

Downtown Hyannis Growth Incentive Zone Application

November 14 2005 for submission to the Cape Cod Commission

Prepared By; Town of Barnstable, Growth Management Department



Balancing growth, infrastructure and natural systems

I. GIZ APPLICATION INTRODUCTION



I. Foreword

This is an application to the Cape Cod Commission requesting the designation of a Growth Incentive Zone, allowing more local control by raising Development Regional Impact thresholds. This streamlined regulatory approach, in conjunction with recently approved zoning changes and an increased capacity to manage growth by the Town will provide a clear incentive for those interested in investing in Downtown Hyannis.

This Growth Incentive Zone will allow the Town to direct opportunity to the center of the Village of Hyannis by supporting village-scale density and mixed use zoning furthering a town-wide plan to create a healthy community and a sustainable economy. Downtown Hyannis is an area of Barnstable with existing growth infrastructure and capacity but many underperforming properties. This plan maximizes the infrastructure advantage while minimizing the negative impacts of growth. It highlights the potential for people to live and work on a smaller environmental footprint reinforced by steps taken to offset growth in areas of Town where development threatens those human and environmental measures that determine our quality of life

Hyannis is a Village important to the commercial and marine history of Cape Cod and the region. Hyannis Main Street has served with distinction as a seaport home to captains and commerce. Through fire and depression it emerged as the regional retail hub which characterized its nature until the steady and ultimately complete transformation of the economy by the automobile. Following incentives created by major roadways, the retail base and residential development motored further away from the historic center. Eventually residential coexistence with commerce was viewed as inconsistent and zoned out of the Main Street area. The resulting loss of people and business left a hole in the Village of Hyannis.

This application supports a revitalization plan aimed at literally and figuratively bridging that gap. It encourages redevelopment along historic footprints investing not just in plastic recreations of

neighborhoods but in real neighborhoods. It capitalizes on a unique opportunity for people of varied means to live as neighbors unified by a common desire for active social interaction and a livable, workable, walkable village rooted in the historic draw of Hyannis Harbor, Lewis Bay and Nantucket Sound.

Cape Cod faces the challenge of balancing human interaction on a fragile peninsula. A comprehensive approach weaving together social, environmental and economic needs is necessary. This effort strikes a balance by creating incentives to develop in areas with existing infrastructure and disincentives for development in areas with limited ability to process the effects of sprawl. For generations Hyannis has carried many burdens for the region. Realizing the potential of Main Street Hyannis will demonstrate the balance required as stewards of our community character and quality of life, for generations to come.

2. Organization

This document is divided into seven parts. The first four sections introduce the goals, strategies, detailed build-out, offsets and threshold modifications proposed by the Town of Barnstable. The last three sections describe in detail the necessary infrastructure, capital improvements, and timing of improvements planned to support the build-out. Documents indicated as attached may be viewed and copied at 200 Main Street, Planning Department, and at the Growth Management Department, 3rd Floor, Town Hall, 267 Main Street.

3. Growth Incentive Zone Boundary

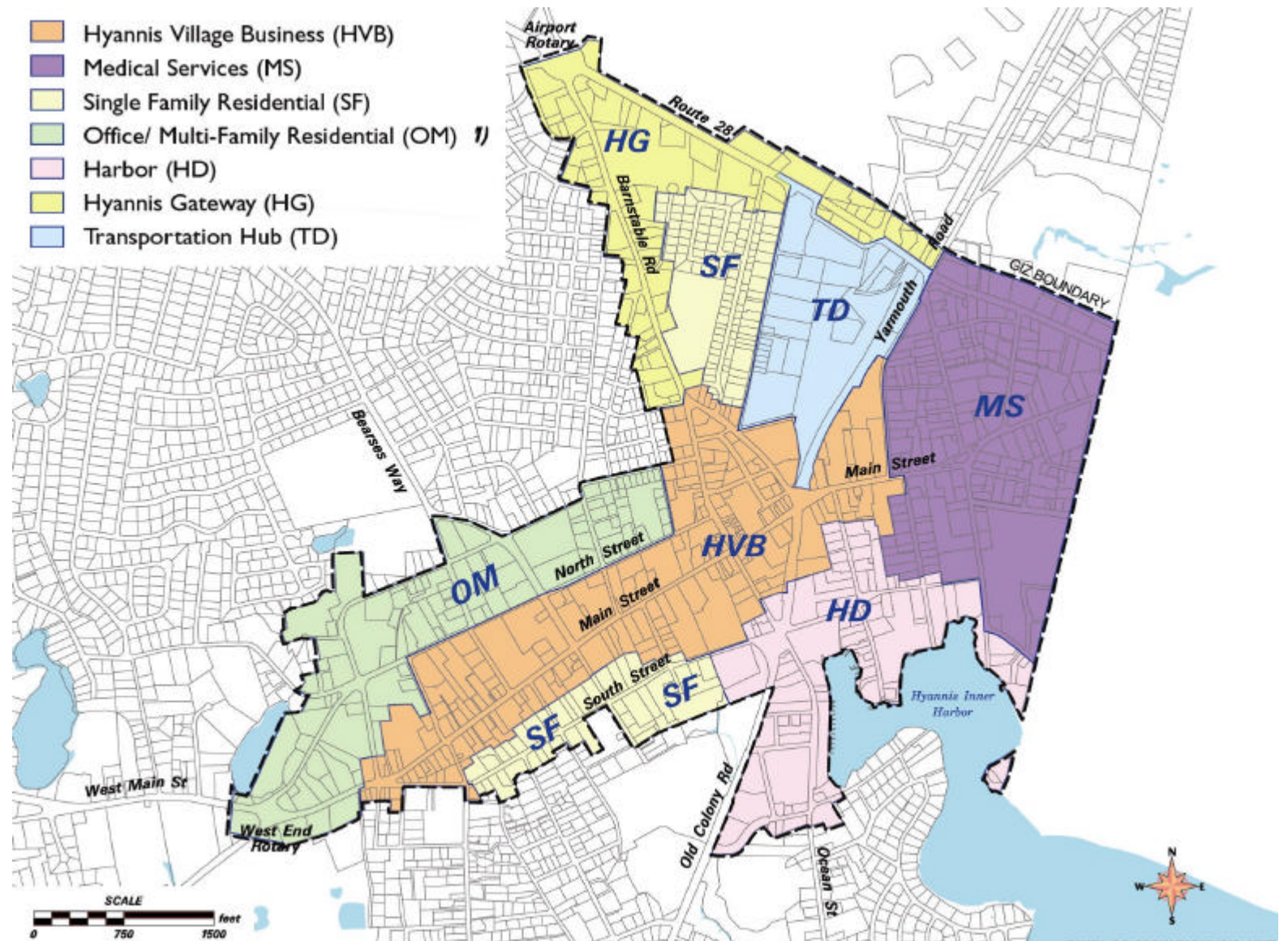
The boundary of the proposed Growth Incentive Zone (GIZ or District) is illustrated on Map-1. The GIZ area is the area equal to the Downtown Hyannis Village Zoning Districts. Generally, the District is bounded on the North by the Airport Rotary and Route 28, on the East by the Yarmouth Town line and the Hyannis Inner Harbor, on the South by the Hyannis Inner Harbor and on the West by the West End Rotary and Aunt Betty's Pond.

Downtown Hyannis is a major tourist destination and serves as the commercial and transportation center of the Cape and Islands region. It contains the regional airport and one of the Cape's two full-service hospitals. Its strategic location at the geographic center of the Cape makes it a central presence in regional and local activity. With its proximity to public transportation, the hospital, commercial centers, local government centers and a working harbor, Downtown Hyannis is an ideal place for smart growth.

4. Developing a Vision for Hyannis & Work to Date

a) Goals

The designation of Downtown Hyannis as a Growth Incentive Zone is only one small part of the larger Downtown Hyannis Revitalization Project that has been going on for over five years. Throughout the 1990s, downtown Hyannis was plagued by vacant storefronts and failing businesses, mainly due to the town's inflexible single-use zoning coupled with economic downturn. This problem is illustrated by the fact that, despite an increase in Hyannis' overall median income between 1990



Map-1 Proposed GIZ Boundary

and 2000, the number of families living below the poverty level grew by 65.2%. In addition, 70% of the persons and families living below the poverty level in the entire Town lived in Hyannis.

The Town responded to these downward trends in 2000 with the start of the Hyannis Revitalization Project. The goals of the Revitalization Project were identified as the following:

1. Create consistency with the historic and maritime character of the area.
2. Create livable neighborhoods for year round residents.
3. Create housing opportunities for persons and households of all income levels.
4. Enhance pedestrian access and public spaces.
5. Preserve views and public access to the waterfront.
6. Foster history, culture and the arts.
7. Protect and enhance natural systems.
8. Make development review decisions predictable, fair, timely, and cost effective
9. Promote private investment in buildings and structures and support appropriate economic development.
10. Promote traffic reduction and alternate transportation modes. Enhance opportunities for eliminating curb cuts and for creating driveway interconnections, shared driveways, public transit and/or travel demand management.

In developing a vision for Downtown Hyannis, the Town reached out to residents and many local organizations, including the Hyannis Civic Association, the Hyannis Business Improvements District (BID), Hyannis Area Chamber of Commerce (HACC), and other local non-profits. In response to the input from these individuals and groups, the Town completed the seven (7) following activities to encourage private investment the District:

1) RKG Study, Community Participation & Downtown Hyannis Rezoning

In July 2002, RKG Associates was hired as a consultant to the Town to identify potential land use policy changes and capital improvements policies and projects to encourage revitalization of the Downtown Hyannis area. The findings strongly suggested that Downtown Hyannis' complicated zoning and approvals process was significantly contributing to the lack of re-development in the Downtown. An implementation-working group was established by the Town Manager to advise town staff in developing the various components of RKG's study. The working group included members of the Hyannis Main Street BID, the Hyannis Civic Association, Cape Cod Commission staff, the Association to Preserve Cape Cod, the Town Planning Board and Economic Development staff, Hyannis Historical Commission and the Hyannis Area Chamber of Commerce. Eleven meetings with Town Staff and the working group were held in 2003.

Community input was also heavily solicited. In September 2004, Town staff initiated a series of community listening sessions in Downtown Hyannis. The goal of these sessions was to elicit responses from a wide audience of stakeholders about the area's unique characteristics, and where the community concurred in matters of revitalization. Seven community sessions were held with a total of 130 Hyannis area residents, business and property owners. In addition, in November and December 2004 a team of trained interviewers administered a phone survey designed to "test" the shared values articulated by those attending the listening sessions. 316 Hyannis area residents participated in the telephone survey. The shared values of both the listening session attendees and phone survey participants are reflected in all of the revitalization efforts to date. A more detailed summary of the community participation process can be found in the document submitted with the application titled *Community Report, Greater Downtown Hyannis Area: Shared Values For A Livable Community*.

