PROTECTING NITROGEN SENSITIVE EMBAYMENTS THROUGH LAND CONSERVATION: A DEMONSTRATION IN TWO BUZZARDS BAY EMBAYMENTS

PROJECT NUMBER: 97-07/319

PREPARED BY: BUZZARDS BAY PROJECT NATIONAL ESTUARY PROGRAM

PREPARED FOR:

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF RESOURCE PROTECTION

AND

US ENVIRONMENTAL PROTECTION AGENCY REGION 1

MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS Robert Durand, Secretary

DEPARTMENT OF ENVIRONMENTAL PROTECTION Lauren A. Liss, Commissioner

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I. Executive Summary

As the population increases in the Buzzards Bay watershed, many coastal embayments are experiencing declines in water quality – the main culprit being nutrient loading originating from residential development. The purpose of this project was to demonstrate that proactive land conservation is a viable tool for protecting nitrogen sensitive coastal embayments from further water quality degradation.

Using the assistance of two local land trusts, all large acreage landowners within the Slocums River and Onset Bay subwatersheds were targeted using direct mailings and invitations to workshops. These landowners were informed about the benefits of land conservation, including reductions in nitrogen loads and the various tax incentives. Several land conservation methods were used during this project, including out right purchase, conservation restrictions, and agricultural preservation restrictions. Using these various tools 1,079 acres of land were permanently protected from future development within the two subwatersheds.

The Slocums River has a far larger and more rural subwatershed then the highly urbanized subwatershed of Onset Bay. Therefore, land protection measures were more successful in the Slocums due to the large amount of undeveloped land available. While there were also successes in Onset Bay, they were more modest and illustrated the difficulty of acquiring open land in heavily urbanized areas.

Using a build out analysis it was determined that this initiative prevented 483 additional new homes from being built, with 479 of these being in the Slocums River subwatershed. In turn, future potential nitrogen loadings were reduced by 10,938 lbs. in the Slocums River subwatershed and 91 lbs. in the Onset Bay subwatershed.

II. Introduction

Water quality and living resources in many coastal embayments around Buzzards Bay are impacted or threatened by nitrogen inputs originating from development and other land uses in their surrounding watershed. Some of the largest sources of nitrogen entering Buzzards Bay are nonpoint in nature - septic systems, fertilizer use, and agricultural activities. Sewage treatment plants also contribute to coastal eutrophication but their effects are localized in a few specific embayments. The Buzzards Bay Comprehensive Conservation and Management Plan (CCMP), adopted in 1991, identified excessive nitrogen loading as the most important long-term threat to bay water quality.

In 1994, the Buzzards Bay Project completed a report entitled, A Buzzards Bay Embayment Subwatershed Evaluation: Establishing Priorities for Nitrogen Management in which existing and expected future nitrogen loading was estimated for the bay's 30 subwatersheds. Nitrogen loads for each of these subwatersheds was determined using land use data provided by MassGIS. This land use data included 21 classifications, of which three represented agricultural uses and four were residential categories. Annual nitrogen loading rates were assigned to the 21 land uses to determine current and future loadings per subwatershed. Potential loadings for the residential land use categories included septic systems, lawns, and stormwater on impervious surfaces. Additionally, for

each subwatershed, any known significant point sources, such as sewage treatment facilities, were added to embayment total annual loads.

To calculate potential future loadings it was presumed that 50% of the area defined in the MassGIS "forested land" category was unbuildable because of wetlands or need for infrastructure, open space, protection of drinking water supplies, etc. The remaining 50% of the forested land was presumed to be built as residential and commercial/industrial.

Agricultural land conversions to residential or commercial/industrial land uses were also considered in these build-out projections. Like the undeveloped forested land, it was assumed that 50% of the land in agricultural use would be developed. The remainder presumably would either be converted to open space, be protected as wetland habitat, or remain in agricultural use.

Water quality monitoring data, provided by the Coalition for Buzzards Bay, was used to evaluate current conditions in each embayment, to establish baseline data for trend analysis, and to evaluate the appropriateness of the loading limits recommended in the Buzzards Bay CCMP. The Buzzards Bay Project also developed a water quality index based on five parameters (dissolved inorganic nitrogen, turbidity, % oxygen saturation, total organic nitrogen, and chlorophyll) so that relative comparisons could be made among the subwatersheds. However, the monitoring data was not used to rank the embayments because data was not available for all embayments, and because existing water quality alone is inadequate to characterize nitrogen loading. Rather, the Coalition's monitoring data was used as a tool to determine whether the findings on existing loadings were realistic, and to help identify inadequacies.

In many cases, embayments that were below, near, or slightly above their estimated critical nitrogen loading limit, were found likely to far exceed their recommended limits at future build-out of the embayment's watershed, based on present zoning. These areas were identified as being in most need of management action.

III. Background

There are several management strategies that municipalities can use to control nitrogen inputs to sensitive embayments. Some of these strategies include changes to zoning bylaws, adoption of annual loading limits for new development, requiring the use of denitrifying onsite wastewater disposal systems, and encouraging the installation of best management practices (BMPs). One strategy that has not received adequate exploration or use by decision makers is that of open space and conservation restriction acquisition on critical lands within the watershed to a nitrogen sensitive embayment.

This project sought to demonstrate in two pilot watersheds that private land conservation could serve as an important part of nitrogen management strategies to meet recommended future loading limits. The Onset Bay subwatershed in Wareham and the Slocums River subwatershed in Dartmouth were chosen as the two study areas.

The Onset Bay subwatershed was selected because, at the time, the Buzzards Bay Project was working with the Town of Wareham to refine build-out projections for Onset Bay as well as establishing flushing rates for the embayment. The BBP was also assisting the town with an update to its Open Space and Recreation Plan. Additionally, according to the *Subwatershed Evaluation*, Onset Bay had existing nitrogen loadings of 60% of the Outstanding Resource Waters (ORW) limits, and a future loading projected to be 96% of the limits. ORW refers to the Massachusetts Surface Water Quality Standards (314 CMR 4.0). Designation of a water body as ORW gives the embayment special legal status under the antidegradation provisions of the federal Clean Water Act.

The Slocums River subwatershed was chosen because it was already in excess of its nitrogen loading limits, but considerable open space remained, giving proactive land protection measures a good likelihood to succeed in reducing future nitrogen loads to the Slocums River. Additionally, these subwatersheds were chosen because both the Towns of Wareham and Dartmouth had land conservation trusts that were willing to partner on this project.

Protection of critical lands within the watershed to a nitrogen sensitive embayment offers a unique approach to solving coastal nitrogen management problems. It is cost effective, non-regulatory and non-structural, and can be used in coastal watersheds throughout the Commonwealth and beyond. Open space protection was accomplished through the use of conservation restrictions, and other land protection tools, with the cooperation and assistance of local land conservation trusts. For this project, conservation restrictions were the tool of choice as they are extremely flexible and allow private landowners to continue owning, living on, and managing their land but prevent most types of development or use that would impair coastal water quality.

A conservation restriction (CR), also called a conservation easement, is a voluntary agreement between a landowner and a qualified land conservation organization, municipal conservation commission, or a government agency. With a CR, landowners retain title to their land, but relinquish certain rights, such as the ability to develop the land in the future. Under the agreement, the organization holding the restriction assumes permanent responsibility and the legal right to enforce the terms contained within the restriction. A conservation restriction is an addition to the existing property deed. It is a perpetually enforceable contract and the conditions in the restriction are binding on all future owners.

Conservation restrictions are an attractive option for landowners because of the flexibility in creating them and also for the tax benefits. Activities such as farming, forest management, and other land uses that the property owner wishes to pursue are often allowed. The landowner's ability to sell the property or bequeath it to heirs remains.

A CR that meets federal tax code requirements can qualify as a tax-deductible charitable donation. For income tax purposes, the value of the donation is the difference between the land's value with a restriction and its value without it. Additionally, a CR can result

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in a reduction in estate taxes, which can sometimes be substantial. Land under a CR is also usually eligible for a reduction in property taxes since the fair market value of the property tends to be reduced with the addition of a CR.

As communities undergo sprawl, municipal officials often hope that increased growth will solve their economic problems by increasing the town's tax base. Unfortunately, municipalities soon find that the revenue they receive from this new growth is not enough to pay for the public services they require, such as schools, emergency services, roads and sewers. Several studies have been done that document the cost of community services and the importance of preserving open space.

According to a report published by the Lincoln Institute of Land Policy entitled *Open* Space Conservation – Investing in your community's economic health, for every dollar a town in Massachusetts receives in revenue from residential development, it costs an average of \$1.09 to provide services to the same property. Comparitively, the cost for commercial/industrial development is \$0.56. Land left as open space only cost a town an average of \$0.44 for very dollar received in revenue. Creation of new residential subdivisions on previously unoccupied land costs towns money and will eventually lead to an increase in the tax rate.

Conservation restrictions are an excellent land protection tool for municipalities because open space can be obtained without having to make an expensive purchase. There is also the benefit that the land continues to be held and maintained privately without the need for additional town services, all while remaining on the tax rolls.

While conservation restrictions were considered the primary option for this project, other land protection strategies were also used, including outright purchase of properties and Agricultural Preservation Restrictions.

The Agricultural Preservation Restriction (APR) program is administered by the Massachusetts Department of Food and Agriculture and seeks to protect farmland by purchasing the development rights. The APR program is highly competitive, with preference given to working farms, located in agriculturally productive regions of the state, with highly productive agricultural soils. Similar to a conservation restriction, a permanent deed restriction is placed on the property, ensuring that the farm is never developed. The farmer is provided with cash for the sale of the development rights but, can continue to own, live on, and farm the land. Acceptance of a farm into the APR program is typically supported by a financial contribution from the local municipality.

The Buzzards Bay Project worked with the Dartmouth Natural Resources Trust (DNRT) and the Wildlands Trust of Southeastern Massachusetts (WTSEM), formerly the Plymouth County Wildlands Trust, to perform pilot land conservation projects in the Slocums River and Onset Bay subwatersheds, respectively. The success of this project was closely linked to the expertise and local contacts of the land trusts. These two organizations served as the vehicles for holding conservation restrictions and acquiring properties for landowners interested in protecting their land. The staff and Board of

Directors of the land trusts negotiated all of the land protection deals that were part of this project and they have accepted the responsibility for the long-term stewardship and monitoring of the lands within their ownership. Stewardship of properties with CRs includes regular inspections of the land (usually yearly) and contact with the landowner to avoid any conflicts with the agreement. It also requires legal enforcement of the restriction if a situation arises where violations of the agreement have occurred.

IV. Subwatershed Information

Onset Bay is the sixth largest embayment in Buzzards Bay with a moderately sized drainage basin totaling 3,101 acres. According to the Subwatershed Evaluation referenced above, Onset Bay is located in the top third in terms of percent of land developed, and the bottom third in terms of percent of land forested for all subwatersheds in Buzzards Bay. This report also states that Onset Bay is among the more densely developed subwatersheds, with nearly 50% of nitrogen inputs derived from residential use. It is estimated that Onset Bay will approach its recommended nitrogen loading limit of 37,000 kg/yr with the construction of a potential 885 new dwellings within its watershed at full build-out.

The Slocums River subwatershed is considerably

larger and more complex than the Onset Bay subwatershed, with a 23,640-acre watershed encompassing the Paskamansett River subbasin and significant portions of the northern part of the City of New Bedford. The river is also much more threatened by future development in its watershed. Estimates from the *Subwatershed Evaluation* report suggest that the Slocums River will exceed its recommended loading limit for nitrogen by 160,216 k~yr. or 634%.

V. Model Conservation Restriction

A model Conservation Restriction for lands within the watersheds to nitrogen sensitive coastal embayments was developed as part of this project. This model gives greater attention than is

common in conventional CRs to issues relevant to nitrogen management - such as agricultural



Fig. 1 Onset Bay Subwatershed



Fig. 2 Slocums/Paskamansett River Subwatershed

activities, septic systems, and vegetated buffers - making it transferable to drinking water supply protection areas and coastal areas throughout the Commonwealth.

Using the Commonwealth's standard conservation restriction language as a foundation, nitrogen management standards were developed based on loading assumptions described in a Buzzards Bay Project's technical report entitled "Managing anthropogenic nitrogen inputs to coastal embayments: Technical basis of a management strategy adopted for Buzzards Bay". The model was delivered, with a request for review, to the BBP's Project Supervisor at the Department of Environmental Protection, as well as Joel Learner of the Massachusetts Division of Conservation Services. Mr. Learner's department oversees the approval of conservation restrictions for the Commonwealth.

