrastructure is fully

developed, with many sites having not only public water and sewers, but natural gas service as well. Some sites have rail access.

Those familiar with the first *Industrial Land Use Plan* will remember the plan's emphasis on reusing underutilized or vacant industrial space. Within the "built environment" of Substate Growth Area 1, communities are rising to the occasion and exploiting three distinct but related economic development opportunities — Rhode Island's enterprise zone, mill building reuse, and brownfields program.

Northern Rhode Island has been in the forefront of the enterprise zone program. Three of the original five enterprise zones are located in Substate Growth Area 1: Woonsocket/Cumberland, taking in downtown Woonsocket and the Highland Industrial Park; Central Falls/Cumberland, which includes the entire city of Central Falls and the Valley Falls neighborhood of Cumberland; and Pawtucket/Lincoln, comprised of the Moshassuck Valley area.

A total of eight mill buildings have been certified by the Enterprise Zone Council for redevelopment in Substate Growth Area 1, one each in Burrillville and North Smithfield, and three each in Pawtucket and Woonsocket. The mill building reuse program is a direct offshoot of the enterprise zone program.

However, the built environment typical of the substate area's urban neighborhoods and enterprise zones also constrains industrial development. Surrounding uses may conflict with industrial activity and pose access problems — even though the areas may be only short distances from state or interstate highways. Vacant parcels may be small and scattered. Rocky soils, unfavorable topography, and Blackstone River floodplains may contribute to the problem and explain why some of the vacant parcels have remained undeveloped.

Our review of sites is similarly tempered in the more suburban or rural areas of Substate Growth Area 1. While there may appear to be more possibilities for industrial siting than in the fragmented urban areas, there are still only a limited number of sites that meet our criteria for truly high-potential, construction-ready sites. Lack of sewers may be one constraint, soil and topography another.

Table 212-04(5) gives a status report on infrastructure conditions on vacant industrial land in each of the communities in Substate Growth Area 1 and indicates where the highest-potential acreage may exist. Out of a total of 82 industrial sites covering more than 4,100 acres, only 808 acres, distributed throughout the substate area, have the utility service and lack of environmental constraints to be considered construction-ready. However, this acreage may be further constrained by lack of access, fragmentation of parcels, and room only to expand existing uses. The number should be compared with the "Vacant/High Potential" acreage listed in Table 212-04(4).

This point is made with more visual impact on Map 212-04(1), which shows the industrial development potential (IDP) of the area's industrial sites

**TABLE 212-04(5):
VACANT INDUSTRIAL ACREAGE CHARACTERISTICS,
SUBSTATE EMPLOYMENT GROWTH AREA 1**

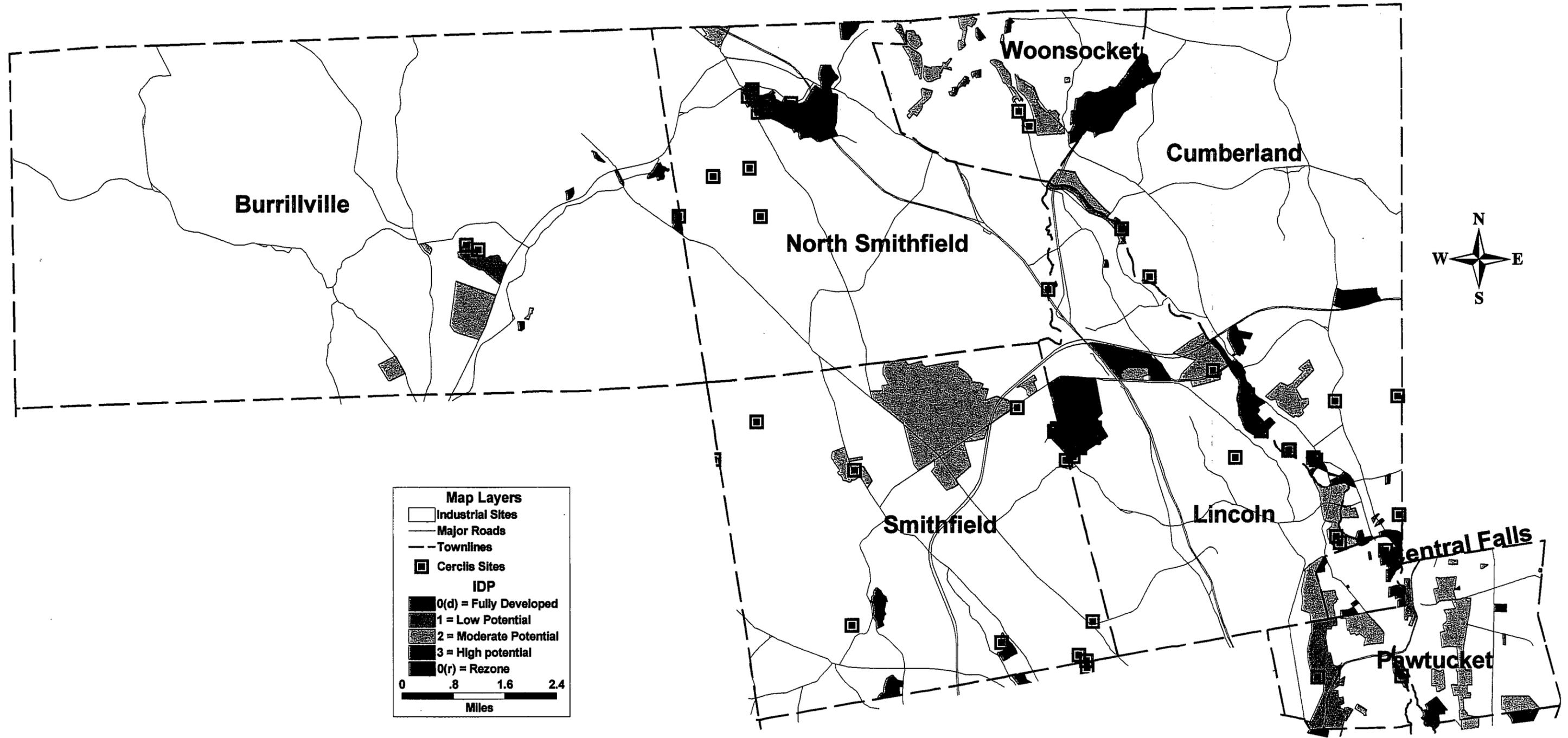
| <i>City or town</i> | <i>Industrial sites</i> | <i>Vacant acres</i> | <i>w/Water</i> | <i>w/Sewer</i> | <i>w/Rail</i> | <i>w/Utilities & No Env. Constr.</i> |
|-------------------------------|-------------------------|---------------------|----------------|----------------|---------------|--|
| Burrillville | 11 | 341 | 234 | 341 | 0 | 4 |
| Central Falls | 8 | 2 | 2 | 2 | 0 | 2 |
| Cumberland | 15 | 345 | 225 | 205 | 100 | 245 |
| Lincoln | 8 | 535 | 535 | 535 | 76 | 92 |
| No. Smithfield | 4 | 337 | 313 | 327 | 313 | 303 |
| Pawtucket | 15 | 48 | 48 | 48 | 28 | 30 |
| Smithfield¹ | 7 | 2,333 | 2,333 | 2,294 | 0 | 77 |
| Woonsocket | 14 | 192 | 192 | 192 | 132 | 55 |
| Total | 82 | 4,133 | 3,882 | 3,944 | 650 | 808 |

¹ 1996 use data, including vacant acreage, were not available from the Town of Smithfield. Figures here for the town were derived from town plat maps by Statewide Planning Program staff.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

according to the scheme described in the Methodology on page 4.3 — IDP-1, IDP-2, etc. This map is found on the second page following. Sites with the highest development potential, ranked IDP-3, correspond with the “Vacant/High Potential” acreage given in Table 212-04(4). The “Cerclis Sites” overlay shows CERCLIS and NPL sites within and outside industrial sites in each community.

MAP 212-04(1)
SUBSTATE EMPLOYMENT GROWTH AREA 1



Map Layers

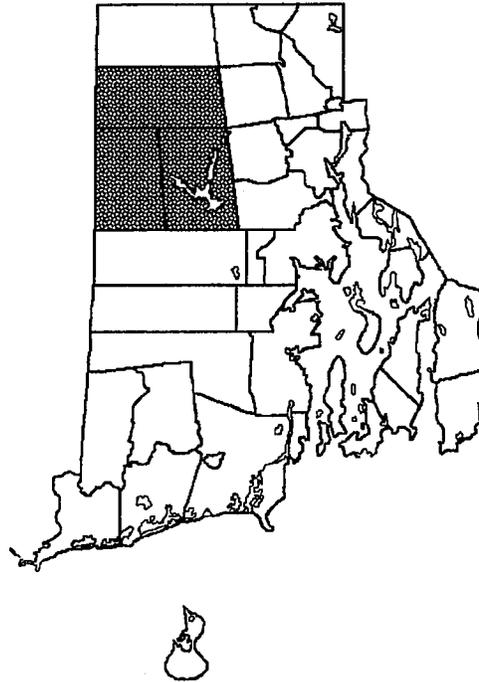
- Industrial Sites
- Major Roads
- Townlines
- Cercis Sites

IDP

- 0(d) = Fully Developed
- 1 = Low Potential
- 2 = Moderate Potential
- 3 = High potential
- 0(r) = Rezone

0 .8 1.6 2.4
Miles

04-05-02: Substate Employment Growth Area 2



Population and Employment Trends

| | <i>Population</i> | <i>Land area, acres</i> | <i>Employment</i> | <i>E/P</i> |
|-------------|-------------------|-------------------------|-------------------|------------|
| 1975 | 18,200 | 97,008 | 1,101 | 0.06 |
| 1980 | 19,325 | " | 1,280 | 0.07 |
| 1985 | 20,900 | " | 1,703 | 0.08 |
| 1990 | 23,339 | " | 1,890 | 0.08 |
| 1995 | 23,172 | " | 2,310 | 0.10 |
| 2000 | 24,632 | " | 2,565 | 0.10 |
| 2005 | 26,025 | " | 2,868 | 0.11 |
| 2010 | 27,444 | " | 3,171 | 0.12 |
| 2015 | 28,969 | " | 3,474 | 0.12 |
| 2020 | 30,865 | " | 3,776 | 0.12 |

04-05-02-01: Demographic Profile

Three towns comprise Substate Employment Growth Area 2: Foster, Gloucester, and Scituate. At 97,008 acres, this substate area is one of the state's largest; at the same time, it has the lowest population density (0.24 persons per acre), reflecting its overwhelmingly rural character.

Substate Growth Area 2 is becoming increasingly suburbanized, with a population growth rate of nearly 11 percent from 1985 to 1995 — one of the

highest in the state. Employment growth in the same period was about 36 percent, *the* highest in the state. Even so, both the population density and the employment-to-resident-population ratio (E/P) are expected to remain the lowest in Rhode Island through 2020, maintaining the three municipalities' status as bedroom communities. The E/P is projected to grow 20 percent from 1995 to 2020, or 0.8 percent per year.

04-05-02-02: Economy

The three predominant employment sectors in Substate Growth Area 2 are services, wholesale and retail trade, and construction. Manufacturing is not among the top three industrial groups.

Health services (SIC 80) dominate the service sector areawide and are expected to continue growing. Social services (SIC 83) are second in employment, but should exhibit little or no growth. Business services (SIC 73) are third, with the most dramatic gains in growth taking place in Glocester and Scituate. ((63))

Durable goods (SIC 50) rank first in wholesale trade employment, which has slumped in all three communities. The highest retail employment is in eating and drinking places (SIC 58). Food stores (SIC 54) are second, followed by miscellaneous retail (SIC 59). ((63))

Special trade contractors (SIC 17) account for about three out of four construction jobs in Substate Growth Area 2; general building contractors (SIC 15) represent the remainder. Both have exhibited decreases since the building boom of the 1980s but are recovering somewhat. ((63))

Manufacturing, which slipped to fourth place among industrial groups in employment in 1995, is dominated by fabricated metal products (SIC 34), primarily in Scituate. Nearly all manufacturing jobs in Foster are in lumber and wood products (SIC 24). ((63))

Even with the relegation of manufacturing to fourth place, that sector is expected to grow in the period from 1990 to 2020, adding 65 jobs — an increase of 25 percent. (It will, however, remain in fourth place according to our projections.) Construction as a whole will grow steadily in the same period, adding 171 jobs. This sector, holding third place, will have the second highest growth rate among area industries — 96 percent.

Wholesale and retail trade will increase by 324 jobs, or 52.5 percent. About 11 percent of the wholesale/retail jobs will be in wholesale trade. ((64))

The industry leader, by far, will continue to be services, which overtook wholesale/retail in 1995. This sector will increase by 995 jobs, or 171 percent, accounting for the most employment in Substate Growth Area 2 through 2020.

These trends are summarized below.

Major Employment Sectors

| <i>Industry</i> | 1990 | 2000 | 2010 | 2020 | Δ 1990-2020 |
|-------------------------|-------------|-------------|-------------|-------------|--------------------|
| Construction | 200 | 238 | 330 | 392 | +192 |
| Manufacturing | 260 | 278 | 301 | 325 | + 65 |
| Wholesale/retail | 617 | 661 | 829 | 941 | +324 |
| Services | 582 | 959 | 1,268 | 1,577 | +995 |

04-05-02-03: Infrastructure

Transportation: The communities in Substate Growth Area 2 do not have direct access to interstate highways, but can reach them via U.S. Routes 6 or 44 (west to I-395 in Connecticut, or east to I-295, and then to I-95), or R.I. Route 102 (south to I-95). These routes, respectively, provide the major east-west and north-south transportation corridors. Development along these highways is scattered and varied. This substate area is not serviced by rail or airport facilities.

Water and sewers: The rural character of the area and its low population density are reflected in the lack of a developed utility infrastructure to serve industrial sites. In almost all cases, both water and wastewater treatment need to be provided on-site. One of Scituate's industrial sites does have public water, but it is presently fully occupied.

04-05-02-04: Site Analysis

Table 212-04(6) indicates that, despite Substate Growth Area 2 being one of the state's largest in terms of land area, it has the least amount of acreage set aside for industrial use. We noted in the 1990 *Industrial Land Use Plan* that "a total

**TABLE 212-04(6):
SUMMARY OF INDUSTRIAL-ZONED LAND,
SUBSTATE EMPLOYMENT GROWTH AREA 2**

| <i>Town</i> | <i>Total</i> ¹ | <i>Industrial use</i> | <i>Other use</i> | <i>Vacant</i> | <i>Vacant/high pot.</i> |
|----------------------|---------------------------|-----------------------|------------------|---------------|-------------------------|
| Foster | 111 | 0 | 22 | 89 | 0 |
| Glocester | 185 | 17 | 4 | 164 | 0 |
| Scituate | 28 | 27 | 0 | 1 | 0 |
| Total | 324 | 44 | 26 | 254 | 0 |
| State total | 32,455 | 11,116 | 6,113 | 15,224 | 1,485 |
| % state total | 1.00 | 0.40 | 0.43 | 1.67 | 0.00 |

¹ All values are in acres, with the exception of "% state total." Use totals may be greater than total acres due to rounding of fractional acreage to nearest whole number.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

of 315 acres divided among five sites has been designated for industrial use," and of that total, "253 acres remain vacant." ((11:4.19)) This is very similar to the situation today: there are six sites and a total of 324 acres, of which 254 are vacant. Lack of infrastructure and some environmental concerns, described in the community-by-community analysis below, impart very low potential to these sites for industrial development.

Foster: Foster's only industrial site, measuring 111 acres, is located at the intersection of R.I. Route 101 and Windsor Road. It has 22 acres in non-industrial use. Approximately 48 acres at the site has changed from "Manufacturing-Industrial" to "Agriculture-Residential." Development is further hampered by its lack of utilities and physiographic limitations. ((8))

Glocester: The Town of Glocester has two industrial sites, measuring 183 acres and two acres respectively. The larger site, on Sheldon Road, has 16 acres in industrial use and four acres in non-industrial use. While 163 acres remain vacant, there are several constraints to development. First, this site does not have frontage on a state highway. Second, no public utilities are in place or are likely to be provided. Third, the nearest interstate highway, rail line, or airport is 15 miles away. Fourth, the site adjoins a pond and contains streams with Class B water quality. The site also contains rocky and wet soils, with only small areas that do not have severe soil limitations.

The second site, located on Putnam Pike (Route 44), is occupied by four separate businesses in four buildings totaling about 16,000 sq. ft. The remaining space on the site is only suitable for expanding these buildings. ((8))

Scituate: The Town of Scituate boasts two fully-occupied industrial sites, measuring six acres and 19 acres respectively. The remaining site, south and east of the intersection of R.I. Route 116 and Danielson Pike, has a single acre vacant. Unfortunately, the vacant area contains wetlands and is not conducive to development. ((8))

04-05-02-05: Conclusions

The industrial development potential of Substate Growth Area 2 is severely limited by a lack of appropriate industrial acreage, a lack of infrastructure, relative remoteness compared to the rest of the state, and wet and rocky soils. The principal geographic feature of the area — a system of lakes and rivers that feed into Rhode Island's main potable water supply, the Scituate Reservoir — adds flood hazard concerns, plus concerns about protecting the reservoir watershed.

The job growth forecasted by Statewide Planning is modest enough to keep Substate Growth Area 2 the least "industrial" of the eight areas examined in this plan. Whether this growth can be accommodated by the area's presently tiny industrial land inventory will depend on the types of industries that grow within the broad industrial groups we surveyed, their demands on land, and if shortcomings in topography, soils, and infrastructure can be mitigated responsibly.

We expect there will be some flexibility in siting the leading disciplines within the service (health services) and construction sectors (special trade contractors — e.g., plumbers, painters, and electricians, who often work out of their homes). Similarly, one out of every four jobs in wholesale trade will be located on non-industrial land. ((11))

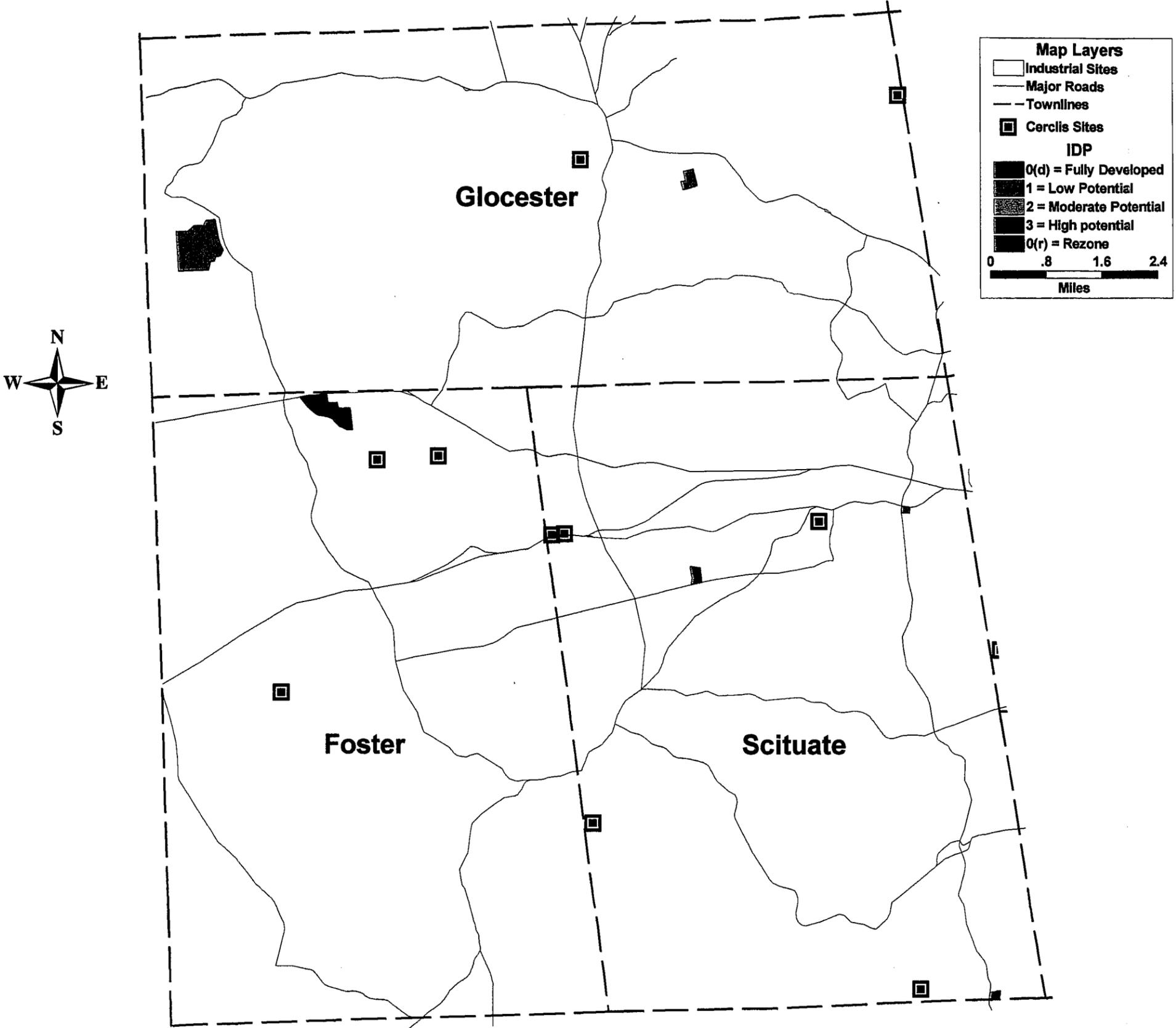
Table 212-04(7) confirms the dearth of construction-ready sites within the constituent communities. This is mirrored in Map 212-04(2), which describes the development potential of Substate Growth Area 2.

**TABLE 212-04(7):
VACANT INDUSTRIAL ACREAGE CHARACTERISTICS,
SUBSTATE EMPLOYMENT GROWTH AREA 2**

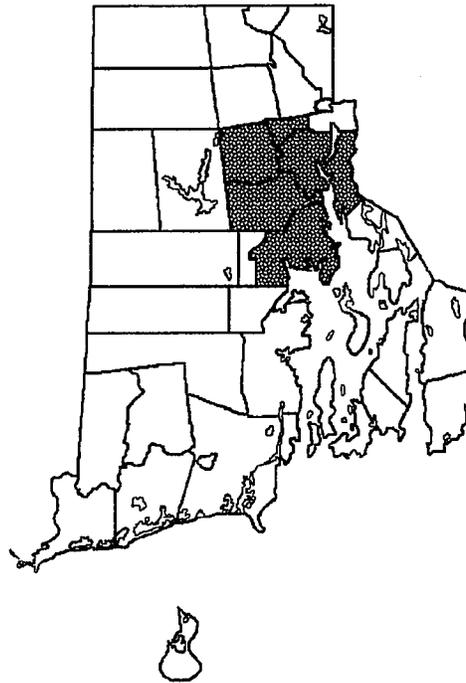
| <i>Town</i> | <i>Industrial sites</i> | <i>Vacant acres</i> | <i>w/Water</i> | <i>w/Sewer</i> | <i>w/Rail</i> | <i>w/Utilities & No Env. Constr.</i> |
|------------------|-------------------------|---------------------|----------------|----------------|---------------|--|
| Foster | 1 | 89 | 0 | 0 | 0 | 0 |
| Glocester | 2 | 164 | 0 | 0 | 0 | 0 |
| Scituate | 3 | 1 | 0 | 0 | 0 | 0 |
| Total | 6 | 254 | 0 | 0 | 0 | 0 |

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

MAP 212-04(2)
SUBSTATE EMPLOYMENT GROWTH AREA 2



04-05-03: Substate Employment Growth Area 3



Population and Employment Trends

| | <i>Population</i> | <i>Land area, acres</i> | <i>Employment</i> | <i>E/P</i> |
|-------------|-------------------|-------------------------|-------------------|------------|
| 1975 | 430,300 | 78,185 | 169,478 | 0.39 |
| 1980 | 420,994 | " | 185,892 | 0.44 |
| 1985 | 423,200 | " | 198,370 | 0.47 |
| 1990 | 431,227 | " | 199,260 | 0.46 |
| 1995 | 428,159 | " | 203,928 | 0.48 |
| 2000 | 427,511 | " | 216,066 | 0.51 |
| 2005 | 424,330 | " | 224,293 | 0.53 |
| 2010 | 420,473 | " | 232,520 | 0.55 |
| 2015 | 416,917 | " | 240,746 | 0.58 |
| 2020 | 414,524 | " | 248,973 | 0.60 |

04-05-03-01: Demographic Profile

Substate Employment Growth Area 3 includes six communities: Cranston, East Providence, Johnston, North Providence, Providence, and Warwick. Its 78,185 acres make it one of the smaller substate areas — but in 1995, with over 428,000 residents, it accounted for 43 percent of Rhode Island’s population. This computes to a population density of 5.48 persons per acre, almost four times the state average.

This substate area is the most urbanized in the state, and can be considered Rhode Island’s “metropolitan” area. Its population grew by 1.9 percent between

1985 and 1990, then began a decrease that is expected to continue through 2020. Modest gains in Cranston, Johnston, and North Providence will be offset by losses in East Providence and Warwick, and particularly in Providence.

Supporting 203,928 jobs in 1995, Substate Growth Area 3 produced more than half of Rhode Island's "covered" private employment. The area's E/P ratio is the largest in the state, driving much of the state's economy. The ratio is expected to grow as employment grows through 2020 and the area's population shrinks.

04-05-03-02: Economy

In 1995, the largest private employment sectors in Substate Growth Area 3 were services, wholesale and retail trade, and manufacturing. Services overtook manufacturing as top employer by 1985; manufacturing moved to third place, after wholesale/retail, by 1990. The outlook is for manufacturing to continue to shrink while wholesale/retail and services grow strongly and steadily through 2020.

Within the manufacturing sector, miscellaneous manufacturing (primarily jewelry, SIC 391) is the areawide employment leader, followed by fabricated metal products (SIC 34), printing and publishing (SIC 27), and rubber and miscellaneous plastic products (SIC 30). Relatively large contributions to manufacturing employment were made by electronic and other electrical equipment and components (SIC 36) and furniture and fixtures (SIC 25) in Warwick. Industrial and commercial machinery and computer equipment (SIC 35) is the third largest employment generator in Cranston, following miscellaneous manufacturing and rubber and plastic products. ((63))

Manufacturing lost over 17,000 jobs in Substate Growth Area 3 from 1985 to 1995. In the same period, services gained over 22,000 jobs, while wholesale and retail trade trends followed the course of the regional economy, with losses in 1990 regained by 1995. The forecast through 2020 below is based on these trends. (But please heed the cautionary note given in the Methodology on page 4.4 about projections of dramatic decreases in employment in any one industrial sector.)

As in other substate areas, health services (SIC 80) are the major service industry. Areawide, business services (SIC 73) follow, and then social services (SIC 83). Social services may displace business services for second place in individual communities. Educational services (SIC 82) are at about the same level of employment as business services in Providence. ((63))

Major Employment Sectors

| <i>Industry</i> | <i>1990</i> | <i>2000</i> | <i>2010</i> | <i>2020</i> | <i>Δ 1990-2020</i> |
|-------------------------|-------------|-------------|-------------|-------------|--------------------|
| Manufacturing | 44,314 | 31,660 | 17,817 | 3,974 | -40,340 |
| Wholesale/retail | 45,560 | 51,948 | 57,092 | 62,235 | +16,675 |
| Services | 74,025 | 95,868 | 118,149 | 140,430 | +66,405 |

Durable goods (SIC 50) dominate employment in wholesale trade. Eating and drinking places (SIC 58), miscellaneous retail (SIC 59), and food stores (SIC 54) represent the most retail employment, in that order. In Warwick, general merchandise stores (SIC 53) make a major contribution as well. ((63)) About 24 percent of the wholesale/retail jobs will be in wholesale trade. ((64))

04-05-03-03: Infrastructure

Located in the virtual center of the state, Substate Growth Area 3 partially envelops Upper Narragansett Bay, the Providence River, and the Seekonk River. The commerce generated by these waterways greatly contributed to the early urbanization of this area. Today a substantial portion of the waterfront in both Providence and East Providence continues to support waterborne cargo. Farther south, harbors in Cranston and Warwick support both an active shellfishing industry and recreational boating.

Transportation: Substate Growth Area 3 has the most elaborate ground transportation system in the state. Interstate Route 95 provides the major north-south corridor, with I-195 and U.S. Route 6 serving east-west traffic. These routes are complemented by I-295, which acts as a beltway around the western side of the metropolitan area. Other major arteries include the north-south Routes 1, 2, 5, 10, 114, 117, and 146, and the east-west Routes 37 and 44. All of these roadways support a variety of industrial and commercial land uses.

With the exception of Johnston, communities in the substate area have an extensive rail system with freight service provided by the Providence and Worcester Railroad. Warwick is home to T. F. Green Airport, Rhode Island's primary facility for commercial air carriers.

Water: Full utility services are available in East Providence, Providence, and North Providence; portions of Cranston, Johnston, and Warwick lack public water, sewers, or both. Public water is generally available in all areas east of I-295 and has been extended to selected areas west of the route in Johnston and Cranston. The source of most of the public water in Substate Growth Area 3 is the Scituate Reservoir. The Kent County Water Authority provides service to portions of Warwick; East Providence maintains its own system, while the Providence Water Supply Board, the owners of the Scituate Reservoir, serves the balance of the area — either directly or through the water departments of Cranston and Johnston.

Sewers: Sewer service is generally available in the eastern portion of the substate area. The Narragansett Bay Commission provides wastewater treatment for East Providence, Providence, and North Providence, and the more densely populated sections of Johnston. Cranston maintains sewer service for the eastern half of the city. Warwick is only partially sewered, with the largest part of the service area encompassing the Post Road corridor. ((8))

04-05-03-04: Site Analysis

The significance of Substate Growth Area 3 on Rhode Island's economy is reflected in the amount of land set aside for industrial use as well as the E/P ratio. Industrial-zoned land totals 9,159 acres, ranking this area first among the substate growth areas. It represents 28 percent of the state's industrial land, and nearly 40 percent of the state's industrial land in industrial use — in an area accounting for only 12 percent for the state's total land area. Some 2,407 acres are vacant, of which 242 acres are considered of high potential with the remainder having mostly environmental problems (flood hazards or physiographic constraints) rather than infrastructure shortcomings. Refer to Table 212-04(8) for a summary.

Cranston: The City of Cranston has 14 sites designated industrial, taking in 1,674 acres. Approximately half of the acreage has been put to industrial use; 541 acres are currently vacant, and most of these are in floodplains.

The largest industrial site in Cranston includes the Pettaconsett Industrial Park and the Howard Industrial Park, measuring 494 acres in total and located at the intersection of R.I. Route 37 and Pontiac Avenue. About 240 acres are in industrial use, 124 in non-industrial use, and 130 vacant. All public utilities are available, and highway access is excellent. Most of the vacant land on the northern part of the site, above Route 37, is swampy and in the floodplain of the Pawtuxet River, presenting constraints to development.

Another large share of Cranston's industrial land is in the Western Cranston Industrial Park, where 239 acres of vacant land remain. This might be considered a

**TABLE 212-04(8):
SUMMARY OF INDUSTRIAL-ZONED LAND,
SUBSTATE EMPLOYMENT GROWTH AREA 3**

| <i>City or Town</i> | <i>Total¹</i> | <i>Industrial use</i> | <i>Other use</i> | <i>Vacant</i> | <i>Vacant/high pot.</i> |
|------------------------|--------------------------|-----------------------|------------------|---------------|-------------------------|
| Cranston | 1,674 | 849 | 285 | 541 | 80 |
| East Providence | 1,828 | 1,075 | 211 | 542 | 65 |
| Johnston | 723 | 195 | 193 | 335 | 0 |
| No. Providence | 81 | 30 | 34 | 17 | 2 |
| Providence | 2,426 | 1,483 | 628 | 315 | 18 |
| Warwick | 2,427 | 783 | 987 | 657 | 77 |
| Total | 9,159 | 4,415 | 2,338 | 2,407 | 242 |
| State total | 32,455 | 11,116 | 6,113 | 15,224 | 1,485 |
| % state total | 28.22 | 39.72 | 38.25 | 15.81 | 16.29 |

¹ All values are in acres, with the exception of "% state total." Use totals may differ from total acres due to rounding of fractional acreage to nearest whole number.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

prime site because of its good highway access, availability of public water, and location near the built-up metropolitan area. However, the soils present moderate limitations to development, being rocky in the eastern portion of the site, having a seasonal high water table in the central and western portions, and having a wetland in the northwestern corner. The Western Cranston Industrial Park is located southwest of the intersection of Plainfield Street (R.I. Route 14) and I-295.

There are three industrial sites in the city with vacant acreage that does not present environmental concerns in terms of flood hazards or unreasonable physiographic constraints. One of these sites includes the Narragansett Brewery property, which is slated for mixed-use development. ((11:4.25)) This site, measuring 136 acres in total, fronts on a rail line within an urban area and contains a mixture of industrial and other uses. Prior to the demolition of the brewery buildings, there were nine acres of vacant land there. The R.I. General Assembly designated the brewery site Rhode Island's tenth enterprise zone in 1998.

The second of these three sites is located southeast of the intersection of Narragansett Boulevard and Montgomery Avenue and features two vacant acres that may best be suited for the expansion of existing uses. Accordingly, this site is included among those of moderate development potential.

The third site offers 71 vacant acres, located just west of the Western Cranston Industrial Park. It is considered of high development potential. ((8))

East Providence: The City of East Providence has 1,828 acres of industrial land on 14 sites. All sites have public water and sewer, and 12 have natural gas service. Seven sites have rail service as well. Five sites are fully occupied; vacant land at the remaining nine sites varies in size from a single acre to 25 acres. Four of these sites have flood hazard potential, and three of the four also have physiographic constraints.

Among the sites with suitable physical conditions for development is the area at the intersection of R.I. Route 114 and New Road, a 52-acre site with 17 vacant acres. The configuration of this parcel may, however, inhibit development. On the other hand, a proposed Industrial Highway through the area may improve the site's development potential.

Another site along New Road, at the intersection with R.I. Route 1A, is the Narragansett Industrial Park. Properties there are almost totally developed, but 20 vacant acres remain. There are wetlands on-site, but on the property fringes so that wetlands restrictions should not inhibit development. The site also has rail access.

A site located in the Omega Pond area has some limited development potential. The site contains 18 acres of vacant land, but most of this is within a narrow strip between a rail line and the Seekonk River. It lies within a flood hazard zone. However, there are some large underutilized facilities on-site that are available for reuse.

The former Gulf Oil (now Cumberland Farms) site on the Veterans Memorial Parkway across from Lyon Avenue is available for reuse and new development, taking in some 20 vacant acres and considered of high potential. East Providence's Waterfront Plan calls for a mixed-use development in this area, but the site is still zoned Industrial. The site has rail access, and a proposed Providence and Worcester quay facility will create 44 additional acres of waterfront land for intermodal port development. A new Port Development Waterfront Zoning District has been proposed to include the site and is being studied by the City Council.

Another high-potential site is located south of the intersection of Routes 114 and 6, but without rail access. The site can accommodate both new development and reuse. It includes the former Hemingway Trucking Terminal, which has been demolished and redivided into seven lots for industrial development with a new street, and an area along Amaral Street and the Old Wampanoag Trail being made available for industrial reuse. The site is 159 acres in total, 25 of which are vacant.

The largest industrial site by far in East Providence is located at the intersection of Routes 103 and 114, measuring 749 acres. The site is about 50 percent occupied, principally by oil terminal and storage facilities. The site's vacant land has varying capabilities for development, with constraints including rocky or poorly drained soils and flood hazards, and amenities including rail access and natural gas service. The site takes in an abandoned sand and gravel pit surrounded by steep slopes that would require extensive site preparation before development. The Mobil Terminal is also part of the site, and is designated for port development in the city's Waterfront Plan. Considerable vacant land exists on the Mobil site for industrial development, which would be subject to subdivision requirements for the extension of utilities and streets. ((8))

Johnston: The Town of Johnston has 19 industrial sites totaling 723 acres. Five of the sites are recommended for rezoning to bring existing non-industrial uses into conformance; three others are fully occupied. Eleven have full utilities and include natural gas service. Nine of the eleven have vacant acreage, but have flood hazard or physiographic constraints. The remainder lack utilities – either sewers, or sewers and water. Therefore, none of the sites in Johnston meet our criteria for high potential sites.

That does not mean that the town is essentially closed to further industrial development, but options are limited by the requirement for extensive site preparation, parcels of odd and perhaps unmarketable sizes, and residential development on-site. Six sites are within one mile of the Central Landfill. ((8))

The R.I. Resource Recovery Corporation, which owns and operates the landfill, plans to develop an industrial park that will measure approximately 310 acres, 240 to 250 of which will be developable. The park would combine land to the north of Shun Pike, west of its intersection with Scituate Avenue, and some 140 acres to the south that includes an area that is currently zoned residential. Though most of the residences have been removed, the town has not yet acceded

to changing the zoning and that has delayed development of the park. ((83)) The portion of the park that has not been rezoned does not show up on our industrial site inventory.

North Providence: The Town of North Providence has nine industrial sites totaling 81 acres. All are fully serviced, and all but two have natural gas service available. A former tenth site, measuring two acres, has been converted to commercial use.

Four of the town's industrial sites are fully occupied. A fifth site, measuring a single acre, is partially unoccupied but because of its small size is considered full. Of the four other sites, one is recommended for rezoning, and three have vacant acreage. Only one of the latter has no natural barriers to development (i.e., flood hazards or physiographic constraints), offering two vacant acres.

Other North Providence sites are limited by the presence of wetlands and the floodplain of the Woonasquatucket River, or by steep slopes and ledge. ((8))

Providence: The City of Providence accounts for 27 industrial sites and 2,426 industrial acres. All have full utility service, including natural gas. Acres in industrial use total 1,483, and vacant acres total 317 (spread over 11 sites). Eight sites have flood hazards, and most of those have soil or slope problems as well. Fifteen sites are fully occupied. Another site, which includes the Silver Spring Industrial Park at the intersection of Silver Spring and Charles Streets, has parcels recommended for rezoning due to surrounding and encroaching non-industrial uses.