The RKG study, working group comments and community feedback resulted in the development of the new Hyannis Village Zoning Districts, which were unanimously approved by the Barnstable Town Council in July 2005. These seven new mixed-use oriented zoning districts replace the area formerly regulated by 14 districts. The new zoning districts are shown on Map-1 and are summarized here. (For the full zoning ordinance, see the attached Hyannis Village Zoning Districts). The newly adopted zoning ordinance provides for compact, mixed use development, a broad range of housing types, civic and institutional uses, and pedestrian and transit-oriented development.

2) July 2005 Zoning Amendments

All Districts: The new zoning districts create a rational planning basis for development in the Downtown. The Hyannis Village Business (HVB) District, which contains much of Main Street, is the core of the GIZ. The zoning in this district is intended to attract year-round residential development, tourism, and supporting commercial uses in a mixed-use community. The outlying districts are intended to form a buffer to provide residential and non-residential uses that support the core district and integrate the existing surrounding residential and commercial development in the area. The Harbor District is the most restrictive zone in the 2005 zoning in order to preserve ways and views to the waterfront. In order to prevent strip development, all commercial districts predominately require parking to the side and rear of buildings and there is a prohibition on new drive-through windows within the entire District, with the exception of drive-through windows for banks as allowed by special permit. All districts are required to provide 10% affordable housing, and three districts provide a density bonus to encourage the creation of a diverse neighborhood that caters to all incomes (three districts promote workforce housing through density bonuses). In addition, existing non-conforming uses are prohibited from changing to another non-conforming use. Please see the full zoning ordinance in the Code, Section 240-24.1 for more detail.

Hyannis Village Business (HVB): The zoning in this district allows compact, mixed use development. To maintain a lively and attractive street front, retail uses are required on the first floor of Main Street between Ocean Street/Old Colony Road and Stevens Street. A mix of office and residential uses is encouraged. Multi-family residential units above commercial are allowed between Stevens Street and Barnstable Road (≤ 12 residential units per acre). Elsewhere in the district, multi-family is allowed on all floors (=12 units per acre). Additional multi-family development (= 16 units per acre) is allowed by special permit. This district promotes the redevelopment of downtown by allowing 100% lot coverage and shared parking agreements, with the exception that residential and office uses must demonstrate parking on-site. This district also requires a zero lot line building setback to prohibit auto-oriented, strip development. To prevent shadows on the street and opposing sidewalk, most building heights on the south side of Main Street are more strictly limited than elsewhere in the district.

Medical Services (MS): Uses allowed in this district contribute to existing hospital and medical uses and promote a mix of housing opportunities. Single family, multi-family (≤ 6 units per acre), workforce housing (= 12 units per acre) and bed & breakfast residential uses are allowed in addition to medical uses.

Single Family (SF): This district is split into two (2) parts. The northern portion of the district is primarily single family use and will remain as such. The southern portion of this district is primarily residential, with a mix of office uses adapted to residential structures. It is intended that the appearance of commercial uses in this district retain a residential look and scale.

Office/ Multifamily Residential (OM): The uses in this district support the central downtown HVB zone. Multi-family (≤ 12 units per acre), workforce housing (= 16 units per acre), business support services, and office uses are encouraged here.

Harbor District (HD): Marine uses are highly encouraged around the harbor. Hotel, motel and restaurant uses are allowed, however, development of over thirty (30) units requires a DRI or special permit approval. Lot coverage and height limitations are the most stringent in this district. However, height limitations are relaxed for existing marine uses to accommodate marina warehouses and other water-dependent uses. Multi-family uses are allowed by special permit (= 7 units per acre).

Hyannis Gateway District (HG): Recognizing this area as the 'first impression' residents and visitors see when entering the downtown, the zoning has been changed to improve the appearance and traffic flow of this district. New zoning and D&I Plan requirements include decreased building setbacks, the requirement for a certified Landscape Architect stamp on each landscape plan, and creation of a pedestrian-scaled environment through closure of curb cuts and encouragement of shared driveways and driveway interconnections. With respect to medical and dental clinics and retail uses, by-right uses are determined via a performance based standard; if no additional traffic is generated the use is allowed by right, if vehicle trips per day or peak use is increased a special permit is required. Multi-family is allowed (= 4 units per acre) by right, and workforce housing is allowed by special permit for up to 16 units per acre.

Transportation Hub District (TD): Centrally located in the downtown area, the TD districts hosts the regional transit center. Parcels in the TD district are encouraged for use as parking or transit support. Parking centrally located will encourage walking, biking and alternative transportation modes. Ideally these parcels will develop into parking that can accommodate alternative transit, long-term parking to the islands, and/or replace parking in the Harbor District and Medical Services District. In addition, this area is identified as a host area for bicycle path and transit development.

3) *Design and Infrastructure Plan (D&I Plan)*

The D&I Plan plays an important role in the District because it establishes design guidelines, evaluates infrastructure, and it serves as the Town's Growth Incentive Zone application to the Cape Cod Commission.

The design guidelines were adopted by the Barnstable Planning Board on September 26, 2005. The design component of the Plan outlines a series of design guidelines and infrastructure best management practices for development to fit with local vernacular and move toward green building techniques. The D&I Plan used the Hyannis Main Street Waterfront Historic District Design Guidelines as a starting point and interwove concepts illustrated in the Cape Cod Commission's *Designing the Future to Honor the Past* to create a set of guidelines that protect and enhance the public realm. The D&I Plan is implemented through site plan review (for all development with the exception of single-family dwellings) and through special permit approval. The D&I Plan includes new site development standards which address issues such as building placement and massing, orientation to the street, lighting design that is sensitive to residential uses in the District, mandatory passive treatment of storm water, use of pervious pavements, planting of habitat-contributing plant material, and many other site and building design issues.

This infrastructure component of the Plan identifies anticipated growth and infrastructure needs required to offset that growth, including measures taken outside the District to address growth management issues throughout the Town.

The Hyannis Village Zoning District Ordinance, Barnstable Code, Section 240-24.1-11 establishes the requirements for the D&I Plan:

- (1) consistency with the historic and maritime character of the area;
- (2) creation of livable neighborhoods for year round residents;
- (3) creating housing opportunities for persons and households of all income levels;
- (4) creation of opportunities for pedestrian access and public spaces;
- (5) preservation of views and public access to the waterfront;
- (6) creation of opportunities for eliminating curbcuts and for creating driveway interconnections, shared driveways, public transit, alternative transportation and/or travel demand management; and,
- (7) creation of opportunities to foster history, culture and the arts.

4) *Capital Improvement Projects*

Physical streetscape improvements, including new pedestrian friendly sidewalks, street furnishings, a new walkway-to-the-sea linking Main Street to Hyannis Harbor, and landscaping were designed and constructed to encourage a walkable, attractive Downtown. The Town and community partners have invested over \$6M to date in Main Street and open space improvements. Extensive renovations to the JFK museum were completed, totaling over \$200K. Significant infrastructure improvements have also been made and are planned for the immediate future, as outlined in the Section entitled Supporting Analysis, below.

Eight million dollars was invested to construct the Hyannis Regional Transit Center in the heart of downtown, contributing a basis, and as-yet unrealized potential, for building a walkable downtown neighborhood.

5) *Economic Development Programs & Events*

To attract residents, tourists and private investors and stimulate economic activity in the area, cultural programs and events were initiated in the District. The Town and local non-profits started Harbor Your Arts (HYA), a visual arts program, in Summer 2005. Seven small artist 'shanties' were constructed at Bismore Park, linking Main Street Hyannis to the sea. Budding local artists were selected to rent the 'shanties' at reduced rents, encouraging local ownership and development of small independent businesses. Once these artists are established, the hope is that artists will gain momentum to open their own shops and fill vacant storefronts on Main Street. In addition, both the Town and its partner, the Hyannis Business Improvement District (BID), have developed an events program. Weekly and annual events now occur downtown. Weekly events in the Summer of 2005 included street festivals, movies on the green, roving musicians on Main Street and more. Annual events include the Father's Day Car Show, Fourth of July Parade, Pops by the Sea, and Safe Trick-or-Treat. These programs and events provide both cultural diversity and economic development downtown.

6) Government Restructuring

Traditionally, town departments separate planners from engineers and other community and economic development staff. This structure makes it difficult to create comprehensive growth strategies. The adoption of an integrated site plan review entity has helped to alleviate some of the problems posed by this separation of departmental knowledge. To further the benefits of the interdisciplinary approach, the Town of Barnstable has taken an unprecedented step on Cape Cod by creating a Growth Management Department (GMD). Within the new GMD, staff members working in planning, zoning, regulatory, historic preservation, environmental services, comprehensive planning, engineering, department of public works, housing, community planning and economic development, property management, and site and building design will work together under a common department head to address issues in a Town-wide context.

The Town has committed \$962,834 to support this new Growth Management Department. The GMD will include approximately 17 staff members who will provide support to local boards and officials as the Town prepares to meet the demand anticipated from an increase in development permit applications within the District. Recently added staff support for property management is expected to increase the Town's ability to provide comprehensive build-out analyses and make better recommendations for preservation and development of public resources, as appropriate.

7) Planning Board Public Hearing

The Barnstable Planning Board will hold a public hearing on November 28, 2005 to accept public comment on this document, which is presented as an infrastructure plan for the Hyannis Village Zoning Districts and the Town of Barnstable GIZ application.

II. BUILDOUT ANALYSIS

I. Overview

A build-out analysis illustrating the Hyannis village zoning adopted in July 2005 was undertaken by an independent planning consultant, Roberta Cameron. The build-out below quantifies the maximum development for the area; methodology and conclusions are described.

- Out of 448 acres in the project area, approximately 385 acres has development, expansion, or redevelopment potential. This 385 acres includes all parcels in the downtown area except wetlands, government owned properties and protected lands.
- A total of 2.7 million square feet of commercial space currently exists within the project area, as well as approximately 309 single family homes and 678 multifamily units.
- A net gain of up to 2.5 million square feet of commercial space and approximately 2,200 residential units could potentially result from the proposed zoning change.
- At full build-out, the total developed area would include approximately 2.5 million square feet of retail and restaurant space, 2.6 million square feet of office space, and 3,200 residential units.

