

# Aquidneck Island and Open Space:

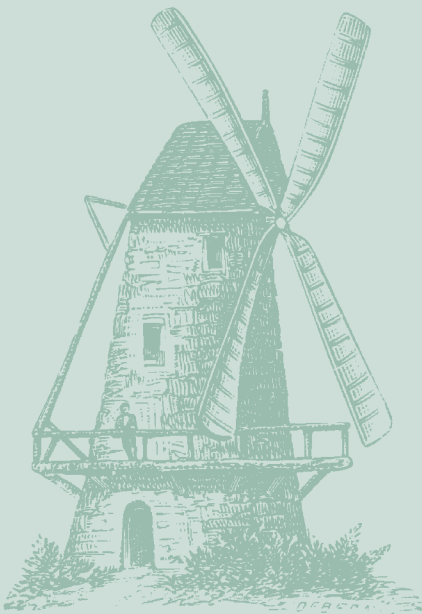
AN ECONOMIC PERSPECTIVE

*By Robert J. Johnston, Ph.D.*



Aquidneck Island Partnership

*Realizing A Shared Island Vision*



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# Aquidneck Island and Open Space:

## An Economic Perspective

*By Robert J. Johnston, Ph.D.*



The Aquidneck Island Partnership  
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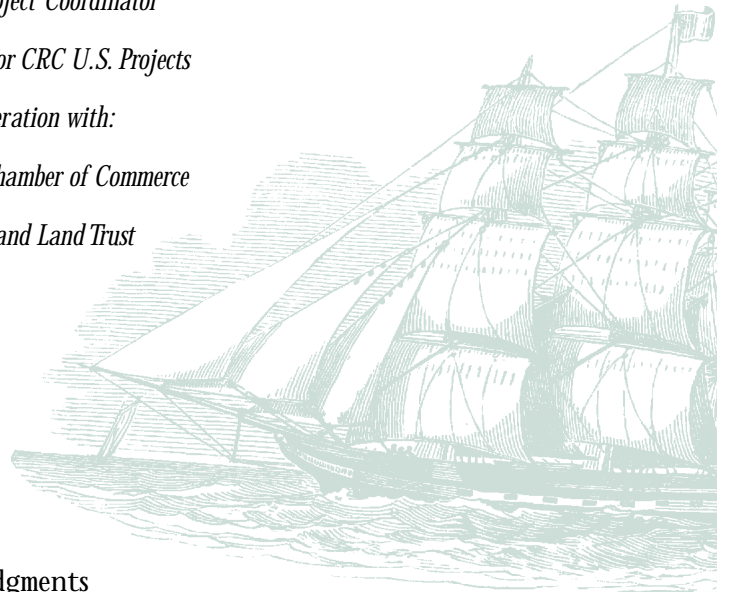
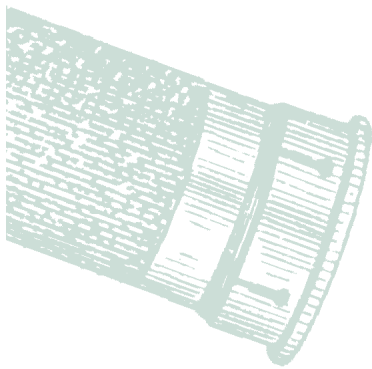
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Recent research  
demonstrates that,  
positive economic  
impacts can be  
generated by all  
types of  
open space.

## Executive Summary

The balance of open space and development influences the economic condition of all communities, including those of Aquidneck Island. Aside from traditional ecological and aesthetic effects, open space and Greenways have the potential to create jobs, provide recreational opportunities, enhance property values, attract customers and revenue to local businesses, increase government revenues, decrease the cost of community services, and improve the local quality of life impacts that benefit all island residents.

This report discusses the economic benefits of open space and Greenways, compared to net losses often imposed by residential and other development. The analysis focuses on the three communities of Aquidneck Island: Middletown, Newport and Portsmouth. The presented information does not suggest that all future development on Aquidneck Island will have negative economic consequences. Rather, the report emphasizes often ignored benefits of open space, and hidden costs of development, as realized on the island today.

The major economic impacts of existing open space on Aquidneck Island may be grouped into four major categories:

- Cost of Community Services Impacts
- Property Value Impacts
- Impacts on Direct Recreational Expenditures
- Other Impacts (e.g., public willingness-to-pay, effects on business relocation)

Considering all four areas of economic impact, the benefits of open space preservation can be con-



siderable, and can easily outweigh preservation costs. In addition, open space preservation offers pure ecological benefits that may not appear in a traditional economic analysis. Both economic and non-economic impacts should be considered when making policy decisions.