There are four sites with vacant acreage and no apparent problems with flood hazards or physiographic constraints. These four sites also boast rail access. They include the area south of Olneyville Square, along Route 10 between Westminster and Union Streets, with 10 vacant acres; the Huntington Avenue Industrial Park along Niantic Avenue, with 39 vacant acres; and two sites at the intersection of Adelaide and Elmwood Avenues, with six and two acres respectively. The Huntington Avenue Industrial Park acreage lacks access and is suitable only for the expansion of existing uses, however, being more properly classified among the 15 fully occupied sites. It is not considered among Providence's highest potential industrial sites.

Another site with limited development possibilities is located in the Davol Square/Rhode Island Hospital/Port of Providence area. Although most of the vacant parcels at the site are small and irregular in shape, there is one sizable parcel with waterfront access and good access to I-95. Most of this parcel lies within a flood hazard area, however; development there is expected to be limited to an industry that requires a waterfront location. Altogether, there are 85 vacant acres at this site.

The 1990 *Industrial Land Use Plan* made the following observation:

[G]iven the historical pattern of locating industry astride waterways, much of the city's vacant acreage is found in flood hazard areas. Aside from the Port of Providence, the city would find it difficult to assemble a tract of developable vacant industrial land of any significant size. Nevertheless, what the city lacks in developable sites it more than makes up for with 1,748,068 sq. ft. of vacant industrial space. This in fact may be the capital city's most valuable industrial development resource. ((11:4.27))

Aside from the exact square footage of vacant space, this assessment remains accurate. As in the other older industrial cities in Rhode Island, underutilized buildings carry great potential in Providence for redevelopment and need to be the focus of future economic development efforts. ((8))

Warwick: The City of Warwick has 2,427 industrial-zoned acres spread over 16 sites, ranging in size individually from seven to over 1,000 acres. Total acreage in non-industrial use is high in Warwick because of nearly 840 acres in the site encompassing T. F. Green Airport in Hillsgrove being devoted to other uses. Fifteen of the 16 sites have public water; ten of the fifteen also have sewers. All but one site (which also lacks water and sewers) have natural gas service.

Floodplains, wetlands, and poor soils constrict industrial development on most of the city's vacant industrial land. There are only two sites, offering four and 77 vacant acres respectively, with no environmental constraints. The first is located at the junction of Routes 1 and 1A. This site, measuring 10 acres in total, has small parcels of vacant land in irregular configurations. The second is located on Pavilion Avenue, across from Green Airport, and with access from Commerce Drive. It measures 87 acres in total. The vacant land is currently zoned light industrial. Highway access is excellent, the site being within minutes of Route 37 and I-95.

While these two sites represent the only industrial sites in Warwick completely free of environmental constraints, there are other sites that are large enough to accommodate development at a reasonable distance away from problem physical features. The T. F. Green Airport site, for example, shows such development potential. The site contains 1,040 acres in total, 119 of which are vacant. A wetland and a former landfill, neither of which is conducive to development, occupies the largest vacant parcel. However, the western half of this parcel — adjacent to existing industries — does appear to be far enough removed from these constraints to be able to support development.

Similarly, at a site north of intersection of Route 37 and I-95, one finds a mixture of vacant parcels, the larger of which are partially within flood-prone wetlands areas and appear to lack easy access. Portions of these parcels could be developed, however, if the wetlands are avoided and the access problems can be resolved.

A third site, located southeast of the intersection of Airport and Post Roads, has small vacant parcels in its southern portion that appear suitable for small-scale

industrial and commercial development similar to what currently exists on the site. The northern portion, on the other hand, is not so suitable, being characterized by sloping land and wetlands.

A fourth site is located along Jefferson Boulevard, containing two sizable vacant parcels but also flood hazard or wetland problems. Use of the northernmost is constricted by these natural features and by its irregular shape, but small-scale industrial development might be accommodated if sited carefully. The greatest potential for development is along the southern portion of the site — the location of Metro Park, which is currently being developed for light industry and office use.

None of the acreage in these last four sites is included in our tally of “high potential” vacant acreage. Our level of coverage is not fine enough to permit the parcel-by-parcel assessment required to include them. ((8))

This assessment of industrial land in Warwick has not included plans for a “Warwick Station Redevelopment District” that would take advantage of intermodal transportation opportunities in the immediate area of T. F. Green Airport. This would include a 22.4-acre Intermodal Zone, where the zoning designation would be changed from light industrial to general business. Within this zone would be a new railroad station, the airport terminal, properties accommodating retail, commercial, and office uses, and what has been described as a “circulation access spine” linking the airport and train. The zoning change would be necessary to accommodate the hotels and restaurants deemed appropriate for an Intermodal Zone, and to prohibit currently permissible industrial uses that would clearly be incompatible (e.g., bottling and paper plants, dry cleaning plants, fish packaging plants, and open lot storage). ((88))

04-05-03-05: Conclusions

Our analysis of vacant industrial land is summarized in Table 212-04(9) and yielded what appears at first glance to be a rather conservative estimate of high-potential acreage (242 acres). This was due to our tendency to discount totally those sites with floodplain or soil and topographic concerns. There may in fact be additional acreage available for light industry that could be located far enough away from physical features that would normally preclude industrial development. Unfortunately, many of these parcels are further constrained by a lack of access — even though they may be only short distances from state or interstate highways — and a tendency to be small and fragmented.

What is perhaps more important than the availability of vacant land is the opportunity in Substate Growth Area 3 to rehabilitate and reuse underutilized buildings that, like Substate Growth Area 1, are this area’s industrial legacy.

Providence has led the creative reuse of some of these buildings for an array of industrial, commercial, and residential purposes. This trend is expected to continue as communities in the area participate in the mill building reuse program. If a reasonable number of these buildings can be kept in

**TABLE 212-04(9):
VACANT INDUSTRIAL ACREAGE CHARACTERISTICS,
SUBSTATE EMPLOYMENT GROWTH AREA 3**

| <i>City or town</i> | <i>Industrial sites</i> | <i>Vacant acres</i> | <i>w/Water</i> | <i>w/Sewer</i> | <i>w/Rail</i> | <i>w/Utilities & No Env. Constr.</i> |
|------------------------|-------------------------|---------------------|----------------|----------------|---------------|--|
| Cranston | 14 | 541 | 541 | 541 | 222 | 82 |
| East Providence | 14 | 542 | 542 | 542 | 448 | 83 |
| Johnston | 19 | 335 | 268 | 199 | 0 | 0 |
| No. Providence | 9 | 17 | 17 | 17 | 0 | 2 |
| Providence | 27 | 315 | 315 | 315 | 262 | 18 |
| Warwick | 16 | 657 | 657 | 638 | 393 | 81 |
| Total | 99 | 2,407 | 2,340 | 2,252 | 1,325 | 266 |

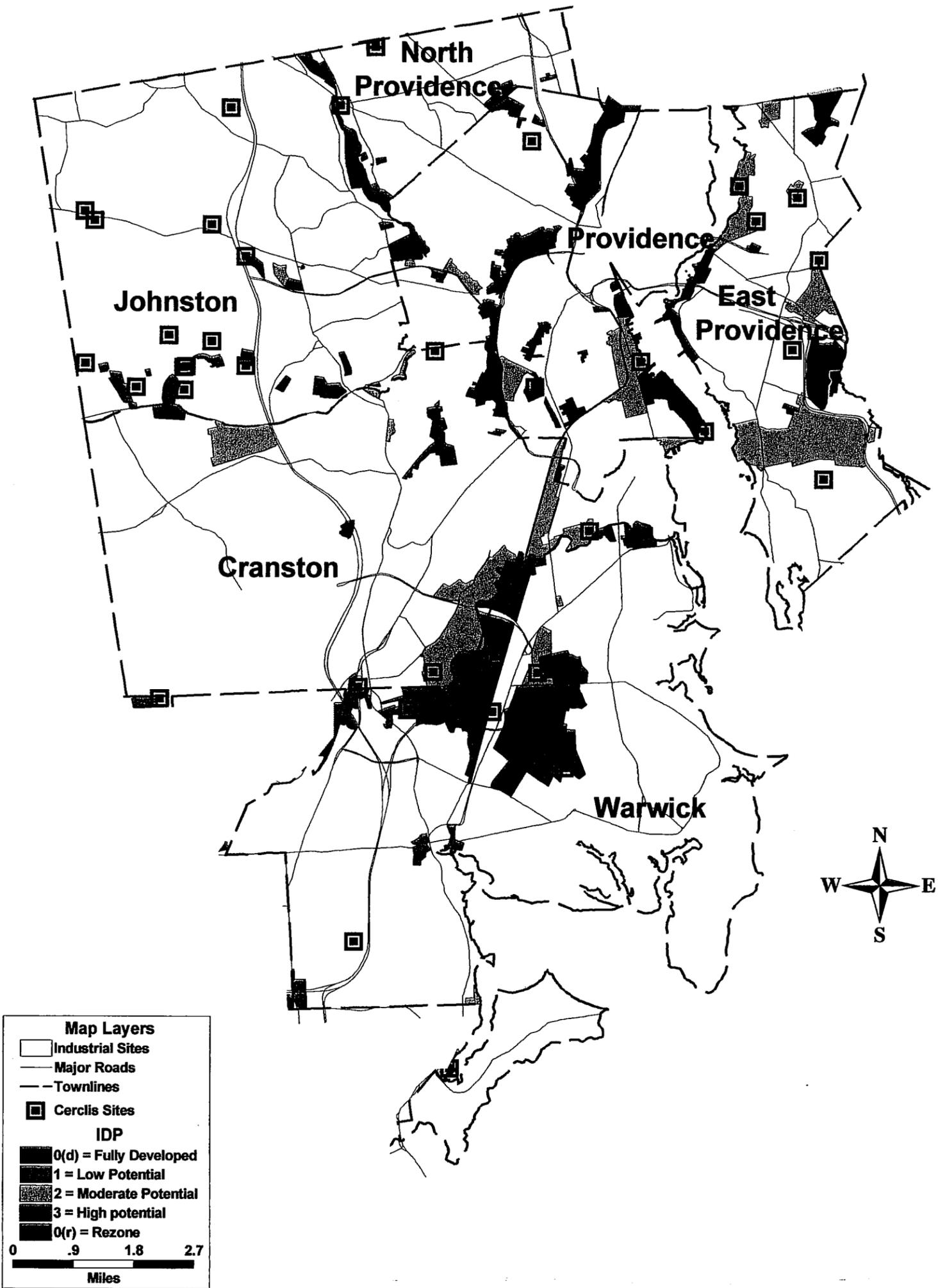
Source: Statewide Planning Program Industrial Land Inventory (1997-99)

industrial use, they can help make up whatever shortcomings exist in the availability of open, accessible parcels of industrial land. They may emerge as ideal candidates for locating the rising industrial sectors — services and wholesale and retail trade.

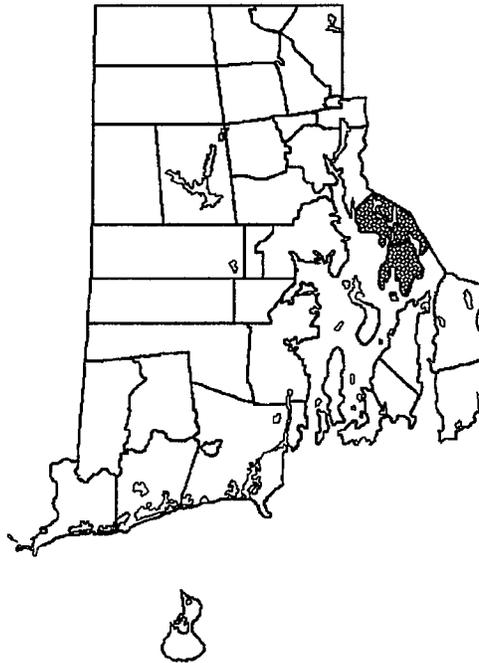
One last note on Substate Growth Area 3, which can apply to other parts of the state as well: the decline in manufacturing forecasted by our employment projections and the gain in trade and service industry jobs suggests the need for, or at least the attractiveness of, mixed-use zoning in the available industrial acreage.

Industrial development potential in Substate Growth Area 3 is presented graphically on Map 212-04(3).

MAP 212-04(3)
SUBSTATE EMPLOYMENT GROWTH AREA 3



04-05-04: Substate Employment Growth Area 4



Population and Employment Trends

| | <i>Population</i> | <i>Land area, acres</i> | <i>Employment</i> | <i>E/P</i> |
|-------------|-------------------|-------------------------|-------------------|------------|
| 1975 | 45,600 | 16,196 | 8,715 | 0.19 |
| 1980 | 46,942 | " | 9,265 | 0.20 |
| 1985 | 47,400 | " | 10,725 | 0.23 |
| 1990 | 48,859 | " | 9,555 | 0.20 |
| 1995 | 48,511 | " | 10,380 | 0.21 |
| 2000 | 48,986 | " | 10,814 | 0.22 |
| 2005 | 49,157 | " | 11,176 | 0.23 |
| 2010 | 49,230 | " | 11,538 | 0.23 |
| 2015 | 49,342 | " | 11,900 | 0.24 |
| 2020 | 49,621 | " | 12,262 | 0.25 |

04-05-04-01: Demographic Profile

Three towns comprise Substate Employment Growth Area 4: Barrington, Bristol, and Warren (Bristol County, R.I., in its entirety). It is the smallest of the Substate Growth Areas at 16,196 acres. With a 1995 population of 48,511, the area's population density, 3.00 persons per acre, is about twice the state average. Population growth, however, is projected to lag behind most of the other Substate Growth Areas from 1995 to 2020. Employment growth will also be significantly less than the state average during this period, according to the regression analysis performed by Statewide Planning Program staff.

04-05-04-02: Economy

The largest private employment sectors in Substate Growth Area 4 are services, manufacturing, and wholesale and retail trade. In the manufacturing sector, ship and boat building and repairing (SIC 373), miscellaneous manufacturing (SIC 39), and industrial and commercial machinery and computer equipment (SIC 35) are the largest employers areawide. In Bristol, textile mill products (SIC 22) and rubber and plastics products (SIC 30) are sector leaders. Manufacturing employment has fallen by one-third due primarily to decreases in boat building and textiles from 1985 to 1995.

Service employment has grown sufficiently to supplant manufacturing as the leading industrial sector, gaining 834 jobs from 1985 to 1995. The biggest share of service employment is in educational services (SIC 82), primarily in Bristol (home of Roger Williams University); this is followed by health services (SIC 80), represented well in all three communities, and social services (SIC 83).

Durable goods (SIC 50) rank first areawide in wholesale trade employment, but nondurable goods (SIC 51) are predominant in Bristol. Eating and drinking places (SIC 58), food stores (SIC 54), and miscellaneous retail (SIC 59) account for the most jobs in retail trade. The wholesale-retail sector is growing significantly in Bristol, but less so in the other towns. ((63))

Statewide Planning's forecast of employment trends in Substate Growth Area 4 suggests that while manufacturing led wholesale/retail and services in employment in 1990, it will be in third place by 2000 and continuing to decline through 2020. Services, meanwhile, will grow faster than wholesale/retail, adding nearly 3,300 jobs — an increase of 116 percent. Wholesale/retail will grow by 1,801 jobs, or about 93 percent. We expect about nine percent of these jobs will be in wholesale trade. ((64))

These trends are summarized below.

Major Employment Sectors

| <i>Industry</i> | <i>1990</i> | <i>2000</i> | <i>2010</i> | <i>2020</i> | <i>Δ 1990-2020</i> |
|-------------------------|-------------|-------------|-------------|-------------|--------------------|
| Manufacturing | 3,454 | 2,434 | 1,273 | 112 | -3,342 |
| Wholesale/retail | 1,933 | 2,783 | 3,258 | 3,734 | +1,801 |
| Services | 2,830 | 3,903 | 5,014 | 6,125 | +3,295 |

The numbers suggest a dramatic fall in manufacturing employment in Substate Growth Area 4 over the period 1990 to 2020, and imply that at some point beyond the year 2020 manufacturing employment will "zero out," being replaced virtually job-for-job by services. As in Substate Growth Area 3, there is a danger in jumping to such a hasty conclusion about employment in certain industrial sectors. This is explained in detail in the Methodology on page 4.4. By the time we reach 2020, the downward trend in manufacturing employment in this substate

area may have proven itself not nearly as radical as our regression analysis portends; it may even have reversed.

04-05-04-03: Infrastructure

The principal geographic feature of Substate Growth Area 4 is its extensive coastline, bordering Upper Narragansett Bay and Mt. Hope Bay. The area's ports are limited to serving small-scale fishing operations and recreational boating.

Transportation: Bristol County lacks immediate access to interstate highways, with I-195 providing the closest major route to southeastern Massachusetts and the Providence metropolitan area. Rhode Island Routes 114 and 136 are the area's major north-south corridors. Both routes support long stretches of residential, commercial, and some limited industrial development. The area is no longer serviced by freight or passenger rail service, nor is it within close proximity to a state airport.

Utilities: The utility infrastructure is well developed, although current capacity is somewhat limited. Public water for the tri-town area is provided by the quasi-public Bristol County Water Authority. Presently, water service is available at all industrial sites in Substate Growth Area 4. Most sites are sewered, with the exception of three sites in Warren. Natural gas service is available at all the area's industrial sites. ((8))

04-05-04-04: Site Analysis

Our community survey rendered a total of 499 industrial-zoned acres in Substate Growth Area 4, making it one of the smallest aggregations of industrial land in the state. This total represents a decrease of 58 acres from the inventory cited in the 1990 *Industrial Land Use Plan*. One hundred thirty-eight acres, or 28 percent of the total, are vacant; of these, only 16 acres are considered of high potential. Flood hazard areas concentrated in Warren represent the major environmental constraint. A town-by-town account is given in Table 212-04(10).

Barrington: The Town of Barrington has four industrial sites, only one of which is fully occupied. The sites are of very modest size: three of them each measure five acres, and the fourth, eight acres. All of the sites have the full suite of utilities, including natural gas service, and no floodplain, soil, or topography problems. There is, however, no rail access at any of the sites.

The fully-occupied site is located northeast of the intersection of Bay Spring Avenue and Narragansett Avenue. At the site is the closed Rhode Island Lace Works Mill (a 300,000 sq. ft. brick building), presently under consideration for conversion to an elderly nursing complex. The project may involve removal of the mill. Regardless of whether the mill building is rehabbed and reused or demolished, future use of the site will likely be a mix of residences and health services typical of an assisted-care facility.

**TABLE 212-04(10):
SUMMARY OF INDUSTRIAL-ZONED LAND,
SUBSTATE EMPLOYMENT GROWTH AREA 4**

| <i>Town</i> | <i>Total</i> ¹ | <i>Industrial use</i> | <i>Other use</i> | <i>Vacant</i> | <i>Vacant/high pot.</i> |
|----------------------|---------------------------|-----------------------|------------------|---------------|-------------------------|
| Barrington | 23 | 5 | 1 | 17 | 0 |
| Bristol | 267 | 200 | 22 | 45 | 4 |
| Warren | 209 | 89 | 44 | 76 | 12 |
| Total | 499 | 294 | 67 | 138 | 16 |
| State total | 32,455 | 11,116 | 6,113 | 15,224 | 1,485 |
| % state total | 1.54 | 2.64 | 1.10 | 0.91 | 1.08 |

¹ All values are in acres, with the exception of "% state total." Use totals may differ from total acres due to rounding of fractional acreage to nearest whole number.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

A second five-acre site has been recently subdivided from a larger parcel containing the former Pilling Chain Mill, which is now under conversion to a 60-apartment elderly housing complex. This site is west of the mill pond (which separates it from the mill site) and Allins Cove; it has frontage on Adams Avenue, which places it within five miles of both a state highway and an interstate highway. Industrial use may be limited by its proximity to the apartments.

The third five-acre site is located north of Bay Spring Avenue, with frontage on that street and adjoining the East Bay Bike Path. The rear of the parcel is separated from frontage by a 1.24-acre pond, giving it something less than three acres of developable land and limiting its potential.

The fourth site, also north of Bay Spring Avenue, was under consideration at one time (in 1980) for a congregate care facility with 200 elderly apartments. There have been no development proposals since then. The site is owned by a tax-exempt private organization and measures slightly more than eight acres. ((8))

Bristol: There are three industrial sites in the Town of Bristol with vacant acreage. The first, measuring 195 acres in total with 41 vacant acres, is the site of the East Bay Industrial Park. This site includes a small golf course and other uses.

Soil conditions are favorable in most areas of the park except for the southeastern part, where the water table is high.

The second site, located on Rhode Island Route 136 south of Hopeworth Avenue, contains only two vacant acres out of a total of 44 acres. However, 13 of the 42 occupied acres are in fact occupied by vacant industrial buildings that may have some potential for reuse.

The third site occupies slightly less than four acres, 1.5 acres being totally occupied by an automotive dealership. The remaining vacant land has potential for development.

The second and third sites contain no apparent soil, topographic, or flood hazard concerns. All industrial sites in Bristol are within one mile of a state highway, but none have rail access. ((8))

Warren: The Town of Warren has 76 vacant acres scattered among five of its eight industrial sites. These sites range in size from three to 68 acres. Two of the sites with vacant acreage lack sewers, and all lack rail access.

Seventeen acres of vacant industrial land are found at a site on Main Street, below the Warren River. Development potential there is hampered by flood hazards. Similarly, a site with 34 vacant acres on Route 136, north of School House Road, contains both wetlands and flood hazards. Since that site lacks sewers and possesses a high water table, the disposal of wastewater could be a problem; however, northern portions of the site (adjacent to Route 136) could be developed for small industries if acceptable methods for handling the wastewater could be devised.

Twelve acres of vacant land at a third site, located at the intersection of Route 114 and 103, are divided between two parcels that appear to lack access and thus have limited potential for development. The larger parcel also lies within a flood hazard area.

There are two other sites in Warren with fully-serviced vacant land and no environmental constraints. One is located on Route 136, south of the intersection with Route 103, but is likely to be suitable only for expanding existing industrial use. The other contains a sizeable amount of undeveloped land (12 acres) of high development potential. It is also located on Route 136, in the vicinity of School House Road. ((8))

04-05-04-05: Conclusions

While there is fully-serviced industrial acreage in Substate Growth Area 4 that is presently vacant, development is constrained by soil and topographic concerns or flood hazards, the lack of rail access and service, and distance to interstate highways. This is shown in Table 212-04(11).

Some of the area's best potential for industrial development is in the reutilization of existing buildings. Two relatively large facilities, the former Kaiser plant and the American Tourister plant, are being targeted for the mill building reuse program in Bristol and Warren, respectively. Either complex could house a major employer, several smaller businesses, or business incubators.

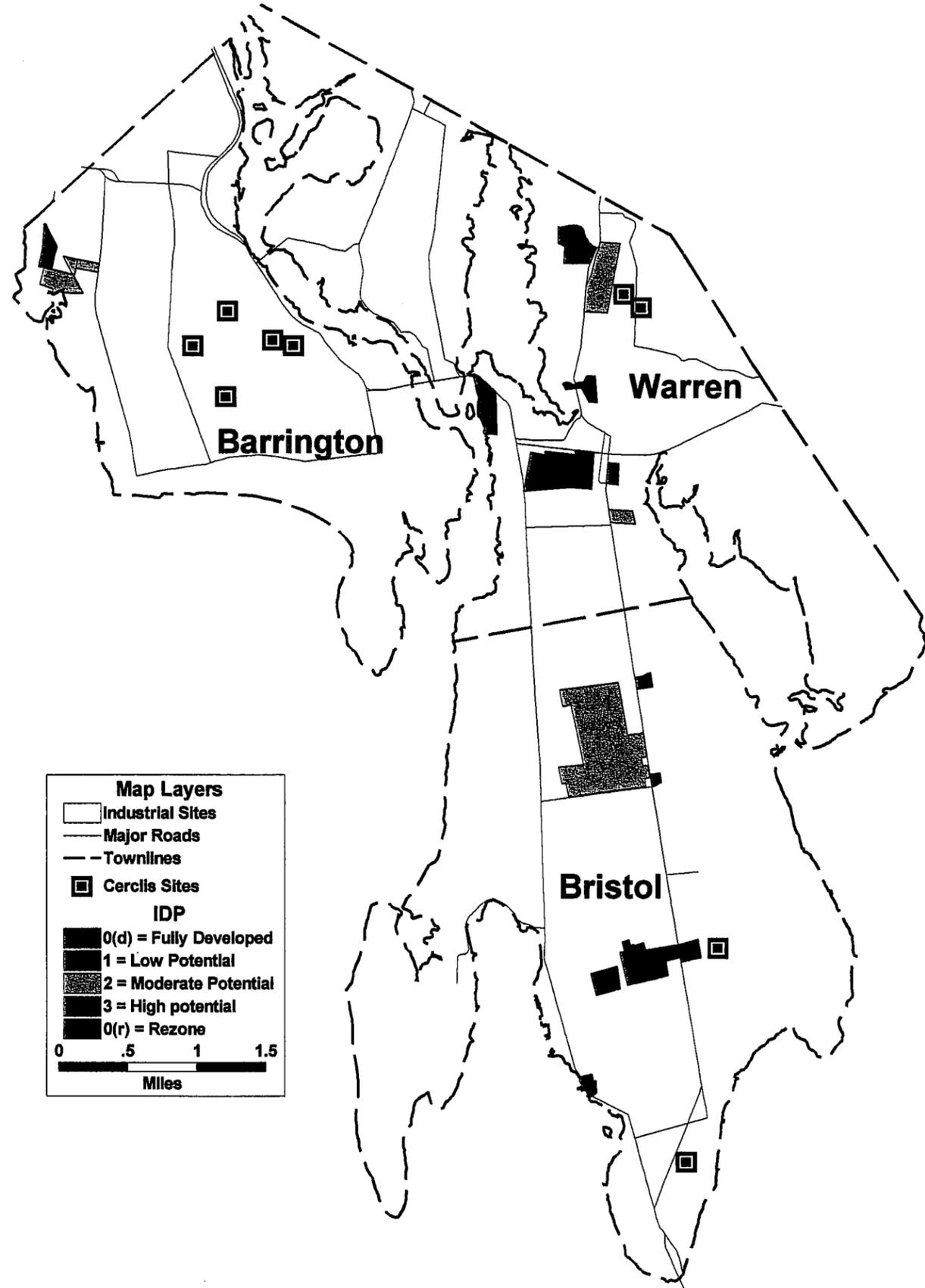
Map 212-04(4), on the second page following, assesses industrial development potential in Substate Growth Area 4.

**TABLE 212-04(11):
VACANT INDUSTRIAL ACREAGE CHARACTERISTICS,
SUBSTATE EMPLOYMENT GROWTH AREA 4**

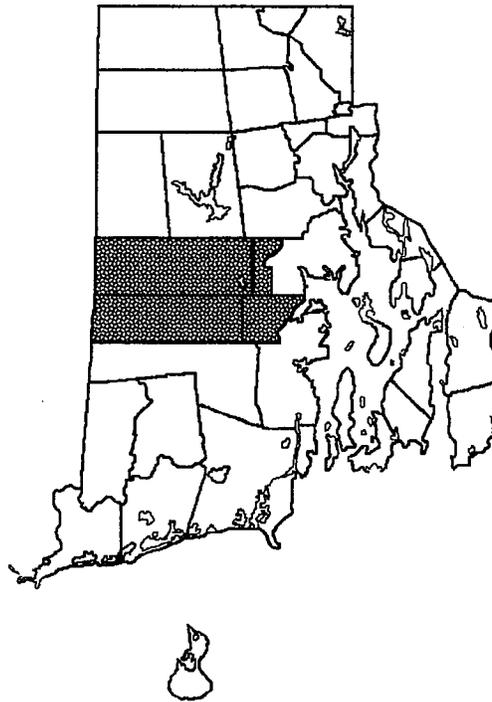
| <i>Town</i> | <i>Industrial sites</i> | <i>Vacant acres</i> | <i>w/Water</i> | <i>w/Sewer</i> | <i>w/Rail</i> | <i>w/Utilities & No Env. Constr.</i> |
|-------------------|-------------------------|---------------------|----------------|----------------|---------------|--|
| Barrington | 4 | 17 | 17 | 17 | 0 | 17 |
| Bristol | 6 | 45 | 45 | 45 | 0 | 4 |
| Warren | 8 | 76 | 76 | 42 | 0 | 12 |
| Total | 18 | 138 | 138 | 104 | 0 | 33 |

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

SUBSTATE EMPLOYMENT GROWTH AREA 4



04-05-05: Substate Employment Growth Area 5



Population and Employment Trends

| | <i>Population</i> | <i>Land area, acres</i> | <i>Employment</i> | <i>E/P</i> |
|-------------|-------------------|-------------------------|-------------------|------------|
| 1975 | 62,800 | 85,822 | 11,335 | 0.18 |
| 1980 | 67,040 | " | 14,632 | 0.22 |
| 1985 | 70,800 | " | 15,476 | 0.22 |
| 1990 | 75,708 | " | 15,311 | 0.20 |
| 1995 | 75,170 | " | 18,849 | 0.25 |
| 2000 | 77,896 | " | 19,833 | 0.25 |
| 2005 | 80,223 | " | 21,403 | 0.27 |
| 2010 | 82,430 | " | 22,974 | 0.28 |
| 2015 | 84,831 | " | 24,545 | 0.29 |
| 2020 | 87,577 | " | 26,116 | 0.30 |

04-05-05-01: Demographic Profile

Substate Employment Growth Area 5 takes in Kent County, with the exception of the City of Warwick. Represented there are Coventry, East Greenwich, West Greenwich, and West Warwick. The area's 85,822 acres make it comparable in size to the state's average substate area, while its population density, 0.88 persons per acre (1995), is substantially less than the state's average.

Low population density reflects the suburban and rural character of Substate Growth Area 5. However, population growth in the area is among the

fastest in the state. Employment growth surpassed the state average strikingly from 1985 to 1995. Regression analyses based on those numbers suggest significant increases in population and employment through 2020.

04-05-05-02: Economy

Substate Growth Area 5 is unique among the substate areas in that manufacturing is expected to grow rather than shrink there as a sector *and* to lead the second- and third-place sectors, wholesale/retail and services, through 2020.

Industrial and commercial machinery and computer equipment (SIC 35) lead in manufacturing jobs areawide because of heavy representation in a single community, East Greenwich. Chemicals and allied products (SIC 28) are second overall, but first in Coventry and West Warwick. Electronic and other electrical equipment and components, except computers (SIC 36) are third, with employment concentrated in East Greenwich and West Warwick. Fabricated metal products (SIC 34) are fourth, but second in West Warwick. ((63))

Nondurable goods (SIC 51) led wholesale employment trade years ago in most of Substate Growth Area 5, but then faltered in the most recent recession and began running second to durable goods (SIC 50). Durable goods continue to lead. In retail, eating and drinking places (SIC 58) are first overall in employment, followed by food stores (SIC 54) and miscellaneous retail stores (SIC 59). Automotive dealers and service stations (SIC 55) are first in retail employment in West Greenwich, third in West Warwick, and fourth overall. ((63))

As in other substate areas, we found health services (SIC 80) leading all other service industries in employment in Substate Growth Area 5. Health services are followed by business services (SIC 73), personal services (SIC 72), and social services (SIC 83). In West Warwick, business services do not make as large a contribution to employment as personal services, social services, and auto repair services (SIC 75). Growth in health service employment is steady, while business services have begun growing again after a slump. ((63))

Our forecast of employment trends in Substate Growth Area 5 through 2020 is summarized below. Regression analyses indicated steady growth in all three sectors into the 21st Century, with manufacturing gaining 1,474 jobs, wholesale/retail 2,115 jobs, and services 3,409 jobs. In wholesale/retail, about 13 percent of the employment is in wholesale trade. ((64))

Major Employment Sectors

| <i>Industry</i> | <i>1990</i> | <i>2000</i> | <i>2010</i> | <i>2020</i> | <i>Δ 1990-2020</i> |
|-------------------------|-------------|-------------|-------------|-------------|--------------------|
| Manufacturing | 6,581 | 7,398 | 7,726 | 8,055 | +1,474 |
| Wholesale/retail | 4,926 | 5,475 | 6,258 | 7,041 | +2,115 |
| Services | 2,886 | 3,991 | 5,143 | 6,295 | +3,409 |

04-05-05-03: Infrastructure

The communities comprising Substate Growth Area 5 are a study in contrasts, ranging from urbanized West Warwick (with a population density almost four times the state average) to rural West Greenwich (with the lowest population density in the state, one-tenth of a person per acre). The area includes Rhode Island's most affluent municipality, East Greenwich, and the one that is the largest in terms of acreage, Coventry. The geography varies from crowded coastal inlets in the east to large tracts of rural, undeveloped land to the western Connecticut border. ((11))

Transportation: As would be expected, the eastern portion of Substate Growth Area 5 has an extensive transportation infrastructure, with I-95 and R.I. Route 4 serving as the major north-south routes. Interstate 95 also swings more westerly in the southern part of the growth area, providing access to the southeastern corner of Coventry and bisecting West Greenwich. The area's other major roadways include R.I. Routes 3, 102, and 117. ((11))

Rail service is available through the Shore Line through East Greenwich; the Washington Secondary Track serving West Warwick and Coventry is no longer available. The freight-dedicated "Third Track" will run through East Greenwich when it is completed.

Water: Utility infrastructure is most fully developed in the eastern part of Substate Growth Area 5. The Kent County Water Authority provides water to virtually all of West Warwick, the eastern portion of Coventry, central and eastern East Greenwich, and the Mishnock Pond area of West Greenwich. Most of the area's public water supply is drawn from the Scituate Reservoir. ((11))

Sewers: Sewer service is somewhat less developed. West Warwick is almost totally sewered, and the town also provides treatment to portions of Coventry and West Greenwich. Sewers have been extended along Hopkins Hill Road and New London Turnpike in Coventry to serve two adjoining industrial parks in West Greenwich. East Greenwich has extended sewer service along the R.I. Route 2 corridor from Division Street to Middle Road, and plans to extend service to areas south of Middle Road. ((81))

04-05-05-04: Site Analysis

There are 3,091 acres zoned industrial in Substate Growth Area 5. Vacant industrial acreage was nearly halved in the period from 1988 to 1997. Of the 1,356 acres currently vacant, only 45 acres are considered "high potential," the others being limited by environmental concerns or infrastructure limitations. ((8)) Table 212-04(12) gives the full account of industrial land by town.

Coventry: Coventry has six sites set aside for industry, totaling 1,157 acres. All have public water, but sewer service (via the Town of West Warwick) is limited. Five of the six sites have natural gas service. One of these measures a modest four

**TABLE 212-04(12):
SUMMARY OF INDUSTRIAL-ZONED LAND,
SUBSTATE EMPLOYMENT GROWTH AREA 5**

| Town | Total¹ | Industrial use | Other use | Vacant | Vacant/high pot. |
|-----------------------|--------------------------|-----------------------|------------------|---------------|-------------------------|
| Coventry | 1,157 | 305 | 289 | 563 | 0 |
| East Greenwich | 408 | 182 | 119 | 107 | 0 |
| West Greenwich | 883 | 405 | 50 | 428 | 45 |
| West Warwick | 643 | 180 | 205 | 258 | 0 |
| Total | 3,091 | 1,072 | 663 | 1,356 | 45 |
| State total | 32,455 | 11,116 | 6,113 | 15,224 | 1,485 |
| % state total | 9.52 | 9.64 | 10.85 | 8.91 | 3.03 |

¹ All values are in acres, with the exception of "% state total." Use totals may differ from total acres due to rounding of fractional acreage to nearest whole number.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

acres and is fully occupied. The site lacking gas service is of identical size and fully occupied also, but with non-industrial uses. Other sites have either flood hazard or soil and topographic concerns.

The largest of the town's industrial sites, measuring some 534 acres, is located at and around the Coventry Airport between Routes 3 and 103. This site is already more than one-half developed, with the airfield, a gravel pit, some industry, and other uses. The site also has rail access. Much of the remaining vacant land, however, is limited by the presence of wetlands and soils with a seasonal high water table, or is in the floodplains of the Pawtuxet and Mishnock Rivers. Another problem is that the arrangement of existing uses throughout the site has restricted access to some land. The final constraint is that the site is within the Mishnock groundwater aquifer.

The second largest site, some 449 acres in total with 268 acres of vacant land, is located between Hopkins Hill Road and Arnold Road. Sewer service is being extended to the site, which, coupled with its excellent highway access, should improve development potential. However, further development would have to overcome topography limitations — slopes, high water tables, and streams. Some of the land adjoins residential areas, which poses access and compatibility problems. This site also is within the Mishnock aquifer.

The remaining sites measure 65 acres and 101 acres, respectively. The first is located on Howard Street, the second south of the intersection of Route 117 and Fairview Avenue. At each, vacant land is in the form of fragmented parcels within river floodplains or wet areas, and therefore is of limited development potential.

((8))

East Greenwich: Our inventory for the Town of East Greenwich shows 408 industrial acres, scattered among 12 sites ranging in size from one acre to 136 acres. All but two have natural gas service, and both of these are fully occupied. Five sites have vacant land. Four are limited by access, flood hazard, and/or soil and topographic concerns. One of the four, north of the intersection of Route 2 and Frenchtown Road, is located within the Hunt River Aquifer. The fifth site, on Route 2 south of Division Street, has poor access and verges on wetlands. ((81))

One of the sites with environmental and infrastructure constraints does have portions with some potential for development, provided flood hazard areas or hydric soils are avoided. This site is located southeast of the intersection of Route 2 and Middle Road and has some development already. Highway access, public water and sewer service are available. ((8)), ((81)), ((101))

East Greenwich's future land use map, approved by the state in 1998, greatly expands the land available for industrial development. Municipal sewers have been installed in formerly unsewered areas between Division Street and Middle Road along the Route 2 corridor. The town's policy is to pursue light industry and office/office park types of development along Route 2, rezoning properties if need be in response to specific proposals. Revisions in industrial zoning may more than double the available acreage over what is reported here. ((101)) The new industrial sites, lying adjacent to existing sites, would bring total industrial land, occupied and vacant, to over 1,100 acres.