After reviewing the model, Mr. Learner recommended that rather than attempting to create another conservation restriction model, that the nitrogen management recommendations should be suggested footnote additions to the prohibition/rights section in existing models. Therefore, the BBP provided only the nitrogen management recommendations to each land trust so that they could be incorporated into existing CR boilerplate language.

In order to determine the maximum allowable nitrogen load for a parcel, an Existing Annual Load Worksheet was developed. This Worksheet (Exhibit A), located in the Appendix of this document, allows land trusts, conservation commissions, or government agencies to easily calculate the existing nitrogen load a parcel is contributing to a watershed prior to enacting a conservation restriction. This information can then be used to determine the annual nitrogen loading limit for the property after the restriction is in place.

The following nitrogen management standards were developed as part of this project. They are to be inserted into the prohibition/rights section of existing CR models.

Nitrogen Management Standards:

(i.) The designated annual nitrogen loading limit for this property is established at ____ lbs nitrogen per acre, or _____ lbs annually for the entire property. Evaluation of compliance with this established limit shall be based on the nitrogen loading worksheet in Exhibit A and recommendations from the Buzzards Bay Project (Ph: (508) 291-3625).

(ii.) Existing nitrogen loading from this property established at the time of adoption of this Conservation Restriction is _____ lbs annually (From Exhibit A).

(iii.) If existing nitrogen loading rates in section (ii) exceed recommended limits in section (i), the following conditions apply. Existing uses are grandfathered. However, no new uses are allowed that result in increased nitrogen loading. Loading from existing uses may be traded for new uses as long as total loads do not exceed the loads in section (ii).

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(iv.) No additional human waste disposal systems shall be installed on the Property. Upgrades of pre-existing systems shall be in compliance with Title Five regulations. If loading in section (ii) exceeds loading in section (i), any required wastewater disposal system upgrades shall require a septic system design that provides at least 85% removal efficiency of nitrogen (as rated by the Massachusetts Alternative Septic System Test Center). If nitrogen loading on the property is below the limits established in section (i), any new systems must not result in the recommended annual nitrogen loading limits being exceeded.

(v.) One hundred foot buffers of undisturbed natural vegetation/woodland are required to surface waters, nutrient poor wetlands (such as natural bogs), and rare and endangered species habitat identified by the Massachusetts Natural Heritage Endangered Species Program.

(vi.) The slope of the land may not be increased to exceed a grade of 10% within 50 feet of any wetland.

(vii.) For agricultural properties:

(i.) New or existing agricultural or related activities must comply with a farm conservation plan prepared by the ______County District Conservationist of the United States Department of Agriculture (USDA) Natural Resource Conservation Service, or any successor or equivalent agency, which is reviewed and updated whenever a substantial change in operations is contemplated but, in any case, no less then every five (5) years. Fencing must be erected according to the standards established in the USDA farm conservation plan to ensure that wetlands, streams, and/or other waterbodies are protected. Tailwater recovery systems are required for bogs (no "flow through" systems are allowed, and bog water must be kept separate).

(ii.) Manure, wastewater, and contaminated runoff shall be stored on a concrete slab or other impermeable surface and shall be covered. There must be 4 feet of separation between the concrete pad and the groundwater. Agricultural operations and practices must be in accordance with a farm conservation plan prepared by the County Conservation District in cooperation with the United States Department of Agriculture Natural Resource Conservation Service, or any successor or equivalent agency. The plan must be reviewed and updated whenever a substantial change in operations is contemplated but, in any case, no less then every five (5) years.

(iii.) For purposes of general water quality management, livestock density shall not exceed 6000 lbs per acre.

VI. Subwatershed Land Conservation Plans

To facilitate the identification of all large acreage landowners within the two subwatersheds, Subwatershed Land Conservation Plans in the form of large-scale maps

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were created. One map per subwatershed was developed using a Geographic Information System (GIS) and data provided by MassGIS and the Buzzards Bay Project.

For the Slocums River subwatershed, all unprotected parcels 25 acres or greater in size were highlighted. The Onset Bay subwatershed is more densely developed and contains smaller sized parcels than the Slocums. For the Onset subwatershed all unprotected parcels 5 acres or greater were identified. This large acreage landowner information was overlaid with each town's Assessors' parcel information, existing conservation holdings, water supply areas, and watershed boundaries.

Once the large parcels of land were identified on the maps, mailing lists of the landowners were assembled using the Assessors' data for each town. The Buzzards Bay Project provided these maps as well as a list of large acreage landowner contact information to the respective land trust partners.

The Subwatershed Land Conservation Plans created for this project were not used to target a small number of specific parcels for acquisition or restriction, but rather, to initiate contact with all landowners of large parcels. Land conservation is a very personal decision and it generally takes a long time, often several years, for a landowner to decide to permanently restrict development on their property. This project sought to educate as many landowners as possible about the merits of land conservation, with the hopes that interested landowners would continue to contact the land trusts after the life of this project.

VII. Landowner Workshops

In conjunction with its land trust partners, the Buzzards Bay Project co-hosted a land conservation workshop in each pilot watershed. The purpose of these workshops was to discuss conservation tools available to protect forest, farmland, and wetland acreage and the significant property, income, and estate tax benefits that can accompany such options. These workshops were designed to introduce large acreage landowners to land protection staff and to spark interest in potential conservation projects.

Using the information from the Subwatershed Land Conservation Plans and Assessors' data from the towns, a mailing list of all large acreage landowners in each watershed was complied. Two weeks before each workshop an invitation in the form of a post card was sent to 233 people in the Slocums River watershed and 177 people in the Onset Bay watershed. A week later the post card was followed up with a workshop agenda.

The workshops, held mid-week from 7:00 - 9:00 p.m. on a weekday, started with a welcome and introduction by a Buzzards Bay Project staff member. A presentation followed by the appropriate land trust partner. The land trust's presentations focused on the history of each organization and how they have successfully enabled landowners to protect the natural resource features of their properties from potential development. This was followed by a presentation by noted Attorney Stephen J. Small of Boston, MA. Attorney Small was hired by the Buzzards Bay Project to discuss estate tax planning and legal options for landowners who were interested in protecting their land for future

generations. Attorney Small has a tremendous amount of experience working with private landowners and is the author of several books on estate planning. All in attendance were given free copies of Attorney Small's most recent book, *Preserving Family Lands: Book II*, as well as additional information provided by the land trusts on tax benefits and conservation options. Additionally, The Trustees of Reservations, the world's oldest land trust, was invited to present a "real-life" scenario that demonstrated how the various conservation options presented during the workshop were used to save "Riverview", an important estate that was under considerable development pressure. After the presentations, an open "question and answer" period was held where audience members could ask the experts for their opinions. The majority of questions asked by those in attendance centered around potential tax benefits, while some landowners were more concerned about protecting the natural resource values of their properties. Several contacts for potential land deals in each subwatershed were made during these workshops.

VIII. Landowner Outreach and Education

Outreach materials were also developed to help educate landowners about available land protection options. A brochure was created that detailed the most common land conservation tools available, as well as contact information for area land conservation organizations. Additionally, a pamphlet was developed that describes the effects of nitrogen on water quality in Buzzards Bay (see Appendix). This pamphlet explained the process of eutrophication and included simple, yet effective, recommendations for reducing nitrogen originating from residential activities. All printing was done by a state certified Minority/Women Owned Business printing company.

Both the brochure and pamphlet were mailed to those on the large acreage landowner mailing list. A letter was sent with the brochure reminding recipients of the importance of land conservation and that funds were available to help pay for appraisals and other costs related to restricting their property. These outreach materials were also given to DNRT and the WTSEM so that each organization could use them to educate additional landowners within the subwatersheds.

Additionally, press releases were also used as a method of informing landowners about this project. The Buzzards Bay Project supplied several press releases to the local newspapers, while DNRT and the WTSEM promoted the land conservation initiative in newsletters that were mailed to their members.

IX. Land Deals in the Slocums River Subwatershed

The intent of this project was to secure conservation restrictions on lands within the watersheds to nitrogen sensitive embayments. Conservation restrictions were chosen as the most appropriate conservation tool because of their flexibility. Landowners are able to protect the natural resource values of their land <u>and</u> retain ownership and use of their property. Conservation restrictions are also more affordable because they do not require purchase of the entire property, only an interest in it. In Dartmouth, however, outright acquisition of critical pieces of land proved to be the most successful tactic. More than 1,060 acres of land are now permanently protected in Dartmouth because of this project.

The region west of the Slocums River is characterized by a working rural landscape with more than 3,000 acres in active agriculture. During the past 25 years, various public and private organizations have worked to preserve more than 1,200 acres in this region. However, 1,060 acres owned by Indurama Finance USA Corporation, a Tennessee-based agribusiness corporation, were at risk of being developed into residential subdivisions.

Shortly after this project began, the Dartmouth Natural Resources Trust and their partner, The Trustees of Reservations (TTOR) entered into negotiations with the Indurama Finance USA Corporation to purchase the three large reserves that made up Indurama's land holdings. The decision to purchase these parcels, rather then negiotiate a CR, was made because the landowner did not wish to retain ownership of the properties and was looking for a financial gain that could only be made with a full purchase. Ownership of the properties by the land trusts would also provide the greatest protection to the land, as there will never be the need to monitor and enforce a conservation restriction on a future landowner. Additionally, under the stewardship of the land trust, the properties could remain open to the public for trail access, which is not always possible with a conservation restriction.

The effort to raise the funds needed to purchase these three reserves was named the Slocums River Conservation Project and took two years to complete. DEP s. 319 monies were used to perform land surveys and appraisals on the three reserves.

DNRT and TTOR purchased Island View Farm on January 1999 for \$2.85 million. Island View Farm is a 116-acre reserve located along the shores of the Slocums River. It abuts another 17-acre reserve previously acquired by DNRT. At the time of purchase, the property was composed of working farm fields, woods, marsh, and old wood roads. Due to its prime agricultural soils and historical use as farming fields, DNRT and TTOR decided to restrict 62 acres of the reserve with an Agricultural Preservation Restriction and sell it to Sylvan Nursery. Sylvan Nursery now uses the fields to grow alfalfa and hay. There are also three farmhouses on the property. These houses and their respective lots were sold to Sylvan Nursery and to the Architectual Heritage Foundation. The remaining 35 acres is owned jointly by DNRT and TTOR and is further protected from development by a conservation restriction held by the Town of Dartmouth. Island View, now renamed the Slocums River Reserve, contains more protected shoreline than any other property on the Slocums River. It includes 2,000 feet of river frontage consisting of a mix of brackish/salt marsh and rocky shore that rises abruptly to boarding upland shrubs and trees. Additionally, a creek flows into the Slocums River along the northern boundary of the reserve.

The second phase of the Slocums River Conservation Project involved the purchase of the 641-acre Dartmoor Farm. This property is so large that it is second only to the University of Dartmouth in terms of total contiguous land area under single ownership within the subwatershed. Dartmoor Farm contains an extensive trail system, vital wetlands that flow to the Slocums River, and more than 100 acres of productive farmland. Dartmoor Farm was purchased in January 2000 for \$2.2 million. Immediately after purchase, 506 acres were sold to the Massachusetts Division of Fisheries and Wild-

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Fig. 3 DNRT land acquisitions in the Slocums River Subwatershed

life to establish the Dartmoor Wildlife Management Area. Additionally, 13 acres of field and forest were sold to a neighbor subject to a conservation restriction, and 120 acres of farmland and a farmstead site was sold to Sylvan Nursery with an Agricultural Preservation Restriction in place. DNRT retained ownership of the remaining 2 acres abutting Horseneck Road.

The third phase concluded with the purchase of the 303-acre Destruction Brook Woods property in November 2000. The final purchase price was \$2.15 million. The Destruction Brook property abuts Russells Mills Village, one of the original town centers in Dartmouth. The property contains an old mill site, three mill ponds, and a network of carriage trails and walking paths. Destruction Brook runs through the center of the reserve, draining substantial acreage further north and joining the Slocums River just below Russells Mill Village. Approximately 250 acres of this property falls within the Town of Dartmouth's Aquifer Protection District. Twelve acres along Slades Corner Road contain a house lot with land cleared for agricultural fields (approximately 5 acres). The 18th century house and 12-acre lot will be sold after being protected with a conservation restriction. DNRT and TTOR currently own the remaining land. However, in the near future, ownership will be transferred to DNRT, and TTOR and the Town of Dartmouth will retain a conservation restriction on the parcel.