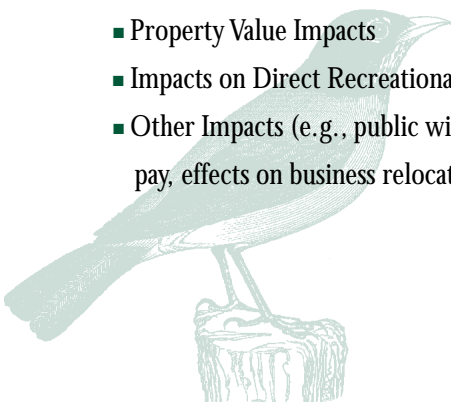


Open space offers benefits to residents of urban, suburban, and rural areas.

Maintaining this positive role of open space is a critical element in the

shared vision of all three

island communities. This report promotes a more informed view of the full range of impacts associated with open space, and provides a basis for future policy discussions. This booklet summarizes a more extensive technical document, which is also available to the public.<sup>1</sup>



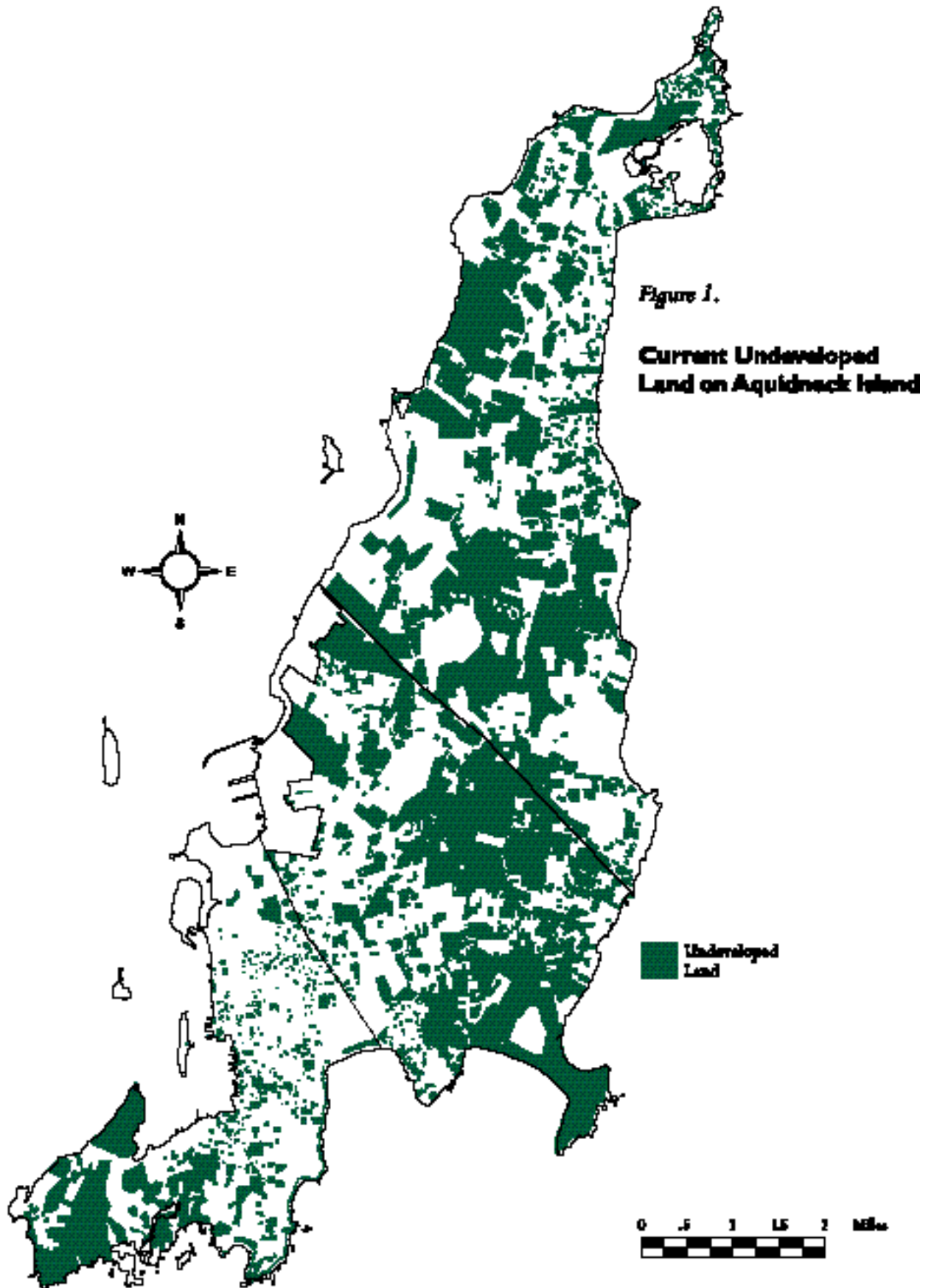
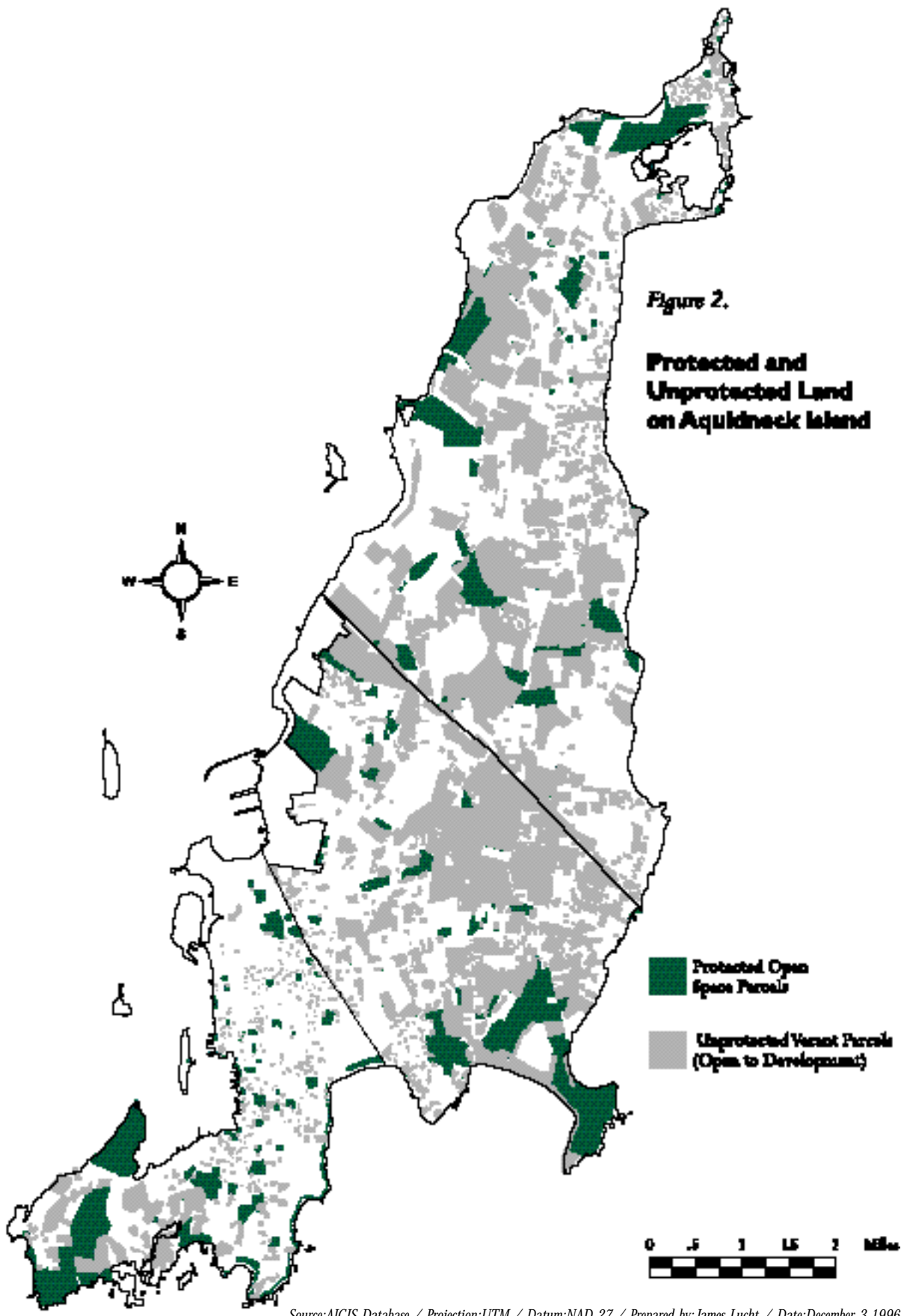