West Greenwich: Industrial land in industrial use in the Town of West Greenwich has more than doubled since 1988. The town has ten industrial sites, totaling 883 acres. Six sites have vacant land. Within these six, there are 428 vacant acres, some 45 of which — at one site, the West Greenwich Technology Park — appear to be of high potential.

The West Greenwich Technology Park is located northeast of the intersection of I-95 and Hopkins Hill Road at the former "Digital site." It is being developed as part of a regional industrial park that includes abutting acreage in Coventry and West Warwick. The site now boasts public water and sewers, the infrastructure having been extended to accommodate two large industrial clients. Vacant acreage may require some site preparation (as it is a former gravel pit) but soils pose no apparent constraint to development. The site's frontage on an interstate highway offers excellent transportation access.

A site with some potential for specialized operations is located southeast of the intersection of Hopkins Hill Road and Bates Trail. The site measures 205 acres and is presently undeveloped. It lacks public water and sewers. In addition, stony soils and moderately steep slopes in some areas may impose limitations on septic systems and other forms of subsurface construction. The site has good highway access, however, making it suitable perhaps for distribution activities or other low-intensity development. ((8)), ((86))

West Warwick: West Warwick's industrial site inventory has not changed in terms of total acreage since the last *Industrial Land Use Plan*, but some land has

shifted use. Out of a total of 643 acres at nine sites, 180 are in industrial use, 339 in non-industrial use, and 258 left vacant. Eight sites have vacant acreage, ranging in size from one acre to 152 acres (at the regional industrial park abutting the West Greenwich Technology Park). All eight sites have the full suite of utilities, including natural gas service; four have rail access as well.

Much of West Warwick's industrial land is scattered along the north and south branches of the Pawtuxet River. ((11)) These sites typically contain older textile mill complexes and are located along town streets that pose access problems. Proximity to the river also suggests flood hazards, while wetlands also constrain development on many of the vacant parcels. Vacant areas within four of the sites are appropriate mainly for the expansion of existing uses. ((8))

There is but one site with no environmental constraints among the sites with vacant acreage. It is located northwest of the intersection of Legris Avenue and Church Street. Vacant land at the site measures a single acre, and so is most likely only appropriate for expanding existing uses.

There are other sites that appear to have sizable parcels within them that can support development, although other parcels have unfavorable topography, wetlands, high water tables, or floodplains. One is located north of the intersection of Providence Street and Main Street and has 54 acres of vacant land. The presence of steep slopes and a former landfill constrain development, but a parcel in the eastern portion of the site, adjoining a rail line, could be used if road and highway access are available.

Wetlands and flood hazard conditions diminish the development potential of the site adjoining the West Greenwich Technology Park. Developers will have to address wetland and flood hazard conditions in about half of the parcel, north of I-95, and several smaller wetland areas to the south. Most of the remainder of the site may be conducive to industrial development, but the site as a whole cannot under our criteria be considered "high potential." ((8))

04-05-05-05: Conclusions

Table 212-04(13) portrays a paucity of developable acreage in Substate Growth Area 5 that is somewhat misleading if considered only under our gross, sitewide scale. There do exist sites of sufficient size to enable developers to "engineer around" localized environmental constraints, and the general availability of all utilities in the area is good.

Extension of sewer and water can promote industrial development ancillary to the West Greenwich Technology Park and elevate otherwise acceptable sites into sites of high potential. It should be noted that only one West Greenwich site was identified as having physiographic constraints (stony soil and moderately steep slopes).

The East Greenwich Planning Board has recommended that industrial uses be extended to the entire length of Route 2 on the westerly side, down to a local Ford

**TABLE 212-04(13):
VACANT INDUSTRIAL ACREAGE CHARACTERISTICS,
SUBSTATE EMPLOYMENT GROWTH AREA 5**

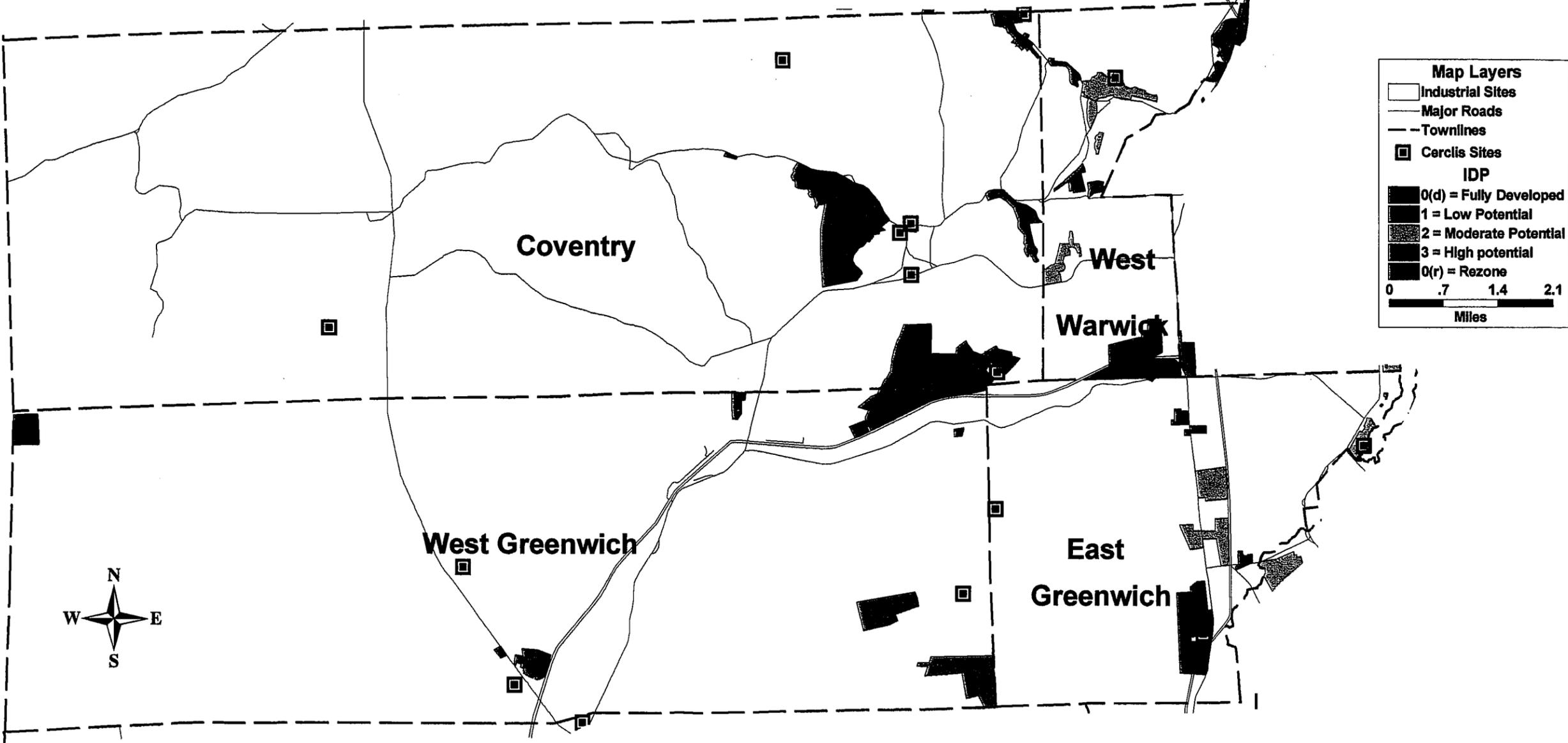
| Town | Industrial sites | Vacant acres | w/Water | w/Sewer | w/Rail | w/Utilities & No Env. Constr. |
|-----------------------|-------------------------|---------------------|----------------|----------------|---------------|--|
| Coventry | 6 | 563 | 563 | 0 | 261 | 0 |
| East Greenwich | 12 | 107 | 107 | 44 | 9 | 4 |
| West Greenwich | 10 | 428 | 54 | 45 | 0 | 45 |
| West Warwick | 9 | 258 | 258 | 258 | 78 | 1 |
| Total | 37 | 1,356 | 982 | 347 | 348 | 50 |

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

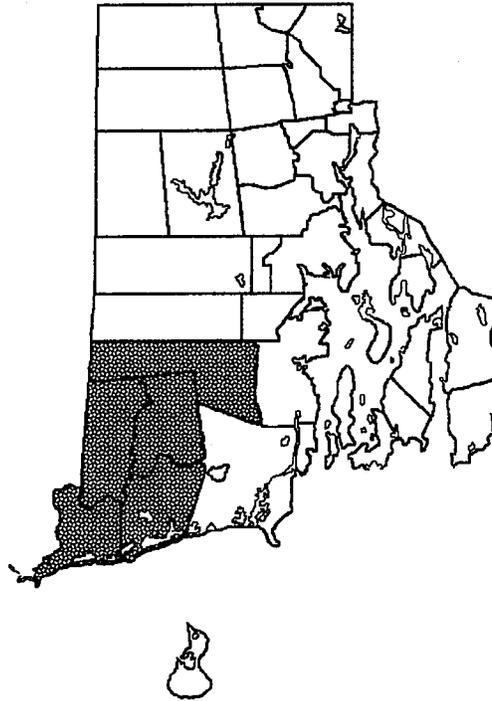
dealership located at the northwest corner of Route 2 and Frenchtown Road. This proposal would provide a significant increase in prime industrial land – with sewer, water, excellent transportation access, and close proximity to the Quonset Davisville Port and Commerce Park.

Map 212-04(5) summarizes the industrial development potential of sites in Substate Growth Area 5.

MAP 212-04(5)
SUBSTATE EMPLOYMENT GROWTH AREA 5



04-05-06: Substate Employment Growth Area 6



Population and Employment Trends

| | <i>Population</i> | <i>Land area, acres</i> | <i>Employment</i> | <i>E/P</i> |
|-------------|-------------------|-------------------------|-------------------|------------|
| 1975 | 34,100 | 130,635 | 6,017 | 0.18 |
| 1980 | 38,257 | " | 8,564 | 0.22 |
| 1985 | 41,100 | " | 9,390 | 0.23 |
| 1990 | 45,768 | " | 10,852 | 0.24 |
| 1995 | 45,444 | " | 11,819 | 0.26 |
| 2000 | 48,203 | " | 13,496 | 0.28 |
| 2005 | 50,557 | " | 14,885 | 0.29 |
| 2010 | 53,596 | " | 16,274 | 0.30 |
| 2015 | 56,584 | " | 17,664 | 0.31 |
| 2020 | 60,000 | " | 19,053 | 0.32 |

04-05-06-01: Demographic Profile

Substate Employment Growth Area 6 has five towns: Charlestown, Exeter, Hopkinton, Richmond, and Westery. It is the largest of the eight substate areas, taking in 130,635 acres. The area's population in 1995 was 45,444, giving it a population density of 0.35 persons per acre and revealing its rural character. Population density is projected to increase to 0.46 persons per acre by 2020. ((67)) Employment growth from 1985 to 1995 was substantially greater than the state average; significant growth is expected to continue through 2020.

04-05-06-02: Economy

According to our regression analysis, wholesale and retail trade and services in Substate Growth Area 6 will follow the general trend in Rhode Island of growth through 2020. Manufacturing will gain, then lose a modest number of jobs in the same period. This follows an up-and-down pattern in manufacturing employment from 1975 to 1995, vs. steady growth in the other sectors.

Textile mill products (SIC 22) dominate manufacturing employment in Substate Growth Area 6, with their greatest strength in Westerly. Rubber and plastics products (SIC 30) are second areawide, followed by paper and allied products (SIC 26), primarily from Hopkinton. ((63)) A major contributor to employment in SIC 26, however, closed its facility in Hopkinton in June, 1998. ((71))

Nondurable goods (SIC 51) are first in wholesale trade employment in Westerly, but durable goods (SIC 50) lead elsewhere. Eating and drinking places (SIC 58) lead retail employment areawide, followed by food stores (SIC 54) and miscellaneous retail stores (SIC 59). Automotive dealers and service stations (SIC 55) are second in retail employment in Hopkinton, and fourth in most of the other towns. ((63))

Health services (SIC 80) have the biggest share of areawide services employment and are concentrated in Westerly. Social services (SIC 83) lead services employment in Charlestown, Exeter, and Hopkinton, and are in second place in Westerly. Amusement and recreational services (SIC 79) are third areawide, but second in Hopkinton. Growth in health services and social services from the mid-1980s has been dramatic in Westerly, but far more modest (essentially level) in the other communities. ((63))

Our forecast of employment trends in Substate Growth Area 6 through 2020 is summarized below. The fastest growing sector is services, but it will remain second in employment to wholesale/retail into the next century. Even though manufacturing will be steadily losing jobs from 2000 to 2020, the loss is not large enough to offset completely the gain from 1990 to 2000. About eight percent of the jobs under wholesale/retail will be in wholesale trade. ((64))

Major Employment Sectors

| <i>Industry</i> | <i>1990</i> | <i>2000</i> | <i>2010</i> | <i>2020</i> | <i>Δ 1990-2020</i> |
|-------------------------|-------------|-------------|-------------|-------------|--------------------|
| Manufacturing | 1,742 | 2,107 | 2,062 | 2,017 | + 275 |
| Wholesale/retail | 3,939 | 4,605 | 5,599 | 6,594 | +2,655 |
| Services | 2,943 | 4,122 | 5,213 | 6,304 | +3,361 |

04-05-06-03: Infrastructure

Substate Growth Area 6 forms the southwest corner of Rhode Island, with two of its communities — Charlestown and Westerly — bordering Block Island

Sound and a number of coastal ponds. The rest of the area is defined hydrologically and geographically by the Wood and Pawcatuck Rivers and their subwatersheds.

Transportation: The northwest portion of Substate Growth Area 6 has good access to I-95, which provides the major north-south corridor to that area. Numerous state routes provide additional north-south access. Rhode Island Route 138 east of I-95 is one of two major east-west corridors. The second is Route 1, which connects points along the coast.

The area has passenger rail service with stops by Amtrak at the Westerly station. Limited air charter and freight service at Westerly State Airport, a primarily commuter-oriented facility.

Utilities: In keeping with the rural character of the area, the utility infrastructure is concentrated in the most urbanized areas of Westerly, and small, scattered neighborhoods elsewhere. In most communities, there is no public water, sewerage, or natural gas service on industrial land.

Public water is limited to parts of Westerly and the Canob Park/Wyoming section of Richmond. Sewers are available only in downtown Westerly and the surrounding area, and through a small system in the Village of Bradford that is tied into a local textile plant's treatment facility. A similar small, primary treatment system exists at the Ladd Center in Exeter, which is presently closed.

It is important to note that a substantial percentage of the land area of Substate Growth Area 6, including industrial land, falls within the Pawcatuck Sole Source Aquifer. ((11))

04-05-06-04: Site Analysis

While nearly 4,371 acres have been zoned industrial in Substate Growth Area 6, only 516 acres are in industrial use. Eight hundred nine acres are in other use, and 3,047 acres are vacant (undeveloped).

Comparisons with 1988 data used in the original *Industrial Land Use Plan* show that industrial use of industrial land in the Substate Growth Area has increased (516 acres in industrial use in 1997 vs. 377 in 1988), but the total acreage of industrial land has decreased and is presumed rezoned. The greatest losses of industrial land occurred in Exeter and Richmond; Charlestown and Hopkinton's industrial acreage and distribution of uses (industrial, other, and vacant) have remained the same. The Town of Westerly gained some industrial land, a modest 74 acres, over the same period.

In 1988, almost three-fourths of the total acreage zoned for industrial use was vacant; it was noted in the *Industrial Land Use Plan* that "due in large part to the area's dearth of infrastructure, virtually none of this acreage is considered prime for development." ((11:4.42)) In 1997, 70 percent of the area's industrial land remained vacant. Only 32 acres, all of them in Westerly at a single site, have the

"prime" characteristics of public water, sewers, and an absence of environmental constraints to development. ((8)) This is depicted in Table 212-04(14) below, and explained town-by-town in the narrative that follows.

Charlestown: The Town of Charlestown has three sites designated for industrial use, two of which are fully occupied. The remaining site is the former location of United Nuclear on Narragansett Trail, measuring 1,100 acres in total, of which nearly all are vacant. All but five acres are developable, those acres being excluded by a R.I. Department of Environmental Management monitoring agreement because of residual contamination. Soil conditions vary throughout this site, with generally rocky and stony, sloping soils in the northern and eastern portions. There are wetlands and endangered species habitat along the western border and in the southwestern corner of the site.

There are, however, major obstacles to the industrial development of the United Nuclear site. These include a lack of public utilities, location over a groundwater recharge area, the Wood River aquifer, and the relative remoteness of the site. Additionally, the site is now zoned "Planned Development," intended to accommodate residential, commercial, and light industrial uses commingled according to performance standards. While the site remains on our list, it should not be assumed that the considerable acreage available for development will be reserved for industrial use. ((74))

Exeter: The Town of Exeter has a single industrial site, about one-sixth of which is occupied by industrial and non-industrial uses. It is located at the intersection of Nooseneck Hill Road and Ten Rod Road. There are 236 vacant acres at the site, but further development is hampered primarily by a lack of utilities,

**TABLE 212-04(14):
SUMMARY OF INDUSTRIAL-ZONED LAND,
SUBSTATE EMPLOYMENT GROWTH AREA 6**

| <i>Town</i> | <i>Total</i> ¹ | <i>Industrial use</i> | <i>Other use</i> | <i>Vacant</i> | <i>Vacant/high pot.</i> |
|----------------------|---------------------------|-----------------------|------------------|--------------------|-------------------------|
| Charlestown | 1,100 | 0 | 5 | 1,095 ² | 0 |
| Exeter | 282 | 14 | 32 | 236 | 0 |
| Hopkinton | 691 | 29 | 197 | 465 | 0 |
| Richmond | 627 | 239 | 49 | 339 | 0 |
| Westerly | 1,671 | 234 | 526 | 912 | 32 |
| Total | 4,371 | 516 | 809 | 3,047 | 32 |
| State total | 32,455 | 11,116 | 6,113 | 15,224 | 1,485 |
| % state total | 13.47 | 4.64 | 13.23 | 20.01 | 2.15 |

¹ All values are in acres, with the exception of "% state total." Use totals may be greater than total acres due to rounding of fractional acreage to nearest whole number.

² Vacant acres zoned "Planned Development"; not all are expected to be available for industrial use.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

stony soils and a seasonal high water table in specific areas, and slopes ranging from three to eight percent or more. The site does boast excellent access to state and interstate highways, however. ((8))

The 1990 *Industrial Land Use Plan* mentioned another site in Exeter that, although not zoned industrial, was being actively considered for economic development: the state-owned Ladd Center, a 330-acre site along R.I. Route 2 housing an intensive care facility for the mentally retarded that was to cease operations by 1991. (The actual year of closure was 1994.) Today, four years after its closure, Ladd Center is still unoccupied but attracting notice. In its favor are a complete utility and road infrastructure and its campus-like environment, although structures on site are likely to require substantial refurbishment and upgrade, including the wastewater treatment facility. Intensive redevelopment, on the other hand, will be constrained by the presence of the Usquepaug-Queen River aquifer, wetlands, and prime agricultural land.

"Nevertheless," as Statewide Planning observed in 1990, "the [Ladd Center's] proximity to the University of Rhode Island, its infrastructure, and substantial floor space have made it a prime candidate for conversion to a university research and office park." ((11:4.43)) There is considerable interest at this writing in developing Ladd Center as an eco-industrial park ((87)) and federal Job Corps training site. The latter would be a means of attracting federal funds to the site that could be used to renovate infrastructure.

Hopkinton: The Town of Hopkinton has zoned almost 700 acres in 11 sites for industrial use. Most of this industrial acreage is vacant, and much of what is in active use is in a use that is something other than industrial. Only two of the 11 sites are fully occupied. Five of the sites with vacant land measure five acres or less each. None of the sites have public water, sewers, or natural gas service.

One site, located in Hopkinton southwest of the intersection of Route 3 and Maxson Street, is within the Ashaway aquifer; actually measuring less than an acre, it is nevertheless deemed suitable for small-scale industrial use. Another site, offering two vacant acres and located southwest of the intersection of Tomaquag Road and Colonial Village, has also been suggested for small-scale use.

Other sites suffer a litany of constraints, most being floodprone, rocky or stony-soiled, and relatively inaccessible even though they are within one mile of I-95. This applies to even the larger sites, where considerable vacant acreage is available. Three of the larger sites — at the intersection of I-95 and Alton Road, southeast of the intersection of I-95 and Canonchet Road, and at the intersection of R.I. Routes 91 and 216, respectively — overlie the Wood River aquifer.

The southern portion of the site at I-95 and Alton Road does have some development potential because existing land uses are buffered by the highway, and the soils, at least in part, are suitable. As with other Hopkinton sites, however, its lack of utilities prevent it from being considered "prime." ((8))

Richmond: The Town of Richmond has 627 industrial-zoned acres in total, a decrease of 444 acres from 1988 through rezoning. Acreage in industrial use, on the other hand, has increased ten-fold (239 acres today vs. 24 acres in 1988). Vacant industrial acreage has decreased by some 40 percent, from 849 acres in 1988 to 339 acres today. The vacant acreage is scattered among seven of the town's ten industrial sites.

One of the town's largest vacant areas, measuring 91 acres, is located at the site at the intersection of I-95 and R.I. Route 138. Despite excellent highway accessibility, this site has limited potential for large-scale industrial development. (Small-scale distribution facilities may be appropriate, however.) Although public water is available, sewer service is absent. In addition to being a siting constraint, this creates a concern about the potential pollution of the Wood River, which the R.I. Department of Environmental Management classifies "Class B" in this area. Considerable site preparation also appears necessary to remove physiographic obstacles, including some slopes in the three-to-15 percent range, and stony soils evident along the Wood River and its tributary streams.

A site to the north of the above offers 50 vacant acres, but under the same environmental constraints as its neighbor. A third site, at the intersection of Route 138 and Heaton Orchard Road, has 105 vacant acres. This site, particularly the area adjacent to Route 138, appears to have generally suitable soil characteristics, but there are wetlands and flood hazard areas in the western portion that should be avoided. Public water and sewer service are also lacking.

The remaining four sites with vacant land have moderate potential. A site in the Village of Shannock has only four vacant acres and sloping that could be mitigated with some site preparation. Suitable areas appear available at the rest of the sites, but all the sites have floodprone portions. The sites are located at or to the west of the intersection of R.I. Route 91 and Hope Valley Road and account for 30, 20, and 39 vacant acres respectively. That last site is within the Usquepaug/Queen River groundwater aquifer. ((8))

Westerly: With 1,671 acres zoned industrial, the Town of Westerly possesses the largest share of industrial land in Substate Growth Area 6. There are 234 acres in industrial use, 526 acres in some use other than industrial, and 912 undeveloped acres. The town has ten industrial sites, only one of which — located southeast of the intersection of John Street and Beach Street — is fully occupied. All but one site has public water, half have sewers, and all have access to natural gas service.

There are sizable blocks of vacant industrial acreage in Westerly. Three sites contain more than 100 acres of vacant land each. The first is located east of the intersection of Routes 91 and 3 and adjoins the Conrail Mainline tracks, thus having good transportation access. Development of the vacant land, some 140 acres, will principally be limited by soil and topographic conditions (rocky with considerable outcrops) and the presence of several wetlands.

The second of the three sites, at the intersection of Airport Road and Post Road, contains the Westerly Airport Industrial Park and 114 vacant acres. Two

large parcels at the eastern and southern portions of the site appear to be generally suitable for development, although site work would be necessary to correct moderate to steep slopes and stoniness. Smaller vacant parcels on the western side of the site appear to be within wetland areas and have very poorly drained soils.

The third site, Douglas Park, contains a large quantity of vacant land (513 acres) with varying development capabilities. Wetlands and poorly-drained soils occupy a considerable portion of the site, and steep slopes and flood hazards are also present. The site overlies Bradford groundwater aquifer. Adding to these constraints is the lack of sewers on site. On the positive side, much of the site's vacant acreage appears to be quite suitable, physiographically, for large-scale industrial use — provided the site can be developed in an orderly fashion that accounts for its varying capabilities, perhaps under an overall site plan.

Other industrial sites in Westerly have varying development potential. Undeveloped areas within these sites are similar to those described above, in that they typically have flood hazard or soil and topographic conditions that limit development to small subareas within them.

One of these sites is located on R.I. Route 78 at the Connecticut state line, and contains 34 vacant acres among a mixture of industrial and non-industrial uses. The area most conducive to development — on a small scale — is found near the center of the site. Elsewhere, development is limited by floodprone areas and wetlands or rocky soils. The site is fully serviced, however, has reasonable highway access, and rail on site.

Another is located on Ledward Avenue and measures six acres in total, four of which are undeveloped. The site contains small parcels, but physical characteristics make them acceptable for small-scale development. The site's biggest disadvantage is that it lacks sewers, though public water and gas service are available.

A third is located on Franklin Street, adjacent to the Franklin Shopping Center and Route 78. This site is unique in that it is an eight-parcel industrial park that is being developed under a site plan that reserves acreage that would otherwise be unbuildable, or severely constrained, for buffer areas around floodprone and environmentally sensitive areas. The remainder will be divided into parcels ranging from 3.1 to 5.3 acres, giving a total developable area of about 32 acres (which in our inventory are currently classified as "vacant"). The park will be fully serviced, with natural gas and highway and rail access.

The remaining industrial sites have been recommended for rezoning. These are located in Potter Hill and at the intersection of Route 91 and Pound Road respectively. Both have lapsed into non-industrial uses, the Pound Road site having largely become a residential area. ((8))

04-05-06-05: Conclusions

Substate Growth Area 6 presents an interesting challenge: literally thousands of industrial-zoned acres are vacant, but only a single site — the planned industrial park in Westerly — passes muster as “high potential.” The remainder is constrained by flood hazards, wetlands, rocky soils, slopes, or lack of utilities. These are features that have to be mitigated, compensated for, or avoided for development to proceed.

Table 212-04(15) and Map 212-04(6) summarize the constraints and development potential of the industrial sites in Substate Growth Area 6.

When one looks closer at the sites, it is obvious that some of them are large enough to allow the skillful avoidance of discrete, environmentally sensitive features, such as river floodplains and wetlands. On the other hand, the presence of groundwater aquifers under many of the sites is a major constraint to any development other than a modest expansion of existing manufacturing, or a low-intensity use such as wholesale trade. Fortunately, this appears to fit our employment projections for the area’s manufacturing and wholesale/retail sectors. (Firms specializing in wholesale trade would coincidentally benefit from the generally good access to state and interstate highways in the area.)

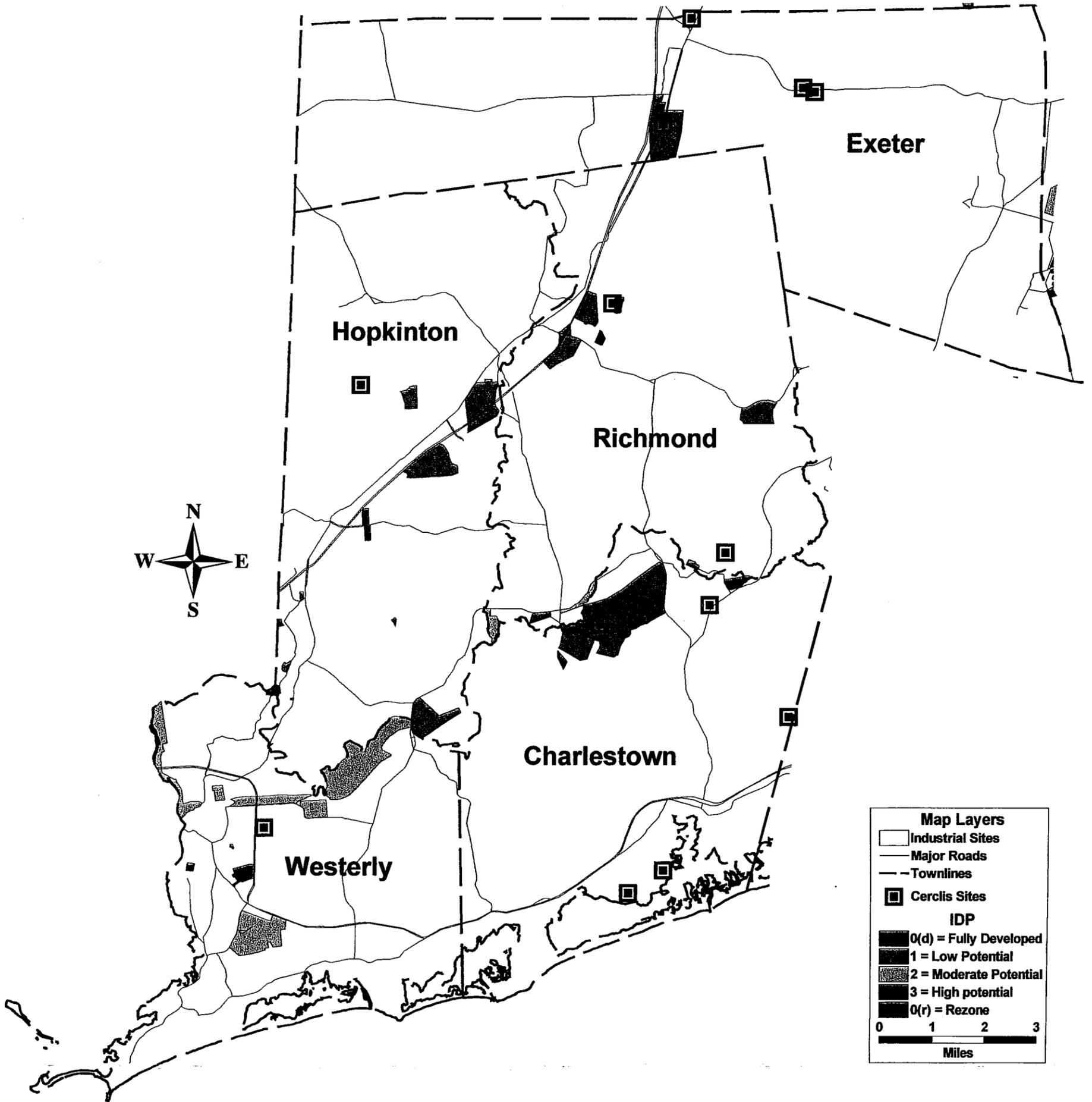
In a similar vein, little can be done to mitigate the absence of utilities at most industrial sites in Substate Growth Area 6 other than to dig a well or provide on-site wastewater treatment. This is not to say that utility limitations have prevented industrial use of many of these sites, and considerable non-industrial use as well. However, development can be expected to be limited and even *defined* by the capacities of wells and septic systems, and by the schedule for infrastructure improvements.

**TABLE 212-04(15):
VACANT INDUSTRIAL ACREAGE CHARACTERISTICS,
SUBSTATE EMPLOYMENT GROWTH AREA 6**

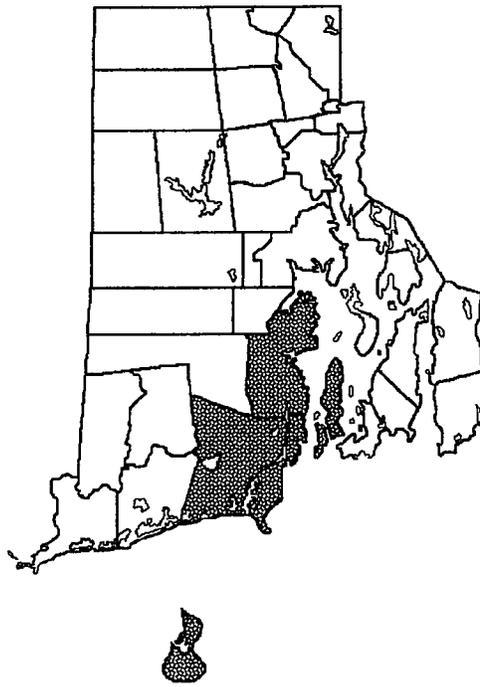
| <i>Town</i> | <i>Industrial sites</i> | <i>Vacant acres</i> | <i>w/Water</i> | <i>w/Sewer</i> | <i>w/Rail</i> | <i>w/Utilities & No Env. Constr.</i> |
|--------------------|-------------------------|---------------------|----------------|----------------|---------------|--|
| Charlestown | 3 | 1,095 | 0 | 0 | 1,095 | 0 |
| Exeter | 1 | 236 | 0 | 0 | 0 | 0 |
| Hopkinton | 9 | 465 | 0 | 0 | 163 | 0 |
| Richmond | 10 | 339 | 0 | 0 | 54 | 0 |
| Westerly | 10 | 912 | 864 | 225 | 786 | 32 |
| Total | 33 | 3,047 | 864 | 225 | 2,098 | 32 |

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

MAP 212-04(6)
SUBSTATE EMPLOYMENT GROWTH AREA 6



04-05-07: Substate Employment Growth Area 7



Population and Employment Trends

| | Population | Land area, acres | Employment | E/P |
|-------------|-------------------|-------------------------|-------------------|------------|
| 1975 | 52,400 | 83,169 | 9,946 | 0.19 |
| 1980 | 59,100 | " | 16,638 | 0.28 |
| 1985 | 62,800 | " | 19,486 | 0.31 |
| 1990 | 69,237 | " | 19,154 | 0.28 |
| 1995 | 68,744 | " | 21,322 | 0.31 |
| 2000 | 73,206 | " | 24,890 | 0.34 |
| 2005 | 77,485 | " | 27,416 | 0.35 |
| 2010 | 81,872 | " | 29,943 | 0.37 |
| 2015 | 86,598 | " | 32,470 | 0.37 |
| 2020 | 91,933 | " | 34,997 | 0.38 |

04-05-07-01: Demographic Profile

The towns of Jamestown, Narragansett, New Shoreham, North Kingstown, and South Kingstown make up Substate Employment Growth Area 7. The land area encompasses 83,169 acres and supported a population of 68,744 in 1995. The population density of 0.83 persons per acre reflects the area's rural character, though much suburbanization has taken place. The trend is continuing, as Substate Growth Area 7 gained population at a much faster rate than the rest of the state from 1985 to 1995, and is projected to continue growing significantly

through 2020. Employment growth is expected to keep up with population growth.

Quonset/Davisville: As in other Substate Growth Areas, the employment projections above are based on a regression analysis. This analysis is based on the pace of past and present use of industrial properties in Substate Growth Area 7, including the Quonset Point/Davisville Industrial Park (now called the "Quonset Davisville Port and Commerce Park") in North Kingstown. The pace may accelerate rapidly if QPD is developed in full as a combined commerce park, intermodal terminal, and seaport. A regression analysis, based as it is on trends, cannot account for a sudden change in employment growth, so our employment projections must be taken as conservative.

As many as 22,000 additional jobs could be generated over a 20-year period at QPD under a scenario calling for the construction of a container port in addition to the other facilities. There are approximately 5,000 people employed in the park today. ((69))

However, the scope of the Quonset project is still a matter of debate, and until all the issues are settled and the plans are finalized, we prefer, for consistency with our projections for the other Substate Growth Areas, to keep basing our employment estimates for Substate Growth Area 7 on patterns of past and present industrial use. If it is necessary to revisit those projections in the near future because of a significant uptick in employment due to Quonset's development, staff will do so and revise them accordingly.

04-05-07-02: Economy

Manufacturing, wholesale and retail trade, and services are the three leading contributors to employment in Substate Growth Area 7, as they are in most of the rest of the state. All three are projected to grow over the next 20 years, with manufacturing leading through 2000, and then being overtaken by both wholesale/retail and services.

Rubber and plastics products (SIC 30) account for most manufacturing employment areawide, followed by instruments and related products (SIC 38) and food and kindred products (SIC 20). Rubber and plastics products and instruments are concentrated in North Kingstown; there, the third largest manufacturing sector is industrial and commercial machinery and computer equipment (SIC 35). Printing and publishing (SIC 27) employ the most in South Kingstown, followed by textile mill products (SIC 22). ((63))

Nondurable goods (SIC 51) lead wholesale trade employment in all communities except North Kingstown and South Kingstown. Wholesale trade employment in Narragansett has shown a steady decline from 1985 to 1995, while growing in Jamestown and North Kingstown. In retail, eating and drinking places (SIC 58) are the top employer areawide, with food stores (SIC 54) second and miscellaneous retail stores (SIC 59) third. Auto dealers and service stations (SIC 55)

are third in North Kingstown. Miscellaneous retail has shown steady growth in Narragansett, New Shoreham, and North Kingstown. ((63))

Health services (SIC 80) are the areawide employment leader in services, concentrated in South Kingstown and North Kingstown; business services (SIC 73) are second, and social services (SIC 83) third. Amusements and recreational services (SIC 79) are third in employment in North Kingstown, and engineering and architectural services (SIC 87) are third in South Kingstown — after health services and social services. ((63))

Our forecast of employment trends in Substate Growth Area 7 through 2020 is summarized below. About ten percent of the wholesale/retail employment is expected to be in wholesale trade. ((64))

Major Employment Sectors

| Industry | 1990 | 2000 | 2010 | 2020 | Δ 1990-2020 |
|-------------------------|-------------|-------------|-------------|-------------|--------------------|
| Manufacturing | 6,832 | 7,725 | 8,409 | 9,093 | +2,261 |
| Wholesale/retail | 5,156 | 7,532 | 9,282 | 11,031 | +5,875 |
| Services | 4,950 | 6,757 | 8,701 | 10,644 | +5,694 |

Two of the Substate Growth Area 7 towns are islands: Jamestown and New Shoreham (Block Island). Although each of these communities does contribute to the economy of the growth area, neither has land set aside for industrial use. Our analysis of the area's industrial land use therefore excludes them.