The Town of Dartmouth was also involved with protecting this project. land under Although significantly smaller in size than the projects discussed above, the Smith Mills property was considered critical а acquisition as it lies within an Aquifer Protection District. Smith Mills, a 0.72-acre parcel located on Route 6 in one of the most commercial Dartmouth, areas of is situated at the head of the Paskamansett River on Mill Pond. The site was formerly home of an auto the mechanic shop and contains some remains of the former Paskamansett Mill. After using s. 319 funds for an appraisal the Town applied to the Commonwealth's Self-Help program for funds to purchase the parcel. The town was successful and received \$188,500 (58% of the purchase price) from the



Fig. 4 Smith Mills Property

State in December 1999. Since the time of purchase, the building on the site has been razed and the site restored to its natural condition. Eventually, park benches and a canoe access site are planned for the property. This project helped preserve one of the few remaining pieces of open land along the commercially developed Route 6 corridor and an important part of the Slocums River's headwaters.

X. Land Deals in the Onset Bay Subwatershed

The Onest Bay subwatershed is a much smaller and more highly developed subwatershed than the Slocums River. The number of contiguous parcels under single ownership is also significantly less. For these reasons, the Wildlands Trust of Southeastern Massachusetts (WTSEM) had a more challenging job of securing conservation restrictions on large acreage parcels. A total of 17 acres were protected in Wareham.

In February 2000 the WTSEM successfully completed a conservation restriction on 13 acres along the Agawam River. The property, which was donated to the WTSEM by Douglas and Donna Truran, protects more than 500 feet of shoreline along the Agawam River and 450 feet of shoreline along Spectacle Pond. The property provides habitat for a variety of unusual animals, including rare damselflies and freshwater mussel beds. It also contains a quaking sphagnum



Fig. 5 Protected lands in the Onset Bay Subwatershed

bog. The Trurans will continue to live on the land and use it to raise blueberries.

As was the case in Dartmouth, the Town of Wareham also became involved with protecting critical parcels for this project. In this case the parcels were owned by the town but were not protected from potential development in any manner. The two undeveloped parcels (4 acres total) directly abut Onset Water Department lands. In the summer of 2000 they were transferred to the jurisdiction of the Onset Water Department and are now held in perpetuity as well-field protection areas. These parcels were critical to ensuring clean drinking water for Onset's residents and to preventing future development.

XI. Ongoing Projects

The decision to restrict one's property is a very personal one. Oftentimes, land deals can take years to develop and complete. In Dartmouth, there are three potential conservation opportunities that will continue past the life of this project. All three properties directly abut either the Slocums or Paskamansett Rivers and would protect over 150 additional acres from development.

In Wareham, the son of the Truran family that donated the 13-acre CR is working with the WTSEM to donate a conservation restriction on an adjacent 12-acre parcel, as well as an additional 3 acres on another property. Additionally, the WTSEM is continuing to work with a landowner on a potential 30-acre CR.

XII. Nitrogen Loading Analysis

The acquisition of open space resulted in the protection of 1,079 acres of land in the two subwatersheds (Table 1). Most of this land protection effort was achieved in the Slocums River subwatershed, which is far larger and more rural than the Onset Bay subwatershed and has a far larger percentage of undeveloped land.

To calculate the benefits of this land protection on future nitrogen loading, we conducted a simplified build out analysis on the protected land. For large parcels (>5 acres) we assumed that 10% of the land would be needed for roads and other infrastructure. The remaining acreage, was divided by the existing zoning requirements. Using this simplified approach, the acquired or protected land could have accommodated 483 potential additional homes at build out conditions (Table 1), with 479 of these in the Slocums River subwatershed.

The Buzzards Bay Project has developed a nitrogen loading methodology that has been widely accepted for land use planning, and the loading assumptions are shown in Table 2. Based on these loading assumptions (with an assumed 3 person per unit occupancy), each additional unit in these subwatersheds will contribute approximately 10.8 kg N per year. Using these loading estimates, future potential loading to the Slocums River has been reduced by 10,938 lbs. In contrast, loading to Onset Bay has been reduced by a trivial 91 pounds.

These loading savings can be compared to existing estimated loadings done by the Buzzards Bay Project for the two subwatersheds (Tables 3 and 4, note that loadings are in kilograms). In the case of the Slocums River, the estimated nitrogen savings amount to 5.5% of the existing load.

Table 1. Build out reductions of units and nitrogen loads in the Slocums River and Onset Bay subwatersheds.

Slocums River Subwatershed

3 properties protected in Single Residence-B Zoning (2 ac. Lots)

Island View Farm Acres Comment # pot. houses 28 62 APR - farmer growing alfalfa & hay 16 35 open space/no development (forested) 9 19 three existing houses on property 116 total acres 53 potential new houses Dartmoor Farm Acres Comment # pot. houses 506 Forested preserve owned by DFW 228 120 Farm w/ lot sold to Sylvan Nurseries w/ APR 53 (adj. for 1 existing house on property) 13 Field/forest sold to neighbor with CR in place 6 2 Forest land owned by DNRT 288 potential new houses 641 total acres Destruction Brook # pot. houses Acres Comment 291 forest owned by DNRT - 250 ac. in aquifer prot. dist. 131 12 house lot w/ one house, 5 ac of lot is cleared field 5 (plus 1 existing house on property) 136 potential new houses 303 total acres Miscellaneous Site 1 business unit 1 1 property protected in General Business Zone (1 ac. lots) Smith Mills Acres Comment # pot. buildings 0.72 Grandfathered lot in aguifer protection district 1 potential commercial buildings Total Acres in Slocums watershed removed from buildout= 1062 Total Units in Slocums watershed removed from buildout= 479 nirtrogen savings at buildout 10938 **Onset Bay Subwatershed** 2 properties protected in R-130 Zoning (130,000 sq. ft. lots) Truran Property Acres Comment # pot. houses 3 potential new houses 13 lot w/ 1 house w/ CR, owner grows blueberries (adj. for 1 existing house on property) **Onset Water Department** Acres Comment # pot. houses 1 potential new house 4 undeveloped water department land Total Acres in Onset watershed removed from buildout= 17

4

91

Protecting Nitrogen Sensitive Embayments Through Land Conservation

Total Units in Onset watershed removed from buildout=

nirtrogen savings at buildout

	Table 2. Nitrogen	loading assum	ptions emplo	oyed by the	e Buzzards Ba	y Project
--	-------------------	---------------	--------------	-------------	---------------	-----------

	Loading	
MassGIS Land use Type	rate (Kg/ha)	
Cropland	20.17	
Pasture	10.17	
Forest	0.17	
non-forested wetland	0.00	
Mining Open Land	0.17	
Particinatory Recreation	29.47	
Spectator Recreation	29.47	
Water Based Recreation	7.47 value w/ census	
Residential-Multi-Family lots	106.41 0.	17
Residential-<1/4 Acre Lots	83.60 0.	17
Residential-1/4 - 1/2 Acre Lots	51.77 0.	17
Residential->1/2 Acre Lois	24.59 0.	17
COMMERCIAL unsewered	121.17	
COMMERCIAL, sewered	8.07	
Industrial	11.64	
Urban Open	0.17	
Transportation	15.47	
Waste Disposal	15.47	
Woody Perrenial	18 47	
NA	0.00	
Cranberry Bog (part of #21	18.63	
Powerlines (part of #6)	0.17	
Saltwater Beach (part of #9)	7.47	
Golf (part of #7)	29.47	
1 Idal Salt Marsh (part of #14)	0.00	
Marina (part of #9)	7.47	
New Ocean	7.30	
Urban Public (part of #17)	0.17	
Transportation Facility (part of #18)	15.47	
Heath (part of #17)	0.17	
Cemetaries (part of #17)	29.47	
Orchard (part of #21)	20.17	
Nursery (part of #21)	20.17	
rorested wetland (part of #3)	0.17	
Residential-Multi-Family lots	6.34	
Residential-<1/4 Acre Lots	8.55	
Residential-1/4 - 1/2 Acre Lots	7.94	
Residential->1/2 Acre Lots	3.77	
DO LDG (V. 4.)	15.47	
ROADS (Kg/ha)	15.47	
2 uM Background from Precipitation	0.17	
2 um Background from Frecipitation	0.17	
average upper watershed attenuation factor	0.30	
average lower watershed attenuation	0.00	
average upper watershed transmission	Q.7Q -nanually set	
average lower watershed transmission	i'.00 manually set	
per capita N load	2.70 kg/person	
AVG Occupancy:	2.20 persons/unit	
PLan Occupancy:	3.00 persons/unit	
Fert. Lawn	5.00 10/3000	
Onits. Mult	12.35 units/ha	
-lawn	0.41 kg/unit	
Units: <1/4	3.75 units/acre	
	9.27 units/ha	
-lawn	0.82 kg/unit	
Units: 1/4-1/2	2.19 units/acre	
	5.41 units/ha	
-lawn	1.36 kg/unit	
Units: >1/2	2.57 units/ha	
-lawn	1.36 kg/unit	
Imperv lot load (roof sidewalk)	0.10 kg/unit	
roof sidewalk precip load	7.30 kg/ha	
drive way and road precip. Load	15.30 kg/ha	
Road width, major, average width	16.80 m	
Road width, secondary average width	8.00 m	
Average road load/unit (use if GIS NA)	0.81 kg/unit	

Protecting Nitrogen Sensitive Embayments Through Land Conservation

Table 3. Current Buzzards Bay Project nitrogen loading estimates for Onset
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Onset Bay 1999	Watershed	areas in H	lectares	sewered	sewered	sewered		
Landuse type	whole	Lower	upper	whole	lower	upper	N (kg)	
Cropland	0.5	0.5	0.0				10	
Pasture	8.0	8.0	0.0				82	
Forest	597.5	299.9	297.6				85	
Non-forested wetland	36.6	18.6	18.1				0	
Mining	1.1	0.3	0.8				7	
Open land	36.2	28.1	8.2				6	
Participatory recreation	8.6	6.7	1.9				237	
Spectator recreation	0.0	0.0	0.0				0	
Water based recreation	6.5	6.5	0.0				49	
R0: residential multi-family	2.7	0.0	2.7	0.0	0.0	0.0	136	
R1: Residential- <¼ acre lots	164.3	158.2	0.1	98.9	98.9	0.0	4456	
R2: Residential 4-1/2 acre lots</td <td>24.3</td> <td>21.9</td> <td>32.5</td> <td>2.9</td> <td>2.9</td> <td>0.0</td> <td>1532</td>	24.3	21.9	32.5	2.9	2.9	0.0	1532	
K3: Kesidential- 2 acre iots</td <td>01.1 72.0</td> <td>72.0</td> <td>14.0</td> <td>5.0</td> <td>5.0</td> <td>0.0</td> <td>1208</td>	01.1 72.0	72.0	14.0	5.0	5.0	0.0	1208	
Commercial	/3.0	13.0	2.2	35 5	355	0.0	1696	
Industrial	40.1	44.0	0.0	0.0	0.0	0.0	0	
Urban open	3.8	3.3	0.5	0.0	0.0	0.0	ĩ	
Transportation (mai, highways)	32.1	0.5	31.6				350	
Waste disposal	0.1	0.0	0.1				1	
Water (ponds, other freshwater)	56.4	21.7	34,7				0	
Woody perrenial (bogs, orchards, etc.)	0.0	0.0	0.0				0	
NA	0.0	0.0	0.0				0	
Cranberry Bog (part of #21	57.6	36.8	20.7				957	
Powerlines (part of #6)	2.8	. 0.0	2.8				0	
Saltwater Beach (part of #9)	0.0	0.0	0.0				0	
Golf (part of #7)	25.4	25.4	0.0				750	
Tidal Salt Marsh (part of #14)	0.0	0.0	0.0				0	
Irreg. Flooded Salt Marsh (part of #14)	0.0	0.0	0.0				0	
Marina (part of #9)	0.0	0.0	0.0				0	
New Ocean	0.0	0.0	0.0				0	
Urban Public (part of #17)	3.5	2.8	0.7				1	
Transportation Facility (part of #18)	1.1	1.1	0.0				17	
Heath (part of #17)	0.0	0.0	0.0				0	
Cemetaries (part of #17)	2.2	2.2	0.0				00	
Orchard (part of #21)	0.0	0.0	2.1				20	
Forested Wetland (part of #3)	2.1	0.0	2.1				29	
roissica menana (pari or #5) 0.0 0.0 0.0 0.0 0								
TOTAL LAND AREA (hg)	1248.1	805.6	477.2					
Major road length km	60	2.6	3.4					
All Roads km	72.3	52.5	5.1					
Secondary Road length km	66.3	10.0	164					
Road Area (ba)	63.1	44 3	18.8				420	
Embayment area (ha)	239.00		10.0				1745	
Total Loading based on landuse, pre ad	instments						13476	
Reported Area occupancy	22	22	22					
Predicted units (existing)	2059	1754	305	sewered i	mits			
actual units (1990 census)	2837	2522	315.0	1625	1625	0		
roof+lawn loading from census units	2057	3701	324	57 30/	64 494	0.0%	4025	
Unit density (ner acre)	0.7	0.0	0.2	57.570	04.470	0.078	4025	
Predicted population (existing)		2925	664					
Actual population (1900 Census)	2952	2242	6100	1015	1015	0		
Population w/ seasonal adjustment	5473	1963	610	2973	2972	0 0		
sentic loading from census non data	5446	1.022	013	10.15	DUCE	0	6527	
actual/assumed annualized occupancy	1.9	1.9	19				0527	
Total Loading based land use, census up	nits, centr n	ണ. എന്ന് മ	 ന്നപ്പാം	ads			18324	
Animal units		00	0.0	0.0	0.0		0	
Point sources (MGD_nom)	0.0	0.0	0.0	0.0	0.0		ő	
Other Special:	H	0.0	0.0				õ	
Severing adjustment units	H	0.0	0.0				0	
unner watershed adjustment (ka)	L	0	0				0	
lower watershed adjustment (kg)							0	
Final Adjusted Loading. landuse/census	based						18324	