Figure 1.

**Current Undeveloped Land on Aquidneck Island**

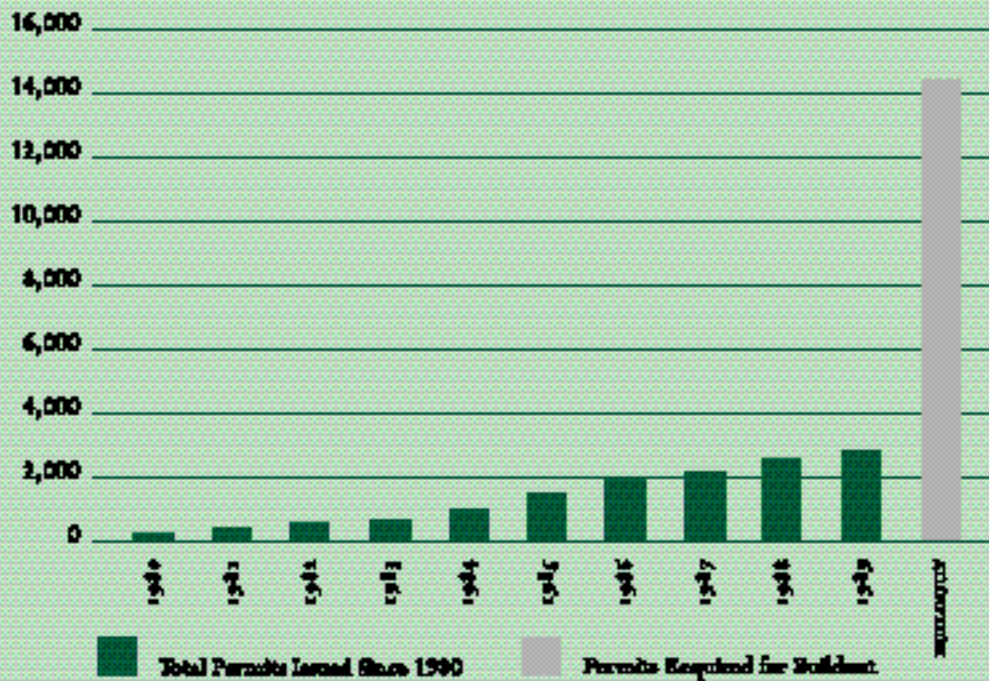
Undeveloped Land

0 .5 1 1.5 2 Miles



Source: AIGIS Database / Projection: UTM / Datum: NAD-27 / Prepared by: James Lucht / Date: December 3, 1996

**Figure 3.**  
**Residential Building Permits Issued on Aquidneck Island: Total Since 1980**



Source: Data Compiled from Commonwealth Research Group 1996

How soon will Aquidneck Island approach the urban/suburban build-out reflected in Figure 2? The answer depends on the rate of development permitted by Island municipalities. A good indicator of the development rate is the number of building permits issued by local zoning boards. Figure 3 illustrates the total number of residential building permits issued on Aquidneck Island since 1980. The bar to the extreme right approximates the total number of permits required to reach build-out. As illustrated by this diagram, the Island is approaching build-out at a steady pace.

Given current zoning and development restrictions, development pressures are changing the character of Aquidneck Island. According to a recent build-out analysis (IEP Inc. 1991), present zoning

requirements will “most likely create suburban/urban communities, with little consideration given to [the ecological, cultural, historical and quality of life] characteristics of the Island”. These changes in community character are accompanied by economic impacts—both positive and negative. However, while development offers benefits to a limited group of developers, residents and businesses, the overall economic impact of development in New England is often negative. Residential development, including suburban “sprawl” housing, often imposes high costs on local communities in the form of increased costs of community services and lost benefits of open space. The impact of commercial development is more difficult to predict, as it depends on the demand for particular products or shopping oppor-





tunities, and on the type of development considered. In some cases, well-planned commercial development can offer significant economic benefits. However, all forms of development, whether residential or commercial, cause significant losses in the economic benefits associated with open space.

While the net economic impact of development is often negative, the net impact of undeveloped open space is often positive. Aside from traditional ecological and aesthetic effects, open space and Greenways have the potential to create jobs, provide recreational opportunities, enhance property values, attract customers and revenue to local businesses, increase government revenues, decrease the cost of community services and improve the local quality of life. While the size of each of these impacts will vary according to the characteristics of each community, recent research demonstrates that, positive economic impacts can be generated by all types of open space.

## Economic Impacts of Open Space on Aquidneck Island

The major economic impacts of existing open space on Aquidneck Island may be grouped into four major categories:

- Cost of Community Services Impacts
- Property Value Impacts
- Impacts on Direct Recreational Expenditures
- Other Impacts (including public willingness-to-pay values and effects on business relocation and retention)

Each of these areas of impact is discussed below, with an emphasis on Aquidneck Island.

### Cost of Community Services Impacts

Although residential development expands the gross tax base, tax revenue increases are almost always offset by even

larger increases in the cost of community services, including costs of infrastructure, education, and other services required by residents. As a result, typical residential development costs more to local communi-