04-05-07-03: Infrastructure

The towns of Substate Growth Area 7 share in common a defining geographic feature: an extensive coastline, along either the western portion of Narragansett Bay or the Atlantic Ocean. Not surprisingly, the area has marine facilities catering to many different types of commercial pursuits, including fishing, import operations, and recreational boating. It is the location of Point Judith in Narragansett, one of the largest commercial fishing ports in the Northeast, and Quonset/Davisville, a decommissioned naval base that is Rhode Island's major industrial park, seaport, and foreign trade zone.

Transportation: Access to an interstate highway can be problematic for industrial sites in Substate Growth Area 7, however. Rhode Island Route 4 and U.S. Route 1 are the main north-south highways. Route 4 links North Kingstown and points south with I-95. The area's east-west corridor is R.I. Route 138, which connects I-95 in the west with Aquidneck Island via the Verrazano Jamestown Bridge and the Pell (Newport) Bridge in the east.

As part of the redevelopment of Quonset/Davisville, which is located in North Kingstown, there are plans to provide better highway access to the park by constructing a limited-access highway from Route 4 to the industrial park. ((80))

Plans for improving highway access to Quonset are coupled with the anticipated improvement of rail access through the construction of a freight-dedicated "third track" to enable freight and passenger rail traffic to travel along the same rail corridor simultaneously. The completion of the "third track," which will run from Davisville to a switchyard in Central Falls, is considered critical to the success of a revitalized Quonset.

The Quonset State Airport within the Quonset/Davisville complex provides the area with a general aviation facility with runways capable of accommodating transport category aircraft as well as corporate and chartered flights. The current layout of the airport may be altered if plans for developing the seaport at the park are implemented.

Water: The utility infrastructure at industrial sites in Substate Growth Area 7 varies from fully serviced areas such as Quonset to areas lacking sewer service and even public water. Where public water is available, it is provided by one of seven separate water systems. Quonset is served by its own system, with a capacity originally designed to service the needs of the U.S. Navy, which began vacating the complex in 1973. The Town of North Kingstown also operates its own system, serving about 90 percent of the town. ((80))

South Kingstown has four different water systems: the South Shore Water District, the Kingston Water District, United Water Rhode Island (formerly the Wakefield Water Company), and, serving itself, the University of Rhode Island. The less developed western portion of South Kingstown lacks public water service. Like neighboring communities in Substate Growth Area 6, this area contains sole source groundwater aquifers in areas with developable industrial land: the Hunt-Annaquatucket-Pettaquamscutt in North Kingstown and the Wood River in South Kingstown. ((11)), ((75)), ((79)), ((80))

Narragansett has no water supply wells of its own. It purchases water from United Water Rhode Island (about 68 percent), the Town of North Kingstown (30 percent), and South Kingstown's South Shore Water District (about two percent, for Jerusalem only). The town will be discontinuing use of North Kingstown water, and increasing its proportion from United Water Rhode Island. ((75))

Sewers: The wastewater treatment infrastructure in Substate Growth Area 7 is not as widely available as public water. Within North Kingstown, for example, sewer service is only available within the confines of Quonset Point/Davisville and in the areas immediately around QPD, such as the Navy housing. ((80)) North Kingstown's industrial sites outside the complex therefore all lack a critical component determining development potential.

The Town of Narragansett has two treatment plants, located in Scarborough and Narragansett Pier. The former (the South End System) serves high-density areas in the southern portion of the town, including the Galilee fishing piers. The latter (the North End System) is actually owned and operated by the Town of South Kingstown, though its service area includes most of central and northern Narragansett. The North End System has capacity limits by agreement

with the town's partners, the University of Rhode Island and the Town of South Kingstown. Narragansett is at its limit in the North End System. The South End System, on the other hand, is at only 50-60 percent capacity, but is limited by its ability to handle very concentrated effluent from Galilee's fish processing plants. Pretreatment programs can be effective, however, in making the unused capacity available to other users. ((75))

Table 212-04(16) reports the use of industrial land in the five communities of Substate Growth Area 7. The additional entry on the table is Quonset Point/Davisville, which technically is located within the Town of North Kingstown but which has an ownership history, infrastructure, and use characteristics that set it apart from other industrial properties in the town.

04-05-07-04: Site Analysis

Nearly 3,000 acres are zoned industrial in Substate Growth Area 7, more than half of which (1,541, or 52 percent) are vacant. The primary contributor is Quonset/Davisville, which also accounts for the area's large proportion of "high potential" industrial acres — some 36 percent of the state's total.

It is widely believed that this growth area will continue to be a major focus of job expansion in Rhode Island in the years to come, particularly if the ambitious plans for QPD come to fruition. The area's E/P ratio is growing, and is the third highest in the state (behind the Providence metropolitan area, Substate Growth

**TABLE 212-04(16):
SUMMARY OF INDUSTRIAL-ZONED LAND,
SUBSTATE EMPLOYMENT GROWTH AREA 7**

| <i>Town</i> | <i>Total</i> ¹ | <i>Industrial use</i> | <i>Other use</i> | <i>Vacant</i> | <i>Vacant/high pot.</i> |
|-------------------------------------|---------------------------|-----------------------|------------------|---------------|-------------------------|
| Jamestown | 0 | 0 | 0 | 0 | 0 |
| Narragansett | 148 | 71 | 67 | 10 | 4 |
| New Shoreham | 0 | 0 | 0 | 0 | 0 |
| No. Kingstown | 989 | 266 | 257 | 466 | 0 |
| Quonset/D'ville ² | 1,555 | 455 | 120 | 980 | 527 |
| So. Kingstown ³ | 258 | 126 | 47 | 85 | 0 |
| Total | 2,950 | 918 | 491 | 1,541 | 531 |
| State total | 32,455 | 11,116 | 6,113 | 15,224 | 1,485 |
| % state total | 9.09 | 8.26 | 8.03 | 10.12 | 35.76 |

¹ All values are in acres, with the exception of "% state total." Use totals may differ from total acres due to rounding of fractional acreage to nearest whole number.

² Located in the Town of North Kingstown; not a separate municipality.

³ Does not include the Route 1 Special Management District.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

Area 3, and the heavily industrialized Blackstone Valley, Substate Growth Area 1).

As explained above, our projections, being based solely on trends set from 1975 to the present, did not factor in any *additional* employment from the development of QPD as a larger seaport. This makes the numbers all the more interesting. According to our analysis, even if we discount a major influx of jobs from accelerated port development, the growth trend in Substate Growth Area 7 will continue to the year 2020.

Narragansett: A comparison of industrial acreage from the 1988 and current inventories show some significant changes in use or vacancy in the Town of Narragansett. The most subtle change is that a single acre has been added to the town's industrial land to accommodate communications towers on Westmoreland Street. ((8))

Narragansett's largest industrial site is the fully-serviced South Ferry Industrial Park. It is situated next to the University of Rhode Island Bay Campus, home of the Graduate School of Oceanography, off Ferry Road. The park was designed as a joint venture between the state and local developers to take advantage of the nearby marine scientific facilities. Today, much of the park is occupied by a variety of businesses, few of which are engaged in oceanographic research.

Recent additions to the South Ferry Industrial Park include a water purification system contractor/builder and a major addition to DeWar Industries, an industrial coating firm. The park is essentially built out, with a single vacant parcel of 1.8 acres. Nearly all the vacant land formerly associated with the park has been deeded to the town or to the University of Rhode Island for conservation purposes. ((75))

To the west of the South Ferry Industrial Park is the North Star Industrial Park, also fully serviced, which is being marketed for light industry and warehousing. The site contains 29 acres, most of which are presently occupied. There remain a total of six half-acre vacant lots, all of which would require special use permits to be developed. ((75)) Like the other park, North Star is located within one mile of U.S. Route 1.

Of the remaining three industrial sites in Narragansett, only two have vacant acreage. One serves as one of Rhode Island's main fishing ports, the Galilee area of Point Judith. Galilee is primarily state-owned land near the entrance of Point Judith Pond with berthing facilities for fishing boats. Much of this site serves as necessary laydown and storage areas supporting the fishermen. Industrial uses here must be related to fishing and related industries. Fish processors must plan for pretreatment of waste streams to meet the town's wastewater effluent standards. ((75))

A master plan for more efficient use of the Galilee port area is expected to direct more tourism into Galilee while preserving the fishing industry through infrastructure improvements, including bulkheads, piers, utilities, and roadways.

The plan culminates a multi-year effort by the University of Rhode Island, the EDC, Statewide Planning, the DEM, stakeholders in the Town of Narragansett, consultants, and private developers. About four vacant acres remain at this site, a small amount being used for public parking.

The second site is the Narragansett Industrial Park, located at the intersection of R.I. Route 108 and Woodruff Avenue. It is 16 acres in size, with 15.5 acres in industrial use and only 0.5 acres vacant. The park's tenants include firms involved in metal fabricating, wood products manufacturing, warehousing, and fish processing. The vacant acreage seems best suited to an expansion of existing uses.

As mentioned in the discussion of utility infrastructure in Substate Growth Area 7, further industrial development is limited by the town's wastewater treatment capacity. Wastes from the fish processing industry in particular have been a focus of concern, and DEM staff has attempted to engineer a waste minimization program within the industry to limit the amount of waste flowing "downstream" to the treatment facilities. The concept would well be applied to any new industry seeking to locate in Narragansett. ((8)), ((75))

North Kingstown: Excluding Quonset Point/Davisville, the Town of North Kingstown has 989 acres zoned industrial, 266 of which are in industrial use, 257 in non-industrial use, and 466 vacant. These are scattered among 15 sites ranging in size from two acres to 367 acres. The relatively high proportion of non-industrial use may be explained by the lack of sewers in areas of North Kingstown outside QPD. Most sites are further constrained by the presence of groundwater aquifers. ((80))

Seven of the town's industrial sites have vacant acreage. The first, located off Frenchtown Road, measures 155 acres in total, 85 of which are vacant. For years it has been the site of the Brown & Sharpe manufacturing facility, and boasts excellent highway access with links to I-95 via Frenchtown Road and R.I. Route 4. In addition, the site has rail access and favorable soil and topographic characteristics. However, it is also within the recharge area of the Hunt River aquifer. The Brown & Sharpe plant has its own wastewater treatment facility with secondary treatment at the site, but whether additional tie-ins are possible is not known.

Another site measures eight acres, two of which are vacant and apparently best suited to an expansion of existing uses. Located northeast of the intersection of South Road and Old Baptist Road, it is within the Hunt River aquifer Wellhead Protection Area. A third site overlies the Annaquatucket River aquifer and could be developed only with strict restrictions. The site is located on Oak Hill Road at Bellville Pond and is 27 acres in total, with 18 vacant acres. In May, 1998, all industrial properties overlying the aquifer were rezoned "light industrial." ((80))

Most of the acreage of a site northeast of the intersection of Railroad Avenue and Indian Corner Road is expected eventually to drop out of our industrial land inventory. The site is rated as prime agricultural land by the U.S.

Department of Agriculture, and it overlies the Chipuxet River groundwater aquifer. It is 182 acres in size, only eight of which are presently occupied (and in industrial use). A portion of this site has been rezoned "rural residential." The remaining acreage is proposed to be similarly rezoned. We presume that only a limited expansion of the existing industrial uses will be possible at this location.

One site with what appears to be considerable potential is located at Dry Bridge Road and Lafayette Road. It measures 367 acres in total, much of which is vacant or in use for sand and gravel operations. The southwest portion of the site has favorable physical conditions for development; soil conditions and steep slopes in the northern and eastern sections, however, are constraining. Such differing capabilities of the land within this site indicate the need for a coordinated site plan should development proceed. As in other areas of North Kingstown, an important groundwater aquifer (for the Annaquatucket River) is present that might further constrain development.

The remaining two sites with vacant acreage are much smaller, measuring six acres and five acres respectively and each having a single undeveloped acre. The former is within a groundwater aquifer, the latter in a flood hazard zone. The first site, located at Oak Hill Road and Sweet Lane Road, may not be able to support further development as the vacant area is extremely wet. Some expansion of existing industries is possible at the second site, located in the Village of Wickford, but this is within a flood hazard area.

Because all of the industrial sites in North Kingstown outside the Quonset/Davisville complex lack sewers, as mentioned above, the *Industrial Land Use Plan* excludes them from its list of "high potential" sites. ((8))

Quonset Point/Davisville: The Quonset Davisville Port and Commerce Park is a 2,500-acre industrial complex consisting of 14 industrial sites, ranging in size from 35 to 250 acres. Vacant land exists at each of the sites. All of the sites have public water, but only 11 have sewers. Natural gas service is available at eight of the sites. Rail access is available to all but one of the sites.

Quonset Point/Davisville benefits from the wastewater treatment plant, power plant, port, road system, rail access, and airport, all originally developed by the U.S. Navy and enhanced over the last decade for industrial purposes. The complex also features a free trade zone. The industrial park portion is where the Davisville Naval Construction Battalion Center and Quonset Naval Air Station were formerly located. ((80))

For years, QPD has been refurbished, redeveloped, and marketed as the state's premier industrial park by a quasi-public corporation, the R.I. Port Authority and Economic Development Corporation, which has since been succeeded by the EDC. Whatever comes of the plans for a seaport at QPD, the area will remain important to the economic development of Substate Growth Area 7 and the rest of the state. Tenants will continue to be attracted by its location and development potential. Total employment at the park exceeded 6,000 in early 2000. ((98))

Eight sites have no apparent constraints to development. The first such site encompasses the Kiefer Park area, which has recently been upgraded with new roads and utilities to serve as a technology park. When the industrial land inventory was initially compiled in 1996, 62 of Kiefer Park's 72 acres were vacant; by 1999, only 25 remained so. ((69)), ((98)) The second site, 85 acres in size, is located in West Davisville, and has an active rail siding and 61 vacant acres. Our survey indicates a sewer line extension at the site (an Army Corps of Engineers public works project) was completed in 1997.

The third of the eight sites is 72 acres in size, with 58 in industrial use and 14 vacant. The inventory describes it as "well serviced by both utilities and roads," though it lacks natural gas service and rail access. It is located in South Davisville. The fourth site, in the South Davisville/Mill Creek area, is similar in size and compliment of services, but with 63 vacant acres. (Some of the vacant acreage is located within the right-of-way for the new access road, however.)

The next of the eight sites is presently partially occupied by General Dynamics/Electric Boat. It is a waterfront site measuring 170 acres, adjacent to the Quonset Airport, and well served by rail. Thirty acres are vacant, and further downsizing at Electric Boat is expected to cause some buildings to be turned over to the state for redevelopment.

The last three of the eight sites have sizeable vacant acreage, and were among the most recent conveyed to the state by the U.S. Navy. ((98)) The first of these, in West Davisville, measures 70 acres and is entirely vacant. Sewer extension is either complete or nearly completed. The next site, located in the Administrative Triangle, is 126 acres in size, 32 of which are in non-industrial use and the remainder vacant. This area is planned for institutional/office and community uses. The last of the three is the largest of all, 250 acres in total. Forty acres are occupied by industrial uses and seven by non-industrial uses; the remaining 203 are vacant. Located in the Davisville warehouse area, this site is planned for general industrial and manufacturing activities.

The remaining six sites in QPD have varying intensities of industrial activity and vacant acreage that is constrained by either flood hazards, problem soils, or a lack of sewers.

The first of these six sites, in Central Quonset, is partly occupied by Toray Plastics. It measures 140 acres, with 80 acres in industrial use and 60 acres vacant. Steam is available at the site. Development of a small part of the vacant portion of the site may be limited by the presence of a flood hazard area, however.

The next site, the Davisville Piers, is adjacent to the town marina, and includes two 1,200 ft. piers with a 30 ft. water depth. It measures 71 acres, 55 of which are in industrial use, and the remainder vacant. This is a flood hazard area. Another site, in North Davisville, is partially constrained by a lack of sewers on three of its parcels (although there is excellent potential for sewers to be extended there). More serious, perhaps, is the site's location along the airport approach, which may impose height restrictions on what is built there. This is a relatively

large site, measuring 120 acres, 25 of which are in industrial use, 45 in non-industrial use, and 50 undeveloped.

The fourth site with constraints measures 45 acres, 15 of which are in non-industrial use and 30 vacant. A lack of sewers and the presence of a flood hazard characterize this site, a waterfront parcel adjacent to the Davisville Piers and the airport. While there is potential for sewer connection, 15 acres are wetland.

The fifth site was still owned by the Navy at the time of the inventory. It is a large site, some 229 acres, that currently lacks sewers but has excellent potential for connection owing to plans to make it a light/waterfront industrial area. Twelve acres are presently occupied, split between industrial and non-industrial uses. It is supported by proximity to the Davisville Piers and extensive rail facilities. A small portion of the site is in a flood hazard area.

The sixth site, the Carrier Pier with a 35 ft. water depth, is fully serviced. It is the site of the EDC steam and wastewater treatment plant. Vacant parcels fronting water classified "SB(1)" by the Department of Environmental Management are available for aquaculture. The extent of the flood zone may constrain other types of development. ((8)), ((98))

South Kingstown: The Town of South Kingstown has five industrial sites, three of which are fully occupied. ((79))

The fourth site, located between Kingstown Road (Route 138) and Liberty Lane (Fairgrounds Road), has topography conducive to industrial development, but the presence of Chipuxet aquifer is a constraining factor. It is 160 acres in size, with 19 acres in industrial use, 100 acres in non-industrial use, and 41 acres vacant.

The fifth site, north of the intersection of Route 108 and North Road, contains a sand and gravel operation, a precast concrete plant, and an asphalt plant. The remaining vacant area, 13 acres, consists of poorly drained wetlands that are not favorable for industrial use. ((8))

In May 1998, the town rezoned an additional 220-acre area, located on Route 1 across from the Washington County Government Center and north of the Wakefield cut-off, for a mixed-use district. Site controls require that 50 percent of the developable property be dedicated to office/industrial use. Fifteen percent of the developable property must be set aside as protected open space. Wetlands occupy half the site and must not be disturbed. Public water and sewer service are available. Owing to its mixed-use rather than strictly industrial designation, this area does not show up in our industrial site inventory, but could be a significant resource — up to 55 acres for office or light industrial use — for the town. ((79)), ((82))

04-05-07-05: Conclusions

Infrastructure is expanding in Substate Growth Area 7 to accommodate trends in economic growth, particularly in manufacturing and most notably in the

Quonset Davisville Port and Commerce Park. We have begun to see the extension of sewers into the Town of North Kingstown as a result of upgrades in wastewater treatment at QPD to accommodate that growth. No matter what path is taken regarding QPD's future, industrial activity will continue to gain strength in this growth area because of the presence of that facility.

The draft master plan for QPD proposed land uses at a new port and commerce park as follows: 851 acres developed for manufacturing (45 percent) and distribution industries (55 percent); 40 acres for office use; 584 acres for open space; 514 acres for transportation and utilities; and 204 acres for recreation. A significant container port was proposed in 1998 by private developers, and this proposal was reflected in the master plan. The port plans were withdrawn following more than a year and a half of controversy, although some reconfiguration of waterfront development to accommodate future port uses is possible. Long-range planning is ongoing. ((98))

As Tables 212-04(16) and (17) indicate, high potential industrial land in Substate Growth Area 7 is concentrated in QPD (527 acres, equipped with utilities and without environmental constraints). An additional eight acres of fully serviced vacant land are found in Narragansett (four of which are high potential).

Throughout Substate Growth Area 7, limitations in infrastructure are a limiting factor, but probably not as much as the availability of water. The whole area, essentially, is served by a sole source aquifer. There is a concern that there will come a time that cumulative drawdowns to support expanding industrial uses will exceed safe levels for sustainability. ((100))

**TABLE 212-04(17):
VACANT INDUSTRIAL ACREAGE CHARACTERISTICS,
SUBSTATE EMPLOYMENT GROWTH AREA 7**

| <i>Town</i> | <i>Industrial sites</i> | <i>Vacant acres</i> | <i>w/Water</i> | <i>w/Sewer</i> | <i>w/Rail</i> | <i>w/Utilities & No Env. Constr.</i> |
|-------------------------------------|-------------------------|---------------------|----------------|----------------|---------------|--|
| Jamestown | 0 | 0 | 0 | 0 | 0 | 0 |
| Narragansett | 5 | 10 | 10 | 10 | 0 | 8 |
| New Shoreham | 0 | 0 | 0 | 0 | 0 | 0 |
| No. Kingstown ¹ | 15 | 466 | 466 | 0 | 432 | 0 |
| Quonset/D'ville ² | 14 | 980 | 980 | 667 | 966 | 527 |
| So. Kingstown ³ | 5 | 85 | 25 | 0 | 60 | 0 |
| Total | 39 | 1,541 | 1,481 | 677 | 1,458 | 535 |

¹ All areas outside Quonset /Davisville

² Located in the Town of North Kingstown

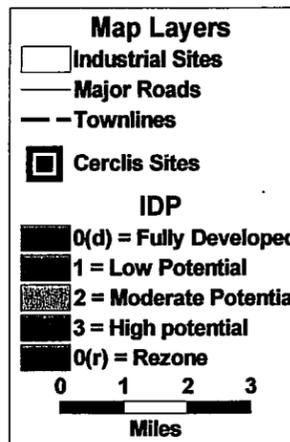
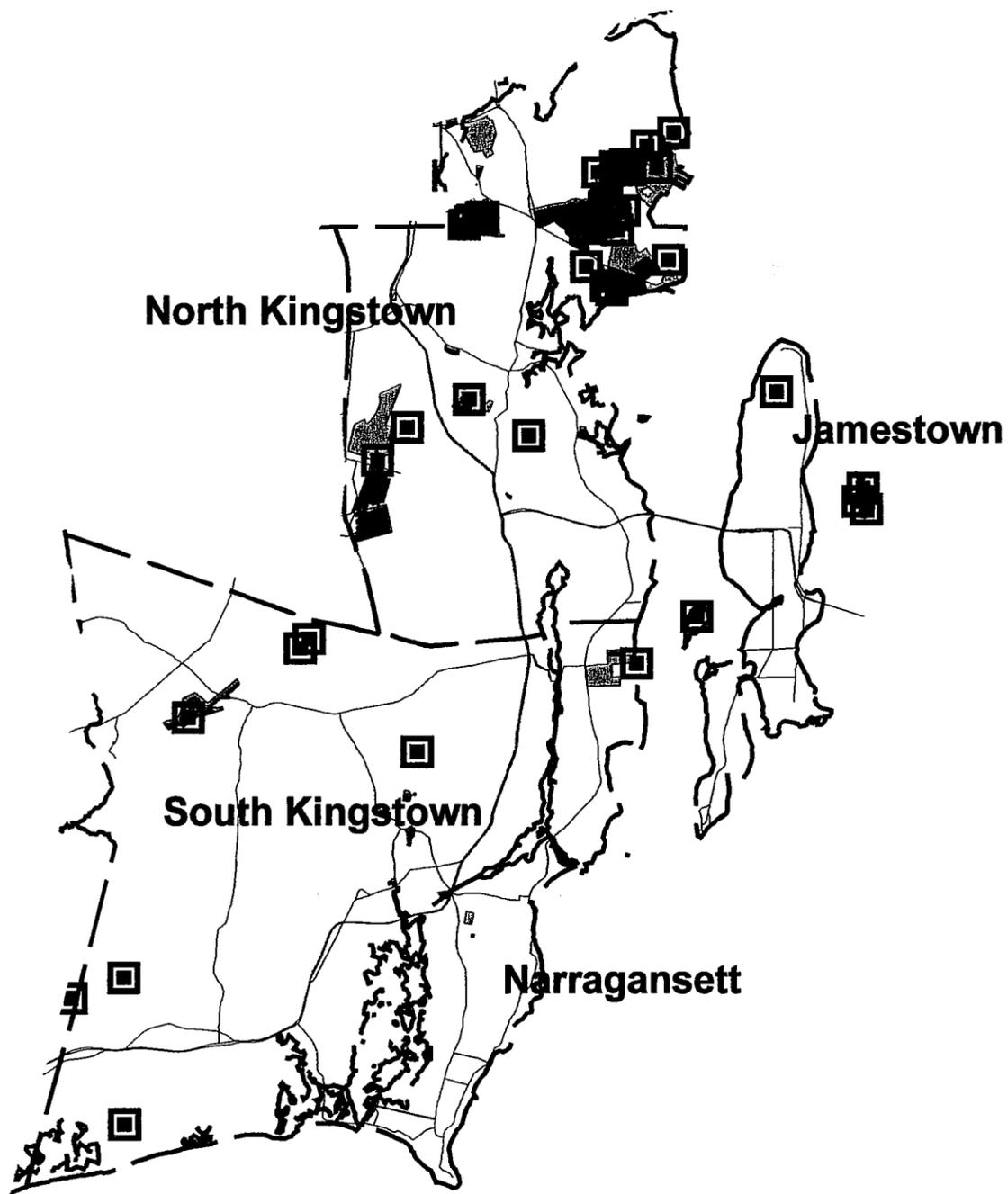
³ Does not include the Route 1 Special Management District

Source: Statewide Planning Program Industrial Land Inventory (1997)

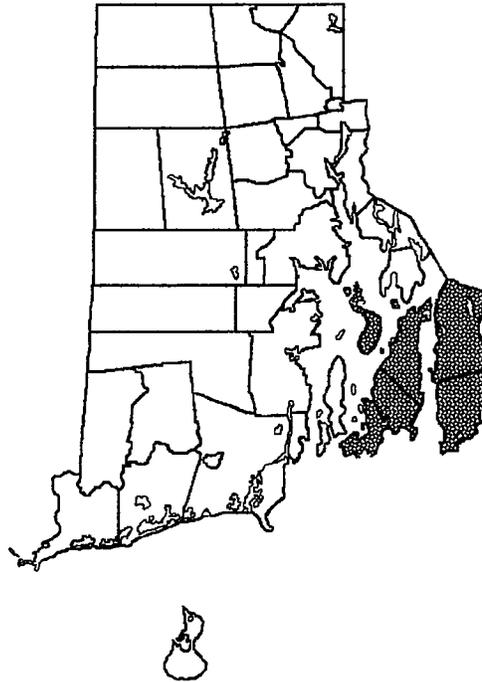
The communities within the growth area have adopted protective mechanisms for aquifers such as overlay districts that will further limit industrial expansion. On the other hand — and as we noted in the original *Industrial Land Use Plan* — other opportunities may present themselves in the siting of less demanding uses such as services and wholesale distribution industries. ((11:4.53-54)) Growth in both those sectors is expected to outpace manufacturing by the year 2010.

Map 212-04(7) shows the industrial development potential of the sites within Substate Growth Area 7.

SUBSTATE EMPLOYMENT GROWTH AREA 7



04-05-08: Substate Employment Growth Area 8



Population and Employment Trends

| | Population | Land area, acres | Employment | E/P |
|-------------|-------------------|-------------------------|-------------------|------------|
| 1975 | 75,100 | 60,118 | 11,619 | 0.15 |
| 1980 | 77,343 | " | 19,197 | 0.25 |
| 1985 | 79,900 | " | 27,032 | 0.34 |
| 1990 | 82,195 | " | 25,367 | 0.31 |
| 1995 | 81,609 | " | 24,571 | 0.30 |
| 2000 | 83,923 | " | 31,179 | 0.37 |
| 2005 | 85,771 | " | 34,387 | 0.40 |
| 2010 | 87,494 | " | 37,594 | 0.43 |
| 2015 | 89,334 | " | 40,802 | 0.46 |
| 2020 | 91,528 | " | 44,009 | 0.48 |

04-05-08-01: Demographic Profile

Five communities make up Substate Employment Growth Area 8: Little Compton, Middletown, Newport, Portsmouth, and Tiverton, encompassing Rhode Island's "East Bay." It is one of the smallest substate areas considered in this plan, measuring a little more than 60,000 acres. With a 1995 population of 81,609, its population density is slightly less than the state average at 1.40 persons per acre.

Reversing the trend from 1970 to 1985, the area gained population from 1985 to 1995. The tendency upward is expected to continue. Private employment growth is projected to begin trending upward after 1995, and continue growing as well. In fact, by the year 2020, Substate Growth Area 8 is expected to be second only to Substate Growth Area 3 — the metropolitan Providence area — in the ratio of employment by establishment to resident population (E/P).

04-05-08-02: Economy

As in most of the other substate areas, the three major private employment sectors are services, wholesale and retail trade, and manufacturing.

Transportation equipment (SIC 37), primarily boat building, is the areawide leader in manufacturing, followed by printing and publishing (SIC 27) and apparel and other textile products (SIC 23). Printing and publishing is first in Newport, third in Portsmouth, and fourth in Middletown. Industrial and commercial machinery (SIC 35) is second in Middletown. Instruments and related products (SIC 38), which are fourth areawide, are third in Newport.

Durable goods (SIC 50) are predominant in wholesale trade everywhere but Portsmouth. Eating and drinking places (SIC 58) lead retail employment, followed by food stores (SIC 54) and miscellaneous retail stores (SIC 59). Auto dealers and service stations (SIC 55), ranked fourth areawide, are second in Tiverton and third in Middletown.

Health services (SIC 80) dominate services employment in Substate Growth Area 8, thanks to strong representation in Newport. Engineering and architectural services (SIC 87) are second, being concentrated very heavily in Middletown and Portsmouth. Running third areawide, but leading in Tiverton, are social services (SIC 83). Growth appears to be consistent in health services, on the rebound in engineering and architectural services, and gaining strength in social services, particularly in Portsmouth. Business services (SIC 73), which lead in Portsmouth, are on a downturn elsewhere. ((63))

Our forecast of employment trends in Substate Growth Area 8 through 2020 is summarized below. In the wholesale/retail sector, about six percent of the jobs will be in wholesale trade. ((64))

Major Employment Sectors

| <i>Industry</i> | <i>1990</i> | <i>2000</i> | <i>2010</i> | <i>2020</i> | <i>Δ 1990-2020</i> |
|-------------------------|-------------|-------------|-------------|-------------|--------------------|
| Manufacturing | 4,800 | 4,278 | 4,138 | 3,997 | -803 |
| Wholesale/retail | 6,022 | 8,228 | 9,806 | 11,384 | +5,362 |
| Services | 11,162 | 14,886 | 19,182 | 23,478 | +12,316 |

04-05-08-03: Infrastructure

The chief geographic feature of Substate Growth Area 8 is its extensive shoreline, taking in all of Aquidneck Island and the coasts of Tiverton and Little Compton. Its boundaries are formed by eastern Narragansett Bay, Mt. Hope Bay, the Sakonnet River, and Rhode Island Sound (the Atlantic Ocean). The area's ports serve numerous commercial fishing operations, Naval training and fleet operations, and recreational boating.

Transportation: This substate area lacks immediate access to interstate highways, with I-195 providing the closest major route to southeastern Massachusetts and the Providence metropolitan area. Rhode Island Routes 114, 138, 24, and 77 are the main north-south corridors. With the exception of Route 24, the roadways support long stretches of residential and commercial development, with some limited industrial development along the way.

The area is no longer serviced by rail freight due to the closing of the Sakonnet River railroad bridge in Tiverton, which linked Aquidneck Island to the City of Fall River, Mass. A number of industrial sites along the western shore of Aquidneck Island abut the rail line and could easily be served if the bridge were brought back on line. Limited passenger rail service is available on the Aquidneck Island line, and there is some discussion of locating a new railway station in Newport near the U.S. Naval Complex.

Substate Growth Area 8 has access to limited commuter and air freight service by way of Newport State Airport, a general aviation facility with 2,600- and 3,000-ft. basic utility runways.

Water: The utility infrastructure in Substate Growth Area 8 varies as one moves away from the urbanized surroundings of Newport to the more rural communities of Portsmouth, Tiverton, and Little Compton. Where available, public water is provided by five separate water systems. The Newport system provides service to Newport, central and western portions of Middletown, and a southern section of Portsmouth. The Portsmouth Water and Fire District serves most of Portsmouth, obtaining some of its supply from the Stone Bridge Fire District in Tiverton. Tiverton is supplied by three water districts in total — the Stone Bridge Fire District, the Tiverton Water Authority which is currently managed by the Stone Bridge Fire District, and the North Tiverton Fire District. These provide public water to limited areas in northern and eastern Tiverton and Stone Bridge. ((11)), ((73))

Quality and quantity of water are a recurring concern, especially on The Aquidneck Island. The shallowness of Newport's reservoirs affects the quality of the supply. Portsmouth's infrastructure and ability to purchase additional supply are limited, and the town depends heavily on the Stone Bridge Fire District in Tiverton and the Newport Water Department.

Sewers: The availability of sanitary sewers is limited to Newport and western and central portions of Middletown. Within Portsmouth, a few industrial facilities utilize package wastewater treatment facilities. The Melville area, the site of boat building yards and marinas, is served by the Newport Wastewater Treatment Plant via the U.S. Navy. ((72))

Other communities lack sewers, and, in many areas, high water tables and unfavorable soil conditions limit the effectiveness of individual sewage disposal systems (ISDs). ((11))

04-05-08-04: Site Analysis

More than 4,100 acres are zoned industrial in Substate Growth Area 8, about 13 percent of the state's total. However, only 850 acres are currently used by industry. Non-industrial uses occupy 918 acres. While there appears to be a deep pool of vacant industrial land, 2,348 acres, only 25 acres – less than two percent – is considered "high potential." Poor soil conditions and a lack of sewers constrain development potential.

A summary of uses of industrial land in the growth area is presented in Table 212-04(18). This is followed by a community-by-community analysis of industrial sites.

Little Compton: The 1990 Industrial Land Use Plan reported:

**TABLE 212-04(18):
SUMMARY OF INDUSTRIAL-ZONED LAND,
SUBSTATE EMPLOYMENT GROWTH AREA 8**

| <i>Town</i> | <i>Total¹</i> | <i>Industrial use</i> | <i>Other use</i> | <i>Vacant</i> | <i>Vacant/high pot.</i> |
|-----------------------|--------------------------|-----------------------|------------------|---------------|-------------------------|
| Little Compton | 0 | 0 | 0 | 0 | 0 |
| Middletown | 504 | 104 | 242 | 158 | 25 |
| Newport | 569 | 297 | 270 | 2 | 0 |
| Portsmouth | 1,063 | 367 | 237 | 459 | 0 |
| Tiverton | 1,980 | 82 | 169 | 1,729 | 0 |
| Total | 4,116 | 850 | 918 | 2,348 | 25 |
| State total | 32,455 | 11,116 | 6,113 | 15,224 | 1,485 |
| % state total | 12.68 | 7.65 | 15.02 | 15.42 | 1.68 |

¹ All values are in acres, with the exception of "% state total." Use totals may differ from total acres due to rounding of fractional acreage to nearest whole number.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

Little Compton has designated only one site for industry. The development of this site has always been questionable inasmuch as it lacks infrastructure and good transportation access, and contains wetlands and flood hazard areas. Over the years, residential development has continued to occur in this district, further limiting a compatible siting of industry. ((11:4.58))

The plan recorded that the site, measuring 223 acres, had no industrial uses resident upon it, and that 92 acres had already been devoted to non-industrial use. That lone site disappeared from our latest statewide inventory of industrial sites, so we presume it was appropriately rezoned. ((8))

Middletown: The Town of Middletown has three industrial sites, all fully serviced with utilities, including natural gas. One of the sites, located at the intersection of Valley Road and Aquidneck Avenue, stands out as one of Rhode Island's best examples of a modern industrial park: the Aquidneck Island Industrial Park. It is fully occupied with companies employing more than 2,000 people in computer programming and related technical services. In the 1980s and early 1990s, these firms supported the island's array of defense industries; more recently, as defense contracts waned, they were targets of "conversion" efforts promoted by the University of Rhode Island, Statewide Planning's Office of Strategic Planning, and the EDC. As of the most recent inventory, 94 acres are in industrial use, 12 acres in non-industrial use, and zero acres vacant and undeveloped.

Another industrial site, the largest in Middletown at 373 acres, is occupied in large part by the Newport State Airport. While the site includes 133 vacant acres, wetlands, a high water table, lack of accessibility, irregularly shaped parcels, and proximity to residential areas limit further development. On the other hand, the availability of utilities may make limited development feasible, and proximity to the airport is a plus. Only ten acres are in industrial use; 230 acres are in non-industrial use, and the remainder vacant.

The third Middletown site was formerly classified "fully occupied," having served as a R.I. Public Transit Authority (RIPTA) garage and yard. It is currently vacant, and accounts for 25 acres of industrial land. There are no apparent natural constraints to further development. ((8))

Newport: The City of Newport, long known as a tourist or yachting destination and playground of the rich, has but three industrial sites — two of which are in full industrial use and fully occupied, and the third mostly in non-industrial use with only two undeveloped acres remaining. All three sites are fully serviced and located along Coddington Highway.

The latter site, zoned both industrial and commercial, measures 281 acres. Non-industrial use occupies 270 acres. Its single vacant lot abuts a residential zone and is most likely to be developed for non-industrial use also, due to its location. ((8))

There is an effort active in the city to create some 50,000 sq. ft. of new industrial space, the Halsey Street Industrial Park Expansion Project. This space would affect an area known as the City Yard, providing better access for truck traffic and permitting expansion of the area's industrial use. If the project is successful, the new industrial park is likely to be the focus of future light industrial development in Newport, as the other option is so limited. Development may be constrained, however, by the presence of wetlands and a floodplain. ((70))

Portsmouth: Although most of the Town of Portsmouth lacks the necessary infrastructure usually associated with industrial location at nearly all its industrial sites — i.e., sewers — it has set aside and uses far more industrial acreage than its East Bay neighbors. This acreage is distributed among ten sites, ranging in size from 11 to 464 acres. Of these ten sites, eight have vacant land. All eight have natural gas service, but none have sewers. None of the sites appear to have soil or topographic constraints, or flood hazard areas.