2. Methodology

A parcel-based build-out analysis was prepared to determine the maximum development potential under the proposed zoning changes for the downtown Hyannis area. The proposed zoning includes 7 districts: Harbor District (HD), Hyannis Gateway District (HG), Hyannis Village Business District (HVB), Medical Services District (MS), Office Multifamily District (OM), Single Family District (SF), and Transportation District (TD).

The Assessor's database (2005) was used to find the area of each of these proposed districts, and to identify characteristics of existing land use within the project area.¹ Table A-1 in the attached build-out document shows details of existing land use. With the exception of the SF and TD districts, all of the proposed districts would allow a mixture of residential and nonresidential uses by right. Following is a summary of the characteristics of each proposed district.

The Harbor District allows a mixture of retail, marine, and cultural uses, as well as multifamily residential uses and guest accommodations. Within a portion of this district residential uses are restricted to upper floors. Maximum multi-family density is 7 units per acre by special permit. The district has 129 parcels totaling 57 acres.

The Hyannis Gateway District allows office and retail uses. Multifamily residences are allowed at a density of 4 units by right or up to 16 units per acre by special permit. The district has 118 parcels totaling 49 acres.

The Hyannis Village Business District covers the downtown business area and has a correspondingly high density. The new zoning requires retail uses on the ground floor, and allows up to 12 multifamily units by right in the upper floors, or up to 16 units per acre by special permit. There are currently 244 parcels in this district with a total of 102 acres.

The Medical Services District allows office and medical service uses, as well as single and two family homes, and multifamily homes up to 6 units per acre. A density of up to 12 units per acre is allowed by special permit. The district has 245 parcels totaling 84 acres.

The Office Multifamily District includes business and professional offices, service establishments, and some limited retail uses, as well as multifamily uses up to 12 units per acre and up to 16 units per acre by special permit if the units are workforce housing. The district includes 219 parcels totaling 67 acres.

The Single Family District allows single family homes with a minimum lot size of 20,000 square feet. No new commercial uses are permitted in this district. Its 156 parcels total 47 acres, with 193 existing housing units.

The Transportation Hub District is reserved primarily for parking and transportation facilities, with a limited amount of retail use. No new residential uses are permitted in this district. The 36 parcels in this district total 41 acres.

¹ Corrections to the parcel data were made to eliminate duplication of lots where there were condominiums or other errors.

Table-I, Proposed GIZ Area Existing Characteristics

	Total Area	Total Existing Building Area	Parcels	% Coverage	Existing FAR
HD	57.31 acres	489,589 s.f.	129	12.1%	0.17
HG	48.78	714,568	118	23.0	0.26
HVB	102.38	1,981,481	244	38.1	0.57
MS	84.37	865,368	245	13.6	0.22
OM	66.75	907,342	217	12.0	0.17
SF	46.67	418,468	156	22.6	0.30
TD	41.38	275,076	36	15.1	0.21
Total	447.65 acres	5,651,892 s.f.	1,145	20.6%	0.29

To determine the amount of buildable area in each district, a list of parcels considered to be probable candidates for redevelopment was developed within time frames of 1-2 years, 2-5 years, 5-10 years, 10-20 years and over 20 years. In addition, a scenario titled “Entire District” was also considered in which all privately owned land (excluding parcels identified as undevelopable by the assessor, wetlands and government land) is redeveloped at some point in the future. This latter scenario, titled “Entire District” includes churches and other institutional parcels, as well as some properties that already have more dense coverage than is allowed under current zoning, or which have historic significance. The more selective 20+ year build-out scenario provides a more likely long term outcome than the “Entire District” build-out scenario, but this document references the “Entire District” scenario to calculate maximum build-out.

The buildable area is defined as the sum of the area of all of the parcels highlighted for each time period. Although many of these lots may be isolated and not individually meet dimensional requirements for development, these parcels are all included in the buildable area because a) they reflect the amount of expansion on existing developed parcels, and b) there may be some potential for combining ownership with neighboring parcels in the future to make these parcels fully developable. While it is possible that some unforeseen conditions may affect the potential density of future development in either direction, the build-out analysis is a best estimate of the most intensive development that could take place within the District, based upon conservative assumptions.

Table-2, Buildable Acres

	1-2 Years	2-5 Years	5-10 Years	10-20 Years	20+ Years	Entire District
HD	0.00	1.36	7.82	15.35	21.44	44.57
HG	3.03	3.03	3.03	10.63	14.28	46.40
HVB	11.44	33.66	41.48	54.38	73.31	87.27
MS	0.00	3.73	10.19	14.84	39.20	81.58
OM	8.60	8.73	10.94	21.16	53.64	62.66
SF	0.00	1.18	1.18	1.18	1.68	45.87
TD	0.00	0.00	0.58	1.36	5.32	23.52
Total	23.07	52.71	75.21	119.90	209.87	391.86

The dimensional and use regulations and parking requirements for the proposed zoning districts were used to determine the density in each of the proposed districts. In most cases, the parking requirements provided a stricter constraint on density throughout the district than the dimensional requirements. Individual lots may vary in the amount of commercial space, residential space and parking that is created through a redevelopment project, but the build-out potential identified in this analysis represents an aggregate of the projected land use in each district. This allows for the fact that there may be parcels that are redeveloped in the future to include only commercial or only residential use, or even to have only parking that is shared by surrounding properties.

In order to estimate the potential build-out for mixed use districts, it is necessary to make assumptions about the proportion of built area that will be allocated to each type of use. While zoning flexibility allows for more residential intensive or commercial intensive possibilities, a fairly balanced mix reflecting probable market-driven development patterns was selected for the build-out analysis. (A change in residential density would result in a trade-off reduction in commercial density, and vice-versa.)

Within the HVB district it was assumed that much of the parking requirements would be satisfied through on-street parking or out-of-district parking. The commercial density for the HVB district assumes that only 30% of the required commercial parking will have dedicated spaces located within the district; the remaining commercial parking would take place on-street, be shared with other uses, or be located outside of the district. Dedicated off-street spaces within the district are assumed for 100% of the residential parking requirements for this district.

Commercial build-out is further subdivided into office space and retail/service space, based on the types of uses allowed in each district. Residential units are multifamily in all districts except SF, where they are single family.

3. Findings

The buildable area shown in Table 2 is multiplied by the density derived from the proposed zoning bylaw in Table 3 to determine the maximum potential build-out shown in Table-4. A total net gain of 2,213 residential units, 633,817 square feet of retail and restaurant space, 1,780,914 square feet of office space, and 87 hotel rooms is gained. It is highly unlikely that conditions would allow for the extreme extent of redevelopment shown in this Entire District Scenario, but the build-out indicates the theoretical outside limits of development potential. A more likely build-out scenario is the development shown in the “20+

years” scenario which shows a net gain of 1,736 residential units, 543,524 square feet of retail and restaurant space, 1,255,103 square feet of office space and 87 hotel rooms. Tables provide in the separate document titled *Build-out Detailed Tables* included with this application provides a more detailed estimate of development changes over the next 20 years and beyond.

Table-3, Build-out Specifications

	Limiting Dimensional Requirements	Effective FAR	Effective % Coverage	Effective residential density	Type of Commercial
HD	Parking requirement	0.42	23%	7 units per acre (14 bedrooms)	80% retail, 20% restaurant, hotel
HG	Parking requirement	0.48	26%	8 units per acre (16 bedrooms)	25% office, 64% retail, 11% restaurant
HVB	Parking requirement	1.03	62%	15 units per acre (30 bedrooms)	20% office 64% retail, 16% restaurant,
MS	Parking requirement	0.41	25%	6 units per acre (12 bedrooms)	100% office
OM	Parking requirement	0.64	31%	12 units per acre (24 bedrooms)	10% office, 45% retail, 5% restaurant
SF	Minimum lot size			2.2 units per acre (9 bedrooms)	
TD	Allowed uses	0.08	8%		85% retail 15% restaurant

Build-out assumptions and notes:

1. *Special permits will be obtained wherever necessary to reach the optimum amount of development.*
2. *A pre-determined amount of hotel space was added to the development mix for the HD district; no other new hotel construction is included in the build-out.*
3. *An additional portion of 2nd floor office space was allocated for the HVB district (50% of floor area) and MS district (40% of floor area), while residential use is assumed to occupy 40% of the ground floor area of the OM.*
4. *Multifamily residential units have a minimum of 600 square feet per bedroom. An average of 2 bedrooms per unit is assumed.*
5. *An area of 350 square feet per parking space is provided to account for driveway and landscaping requirements within parking areas.*
6. *75% of TD district will be dedicated to its primary use, which is parking and transportation. Subtracting required frontage and landscaping, total impervious area in this district is approximately 89%.*

Table-4, Build-out Development Over Time (Cumulative)

		years 1-2	yr 2-5	yr 5-10	yr 10-20	yr 20+	maximum potential buildout (unlikely)
New Development	buildout summary						
	new residential units	299	659	863	1,321	2,158	3,200
	new net hotel rooms	0	300	300	300	800	800
	new net restaruant	45,439	114,775	147,122	219,549	303,938	435,564
	new net retail	217,665	495,453	632,930	974,524	1,434,510	2,071,307
	new net office	176,442	535,866	741,956	1,023,227	1,701,527	2,626,094
	total commercial space	439,546	1,146,095	1,522,008	2,217,300	3,439,975	5,132,964
Net Development	buildout summary						
	residential units	267	598	742	1,166	1,736	2,213
	net hotel rooms	-173	-18	-123	-123	87	87
	net restaruant	25,809	95,145	84,136	121,293	183,442	169,346
	net retail	76,368	64,448	116,421	167,676	360,082	464,471
	net office	92,665	425,587	549,178	712,239	1,255,103	1,780,914
	total commercial space	194,842	585,181	749,735	1,001,208	1,798,627	2,414,730
Total Development	buildout summary						
	residential units	1,254	1,585	1,729	2,122	2,723	3,200
	hotel rooms	2,069	2,224	2,120	2,120	2,330	2,330
	restaruant	224,079	293,415	282,406	319,563	381,712	435,564
	retail	1,683,204	1,671,284	1,723,257	1,774,512	1,966,918	2,071,307
	office	937,845	1,270,767	1,394,358	1,557,419	2,100,283	2,626,094
	total commercial space	2,845,128	3,235,467	3,400,021	3,651,494	4,448,913	4,697,401

4. Prior Zoning Build-out

A similar build-out analysis was completed on the same sets of parcels to determine the build-out that would have occurred with the prior I4 zoning districts in the area. Table-5A and Table-5B illustrate the assumptions used for the prior zoning build-out. Table-5C summarizes the prior zoning build-out findings.