Table 4. Current Buzzards Bay Project nitrogen loading est	stimates for the Slocums River
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Slocum River 1999	Watershee	l areas in	Hectares	sewered	sewered	sewered	
Landuse type	whole	Lower	upper	whole	lower	upper	N (kg)
Cropland	423.4	308.4	115.0				7843
Pasture	289.6	211.5	78.0				2706
Forest	5695.8	2909.2	2786.6				810
Non-forested wetland	120.3	24.2	96.1				0
Mining	32.1	23.3	8.7				220
Open land	291.9	109.1	182.7				39
Participatory recreation	40.5	18.0	22.6				995
Spectator recreation	0.0	0.0	0.0				0
Water based recreation	0.0	0.0	0.0				0
R0: residential multi-family	73.7	17.3	56.4	60.3	10.1	50.1	1882
R1: Residential- <¼ acre lots	185.9	0.0	185.9	98.8	0.0	98.8	4990
R2: Residential- <1/4-1/2 acre lots	535.0	202.2	332.8	391.6	125.2	266.3	10578
R3: Residential- <1/2 acre lots	526.3	356.4	169.8	61.7	44.8	16.9	14046
Salt marsh	103.4	103.4	0.0				0
Commercial	190.8	5.1	185.7	138.5	1.9	136.6	5335
Industrial	164.8	4.7	160.0	36.8	0.0	36.8	1359
Urban open	51.9	12.8	39.1				7
Transportation (maj. highways)	263.5	0.0	263.5				2853
Waste disposal	59.9	13.5	46.4				712
Water (ponds, other freshwater)	69.7	18.0	51.7				0
Woody perrenial (bogs, orchards, etc.)	1.1	0.0	1.1				14
NA	0.0	0.0	0.0				0
Cranberry Bog (part of #2)	30.2	21.6	8.6				515
Powerlines (part of #6)	54.4	23.8	30.5				8
Saltwater Beach (part of #9)	0.0	0.0	0.0				Õ
Golf (part of #7)	174.5	50.7	123.8				4046
Tidal Salt March (part of #14)	0.0	0.0	125.0				0
Irrag Elooded Salt Marsh (part of #14)	0.0	0.0	0.0				ő
Marina (next of $\#0$)	0.0	0.0	0.0				0
New Ocean	0.0	0.0	0.0				ő
Urban Public (nort of #17)	121.7	50.0	Q1 7				18
Transportation Excility (part of #19)	29	50.0	28				31
Heath (next of #17)	2.0	0.0	2.0				51
Generation (mart of #17)	20.2	0.0	0.0				075
Cemetanes (part of #17)	39.3	2.2	20				107
Orchard (part of #21)	0.2	3.2	3.0				110
Nursery (part of #21)	0.3	3.3	3.0				110
Forested Wetland (part of #3)	0.0	0.0	0.0				0
TOTAL LAND AREA (bz) 9482.6 4467.1 5066.1							
IUIAL LAND AREA (ne)	9482.0	440./.1	2000.1				
Major road length, km	20.1	0.0	20.1				
All Roads, km	282.9	89.9					
Secondary Road length, km	262.8	89.9	172.9				
Road Area (ha)	244.0	71.9	172.1				1404
Embayment area (ha)	197.00						1438
Total Loading based on landuse, pre adja	stments						61485
Reported Area occupancy	2.2	2.2	2.2				
Predicted units (existing)	6880	2224	4656	sewered u	inits		
actual units (1990 census)	8447	1562	6885 0	4890	547	4343	
roof+lawn loading from census units		2202	7073	57.0%	35.0%	63 10/	9366
Linit density (non core)	0.2	0.2	1015	51.970	33.070	05.176	1000
Desidented activities (aviation)	14000	4940	10150				
Predicted population (existing)	14999	1045	10136	10.00		11670	
Actual population (1990 Census)	23511	5989	1/5220	13627	2057	11570	
Population w/ seasonal adjustment	25002	7486	17522	1,4,1,4,1	2571	11570	
septic loading from census pop. data 24520							
actual/assumed annualized occupancy 3.0 4.8 2.5							
Total Loading based land use, census uni	ts, cenur p	op, and a	ectual roa	ds			79326
Animal units	C0	0.0	0.0	0.0	0.0		0
Point sources (MGD, ppm)		0.0	0.0				0
Other Special: Landfill		0.0	0.0				10000
Sewering adjustment units		0	0				
upper watershed adjustment (kg)	L	v I	v				0
lower watershed adjustment (kg)							ő
Final Adjusted Loading, landuse/consus	hased						89326

Protecting Nitrogen Sensitive Embayments Through Land Conservation

XIII. Conclusions

There are many environmental and aesthetic benefits for protecting open space. One of those benefits is the reduction of pollutants like nitrogen from potential new development. Considering the modest level of funding and effort through this 319 grant, a large amount of land was protected. Admittedly, expenditures under this grant such as for survey work or assistance in preparation of self help grants represents a small portion of the efforts committed by municipalities, land owners, and state agencies providing funding for land acquisition described in this report.

Although the reductions of future nitrogen inputs through this initiative are modest, the fact that sufficient land in the Slocums River watershed was acquired over a three-year period to equal 6% of the existing load is a remarkable achievement. This finding shows that protection of open space can be a valuable tool available to planners, especially when combined with other techniques, and over sustained periods of time.

The amount of land protected in Onset Bay was modest. This result illustrated the great difficulty in acquiring open space in urbanized subwatersheds that are near build out conditions. The failure to protect more land in this subwatershed was also due to the lack of a strong lands trust advocacy group focused on this subwatershed. The Wildlands Trust of SE Massachusetts is a regional land trust and covers a much larger area then the Town of Wareham. However, at the time The Wildlands Trust was the only available partner, as Wareham did not have its own town land trust.

Despite the lack of progress in the Onset Bay watershed, a very important outcome was achieved through our outreach program. In a 2001 Fall Town Meeting in the Town of Wareham, an article was introduced to require 4 acre zoning in large portions of town to minimize nitrogen impacts from new development. While the article was tabled for further study, the fact that nitrogen impacts of development is now a prominent issue in open town meeting illustrates that a large portion of the residents are now aware of this issue.

Of course, protection of open space can only prevent water quality from worsening; it cannot improve upon existing water quality. Both Onset Bay and the Slocums River are currently impaired by excessive nitrogen inputs (c.f. Baywatchers II report, Coalition for Buzzards Bay, 1999). Presently Buzzards Bay towns are sewering new areas, upgrading sewage treatment plants, and in some areas requiring installation of innovative onsite septic systems or community systems to reduce existing nitrogen inputs. This 319 grant has contributed to increasing awareness of the nitrogen loading problem facing embayments around Buzzards Bay, and the many solutions needed to address the problem, including protection of open space.

References

Buzzards Bay Project, 1994. A Buzzards Bay Embayment Subwatershed Evaluation: Establishing priorities for nitrogen management, Buzzards Bay Project Technical Report Draft Final.

Costa, J.E., B.L. Howes, D. Janik, D. Martin, D. Aubrey, E. Gunn, M. Frimpter, A.E. Giblin. 1997. *Managing anthropogenic nitrogen inputs to coastal embayments: Technical basis of a management strategy adopted for Buzzards Bay*. Buzzards Bay Project Technical Report. Draft Final, September 1999.

Howes, B., T. Williams, M. Rasmussen. 1999. Baywatchers II - Nutrient related water quality of Buzzards Bay embayments: a synthesis of Baywatchers monitoring 1992-1998. The Coalition for Buzzards Bay Publication.

Tibbetts, John. 1998. Open Space Conservation: Investing in your community's economic health. Lincoln Institute of Land Policy Publication. 7 pp.

Appendix

Exhibit A – Existing Annual Load Worksheet

Letters sent to large acreage landowners with land conservation brochure

Invitations to workshops and workshop agenda

Material distributed at the workshops by Attorney Stephen J. Small and The Trustees of Reservations

Large acreage landowner mailing lists

News clippings and press releases

Brochures developed as part of this project

EXHIBIT A

Nitrogen Loading Standard Rates used for evaluation of Compliance with Conservation Restriction Nitrogen Mass Loading standards. Load rates are those presumed to reach groundwater and eventually the sensitive receptor being protected. Loading assumptions are describe in the following report: Costa, J. E., B. L. Howes, D. Janik, D. Aubrey, E. Gunn, A. E. Giblin. 1999. Managing anthropogenic nitrogen inputs to coastal embayments: Technical basis of a management strategy adopted for Buzzards Bay. Buzzards Bay Project Technical Report. 56 pages. Draft Final, September 24, 1999.

A) Watershed Annual Loading Limit: ______ lbs. N per acre (For current Watershed Annual Loading Limits contact the Buzzards Bay Project at (508) 291-3625 or its successors)

B) Parcel Acreage:

C) Parcel Annual Mass Load Limit: _____ lbs. N per acre per year (= $A \div B$)

Existing Annual Load Worksheet

1. Septic System Nitrogen Loading (5.9 lbs per capita per year) bedrooms x 1.33 persons/bedroom avg. occup. x 5.9 lb N per capitata/yr =

2. Lawns (0.6 lbs. per 1000 sq ft.) ______ sq ft of lawn x 0.0006 lbs per sq. ft.

3. Road impervious area (13.6 lbs per acre) sq ft of roads x 0.00031 lbs per sq. ft.

4. Other impervious area (driveways, roof, sidewalk, recreational; 6.5 lbs per acre) sq ft of roads x 0.00015 lbs per sq. ft.=

5. Precipitation to Natural Landscapes and Surface Waters (0.125 lbs per acre) acres x 0.125 lbs per acre=

6. Golf Course and other recreational fields _____acres x 26.1 lbs per acre=

7. Agriculture

Cranberry Bogs: _____ production acreage x 22 lb per acre= Orchards: _____ production acreage x 22 lb per acre= Corn, nurseries, Miscel.: _____ production acreage x 17.8 lb per acre= Pasture, Hay: _____ production acreage x 8.9 lb per acre=

8. Livestock

Animal units x 75 kg per animal =

(Note: 1 Animal unit= 1000 lbs = 1 Beef Steer = 0.8 Dairy cows = 500 chickens = 10 pigs)

Protecting Nitrogen Sensitive Embayments Through Land Conservation

Letters sent to large acreage landowners with land conservation brochure



Buzzards Bay Project National Estuary Program

February 2000

Dear Landowner,

The land you own is located in the Slocums River watershed. A *watershed* is a land area where all sources of water, including lakes, rivers, estuaries, wetlands, streams, and groundwater, drain to a common waterbody. Water from your property ultimately flows into the Slocums River.