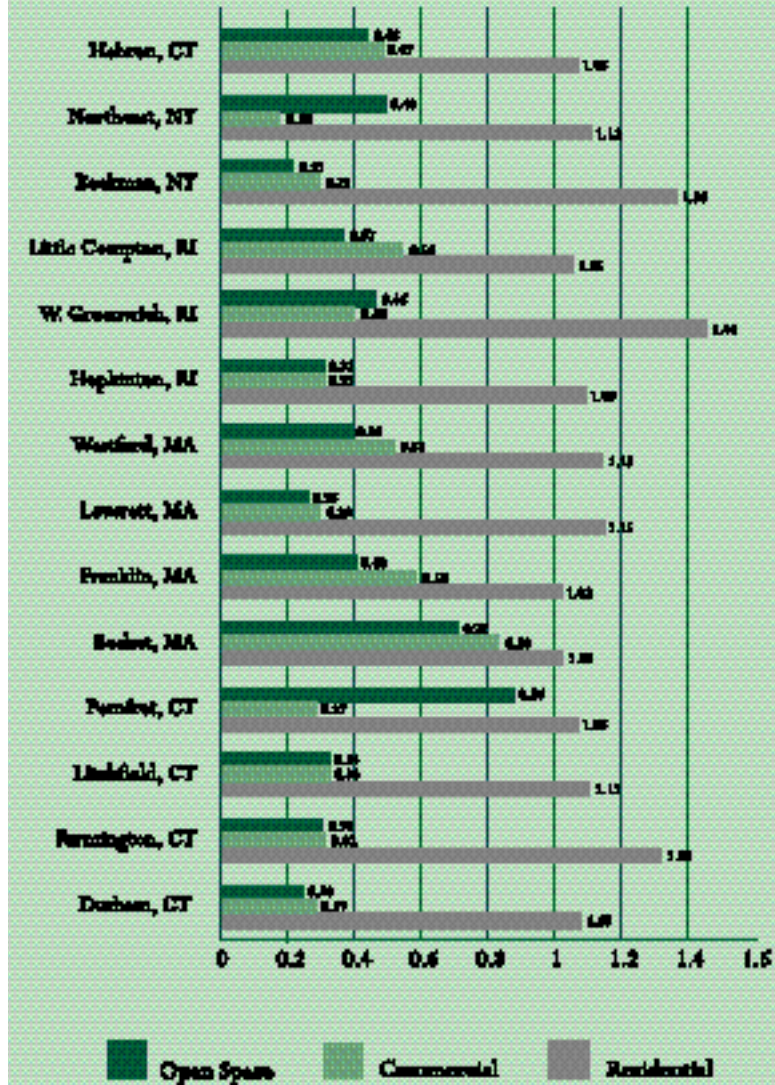
**T**ypical residential development costs more to local communities than it provides in tax revenues.

ties than it provides in tax revenues. Open space requires few town services, and places little pressure on the local infrastructure. Accordingly, typical open space land provides more in revenues than it costs to maintain.

The cost of community services (COCS) impacts of open space and residential development are estimated through cost of community services studies, such as those conducted by the American Farmland Trust (1989, 1992, 1993) and the Commonwealth Research Group (1995). These studies break down community revenues and expenses, and allocate them to different types of land, such as open space/farm, residential or commercial/industrial.

All available New England COCS studies show that residential land contributes to budget deficits—producing more costs than revenues. In addition, all show that open space generates a budget surplus—producing more revenues than costs. Figure 4 illustrates cost/revenue ratios for residential, commercial, and open space land, generated by 14 COCS studies. The results indicate the aggregate cost of each type of

**Figure 4.**  
**Cost Per Dollar of Revenue**



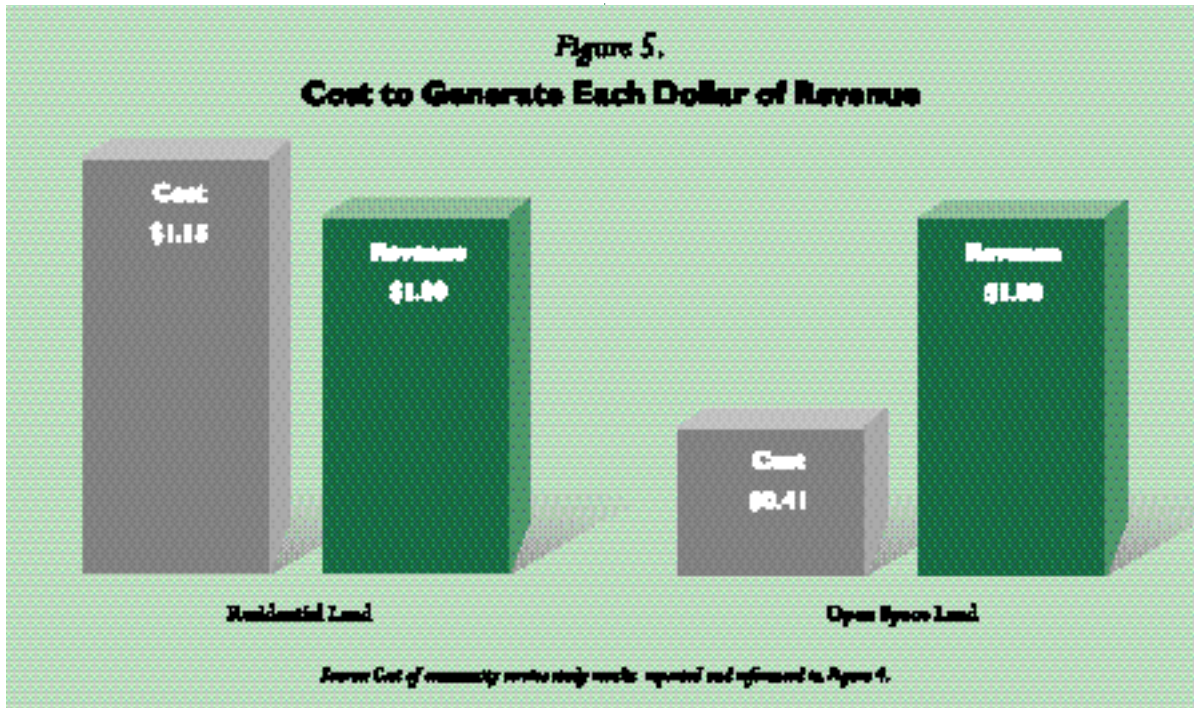
Source: Commonwealth Research Group 1995; Wheeler and Hunter 1991; American Farmland Trust 1989, 1991.

land, per dollar of revenue generated. A COCS cost/revenue ratio greater than 1.0 indicates that the land type costs more than it provides in revenue. A ratio less than 1.0 indicates that the land provides more in revenue than it costs in services.