Table-5A, Prior Build-out Specifications

Assumptions and notes:

1. Effective coverage refers to the proportion of the area in the district that would be covered by ground floor commercial or mixed uses. Effective FAR includes both commercial and residential space.
2. Second floor office space is assumed for the MA-1 district (50%), and the O-2, O-3, OR, and PRD districts (100%).
3. Although office use is permitted in the RB-1 district, the zoning requires development to be consistent with the residential character of the district; the amount of office space counted is equivalent to approximately one ground floor office per two single family homes.
4. Commercial and mixed uses are allowed in the MA-2 district only in buildings built prior to 1970, hence the build-out projection assumes that no new commercial development will take place, while the Entire District scenario assumes that all privately owned parcels will be redeveloped.

The tables on the next 2 pages demonstrate build-out potential under the I4 district zoning in effect immediately prior to the adoption of the July, 2005 zoning ordinance amendments.

Table-5B, Build-out Under Prior Zoning

	Max Coverage (footprint) or FAR	# of stories	Total impervious area allowing for min required yards	Max residences under zoning	Ground Floor Use	Second Floor Use	Third floor (or added ½ story use if allowance is for 2.5 stories)	Effective Density (per acre)	Acres in District
B		2	0.908	8.7 units per acre	75% retail, 25% office,	75% retail, 25% residential		2.5 units 12,000 s.f. mixed use footprint	50 acres
B-I	0.40 FAR	2	0.9	8.7 units per acre	100% retail	100% residential		8.7 units 7,000 s.f. mixed use footprint	55 acres
BL-B		2	0.8	0	100% retail	100% retail		6,700 s.f. retail footprint	32 acres
HB	30%	2	0.82	8.7	100% retail	50% retail 50% office		0 units 8,600 s.f. office/retail footprint	35 acres
MA-I		3	0.98	21.8	100% retail	100% office	50% office 50% residential	7 units 16,700 mixed use footprint	47 acres
MA-2	0.30 FAR	2.5	0.9	5.8	100% retail	100% retail	50% residential	2.2 units and 5,200 retail footprint	1.3 acres
O-I	0.40 FAR	2.5	0.94	8.7	50% retail 50% office	100% office	50% residential	5.8 units 7,000 s.f. mixed use footprint	13 acres
O-2	0.40 FAR	2.5	0.94	0	50% retail 50% office	100% office	50% office	7,000 s.f. retail/office footprint	8 acres
O-3	0.30 FAR	2.5	0.86	0	50% retail 50% office	100% office	50% office	6,500 s.f. retail/office footprint	
OR	0.20 FAR	2.5	0.58	4.36	50% office 50% residential	100% residential	50% residential	4.4 units	15 acres
PRD	25%	2	0.58	8.7	50% office, 50% residential	100% residential		8.7 units 10,900 s.f. mixed use footprint	78 acres
RB		2.5		1	100% residential	100% residential	50% residential	1 unit	36 acres
RB-I		2.5		1	100% residential	100% residential	50% residential	1 unit	6 acres
UB	35%	2	0.908	8.7	50% retail, 50% office	50% office 50% residential		4.5 units 10,800 s.f. mixed use footprint	11 acres

Table-5C, Prior Zoning Build-out Over Time (Cumulative)

		yr 2-5	maximum potential buildout (unlikely)
New Development	buildout summary		
	new residential units	299	1,829
	new net retail	298,100	2,518,223
	new net office	475,791	2,224,178
	total commercial space	773,891	4,742,401

		yr 2-5	maximum potential buildout (unlikely)
Net Development	buildout summary		
	residential units	251	842
	net retail	47,465	713,117
	net office	365,512	1,196,674
	total commercial space	412,977	1,909,791

		yr 2-5	maximum potential buildout (unlikely)
Total Development	buildout summary		
	residential units	1,008	1,695
	total commercial space	3,372,597	3,936,013

III. OFFSETS

I. Introduction

Development reduction measures (offsets) are divided into two sections; municipal offsets and private offsets. Municipal offsets include [1] an analysis of the current zoning build-out in comparison to the previous 14 zoning districts, [2] open space acquisitions purchased and conservation restrictions acquired and approved over the past three years [3] the 2001 two (2) acre zoning amendment, [4] the previously adopted District of Critical Planning Concern (DCPC) for growth management, [5] the proposed Pond Village DCPC overlay district, and [6] other offsets as described below. Private offsets include mitigation

provided by new development within the District, including the potential for impact fees as may be adopted by the Barnstable Town Council, potential use of Districts of Critical Planning Concern for discrete roadway segments, and potential use of transfer development rights.

2. Method for Calculating Offsets

The GIZ Regulations require that “increases in development potential and intensification of use within the GIZ will be offset by a commensurate reduction in development potential and reduced intensification of use in specific offset area(s) outside the GIZ. Offsets shall be proportional to increases in development potential inside the GIZ and may be measured in terms of acres or units for residential development or square feet for commercial development, based on the characteristics of the area(s) to be protected.”

The calculation of offsets begins with the build-out potential estimated for years 2-5 from the newly adopted 2005 Zoning Ordinance. (See Table-6) From there, development build-out that would have occurred under previous zoning is removed. Potential development that has been removed by the Town of Barnstable due to down-zoning, open space acquisition over the past 3 years, etc., is then subtracted. Lastly, the remaining development to be offset is multiplied by a *Compact Development Factor*. Since one residential unit (or one square foot of commercial) in the GIZ will have less of an environmental and traffic footprint than one residential unit (or one square foot of commercial) developed in an automobile-oriented decentralized development, new residential development in the GIZ is multiplied by a factor of 60% (commercial by a factor of 76%) to show what the equivalent impact would be if development were to occur outside the GIZ. This *Compact Development Factor* is explained in more detail in the following text on Page 27. The quantity of additional offsets required is then obtained. Offsets are calculated as follows:

TABLE-6 Municipal Offset Calculation The calculation of municipal offsets presented in Table-6 is described in following paragraphs.

	Requested GIZ build-out potential 2005 Zoning Build-out in 2-5 years (7 Zoning Districts)	Prior Zoning Build-out in 2-5 years (14 Zoning Districts)	Compact Development Factor	Offset #1 Open Space Acquisitions 2003-2005	Offset #2 Conservation Restrictions 2003-2005	Offset #3 Two-Acre Zoning 2001	Offset #4 Barnstable DCPC 2001	Offset #5 Pond Village DCPC 2005 or 2006	GIZ Development in Year 2-5 to be Offset
Residential Units	598	251	60% (-139 units)	291	19	3,432 ²		17	
#r of Residential units to be offset		347	208	(83)	(102)	(3,534)		(3,551)	3,551 units of credit (potential development removed on top of 598 requested for the GIZ)
Commercial Square Feet	585,180	412,977	76% (-41,329)	9,804 SF					
Commercial S.F. to be offset		172,203	130,874	121,070					121,070 SF to be offset

² See document titled *Buildout Update August 2000* by the Town of Barnstable Planning Division, attached.

3. Municipal Offsets

a) Two (2) Acre Zoning

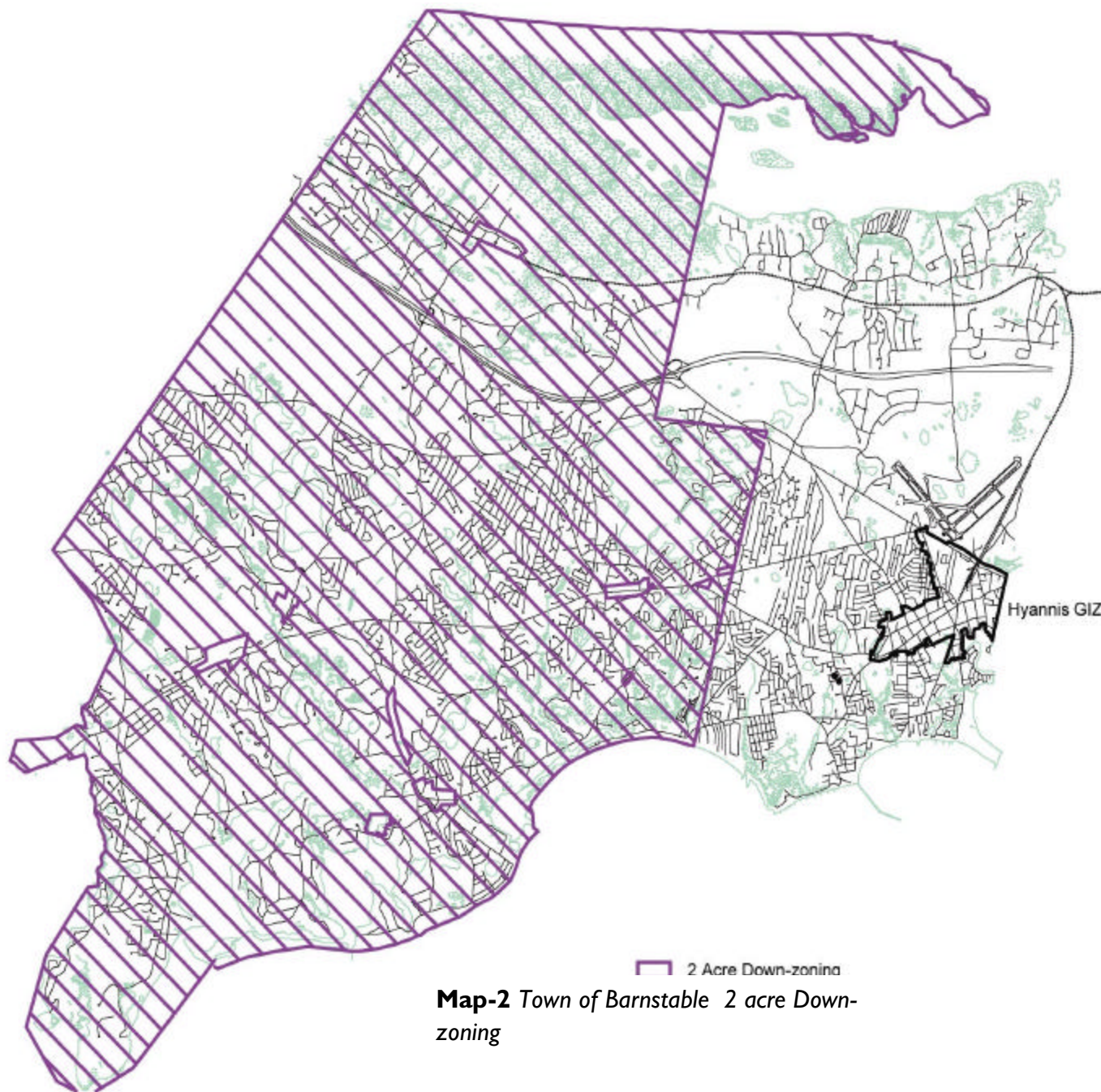
In 2001, Barnstable adopted two acre zoning for single-family residential uses in the Town's Resource Protection Overlay District. The 2001 re-zoning encompassed 31,294 total acres. Of the total acreage, there are 26,817 acres excluding surface water and marine water bodies. (Barnstable GIS Dept., 2005) (See Map-2.) The two-acre zoning was adopted with the goal of promoting reductions in:

- Nitrogen-loading
- Traffic Impacts
- School Impacts
- Water Resources Impacts
- Loss of Habitat

Prior to two acre zoning, the Barnstable Planning Department (Build-out Update, May 17, 2001) estimated that there were 6,117 single-family buildable lots in the re-zoned area. The Department further estimated that 2,685 single-family buildable lots remained after the adoption of the two acre zoning. As a result, it is estimated that the adoption of this zoning resulted in a reduction of 3,432 single-family dwelling buildable lots in the Town. It is noted that the Cape Cod Commission's August 2000 estimate of Town of Barnstable single-family residential build-out capacity was 6,874 total single-family buildable lots. If this is the case, then the resulting reduction of single-family residential build-out capacity is likely higher than 3,432. However, the Town presents 3,432 as a conservative estimate of the number of single-family homes that will not be built in Barnstable as a result of the adoption of two acre zoning.

b) Barnstable District of Critical Planning Concern for Growth Management

On February 23, 2001, the Town of Barnstable became the first town on Cape Cod to nominate a town-wide District of Critical Planning Concern ("DCPC") to address issues arising from rapid growth in the community. In August and September of 2001, the Cape Cod Commission and the Barnstable County Assembly of Delegates



Map-2 Town of Barnstable 2 acre Down-zoning

established the Town of Barnstable DCPC and the Cape Cod Commission approved local ordinances (Implementing Regulations) for the DCPC. Town of Barnstable provided full financial support for the legal defense of the DCPC designation, which was upheld by the Supreme Judicial Court. The Town’s legal support of the DCPC designation confirmed the ability of Towns and the Commission to use the DCPC tool as envisioned in the Cape Cod Commission Act.

DCPC Implementing Regulations include:

(1) Rate of Residential Development

In 2001, the Town of Barnstable adopted a town-wide growth cap that limits the number of residential building permits that may be issued in a single year. Beginning in 2005, residential building permits are limited to 96 market rate permits per year and 36 affordable permits per year. As adopted, the ordinance establishes a graduated (decreasing) allowance for residential development. Below is a listing of permits allowed and permits issued since the ordinance went into effect::

Year	Market Permit Limit	Market Permits Issued:	Affordable Permit Limit:	Affordable Permits Issued:
2001	183	180 Market	36	
2002	132	111 Market	36	
2003	126	86 Market,	36	16 Affordable
2004	108	65 Market	36	7 Affordable
2005 (to 10/17)	96	65 Market	36	16 Affordable
2006 forward	96			

The numbers of permits issued are town-wide figures. The total annual market distribution has not been surpassed in any year since the adoption of the ordinance. The building permit cap does not necessarily impact the amount of residential development, but rather, it limits the number of permits issued in a single year to regulate the rate of residential growth.

(2) Decentralized Package Treatment Plants - Board of Health Regulation

In 2002, the Barnstable Board of Health amended its regulations to require, in certain circumstances, innovative and/or shared, on-site, wastewater treatment and disposal systems. The regulation also allows the Board of Health to require the dedication of a subdivision lot to support an on-site, shared wastewater system. Since the adoption of the regulation two developments have installed innovative or shared wastewater disposal systems: Hawthorne Terrace, Craigville Beach(residential condominiums), and Windmill Square (commercial condominiums) at Route 28 and Putnam Avenue in Cotuit.

c) The Pond Village District of Critical Planning Concern

In 2005, the Town of Barnstable nominated the Pond Village DCPC, located on 125 acres in Barnstable Village. (See Map-3.) The proposed district includes the RF-1 and RF-2 zoning districts. Both zoning districts establish a one-acre minimum lot size. It is estimated that 30 new residential lots could be created under the pre-DCPC zoning designation. A central goal of the DCPC designation is to adopt two-acre zoning for the proposed district. As a result, it is estimated that single-family residential development potential will be reduced to a total of 13 lots. As a result, 17 potentially developable lots will be eliminated by virtue of the DCPC designation.



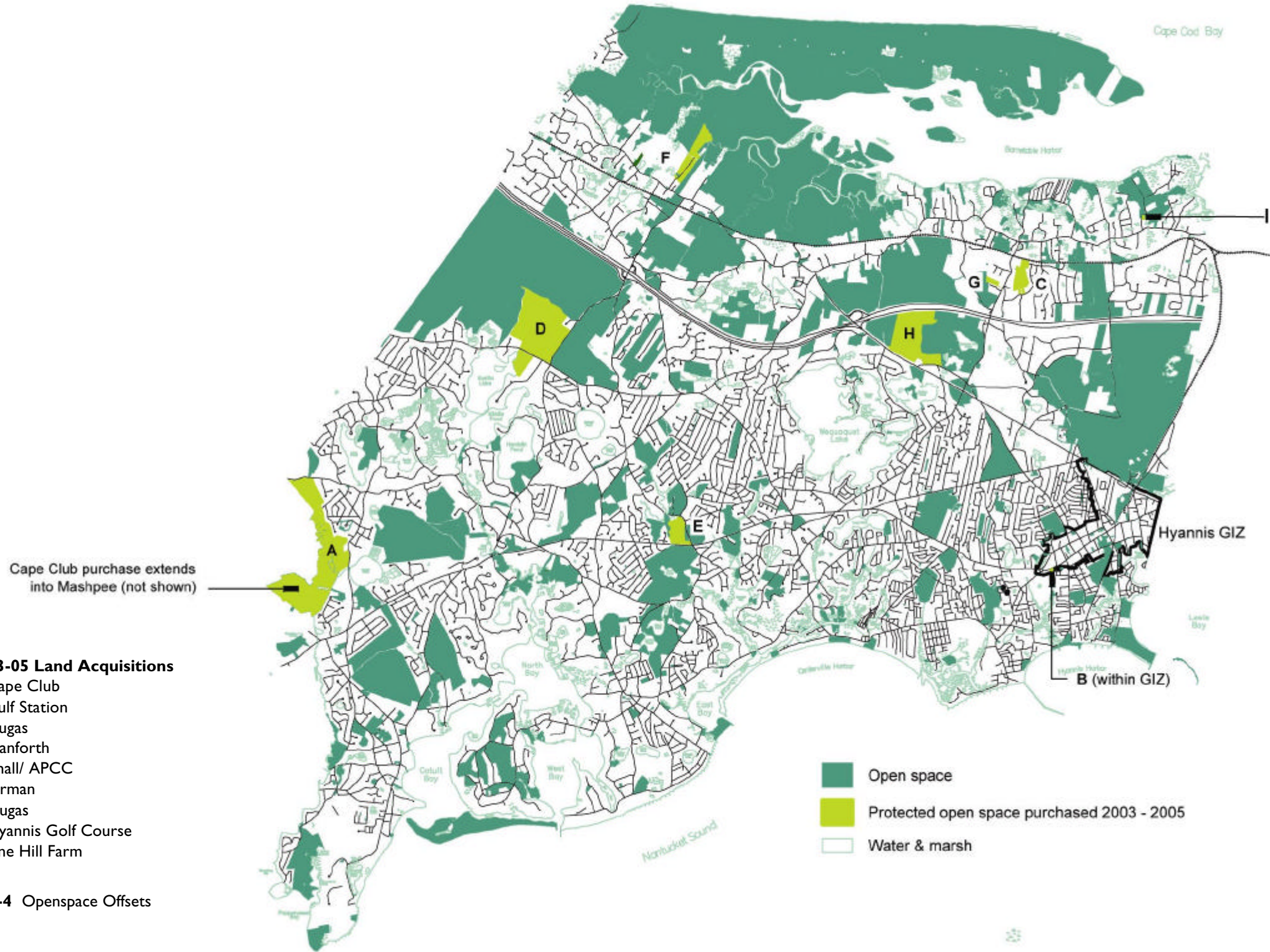
Map-3 2005 Proposed Pond Village DCPC

d) Open Space: Habitat, Water & Recreation

At 60.17 square miles, Barnstable is the largest town on the Cape, and is the third largest community in the Commonwealth. Over the past 20 years, the Town has pursued an aggressive open space purchasing agenda. As demonstrated in this Plan, the Town of Barnstable has made significant purchases of open space over the past three years. Totalling 786.6 acres, these recent purchases are shown in green on Map-4. As a result of these purchases the Town has gained control over parcels protecting the public water supply, groundwater recharge areas, habitat resources, contiguous open space, connecting wildlife corridors, Cape Pathways connections, and potential hazardous waste remediation sites. By removing development potential for residential and non-residential uses, these open space acquisitions significantly offset the nitrogen loading and transportation demands proposed in the District. The reduction in town-wide development potential due to open space purchases is summarized in Table-7A and Table 7B below.

Town of Barnstable participation in the Land Bank transitioned when the Town adopted the Community Preservation Act. Through the recently appointed Community Preservation Committee, the Town will continue to pursue opportunities for protecting and preserving open space, affordable housing, and historic preservation. The Town's commitment to open space and recreational purchases is supported by the recent award of \$.5M in Self-Help Grant monies for continuing open space efforts in Barnstable.

Recreational resources are also plentiful. In summer 2005, the Town of Barnstable completed a draft Open Space Priority Plan to identify opportunities for future open space acquisitions to compliment already protected lands. (See also Section IV, Open Space and Recreation, for further information on open space and recreation capacity.)



FY03-05 Land Acquisitions

- A.** Cape Club
- B.** Gulf Station
- C.** Dugas
- D.** Danforth
- E.** Small/ APCC
- F.** Furman
- G.** Dugas
- H.** Hyannis Golf Course
- I.** Bone Hill Farm

Map-4 Openspace Offsets

e) Calculation of Open Space Purchase Offsets

Quantities of potential residential units and commercial square feet taken out of development are indicated in Table 7A below and are based upon specific parcel purchases, including zoning and upland and wetland considerations. The figures for units and square feet eliminated from development potential are rounded down.