On its way through a watershed, water may travel over town streets, residential yards, forests and farmland. It may also seep into the soil and travel as groundwater. As it moves along, water can pick up pollutants, such as sediment, chemicals, and nitrogen. Once these pollutants reach the Slocums River they can have a detrimental effect on water quality; often resulting in shellfish bed closures, destruction of aquatic habitat, and loss of native plant and wildlife species.

A pollutant of major concern in the Slocums River is nitrogen. The primary source of nitrogen entering the river is residential septic systems; followed by commercial and industrial development. One proven way to control increases of nitrogen is to slow residential growth rates through land conservation.

The Slocums River watershed encompasses approximately 23,640 acres, of which only 4,100 acres of land are permanently protected from future development. Currently, about 62% of the watershed is available for development, and there is a potential for more than 9,000 new homes to be built. Such a dramatic increase in residential housing coupled with an increase in septic systems would further reduce water quality and damage living resources in the Slocums River.

An easy way that you as a landowner can contribute to solving this problem is to decide to permanently protect your property with a conservation restriction; or one of the many other tools available today. A conservation restriction is an addition to the existing property deed which allows the landowner to maintain ownership of their land and use it as they do today, but it restricts the property from being developed in the future. There are also numerous tax benefits associated with land conservation, such as a substantial reduction in estate and property taxes.

To assist landowners in the Slocums River watershed to protect their land, the Buzzards Bay Project and Dartmouth Natural Resources Trust have secured grant money from the Massachusetts Department of Environmental Protection. This money is being made available to Slocums River watershed landowners to pay for survey, appraisal, and title work costs associated with legally restricting land for conservation purposes.

Please read the enclosed brochure which details the various conservation options available to you.

2870 Cranberry Highway, East Wareham, Massachusetts 02538 (508) 291-3625 Facsimile (508) 291-3628 http://www.capecod.net/~menviron

The Buzzards Bay Project is sponsored by the U.S. Environmental Protection Agency and the Massachusetts Executive Office of Environmental Affairs through the Coastal Zone Management Office.

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Buzzards Bay Project National Estuary Program

February 2000

Dear Landowner,

The land you own is located in the Onset Bay watershed. A *watershed* is a land area where all sources of water, including lakes, rivers, estuaries, wetlands, streams, and groundwater, drain to a common waterbody. Water from your property ultimately flows into Onset Bay.

On its way through a watershed, water may travel over town streets, residential yards, forests and farmland. It may also seep into the soil and travel as groundwater. As it moves along, water can pick up pollutants, such as sediment, chemicals, and nitrogen. Once these pollutants reach Onset Bay they can have a detrimental effect on water quality; often resulting in shellfish bed closures, destruction of aquatic habitat, and loss of native plant and wildlife species.

A pollutant of major concern is nitrogen. The primary source of nitrogen entering Onset Bay is residential septic systems; followed by commercial and industrial development. One proven way to control increases of nitrogen is to slow residential growth rates through land conservation.

The Onset Bay watershed encompasses approximately 3,101 acres, of which only 361 acres of land is permanently protected from future development. Currently, about 65% of the watershed is available for development, and there is a potential for more than 800 new homes to be built. Such a dramatic increase in residential housing coupled with an increase in septic systems would further reduce water quality and damage living resources in Onset Bay.

An easy way that you as a landowner can contribute to solving this problem is to decide to permanently protect your property with a conservation restriction or one of the many other tools available today. One of your neighbors in the watershed did just that and helped to protect 13 acres of beautiful wildlife habitat along the Agawam River (Please see enclosed newspaper article).

There are many land conservation tools available, but one of the easiest and most effective is a conservation restriction. A conservation restriction is an addition to the existing property deed which allows the landowner to maintain ownership of their land and use it as they do today, but it restricts the property from being developed in the future. There are also numerous tax benefits associated with land conservation, such as a reduction in estate and property taxes.

To assist landowners in the Onset Bay watershed to protect their land, the Buzzards Bay Project and the Wildlands Trust of Southeastern Massachusetts, a regional land trust, have secured grant

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²⁸⁷⁰ Cranberry Highway, East Wareham, Massachusetts 02538 (508) 291-3625 Facsimile (508) 291-3628 http://www.capecod.net/~menviron

Wildlands trust gains 13 acres

By Mark Primack The Wildlands Trust

DUXBURY — A victory for bugs, bogs and blueberries was recorded recently as 13 acres of prime wildlife habitat was placed under permanent conservation protection along the Agawam River in Wareham. Douglas and Donna Truran of Glen Charlie Road donated a conservation restriction to the Wildlands Trust of Southeastern Massachusetts, protecting more than 500 feet of shoreline along the Agawam River and 450 feet of shoreline along Spectacle Pond.

The property is home for a variety of unusual plants and animals, including rare damselflies and moths, insect-eating plants, freshwater mussel beds, and a quaking sphagnum bog. "We wanted to protect the bog, where there are a variety of rare dragonflies," explained Mark Truran, who encouraged his parents to donate the conservation restriction. The property is also the site of a pick-your-own blueberry business: "My grandfather started, blueberry cultivation here in 1935, so this is a real piece of our family," said Mr. Truran, who helps maintain the local heirloom varieties.

Land under a conservation restriction is protected from development by future owners, and the preservation of specific wildlife, and agricultural, scenic and historical values can be written into the document. Although public access is not necessarily a requirement, the Trurans were interested in a future boardwalk that would allow access to the bog for education programs, an option that was written into the conservation restriction. Under the restriction, the land remains private and stays on the tax rolls, although the landowner can often benefit from a charitable tax deduction. The

Trurans were also able to benefit from a program offered through the Buzzards Bay Project National Estuary Program, in which survey and appraisal costs were reimbursed by a U.S. Environmental Protection Agency grant in return for helping to protect the water quality in Onset Bay.

The Standard-Times, New Bedford, MA, Tuesday, February 8, 2000 / Page A5

"In a time when towns are seldom able to raise scarce funds to buy land for open space, the (conservation restriction) represents one of the least. expensive options for preserving the character of our communities," said Mark Primack, executive director of the Wildlands Trust of Southeastern Massachusetts.

The trust is a local conservation organization, founded 27 years ago in Plymouth, which owns or protects nearly 3,000 acres of nature preserves throughout the region. Invitations to workshops and workshop agenda

E



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YOU ARE INVITED

A Workshop on Land Conservation Opportunities for Dartmouth & New Bedford Landowners

Wednesday, January 28, 1998, 7-9pm Dartmouth Town Hall, Selectmen's Meeting Room - 3rd floor 400 Slocum Road, North Dartmouth, MA

Dartmouth Natural Resources Trust (DNRT) and the Buzzards Bay Project National Estuary Program are cohosting a meeting for landowners in Dartmouth and New Bedford on the range of land conservation options available to owners of forest, farmland, and wetland acreage and the often significant property, income, and estate tax benefits that accompany such options. All are welcome to attend.

WORKSHOP AGENDA

7:00 - Welcome & Land Conservation in the Slocum/Paskamanett River watershed

• Mark Rasmussen, Buzzards Bay Project

7:10 - Dartmouth Natural Resources Trust (DNRT)

 David Wilson, President & Leslie Badham, Executive Director How dozens of landowners have worked with the DNRT to protect nearly 1,700 acres of scenic open space, natural areas, and farmland in Dartmouth

7:20 - Tax-Saving Strategies and Conservation Restrictions

• Attorney Stephen J. Small, Law Office of Stephen J. Small Esq., Boston, MA author of <u>Preserving Family Lands</u> & <u>Preserving Family Lands</u>: <u>Book II - More Planning</u> <u>Strategies for the Future</u> focusing on estate tax planning and options for landowners who want to protect their land and keep it intact for the next generation of owners.

8:00 - Real-Life Example: "Riverview" - How conservation options have worked to preserve land & solve tax planning problems for landowners

Steve Sloan, Land Conservation Specialist, Trustees of Reservations

8:30 - Questions and Answers - Ask the experts

How can land conservation help you save land and money in Dartmouth or New Bedford?

Printed on 20% post-consumer recycled paper

All attending will receive a free copy of Attorney Small's book, <u>Preserving Family Lands: Book II</u>, as well as other information regarding tax benefits and land conservation options available to landowners

LAND CONSERVATION OPPORTUNTIES FOR WAREHAM LANDOWNERS

An informational meeting for landowners in Wareham on land conservation options and substantial tax benefits available to landowners.

When: Thursday, November 20, 1997, 7pm Where: Wareham Multi Service Center, Marion Rd, Wareham (Next door to Town Hall, 2nd Floor Meeting Room)

Tax benefits for landowners, estate planning and real-life examples will be discussed by noted Attorney Steven J. Small and Wes Ward of The Trustees of Reservations. Everyone attending the workshop will receive a free copy of Attorney Small's book, "Preserving Family Lands II" as well as other information regarding tax benefits and land conservation.



Cosponsored by the Wildlands Trust of Southeastern Massachusetts & Buzzards Bay Project National Estuary Program. Call (508)748-3600 for further information.





PO Box 2282 Duxbury, MA 02331 (617) 934-9018 (617) 934-8110

Land Conservation Opportunities for Wareham Landowners

Thursday, November 20, 1997, 7-9pm Wareham Multi-Service Center, Marion Rd (Route 6), Wareham (Next to Town Hall on east side)

WORKSHOP AGENDA

- 7:00 Welcome
 - Mark Rasmussen, Buzzards Bay Project National Estuary Program, Marion, MA
- 7:10 The Wildlands Trust of Southeastern Massachusetts in Wareham
 - Mark Primack, Executive Director, Wildlands Trust of Southeastern Massachusetts

7:20 - Tax-Saving Strategies and Land Conservation

- Attorney Stephen J. Small, Law Office of Stephen J. Small Esq., Boston, MA author of <u>Preserving Family Lands</u> & <u>Preserving Family Lands</u>: Book II - More Planning <u>Strategies for the Future</u> focusing on estate tax planning and options for landowners who want to protect their land and keep it intact for the next generation of owners.
- 8:00 Real-Life Example: "Riverview" How conservation options have worked to preserve open space & solve tax planning problems for landowners
 Wes Ward, Director for Land Conservation, Trustees of Reservations, Beverly, MA
- 8:30 Questions and Answers Ask the experts

How can land conservation help you save land and money in Wareham?

All attending will receive a free copy of Attorney Small's book, <u>Preserving Family Lands: Book II</u>, as well as other information regarding tax benefits and land conservation options available to landowners

Cosponsored by the Buzzards Bay Project National Estuary Program and the Wildlands Trust of Southeastern Massachusetts Material distributed at the workshops by Attorney Stephen J. Small and The Trustees of Reservations

TAX-SAVING STRATEGIES AND CONSERVATION RESTRICTIONS

by

Stephen J. Small Law Office of Stephen J. Small, Esq., P.C. Boston, Massachusetts

Sponsored by the Dartmouth Natural Resources Trust and The Buzzards Bay Project National Estuary Program

> January 28, 1998 North Dartmouth, Massachusetts

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THE LANDOWNER'S QUIZ

What do you think the combined federal and state estate tax will be on your estate? Fill in the information below.

1. My net worth, not including the value of my real estate, is _____.

2. The value of my real estate is ______.

No.

3. Therefore, the total value of my estate is ______

4. If my estate is fully taxable, the combined federal and state estate tax will be

5. In order to pay this tax, my heirs will have to _____

DON'T LOOK AT THE NEXT PAGE UNTIL YOU HAVE COMPLETED THIS PAGE

PRESERVING FAMILY LANDS: SUCCESSION PLANNING FOR THE LANDOWNER

by

Stephen J. Small Law Office of Stephen J. Small, Esq., P.C. Boston, Massachusetts

I. <u>PLANNING FOR THE LANDOWNER</u>

A. Historically, goal of estate planning has been to put the client's affairs in order.

- B. Beyond that, biggest problem: how to get the family's <u>business</u> through the estate tax, intact, and into the hands of the next generation.
 - 1. Example: valuable family business -- what happens when clients visit advisor.
 - 2. Example: valuable family land -- what happens when clients visit advisor.
 - 3. Landowners are asking for the same planning attention and creative energy by professionals as business owners are receiving -- and landowners are not getting it!!
 - 4. Understanding the process: how do you get the family to agree??
 - 5. What are some of the things the attorney needs to know about to be able to help the family reach agreement (this is not intended to be an all-inclusive list):

See, generally, Small, <u>The Federal Tax Law of Conservation Easements</u> (Land Trust Alliance, 1986), for annotated commentary on the Income Tax Regulations on easement donations and for a discussion of some of the tax considerations associated with easement donations. See also <u>Preserving Family Lands</u>, second edition, Landowner Planning Center, 1992; <u>Preserving Family Lands</u>: <u>Book II – More Planning Strategies for the Future</u>, Landowner Planning Center, 1997.