The first site is located on Willow Lane. It is the largest of the eight sites, and has substantial vacant industrial land. Of the 464-acre total, 32 acres are in industrial use, 182 in non-industrial use, and the remainder vacant. This site contains a 620,000-sq. ft. former wire manufacturing plant that is scheduled for conversion to a hotel/convention center, a large pier, and a 250,000-sq. ft. facility that will be used in part for boat building. The remainder of the Willow Lane area is vacant. Rail service is available on site.

The town is considering rezoning this area from "heavy industrial," which is neither compatible with the area nor likely to locate there, to a zone for light industrial (including boat building and related uses), research and development, office, and tourism-related uses. ((72))

The second site is one of a handful located along the eastern side of R.I. Route 114, and abuts the northern portion of the Newport Reservoir. Measuring 34 acres in total, it is roughly split between non-industrial use and vacancy. Its proximity to the reservoir would appear to make it an inappropriate site for industrial development.

Three other sites along Route 114 are found at three separate points at the intersection of the highway with Hedley Street. The first of these, located to the northeast of the intersection, is a ten-year-old light industrial park some 49 acres in size with 22 vacant acres. Available buildings measure 34,000 sq. ft. and 12,000 sq. ft. respectively. The second site, at the southeast corner, measures 41 acres, none of which are in industrial use, four of which are in non-industrial use, and the remainder vacant. Industrial development is constrained by the classification of these vacant acres as prime agricultural land. The third site, at the southwest corner, measures only 11 acres. Two of these are committed to office condos and the remainder are vacant. Rail service is available at this site.

Just south of the Hedley Street/Route 114 intersection is a site measuring 39 acres, six of which are in non-industrial use and the remainder vacant. The vacant

acreage is classified "prime agricultural," constraining further industrial development.

A site south of the intersection of Schoolhouse Lane and Route 138 accommodates some light industry as well as non-industrial use. The site is 91 acres in size and contains 59 vacant acres. However, the R.I. Agricultural Preservation Commission has purchased development rights to the vacant area in the southern portion of the site, and the remainder has been classified "prime agricultural."

North of the intersection of Schoolhouse Lane and Route 138 is another site, measuring 43 acres. This site has only one acre in industrial use, 11 acres in residential use, and 31 acres vacant. The vacant acreage is of moderate development potential. ((8)), ((72))

Tiverton: The Town of Tiverton has four industrial sites, all limited by both environmental constraints and a lack of sewerage. These four sites, however, comprise the largest industrial land resource in Substate Growth Area 8, totaling nearly 2,000 acres. Vacant areas at the individual sites range in size from nine acres to 1,146 acres, and the options for development forced by the natural constraints vary accordingly.

The first site is located at the intersection of Bay Street and State Avenue. It is 24 acres in size, and has ten acres in industrial use, four acres in non-industrial use, and ten acres vacant. The vacant parcel adjoins the coastline and is largely within a flood hazard area. The second site, southeast of the intersection of State Avenue and Shove Street, is about twice as large, with 24 acres in industrial use and 15 in non-industrial use. The remaining, vacant acreage consists of poorly drained soils not conducive to industrial development.

The third Tiverton site is much larger, measuring 626 acres. It is located north of the intersection of Eagleville Road and Route 24. There is no industrial use represented at this site, and 62 acres are in non-industrial use. This leaves 564 vacant acres, the majority of which are occupied by a cedar swamp and areas of steeply sloping, shallow soils interspersed with rock outcrops. These conditions make large-scale industrial development at this site unlikely in the foreseeable future.

The greatest potential lies with the fourth site, located at the intersection of Fish Road and Souza Road and near Routes 138 and 24. The site is 1,282 acres in size, with 48 acres in industrial use, 88 acres in non-industrial use, and over 1,100 acres vacant. About 200 acres located immediately east of Route 138 appear to be most conducive to development. The topography is moderately sloping and soils are stony, but soil drainage is generally good and development would be feasible with appropriate site treatment. East of Route 24, soil and topographic conditions are less favorable to development, with rocky land and moderately drained soils predominating. ((8))

Within this last site is the Tiverton Industrial Park, one tenant of which is the Tiverton Power Associates' (TPA) electric generating plant. The TPA found the site attractive because of the easy availability of natural gas service (a pipeline right-of-way abuts the property) and nearby tie-ins to the existing power distribution network. Highway access is also excellent. The TPA broke ground for its plant in October, 1998, and construction of the main road into the industrial park is proceeding. The town will be amending its Master Plan (comprehensive plan) for additional lots in the park. ((73))

04-05-08-05: Conclusions

Quantitatively, as demonstrated in Table 212-04(19), Substate Growth Area 8 appears able to make only a very modest contribution to the state's store of vacant, high-potential industrial sites. Qualitatively, however, there are greater possibilities. For example, there are empty industrial facilities in Portsmouth (described above) with convenient rail and waterfront access that could be attractive sites for light manufacturing, with the appropriate buffering to lessen impacts on nearby residences. Similarly, the airport area in Middletown might be ideal for distribution industries or the assembly of low-volume, high-value goods. Business services and other low-impact industries might also thrive at such locations. On-site wastewater treatment would be required, however.

Lack of sewers is responsible for the zero reading in the last column of Table 212-04(19) for most of the industrial acreage in Substate Growth Area 8. There are also flood hazards and topographic concerns scattered among the industrial sites. However, two of the greatest conflicts with industrial development are not depicted in the table. They result from the desirability to protect the prime agricultural lands that overlay many of these sites, and the market's push to convert some of the sites to residential or commercial use. There seems to be a need to protect existing industrial land in the area, but infrastructure deficiencies and the apparent increase in non-industrial use of that land do not readily offer a solution.

**TABLE 212-04(19):
VACANT INDUSTRIAL ACREAGE CHARACTERISTICS,
SUBSTATE EMPLOYMENT GROWTH AREA 8**

| <i>City or town</i> | <i>Industrial sites</i> | <i>Vacant acres</i> | <i>w/Water</i> | <i>w/Sewer</i> | <i>w/Rail</i> | <i>w/Utilities & No Env. Constr.</i> |
|-----------------------|-------------------------|---------------------|----------------|----------------|---------------|--|
| Little Compton | 0 | 0 | 0 | 0 | 0 | 0 |
| Middletown | 3 | 158 | 158 | 158 | 0 | 25 |
| Newport | 3 | 2 | 2 | 2 | 2 | 2 |
| Portsmouth | 10 | 459 | 459 | 0 | 259 | 0 |
| Tiverton | 4 | 1,729 | 1,729 | 0 | 10 | 0 |
| Total | 20 | 2,348 | 2,348 | 160 | 269 | 27 |

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

One bright spot is the renewed interest in developing the Tiverton Industrial Park, including, of course, the extension of sewers into the area. As this site has the highest industrial development potential in town — with a large, vacant area and highly favorable location — fitting in this “missing piece of the puzzle” seems to be a wise targeting of resources.

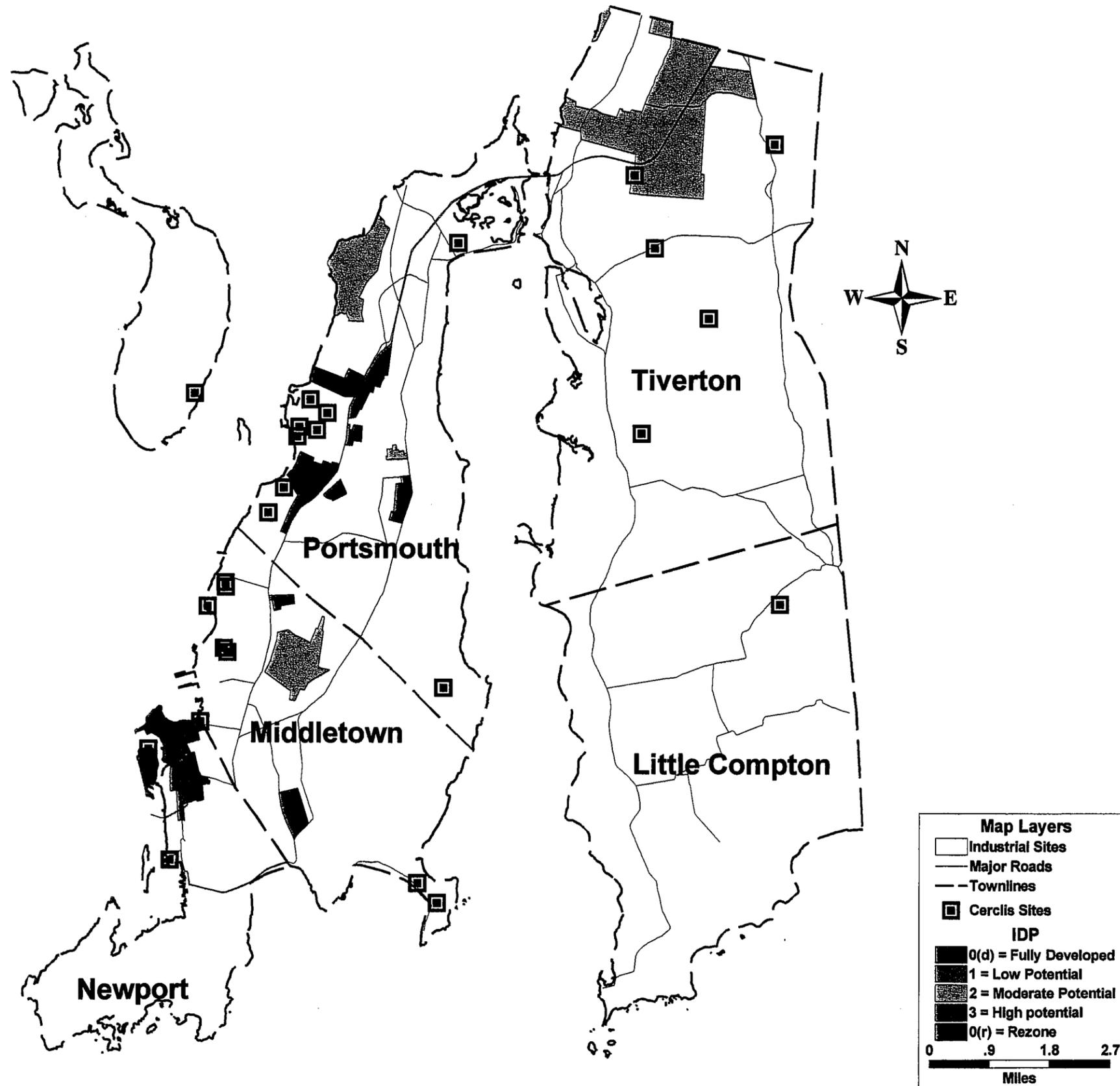
Another is the choice of Portsmouth by Raytheon to be the site of the consolidation of some of that company’s engineering and research and development facilities. Some 400-600 engineers and high-tech jobs will be transferred there in 1999. ((72))

Also in Portsmouth, the boat building industry in the Melville area has grown so much in the past decade that it has built that area to capacity. ((72))

Finally, the Navy is cleaning up the fuel tank farms in Portsmouth and Middletown. It will most likely begin the process of surplusizing those areas within the next few years, making over 350 acres of fully-serviced, “prime” waterfront sites available for development. The sites will show up on future industrial site inventories. The three Aquidneck Island communities, along with the Navy and the EDC, are developing a master plan for the area. ((72))

The industrial development potential of the industrial sites in Substate Growth Area 8 are shown in Map 212-04(8).

SUBSTATE EMPLOYMENT GROWTH AREA 8



04-06: Capacity of Rhode Island's Industrial Land Resources to Sustain Growth

In Part Two of the *Industrial Land Use Plan*, Statewide Planning Program staff established a goal to dedicate more than 20,000 acres of industrial land to industrial use, to sustain economic growth through the year 2020. Folded within this acreage is an 8,000-acre reserve to cover such contingencies as employment estimates that turned out too conservative, varying models and methodologies to predict the amount of land needed, and different ways of interpreting trends and data. That reserve is over and above the pool of high-potential industrial acreage we have described here, substate area by substate area.

04-06-01: "Prime" and Not-so-prime Acreage

If we look beyond the high-potential (or "prime") acreage, it appears that we do have more than enough vacant industrial acreage to meet the goal, but the quality of that acreage varies from moderate to marginal to unbuildable. We might also expect competition among likely users for some of the most attractive industrial sites or underutilized facilities in accordance with fluctuations in the real estate market, with conversion to non-industrial use resulting.

One front on which this is likely to occur is Narragansett Bay, including the Seekonk River, the Sakonnet River and Mt. Hope Bay. Along this coastline, there are 27 industrial sites totaling 4,081 acres. Our inventory showed 1,847 acres vacant, only 50 acres of which are classified IDP-3. The vast majority of this vacant acreage is of moderate potential, i.e., IDP-2 – some 1,765 acres. However, flood hazards or other physiographic constraints are present on all but 258 IDP-2 acres, suggesting that this land will have to be managed carefully to be matched to an appropriate industrial use (perhaps in the marine trades?).

Our calculations in Part Two presumed that the state's future industrial activity will be located on industrial-zoned land that is already occupied and in industrial use, or may at present be vacant but has good access, full utilities, and few if any physiographic constraints to hamper development. What remains when this land is taken out of the inventory are sites that are small and scattered, lack public water and/or sewers, abut or overlie wetlands, have poorly drained soils or difficult slopes, are surrounded by residential areas, or have virtually no access to highways.

Whether this land is located along the Bay, the south shore, or inland, the costs associated with making these sites competitive industrial locations can be substantial. Improving access or extending infrastructure in many cases may not even be realistic. Requirements for site buffers and operational constraints for protecting natural resources may reduce the amount of developable acreage. Redeveloping old mill buildings and other previously occupied properties will extend industrial use somewhat, but cannot provide the space we will need *in toto*.

04-06-02: Infrastructure

Infrastructure improvements can make a difference, creating new industrial land that satisfies definitions of "prime" and "high potential." For example, the latest industrial land inventory indicated there were 15,224 vacant industrial-zoned acres throughout the state. Of these, 901 acres have no physiographic constraints but lack public water and/or sewers. Put another way, infrastructure extension could convert these 901 acres into new prime industrial land.

Also among the 15,000-plus vacant industrial acres are sites with physiographic constraints. This is a substantial fraction of Rhode Island's vacant industrial acreage: 11,032 acres, or about 72 percent. Providing public water and sewerage to these sites, if lacking, will not render them prime; considerable site preparation may be necessary for development, and costs or regulatory requirements may be prohibitive. On the other hand, it may be possible to accommodate light industrial activity on such land through designs that avoid, or mitigate, any undesirable impact on sensitive natural features. Through the permitting process, this would be determined on a case-by-case basis.

It also must be mentioned that even if infrastructure extension could be accomplished in a given area, the capacities and level of treatment of the local treatment plant may limit the number of tie-ins, or the nature of the industry served. Pre-treatment at the industry level may be required to permit certain types of industrial activity within an area served by sewers.

Improved transportation access, such as R.I. Route 99 to the Highland Industrial Parks in Woonsocket and Cumberland or the Route 295 beltway around the greater Providence area can open up additional sites for industrial development. However, the severest access problems remain in urban areas, where older industrial properties tend to be surrounded by non-industrial and even conflicting uses.

Recent anti-sprawl initiatives, from brownfields legislation to the founding of Grow Smart Rhode Island, are forcing reconsideration of the older industrial sites as homes for new businesses. "Opening up sites" does not have to mean opening up greenfields (undeveloped lands) to development; it can be directed toward the older sites to make them more accessible by modern modes of transportation. Indeed, access improvements are essential in many instances where older sites are to be reused, or at least to be better utilized than they are now. The sewers and public water usually are already available.

Economic development practitioners have set their sights on firms in the "New Economy." Such firms often can be accommodated in rehabilitated mill space because of the nature of their work and the typical office-type work setting they require. Traditional aspects of infrastructure, insofar as they address highway access or public water or sewer availability, would not figure as importantly as they would in a manufacturing use; wastewater, typically, would be of the domestic rather than the process variety. What would be important, however, is

the telecommunications infrastructure. Fiber optic networks may well become the defining element of infrastructure in the twenty-first century.

Throughout the Blackstone Valley, in Massachusetts and Rhode Island, fiber optic networks are being expanded to meet the demand – and accommodate the re-occupation of former mills and other urban sites (Worcester is a good example) with firms selling goods and services reliant on electronic commerce. This has also proved a boon for local colleges and universities, and for home offices not located on industrial land. Communities without fiber optic capability are increasingly at a disadvantage.

As the years go on, electronic commerce grows, and the telecommunications revolution continues, access to fiber optic networks is likely to become more and more of a determinant of development potential – even in manufacturing – than what we normally think of when we speak about infrastructure. The authors of a future *ILUP* would be well advised to address fiber optics, too, in an industrial site inventory.

04-06-03: Permitting

Because so many of the state's industrial sites are marginal, development will often require some degree of site preparation — and one or more environmental permits. The permitting process, from the determination of what type of permit is required to the finalizing of mitigation measures, adds to development time and costs. Developers should plan for them and must recognize them as a necessary cost of doing business. Regulators should make themselves as customer-friendly as possible without betraying the intent of their regulations, and be forthright in explaining what developers need to do to get their permits. Delays that could have been avoided with better communication between the two parties might make the difference between a viable project and a losing one.

04-06-04: Protecting and Reserving Industrial Land

Finding vacant land of suitable size for “the next Fidelity” or “the next Electric Boat” will become increasingly difficult as we approach the year 2020. A perusal of our industrial site inventory shows that a great many sites with vacant acreage are constrained by environmental factors. On the other hand, some of these sites have industrial *space* (i.e., buildings) that is not occupied to capacity. There is some expansion capability there. Given the continuing growth of the service sector, reconfigurations of existing buildings on site could accommodate many of the jobs we project Rhode Islanders will hold in 2020.

It is therefore essential that this space be considered as valuable a commodity as heretofore undeveloped industrial land, and be protected against a reversion to a “higher use” such as commercial or residential. There are attempts by sources outside the real estate industry to inventory and categorize industrial buildings to prepare for reoccupation and reuse, but these efforts will require diligence to keep such lists up to date and useful. Because of its very fine scale

and specificity, an inventory of industrial buildings cannot just be assembled, and then updated every year or every couple of years, as Statewide Planning has done with our inventory of industrial land.

The development potential of industrial land is easily compromised by the threat of conflict with competing incompatible uses. This is often the case in communities that permit uncontrolled residential or commercial use in industrial-zoned districts. Hopefully, some of the pressures in that area have eased in Rhode Island with the advent of the community comprehensive plans. Even so, real estate market pressures may allow controls to "slip" a bit, special exceptions to be granted, and industrial lands to be reused for other purposes for no compelling reason other than there was a buyer who was interested, and a property that was available. Local officials must be sensitive to land use conversion and recognize the contribution that their individual community makes to the economic infrastructure of the state as a whole.

212-05: INDUSTRIAL LAND USE: YEAR 2020

05-01: Introduction

From the foregoing we can make a reasonable attempt to portray Rhode Island's capabilities in industrial land use. The maps presented at the end of each substate area discussion illustrate the industrial development potential (IDP) of occupied land and vacant land, as determined by limitations in size, physiographic conditions, and infrastructure. Any changes in zoning or infrastructure would, of course, affect the IDP, and need to be monitored periodically to keep the maps up to date.

05-02: Industrial Land Development Potential

The original *Industrial Land Use Plan* introduced an IDP classification system. As the numerical designation moved upward, so did the potential of the land. Thus IDP-0 land, whether IDP-0(d) or IDP-0(r), had no potential (either fully developed or recommended for rezoning), and IDP-3 had the greatest potential (prime industrial land without physiographic constraints).

As a result of our calculations in Part 212-02 (see pages 2.6 and 2.7), the staff determined that 13,607 acres of industrial land would be needed to sustain Rhode Island industries in the year 2020, or nearly 2,500 acres in addition to what is presently in industrial use. We also determined that, while 15,224 acres of industrial land were vacant (undeveloped), only 1,485 acres fit the definition of "prime," and not all of these acres would be construction-ready. As Table 212-05(1) shows, 676 of the 1,485 acres are CERCLIS sites, with environmental contamination confirmed or suspected. Even if this cloud could be lifted with site remediation, there would still be an apparent shortfall of over 1,000 "prime" industrial acres.

We were left with the question, how can we make up the shortfall in industrial-zoned land? Moreover, how can we prevent the loss of land that is currently zoned industrial to other uses, and ultimately to rezoning?

Table 212-05(1) suggests Rhode Island has a large pool of land in the second-highest IDP classification, IDP-2, that could be improved (i.e., elevated to IDP-3, prime status) for future industrial use. Consideration of any of these sites, however, must be done on a case-by-case basis. (This also applies to the IDP-3 sites that are on the CERCLIS list.)

Land classified IDP-2 is defined on page 4.3 as "of moderate potential...as determined by the site's size, accessibility, and level of infrastructure, and the degree to which poor soils, aquifers, wetlands, and flood hazards can be avoided." While in some instances improvements to infrastructure can be made or environmental constraints mitigated, a site's size and accessibility can be limiting factors that make any elevation of development potential impossible. Expansion of neighboring

**TABLE 212-05(1):
VACANT INDUSTRIAL-ZONED ACREAGE BY
INDUSTRIAL DEVELOPMENT POTENTIAL (IDP) CLASSIFICATION**

| <i>Substate Growth Area</i> | <i>IDP-0(r) acres</i> | <i>IDP-1 acres</i> | <i>IDP-2 acres</i> | <i>IDP-3 acres¹</i> | <i>IDP-3 CERCLIS</i> |
|-----------------------------|-----------------------|--------------------|--------------------|--------------------------------|----------------------|
| District 1 total | 5 | 183 | 3,349 | 596 | 303 |
| District 2 total | 89 | 165 | 0 | 0 | 0 |
| District 3 total | 168 | 861 | 1,136 | 242 | 0 |
| District 4 total | 0 | 29 | 93 | 16 | 2 |
| District 5 total | 0 | 877 | 596 | 45 | 45 |
| District 6 total | 8 | 2,183 | 824 | 32 | 0 |
| District 7 total | 175 | 104 | 735 | 529 | 326 |
| District 8 total | 158 | 0 | 2,143 | 25 | 0 |
| Statewide total | 603 | 4,402 | 8,876 | 1,485 | 676 |
| Statewide total, 1988 | 1,395 | 2,059 | 13,188 | 1,233 | n/a |

¹ Includes IDP-3 CERCLIS sites.

Source: Statewide Planning Program Industrial Land Inventory (1997-99)

industrial uses may be feasible, but not anything larger.

The provision of additional infrastructure must also be done in ways that minimize sprawl and optimize existing resources. A persistent finding in every survey taken by economic development practitioners is that Rhode Island's quality of life is a very big draw to firms either wanting to move here or stay here. The need to accommodate industry with attractive sites must be balanced by the obvious interest the state has in preserving greenfields and other commodities that contribute to quality of life.

05-03: Conclusions

Measures must be taken to protect the prime industrial land we already have. These include what we have already mentioned: "matching the plant [use] to the land," cleaning and recycling brownfields, using performance standards to cluster and commingle industries, promoting labor-intensive industrial sectors, and working toward the most efficient use of the land possible, including mixed uses, to conserve and stretch the resource.

We may find that certain industrial sectors with a lot of growth potential ("New Economy" firms come to mind) can be accommodated in large measure on industrial land that is less than prime, or on prime land in innovative configurations that optimize the use of space. That would certainly be welcome. On the other hand, there

is disturbing anecdotal evidence from site specialists that Rhode Island is already facing limited options with vacant or underutilized industrial sites.

We should not rezone other types of land we are trying to protect – for example, agricultural land or open space/conservation land – to secure additional industrial sites. That would be contrary to other elements of the State Guide Plan. The same principle applies to industrial land. Holding on to what we have is the crucial first step we must take.

212-06: IMPLEMENTATION MECHANISMS

06-01: Introduction

The long-term economic viability of our state will depend on three factors: a skilled labor force, capital resources, and technology. This report focuses on an integral element of the capital resource, industrial land. We have found that much of Rhode Island's current supply of vacant industrial land has limited development potential; very few sizeable sites exist that are fully serviced and without environmental constraints. On the other hand, many sites may be suitable for expansion of existing industry, or, with more efficient deployment and reuse, for nurturing businesses typical of the "new economy."

In 1990, the authors of the original *Industrial Land Use Plan* recognized these challenges in the state's inventory of industrial land, and identified five specific needs:

- Improve the quality of existing industrial land.
- Preserve urban industrial sites.
- Improve land management techniques.
- Provide needed infrastructure.
- Provide for a straightforward permitting process.

In the nine intervening years since the publication of the *ILUP*, the "smart growth" concept has become popular among economic development practitioners. This is consonant with the five principles above, where providing "needed infrastructure" such as public water and sewer service – which will spur growth – is balanced by "improved land management techniques" that would concentrate development in discrete areas. Among these areas would be "urban industrial sites" that might occasionally be under pressure by market forces to be placed in some use other than industrial (e.g., residential or commercial).

To satisfy these five needs, the *ILUP* proposed initiating or committing to several innovative programs: an Industrial Land Reserve Fund, a mechanism to reuse urban industrial properties, Bank Community Development Corporations (CDCs), enterprise zones, business incubators, and a state Industrial Infrastructure Fund, operated as a revolving loan fund. Our research suggests that these proposals have withstood the test of time as implementation mechanisms. Three already exist as programs and should be continued and perhaps revitalized to deliver maximum performance.

06-02: The Mechanisms

06-02-01: Industrial Land Reserve Fund

The foremost goal of this plan is to ensure that Rhode Islanders wisely use a very finite resource, industrial-zoned land. There needs to be sufficient industrial land to sustain and expand the state's economy over the long term. The staff has projected

acreage needs to the year 2020 based on growth trends in various industry sectors. When we talk about reserving land currently zoned industrial for industrial use, we are really talking about conservation of the resource. Protection of industrial land logically leads to protection of *all* land, and use of *all* land in the most appropriate manner – industrial, commercial, residential, or open space.

In the 1990 *ILUP*, Statewide Planning proposed a concept called the Rhode Island Industrial Land Reserve Fund. This would be a targeted financial mechanism to acquire and assemble industrial land into viable parcels, to improve its capacity to support more intensive, or at least more efficient uses, and to function as a bank of money rather than a bank of land. By making existing industrial land more attractive to developers, the fund could truly reserve/conservate industrial land by discouraging its conversion to other uses. With proper guidance, it could implement smart growth objectives by helping direct the pace of industrial development and controlling sprawl.

Given the interests of the many actors and players in the process, reserving/conserving industrial land can be accomplished through collaborations among state officials, planners and economic development practitioners in the local communities, and the private sector. What shape these collaborations take will be up to the parties involved, but we recommend establishing a formal partnership that can work within the limits of zoning ordinances and according to comprehensive plans while maintaining a statewide perspective. The partnership would be empowered to help developers locate the financing they need to acquire industrial land, and development would be keyed to the needs and interests of the host communities.

The quasi-public R.I. Economic Development Corporation may be the best starting point for this, given its statewide penetration and experience with the development of industrial parks. The EDC would take a leadership role in forming the partnership, and recruit members from municipal governments and the private sector. State agencies (e.g. DEM and Statewide Planning) might sit in as advisory members. On the other hand, a decentralized approach may be equally appropriate, where a series of regional, stand-alone, private nonprofit development corporations would establish individual partnerships in different parts of the state. In that instance, the nonprofits would do the recruiting, and would also draw upon relevant state agencies as well as municipal governments for public sector representation.

In either case, the mission would be the same: to undertake the role of industrial land broker on behalf of the entire community, region, or state. The lead organization, whether the EDC or a regional nonprofit, would be the conduit for funds to developers. The public purpose required of both the EDC and every nonprofit organization would link the goals and priorities established by the partnership closely with the State Guide Plan and the comprehensive plans of affected communities.

After its initial capitalization, an Industrial Land Reserve Fund could be conducted as a revolving loan fund. Again, either the EDC or a regional nonprofit development corporation could work well as a manager of the fund, given the EDC's experience with financial programs and regional practitioners' experience with revolving loan funds.

How It Would Function: The Rhode Island Industrial Land Reserve Fund would provide financing for the advance acquisition of industrial land while preserving the normal market-driven mechanisms common to industrial development, including lending. Projects suitable for Industrial Land Reserve Fund financing might be those that are not likely to be underwritten by conventional lending institutions or public subsidy alone, but that could proceed if such funds were combined and leveraged.

The Industrial Land Reserve Fund could be designed to combine money from the private sector and from government programs such as the Community Development Block Grant Program or the DEM's brownfields program. This would cement its public purpose, the commitment of the private sector, and the active involvement of the state and the host community. The appropriate controls on the uses of the fund would be set by the legislation establishing it. Running the fund as a revolving loan program would avoid having to return each year to the Governor and the General Assembly for appropriations.

The Industrial Land Reserve Fund could feature a requirement for a city or town to nominate industrial-zoned parcels for inclusion in the program. This would be similar to the first step of the certification process for buildings in the mill rehab and reuse program, and be another means of securing local involvement and support. Projects could be selected for funding on the basis of several criteria:

1. Economic and financial viability (i.e., best potential for success).
2. Conformance to state and local land use plans (and other elements of the State Guide Plan and communities' comprehensive plans).
3. Amount of private funding leveraged.
4. Positive economic impact, including employment generation.
5. How quickly the project will return capital to the fund.

The need to reallocate funds in a revolving loan program would necessitate demonstration of a market demand to justify the investment and repay the loan.

There may be opportunities to expand the scope of the Industrial Land Reserve Fund at the point at which capital return to the fund from loan payments exceeds the amount of money being lent for new projects. Assistance might be made available for feasibility studies, including market analyses, and environmental review. The latter could work in tandem with assistance provided by the DEM for environmental assessments on brownfield projects. Grants for these purposes could be financed by the interest on loans or equity-derived profits from projects in the program's portfolio (depending on how the program is structured and who is managing it).

Statewide Planning, in recommending the formation of the Industrial Land Reserve Fund, is aware that there are numerous financing programs, often keyed directly to small businesses, that can assist in land acquisition. The funds allotted for these programs, however, are not for land acquisition exclusively; construction is financed through them as well, and the purchase of equipment. There is tough competition for the funds available. We believe that a financing program dedicated specifically to the acquisition and reservation of industrial land for industrial purposes

is necessary, in addition to those other programs, to accomplish the objectives of the *ILUP*.

06-02-02: Reusing Urban Industrial Properties

After decades of capital flight to the suburbs, urban areas are again being recognized as sources of enormous economic potential. As the *ILUP* stated in 1990,

Preserving existing jobs in proximity to the labor force, taking best advantage of the existing transportation facilities and public infrastructure, will remain an important part of our economic strategy, especially for the state's older central cities... [F]or many cities, vacant manufacturing space is their most abundant economic development resource. ((11:6.4))

Absent the incentives now in place through Rhode Island's mill building rehabilitation and reuse program, old industrial buildings with reuse potential would likely be at a competitive disadvantage to newly constructed, purpose-built structures. This is due to the costs of retrofitting the structure to meet current industrial needs, which, generally speaking, do not favor multi-story structures. Rehabbing to meet the standards in modern building and fire codes has also been problem, with some rehabs producing a floor space cost equal to or exceeding new construction. ((103))

The mill building program does have limitations, however. The structure in question must be nominated by the city or town in which it is situated, and certified by the Enterprise Zone Council, before tax incentives become available. During the process it must be established that the building satisfies the requirements of the program – it must have been constructed before January 1, 1950, it must have a minimum of two floors excluding a basement, and it must have been at least 75 percent vacant for a period of 24 months. Additionally, a "substantial rehabilitation" must be proposed, worth at least 20 percent of the property's market value, and to be nominated for the program it must compete with other buildings of perhaps equal redevelopment potential.

What happens to the properties that do not qualify?

In 1990, before the mill building program was established, the *ILUP* proposed providing loans and grants to municipalities and local industrial development corporations for demolition, relocation, refurbishment and rehabilitation of industrial buildings and site improvements. We stressed a concentration on urbanized areas "to achieve the industrial retention, mixed use, and industrial facility reuse goals of the State Guide Plan." ((11:6.5)) We called our proposal the "Rhode Island Urban Land Assembly Program."

The staff believes that an Urban Land Assembly Program is still necessary, its purpose to serve those properties in urbanized areas that are ineligible for the mill building credits, were passed over by the cities and towns, or that do not have the added attraction of location within an enterprise zone. It would be complementary to the Industrial Land Reserve Fund proposed above, and to the brownfields program. It

would be restricted to urban areas as opposed to the more widely distributed Industrial Land Reserve Fund to underscore reuse and rehabilitation of abandoned or poorly utilized industrial sites likely to have access to infrastructure and local markets.

How It Would Work: In 1990, we suggested adapting the program from two already underway, respectively, in Michigan and Alabama. We turned to the Michigan Urban Land Assembly Act, which provides loans to cities and towns for land acquisition and industrial and commercial development. We pointed out what we called "two interesting features" of the Michigan program: a provision that allows loans to local development organizations, including economic development corporations, industrial development corporations, and private, non-profit corporations, and the option to provide deferred loans with no interest payments for as long as ten years to write down acquisition costs. ((11:6.5))

The Alabama Industrial Building Loan Program was cited for providing both loans and grants to municipalities and local industrial development corporations to pay a portion of the costs of site improvements for industrial firms. Funds would be used for conducting land and labor surveys, and for physical work on-site such as grading, draining, and providing access.

Alabama's program is capitalized by the sale of bonds by an authority, and an equity position in the project is assumed. This equity is the source of the program's grants. The amount of the grant is determined by a sliding scale that depends on the size of the project: for smaller projects, where total project cost is \$100,000 or less, the grant amount is 6 percent; for very large projects, up to \$10,000,000 in total cost, the amount is 1 percent. Title to the property must be held by a city, county, or industrial development board. ((11:6.5))

To qualify for Alabama's program, an industry must fall into SIC classifications 20-39. ((11:6.5)) Rhode Island's mill building program is similar in restricting benefits to commercial or industrial properties. It was originally envisioned to be restricted to manufacturing, like Alabama's program, but its reach was broadened to exclude only residential uses. To follow the goals of the *Industrial Land Use Plan*, however, industrial use *exclusively* (whether manufacturing, warehousing, or services) would be required in the Urban Land Assembly Program.

Assuming equity in the project recalls another Rhode Island program, the Urban Enterprise Equity Fund. This is a revolving loan fund used to provide equity to assist start-up and existing businesses secure funds from traditional lending institutions or public sector lenders. Seventy-five percent of the fund's financing is reserved for urban small businesses located in enterprise zones; the remainder is available to other urban area applicants. The amount of equity investment in any small business ranges from a minimum of \$5,000 to a maximum of \$100,000, at an interest rate of 6 percent and a 36-month term. Collateral is determined on a case-by-case basis, and may be in the form of a lien on corporate assets, personal assets, and stock, stock options, or stock warrants. ((85)), ((90))

The legislation enacting the Urban Enterprise Equity Fund also provided for an "urban business incubator" (see below) and might be an appropriate home, through amendment, for the Urban Land Assembly Program.

06-02-03: Enterprise Zones and Bank CDCs

Rhode Island's enterprise zone program and Bank CDCs are explained in full in Part 3 (pages 3.15-3.18). The former now numbers ten zones, in addition to a federally designated "empowerment community" zone where state enterprise zone tax benefits have been extended.

Based on community support and business participation, the enterprise zone program has been a success. In 1998 and 1999 alone, over 2,000 new jobs were reported in the enterprise zones by participating businesses.

Improvements to the program over the years have included a relatively new provision that rewards companies not only for conducting their business in enterprise zones, but for hiring enterprise zone residents as well. A scan of U.S. Census data by Statewide Planning ((91)) showed a significant number of Census tracts within enterprise zones with per capita incomes less than 80 percent of the national average (Table 212-06(1)). Increased employment of zone residents could lift these incomes and relieve this form of economic distress. ((92))

Experience with Bank CDCs appears limited to a CDC affiliated with Fleet Bank, although other banks are involved in community lending through the requirements of the federal Community Reinvestment Act. As mentioned in Part 3, the majority of Fleet's CDC borrowers are in the service or retail sectors. ((84))

In August, 1999, Fleet's CDC announced that it had closed a \$5 million, ten-year loan with the Local Initiatives Support Corporation (LISC) to support the latter's affordable housing and economic development efforts throughout the Northeast, including Rhode Island. This was the latest development in the "multi-faceted relationship" Fleet has maintained with LISC, the nation's largest economic development intermediary, since 1981. Fleet said it has provided more than \$120 million to LISC and its affiliates, in equity, bridge financing, and grants, through its CDC or other channels. ((97:1))

Fleet's CDC is run as a wholly owned for-profit subsidiary of Fleet Financial Group. It was established in 1994 to assist small businesses located in low-to-moderate income Census tracts, with an emphasis on minority- and women-owned businesses. Its loans may range from \$1,500 to \$500,000, with most loans between \$5,000 and \$150,000. As indicated above, it is not limited to Rhode Island.

06-02-04: Business Incubators

The business incubator concept was relatively new and innovative in 1990, when we proposed it as an implementation mechanism in the original *ILUP*. While it is just beginning to establish a track record in Rhode Island, it has been used widely

enough in other parts of the country to become a rather conventional tool for economic development.