First, Table-7A lists open space purchases by total acreage acquired and the minimum lot size allowed by zoning at the time of purchase. It sets forth the number of residential units eliminated from production as a result of the purchase. Wetland portions of acquired open space are subtracted from the total acreage to calculate the development potential removed.

Second, the individual purchases are grouped into purchases located within areas that require 2-acre, 1.5-acre, and 1-acre minimum lot size for zoning. The percentage of each type of purchase, based on minimum lot size, is then applied to the amount of upland provided by the total open space purchases.

Table-7A Open Space Purchases Offsets

Name of Property	Location	Fiscal year Purchased	Total Acres	Zoning Minimum Lot Size in Acreage or Square Feet at Time of Purchase	Total Acres Upland***	Total Acres Wetland	# Residential Units/S.F. Not Constructed Due to Open Space Purchase (Estimated with upland area)	Reason Open Space was Purchased	Units/S.F. in Marine Estuary	Units/S.F. in W.P District	Cost
Cape Club Cotuit/Mashpee	Santuit River, Cotuit/Mashpee	2002/2003	297 (80 in Barnstable)*	2 Acres	72.2 (in Barnstable)	7.8 (in Barnstable)	36 units	Water supply protection, habitat protection, marine estuary protection, river protection	36 units	36 Immediately up-gradient of WP Overlay	\$ 3,013,460*
Gulf Station	Main St., Hyannis	2003	1.3	O-1 Zoning District: 8.7 units per acre + Commercial Max FAR .4	1.26	.04	9,257 s.f.** 10 units**	Remediate Haz Waste Site, stormwater mgt., open space			\$650,552
Dugas	B.Village, Rte. 6A	2003	29.96	1 Acre	26.84	3.12	18 by Settlement Agreement	Village open space, Cape Pathways linkage, habitat and marine estuary protection	18 units	18 (WP Overlay)	\$1,997,946
Danforth	Marstons Mills Airport	2004	217.36	2 Acres	216.81	.55	108 units	Water supply and potential well site protection, habitat and rare and endangered species protection, Pathways connections, scenic vistas	108 units	108 (WP and GP Overlay)	\$11,275,790
Small/ APCC	Scudder Lane	2004	29.4	2 Acres	26.49	2.91	13 units	Preserve wildlife corridor and habitat interconnections, protect approx.	13 units	13 (WP and GP Overlay)	\$496,827

								1,000' riverfront, connect to Scudder Bay			
Furman	Great Marsh	2004	65.62	2 Acres	40.63	24.99	20 units	Habitat protection, contiguous open space, marine resource protection, Great Marsh restoration project with BLT and TNC	20 units		\$298,289
Dugas	B. Village, Rte.6A	2005	5.3	65,000 SF	5.3	0	3 units	Village open space, Cape Pathways linkage, habitat and marine estuary protection	3 units	3 units (WP Overlay)	\$178,874
Hyannis Golf Course	Rte. 132, Hyannis	2005	125.63	65,000 s.f.	123.62	2.01	82 units	Recreation, water supply, habitat and rare and endangered species protection, potential effluent mitigation site,		82 units	\$5,500,000
Bone Hill Farm	Cummaquid	2005	1.2	1 Acre	1.2	0	1 unit	Habitat protection connecting existing open space, marine estuary protection,	1 unit		\$200,000
Cash's Auto Body	Barnstable Road, Hyannis	2005	.13	40,000 s.f.	.13	0	—	Remediate Haz Waste Site			Mitigation
Archibald Parcel****	Mill Pond	2005	13.7	2 acres	8 (estimated)	5.7 (estimated)	4 units	Zone I & Zone II Contribution, Pond Frontage		4 units	\$1,500,000
Total			569.6* acres in Barnstable		522.48 in Barnstable	47.12 in Barnstable	295 units 9,257 SF Commercial		199 units	264 units	\$25,111,738

* The Cape Club purchase included land within the Towns of Barnstable (80 acres) and Mashpee (217 acres). The total acres purchased of 569.6 acres does not include the 217 acres in the Town of Mashpee. The total acres of open space purchased in both towns equals 786.6 acres. The cost number presented above reflects the Town of Barnstable's costs.

** Gulf Station Parcel = 1.22 acres of upland x 8.7 units per acre (1 unit per 5,000 SF of lot) = 10 units (10.61 rounded down). To figure out the amount of additional commercial allowed, the limiting development factor is not required onsite parking, but the maximum FAR of .4. Therefore 1.26 acres x 43,560 = 53,143 s.f x .4 = 21,257- 12,000 (10 units @ 1,200 SF) = 9,257 SF of commercial eliminated from development potential.

*** The figures for total acres, upland acres and wetland acres were provided by the Barnstable GIS Department.

**** The Town is acquiring the 13.7 acre Archibald parcel along Mill pond. This parcel is located within a Zone I and Zone II, and includes wetlands and pond frontage. The purchase price is \$1,500,000 and the closing is scheduled for November 22, 2005. This purchase is expected to offset approximately 6 residential units (based upon 2-acre minimum lot size).

Table-7B Conservation Restriction Offsets

Date	Acreage Restricted	Address of Restriction	Holder of Restriction	Reduction in Residential Development Due To Restriction
Nov. 6, 2003	14.48	250 Vineyard Road, Cotuit	Barnstable Land Trust	7
Feb. 19, 2004*	207	Various – Further described in Table-7C below.	Mass. Dept. Conserv. & Rec. and Compact Cape Cod Conserv. Trusts	0 assuming mostly wetland
Oct. 7, 2004	1.59	71 Calves Pasture Lane, Barnstable	Barnstable Land Trust	1
Dec. 2, 2004	3.43	194 Meadow Lane, West Barnstable	Orenda Wildlife Land Trust	1
June 16, 2005	5.00	Old Neck Road, Barnstable	Town of Barnstable	2
July 14, 2005	7.41	Old Neck Road, Barnstable	Town of Barnstable	3
July 14, 2005	10.00	Old Post Road, Cotuit	Barnstable Land Trust	5
Totals	248.91			19 units

***Table-7C Feb 19, 2004 Conservation Restriction Offsets Further Defined**

Acres	Village	Street Location
0.63	West Barnstable	Meadow Lane
6.07	West Barnstable	Main St./Rte 6 at railroad tracks
24.03	West Barnstable	Great Marshes(Bridge Creek)

21.57	West Barnstable	Great Marshes(Bridge Creek)
41.96	West Barnstable	Great Marshes(Bridge Creek)
2.06	West Barnstable	Off Navigation Road
6.8	West Barnstable	North of Railroad(Buttonwood Lane)
15.32	West Barnstable	North of Railroad(Buttonwood Lane)
.85	West Barnstable	1820 Main St./Rte 6A
.79	West Barnstable	19 Watergate Lane
.48	West Barnstable	37 Watergate Lane
.91	West Barnstable	45 Buttonwood Lane
.91	West Barnstable	61 Buttonwood Lane
19.53	West Barnstable	North of Railroad
.45	West Barnstable	130 North of Railroad (John Maki Rd)
2.2	West Barnstable	Great Marshes (Bridge Creek)
7.17	West Barnstable	Parker Road
1.51	West Barnstable	58 Parker Road
.85	Barnstable	North of Railroad(John Maki Rd)
15.97	Barnstable	Sandy Neck
37.03	Barnstable	Sandy Neck
207.09 Total Acres		

The February 19, 2004 conservation restrictions were part of an on-going acquisition program between the Town, the Barnstable Land Trust, the Nature Conservancy, and others to protect the Great Marsh.

f) Chapter 40B Affordable Housing Unit Potential Offset by Land Acquisition

All of the upland area taken out of development potential by acquisition had the potential for Chapter 40B development at densities in excess of the underlying zoning. It is not possible to make a reliable estimate of which lots would have developed consistent with underlying zoning versus lots that would have developed under Chapter 40B. As a result, this analysis is provided for informational purposes and is not included in the offsets set forth in Table-6 above.

The Town conducted an analysis of all multi-family units with affordable housing that were developed as permitted by the Barnstable Board of Appeals under Chapter 40B in the last ten (10) years (attached). The analysis of multi-family developments resulted in an average density of 12.6 units per acre. It should be noted that this analysis did not include detached-unit developments, which would render a lower density, on average, resulting from the development of affordable housing

PART A: Applying this multi-family density of 12.6 units/acre to the 565.7 acres taken out of development potential due to land bank acquisitions, there is a reduction in development potential for 7,127 Chapter 40B affordable units due to land acquisition ($565.7 \times 12.6 = 7,127$).

PART B: The Town will reach its 10% goal before it would be required to approve the 7,127 potential affordable units calculated above. As a result, the limitation on the affordable housing offset is the number of units required to reach 10%. As of the publication of this document, Barnstable must develop another 759 units of affordable housing to meet its town-wide goal of 10%.

Chapter 40B requires only 25% (or the actual percentage provided) of affordable units in homeownership developments; in rental unit developments 100% of the units count as affordable. This Plan assumes that 75% of the development potential eliminated would have been homeownership, and 25% would have been rental.

25% of units rental = 190 units (759 x .25 = 189.75)

75% of units homeownership = 570 units (759 x .75 = 569.25). However, because only 25% of units count as affordable, this figure must be multiplied by a factor of four (4) to establish the total number of units that would have developed under Chapter 40B. 570 units x 4 = 2,280.

Following these assumptions, the number of units offset would have been:

190 + 2,280 = 2,470.

As a result, a net reduction in Chapter 40B development potential of 2,470 units is estimated due to municipal land acquisitions.

g) Compact Development Factor

Since one residential unit (or one square foot of commercial) in the GIZ will have less of an environmental and traffic footprint than one residential unit (or one square foot of commercial) developed in an automobile-oriented decentralized development, new development in the GIZ is multiplied by a factor of 60% for residential and 76% for commercial to show what the equivalent impact would be if development were to occur outside the GIZ. An explanation of this Compact Development Factor follows:

Development outside of areas with opportunities to walk to shopping, work, recreation, and other necessary pursuits is, by its nature, more demanding on our resources than is development in the Downtown Hyannis area. As a result, a one-to-one offset of development is not an appropriate offset proportion. Rather, ratios comparing decentralized vs. compact development for each category of environmental impact have been researched, and are documented below. The ratios are then averaged equally to create a *Compact Development Factor* for residential and commercial development.