The similarity of COCS results across different communities suggests that fiscal benefits of open space are nearly universal, and are similar across a wide range of communities. In all cases, open space land has a cost/revenue ratio less than one, and residential land has a cost/revenue ratio greater than one. As shown by Figure 5, the average cost/revenue ratio for open space is 0.41, indicating that open space land contributes an average of \$1.00 in town revenues for every 41¢ in costs—a net gain for the community. The mean cost/revenue ratio for residential land is 1.15, indicating that residential land contributes only \$1.00 in tax revenues for every \$1.15 in costs—a net loss to the community.

There are no formal COCS study results for Aquidneck Island. However, it is possible to approximate such results by comparing tax revenue generated by residential land on Aquidneck Island to public school expenditures—a major cost associated entirely with residential development. In 1991, res-

idential development generated \$1.32 in public school expenses for every dollar of tax revenue—a net loss of \$0.32 per dollar of revenue. To further illustrate this deficit, Figure 6 illustrates the difference between tax revenue and public school expenditures, calculated per occupied housing unit on Aquidneck Island. For example, average tax revenues in Newport were approximately \$1,970 per housing unit, during the 1991 fiscal year. During the same year, public school costs were \$2,098 per unit, resulting in net loss of \$128 per housing unit. These results suggest that, as in other New England communities, residential development on Aquidneck Island generates more costs than revenues. Open space provides a means to minimize increases in educational and community services costs that accompany new residential development—without cutting back on the public education provided to each student, or the community services provided to each resident.



**Figure 6.**  
**Partial Net Loss per Housing Unit, 1991:**  
**Mean Residential Property Tax Minus Public School Costs**



*Source: 1992 Annual State Report on Local Government Finance and Tax Equalization, State of Rhode Island Department of Administration.*

## Property Value Impacts

Open space contributes to community character, while providing a wide variety of amenities, including scenic views; outdoor recreation; insulation from noise, congestion, traffic and other aspects of the urban landscape; protection of local water quality; and prevention of erosion and flooding. These amenities are valued by local homeowners, making communities with significant open space more attractive than similar communities without open space. Home buyers are willing to pay more for land and housing, reflecting the value of the increased amenities and character offered by open space.

The resulting property value increases represent the benefits of open space to local residents, or the value of increased quality of life associated with nearby open space. In addition, the wealth of local landowners is increased, as the market value of land holdings increases.

Economic statistical tools (also called hedonic models) can estimate the impact of open space on property values, and predict the impact of future open space acquisitions. Such tools analyze correlations between characteristics of properties (including proximity to open space) and property values. Using these methods, numerous studies have found correlations between protected open space and property values.<sup>2</sup> An economic statistical analysis of Middletown property values—using data gathered from the Geographic Information System database for Middletown and Aquidneck Island—indicates that significant increases in Middletown property values are generated by nearby open space. That is, all else being equal, higher property values are associated with properties located closer to open space parcels, and lower property values are associated with properties farther from open space. Furthermore, larger value increases are associated with larger tracts of open space.