Business Incubators in Rhode Island: The legislation establishing the Urban Enterprise Equity Fund also directed the EDC "in furtherance of its responsibility to assist urban communities" to establish "an urban business incubator" in an enterprise zone. This is intended to be a "multi-tenant, mixed-use facility" serving companies engaged in light manufacturing, technology, services, and distribution – but not limited to them. Its function will be typical of an incubator: flexible leases, shared office equipment, use of common areas such as conference rooms, and access to business management, training, financial, legal, accounting, and marketing services. ((85))

The first such urban business incubator was founded in 1999 in South Providence, a distressed urban area that nonetheless is host to considerable economic

**TABLE 212-06(1):
CENSUS TRACTS IN R.I. ENTERPRISE ZONES WITH
PER CAPITA INCOMES LESS THAN 80% U.S. AVERAGE**

| Zone | City/town | Tract | % U.S. PCI | Population |
|--|---------------|-------|------------|---------------|
| Central Falls/ Cumberland | Central Falls | 108 | 58.9 | 4,374 |
| | Central Falls | 109 | 61.4 | 4,384 |
| | Central Falls | 110 | 59.4 | 4,718 |
| | Central Falls | 111 | 62.0 | 4,114 |
| Mt. Hope | Warren | 305 | 75.5 | 3,599 |
| | Bristol | 307 | 77.6 | 4,546 |
| | Bristol | 308 | 79.6 | 4,859 |
| Pawtucket/ Lincoln | Pawtucket | 151 | 58.8 | 4,832 |
| | Pawtucket | 164 | 70.7 | 5,045 |
| Providence/ Cranston | Providence | 1 | 63.3 | 9,066 |
| | Providence | 2 | 54.1 | 9,626 |
| | Providence | 5 | 39.0 | 2,564 |
| | Providence | 6 | 51.7 | 1,101 |
| Providence Zone II | Providence | 7 | 31.6 | 2,904 |
| | Providence | 19 | 65.4 | 4,913 |
| | Providence | 22 | 71.0 | 3,722 |
| Woonsocket/ Cumberland | Providence | 25 | 65.7 | 2,321 |
| | Woonsocket | 172 | 67.7 | 1,303 |
| | Woonsocket | 174 | 63.1 | 4,215 |
| | Woonsocket | 179 | 76.9 | 3,535 |
| TOTAL | | | | 85,741 |
| Source: U.S. Census, 1990 (1989 data) | | | | |

activity in the form of *bodegas*, restaurants, manufacturing concerns, and other small businesses. The incubator is managed by a non-profit corporation known as Urban Ventures, whose directors are drawn from the surrounding community. The incubator is not restricted to industries from South Providence, but is open to all enterprises that meet the board's requirements. Businesses suited for admittance are restricted to:

- Light manufacturing;
- Service operations that are not restaurants, retail establishments, or distribution, warehouse, or wholesale operations; and
- Companies involved in one of the EDC's "designated industry clusters" (software, electronics, woodworking, metalworking, plastic manufacturing, media, jewelry, financial services, biotech, textiles, or printing).

Entrepreneurs participating in the incubator are expected to avail themselves of the incubator's services, grow, and graduate, after a maximum tenure of five years, to make room for new tenants. Their firms must have job growth potential and the potential to contribute to and diversify the local economy; be not more than two years old, employ not more than five persons, and require not more than 1,500 sq. ft.; be environmentally friendly, and prepared to cooperate with other incubator tenants; be able to sell goods and services outside the community; and genuinely benefit from the services provided by the incubator. Specific criteria govern selection and retention within the incubator. A coherent business plan is a must. ((93))

In return for meeting these criteria, firms can avail themselves of the incubator's low rent (\$3 per sq. ft. per year), free computers and printers, and access to an executive conference room, training room, and business development assistance.

Another incubator is located at the Ocean Technology Center at the University of Rhode Island, established in 1997 as one of the state's first Research Centers of Excellence. The Ocean Technology Center functions as a unit of the university on its Narragansett Bay Campus, inside a 10,000-sq.-ft. building that houses administrative space, a large systems fabrication shop, an equipment development lab and an incubator area to provide business services for start-up companies. The Center expects to expand its incubator capacity as new companies develop from the research being conducted there. It also provides loans to small companies through a "Marine Enterprise Development Program" from grant funds provided from the U.S. Economic Development Administration and the EDC, and networking assistance by sponsoring meetings and helping groups find resources. ((94))

Incubators fit into the *Industrial Land Use Plan* as a recommended reuse of industrial buildings. While some of the older buildings may not be ideally configured for modern manufacturing, they can still provide incubator space that supports the entrepreneurial activity required to launch modern manufacturing or other firms.

Conversion of mill buildings to office space now is quite common, and this can include incubators. For example, the Urban Ventures incubator is located in an industrial building on Colfax Street in Providence. It is gratifying to see formerly

vacant or underutilized industrial property – a legacy of Rhode Island’s manufacturing past – making a contribution once again to the state’s economy.

06-02-05: Infrastructure Improvement

Infrastructure requirements figure heavily in the choice of sites by industry. Optimal utility service and access to transportation corridors are what make prime industrial sites prime. However, public water and sewer are available at barely half the industrial acreage that remains vacant (undeveloped) in Rhode Island. Only one of these acres in four has no physiographic constraints to construction (i.e., poorly drained soils, flood hazard zones, or slopes).

Capitalizing new investment in infrastructure is a major challenge to municipal and state government. As with other public investment, innovative strategies are needed to minimize debt service costs and leverage available funds. Traditional financing schemes, such as pay-as-you-go appropriations or debt instruments (bonds), will not always be available.

In the original *ILUP*, Statewide Planning suggested considering dedicated taxes (tax increment financing programs) and an “infrastructure bank” run as a revolving loan fund to provide the capital for infrastructure investment. Impact fees were examined as well, but ultimately rejected: it would be difficult, the staff concluded, to apportion costs and set the fees equitably for developers when the improvements could benefit parties outside their development. This could happen, for example, when utilities are being extended along a corridor to an industrial park. Moreover, assessing impact fees could be a disincentive to industrial development if new sites become so expensive that they are uncompetitive with other sites in the same market area.

The *ILUP* also observed that while popular opinion supports having the developer and subsequent user shoulder the burden of infrastructure development, there is a clear “public purpose in providing environmentally acceptable industrial sites to sustain the economy.” That public purpose, it was argued, justifies the use of public funds. Tax increment financing (TIF) was recognized as one approach for providing public assistance that has been tried successfully in other parts of the country. Also meriting consideration was the establishment of an infrastructure bank, working in tandem with TIF.

How It Would Work: A typical tax increment financing scheme begins with issuing bonds, in this case specifically earmarked for infrastructure extension or improvement. These bonds are repaid by funds equivalent to the difference between tax revenues generated by the “improved” property (i.e., the development), and those generated by the same property before development. A TIF arrangement would only work if the development would increase the tax baseline sufficiently to repay the bonds. ((11:6.12))

An infrastructure bank would make loans available to communities at below-market interest rates for expansion, improvement, or even repair and maintenance. The bank could be capitalized by bonds and federal aid programs and leveraged with

tax increment financing. Unlike a one-time, project-specific TIF program, however, the bank would be operated as a revolving loan fund. Loan payments to the bank would be dedicated to meeting the initial bond obligations and federal match requirements. Once those obligations were met, the payments would be reserved to capitalize loans for subsequent projects. ((11:6.11))

06-03: Site Assessments and Permitting

A potentially large inventory of industrial-zoned land with physiographic constraints and environmentally sensitive areas would become eligible for development assistance through one or more of the proposed programs of this plan. Extended delays for projects funded by the Industrial Land Reserve Program or other revolving loan programs, in addition to eroding the marketability of the land, would also paralyze rollover of the loan fund. One type of delay could result from the permitting process if environmental assessments undertaken by the developer are incomplete or poorly documented.

It is beyond the scope of this plan to suggest procedural changes by the various permitting agencies, federal, state, or local. What can and should be done is to assure that regulators are provided with the most complete package of documentation possible for any project supported by the state's incentive programs. Toward this end, the staff believes that funding for physical assessments of these projects – including site surveys, drainage characteristics, and geotechnical data – should be eligible program expenditures. A preliminary engineering survey of a site may also require an environmental assessment to facilitate review.

There is a precedent for this in the DEM's brownfields program. An environmental assessment is required of a brownfields site to set conditions and a schedule for site remediation. This may be handled by a loan program set aside for this purpose if the property being redeveloped has been formally identified as a "priority site for economic development." (A Certificate of Critical Economic Concern is required from the Economic Development Corporation.) A portion of the state's tire site remediation account was made available to the EDC to capitalize these loans; repayments would go back to that account. ((95))

It is also important for developers to educate themselves as to what makes an application for a permit complete and defensible. Regulating agencies can assist by conducting "permitting workshops," particularly when new regulations are promulgated, and preapplication conferences between themselves and developers whenever appropriate. The EDC's involvement is appropriate as well whenever a project is deemed of critical economic concern.

06-04: Finance

The 1990 *ILUP* set a price for capitalizing its proposed revolving loan programs: \$30-40 million. In the intervening ten years, that figure would have changed due to inflation (an increase) and the degree of development that has already proceeded on

sites the staff expected to be candidates for funding (a decrease). On the other hand, development is likely to have become more expensive in general. The sites on which development has occurred since 1990 have been sites in which the least physical preparation or infrastructure improvement was necessary. The sites that remain are the challenge, leaving the amount needed in the tens of millions of dollars.

What options are available for financing this plan's revolving loan programs?

06-04-01: Bonds

Revolving loan funds may be capitalized by bonds. The magnitude of public debt in Rhode Island, however, is a concern. Voters over the years have become increasingly wary of bond issues without a specific, targeted purpose (e.g., the Freight Rail Improvement Project or the Coastal Institute at the University of Rhode Island). Bond issues have to be "sold" to the public, like any other referendum.

The 1990 *ILUP* mentioned oversells of general obligation bonds, which are exempt from federal taxes, as a funding source:

Ninety-five percent of a general obligation bond issue must be used for its stated public purpose; however, the remaining five percent does not appear subject to a public purpose test. The five percent oversell is normally utilized to pay for issuance expenses of the bond issue, which typically represent 2.0 to 2.5 percent, leaving the remaining unrestricted funds potentially available for economic development purposes. ((11:6.16-6.17))

Applied to one general obligation bond, the two-percent remainder would yield relatively low proceeds. For example, for a \$50 million issue, this two percent would represent \$100,000. However, if the principle were applied to all general obligation funding, the oversell program could generate significant unrestricted funds to capitalize a revolving loan program.

Or, a general obligation bond referendum could demonstrate a "predominant public purpose" in an infrastructure project to pass the test for tax-exempt issues. Those projects that produce a secure revenue stream could be the source of a revolving loan fund for subsequent projects. As the latter projects generate their own revenue stream, repayments would be made to replenish the fund.

06-04-02: Federal Assistance

An agency within the U.S. Department of Commerce, the Economic Development Administration (EDA), has been key to economic development in Rhode Island, supplying planning grants and public works grants for years that have helped the state implement its *Economic Development Strategy*. The grants are usually very competitive, as eligible parties from all regions of the country apply and appropriations are debated by Congress. The staff sees a future in the programs we have proposed above to meet the non-federal match requirements for the public works grants, which are primarily "bricks and mortar."

Another EDA grants program, the Economic Adjustment Grants, allows successful applicants to use a federal grant as a capitalization source for a revolving loan fund. States, municipalities, Indian tribes, CDCs, and nonprofit development organizations may be eligible, provided certain distress criteria apply for the area. "Implementation grants" under the program provide money for infrastructure improvements ("site acquisition, site preparation, construction, rehabilitation, and/or equipping of facilities") and revolving loan funds for business or infrastructure financing, in addition to other activities such as market or industry research and analysis, technical assistance, and training. ((96:26))

The program's Revolving Loan Fund (RLF) Grants are awarded on the basis of "the need for a new or expanded public financing tool to enhance other business assistance programs and services targeting economic sectors and/or locations" identified in the applicant's CEDS. Also essential is "the capacity of the RLF organization to manage lending, create networks between the business community and other financial providers, and contribute to the [economic] adjustment strategy." ((96:27))

While the opportunity presented by this program should not be missed, it must be noted that the eligibility requirements limit its use to very specific circumstances: reductions in civilian employment due to military base closures or other defense cutbacks, declared disasters or emergencies, international trade impacts, fishery failures, long-term economic deterioration, or loss of a major community employer. ((96:25)) Rhode Island has fallen victim to these sorts of "adjustments" in its recent past, but that is hardly a guarantee that the state will be eligible in the future. As one outcome of the annual CEDS process, the state will continually monitor economic distress in Rhode Island communities and be able to detect negative trends that do last over the long term. The Economic Adjustment Grants program should remain an option in such instances.

06-05: Recommendations

A. Industrial Land Reserve Fund

1. Statewide Planning recommends the formation of an Industrial Land Reserve Fund. There are numerous financing programs now in existence, often keyed directly to small businesses, that can assist in land acquisition. The funds allotted for these programs, however, are not for land acquisition exclusively; construction is financed through them as well, and the purchase of equipment. There is competition for the funds available. We submit that a financing program geared specifically to the acquisition and reservation of industrial land, for industrial purposes, is necessary in addition to these other programs to accomplish the objectives of the *Industrial Land Use Plan*.

2. We also recommend that the R.I. Economic Development Corporation be responsible for the Industrial Land Reserve Fund, given the EDC's statewide interest in economic development. The Reserve Fund should be run with the express purpose of

providing low-interest gap financing on a revolving loan basis to municipalities, private non-profit development corporations, and agencies of the state when appropriate.

3. The EDC should also establish a separate fund financed by interest payments and equity from the Reserve Fund to provide funding assistance in the form of matching grants for feasibility studies, market analyses, and environmental reviews of land reserve and land assembly projects.

4. Communities should keep track of brownfields initiatives that can link financial and technical assistance from participating federal agency programs with the reuse and rehabilitation of industrial properties.

B. Urban Industrial Land Assembly Program

1. In addition to the Industrial Land Reserve Fund, which would extend to rural and suburban as well as urban communities, there should be established an Urban Industrial Land Assembly Program. As this would appear to be a logical offshoot of the EDC's responsibility for the state's enterprise zone program and mill building reuse program, we recommend the Corporation take charge of this program as well.

2. The Urban Industrial Land Assembly Program should be run as a "one-stop shop" that makes low-interest financing accessible to those seeking to acquire industrial properties for reuse. Financing from this program should not disqualify applicants from any tax benefits from existing programs, including both the enterprise zone and mill building reuse programs.

3. While properties outside enterprise zones would be eligible for inclusion in the Urban Industrial Land Assembly Program, the program would be limited to urban communities. The intent of the program is to incentivize the reuse underutilized, neglected, and abandoned properties in these communities.

4. As the first tangible results of an urban land assembly program might be on a relatively modest scale, we encourage that they be directed toward establishing additional business incubators. Linkages with institutions of higher learning (as in the Ocean Technology Center incubator) and community activists (as in the Urban Ventures incubator) should continue to be promoted.

C. Bank Community Development Corporations (CDCs)

1. Presuming that all leading banks in Rhode Island have an interest in meeting their obligations under the Community Reinvestment Act, the establishment of additional Bank CDCs should be promoted.

2. Toward this end, we recommend that a working group be convened of state banking regulators, bankers, economic development officials, and neighborhood groups to investigate the feasibility of dedicating a Bank CDC to industrial development or redevelopment.

3. If it is inappropriate or impractical for the Economic Development Corporation to manage any of the programs proposed above, or if a more decentralized approach is desirable, the possibility should be considered of using Bank CDCs for these purposes with appropriate oversight. Otherwise, Bank CDCs should be tapped to provide bridge financing or grants to supplement these programs.

4. Linkages with the state's Urban Enterprise Equity Fund should be established immediately. The equity fund and Bank CDCs can complement each other in enterprise zones and non-zone urban areas.

D. Enterprise Zones

1. The enterprise zone program should build upon its successes and continue its outreach to businesses and communities. The system of regional contacts for enterprise zone information augments the coordination work of the EDC and should be supported. This could also be a conduit for information about other programs proposed in this plan, for example the Urban Industrial Land Assembly Program.

2. Changes to the enterprise zone program should occur only after consultation with the Enterprise Zone Council and with the Council's approval. This includes the addition of zones to the program, modifications of boundaries of existing zones, and changes to the mill building reuse program.

3. If additional programs are implemented within the Economic Development Corporation to complement the enterprise zone program, for example urban industrial land assembly, provision must be made for adequate EDC staffing. Capitalization of any revolving loan fund supporting these programs should include an administrative budget, which can subsequently be met by the loan repayments that will recapitalize the fund.

4. Given that properties in the mill building program are often surrounded by residential neighborhoods, communities should apply industrial performance standards to encourage appropriate and compatible uses. Where necessary, technical assistance programs should be established to help modernize and enforce performance standards, with the involvement of the DEM, the Building Codes Commission, and the Statewide Planning Program.

E. Infrastructure Bank

1. The EDC should determine the best vehicle for an infrastructure bank to provide below-market financing to communities for public infrastructure. The loan activities of this bank should be closely coordinated with the activities of existing programs in the fields of potable water, wastewater treatment, and transportation, to ensure that scarce financial resources are used prudently.

2. Communities should be encouraged to use tax increment financing to fund infrastructure improvements. The EDC should support this effort by exploring the feasibility of a bond bank to facilitate municipal TIF programs through credit enhancement and by combining smaller issues to obtain the most favorable rates.

F. Site Assessments and Permitting

1. There should be financial support from the state for site assessments at brownfield sites designated priority sites for economic development. The public purpose in cleaning these properties and returning them to productive use has been established and is generally accepted. Other means may be required, however, than (or in addition to) the tire site remediation account.

2. The DEM, Coastal Resources Management Council, and other permitting agencies, including local ones, should use comprehensive preapplication conferences between regulators and developers, together with, whenever appropriate, representatives of the EDC. These conferences should acquaint developers with what is expected from them in a project application, introduce the appropriate contacts in state and local government for permits and regulatory advice, and answer any questions about funding programs on the state, local, or federal level.

06-06: Summary

The *Industrial Land Use Plan* demonstrates that there is an imminent shortage of readily developable industrial-zoned land. This condition portends a threat to the growth of the Rhode Island economy beyond "virtual" industry run out of home offices. The historical development of industrial land, driven primarily by locational factors prevalent in the heyday of the textile and metals industries, has left us with a large stock of mill buildings and other heavy industrial sites, some of which, by dint of configuration or location, may be unsuitable for contemporary industrial use.

To its credit, Rhode Island has begun to address the problem of decaying infrastructure in urban areas and abandoned factory buildings. The state can point proudly to its enterprise zone and mill building reuse programs, and to pilot projects undertaken to reclaim brownfield sites. But while providing for the beneficial reuse of existing facilities, we need to turn our attention to upgrading marginal undeveloped industrial land, and making the best use of all our resources through varied and flexible strategies. Happily, efforts in this direction also promote a renewed commitment to sustainable development, which is popularly associated with the "smart growth" movement.

Table 212-06(2) (second page following) shows the various mechanisms by which the *ILUP's* recommendations may be implemented. The plan has identified five industrial land use goals (pages 2.19-2.20):

- Place sufficient land in reserve to sustain economic growth without compromising the state's quality of life.
- Employ "mixed use" as a strategy for industrial land use wherever economically and environmentally feasible.

- Assure to the maximum extent possible the appropriate use of prime industrial land by “matching the plant to the land.”
- Promote sustainable development through waste control and reuse of older industrial facilities.
- Encourage business partnerships that can nurture growing companies with much potential, co-locating them to encourage clustering, networking, and synergy.

The matrix in the table keys the various implementation mechanisms recommended in this plan to the goals they satisfy. Together with the policies derived in Part 212-03, they represent the tools needed for an effective, contemporary *Industrial Land Use Plan*.

TABLE 212-06(2):

INDUSTRIAL LAND USE GOALS AND RECOMMENDATIONS

| IMPLEMENTATION MECHANISMS | | GOALS | | | | |
|--|---------------------------------------|--------------------------------|-------------------------|-------------------------------------|----------------------------------|------------------------------------|
| Need | Recommendations | Reserve industrial land | Employ mixed use | Use prime land appropriately | Promote sustainable dev't | Encourage bus. partnerships |
| <i>Improve the quality of existing industrial land</i> | A1: Industrial Land Reserve Fund | • | | • | • | |
| | A2: Loans for gap financing | • | | • | • | |
| | A3: Funding for studies | • | | • | • | |
| | A4: Link with brownfields programs | • | | | • | |
| <i>Preserve urban industrial sites</i> | A4: Link with brownfields programs | • | | | • | |
| | B1: Urban Industrial Land Assembly | • | | • | • | • |
| | B2: Low interest financing | • | | • | • | |
| | B3: Limit to urban communities | | | | • | |
| | B4: Add business incubators | | | | • | • |
| | C1: Satisfy CRA requirements | | • | | | • |
| | C2: Dedicated Bank CDC | | | | • | |
| | C3: Involve Bank CDC in ILUP programs | • | | • | • | • |
| C4: Link to Urban Enterprise Fund | | | | • | • | |
| <i>Improve land management</i> | D1: Enterprise zone outreach | | • | • | • | |
| | D2: Consult Enterprise Zone Council | | • | • | • | |
| | D3: Adequate program staff | | • | • | • | |
| | D4: Apply performance standards | • | • | • | • | • |
| <i>Provide needed infrastructure</i> | E1: Loans to communities | • | | | | |
| | E2: Use tax increment financing | • | | | | |
| <i>Improve permitting process</i> | E2: Establish bond bank | • | | | | |
| | F1: Support brownfield assessments | • | | • | • | |
| | F2: Hold preapplication conferences | • | | • | | |

NOTES AND REFERENCES

1. Because this total does not include jobs not covered by unemployment insurance it does not count the self-employed, whose occupations may or may not be located on industrial land. It also ignores workers outside the private sector (government employees), who make up about 16 percent of *total* Rhode Island employment.
2. Rhode Island Statewide Planning Program, *Economic Development Strategy*, State Guide Plan Element 211, Report Number 51 (Providence: Statewide Planning Program, 1986). This element has been superseded by the *Economic Development Policies and Plan* (same source, 2000).
3. Rhode Island Department of Administration, Division of Planning, *Land Use 2010: State Land Use Policies and Plan*, State Guide Plan Element 121, Report Number 64 (Providence: Division of Planning, 1989).
4. Rhode Island Department of Administration, Division of Planning, *Rhode Island Employment Forecasts, Year 2010 — The State, Cities and Towns, and Analysis Zones*, Technical Paper Number 127 (Providence: Division of Planning, 1987).
5. Gruen Gruen and Associates, *Employment and Parking in Suburban Business Parks: A Pilot Study* (Washington, D.C.: The Urban Land Institute, 1986).
6. Further investigation shows that use of a cross-industry average can lead to an underestimate, perhaps a *gross* underestimate, of future land requirements. If a new cross-industry average were calculated just among the six industrial groups listed in Table 212-02(01), it would be 51 — leading to a required estimate of only 4,275 acres. Clearly there is a danger in putting too much faith in cross-industry averages.
7. Statewide Planning's employment projections were based on data from the Department of Employment and Training and its successor agency, the Department of Labor and Training. The DET/DLT data consisted solely of private and public sector employment covered by the state's Employment Security Act. We also considered estimates based on *total* (not just "covered") employment by the Bureau of Economic Analysis (BEA), part of the U.S. Department of Commerce. The BEA included self-employment in its figures. The trends evident from covered employment data were identical to trends predicted by the BEA. The BEA's *totals* were higher, of course, having included self-employment. Using the BEA's numbers in our calculations to predict industrial land use in either 2015 or

2025 — as 2020 figures from the BEA were not available — would have yielded 16,283 or 16,407 acres, depending on the year selected.

8. These data (1996-99) are from the industrial land inventory compiled by the Statewide Planning Program as a part of this plan with the assistance of the 39 cities and towns.
9. Buttke, Carl H., *Using the ITE Trip Generation Report* (Washington, D.C.: Institute of Transportation Engineers, 1984).
10. Lochmoeller, Donald C., Dorothy A. Muncy, Oakleigh H. Thorne, Mark A. Viets, David F. Delaney, Nathaniel M. Griffin, and Frank H. Spink, Jr., *Industrial Development Handbook* (Washington, D.C.: Urban Land Institute, 1975).
11. R.I. Department of Administration, Division of Planning, *Industrial Land Use Plan*. State Guide Plan Element 212, Report No. 66 (Providence, R.I.: Division of Planning, 1990).
12. Mill buildings (or, more correctly, *certifiable* mill buildings) are defined this way in the legislation, R.I.G.L. 42-64.7-5: constructed prior to January 1, 1950; having at least two floors, excluding the basement; to be reused primarily for manufacturing or commercial purposes; 75 percent vacant for at least 24 months; and officially nominated by the municipality in which it is located.
13. Beyard, Michael D., Jane Buckwalter, Steven W. Fader, and Nadine Huff, *Business and Industrial Park Development Handbook* (Washington, D.C.: Urban Land Institute, 1988).
14. R.I. Department of Administration, Division of Planning, *Industrial Performance Standards: An Evaluation of Current Practices in Rhode Island*. Technical Paper No. 142 (Providence, R.I.: Division of Planning, 1992).
15. R.I. Economic Policy Council, *Meeting the Challenge of the New Economy*. Annual Review 1997 (Providence, R.I.: Economic Policy Council, 1997).
16. Salvesen, David, *Urban Land*, February 1996.
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In Chattanooga, a 100-acre brownfield site will house a zero-emissions manufacturing zone, an urban ecology center, a community stadium, and an environmental technology complex. The report added that economic development practitioners in the Chattanooga area were exploring development options that include reclaiming other brownfield sites and establishing new eco-industrial parks "that pair manufacturing facilities in an almost symbiotic relationship."

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19. Campbell, Candace, David Berge, James Janus, and Kevin Olsen, *Change Agents in the New Economy: Business Incubators and Economic Development*, Executive Summary. Prepared for the Charles Stewart Mott Foundation (Minneapolis, Minn.: University of Minnesota, 1988).
20. Gillen, Lori, and James Breagy, *Innovative State and Local Economic Development Programs* (Washington, D.C.: National Council for Urban Economic Development, 1987).
21. Brown, Buck, "Business Incubators Suffer Growing Pains," *Wall Street Journal*, June 16, 1989.
22. R.I. Historical Preservation Commission, *Central Falls, Rhode Island*, Statewide Historical Preservation Report P-CF-1 (Providence, R.I.: R.I. Historical Preservation Commission, 1978).
23. R.I. Historical Preservation Commission, *Woonsocket, Rhode Island*, Statewide Historical Preservation Report P-W-1 (Providence, R.I.: R.I. Historical Preservation Commission, 1976).
24. The changes in the electric industry at this juncture are too recent to have established a record indicating whether the general tendency with deregulation, over a longer term, is for prices to go down or up.
25. Please refer to the *Rhode Island Energy Plan*, State Guide Plan Element 781, released by the Statewide Planning Program and the State Energy Office in March, 1997, for a list, including individual capacity in megawatts, of cogeneration facilities in Rhode Island. The *Energy Plan* is available from the Statewide Planning Program.
26. Satterthwaite, Mark, "Location Patterns of High-Growth Firms," *Economic Development Commentary*, Spring 1988.

27. Schmenner, Roger W., *Making Business Location Decisions* (Englewood Cliffs, N.J.: Prentice Hall, 1982).
28. Bamberger, Rita J., William A. Blazar, and George E. Peterson, *Infrastructure Support for Economic Development*, Planning Advisory Service Report No. 390 (Washington, D.C.: American Planning Association, 1985).
29. R.I. Department of Administration, Division of Planning, *Land Use Controls: A Working Paper for Land Use 2010*, Technical Paper No. 131 (Providence, R.I.: Division of Planning, 1987).
30. R.I. Department of Administration, Division of Planning, *State Guide Plan Overview*, Report No. 80 (as amended) (Providence, R.I.: Division of Planning, 1992).
31. Section 45-31-7, *Rhode Island General Laws*.
32. Section 45-31-8, *Rhode Island General Laws*.
33. Poirek, Erin M., "Rhode Island Plans to Expand Cleanup Program to New Sites," *Providence Business News*, February 10, 1997.
34. Anonymous, "EPA and HUD Increase Commitments to Brownfields Cleanup," *Economic Developments*, March 15, 1998. Additionally, the Federal Highway Administration (FHWA) has revised longstanding policy by actively encouraging transportation projects that include the use and redevelopment of brownfield sites, plus brownfield partnerships with HUD and the EPA.
35. Fitzpatrick, Mary, and Peter Tropper, *Tax Cuts for Business: Will They Help Distressed Areas?* (Washington, D.C.: Northeast-Midwest Institute, 1980).
36. U. S. Department of the Interior, National Park Service, Heritage Preservation Resources, *Preservation Tax Incentives for Historic Buildings* (Washington, D.C.: General Printing Office, 1996).
37. St. Sauveur, Jeffrey A., "Revitalizing Rhode Island's Mill Buildings," *Land Use and Environmental Law*, Winter/Spring 1997.
38. On the subject of the rehab credit in general, it is worth noting that highly specific federal or state tax breaks of this nature are popular in the communities because, at least according to some observers, there is a distinct trend away from local governments granting tax holidays. This is a reaction in no small part to the political difficulties posed in making up those revenue shortfalls with increased property taxes on residences and

other businesses. Also, some cities and towns are wary of the state adopting a policy whereby local tax abatements are considered the cornerstone of industrial development. They fear a contest might develop among the communities as to who could provide the biggest break, rather than the best industrial sites.

39. Petersen, John E., and Ronald Forbes, *Innovative Capital Financing*, Public Advisory Service Report No. 392 (Chicago, Ill.: American Planning Association, 1985).
40. Congress of the United States, Congressional Budget Office, *Small Issue Industrial Revenue Bonds* (Washington, D.C.: U.S. Government Printing Office, 1981).
41. This program derives from the small-issue bond provisions of the Omnibus Budget Reconciliation Act of 1993. Under the program, interest on these bonds is excluded from the taxpayer's (lender's) income if at least 95 percent of the bonds' proceeds is used to finance manufacturing facilities.
42. *Consolidated Community Development Block Grant Regulations*.
43. City of Woonsocket, R.I., *Community Development Block Grant Entitlement Program, Year 6* (Woonsocket, R.I.: City of Woonsocket, 1989).
44. Anonymous, "HUD Examines Ways to Improve Role of CDBGs," *Economic Development*, August 1, 1989.
45. Copies of the *OEDP Update* may be obtained from Bruce Vild, Economic Development Planning Section, Statewide Planning Program, One Capitol Hill, Providence, RI 02908.
46. Oglesbee, Clay, "The Kemp Plan for Rebuilding the City," *The Christian Century*, April 5, 1989.
47. U.S. Department of Housing and Urban Development, Office of the Assistant Secretary for Community Planning and Development, Office of Program Analysis and Evaluation, *State-designated Enterprise Zones: Ten Case Studies* (Washington, D.C.: U.S. Government Printing Office, 1986).
48. Barros, Victor, personal communication.
49. Section 42-64.3-3, *Rhode Island General Laws*.

50. The wage differential credit is equal to 50 percent of wages paid to new employees of the zone business; the maximum credit per employee is \$10,000. The resident business owner credit is available to business owners who live and operate their businesses in an enterprise zone, taking the form of a modification to the adjusted gross income used to calculate their Rhode Island income tax. For the first three years of their participation, the maximum modification is \$50,000 annually; for the next two years, the maximum is \$25,000 annually.
51. U.S. Department of Commerce, Economic Development Administration, *Background Information: Bank CDCs and Economic Development* (Washington, D.C.: Economic Development Administration, 1988).
52. Rivers, Ben, "EDA Program to Organize Bank CDCs," *Economic Developments*, November 15, 1988.
53. Rhode Island Statewide Planning Program, *Industrial Land Banking in Rhode Island: Analysis and Recommendations*, Preliminary Draft (Providence, R.I.: Statewide Planning Program, 1983).
54. Prince William County Board of County Supervisors, "Creation of a Prince William County Economic Development Land Bank and Adoption of Governing Policies Thereof." Resolution of the Board of County Supervisors, undated.
55. Ostergaard, J. Robert, "The Cape Cod Land Bank: The Pros and Cons of an Open Space Proposal," *Cape Cod Life Online*, 1997.
56. Massachusetts Government Land Bank, *Annual Report 1983* (Boston, Mass.: Massachusetts Government Land Bank, 1983).

The "Head of the Harbor" project is an interesting example of how the MGLB acted "as both financier and private developer." It involved dredging the inner harbor in Gloucester, building a retaining wall, and constructing two large piers, an off-loading platform, and a work area. Providing "construction-ready" sites to private developers facilitated the construction of processing plants to serve the commercial fishing industry.

57. Rhode Island Housing and Mortgage Finance Corporation, "Land Bank Program," *Program Bulletin #87-3*, March 27, 1987.
58. Grow Smart Rhode Island describes itself as "a network of non-profit organizations, businesses, government agencies, and concerned individuals." There are 35 organizations now affiliated with the group, ranging from the Rhode Island Wild Plant Society to the Urban League, and from the Nature Conservancy to the Providence Energy Corporation.

The group's mission statement cites "...a special obligation to make sure that [Rhode Island's] cities are attractive, vibrant centers for business and residents and that the character of its rural areas remains intact."

59. Section 46-15.2-4, *Rhode Island General Laws*.
60. The Enterprise Zone Council consists of the Director of the EDC, representatives of the Urban League of Rhode Island and the R.I. League of Cities and Towns, and two members of the general public.
61. Tompros, Judy, "CUED Salutes 45 Programs for Innovative Approaches," *Economic Developments*, April 1, 1989.
62. Rhode Island Statewide Planning Program, *Land Zoned for Industrial Use: Inventory and Analysis*, Technical Paper No. 76 (Providence, R.I.: Statewide Planning Program, 1978).
63. Rhode Island Department of Employment and Training and its successor, the Rhode Island Department of Labor and Training data, 1987-1993, corroborated by subsequent DET/DLT reports and *Labor Market Information for Rhode Island Planners*.
64. This estimate is based on trends in wholesale and retail trade monitored by Statewide Planning staff (1985-1995 DET data).
65. The *Industrial Land Use Plan's* criteria for determining industrial sites of high potential do not consider the *size* or *configuration* of the parcels within them. Some sites have only scattered parcels of limited acreage available that may not be viable for all industrial uses. However, the sites do pass through the screen being used here, in that they do have public water and sewer, good transportation access, and an absence of environmental constraints.

The converse is also true. The presence of even localized environmental constraints, such as a floodplain or a wetland within a site, will stop that site from passing through the screen — even if it is a relatively large site with parcels available that avoid the constraining feature.

Our inventory gives us no way of dealing with sites on a parcel level, unless information about parcels was provided by the city or town as a sidebar. To keep our database and inventory consistent from community to community, we have kept the level of analysis *sitewide* to determine overall development potential.

66. Woonsocket's 668 industrial-zoned acres are a significant decrease from what was recorded in the 1990 version of this plan (over 900 acres). The

low proportion of industrial acres in non-industrial use at the present time makes it apparent that the "missing" industrial acreage from 1990 has been rezoned. This is also strongly suggested by the aforementioned "creative reuse" of vacant industrial properties over the years, which includes condominium residences, senior housing, and commercial space, as well as the Museum of Work and Culture.

67. All references to population projections in this and other Substate Growth Areas, unless otherwise noted, come from the Statewide Planning Program. The full citation is:

Rhode Island Statewide Planning Program, *Rhode Island Population Projections by Age, Sex, and Race 1995-2020 (Revised)*(Providence, R.I.: Statewide Planning Program, 1997).

68. O'Brien, John, personal communication.
69. Swen, John, presentation to the State Planning Council, June 11, 1998.
70. City of Newport and Newport County Chamber of Commerce, from their Overall Economic Development Program (OEDP) application (1998).
71. Maxwell, Kathryn, personal communication.
72. Gilstein, Robert W., personal communication.
73. Eva, Rosemary, personal communication.
74. Hess, Nancy, personal communication.
75. Collins, Clarkson A., personal communication.
76. Levin, Michael B., "Brownfields Redevelopment: 1990s Success Story," *New England Developments*, Winter 1999.
77. Ackerman, Jerry, "A Glimpse into a Brownfields Showcase Community: The Woonasquatucket River Greenway Project," *VHB Siteworks*, Vol. 1, No. 4, September 1998.
78. Crawley, Kathleen, personal communication.
79. Lachowicz, Anthony W., personal communication.
80. Cohen, Marilyn F., personal communication.
81. Murray, L. Vincent, personal communication.

82. Town of South Kingstown, "Route 1 Special Management District," Comprehensive Economic Development Strategy Application, 1999.
83. Ionata, Dante, personal communication.
84. Anonymous, "Fleet Community Development Corporation," from the Web site <http://www.fleet.com/afcpv.html>.
85. Section 42-64-13.1, *Rhode Island General Laws*.
86. Goff, Raymond, personal communication.
97. A cogeneration plant, for example, could form the basis of an eco-industrial park if its waste steam is used for heating. See also the note at #17.
98. Anonymous, "Warwick Station Redevelopment District Master Plan."
99. Section 42-64-13.1, *Rhode Island General Laws*.
90. Sheehan, John, personal communication.
91. Rhode Island Statewide Planning Program, *Rhode Island Comprehensive Economic Development Strategy Annual Report*, July 1999 (Providence, RI: Statewide Planning Program, 1999).
92. The Census data date back to 1989 and, at this writing, are the most recent available. As these data predate the entire enterprise zone program and not just the employment credit for hiring zone residents, the program's performance cannot be determined from these figures. They can only serve as a benchmark.
93. Aina, Justin, personal communication.
94. Costello, Bethany, "Ocean Technology Center Helps Companies Develop," *Providence Business News*, October 25-31, 1999.
95. Section 23-19.14-9, *Rhode Island General Laws*. The tire site remediation account was established for the cleanup of waste tires in dumps, as the name suggests. See Sections 23-63-4.1 and 23-63-4.2, *R.I.G.L.*
96. Section 308.3(c)(2), U.S. Department of Commerce, Economic Development Administration, *Regulations Revised to Implement Public Law 105-393*.

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98. Trapani, Katherine, personal communication.
99. Greenwood, Richard E., personal communication.
100. Griffith, Robert, personal communication.
101. Whitaker, Lee, personal communication.
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103. In June, 2000, legislation was passed in the R.I. General Assembly that mandates the creation of a building code specifically tailored to historic buildings. The idea is to preserve the character and architectural integrity of these buildings without compromising safety, thereby encouraging their renovation and reuse.
104. The terms "Substate Employment Growth Area," "Substate Growth Area," and "substate area" are all used interchangeably.
105. Raford, Noah, "The Use of GIS in Flood Hazard Analysis: A Report for the City of Warwick and Project Impact," presentation before the R.I. Showcase State Subcommittee, June 25, 1999.