Residential Compact Development Factor

See description of each impact ratio below the chart

	Sewer/ Nitrogen Impact Ratio	Traffic Impact Ratio	Water Use Impact Ratio	Storm Water Impact Ratio	Average of Ratios=Compact Development Factor
Decentralized Single Family Unit with 1 acre lot	1	1	1	1	100% impact
Multifamily Unit in Downtown Area	1/8 (12.5% of the impact)	1/1.5 (66% of the impact)	40% less (60% of the impact)	1/1 (100% of the impact)	60% impact

(1) Sewer/ Nitrogen Impact Ratio

Residential units located on a sewer line release a significantly lower amount of nitrogen into the environment than a residential unit using a Title 5 system.

For a sewer property, the nitrogen discharge is calculated at 0.0046 pounds per bedroom per day vs. 0.037 pounds per bedroom per day for a conventional Title 5 system; the amount of nitrogen released per bedroom on the sewer property is 1/8 the amount of nitrogen released through a traditional Title 5 system.

The following assumptions were used for this analysis:

Nitrogen effluent concentration = 5 ppm (after treatment at Hyannis WPCF) for sewer vs. 40 ppm for Title 5.

Flow = 110 gallons per day per bedroom.

(2) *Traffic Impact Ratio*

The Institute of Traffic Engineers Trip Generation Manual documents that single family detached dwelling units generate a higher number of vehicle trips than apartment or condo/townhouse building typologies. The following chart is taken from this manual.

Dwelling Unit Typology	Trip Generation per Unit	Ratio Compared with Single Family
Single Family Detached	9.57	
Apartment	6.72	1.42 SF. trips for every 1 apartment trip
Condo/ Townhouse	5.86	1.63 SF trips for every 1 condo trip
	Average Ratio of Apartments & Condos	1.5 Single Family Vehicle Trips for every 1 multifamily trip.

(3) *Water Use Impact Ratio*

The Massachusetts's Office of Environmental Affairs (EOEA)³ reports that the average lawn size in Massachusetts is 1/3 an acre for a single family lot. Due to the nature of compact development, few new lawns, if any, will be generated within the GIZ boundary. EOEA states that 10,000 gallons of water is used annually on each average single family lawn thereby using 40-60% of all household water on watering lawn (not including other residential landscape). Assuming that each single family lot has 1/3 an acre of lawn and compact development has no new lawns, a conservative estimate indicates that a 40% reduction in water use will occur if residential units are constructed in compact vs decentralized development.

(4) *Storm Water Impact Ratio*

An average residential unit on a 1 acre single family lot is covered by 20% impervious surface. (8,712 SF)⁴ An average residential unit in the proposed GIZ is on a lot covered by 90% impervious surface (38,304 SF), but compact development assumes that there is a proposed average of 4 multifamily units per acre in the GIZ. If we divide the amount of impervious surface on the lot (38,304 SF) by 4 units, each unit would produce about 9576 SF of impervious area. This is 110% of the impervious area produced for a single family unit. The impervious area per each residence, however, is also utilized for any mixed use development located on the same lot. However, to provide a conservative estimate for the Compact Development Factor, we have assumed that units developed in a compact form create the same amount of impervious area as units built on traditional one (1) acre lots.

³ http://www.mass.gov/envir/mwrc/pdf/More_Than_Just_Yard.pdf

⁴ Purdue University Long Term Impacts of Land Use Change. <http://www.ecn.purdue.edu/runoff/documentation/scs.htm>

Commercial Compact Development Factor

See description of each impact ratio below the chart

	Sewer/ Nitrogen Impact Ratio	Traffic Impact Ratio	Water Use Impact Ratio	Storm Water Impact Ratio	Average of Ratios=Compact Development Factor
Decentralized Commercial	1	1	1	1	100% impact
Commercial in Downtown Area	1/8 (12.5% of the impact)	10% less (90% of the impact)	100%	100%	76% impact

(5) Sewer/ Nitrogen Impact Ratio

Commercial development located on a sewer line releases a significantly lower amount of nitrogen into the environment than commercial development on a Title 5 system.

For a sewer commercial property, the nitrogen discharge is calculated at 0.0046 pounds per 110 gallons released vs. 0.037 pounds per bedroom per 110 gallons released on a Title 5 system; the amount of nitrogen released per 110 gallons on the sewer property is 1/8 the amount of nitrogen released through a traditional Title 5 system.

The following assumptions were used for this analysis:

Nitrogen effluent concentration = 5 ppm (after treatment at Hyannis WPCF) for sewer vs. 40 ppm for Title 5.

(6) Traffic Impact Ratio

The Conservation Law Foundation documents in their report “The Smart Growth- Climate Change Connection” that commercial development in mixed use downtown areas generate 10% less vehicle miles traveled than decentralized commercial development.⁵

(7) Water Use Impact Ratio

Water use of decentralized commercial development and compact development is estimated to be about the same since the amount of landscape in each cannot be accurately determined.

(8) Storm Water Impact Ratio

Storm water generation in compact vs. decentralized development is estimated to be about the same.

h) Potential Commercial Development Offsets

In the summer of 2004, Town staff created a coordinated package of general and zoning ordinances intended to implement the findings of the RKG study. These ordinances were intended to promote the revitalization of Downtown Hyannis by encouraging private investment and by tackling the roadway congestion that prevents the free flow of traffic into and out of Hyannis. Included in the package was a Regulatory Agreement Ordinance, re-zoning of the IND Industrial Zone, Route 132 corridor zoning map revisions, a Traffic Management Overlay District, and the creation of a Community Development Board. The traffic management overlay district proposal was not well received. The only ordinance to gain Town Council approval was the Regulatory Agreement Ordinance, which has since been approved in a revised

⁵ <http://www.clf.org/uploadedFiles/CLF/General/Publications/The%20Smart%20Growth%20Climate%20Change%20Connection.pdf>

form by the Town Council. This Plan sets forth a different approach to address traffic management in order to ease the flow of traffic within the Town and into and out of Hyannis. The approach is to provide both structural improvements and regulatory changes to ensure that newly created capacity will not lead to more development, leading us back to where we began.

Potential structural improvements outside the District are yet to be identified. Discussed in much further detail later in this document, the Town will use funds from the Commonwealth Development Corporation to conduct a study of the major corridors leading into and out of Hyannis. The Town is committed to working with the County and the State to bring about necessary improvements on state roadways, including funding design projects necessary to initiate the construction of those projects.

Potential planning and regulatory measures include:

- 1) The adoption of small, strategic Districts of Critical Planning Concern along defined areas of congested roadways to address vehicle use, land uses, and access management options. Working in smaller, more easily identifiable areas of the Town's roadway system is expected to produce better results than the previously proposed town-wide approach. By concentrating our efforts on particular roadway segments, the Town can work with affected property owners to draft measures that best serve the affected area while reducing roadway congestion.
- 2) Access-management policies and regulations for congested roadway segments. The Growth Management Department will work with the Department of Public Works, Engineering, and the Planning Department to draft policies and regulations to free-up the flow of traffic. Such policies and regulations would likely address the issuance of permits for new and expanded curb cuts on local roads, and prohibiting the granting of use variances in additional high traffic areas (zoning already prohibits use variances on certain roadway segments).

4. Private Offsets

Private offsets will be provided by individual development projects as they are developed in Downtown Hyannis. This will be accomplished through negotiated development offsets and through the potential creation of a system of impact fees for the District. Anticipated impact fees include fees for open space, parking, and traffic and transit system improvements. Any such impact fee system would require approval by the Barnstable Town Council. The Town's newly created Growth Management Department will document private offsets within the District.

The Town is also working with local partners, including the Association to Preserve Cape Cod and the Business Round Table, to explore options for the use of transfer of development rights (TDR). This Plan estimates that one potential use of TDR is to create an incentive for the voluntary deconstruction of some existing development in highway commercial zones. Other options under discussion include transferring traffic or wastewater credits.

5. Historic Structure Offsets

The build-out scenarios included in this document assume that all properties in the District will redevelop. They do not take into account that many parcels have historic significance and will never redevelop. As a result, the build-out figures for zones within the Hyannis Main Street Waterfront Historic District (Map-6) likely overstate the expansion potential of those areas. It is difficult to estimate the total reduction in development potential that will result from historic review, but this Plan estimates that it will be a meaningful amount.

IV. REQUESTED GIZ REGULATORY RELIEF

The Town requests that the Cape Cod Commission provide a cumulative threshold for development in the District that may proceed without mandatory Development of Regional Impact approval.

I. Cumulative Development Thresholds

This GIZ application is organized in phases. This Plan and the build-out are organized in terms of the Year 1-2 (FY06-07), Year 2-5 (FY 08-10), Year 5-10 (FY 11-15) and Year 20 planning scenarios. This application seeks approval to develop the amount of development anticipated in the Year 1-2 and Year 2-5 Phases within the GIZ boundary. Based upon the build-out estimate provided below, the Town's request is for:

Type of Development	Year 1-2 Development Potential Applied For	Year 2-5 Development Potential Applied For	Total Development Potential Applied For
Residential Units (including residential units in mixed use developments)	267 units	331 units	598 units
Non-Residential Square Feet	194,842 s.f.	390,338 s.f.	425,587 s.f.

The requested cumulative development thresholds include anticipated Regulatory Agreements within the District boundary. The requested cumulative development thresholds do not include projects associated with the Cape Cod Hospital (with the exception of existing and previously permitted projects, including the new patient bed addition currently under construction).

In the future year scenarios, (Year 5-10 and Year 20) it is anticipated that as infrastructure is provided in the District, the Town will approach the Cape Cod Commission and the Assembly of Delegates to seek further cumulative Development of Regional Impact relief through amendments to the Growth Incentive Zone designation.

V. CAPACITY

The infrastructure information contained below evaluates capacity of existing town facilities, and outlines specific strategies to provide public services and networks in the Hyannis Village Zoning Districts (the "District" or "Hyannis"). Infrastructure systems have been evaluated in conjunction with existing development and with the build-out analysis, based upon the 1-2 Year, 2-5 Year, 5-10 Year and 20 Year scenarios. An analysis of existing infrastructure and recommendations for future policies and improvements are set forth below.

Unlike other areas susceptible to development on the Cape, Hyannis has the infrastructure necessary to support sustainable growth, as summarized below:

- New mixed-use zoning was passed in July 2005 to encourage residential units downtown paired with retail, office and other supporting uses. A special harbor district zone was created to encourage marine uses on the waterfront. See page 37.