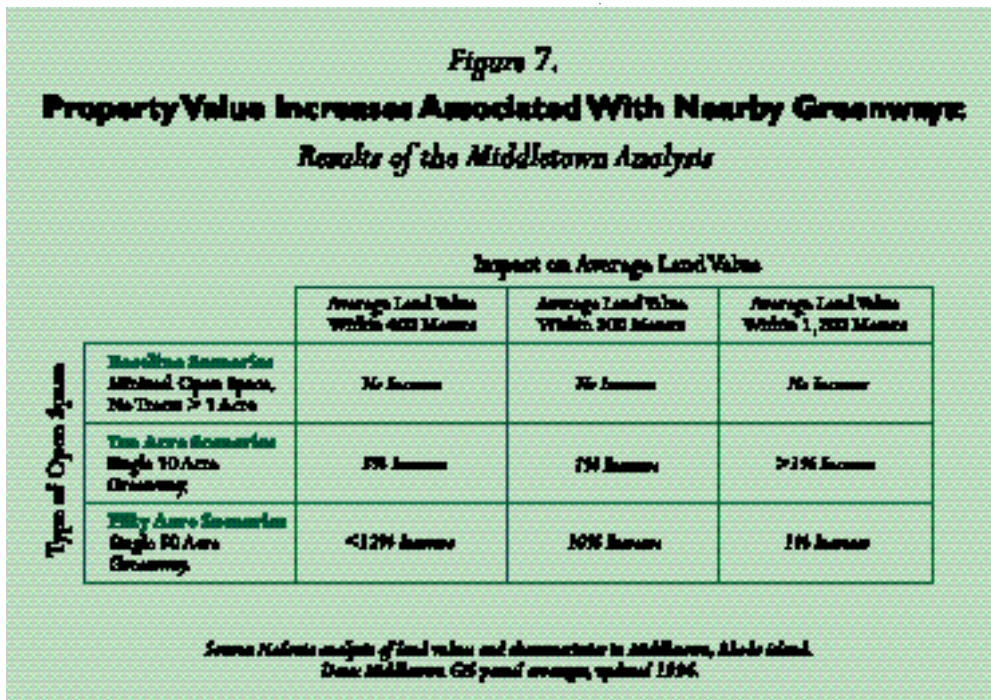
Figure 7 illustrates the estimated impact of open space on Middletown property values. As might be expected, impacts differ depending on the type of open space, and the distance of a given parcel from the open space area. For example, properties located within 400 meters of a 50-acre tract of open space are expected to have values at least 12 percent higher than similar property without nearby open space.<sup>3</sup> Properties located within 400 meters of a 10-acre tract of open space are expected to have values at least three percent higher than similar property without nearby open

space impacts is provided by the full set of statistical results (see Johnston 1997).

## Impacts on Direct Recreational Expenditures

Certain types of open space generate significant public expenditures on food, lodging, recreational equipment and other purchases. These recreational expenditures derive from both local residents and tourists, and may be broken down into two classes: those related to “free” public outdoor recreation such as hiking, biking, and bird-

watching; and those related to outdoor festivals or concerts held in open space areas, such as parks or golf courses. Both types of recreational expenditures can result in significant added revenue for local businesses



space. The analysis shows that significant areas of protected, undeveloped open space tend to increase property values on Aquidneck Island. This increase is a result of the increased quality of life gained by residents who live in close proximity to open space. Although Figure 7 illustrates results for two classes of open space and three distance measures, a more comprehensive picture of open

Without open space required to support such recreational activities, these benefits are lost to the community.

Little quantitative research has been conducted on the value of outdoor recreation on Aquidneck Island. However, research conducted elsewhere in Rhode Island identifies significant benefits generated by recreational open space. A recent study of

the East Bay Bike Path (running from Providence to Bristol) indicates that average recreational usage ranges from 899 users per day on weekdays, to 2,347 per day on weekends, with the typical user spending \$5.24 per day at businesses located along the bike path. This figure does not include money spent by the 63.2 percent of path users who purchased new recreational equipment (e.g., bicycles, in-line skates) as a direct result of the bike path.<sup>4</sup> The average value of recreational equipment purchased as a direct result of the bike path is estimated to be \$372.92 per user.

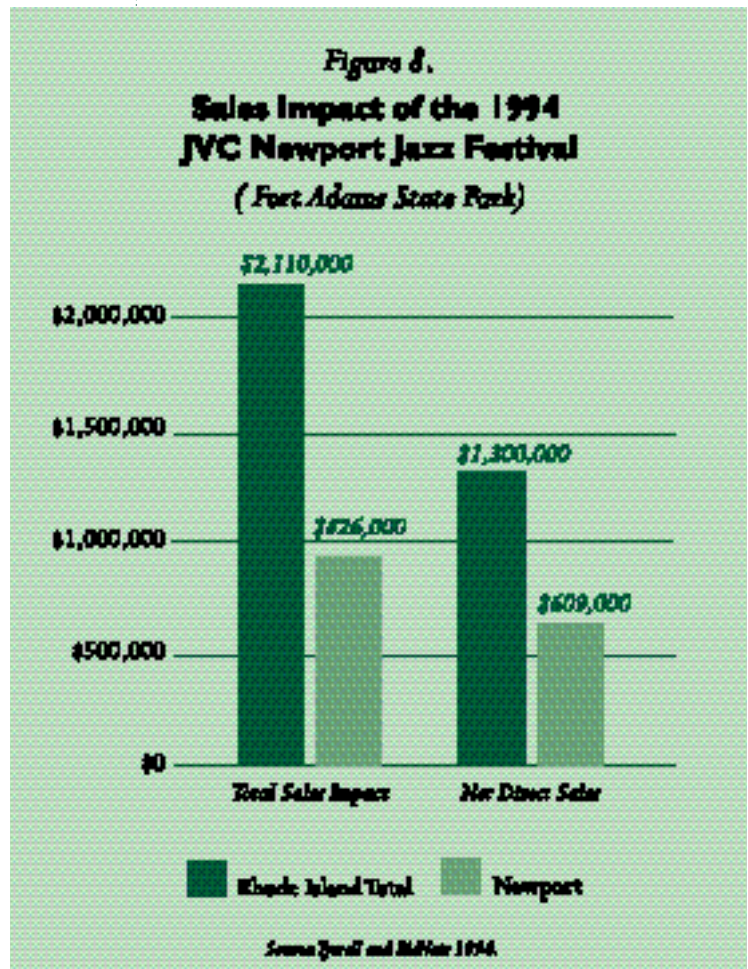
Aquidneck Island also receives significant benefit from the many festivals and concerts that take place at local parks, including Fort Adams State Park in Newport. For example, a study of the sales impact of the 1994 JVC Jazz Festival (held at Fort Adams) was recently conducted by Tyrrell and McNair (1994). The total sales impact of the festival in Newport alone was an estimated \$836,000. The impact on the state as a whole was an estimated \$2.1 million. Direct sales were \$609,000 in Newport and \$1.3 million for the entire state (see Figure 8). Without a substantial area of public open space, such as Fort Adams State Park, the JVC Jazz Festival could not have taken place on Aquidneck Island. Similar results were estimated for the 1995 ESPN Extreme Games, held in Providence, Middletown and at Fort Adams State Park. The games, which required large areas of public open space, generated an esti-