- j. Valuation discounts
- k. So-called private foundations and other non-public and non-private tax-exempt entities, including, for example, charitable trusts and "supporting organizations"
- 1. Charitable remainder trusts and related vehicles
- m. Taxation of life insurance
- n. Hazardous waste liability issues
- o. Water rights law
- p. Mineral rights law
- q. State law, real estate law, land use controls, zoning, state and local taxation of real estate
- . r. Community property law

II. FEDERAL ESTATE AND GIFT TAX "PRIMER"

- A. Introduction to concepts; most people <u>never ever</u> had to worry about this before.
- B. General rule: all transfers of wealth are subject to gift tax or estate tax
- C. Exceptions
 - 1. \$10,000/\$20,000
 - 2. Between spouses
 - 3. Charitable
 - 4. So-called "\$600,000 exclusion" may apply
 - 5. Examples
 - 6. Most people historically have not used any of the \$600,000 exclusion during lifetime.
 - 7. JWROS: a trap for spouses

- 3 -

- Limitation on benefits from a gift of <u>property</u> to charity: generally deductible up to 30% of adjusted gross income ("AGI"). Five-year carryforward. (A gift of cash is deductible up to 50% of AGI.) Possible election to take deduction up to 50% of AGI, <u>without deducting any</u> <u>appreciation</u>.
- 3. Example: John and Mary have adjusted gross income of \$100,000. They give land with a value of \$100,000 to charity. They can deduct \$30,000 of the gift (30% times \$100,000) in the first year, with a five-year carryforward of the \$70,000 that's left. Any undeducted "value" remaining after six years disappears into thin air.
- 4. No alternative minimum tax rule, although the alternative minimum tax may still be relevant.
- 5. Most easements <u>not</u> driven by income tax benefits.
- 6. Run the numbers!!
- G. Lower property tax
 - 1. Up to local assessors (or state statute), not federal tax law
 - 2. State and local considerations; state statutory issues
 - 3. Watch out for "revenue base" mentality.
 - 4. Special use assessment considerations and misconceptions
- H. Do the <u>economic analysis</u>
- I. Other federal tax issues
 - 1. Harry Investor
 - a. Harry proposes donating to the town a conservation easement if the town approves his application for a new subdivision.
 - b. <u>Quid pro quo</u> trap: Harry's "deal" is not a gift, and no deduction is allowable. This not just "conservation" law, it is part of the underlying law of charitable contributions.
 - c. <u>If Harry can get by the quid pro quo</u> hurdle, it is still likely that his deduction will be limited to his "basis" (or cost) of the donated property.

- 9. An amount of land equal to the amount of any mortgage on the property will not be eligible for the exclusion.
- 10. To the extent of the exclusion land will receive a "carryover basis," rather than a "stepped-up basis" at the decedent's death.
- 11. The 40% exclusion will be reduced by two percentage points for each percentage point by which the easement fails to reduce the value of the property by at least 30%.
- 12. The exclusion may apply when land is owned by a family corporation or partnership as long as the decedent owned at least a 30% interest in the entity at the time of death.
- 13. The new law appears to allow an executor and heirs to agree to donate a "post-mortem" easement that will not reduce the value of the gross estate, but will allow the §2031(c) exclusion.
- 14. Observations:

a. This is an important new incentive. There are questions about how it works but there is a lot that we do know about how it works.

- b. Every single easement must now take into account the rules of §2031(c) as part of the planning process.
- c. Every single family lands planning situation must now take into account the rules of §2031(c).
- d. Every single <u>recorded</u> easement should be reviewed with §2031(c) eligibility in mind if the land is still owned by the same family that donated the easement.

e. Planning immediately after the death of many landowners will now become more complex, difficult, expensive, possibly highly beneficial, and <u>absolutely necessary</u>.

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4/1/97

A Message to Landowners: Planning Now Can Help Protect Your Land from Estate Tax

by Stephen J. Small, Esq.

A few years ago, at a national conference in Montana, a speaker made the following observation.

"There are 90 million acres of land in Montana," he said, "and over the next 15 to 20 years 30 million of those acres are going to change hands. That's because that's how much land we have that is owned by people who are of an average age of 59%."

That is really remarkable, I thought. And then I thought, you know, that's not true only in Montana, it's true in Georgia ... and Virginia ... and Pennsylvania ... and New York ... and all over the United States. An enormous amount of private land in this country is held by people who are 55, even 65, and older. And over the next 15 to 20 years, millions of acres are going to change hands and potentially change use, depending on how landowners plan for—and don't plan for—their land's future.

With all due credit to that speaker, I don't think he realized the significance of what he had said. In New England, the average age of the woodlot owner is 65. In the Southeast, the average age of the private forestland owner is 64. I was told recently that on one particularly important stretch of scenic road outside of Lexington, Kentucky, there are 20 landowners and 18 of them are 70 or older.

In 1988, I wrote a little book called *Preserving Family Lands*. The message of *Preserving Family Lands* is simple: if you have a piece of land you care about, you may have a senous estate tax problem. That land may have become so valuable it may have to be sold to pay the estate tax. Given the one-two combination of demographics and the estate tax, millions of acres of open space, wildlife habitat, farmland, forestland, wildlife corridors, watershed, and ranchland are at risk.

There was another message in *Pre*serving Family Lands. If you are a landowner, and if you care about preserving the quality of life in your neighborhood and your community, you also have tools for dealing with the estate tax problem. Let me give you an example of how devastating the estate tax can be, then turn to the tools to fix the problem.

Let's say that John and Mary own Rolling Hills, a beautiful country estate. A real estate developer has just offered John and Mary \$3 million for Rolling Hills, with the idea of turning the estate into a 50-lot subdivision. Of course, John and Mary turned the fellow down.

Let's also say that John and Mary are comfortable, with a portfolio and savings worth about \$1.5 million, and that they haven't bothered to have their wills updated for some time.

Mary dies first, and she leaves the cash, the portfolio, and Rolling Hills to John. Assume there is no estate tax due at that time. John dies, and he thinks he leaves Rolling Hills and the \$1.5 million to their three children.

The children, who had assumed all along that they would inherit their beloved Rolling Hills, are in for a rude awakening, because this is what happens.

In most states, the combined federal and state estate tax on the \$4.5 million estate (Rolling Hills plus the other assets) is almost \$2 million. *Rolling Hills has to be sold to pay the estate tax*, and there are two irrevocable losses. First, the family will lose Rolling Hills. Second, Rolling Hills will almost certainly be paved over, bulldozed, subdivided, and re-landscaped, and all of the open space will be lost forever.

In contrast, what if John and Mary had a successful family business worth \$3 million? Would John and Mary and their advisors have done some sophisticated tax, financial, and legal planning to get the family business through the transfer tax system to the children? Absolutely! A whole array of entirely appropriate tools would likely be used to keep that business intact and get it to the kids.

Why haven't they done the same sort of sophisticated, aggressive, creative planning for Rolling Hills? Succession planning for the business owner is an accepted tax planning and financial planning discipline; for those of us who value open space, it's time we focus on succession planning for the landowner. Even if Congress changes the estate tax rules, landowners need to understand that good succession planning for family lands will still be necessary.

The principal tool in the private landowner's toolbox is the conservation easement, but it is not the only tool. A planning strategy may include the use of a family limited partnership, a "generation-skipping trust," and possibly annual gifts to children and grandchildren. Often, too, more sophisticated planning involves the use of other forms of tax-advantaged charitable giving, including various forms of charitable trusts and family private foundations.

The purpose of this article is not to explain these tools. The purpose here is to make three points.

First, open space is threatened because of an aging population of landowners and the impact of high federal estate taxes.

Second, this is a problem that landowners can do something about and that land trusts can do something about.

Third, this is a problem that needs attention now. It is not too late for the educational process to begin, and land trusts can play an important role in that process. Awareness of these issues should force landowners to act, to do the planning, and to protect and preserve the open space that is so important to all of us.

Stephen J. Small is a tax attorney in Boston and LTA board member.

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Land Conservation Center

Case Study Outline RIVERVIEW FARM

<u>A. Introduction</u>: Riverview is one of a diminishing number of high quality farms or estates in our outlying suburbs and country towns, now facing development pressure. Its area, topography, other factors in this case study analysis are real. Its name, location, family details are fictional. Dollar values are the result of an actual appraisal, about 1 1/2 years old.

1. Land planning analysis by Warren Flint, Matlock Associates, Land Use Planning and Design, Box 214, Lexington Road, Lincoln, MA 01773 (617-259-0552). Note: the septic system rules have not been updated to new Title V standards.

2. Appraisal analysis by James L. Catterton, Walden Associates, Inc., 91 Main St., Concord, MA 01742 (508-371-7077).

3. Case study originally developed by Stephen J. Small, Esq., 75 Federal Street, Suite 1100, Boston, MA 02110 (617-357-4012); adapted by Wesley T. Ward, Director, Land Conservation Center, The Trustees of Reservations, 572 Essex Street, Beverly MA 01915 (508-524-1863).

B. Background

1. 1810 House and 200 acres, purchased in the 1950's for \$50,000. In other words, cost basis is very low.

2. Riverview is major asset for the Jones family; they also hold investments in stocks and bonds totaling \$700,00. Current value of Riverview is unknown. Town assessors say \$800,000. Broker says \$3,000,000. Who's right? How to determine?

3. Art and Sue hope that Riverview will never be developed; but need to realize some value from the property. They and their two adult children are concerned about estate planning and estate taxes of 40% - 50%. What do the children think about the future -- theirs and the property's?

F. Land planning process for limited or creative development

1. Good process and product can "create" value. May be worth doing even if a gift of restriction or property is not feasible for this family.

2. Basic steps: analysis of land capability, regulatory factors, resources to protect and utilize, and economic factors (based on appraisal); then the creation of development and conservation plan.

<u>G. Tax analysis</u>

1. Will restriction qualify under IRS rules?

2. What income tax benefits can be expected -- first year and then for five additional years?

3. How will the plan affect estate taxes?

4. Integrating the conservation and estate plans.

5. Possible gifts to family members while parents are alive.

H. Future Management Issues

1. Do children have an interest in future ownership and management or will they prefer to sell? Do they agree?

2. What legal form or entity is best for holding / managing the property: partnership, limited partnership, corporation, trust, private operating foundation, other?

a. Number and age of children.

b. Their interests and capabilities.

c. Tax, financial, and management factors.

d. Purpose and intent of the plan, long range and short range.

I. Riverview Conserved: One Possible Strategy

1. Lot A kept unrestricted for future liquidity and to help pay estate taxes. When Lot A is sold, the deed will be restricted to protect the main house on Lot B.

Matlock Associates

Land Use Planning and Design

200 ACRE UNDEVELOPED FARM Property and Project Description

The project description involves site, environmental and zoning analysis and design of a hypothetical subdivision plan of a large undeveloped farm to serve as a basis for an appraisal of the property under highest and best use - Full Development Plan ("Before Plan") and a Conservation Plan: Limited Development Plan ("After Plan").

The Farm consists of approximately 200 acres, in a suburban or rural area outside a major city in eastern Massachusetts, with 2,3707 linear feet of frontage on River Road. The Farm contains a mixture of open fields (both hay and tillage), orchards, woodlots, wetlands and riverbank. From River Road, the terrain slopes down first moderately (10 to 15% slopes) and then more gently (0-5% slopes) until it meets the river. The property has approximately 2,500 feet of frontage on the river. Along most of the riverbank are wooded wetlands, but two dry upland areas exist at the western and eastern ends of the riverbank.

The soils of the Farm include glacial till along River Road, a broad area of glacial outwash sands and gravel through most of the interior, a terrace of shallow soils over bedrock near the western river frontage, and finally, an area of alluvial deposited silty soils supporting wetland vegetation along the river.