**APPENDIX A:
COMPARISON OF STANDARD INDUSTRIAL CLASSIFICATION (SIC)
AND NORTH AMERICAN INDUSTRIAL CLASSIFICATION SYSTEM (NAICS) CODES**

| <u>SIC (2-digit)</u> | <u>NAICS (2 and 3-digit)</u> |
|---|--|
| Division A. Agriculture, forestry and fishing | Sector 11. Agriculture, forestry, fishing and hunting |
| Major Group 01. Agricultural production — crops | Subsector 111. Crop production |
| Major Group 02. Agriculture production livestock and animal specialties | Subsector 112. Animal production |
| Major Group 07. Agricultural services | Subsector 113. Forestry and logging |
| Major Group 08. Forestry | Subsector 114. Fishing, hunting, and trapping |
| Major Group 09. Fishing, hunting, and trapping | Subsector 115. Support activities for agriculture and forestry |
| Division B. Mining | Sector 21. Mining |
| Major Group 10. Metal mining | Subsector 211. Oil and gas extraction |
| Major Group 12. Coal mining | Subsector 212. Mining (except oil and gas) |
| Major Group 13. Oil and gas extraction | Subsector 213. Support activities for mining |
| Major Group 14. Mining and quarrying of nonmetallic minerals, except fuels | |
| Division C. Construction | Sector 22. Utilities |
| Major Group 15. Building construction — general contractors and operative builders | Subsector 221. Utilities |
| Major Group 16. Heavy construction other than building construction — contractors | |
| Major Group 17. Construction — special trade contractors | Sector 23. Construction |
| | Subsector 233. Building, developing, and general contracting |
| | Subsector 234. Heavy construction |
| | Subsector 235. Special trade contractors |
| Division D. Manufacturing | Sector 31-33. Manufacturing |
| Major Group 20. Food and kindred products | Subsector 311. Food manufacturing |
| Major Group 21. Tobacco products | Subsector 312. Beverage and tobacco product manufacturing |
| Major Group 22. Textile mill products | Subsector 313. Textile mills |
| Major Group 23. Apparel and other finished products made from fabrics and similar materials | Subsector 314. Textile product mills |
| Major Group 24. Lumber and wood products, except furniture | Subsector 315. Apparel manufacturing |
| Major Group 25. Furniture and fixtures | Subsector 316. Leather and allied product manufacturing |
| Major Group 26. Paper and allied products | Subsector 321. Wood product manufacturing |
| Major Group 27. Printing, publishing, and allied industries | Subsector 322. Paper manufacturing |
| Major Group 28. Chemicals and allied products | Subsector 323. Printing and related support activities |
| Major Group 29. Petroleum refining and related industries | Subsector 324. Petroleum and coal products manufacturing |
| Major Group 30. Rubber and miscellaneous plastics products | Subsector 325. Chemical manufacturing |
| Major Group 31. Leather and leather products | Subsector 326. Plastics and rubber products manufacturing |
| Major Group 32. Stone, clay, glass, and concrete products | Subsector 327. Nonmetallic mineral product manufacturing |

SIC (2-digit)

Major Group 33. Primary metal products
 Major Group 34. Fabricated metal products, except machinery and transportation equipment
 Major Group 35. Industrial and commercial machinery and computer equipment
 Major Group 36. Electronic and other electrical equipment and components, except computer equipment
 Major Group 37. Transportation equipment
 Major Group 38. Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks
 Major Group 39. Miscellaneous manufacturing industries

Division E. Transportation, communications, electric, gas, and sanitary services

Major Group 40. Railroad transportation
 Major Group 41. Local and suburban transit and interurban highway passenger transportation
 Major Group 42. Motor freight transportation and warehousing
 Major Group 43. United States Postal Service
 Major Group 44. Water transportation
 Major Group 45. Transportation by air
 Major Group 46. Pipelines, except natural gas
 Major Group 47. Transportation services
 Major Group 48. Communications
 Major Group 49. Electric, gas, and sanitary services

Division F. Wholesale trade

Major Group 50. Wholesale trade — durable goods
 Major Group 51. Wholesale trade — nondurable goods

Division G. Retail trade

Major Group 52. Building materials, hardware, garden supply, and mobile home dealers
 Major Group 53. General merchandise stores
 Major Group 54. Food stores
 Major Group 55. Automobile dealers and gasoline service stations

NAICS (2 and 3-digit)

Subsector 331. Primary metal manufacturing
 Subsector 332. Fabricated metal product manufacturing
 Subsector 333. Machinery manufacturing
 Subsector 334. Computer and electronic product manufacturing
 Subsector 335. Electrical equipment, appliance, and component manufacturing
 Subsector 336. Transportation equipment manufacturing
 Subsector 337. Furniture and related product manufacturing
 Subsector 339. Miscellaneous manufacturing

Sector 42. Wholesale trade

Subsector 421. Wholesale trade, durable goods
 Subsector 422. Wholesale trade, nondurable goods

Sector 44-45. Retail trade

Subsector 441. Motor vehicle and parts dealers
 Subsector 442. Furniture and home furnishings stores
 Subsector 443. Electronics and appliance stores
 Subsector 444. Building material and garden equipment and supplies dealers
 Subsector 445. Food and beverage stores
 Subsector 446. Health and personal care stores
 Subsector 447. Gasoline stations
 Subsector 448. Clothing and clothing accessories stores
 Subsector 451. Sporting goods, hobby, book, and music stores
 Subsector 452. General merchandise stores
 Subsector 453. Miscellaneous store retailers
 Subsector 454. Nonstore retailers

Sector 48-49. Transportation and warehousing

Subsector 481. Air transportation
 Subsector 482. Rail transportation
 Subsector 483. Water transportation
 Subsector 484. Truck transportation
 Subsector 485. Transit and ground passenger transportation
 Subsector 486. Pipeline transportation

SIC (2-digit)

Major Group 56. Apparel and accessory stores
Major Group 57. Home furniture, furnishings, and equipment stores
Major Group 58. Eating and drinking places
Major Group 59. Miscellaneous retail

Division H. Finance, insurance, and real estate

Major Group 60. Depository institutions
Major Group 61. Nondepository credit institutions
Major Group 62. Security and commodity brokers, dealers, exchanges, and services
Major Group 63. Insurance carriers
Major Group 64. Insurance agents, brokers, and service
Major Group 65. Real estate
Major Group 67. Holding and other investment offices

Division I. Services

Major Group 70. Hotels, rooming houses, camps, and other lodging places
Major Group 72. Personal services
Major Group 73. Business services
Major Group 75. Automotive repair, services, and parking
Major Group 76. Miscellaneous repair services
Major Group 78. Motion pictures
Major Group 79. Amusement and recreation services
Major Group 80. Health services
Major Group 81. Legal services
Major Group 82. Educational services
Major Group 83. Social services
Major Group 84. Museums, art galleries, and botanical and zoological gardens
Major Group 86. Membership organizations
Major Group 87. Engineering, accounting, research, management, and related services
Major Group 88. Private households
Major Group 89. Miscellaneous services

Division J. Public administration

Major Group 91. Executive, legislative, and general government, except finance
Major Group 92. Justice, public order, and safety

NAICS (2 and 3-digit)

Subsector 487. Scenic and sightseeing transportation
Subsector 488. Support activities for transportation
Subsector 491. Postal service
Subsector 492. Couriers and messengers
Subsector 493. Warehousing and storage

Sector 51. Information

Subsector 511. Publishing industries
Subsector 512. Motion picture and sound recording industries
Subsector 513. Broadcasting and telecommunications
Subsector 514. Information services and data processing services

Sector 52. Finance and insurance

Subsector 521. Monetary authorities — Central Bank
Subsector 522. Credit intermediation and related activities
Subsector 523. Securities, commodity contracts, and other financial investments and related activities
Subsector 524. Insurance carriers and related activities
Subsector 525. Funds, trusts, and other financial vehicles

Sector 53. Real estate and rental and leasing

Subsector 531. Real estate
Subsector 532. Rental and leasing services
Subsector 533. Lessors of nonfinancial intangible assets (except copyrighted works)

Sector 54. Professional, scientific, and technical services

Subsector 541. Professional, scientific, and technical services

Sector 55. Management of companies and enterprises

Subsector 551. Management of companies and enterprises

Sector 56. Administrative and support and waste management and remediation services

Subsector 561. Administrative and support services
Subsector 562. Waste management and remediation services

SIC (2-digit)

Major Group 93. Public finance, taxation, and monetary policy
Major Group 94. Administration of human resource programs
Major Group 95. Administration of environmental quality and housing programs
Major Group 96. Administration of economic programs
Major Group 97. National security and international affairs

Division K. Nonclassifiable establishments

Major Group 99. Nonclassifiable establishments

NAICS (2 and 3-digit)

Sector 61. Educational services
Subsector 611. Educational services

Sector 62. Health care and social assistance
Subsector 621. Ambulatory health care services
Subsector 622. Hospitals
Subsector 623. Nursing and residential care facilities
Subsector 624. Social assistance

Sector 71. Arts, entertainment, and recreation
Subsector 711. Performing arts, spectator sports, and related industries
Subsector 712. Museums, historical sites, and similar institutions
Subsector 713. Amusement, gambling, and recreation industries

Sector 72. Accommodation and food services
Subsector 721. Accommodation
Subsector 722. Food services and drinking places

Sector 81. Other services (except public administration)
Subsector 811. Repair and maintenance
Subsector 812. Personal and laundry services
Subsector 813. Religious, grantmaking, civic, professional, and similar organizations
Subsector 814. Private households

Sector 92. Public administration
Subsector 921. Executive, legislative, and other general government support
Subsector 922. Justice, public order, and safety activities
Subsector 923. Administration of human resource programs
Subsector 924. Administration of environmental quality programs
Subsector 925. Administration of housing programs, urban planning, and community development
Subsector 926. Administration of economic programs
Subsector 927. Space research and technology
Subsector 928. National security and international affairs

APPENDIX B: INDUSTRIAL SITE INVENTORY

The following pages comprise an inventory of industrial sites in Rhode Island, ranging in size from 1 acre to 2,410 acres. Each site contains one or more parcels. The descriptors are as follows:

| | |
|------------------|---|
| REC NO | Record number. Strictly an organizational tool for Statewide Planning. |
| DIST NO | District number. Refers to the Substate Growth Area in which the city or town is located. |
| SITE | Inventory site number. First two digits identify the community (01 for Barrington, 02 for Bristol, etc.). |
| CLASS | Industrial Development Potential (IDP) classification. IDP-0(d) is fully developed (no vacant acreage); IDP-0(r) is recommended for rezoning because of prevalent non-industrial use; IDP-1 is low potential, due to size or physiographic constraints or lack of infrastructure; IDP-2 is moderate potential; IDP-3 is high potential, with sizeable vacant parcels, utilities, good access, and no physiographic constraints. |
| ACRES | Size, in acres, of the site. TOT is total acreage; IND is acreage in industrial use; OTH is acreage in non-industrial use (e.g., commercial or residential); VAC is vacant (undeveloped) acreage. |
| UTILITIES | Indicates the availability of electricity (ELEC), public water (WTR), public sewer (SWR), and natural gas (GAS). Blank spaces indicate a lack of that particular service. Note that this represents only the availability, and not the adequacy of the service to site tenants (present or future). |
| ST HWY | Distance from the nearest state highway, in miles. Distances up to 1 mile are indicated with a "1," distances up to 5 miles with a "5." Blank spaces indicate a distance greater than 5 miles. |
| INTST HWY | Distance from the nearest interstate highway, in miles. Similar scale to above. Blank spaces indicate a distance greater than 5 miles. |
| AIR | Distance from the nearest airport. Similar scale to above, out to 10 miles. Blank spaces indicate a distance greater than 10 miles. |
| RAIL | Rail access is indicated with a "yes." |
| FLD | Presence of a flood plain is indicated with an "F." |
| SOIL TOPO CONSTR | Presence of soil or topographic constraints is indicated with a "yes." |

APPENDIX B

| REC NO | DIST NO | CITY | SITE | CLASS | ACRES | | | | UTILITIES | | | | ST HWY | INTST HWY | AIR | RAIL | FLD | SOIL | |
|--------|---------|----------------|-------|----------|-------|-----|-----|------|-----------|-----|-----|-----|--------|-----------|-----|------|-----|------|-------|
| | | | | | TOT | IND | OTH | VAC | ELEC | WTR | SWR | GAS | | | | | | TOPO | CNSTR |
| 1 | 4 | Barrington | 01010 | IDP-0(d) | 5 | 5 | | | E | W | S | G | 5 | 5 | 5 | | | | |
| 2 | 4 | Barrington | 01030 | IDP-2 | 5 | | | 5 | E | W | S | G | 5 | 5 | | | | | |
| 3 | 4 | Barrington | 01040 | IDP-2 | 5 | | 1 | 4 | E | W | S | G | 5 | 5 | | | | | |
| 4 | 4 | Barrington | 01050 | IDP-2 | 8 | | | 8 | E | W | S | G | | | | | | | |
| 5 | 4 | Bristol | 02010 | IDP-2 | 195 | 134 | 20 | 41 | E | W | S | G | 1 | | | | | yes | |
| 6 | 4 | Bristol | 02030 | IDP-0(d) | 7 | 7 | | | E | W | S | G | 1 | | | | | | |
| 7 | 4 | Bristol | 02040 | IDP-0(d) | 16 | 16 | | | E | W | S | G | 1 | | | | | | |
| 8 | 4 | Bristol | 02050 | IDP-3 | 44 | 42 | | 2 | E | W | S | G | 1 | | | | | | |
| 9 | 4 | Bristol | 02060 | IDP-0(d) | 1 | 1 | | | E | W | S | G | 1 | | | | | | |
| 10 | 4 | Bristol | 02070 | IDP-3 | 4 | | 2 | 2 | E | W | S | G | 1 | | | | | | |
| 11 | 1 | Burrillville | 03050 | IDP-2 | 12 | 8 | | 4 | E | W | S | | 1 | | | | | | |
| 12 | 1 | Burrillville | 03060 | IDP-2 | 40 | 27 | 11 | 2 | E | W | S | | 1 | | | | | yes | |
| 13 | 1 | Burrillville | 03070 | IDP-2 | 258 | 10 | 20 | 228 | E | W | S | | 1 | | | | | yes | |
| 14 | 1 | Burrillville | 03080 | IDP-0(d) | 7 | 7 | | | E | | S | | 1 | | | | | | |
| 15 | 1 | Burrillville | 03090 | IDP-2 | 10 | 7 | | 3 | E | | S | | 1 | | | | | | |
| 16 | 1 | Burrillville | 03091 | IDP-1 | 126 | | 22 | 104 | E | | S | | 1 | | | | | yes | |
| 17 | 1 | Burrillville | 03100 | IDP-0(d) | 14 | 14 | | | E | | | | 1 | | | | | | |
| 18 | 1 | Burrillville | 03120 | IDP-0(d) | 11 | 6 | 5 | | E | | | | 1 | | | | | | |
| 19 | 1 | Burrillville | 03130 | IDP-0(r) | 25 | 1 | 24 | | E | | | | 1 | | | | | | |
| 20 | 1 | Burrillville | 03131 | IDP-0(d) | 20 | 20 | | | E | | | | 1 | | | | | | |
| 21 | 1 | Burrillville | 03140 | IDP-0(d) | 7 | 5 | 2 | | E | | | | 1 | | | | | | |
| 22 | 1 | Central Falls | 04010 | IDP-0(d) | 10 | 8 | 2 | | E | W | S | G | 1 | 5 | | yes | | | |
| 23 | 1 | Central Falls | 04020 | IDP-0(d) | 39 | 39 | | | E | W | S | G | 1 | 1 | | yes | | | |
| 24 | 1 | Central Falls | 04030 | IDP-0(d) | 2 | 2 | | | E | W | S | G | 1 | 1 | | | | | |
| 25 | 1 | Central Falls | 04040 | IDP-0(d) | 22 | 15 | 7 | | E | W | S | G | 1 | 1 | | yes | | | |
| 26 | 1 | Central Falls | 04050 | IDP-2 | 20 | 4 | 14 | 2 | E | W | S | G | 1 | 1 | | | | | |
| 27 | 1 | Central Falls | 04060 | IDP-0(d) | 14 | 9 | 5 | | E | W | S | G | 1 | 1 | | | | | |
| 28 | 1 | Central Falls | 04070 | IDP-0(d) | 3 | 3 | | | E | W | S | G | 1 | 1 | | | | | |
| 29 | 1 | Central Falls | 04080 | IDP-0(d) | 1 | 1 | | | E | W | S | G | 1 | 1 | | | | | |
| 30 | 6 | Charlestown | 05010 | IDP-1 | 1100 | | 5 | 1095 | E | | | | 1 | | | yes | | yes | |
| 31 | 6 | Charlestown | 05020 | IDP-0(d) | 9 | 9 | | | E | | | | 1 | | | | | | |
| 32 | 6 | Charlestown | 05030 | IDP-0(d) | 25 | 25 | | | E | | | | 1 | | | yes | | | |
| 33 | 5 | Coventry | 06020 | IDP-0(r) | 4 | | 4 | | E | W | | | 1 | | | yes | | | |
| 34 | 5 | Coventry | 06030 | IDP-1 | 534 | 81 | 218 | 235 | E | W | | G | 1 | 5 | | yes | F | yes | |
| 35 | 5 | Coventry | 06040 | IDP-0(d) | 4 | 4 | | | E | W | | G | 1 | 5 | | | | | |
| 36 | 5 | Coventry | 06050 | IDP-1 | 65 | 21 | 10 | 34 | E | W | | G | 1 | | | | F | | |
| 37 | 5 | Coventry | 06060 | IDP-1 | 101 | 58 | 17 | 26 | E | W | | G | 1 | 5 | | yes | F | | |
| 38 | 5 | Coventry | 06070 | IDP-2 | 449 | 141 | 40 | 268 | E | W | | G | 1 | 1 | | | | yes | |
| 39 | 3 | Cranston | 07010 | IDP-2 | 372 | 113 | 20 | 239 | E | W | S | G | 1 | 1 | | | F | yes | |
| 40 | 3 | Cranston | 07020 | IDP-2 | 16 | 9 | 1 | 6 | E | W | S | G | 1 | 5 | | | F | yes | |
| 41 | 3 | Cranston | 07030 | IDP-2 | 14 | 8 | 5 | 1 | E | W | S | G | 1 | 5 | | | F | | |
| 42 | 3 | Cranston | 07040 | IDP-1 | 105 | 54 | 20 | 31 | E | W | S | G | 1 | 5 | | | | | |
| 43 | 3 | Cranston | 07050 | IDP-3 | 135 | 60 | 66 | 9 | E | W | S | G | 1 | 1 | | yes | F | | |
| 44 | 3 | Cranston | 07060 | IDP-0(r) | 8 | | 8 | | E | W | S | G | 1 | 1 | | yes | | | |
| 45 | 3 | Cranston | 07070 | IDP-2 | 217 | 165 | 7 | 45 | E | W | S | G | 1 | 1 | 5 | yes | F | | |
| 46 | 3 | Cranston | 07080 | IDP-2 | 31 | 5 | 24 | 2 | E | W | S | G | 1 | 5 | | | | | |
| 47 | 3 | Cranston | 07090 | IDP-2 | 494 | 240 | 124 | 130 | E | W | S | G | 1 | 1 | 5 | yes | F | | |
| 48 | 3 | Cranston | 07100 | IDP-1 | 13 | | 6 | 7 | E | W | S | G | 1 | 5 | 5 | yes | F | yes | |
| 49 | 3 | Cranston | 07110 | IDP-0(d) | 143 | 143 | | | E | W | S | G | 1 | 1 | | | | yes | |
| 50 | 3 | Cranston | 07120 | IDP-0(r) | 1 | | 1 | | E | W | S | G | 1 | 5 | 5 | | | | |
| 51 | 3 | Cranston | 07130 | IDP-0(r) | 3 | | 3 | | E | W | S | G | 1 | 1 | 5 | | | | |
| 52 | 3 | Cranston | 07140 | IDP-3 | 123 | 52 | | 71 | E | W | S | G | 1 | 5 | | | | | |
| 53 | 1 | Cumberland | 08020 | IDP-2 | 108 | | 28 | 80 | E | W | S | G | 1 | 1 | 5 | yes | F | yes | |
| 54 | 1 | Cumberland | 08021 | IDP-0(d) | 3 | 3 | | | E | W | S | G | 1 | 1 | 5 | yes | | | |
| 55 | 1 | Cumberland | 08030 | IDP-0(d) | 205 | 150 | 55 | | E | W | S | G | 1 | 1 | 5 | yes | F | yes | |
| 56 | 1 | Cumberland | 08031 | IDP-3 | 63 | 48 | | 15 | E | W | S | G | 1 | 1 | 5 | | | | |
| 57 | 1 | Cumberland | 08040 | IDP-2 | 157 | 47 | | 110 | E | W | S | G | 1 | 5 | 5 | | | | |
| 58 | 1 | Cumberland | 08050 | IDP-0(d) | 89 | 89 | | | E | W | S | G | 1 | 1 | | | | | |
| 59 | 1 | Cumberland | 08060 | IDP-0(d) | 25 | 25 | | | E | W | S | G | 1 | 5 | | | | | |
| 60 | 1 | Cumberland | 08061 | IDP-0(d) | 31 | 31 | | | E | W | S | G | 1 | 5 | | yes | | | |
| 61 | 1 | Cumberland | 08070 | IDP-2 | 26 | 6 | | 20 | E | W | | G | 1 | 5 | 5 | yes | F | | |
| 62 | 1 | Cumberland | 08071 | IDP-0(d) | 19 | 19 | | | E | W | | G | 1 | 5 | 5 | yes | | | |
| 63 | 1 | Cumberland | 08072 | IDP-0(d) | 38 | 38 | | | E | W | | G | 1 | 5 | 5 | yes | | | |
| 64 | 1 | Cumberland | 08080 | IDP-0(d) | 8 | 8 | | | E | W | | G | 1 | 5 | | yes | | | |
| 65 | 1 | Cumberland | 08081 | IDP-0(d) | 8 | 8 | | | E | W | | G | 1 | 5 | | yes | | | |
| 66 | 1 | Cumberland | 08082 | IDP-0(d) | 8 | 8 | | | E | W | | G | 1 | 5 | | yes | | | |
| 67 | 1 | Cumberland | 08090 | IDP-3 | 235 | | 115 | 120 | E | W | S | G | 1 | 5 | | yes | | | |
| 68 | 5 | East Greenwich | 09010 | IDP-1 | 29 | 23 | 1 | 5 | E | W | | G | 1 | 1 | | | F | | |
| 69 | 5 | East Greenwich | 09011 | IDP-1 | 15 | 10 | 1 | 4 | E | W | | G | 1 | 1 | | | | | |
| 70 | 5 | East Greenwich | 09020 | IDP-0(d) | 3 | 3 | | | E | W | | G | 1 | 5 | | | | | |
| 71 | 5 | East Greenwich | 09030 | IDP-0(r) | 2 | | 2 | | E | | | G | 1 | 1 | | | | | |
| 72 | 5 | East Greenwich | 09040 | IDP-2 | 136 | 73 | | 63 | E | W | | G | 1 | 5 | | | F | yes | |
| 73 | 5 | East Greenwich | 09050 | IDP-0(d) | 26 | 26 | | | E | W | | G | 1 | 5 | | | | | |

APPENDIX B

| REC NO | DIST NO | CITY | SITE | CLASS | ACRES | | | | UTILITIES | | | | ST HWY | INTST HWY | AIR | RAIL | FLD | SOIL TOPO CNSTR |
|--------|---------|-----------------|-------|----------|-------|-----|-----|-----|-----------|-----|-----|-----|--------|-----------|-----|------|-----|-----------------|
| | | | | | TOT | IND | OTH | VAC | ELEC | WTR | SWR | GAS | | | | | | |
| 74 | 5 | East Greenwich | 09060 | IDP-2 | 70 | 34 | 10 | 26 | E | W | S | G | 1 | 1 | | | F | |
| 75 | 5 | East Greenwich | 09070 | IDP-0(r) | 2 | | 2 | | E | W | S | G | 1 | 5 | | yes | | |
| 76 | 5 | East Greenwich | 09080 | IDP-0(r) | 1 | | 1 | | E | W | S | G | 1 | 5 | | | | |
| 77 | 5 | East Greenwich | 09090 | IDP-2 | 36 | 5 | 22 | 9 | E | W | S | G | 1 | 5 | | yes | F | yes |
| 78 | 5 | East Greenwich | 09110 | IDP-0(d) | 4 | 4 | | | E | W | | | 1 | 5 | | | | |
| 79 | 5 | East Greenwich | 09120 | IDP-0(d) | 84 | 4 | 80 | | E | W | | | 1 | 5 | | | | |
| 80 | 3 | East Providence | 10010 | IDP-0(r) | 11 | | 11 | | E | W | S | | 1 | 5 | | | | |
| 81 | 3 | East Providence | 10020 | IDP-2 | 52 | 28 | 7 | 17 | E | W | S | G | 1 | 5 | | yes | | |
| 82 | 3 | East Providence | 10030 | IDP-3 | 113 | 67 | 26 | 20 | E | W | S | | 1 | 5 | | yes | | |
| 83 | 3 | East Providence | 10040 | IDP-2 | 208 | 186 | 4 | 18 | E | W | S | G | 1 | 5 | | yes | F | |
| 84 | 3 | East Providence | 10050 | IDP-2 | 32 | 21 | 10 | 1 | E | W | S | G | 1 | 5 | | yes | | |
| 85 | 3 | East Providence | 10060 | IDP-2 | 233 | 132 | 68 | 33 | E | W | S | G | 1 | 1 | | | F | yes |
| 86 | 3 | East Providence | 10070 | IDP-3 | 67 | 47 | | 20 | E | W | S | G | 1 | 1 | | yes | | |
| 87 | 3 | East Providence | 10090 | IDP-3 | 159 | 117 | 17 | 25 | E | W | S | G | 1 | 1 | | | | |
| 88 | 3 | East Providence | 10100 | IDP-2 | 51 | 15 | | 36 | E | W | S | G | 1 | 5 | | | F | yes |
| 89 | 3 | East Providence | 10110 | IDP-2 | 749 | 309 | 68 | 372 | E | W | S | G | 1 | 5 | | yes | F | yes |
| 90 | 3 | East Providence | 10120 | IDP-0(d) | 25 | 25 | | | E | W | S | G | 1 | 1 | | | | |
| 91 | 3 | East Providence | 10130 | IDP-0(d) | 32 | 32 | | | E | W | S | G | 1 | 1 | | | | |
| 92 | 3 | East Providence | 10140 | IDP-0(d) | 83 | 83 | | | E | W | S | G | 1 | 1 | | yes | | |
| 93 | 3 | East Providence | 10150 | IDP-0(d) | 13 | 13 | | | E | W | S | G | 1 | 5 | | | | |
| 94 | 6 | Exeter | 11010 | IDP-1 | 282 | 14 | 32 | 236 | E | | | | 1 | 1 | | | F | yes |
| 95 | 2 | Foster | 12020 | IDP-0(r) | 111 | | 22 | 89 | E | | | | 1 | | | | | yes |
| 96 | 2 | Glocester | 13020 | IDP-1 | 183 | 16 | 4 | 163 | E | | | | 5 | | | | F | yes |
| 97 | 2 | Glocester | 13030 | IDP-1 | 2 | 1 | | 1 | E | | | | 5 | | | | | |
| 98 | 6 | Hopkinton | 14010 | IDP-1 | 235 | | 115 | 120 | E | | | | 1 | 1 | | | F | yes |
| 99 | 6 | Hopkinton | 14020 | IDP-1 | 208 | | 56 | 152 | E | | | | 1 | 1 | | | F | yes |
| 100 | 6 | Hopkinton | 14030 | IDP-1 | 186 | | 23 | 163 | E | | | | 1 | 5 | | yes | F | yes |
| 101 | 6 | Hopkinton | 14040 | IDP-1 | 15 | 6 | 1 | 8 | E | | | | 1 | 5 | | | F | |
| 102 | 6 | Hopkinton | 14050 | IDP-1 | 14 | | 2 | 12 | E | | | | | 1 | | | F | yes |
| 103 | 6 | Hopkinton | 14060 | IDP-0(d) | 19 | 19 | | 0 | E | | | | | 1 | | | | |
| 104 | 6 | Hopkinton | 14070 | IDP-1 | 5 | | | 5 | E | | | | | 1 | | | F | yes |
| 105 | 6 | Hopkinton | 14080 | IDP-0(d) | 3 | 3 | | 0 | E | | | | | 1 | | | | |
| 106 | 6 | Hopkinton | 14090 | IDP-1 | 1 | | | 1 | E | | | | | 1 | | | | |
| 107 | 6 | Hopkinton | 14100 | IDP-1 | 2 | | | 2 | E | | | | | 1 | | | F | yes |
| 108 | 6 | Hopkinton | 14110 | IDP-1 | 3 | 1 | | 2 | E | | | | | 1 | | | | |
| 109 | 3 | Johnston | 16010 | IDP-0(r) | 34 | 5 | 11 | 18 | E | W | S | G | 1 | 5 | | | F | |
| 110 | 3 | Johnston | 16020 | IDP-0(r) | 174 | 48 | 66 | 60 | E | W | S | G | 1 | 5 | | | F | |
| 111 | 3 | Johnston | 16030 | IDP-0(r) | 9 | | 6 | 3 | E | W | S | G | 1 | 5 | | | | yes |
| 112 | 3 | Johnston | 16040 | IDP-0(r) | 72 | 12 | 53 | 7 | E | W | S | G | 1 | 5 | | | F | |
| 113 | 3 | Johnston | 16050 | IDP-0(d) | 18 | 18 | | | E | | | | 1 | 1 | | | | |
| 114 | 3 | Johnston | 16060 | IDP-0(d) | 18 | 16 | 2 | | E | W | S | G | 1 | 1 | | | | |
| 115 | 3 | Johnston | 16070 | IDP-0(r) | 16 | | 7 | 9 | E | W | | | 1 | 1 | | | F | yes |
| 116 | 3 | Johnston | 16080 | IDP-1 | 80 | 17 | 35 | 28 | E | W | S | G | 1 | 1 | | | F | yes |
| 117 | 3 | Johnston | 16090 | IDP-0(r) | 15 | | 6 | 9 | E | W | S | G | 1 | 5 | | | F | yes |
| 118 | 3 | Johnston | 16100 | IDP-1 | 5 | 1 | 3 | 1 | E | W | S | G | 1 | 5 | | | F | yes |
| 119 | 3 | Johnston | 16110 | IDP-2 | 22 | 1 | | 21 | E | W | S | G | 1 | 5 | | | F | |
| 120 | 3 | Johnston | 16120 | IDP-1 | 38 | 20 | | 18 | E | W | | | 1 | 5 | | | | |
| 121 | 3 | Johnston | 16130 | IDP-1 | 10 | 6 | | 4 | E | | | | 1 | 5 | | | | |
| 122 | 3 | Johnston | 16140 | IDP-1 | 44 | 28 | 1 | 15 | E | | | | 1 | 5 | | | | yes |
| 123 | 3 | Johnston | 16150 | IDP-1 | 51 | | 3 | 48 | E | | | | 1 | 5 | | | | |
| 124 | 3 | Johnston | 16160 | IDP-1 | 28 | 12 | | 16 | E | W | | | 1 | 5 | | | | |
| 125 | 3 | Johnston | 16170 | IDP-1 | 34 | 8 | | 26 | E | W | | | 1 | 5 | | | | |
| 126 | 3 | Johnston | 16180 | IDP-2 | 52 | | | 52 | E | W | S | G | 1 | 1 | | | F | |
| 127 | 3 | Johnston | 16190 | IDP-0(d) | 3 | 3 | | | E | W | S | G | 1 | 1 | | | | |
| 128 | 1 | Lincoln | 17010 | IDP-1 | 62 | 8 | 12 | 42 | E | W | S | G | 1 | 5 | 5 | yes | F | yes |
| 129 | 1 | Lincoln | 17020 | IDP-0(d) | 11 | 7 | 4 | | E | W | S | G | 1 | 5 | 5 | yes | | |
| 130 | 1 | Lincoln | 17040 | IDP-2 | 250 | 26 | 13 | 211 | E | W | S | G | 1 | 1 | 5 | | | yes |
| 131 | 1 | Lincoln | 17050 | IDP-2 | 35 | | 18 | 17 | E | W | S | G | 1 | 1 | 5 | | | yes |
| 132 | 1 | Lincoln | 17051 | IDP-3 | 174 | 78 | 4 | 92 | E | W | S | G | 1 | 1 | 5 | | | |
| 133 | 1 | Lincoln | 17060 | IDP-0(d) | 522 | 503 | 19 | | E | W | S | G | 1 | 1 | 1 | | | |
| 134 | 1 | Lincoln | 17070 | IDP-2 | 203 | 20 | 44 | 139 | E | W | S | G | 1 | 5 | 10 | | F | |
| 135 | 1 | Lincoln | 17080 | IDP-2 | 149 | 106 | 9 | 34 | E | W | S | G | 1 | 5 | 10 | yes | F | |
| 136 | 8 | Middletown | 19010 | IDP-2 | 373 | 10 | 230 | 133 | E | W | S | G | 1 | | 1 | | | yes |
| 137 | 8 | Middletown | 19020 | IDP-0(d) | 106 | 94 | 12 | | E | W | S | G | 1 | | 5 | | | |
| 138 | 8 | Middletown | 19030 | IDP-3 | 25 | | | 25 | E | W | S | G | 1 | | | | | |
| 139 | 7 | Narragansett | 20010 | IDP-2 | 80 | 20 | 58 | 2 | E | W | S | G | 1 | 1 | | | | yes |
| 140 | 7 | Narragansett | 20011 | IDP-3 | 29 | 26 | | 3 | E | W | S | G | | 1 | | | | |
| 141 | 7 | Narragansett | 20020 | IDP-2 | 22 | 9 | 9 | 4 | E | W | S | | 1 | 5 | | | | |
| 142 | 7 | Narragansett | 20030 | IDP-2 | 16 | 15 | | 1 | E | W | S | G | 1 | 1 | | | | |
| 143 | 7 | Narragansett | 20040 | IDP-0(d) | 1 | 1 | | | E | W | S | G | 1 | 1 | | | | |
| 144 | 8 | Newport | 21010 | IDP-0(r) | 281 | 9 | 270 | 2 | E | W | S | G | 1 | | 5 | yes | | |
| 145 | 8 | Newport | 21020 | IDP-0(d) | 179 | 179 | | | E | W | S | G | 1 | | | yes | | |
| 146 | 8 | Newport | 21030 | IDP-0(d) | 109 | 109 | | | E | W | S | G | 1 | | | | | |