ated \$14.2 million in recreational expenditures for Rhode Island (Tyrrell 1995).

## Other Impacts

### Public Willingness to Pay Values:

Studies in Rhode Island and elsewhere demon-



strate that residents are willing to pay significant sums in taxes, fees and other payments to preserve undeveloped open space.<sup>5</sup> A portion of this willingness to pay derives from (or overlaps) previously discussed “use values” of open space, including recreational values, scenic values and other values associated with a direct enjoyment of open space amenities in urban, suburban and rural environments. However,

another portion represents unique “non-use values” of open space—values related to the pure existence of undeveloped land. Such values are manifest in voting behavior for open space bond issues in which people often vote to preserve open space that they may never see or use.<sup>6</sup> These values can be measured by carefully designed survey instruments, called “contingent valuation” or “contingent choice” surveys. Although no such studies exist for Aquidneck Island, surveys conducted elsewhere in Rhode Island indicate that residents have significant values for open space preservation above and beyond values associated with the direct use of open space.<sup>7</sup> These values represent a legitimate and significant source of social benefit associated with open space.

### **Impacts on Business Retention and Relocation:**

Successful business ventures can offer significant economic benefits to communities. In addition, estimated cost of community services ratios for commercial property indicate that commercial land often provides sufficient tax revenues to cover the associated cost of community services, improving municipal budgets. Well-designed open space and Greenways can help attract businesses to local areas, and can aid in the retention of current businesses. Open space improves the quality of life of employees, providing positive incentive for employers to locate in close proximity to areas with significant open space. In addition, Greenways can improve the character of a community, attracting customers to local businesses. Although no studies have addressed potential links between Greenways and business success on Aquidneck

Island, numerous studies conducted nationwide illustrate the ability of Greenways and open space to improve business climates.<sup>8</sup>

### **Conclusion**

Open space can influence the economic and social condition of any community. Although any specific parcel of open space will have unique impacts on quality of life and on other economic benefits, positive economic impacts are often associated with open space preservation. Residents must determine whether the positive impacts of an open space acquisition outweigh the costs of acquisition. This booklet suggests that in many cases the economic benefits of open space are considerable, and can easily outweigh costs, even before non-economic benefits are considered.

The goal of this report is not to identify exact economic impacts that are (or will be) realized in any single case, or to suggest that all potential development will have negative economic consequences. Rather, the purpose is to illustrate that open space provides substantial economic benefit to the three Aquidneck Island communities, above and beyond standard non-economic benefits often considered in policy forums. The choice of open space preservation is not one of economic benefit vs. quality of life. Rather it is a balancing of the cost of a single parcel of open space with the combination of economic benefits, quality of life improvements and non-economic benefits that the parcel of open space provides to the community. It is important to recognize both the costs and benefits of additional open space preservation, as open space becomes an increasingly scarce resource on Aquidneck Island.

<sup>1</sup> Johnston 1997

<sup>2</sup> For example, see Garr and Willis (1992), Corbett et al. (1978), More et al. (1982), and Geoghegan et al. (1995).

<sup>3</sup> Increases are given relative to similar properties located more than 1,500 meters from any open space parcels greater than one acre.

<sup>4</sup> These results are reported by Kribbs (1996).

<sup>5</sup> See Swallow 1996, Bush and Tyrrell 1993, Kline and Wichelns 1996, Swallow et al. 1995, McGonagle 1996.

<sup>6</sup> For example, Rhode Island voters recently approved a \$4 million bond for open space preservation in the state.

<sup>7</sup> Again, see Swallow 1996, Bush and Tyrrell 1993, Kline and Wichelns 1996, Swallow et al. 1995, and McGonagle 1996.

<sup>8</sup> National Park Service 1995.

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# Aquidneck Island Partnership

*Realizing A Shared Island Vision*

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