The above-mentioned wetland consists of approximately 23.5 acres. In addition to this wetland there is a 2.75 acre wetland along the western boundary of the Farm. The total acreage of wetlands on this farm is 26.25 acres, or roughly 13% of the total acreage.

DEVELOPMENT CONSTRAINTS

<u>Soils</u> (See Soils Map)

Those sections containing minimum standards of Title 5 of the Massachusetts Environmental Code which have the strongest bearing on this preliminary analysis are:

1. "<u>Impervious material</u>: Material having a percolation rate greater than 30 minutes per inch, including, but not limited to bedrock, peat, loam and organic material." (Section 15.01).

2. "Subsurface sewage disposal systems shall be located in an area where there is at least 4 feet of naturally occurring pervious soil below the entire area of the leaching facility...the 4 foot stratum must be free of impervious materials, such as layers of clay, silt, subsoil or loam." (Section 15.03(6)). However, it should be cautioned that these are preliminary tests only. Extensive official testing should be conducted before any development is considered.

Wetlands and Floodplains (See Development Constraints Map)

As mentioned earlier, there are approximately 26.25 acres of wetlands on the property. The two wetlands, both of which drain into the river, are subject to protection under the Massachusetts Wetlands Protection Law, MGL 131, §40. The local Conservation Commission has jurisdictional review over any projects which would alter these wetlands, or come within 100 feet of the wetland edges. The wetlands and their 100 foot buffer zone are shown on the Development Constraints Map. The 100 foot buffer zone contains 12.37 acres.

The property contains approximately 66.5 acres within the 100 year floodplain. (A majority of the wetlands and buffer zone fall within the 100 year floodplain). These floodplains are protected by federal law as well as the Town's Flood Plain Conservancy District By-law. By Special Permit from the Board of Appeals, at-grade roads and new construction elevated above the base flood elevation may be allowed. According to the Town Planner, few if any houses have been granted permits within the Flood Plain Conservancy District.

Water

A twelve-inch water main exists along River Road. The water in this main is of sufficient pressure and flow to support new development. According to a staff member of the Town's Water Department, eight inch mains would be required in new subdivision roads serving the Farm property.

Zoning

The farm lies in the AA Residential District. Allowed uses include single family houses, forestry and agricultural uses, educational and religious uses, cemeteries, municipal uses, and underground utilities. By Special Permit from the Board of Appeals, these uses may be expanded to greenhouses, private recreation, above-ground utilities, and child care centers.

The following dimensional requirements apply within the AA District:

- minimum lot size: 80,000 square feet
- minimum lot frontage: 200 feet
- minimum width (measured at the dwelling front wall): 160 feet
- minimum frontage on cul-de-sac: 50 feet (minimum width of 200 feet must be maintained at front yard setback)
- minimum frontage exception: 160 feet (minimum width of 200 feet must be maintained at front yard setback)

grade (the subdivision regulations limit grades to 8%, but a waiver to 10% has been given to subdivisions in the past, according to the Town Planner).

28 of the house sites are in the open fields and will have short vistas. Some will have views of the river, though these views may be eventually compromised by landscaping and fencing of the lots themselves. The remaining 21 lots have house sites located in the orchard or the wooded portion of the property.

Conservation Plan: Limited Development - ("After Plan")

The Conservation Plan: Limited Development Plan shows the property divided into three large residential lots and a 28 acre lot containing the existing house, barn, outbuildings and paddocks. The majority of the Farm (126.57 acres) is devoted to permanent conservation through a Conservation Restriction. All lots have frontage on River Road, eliminating the need to construct any new roads. Lots C and D share a common drive along an existing farm trail, thus preserving the character of the property.

The house sites for Lots B, C and D have been carefully sited off open fields back in the woods. Each of these lots has the right to clear an opening through the trees to allow views of the river. Each of the three lots has a great sense of privacy and a spectacular view of the River across open fields. Each lot is restricted so that all buildings must be located in the eastern portion of each lot, thus protecting the existing open fields. These buildable areas range from $4.7\mp$ to $5.3\mp$ acres.





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WALDEN ASSOCIATES, INC.

RIVERVIEW FARM VALUATION ANALYSIS

James L. Catterton Walden Associates, Inc. 91 Main Street, Concord MA 01742

508-371-7077

INTRODUCTION

The following discussion derives the value of Riverview Farm in an unrestricted condition ("before"), following encumbrance by a conservation restriction ("after"), and the value of the conservation restriction.

The "before" valuation of Riverview Farm requires an analysis of the total gross value of the new lots which could be created in a residential subdivision plus the value of existing improvements set on appropriate lots, adjusted through a cost of development analysis. From the potential gross value of the lots must be deducted the costs which would be incurred by a developer and the profit he would expect to take out of the project.

Similarly, the "after" value is established by determining the gross value of the retained lots, any existing improvements set on appropriate lots, and additional land now encumbered by a conservation restriction. This additional land may be valued at its agricultural or forestry value, or at an "estate amenity" value, depending on the nature of the local market. The value of the existing improvements and any retained lots may be increased or "enhanced" by their proximity to land subject to a perpetual conservation restriction. If the terms of the restriction allow the property to be divided and sold, the potential gross value of the lots must be adjusted by the costs which would be incurred in creating and marketing them to arrive at the property's net "after" value.

The value of the conservation restriction is generally the difference between the "before" and "after" values.

COST OF DEVELOPMENT APPROACH

Since there have been no local sales of property fully comparable to Riverview (there seldom are), we must look at the development potential of the parcel in order to establish its value.

WALDEN ASSOCIATES, INC.

Existing farm house	\$400,000
8 "Form A" lots on River Road	\$70-80,000
26 Standard interior lots	\$75,000
15 Riverfront lots	\$120,000

Total Gross Value

\$4,750,000

The value of the subject property may be derived by summing the value of the component lots and subtracting the cost of their development while accounting for time. Development costs are outlined below and are incorporated into the discounted cash flow which follows. In this analysis we have assumed the following project schedule:

Year 1: The house and two "Form A" lots would be sold, approvals obtained,

Year 2: The loop road built and twelve lots sold,

Year 3: Twelve lots sold,

Year 4: The cul-de-sac lanes built and twelve lots sold,

Year 5: Eleven lots sold.

DEVELOPMENT EXPENSES AND ASSUMPTIONS

A developer would incur certain expenses in a residential subdivision of Riverview which must be subtracted from the gross retail value of the lots, accounting for time, in order to arrive at an estimate of fair market value. These costs are outlined below.

Marketing

We have assumed brokerage commissions of 6% for the sale of vacant land based on a single real estate office obtaining a listing on all lots created.

Survey and Engineering Fees

These fees include perc tests and have been estimated to total \$1,500 per lot, including an initial survey expense of \$20,000.

Land Planning and Legal Fees

Land planning costs in year 1 are estimated at \$15,000; Year 1 legal fees including permit applications are estimated at \$30,000, and at \$5,000 in subsequent years.

-3-

RIVERVIEW FARM, RIVER ROAD, 49 LOTS PLUS FARM HOUSE

RIVERVIEW FARM, RIVER ROAD, 49	LOT	s plus f	ARM HO	USE			
Appreciat. Rt. Project Length	5%		Discount	10%)		
Market Cost	6%		Int	10%			
(CPI(costs)	5%		Term	1078			
	070		Princ	850			
			PMT	000			
YEARS		1	2	3	4	5	Totals
PROJECTED GROSS REVENUES-LO	TS	2	12	12	12	····· 11	49
"Form A" Lots + House		550	150	0	0	300	1,000
Sale of Standard Lots		0	450	600	600	300	1,950
Sale of Riverfront Lots		0	480	480	480	360	1,800
Less Marketing	===	33 ======	65	· 65	65	58	285 =======
TOTAL NET RECEIPTS		517	1,015	1,015	1,015	902	4,465
LESS EXPENSES						*****	
Land Aquisition(Last line)		0	0	0	0	0.	0
Legal		30	5	5	5	5	50
Survey,Engineer,Testing		.95	0	0	0	0	95
 Land Planning 		15 [.]	0	0	0	0	. 15
Common Drives		0	0	0	0	0	0
Sewage Treatment Plant		0	0	0	Q	0	. 0
Road consruct, 6025'@ \$175		0	850	0	284	0	1,134
Telephone and Electric		0	0	0	0	. 0	0
Sewer		0	0	0	0	0	0
Road Improvement		25	0	0	0	· 0	25
Water System(in road cost)	=== ;	0	0	0	0	0	· 0
TOTAL DIRECT COSTS		165	855	5	289	5	1,319
Real Estate Taxes		8	60	45	30	15	158
Road Ioan @ 10%		0	85	0	0	0	85
Arch Consulting@5%Gross		0	0	0	0	0	0
Misc. fees @ 1%		5	10	10	10	9	45
profit@15-25% gross sales	====	83 ======	255 ======	270 ======	270 =======	210 =======	1,088
TOTAL INDIRECT COSTS		96	410	325	310 	234	1,375
TOTAL COSTS		261	1,265	330	. 599	239	2,694
NET RECEIPTS before discrit.		256	(250)	685	416	663	1,771
Discount factor LAND VALUE		1.00 256	0.91 (227)	0.83 566	0.75 313	0.68 453	1,361

Say, \$1,360,00

WALDEN ASSOCIATES, INC.

LOT	SIZE (ACRES)	NON- RESTRICTED <u>AREA</u>	NATURE OF RESTRICTION	MARKET VALUE
A	28	0	Existing Improvements	\$525,000
В	8	5.3	One house	\$200,000
C	20	4.7	One House	\$250,000
D	16.5	4.7	One House	\$225,000
E	126.5	0	Conservation/ Agriculture	\$250,000
			Gross Value	\$1,450,000

and presents their estimated market values based on comparable sales and enhancement adjustments.

The discounted cash flow which appears on the following page parallels the "before" analysis, with a few changes. Various expenses have been reduced due to the smaller scale of the project. All lots created use existing road frontage, so approval time has been reduced to six months (it is still not zero because the building inspector and Planning Board don't like the grades on the common drive).

There is a common drive which serves Lots C, D, and E, which has become a small gravel road complete with ditches and culverts. Wells will be drilled on three of the lots prior to sale.

Pricing Lots B, C, and D has been a difficult task because of their protected setting and size; they are among the best lots in town. Fortunately, there have been some similar sales in the adjoining town of large lots next to land under the APR program, and some nearby high quality lot sales. There are a couple of good estate sales in town of properties with limited road frontage and hence no subdivision potential which are useful in valuing Lot A. Finally, there have been a couple of farmer to farmer land sales, and a sale of paddocks from one estate to another which have been used to value Lot E.

The discounted cash flow which appears on the following page incorporates lot values and development expense estimates as previously outlined. The cash flow produces a value of <u>\$920,000</u> for the subject property.

WALDEN ASSOCIATES, INC.

The Assessors didn't agree that all of the restricted land in lots A, B, C, and D met their requirements for Chapter 61A, and hence the town would be entitled to rollback taxes on 25 acres, which have been pro-rated at \$10,000. The value of Riverview under the limited development plan is hence <u>\$910,000</u>.

The value of the conservation restriction is the difference between the value of the property prior to restriction $(\underline{\$1,300,000})$ and its value following encumbrance by the conservation restriction $(\underline{\$910,000})$, or $\underline{\$390,000}$.

SUMMARY

In its unrestricted form, Riverview's "highest and best use" is as a 50 lots residential subdivision, one of which contains the existing farm house. Its market value is \$1,300,000. Following encumbrance by a conservation restriction that limits its use to three new building sites, the property has a value of \$910,000. The value of the conservation restriction, which represents the difference between these two values, is \$390,000.

Large acreage landowner mailing lists

Allan Charlestana

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News clippings and press releases

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DNRT NEWSLETTER

Winter 1997

DNRT Receives Funds to Protect Dartmouth Watershed

In January, DNRT received a state grant of \$20,000 to encourage land conservation in the Slocums and Little River watersheds. The funds for the program, which will be administered by the town of Dartmouth, were secured by the Buzzards Bay Project as part of a pilot initiative to use land conservation as a tool for protecting water quality and controlling nitrogen flow into sensitive coastal estuaries and harbors.