APPENDIX B

| REC NO | DIST NO | CITY | SITE | CLASS | ACRES | | | | UTILITIES | | | | ST HWY | INTST HWY | AIR | RAIL | FLD | SOIL | |
|--------|---------|--------------------|-------|----------|-------|-----|-----|-----|-----------|-----|-----|-----|--------|-----------|-----|------|-----|------|-------|
| | | | | | TOT | IND | OTH | VAC | ELEC | WTR | SWR | GAS | | | | | | TOPO | CNSTR |
| 147 | 7 | North Kingstown | 23010 | IDP-2 | 155 | 36 | 34 | 85 | E | W | | G | 1 | 5 | | yes | | | |
| 148 | 7 | North Kingstown | 23012 | IDP-0(d) | 4 | 4 | | | E | W | | G | | | | yes | | yes | |
| 149 | 7 | North Kingstown | 23040 | IDP-2 | 8 | 6 | | 2 | E | W | | G | 5 | 5 | | yes | | yes | |
| 150 | 7 | North Kingstown | 23050 | IDP-0(d) | 6 | 6 | | | E | W | | G | 1 | | | | | yes | |
| 151 | 7 | North Kingstown | 23060 | IDP-0(d) | 11 | 7 | 4 | | E | W | | G | 1 | | | yes | | | |
| 152 | 7 | North Kingstown | 23070 | IDP-1 | 27 | 6 | 3 | 18 | E | W | | G | 1 | | | | | yes | |
| 153 | 7 | North Kingstown | 23080 | IDP-0(r) | 182 | 8 | | 174 | E | W | | | 1 | | | yes | | yes | |
| 154 | 7 | North Kingstown | 23090 | IDP-0(r) | 200 | | 200 | | E | W | | | 5 | | | yes | | yes | |
| 155 | 7 | North Kingstown | 23100 | IDP-0(d) | 5 | 4 | 1 | | E | W | | | 1 | | | | | | |
| 156 | 7 | North Kingstown | 23110 | IDP-0(d) | 2 | 2 | | | E | W | | | 1 | | | | | | |
| 157 | 7 | North Kingstown | 23130 | IDP-0(r) | 9 | 3 | 6 | | E | W | | G | 1 | | | | | | |
| 158 | 7 | North Kingstown | 23140 | IDP-2 | 367 | 176 | 6 | 185 | E | W | | G | 1 | | | yes | | yes | |
| 159 | 7 | North Kingstown | 23150 | IDP-1 | 6 | 4 | 1 | 1 | E | W | | | 1 | | | | | yes | |
| 160 | 7 | North Kingstown | 23160 | IDP-0(r) | 5 | 2 | 2 | 1 | E | W | | G | 1 | | | | | F | |
| 161 | 7 | North Kingstown | 23161 | IDP-0(d) | 2 | 2 | | | E | W | | G | 1 | | | | | F | |
| 162 | 7 | North Kingstown/QP | 40010 | IDP-2 | 140 | 80 | | 60 | E | W | S | G | 1 | 5 | 1 | yes | | F | |
| 163 | 7 | North Kingstown/QP | 40020 | IDP-3 | 72 | 10 | | 62 | E | W | S | G | 1 | 5 | 1 | yes | | | |
| 164 | 7 | North Kingstown/QP | 40030 | IDP-3 | 85 | 24 | | 61 | E | W | S | G | 1 | 1 | 5 | yes | | | |
| 165 | 7 | North Kingstown/QP | 40040 | IDP-2 | 71 | 55 | | 16 | E | W | S | | 1 | 5 | 1 | yes | | F | |
| 166 | 7 | North Kingstown/QP | 40050 | IDP-2 | 120 | 25 | 45 | 50 | E | W | | | 1 | 5 | 1 | yes | | yes | |
| 167 | 7 | North Kingstown/QP | 40060 | IDP-3 | 72 | 58 | | 14 | E | W | S | | 1 | 5 | 1 | | | | |
| 168 | 7 | North Kingstown/QP | 40070 | IDP-3 | 70 | 7 | | 63 | E | W | S | | 1 | 5 | 1 | yes | | | |
| 169 | 7 | North Kingstown/QP | 40080 | IDP-2 | 45 | | 15 | 30 | E | W | | | 1 | 5 | 1 | yes | | F | |
| 170 | 7 | North Kingstown/QP | 40090 | IDP-3 | 170 | 140 | | 30 | E | W | S | G | 1 | 5 | 1 | yes | | yes | |
| 171 | 7 | North Kingstown/QP | 40100 | IDP-2 | 70 | | | 70 | E | W | S | G | 1 | 1 | 5 | yes | | | |
| 172 | 7 | North Kingstown/QP | 40110 | IDP-3 | 126 | | 32 | 94 | E | W | S | G | 1 | 5 | 1 | yes | | | |
| 173 | 7 | North Kingstown/QP | 40120 | IDP-3 | 250 | 40 | 7 | 203 | E | W | S | G | 1 | 5 | 1 | yes | | | |
| 174 | 7 | North Kingstown/QP | 40130 | IDP-2 | 229 | 6 | 6 | 217 | E | W | | | 1 | 5 | 1 | yes | | F | |
| 175 | 7 | North Kingstown/QP | 40140 | IDP-2 | 35 | 10 | 15 | 10 | E | W | S | G | 1 | 5 | 1 | yes | | F | |
| 176 | 3 | North Providence | 24010 | IDP-0(d) | 24 | 10 | 14 | | E | W | S | G | 1 | | | | | | |
| 177 | 3 | North Providence | 24040 | IDP-1 | 23 | 10 | 10 | 3 | E | W | S | G | 1 | | | | F | yes | |
| 178 | 3 | North Providence | 24060 | IDP-3 | 2 | | | 2 | E | W | S | | 1 | 5 | | | | | |
| 179 | 3 | North Providence | 24070 | IDP-2 | 1 | 1 | | 1 | E | W | S | | 1 | 5 | | | | | |
| 180 | 3 | North Providence | 24080 | IDP-1 | 24 | 4 | 8 | 12 | E | W | S | G | 1 | 5 | | | | yes | |
| 181 | 3 | North Providence | 24090 | IDP-0(r) | 2 | | 2 | | E | W | S | G | 1 | 5 | | | | | |
| 182 | 3 | North Providence | 24100 | IDP-0(d) | 2 | 2 | | | E | W | S | G | 1 | 5 | | | | | |
| 183 | 3 | North Providence | 24110 | IDP-0(d) | 2 | 2 | | | E | W | S | G | 1 | 5 | | | | | |
| 184 | 3 | North Providence | 24111 | IDP-0(d) | 1 | 1 | | | E | W | S | G | 1 | 5 | | | | | |
| 185 | 1 | North Smithfield | 25010 | IDP-0(d) | 34 | 34 | | | E | | | G | 1 | | | | | | |
| 186 | 1 | North Smithfield | 25020 | IDP-1 | 10 | | | 10 | E | W | | G | | 5 | | yes | F | yes | |
| 187 | 1 | North Smithfield | 25030 | IDP-3 | 525 | 211 | 11 | 303 | E | W | S | G | 1 | | | yes | | | |
| 188 | 1 | North Smithfield | 25050 | IDP-2 | 24 | | | 24 | E | | S | G | 1 | 5 | | | | | |
| 189 | 1 | Pawtucket | 26010 | IDP-1 | 249 | 129 | 106 | 14 | E | W | S | G | 1 | 1 | 10 | yes | F | yes | |
| 190 | 1 | Pawtucket | 26020 | IDP-2 | 108 | 69 | 37 | 2 | E | W | S | G | 1 | 1 | 10 | yes | | | |
| 191 | 1 | Pawtucket | 26030 | IDP-1 | 34 | 13 | 17 | 4 | E | W | S | G | 1 | 1 | 10 | | | yes | |
| 192 | 1 | Pawtucket | 26040 | IDP-0(r) | 28 | 23 | | 5 | E | W | S | G | 1 | 1 | 10 | | | | |
| 193 | 1 | Pawtucket | 26050 | IDP-2 | 4 | 3 | | 1 | E | W | S | G | 1 | 1 | 10 | | | | |
| 194 | 1 | Pawtucket | 26060 | IDP-2 | 4 | 1 | 2 | 1 | E | W | S | G | 1 | 5 | 10 | | | | |
| 195 | 1 | Pawtucket | 26070 | IDP-0(d) | 2 | 2 | | | E | W | | G | 1 | 5 | 10 | | | | |
| 196 | 1 | Pawtucket | 26080 | IDP-0(d) | 1 | 1 | | | E | W | S | G | 1 | 5 | 10 | | | | |
| 197 | 1 | Pawtucket | 26090 | IDP-0(d) | 5 | 5 | | | E | W | S | | 1 | 5 | 10 | | | | |
| 198 | 1 | Pawtucket | 26100 | IDP-0(d) | 28 | 28 | | | E | W | S | G | 1 | 5 | 10 | | | | |
| 199 | 1 | Pawtucket | 26110 | IDP-2 | 247 | 164 | 74 | 9 | E | W | S | G | 1 | 1 | 10 | yes | | | |
| 200 | 1 | Pawtucket | 26120 | IDP-2 | 23 | 13 | 2 | 8 | E | W | S | G | 1 | 1 | 10 | | | | |
| 201 | 1 | Pawtucket | 26130 | IDP-0(d) | 57 | 52 | 5 | | E | W | S | G | 1 | 1 | 10 | | | yes | |
| 202 | 1 | Pawtucket | 26140 | IDP-2 | 8 | | 7 | 1 | E | W | S | G | 1 | 1 | 10 | | | | |
| 203 | 1 | Pawtucket | 26150 | IDP-2 | 64 | 41 | 20 | 3 | E | W | S | G | 1 | 5 | 10 | yes | | | |
| 204 | 8 | Portsmouth | 27010 | IDP-2 | 464 | 32 | 182 | 250 | E | W | | G | 1 | | | yes | | | |
| 205 | 8 | Portsmouth | 27020 | IDP-0(d) | 193 | 193 | | | E | W | | G | 1 | | 5 | | | | |
| 206 | 8 | Portsmouth | 27030 | IDP-0(r) | 34 | | 16 | 18 | E | W | | G | 1 | | 2 | | | | |
| 207 | 8 | Portsmouth | 27050 | IDP-0(r) | 91 | 16 | 16 | 59 | E | W | | G | 1 | | 5 | | | | |
| 208 | 8 | Portsmouth | 27060 | IDP-2 | 43 | 1 | 11 | 31 | E | W | | G | 1 | | 5 | | | | |
| 209 | 8 | Portsmouth | 27080 | IDP-2 | 49 | 27 | | 22 | E | W | | G | 1 | | 5 | | | | |
| 210 | 8 | Portsmouth | 27090 | IDP-0(r) | 41 | | 4 | 37 | E | W | | G | 1 | | 3 | | | | |
| 211 | 8 | Portsmouth | 27100 | IDP-0(r) | 11 | | 2 | 9 | E | W | | G | 1 | | 5 | yes | | | |
| 212 | 8 | Portsmouth | 27110 | IDP-0(r) | 39 | | 6 | 33 | E | W | | G | 1 | 5 | | | | | |
| 213 | 8 | Portsmouth | 27120 | IDP-0(d) | 98 | 98 | | | E | W | S | G | 1 | | | | | | |
| 214 | 3 | Providence | 28010 | IDP-1 | 44 | 29 | 2 | 13 | E | W | S | G | 1 | 5 | | | F | yes | |
| 215 | 3 | Providence | 28011 | IDP-0(d) | 12 | 12 | | | E | W | S | G | 1 | 5 | | | | | |
| 216 | 3 | Providence | 28012 | IDP-0(d) | 7 | 7 | | | E | W | S | G | 1 | 1 | | | | | |
| 217 | 3 | Providence | 28020 | IDP-1 | 42 | 5 | 27 | 10 | E | W | S | G | 1 | 1 | | | F | yes | |
| 218 | 3 | Providence | 28030 | IDP-0(r) | 420 | 169 | 189 | 62 | E | W | S | G | 1 | 1 | | yes | | | |
| 219 | 3 | Providence | 28060 | IDP-0(d) | 9 | 8 | 1 | | E | W | S | G | 1 | 5 | | | | | |

APPENDIX B

| REC NO | DIST | CITY | SITE | CLASS | ACRES | | | UTILITIES | | | | ST | INTST | AIR | RAIL | FLD | SOIL | TOPO |
|--------|------|-----------------|-------|----------|-------|-----|-----|-----------|------|-----|-----|-----|-------|-----|------|-----|------|-------|
| | | | | | TOT | IND | OTH | VAC | ELEC | WTR | SWR | GAS | HWY | | | | HWY | CNSTR |
| 220 | 3 | Providence | 28070 | IDP-1 | 10 | 4 | | 6 | E | W | S | G | 1 | 5 | | | F | yes |
| 221 | 3 | Providence | 28090 | IDP-2 | 76 | 47 | 7 | 22 | E | W | S | G | 1 | 1 | | | F | |
| 222 | 3 | Providence | 28100 | IDP-2 | 6 | 4 | | 2 | E | W | S | G | 1 | 1 | | | F | yes |
| 223 | 3 | Providence | 28130 | IDP-1 | 335 | 196 | 81 | 58 | E | W | S | G | 1 | 1 | | yes | | yes |
| 224 | 3 | Providence | 28210 | IDP-3 | 88 | 38 | 40 | 10 | E | W | S | G | 1 | 1 | | yes | | |
| 225 | 3 | Providence | 28230 | IDP-0(d) | 58 | 33 | 25 | | E | W | S | G | 1 | 1 | | | | |
| 226 | 3 | Providence | 28240 | IDP-0(d) | 10 | 8 | 2 | | E | W | S | G | 1 | 1 | | | | |
| 227 | 3 | Providence | 28280 | IDP-2 | 148 | 80 | 29 | 39 | E | W | S | G | 1 | 5 | | yes | | |
| 228 | 3 | Providence | 28281 | IDP-0(d) | 2 | 2 | | | E | W | S | G | 1 | 1 | | yes | | yes |
| 229 | 3 | Providence | 28290 | IDP-3 | 6 | | | 6 | E | W | S | G | 1 | 1 | | yes | | |
| 230 | 3 | Providence | 28291 | IDP-3 | 2 | | | 2 | E | W | S | G | 1 | 1 | | yes | | |
| 231 | 3 | Providence | 28292 | IDP-0(d) | 7 | 7 | | | E | W | S | G | 1 | 1 | | yes | | |
| 232 | 3 | Providence | 28293 | IDP-0(d) | 36 | 4 | 32 | | E | W | S | G | 1 | 1 | | yes | | |
| 233 | 3 | Providence | 28300 | IDP-0(d) | 50 | 30 | 20 | | E | W | S | G | 1 | 1 | | | | |
| 234 | 3 | Providence | 28320 | IDP-0(d) | 6 | 3 | 3 | | E | W | S | G | 1 | 1 | | | | |
| 235 | 3 | Providence | 28330 | IDP-2 | 752 | 497 | 170 | 85 | E | W | S | G | 1 | 1 | | yes | F | |
| 236 | 3 | Providence | 28331 | IDP-0(d) | 185 | 185 | | | E | W | S | G | 1 | 1 | | yes | F | |
| 237 | 3 | Providence | 28332 | IDP-0(d) | 51 | 51 | | | E | W | S | G | 1 | 1 | | yes | F | |
| 238 | 3 | Providence | 28333 | IDP-0(d) | 45 | 45 | | | E | W | S | G | 1 | 1 | | yes | | |
| 239 | 3 | Providence | 28334 | IDP-0(d) | 6 | 6 | | | E | W | S | G | 1 | 1 | | | | |
| 240 | 3 | Providence | 28335 | IDP-0(d) | 13 | 13 | | | E | W | S | G | 1 | 1 | | yes | | |
| 241 | 6 | Richmond | 29010 | IDP-1 | 166 | 75 | | 91 | E | | | | 1 | 1 | | | F | yes |
| 242 | 6 | Richmond | 29011 | IDP-1 | 116 | 66 | | 50 | E | | | | 1 | 1 | | | | |
| 243 | 6 | Richmond | 29012 | IDP-0(d) | 20 | 20 | | | E | | | | 1 | 1 | | | | |
| 244 | 6 | Richmond | 29020 | IDP-1 | 150 | | 45 | 105 | E | | | | 1 | 5 | | | F | |
| 245 | 6 | Richmond | 29040 | IDP-0(d) | 2 | 1 | 1 | | E | | | | 1 | | | yes | | |
| 246 | 6 | Richmond | 29050 | IDP-1 | 15 | 8 | 3 | 4 | E | | | | | 5 | | yes | | |
| 247 | 6 | Richmond | 29060 | IDP-1 | 51 | 21 | | 30 | E | | | | 1 | | | yes | F | yes |
| 248 | 6 | Richmond | 29061 | IDP-1 | 32 | 12 | | 20 | E | | | | 1 | | | yes | F | yes |
| 249 | 6 | Richmond | 29070 | IDP-1 | 49 | 10 | | 39 | E | | | | 1 | 1 | | | F | |
| 250 | 6 | Richmond | 29080 | IDP-0(d) | 26 | 26 | | | E | | | | 1 | | | | | |
| 251 | 2 | Scituate | 30010 | IDP-0(d) | 6 | 6 | | | E | | | | 1 | | | | F | |
| 252 | 2 | Scituate | 30020 | IDP-0(d) | 19 | 19 | | | E | W | | G | 1 | | | | | |
| 253 | 2 | Scituate | 30030 | IDP-1 | 3 | 2 | | 1 | E | | | | 1 | | | | | |
| 254 | 1 | Smithfield | 31020 | IDP-2 | 106 | 51 | 16 | 39 | E | W | | G | 1 | 5 | | | | yes |
| 255 | 1 | Smithfield | 31040 | IDP-2 | 2410 | 155 | 38 | 2217 | E | W | S | G | 1 | 1 | | | | yes |
| 256 | 1 | Smithfield | 31041 | IDP-2 | 33 | 4 | | 29 | E | W | S | G | 1 | 1 | | | | yes |
| 257 | 1 | Smithfield | 31060 | IDP-0(d) | 23 | 23 | | | E | W | S | G | 1 | 5 | | | | |
| 258 | 1 | Smithfield | 31090 | IDP-3 | 52 | 25 | 13 | 15 | E | W | S | G | 1 | 5 | | | | |
| 259 | 1 | Smithfield | 31100 | IDP-3 | 34 | 13 | 12 | 8 | E | W | S | G | 1 | 5 | | | | |
| 260 | 1 | Smithfield | 31130 | IDP-3 | 60 | 35 | | 25 | E | W | S | G | 1 | 1 | | | | |
| 261 | 7 | South Kingstown | 32010 | IDP-1 | 144 | 49 | 35 | 60 | E | | | | 1 | | | yes | | yes |
| 262 | 7 | South Kingstown | 32020 | IDP-0(d) | 10 | 3 | 7 | | E | W | S | G | 1 | | | | | |
| 263 | 7 | South Kingstown | 32030 | IDP-1 | 80 | 55 | | 25 | E | W | | G | 1 | | | | | yes |
| 264 | 7 | South Kingstown | 32040 | IDP-0(d) | 19 | 16 | 3 | | E | W | S | G | 1 | | | yes | | |
| 265 | 7 | South Kingstown | 32050 | IDP-0(d) | 5 | 3 | 2 | | E | W | S | G | 1 | | | | | |
| 266 | 8 | Tiverton | 33010 | IDP-2 | 24 | 10 | 4 | 10 | E | W | | | 1 | | | yes | F | |
| 267 | 8 | Tiverton | 33020 | IDP-2 | 48 | 24 | 15 | 9 | E | W | | G | 1 | | | | | yes |
| 268 | 8 | Tiverton | 33030 | IDP-2 | 626 | | 62 | 564 | E | W | | | 1 | | | | | yes |
| 269 | 8 | Tiverton | 33040 | IDP-2 | 1282 | 48 | 88 | 1146 | E | W | | G | 1 | | | | | yes |
| 270 | 4 | Warren | 34010 | IDP-1 | 36 | 19 | | 17 | E | W | S | G | 1 | 5 | | | F | |
| 271 | 4 | Warren | 34020 | IDP-2 | 52 | 10 | 8 | 34 | E | W | | G | 1 | 5 | | | F | |
| 272 | 4 | Warren | 34030 | IDP-0(d) | 6 | 6 | | | E | W | | G | 1 | 5 | | | | |
| 273 | 4 | Warren | 34040 | IDP-1 | 68 | 20 | 36 | 12 | E | W | S | G | 1 | 5 | | yes | F | yes |
| 274 | 4 | Warren | 34050 | IDP-0(d) | 8 | 8 | | | E | W | S | G | 1 | 5 | | | | |
| 275 | 4 | Warren | 34060 | IDP-2 | 3 | 2 | | 1 | E | W | S | G | 1 | 5 | | | | |
| 276 | 4 | Warren | 34070 | IDP-0(d) | 2 | 2 | | | E | W | | G | 1 | 5 | | | | |
| 277 | 4 | Warren | 34080 | IDP-3 | 34 | 22 | | 12 | E | W | S | G | 1 | 5 | | | | |
| 278 | 3 | Warwick | 35010 | IDP-1 | 87 | 54 | 12 | 21 | E | W | S | G | 1 | 5 | 5 | | F | yes |
| 279 | 3 | Warwick | 35020 | IDP-1 | 24 | 5 | 3 | 16 | E | W | S | G | 1 | 5 | 5 | | F | yes |
| 280 | 3 | Warwick | 35030 | IDP-2 | 10 | 4 | 2 | 4 | E | W | S | G | 1 | 5 | 5 | | | |
| 281 | 3 | Warwick | 35040 | IDP-1 | 160 | 107 | | 53 | E | W | S | G | 1 | 1 | 5 | yes | F | yes |
| 282 | 3 | Warwick | 35050 | IDP-2 | 86 | 67 | 9 | 10 | E | W | S | G | 1 | 1 | 1 | | | yes |
| 283 | 3 | Warwick | 35051 | IDP-3 | 87 | 10 | | 77 | E | W | S | G | 1 | 1 | 1 | | | |
| 284 | 3 | Warwick | 35060 | IDP-1 | 1040 | 83 | 838 | 119 | E | W | S | G | 1 | 1 | 1 | | | yes |
| 285 | 3 | Warwick | 35070 | IDP-1 | 631 | 334 | 22 | 275 | E | W | S | G | 1 | 1 | 1 | yes | F | yes |
| 286 | 3 | Warwick | 35072 | IDP-0(d) | 7 | 7 | | | | | | | 1 | 1 | 1 | yes | | |
| 287 | 3 | Warwick | 35080 | IDP-1 | 107 | 28 | 25 | 54 | E | W | S | G | 1 | 1 | 5 | yes | | yes |
| 288 | 3 | Warwick | 35090 | IDP-1 | 48 | 2 | 37 | 9 | E | W | S | G | 1 | 1 | 1 | yes | F | |
| 289 | 3 | Warwick | 35100 | IDP-0(d) | 8 | 8 | | | E | W | | G | 1 | 1 | 1 | yes | | |
| 290 | 3 | Warwick | 35130 | IDP-1 | 44 | 2 | 32 | 10 | E | W | | G | 1 | 1 | | | | yes |
| 291 | 3 | Warwick | 35140 | IDP-1 | 59 | 50 | 3 | 6 | E | W | | G | 1 | 1 | 5 | | F | |
| 292 | 3 | Warwick | 35150 | IDP-1 | 17 | 15 | | 2 | E | W | | G | 1 | 5 | 5 | yes | F | |

APPENDIX B

| REC NO | DIST NO | CITY | SITE | CLASS | ACRES | | | UTILITIES | | | | ST | INTST | AIR | RAIL | FLD | SOIL TOPO CNSTR | |
|-------------------------------|---------|----------------|-------|----------|---------|--------|--------|-----------|------|-----|-----|-----|-------|-----|------|-----|-----------------|-----|
| | | | | | TOT | IND | OTH | VAC | ELEC | WTR | SWR | GAS | HWY | | | | | HWY |
| 293 | 3 | Warwick | 35160 | IDP-2 | 12 | 7 | 4 | 1 | E | W | | G | 1 | 5 | 5 | | | |
| 294 | 5 | West Greenwich | 37010 | IDP-0(d) | 114 | 69 | 45 | | E | | | | | | | | | |
| 295 | 5 | West Greenwich | 37020 | IDP-3 | 207 | 157 | 5 | 45 | E | W | S | | 1 | 5 | | | | |
| 296 | 5 | West Greenwich | 37021 | IDP-1 | 29 | 20 | | 9 | E | W | | | 1 | 5 | | | | |
| 297 | 5 | West Greenwich | 37022 | IDP-0(d) | 33 | 33 | | | E | W | | | 1 | 5 | | | | |
| 298 | 5 | West Greenwich | 37030 | IDP-0(d) | 18 | 18 | | | E | | | | 5 | 5 | | | | |
| 299 | 5 | West Greenwich | 37040 | IDP-1 | 163 | 101 | | 62 | E | | | | 5 | 5 | | | | |
| 300 | 5 | West Greenwich | 37050 | IDP-1 | 205 | | | 205 | E | | | | 5 | 5 | | | yes | |
| 301 | 5 | West Greenwich | 37060 | IDP-1 | 89 | | | 89 | E | | | | 1 | 1 | | | | |
| 302 | 5 | West Greenwich | 37070 | IDP-0(d) | 7 | 7 | | | E | | | | 1 | 1 | | | | |
| 303 | 5 | West Greenwich | 37080 | IDP-2 | 18 | | | 18 | E | | | | 1 | 1 | | | | |
| 304 | 5 | West Warwick | 38010 | IDP-1 | 24 | 10 | 6 | 8 | E | W | S | G | 1 | 5 | | yes | F | |
| 305 | 5 | West Warwick | 38020 | IDP-2 | 175 | 20 | 101 | 54 | E | W | S | G | 1 | 5 | 5 | yes | yes | |
| 306 | 5 | West Warwick | 38030 | IDP-1 | 47 | 7 | 25 | 15 | E | W | S | G | 1 | 1 | 5 | yes | F | |
| 307 | 5 | West Warwick | 38040 | IDP-0(d) | 8 | 2 | 6 | | E | W | S | | 1 | 5 | 5 | | | |
| 308 | 5 | West Warwick | 38050 | IDP-2 | 9 | 4 | 1 | 4 | E | W | S | G | 1 | 5 | | | F | |
| 309 | 5 | West Warwick | 38060 | IDP-1 | 28 | 20 | 7 | 1 | E | W | S | G | 1 | 5 | | yes | | |
| 310 | 5 | West Warwick | 38070 | IDP-1 | 22 | 12 | 6 | 4 | E | W | S | G | 1 | 5 | | | F | |
| 311 | 5 | West Warwick | 38080 | IDP-2 | 59 | 17 | 22 | 20 | E | W | S | G | 1 | 5 | | | yes | |
| 312 | 5 | West Warwick | 38090 | IDP-2 | 271 | 88 | 31 | 152 | E | W | S | G | 1 | 1 | | | F | |
| 313 | 6 | Westerly | 36010 | IDP-2 | 295 | 127 | 134 | 34 | E | W | S | G | 1 | 5 | 5 | yes | F | |
| 314 | 6 | Westerly | 36020 | IDP-2 | 22 | 3 | | 19 | E | W | S | G | 1 | 5 | 5 | yes | yes | |
| 315 | 6 | Westerly | 36030 | IDP-2 | 211 | 14 | 57 | 140 | E | W | S | G | 1 | 5 | 5 | yes | yes | |
| 316 | 6 | Westerly | 36040 | IDP-0(r) | 16 | | 8 | 8 | E | W | | G | 5 | | | | F | |
| 317 | 6 | Westerly | 36050 | IDP-2 | 6 | | 2 | 4 | E | W | | G | 1 | 5 | 5 | | | |
| 318 | 6 | Westerly | 36060 | IDP-0(d) | 12 | 8 | 4 | | E | W | S | G | 1 | 5 | 5 | | | |
| 319 | 6 | Westerly | 36070 | IDP-2 | 405 | 40 | 251 | 114 | E | W | | G | 1 | | 1 | | yes | |
| 320 | 6 | Westerly | 36080 | IDP-2 | 562 | 42 | 7 | 513 | E | W | | G | 1 | | | yes | F | |
| 321 | 6 | Westerly | 36090 | IDP-1 | 77 | | 29 | 48 | E | | | G | 1 | | | yes | | |
| 322 | 6 | Westerly | 36100 | IDP-3 | 65 | | 34 | 32 | E | W | S | G | 1 | | | yes | | |
| 323 | 1 | Woonsocket | 39010 | IDP-2 | 22 | 10 | | 12 | E | W | S | G | 1 | | | | yes | |
| 324 | 1 | Woonsocket | 39020 | IDP-2 | 42 | 39 | | 3 | E | W | S | G | 1 | | | yes | | |
| 325 | 1 | Woonsocket | 39030 | IDP-0(d) | 10 | 10 | | | E | W | S | G | 1 | | | | | |
| 326 | 1 | Woonsocket | 39040 | IDP-2 | 34 | 26 | | 8 | E | W | S | G | 1 | | | yes | | |
| 327 | 1 | Woonsocket | 39050 | IDP-2 | 45 | 20 | | 25 | E | W | S | G | 1 | | | yes | yes | |
| 328 | 1 | Woonsocket | 39060 | IDP-1 | 23 | 15 | 4 | 4 | E | W | S | G | 1 | | | | F | |
| 329 | 1 | Woonsocket | 39070 | IDP-1 | 10 | 5 | | 5 | E | W | S | G | 1 | | | yes | F | |
| 330 | 1 | Woonsocket | 39080 | IDP-0(d) | 12 | 12 | | | E | W | S | G | 1 | | | | | |
| 331 | 1 | Woonsocket | 39081 | IDP-2 | 4 | 1 | | 3 | E | W | S | G | 1 | | | | | |
| 332 | 1 | Woonsocket | 39090 | IDP-2 | 130 | 39 | | 91 | E | W | S | G | 1 | 5 | | yes | yes | |
| 333 | 1 | Woonsocket | 39100 | IDP-3 | 39 | 21 | | 18 | E | W | S | G | 1 | | | | | |
| 334 | 1 | Woonsocket | 39110 | IDP-2 | 9 | 4 | 2 | 3 | E | W | S | G | 1 | 5 | | | | |
| 335 | 1 | Woonsocket | 39120 | IDP-2 | 46 | 21 | 5 | 20 | E | W | S | G | 1 | | | | | |
| 336 | 1 | Woonsocket | 39130 | IDP-0(d) | 242 | 242 | | | E | W | S | G | 1 | | | | | |
| Totals | | | | | 32455 | 11116 | 6113 | 15224 | | | | | | | | | | |
| Percent of total acres | | | | | 100.00% | 34.25% | 18.84% | 46.91% | | | | | | | | | | |

APPENDIX C: CERCLIS INDUSTRIAL SITE INVENTORY

This appendix lists industrial sites in Rhode Island that are on the U.S. Environmental Protection Agency's National Priority List (NPL, designated Superfund sites) or in the Comprehensive Environmental Recovery, Compensation, and Liability Information System (CERCLIS, possible Superfund sites pending further investigation). Collectively, for this plan, they are termed "Cerclis Industrial Sites." They range in size from 4 acres to 1,282 acres. Each site contains one or more parcels. The descriptors are the same as in the Industrial Site Inventory (which includes these sites) in Appendix B.

While CERCLIS status may be considered an environmental constraint, such status should not be considered permanent. The CERCLIS and NPL listings are continually being revised to reflect progress in site investigations and cleanup of contaminated sites. Over the years several sites have been removed from the "active list." However, sites with vacant acreage that have CERCLIS status are not truly construction-ready — even if they have the highest Industrial Development Potential (IDP) rating — because the possibility is recognized of contamination of the area from previous use, along with the attendant liabilities.

Statewide Planning is indebted to the R.I. Department of Environmental Management and John Stachelhaus of the R.I. Geographic Information System staff for providing the current CERCLIS and NPL listings, which were incorporated into Substate Growth Area maps by Everett Carvalho of the Economic Development Planning Section.

This list is current to December, 1999.

**APPENDIX D:
"INDUSTRIAL SITE SHEETS" FOR SITE INVENTORY**

Information on industrial site size, occupancy, utilities service, and transportation access was derived from individual Industrial Site Sheets. These forms were developed by Statewide Planning Program staff and completed with the assistance of local planners. The staff then assembled the statewide Industrial Site Inventory by transferring this information onto a spreadsheet (see Appendix B), and onto the Substate Growth Area maps.

As an example, this appendix features four site sheets (on two pages) from the Town of Westerly. The key to the descriptors follows.

| | |
|----------------------------|--|
| CITY: | Community represented, city or town. |
| STATEWIDE SITE NO.: | Number to the left of the decimal point indicates the community number (Westerly is #36 out of 39); number to the right is the site number within the community (010 is Site No. 1). |
| SITE NO.: | Westerly has 10 industrial sites. Site No. 1 is the first of those 10, Site No. 2 the second, etc. |
| CLASSIFICATION #: | Industrial Development Potential. See page 4.3 for an explanation. |
| TOTAL ACRES: | Total size, in acres, of the site. |
| INDUSTRIAL ACRES: | Acres in actual industrial use. Blanks equal 0 acres. |
| OTHER ACRES: | Acres in non-industrial use, e.g., commercial or residential. Blanks equal 0 acres. |
| VACANT ACRES: | Undeveloped acres within the site. Blanks equal 0 acres (the site is fully developed). |
| UTILITIES: | Letters corresponding to the first letter of the utility (E for electricity, W for public water, etc.) denote the presence of service. If a blank appears, that utility is not available. |
| TRANSPORTATION: | Numbers indicate the mileage to the nearest state highway, interstate highway, or airport. Where blanks appear under state or interstate highway, the site is more than 5 miles away; blanks under airport indicate the site is more than 10 miles away. |
| DESCRIPTION: | Self-explanatory. Here the site's attractions and shortcomings are briefly summarized. Under this category, the adequacy as well as the availability of utility services can be assessed, along with physiographic or environmental constraints that can pose problems for developers. |
| NO. & LOCATION: | Address or approximate location. |

INDUSTRIAL SITE SHEET 96

CITY: Westerly

STATEWIDE SITE NO: 36.010

SITE NO: 1

CLASSIFICATION#: IDP-2

SIZE:

TOTAL ACRES:
295

INDUSTRIAL ACRES:
127

OTHER ACRES:
134

VACANT ACRES:
34

UTILITIES:

ELECTRICITY:
E

WATER:
W

SEWER:
S

GAS:
G

TRANSPORTATION:

STATE HIGHWAY:
1

INTERSTATE HIGHWAY:
5

AIRPORT:
5

RAIL ON SITE:
yes

DESCRIPTION:

Vacant land on the western side lies within flood hazard areas along the Pawcatuck River. Several small wetland areas also occupy portions of the site's vacant land. Near the center of the site and along the road a strip of vacant land appears to be suitable for small scale development. Vacant land in the northeastern portion of the site is rocky but could be used given adequate preparation.

NO. & LOCATION: Rt78 at Connecticut state line

INDUSTRIAL SITE SHEET 96

CITY: Westerly

STATEWIDE SITE NO: 36.020

SITE NO: 2

CLASSIFICATION#: IDP-2

SIZE:

TOTAL ACRES:
22

INDUSTRIAL ACRES:
3

OTHER ACRES:

VACANT ACRES:
19

UTILITIES:

ELECTRICITY:
E

WATER:
W

SEWER:
S

GAS:
G

TRANSPORTATION:

STATE HIGHWAY:
1

INTERSTATE HIGHWAY:
5

AIRPORT:
5

RAIL ON SITE:
yes

DESCRIPTION:

Adjoins state highway 91 and the Conrail mainline tracks and thus has good access to transportation facilities. Development of the vacant land will principally be limited by soil and topographic conditions which are rocky with considerable outcrops.

NO. & LOCATION: N.E. intersection of Rts 91 & 3

INDUSTRIAL SITE SHEET 96

CITY: Westerly

STATEWIDE SITE NO: 36.030

SITE NO: 3

CLASSIFICATION#: IDP-2

SIZE:

TOTAL ACRES:
211

INDUSTRIAL ACRES:
14

OTHER ACRES:
57

VACANT ACRES:
140

UTILITIES:

ELECTRICITY:
E

WATER:
W

SEWER:
S

GAS:
G

TRANSPORTATION:

STATE HIGHWAY:
1

INTERSTATE HIGHWAY:
5

AIRPORT:
5

RAIL ON SITE:
yes

DESCRIPTION:

Adjoins state highway 91 and the Conrail mainline tracks and thus has good access to transportation facilities. Development of the vacant land will principally be limited by soil and topographic conditions which are rocky with considerable outcrops. Rocky land also poses a constraint in most of this site as does the presence of several wetlands.

NO. & LOCATION: East of Site #2

INDUSTRIAL SITE SHEET 96

CITY: Westerly

STATEWIDE SITE NO: 36.040

SITE NO: 4

CLASSIFICATION#: IDP-0(r)

SIZE:

TOTAL ACRES:
16

INDUSTRIAL ACRES:

OTHER ACRES:
8

VACANT ACRES:
8

UTILITIES:

ELECTRICITY:
E

WATER:
W

SEWER:

GAS:
G

TRANSPORTATION:

STATE HIGHWAY:
5

INTERSTATE HIGHWAY:

AIRPORT:

RAIL ON SITE:
no

DESCRIPTION:

Remotely located in the northwest section of the town. Half of the site is occupied by non-industrial uses and most of the vacant land has flood hazard and wetland problems. Public sewer service is not available to the site. In light of these factors consideration should be given to re-zoning this site for other uses.

NO. & LOCATION: Potter Hill

APPENDIX E

| POPULATION IN SUBSTATE GROWTH AREAS (INDUSTRIAL LAND USE PLAN) | | | | | | | | | | |
|---|---------|---------|---------|-----------|---------|-----------|-----------|-----------|-----------|-----------|
| | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
| 1 | 217,800 | 218,153 | 222,100 | 227,131 | 225,516 | 227,603 | 228,332 | 228,676 | 229,266 | 230,713 |
| 2 | 18,200 | 19,325 | 20,900 | 23,339 | 23,172 | 24,632 | 26,025 | 27,444 | 28,969 | 30,865 |
| 3 | 430,300 | 420,994 | 423,200 | 431,227 | 428,159 | 427,511 | 424,330 | 420,473 | 416,917 | 414,524 |
| 4 | 45,600 | 46,942 | 47,400 | 48,859 | 48,511 | 48,986 | 49,157 | 49,230 | 49,342 | 49,621 |
| 5 | 62,800 | 67,040 | 70,800 | 75,708 | 75,170 | 77,896 | 80,223 | 82,430 | 84,831 | 87,577 |
| 6 | 34,100 | 38,257 | 41,100 | 45,768 | 45,444 | 48,203 | 50,557 | 53,596 | 56,584 | 60,000 |
| 7 | 52,400 | 59,100 | 62,800 | 69,237 | 68,744 | 73,206 | 77,485 | 81,872 | 86,598 | 91,933 |
| 8 | 75,100 | 77,343 | 79,900 | 82,195 | 81,609 | 83,923 | 85,771 | 87,494 | 89,334 | 91,528 |
| State total | 936,300 | 947,154 | 968,200 | 1,003,464 | 996,325 | 1,011,960 | 1,021,880 | 1,031,215 | 1,041,841 | 1,056,761 |
| EMPLOYMENT IN SUBSTATE GROWTH AREAS (INDUSTRIAL LAND USE PLAN) | | | | | | | | | | |
| | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 |
| 1 | 59,781 | 71,760 | 72,305 | 74,300 | 73,735 | 79,511 | 82,555 | 85,600 | 88,645 | 91,690 |
| 2 | 1,101 | 1,280 | 1,703 | 1,890 | 2,310 | 2,565 | 2,868 | 3,171 | 3,474 | 3,776 |
| 3 | 169,478 | 185,892 | 198,370 | 199,260 | 203,928 | 216,066 | 224,293 | 232,520 | 240,746 | 248,973 |
| 4 | 8,715 | 9,265 | 10,725 | 9,555 | 10,380 | 10,814 | 11,176 | 11,538 | 11,900 | 12,262 |
| 5 | 11,335 | 14,632 | 15,476 | 15,311 | 18,849 | 19,833 | 21,403 | 22,974 | 24,545 | 26,116 |
| 6 | 6,017 | 8,564 | 9,390 | 10,852 | 11,819 | 13,496 | 14,885 | 16,274 | 17,664 | 19,053 |
| 7 | 9,946 | 16,638 | 19,486 | 19,154 | 21,322 | 24,890 | 27,416 | 29,943 | 32,470 | 34,997 |
| 8 | 11,619 | 19,197 | 27,032 | 25,367 | 24,571 | 31,179 | 34,387 | 37,594 | 40,802 | 44,009 |
| State total | 277,992 | 327,228 | 354,487 | 355,689 | 366,914 | 398,354 | 418,983 | 439,614 | 460,246 | 480,876 |
| State E/P | 0.30 | 0.35 | 0.37 | 0.35 | 0.37 | 0.39 | 0.41 | 0.43 | 0.44 | 0.46 |