Nitrogen from residential land uses such as septic systems, fertilizer applications, and road runoff comprises the greatest threat to water quality in many Buzzards Bay harbors and embayments. Working with DNRT, the Buzzards Bay Project hopes to conserve critical lands in the Slocums and Little River watersheds to reduce nitrogen loads from present and future developments.

This summer, DNRT and the Buzzards Bay Project will convene an educational seminar for landowners who are interested in learning more about conserving their property through a gift of land or a conservation restriction to DNRT. As a result of the funds available through this grant program, some landowners will be eligible for financial assistance to cover the costs of completing a conservation gift (e.g. legal or engineering fees). For more information, please contact DNRT's Executive Director, Steve Sloan, at 991-2289.

Water grants awarded

Dartmouth, Onset share \$50,000

By Jack Stewardson Standard-Times staff writer

The Buzzards Bay Project has awarded about \$50,000 in grants to protect the Slocum River and Onset Bay watersheds in Dartmouth and Wareham.

"We'll be working with the towns and conservation groups for ways to help protect sensitive coastal areas," said Dr. Joseph E. Costa, director of the Buzzards Bay Project, which is a unit of the state's Office of Coastal Zone Management.

The funds include \$30,000 from the state's Nonpoint Source Pollution grant program and another \$20,000 from the Massachusetts Environmental Trust. Dr. Costa said the grant breakdown will be about equally divided between the two areas.

The project's goal is to demonstrate how land conservation can be used as a tool to protect water quality, and especially to control the flow of nitrogen into sensitive coastal areas and harbors.

High nitrogen levels that seep into water from such residential uses as septic systems, fertilizer applications and road runoff are the greatest threat to water quality. Dr. Costa said the work will involve inventorying land parcels within the watersheds, identifying areas to preserve as open space and creating buffer zones.

He said the work in Onset Bay will also compliment a flushing study of the harbor that was funded by the Buzzards Bay project earlier this year.

Draft nitrogen management plans for the two areas are expected to be completed by June.

Earlier this year, the Coalition for Buzzards Bay identified the Slocum River as the second most nitrogenloaded estuary in Buzzards Bay.

Coalition officials said 50 percent of the nitrogen loading was attributed to residential land uses, another 24 percent by commercial and industrial land development and 14 percent from cropland.

The coalition also identified high concentrations of nitrogen in groundwater at the new abandoned Dartmouth landfill at the banks of the Paskamansett River, which feeds the Slocum River.

At the same time, while nitrogen load levels in the Onset Bay were much lower, the coalition said nitrogen concentrations had increased considerably there by 1994.

The Buzzards Bay Project is also developing nitrogen management plans for harbors in Falmouth, Dartmouth, Westport and Fairhaven. February 24, 2000 o 2000 MPG Newspapers 75¢ newsstand Newsroom, subscriptions and classified: 1-800-242-0264 Advertising: 1-508-748-1123



Preserving open space

Group seeks to control development and reduce amount of nitrogen entering bay

The Buzzards Bay Project, working in cooperation with the Dartmouth Natural Resources Trust and the Wildlands Trust of Southeastern Massachusetts., received a grant from the Department of Environmental Protection's 319 Nonpoint Source Program to demonstrate in the two watersheds how land conservation can have an effect on water quality in Buzzards Bay.

Preservation of open space is one method that can be used to control development and reduce the amount of nitrogen entering Buzzards Bay.

Besides having an impact on water quality, land conservationalso protects plant and wildlife habitats, rare species, wetlands, forests, migration corridors, scenic vistas and historic sites.

Landowners within the Slocum River and Onset Bay watersheds who are interested in protecting their properties from future development may be eligible to receive reimbursement for survey, appraisals and title work associated with their land conservation project.

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For more information; contact Sarah Wilkes at the Buzzards Bay Project, 508-291-3625. February 24, 2000 O 2000 MPG Newspapers 75¢ newsstand Newsroom, subscriptions and ciassified; 1-800-242-0264 Advertising: 1-508-748-1123



13 acres preserved as open space

Family makes commitment

By Leedia Macomber MPG Newspapers

WAREHAM — Douglas and Donna Truran are now the happy owners of 13 acres they can't possibly build on. They've owned the land on Glen Charlie Road for years, but only recently donated a conservation restriction on the wildlife habitat to The Wildlands Trust of Southeastern Massachusetts.

The land placed under permanent conservation protection includes 500 feet of shoreline along the Agawam River, and 450 feet of frontage on Spectacle Pond. Since 1935, an earlier generation of Trurans began cultivating some of the area with blueberries. For many years the pick-your-own blueberry business has been a favorite spot for Wareham families. Fortunately, the blueberry picking will continue to draw residents to the site.

Mark Primack, executive director of the trust, said the area draws many creatures of nature that are rare and fragile. His list includes rare damselflies, moths, insect-eating plants, freshwater mussel beds, and a quaking sphagnum bog.

"We wanted to protect the bog where there are a variety of rare dragonflies," said Mark Truran, who encouraged his parents to donate the conservation restriction. While the land remains privately owned by the Trurans, Primack said the family wrote an option into the



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Damsel ends distress — This rare damselfly makes its home in a 13-acre wetland area recently dedicated by a Wareham family to open-space and wildlife preservation.

conservation restriction offering supervised use by educational groups. The Trurans have discussed the possibility of creating a boardwalkto facilitate access to the bog for educational purposes.

A conservation restriction protects the land from development by future owners. The land remains under private ownership and stays on the tax rolls, said Primack. Often the landowner can benefit from a charitable tax deduction of up to 75 percent because he has given up rights to develop the land. Primack said the Trurans were able to benefit from a special program offered through the Buzzards Bay Project National Estuary Program, providing free surveys and appraisal costs by the U.S. Environmental Protection Agency in return for helping to protect water quality in Onset Bay.

"I wish there were more land con-

servationists in the area," said Primack. Noting that Massachusetts has one of the oldest land trusts in the world, Primack said that southeastern Massachusetts and particularly Wareham have fewer protected open spaces than most other parts of the state. The Wildlands Trust has six other parcels on Indian Neck that have also been preserved with conservation restrictions. By law, there has to be a public benefit for the restrictions to be granted. At a minimum the area must serve as a wildlife habitat.

Primack describes The Wildlands Trust of Southeastern Massachusetts as a local grass-roots organization founded 27 years ago in Plymouth. The organization owns or protects nearly 3,000 acres of nature preserves throughout the region. The Standard-Times, New Bedford, MA, Tuesday, March 30, 1999 / Page A3

Dartmouth considers buying park on Route 6

By John Doherty Standard-Times staff writer

DARTMOUTH — Voters at May's Town Meeting will decide whether to buy a rare, picturesque parcel on Route 6 for a town park.

Selectmen last night endorsed a petition circulated by resident Stephen Cabral asking that the purchase of land bounding Mill Pond be put to voters.

The parcel — just shy of an acre on Route 6 between Midas Muffler and Dunkin' Donuts on the corner of Faunce Corner Road — is the former home to Szymanski Motors.

Selectmen also set Tuesday, May 26, as the date for this year's Town Meeting.

The owners are asking about \$325,000 for the land, which is one of the few parcels left undeveloped on the heavily commercialized Route 6 strip.

But Michael Labosierre, land officer for the Buzzard's Bay Coalition, said grant money from the state could pay for 50 percent of that cost.

Though there are a myriad of projects statewide vying for the \$8 million available for the reimbursement The owners are asking about \$325,000 for the land, which is one of the few parcels left undeveloped on the heavily commercialized Route 6 strip.

program, the Mill Pond should be competitive, said Mr. Labosierre.

Containing some remains of the former Paskamansett Mill, the site has historical preservation value, as well as recreational importance.

Boat launch onto Mill Pond would not be difficult, said Mr. Labosierre, and from the pond, the Paskamansett River can be accessed.

Dartmouth Executive Director Michael Gagne said the town would need to act quickly to ensure the parcel does not become another businesses on Route 6.

The owners already have another buyer interested in the parcel, he told selectmen.

And as Mr. Labosierre pointed

out, the town would need to file an application for reimbursement by the June 1 state deadline.

In other business, students from Dartmouth Cable Television gave selectmen their annual report.

Dartmouth High junior Ian Grant told selectmen of the "direction" long hours at the town's public access station had given his life, and presented a video collage of the station's programming highlights of the last year.

In addition to broadcasting municipal meetings, the station produces a clutch of original programming, including a local SportsCenter, children's show Backbeat Buzz and many interview and documentary programs.

When students from Dartmouth High travel to Washington this weekend to promote their grassroots campaign spotlighting the plight of the troubled nation of East Timor. crews from DCTV will travel with them, cameras rolling.

"They should come back with an award-winning documentary," predicted selectman Leonard Gonsalves. Opinion – Pages C4-5 🖬 Agenda – Page C6

Obituaries - Pages C8-9

Tuesday, December 21, 1999 The Standard-Times, New Bedford, MA

Riverside property saved for public use

State grant to help Dartmouth resource

By Melinda Leader

Standard-Times staff writer DARTMOUTH --- In an effort to conserve a natural resource in town, the state's Executive Office of Environmental Affairs has granted Dartmouth \$188,500 for the pur-

chase of a piece of along the land Paskamansett River.

The parcel of river frontage, on Route 6 between Midas Muffler and the Dunkin' Donuts on Faunce Corner Road. will be revamped by the town in a \$325,000 project, which will seconstituency

add a canoe launch site to the restored natural site.

Self-Help The Grant was awarded to the town in an effort to protect a vital resource for community," the said Bob Durand, secretary of environmental affairs.

"Ultimately, the canoe launch that the town will build will, in turn, build a public constituency for the river and the ecosystem it supports," he said.

Town Executive Administrator Michael J. Gagne said yesterday that the land will be (See DARTMOUTH, Page C2)

"Ultimately, the canoe launch that the town will build will, in turn, build a public

for the river _and the ecosystem it

supports."

- Bob Durand, state secretary of environmental affairs

Dartmouth: Riverside land saved as natural resource.



ed as a parking area r canoeists who want reach the upper aches of the river.

"There's some really ocautiful vistas and waterfalls there," he said. "It's really

quite pretty." The town will also be going out to

bid on a building on the property, which they hope to make "more aesthetically pleasing," Mr. Gagne said.

State Sen. Mark C. W. Montigny said he made a plea to Mr. Durand for his support after speaking with Dartmouth officials about the land earlier this year.

"... This project will not only conserve open space, but it will open np a beautiful natural resource for-all-of the residents to enjoy," Sen. Montigny said in a prepared statement. "I applaud Dartmouth citizens. for pursuing the initiative."

As commercial projects spread further into the natural beauty of the region, state Rep. John Quinn said if is important that natural resource are preserved.

This grant will help preserve one of the few remaining pieces of open space along the commercially devel oped Route 6 corridor. It will help provide access for the general minife to the Paskamansett River for recre ational purposes," he said.

The parcel of land will also to protect the headwaters of Slocum River Estuary.

Throughout the state, \$5 millio has been granted to communities in an effort to protect more than 1,400 acres of land.

Standard-Times staff Witter Joanna Massey contributed to this report.
Sunday Standard-Times July 23, 2000 New Bedford, Mass.

Dartmouth's little piece of paradise



A lady's slipper blooms in Destruction Brook Woods in early May.

Land trust is hoping to buy 303-acre tract

By Joanna Massey Standard-Times staff writer

DARTMOUTH - At the ce than 300 acres of unspoiled far and wetlands, runs Destruction picturesque, purgling waterway of its name.

Along its banks, amid towerit elms and miles of winding ca forgetting about the bustling community is simple.

"It's just so beautiful," say: Badham, executive director of the Natural Resources Trust, a grou purchase the property. "I've net thing like it. You don't even feel Dartmouth."

It's a feeling Mrs. Badham at a start of the cials at the trust are fighting to j As part of the third and final

group's two-year-old Sloc Conservation Project, the trust purchase-and-sale agreemen Destruction Brook land with the second finance company that currently

By November, the non-prot and must must come up with \$2.15 millio and maintain the 303-acre for estate bordered by Fisher, Slam Comme Division and Gidley Town roads

If the property, known as Brook Woods, is successfully trust will have preserved mor man 1,000 acres of open space through River project.

Dartmoor Farm and Island Warm Furm. nearly 800 acres of land b Slocum River, have already be by the 29-year-old land trust through the first (See LAND TRUST, Page B2)



Destruction Brook meanders through the woods in South Dartmouth.