- Density bonuses for workforce housing, the Town’s accessory affordable housing ordinance, and mandatory inclusionary housing will make Downtown Hyannis the only area on the Cape where residents of all incomes truly live in a diversified neighborhood. See page 32.
- Downtown Hyannis is on a sewer system thereby preventing the release of nitrates from wastewater directly into groundwater and marine ecosystems. The municipal sewer system has additional capacity to support growth. See page 40.
- Adequate water supply infrastructure exists to support additional density. Urban buildings traditionally use less water than suburban models, due to reduced landscape per household. Water conservation can be more easily achieved through a GIZ designation. See page 49.
- Privately owned parcels in Downtown Hyannis are currently covered with significant amounts of impervious surfaces. New development in the GIZ is required to maximize passive storm water collection systems thereby increasing the amount of water recharged and evapotranspired through plants. New development will therefore provide more ecologically sustainable ways for dealing with storm water than in the past. In addition, all road projects completed within the past 3 years in the GIZ District have included addition of infiltration basins to recharge storm water. See page 51.
- The hub of public transportation on the Cape exists within the downtown area. Households using public transit will be supported through planned infrastructure resulting in fewer automobile trips and therefore curbing traffic and emissions. The GIZ will be a pedestrian friendly mixed-use neighborhood where walking, biking, and transit can replace automobile trips. See page 62.
- Open space resources are significant in the Town of Barnstable. Downtown Hyannis has an extensive parks and recreation system, with additional improvements planned. See page 57.
- A significant quantity of parking lots Downtown are owned by the Town. Additional private and municipal parking is planned to accommodate growth in the District. Consolidated parking lots will help reduce the centrality of automobiles in downtown, reinforcing the use of alternative modes of transportation. See page 76.

A. Housing

On January 31, 2001 the Barnstable Town Council unanimously approved a town-wide Affordable Housing Plan with the goal of producing 1,000 units of affordable housing town-wide over a ten-year period. Under the plan the Town committed itself to achieve this goal by mandating and ensuring that at least 10% of all the units in town are affordable to those residents at or below 80% of the median area income. The Barnstable Affordable Housing Plan was approved by the State Department of Housing and Community Development (DHCD) on March 3, 2004. The approved plan was certified by DHCD on August 16, 2005. The Town is working to re-establish its DHCD certification at this time. As can best be estimated from the statistics provided in subsection (a) through (c) below, at the present time there are 487 affordable units in the District eligible for inclusion on DHCD’s subsidized housing inventory, which makes up 38% of the affordable housing stock in the Town of Barnstable.

I. Existing Housing Stock

This section outlines the total units, occupied and vacant units, total year round and seasonal units, totals of rental & ownership units, types of housing (single family detached or attached, 2 units, 3-4 units, 5-9 units, 10-19 units, 20+ units), and age of structures within the District, with the exception that subsection (b) below includes a small, unspecified number of units outside the District. This information is intended to provide a snapshot of the housing stock within the District.

a) Land Use Code Statistics Within The District

The following data is derived from Barnstable GIS data utilizing appropriate land use codes. Based upon that data, it is estimated that the following residential structures exist within the District:

Total Units: 579
Single family residences: 207

Condominiums: 135
Two-Family Residences: 22

Three-Family Residences: 16
Apartments with 4-8 Units: 27
Apartments with 8+ Units: 9

Rooming and Boarding Houses: 9
Motel / Condo: 154

b) Census Tract Statistics

The information provided in this subsection (b) is gathered from the 2000 census data. While three census tracts run through the Growth Incentive Zone, the majority of the zone lies within tract 0124. See Map 5. Set forth below is statistical information for census tract 0124.

Total Units: 1,366

Occupied Units: 1,248
Vacant Units: 118

Year round units: 1,303
Seasonal units: 63

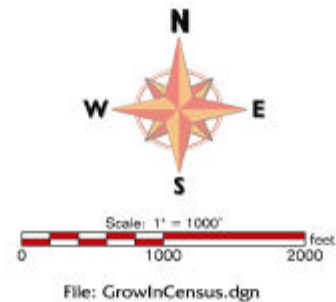
Type of Units

Single family, detached: 354
Single family, attached: 55
Two units: 44
3 to 4 units: 261
5 to 9 units: 177

10 to 19 units: 259
20+ units: 216

Age of Structures

Built 1999 to March 2000 – 0
Built 1995 to 1998 – 0
Built 1990 to 1994 – 27
Built 1980 to 1989 – 177
Built 1970 to 1979 – 317
Built 1960 to 1969 – 290
Built 1950 to 1959 – 148
Built 1940 to 1949 – 132
Built 1939 or earlier – 275



Map Legend

	Paved Road
	Unimproved Road
	Railroad Track
	Town Boundary Line
	Marsh Area
	Stream / Edge of Water
	Growth Incentive District
	Census Tracts
	Census Tract Numbers
	Census Block Groups
	Census Block Group Numbers

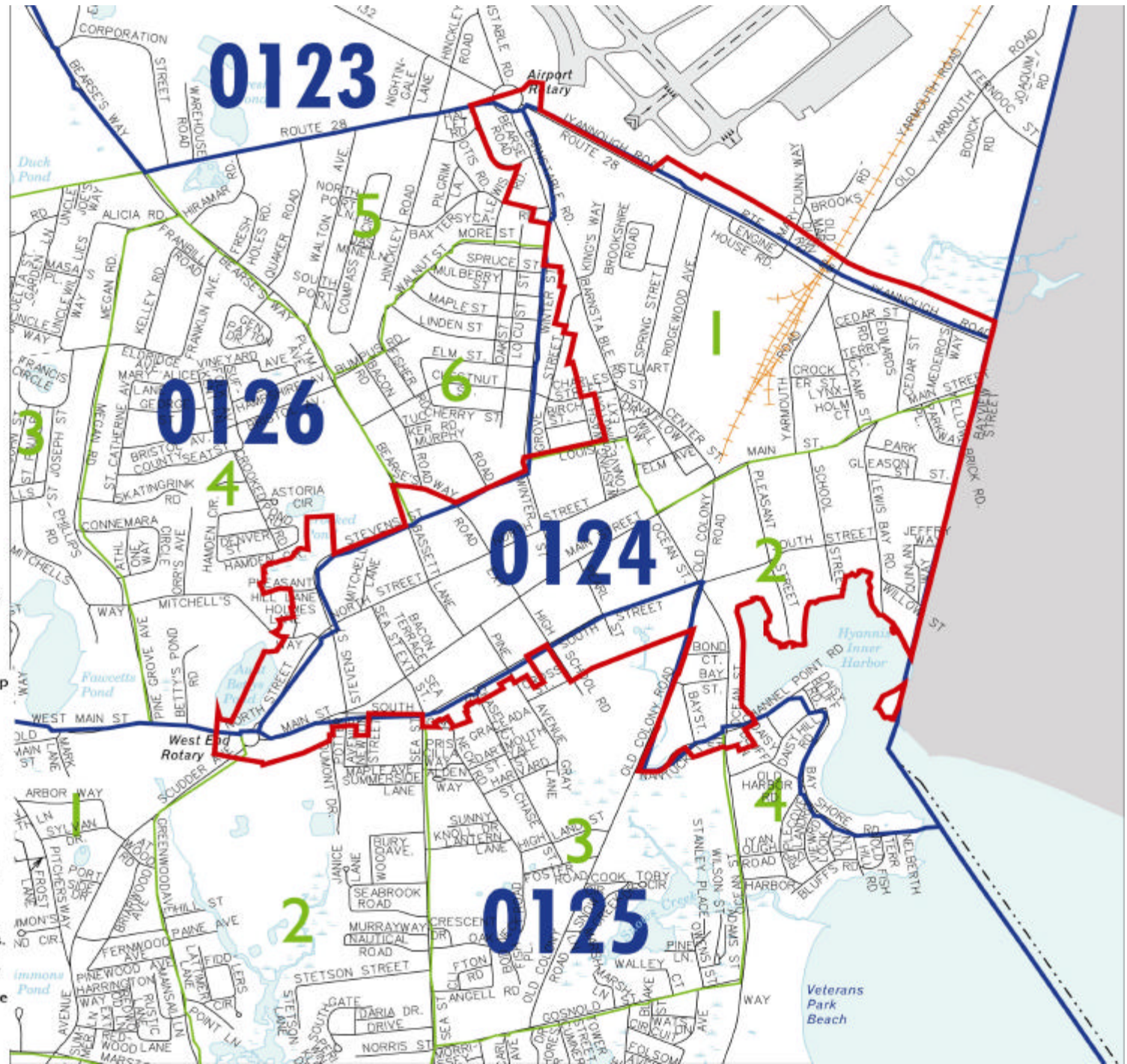
The street data shown on this map is current as of March 2003.

Street data were derived from several different sources including: aerial photographs taken on April 10, 1995 and April 28, 2001, Global Positioning System (GPS) field surveys, and Town of Barnstable Engineering Department records.

Hydrographic (water-related) features were derived from aerial photographs taken on April 10, 1995.

This map was developed to meet National Map Accuracy Standards.

This map represents a reasonable effort to provide accurate and current information. However, the possibility does exist that this map may contain errors or omissions.



Map-5 Housing Census Districts

c) Affordable Units on the DHCD Housing Inventory Within The District

Following is an inventory of affordable units, rental and ownership, within the District that are recognized for inclusion by the DHCD for the purposes of Chapter 40B.

Total Affordable Units: 487

Total Affordable Rental Units: 483

Total Affordable Ownership Units: 4

500 Old Colony Road (rental) – **68 units**
Stevens Street (rental) – **64 units**
Sea Street Extension (rental) – **69 units**
370 South Street / 30 Pine Street (rental) – **20 units**
78 Pleasant Street (rental) – **12 units**
118 High School Road (rental) – **20 units**
47 Cedar Street (rental) – **6 units**
168 Barnstable Road (rental) – **124 units**
South Street “Homestead” (rental) – **10 units**
98 Pleasant Street (rental) – **12 units**
63 Pine Street (rental) – **4 units**
Old Colony Road (ownership) - **3 units**
93 Pleasant Street (rental) – **12 units**

Pleasant Street “Oldest House” (rental) – **1 unit**
71 Pleasant Street (rental) – **8 units**
77 Winter Street (rental) – **6 units**
78 Winter Street - **9 units**
Pine Street (ownership) – **1 unit**
75 Pearl Street (amnesty) – **5 units**
87 Pine Street (amnesty) – **1 unit**
63 Pleasant Street (amnesty) – **7 units**
52 Stevens Street (rental) – **9 units**
63 Louis Street (amnesty) – **1 unit**
26 Yarmouth Road (amnesty) – **14 units**
615 Main Street (inclusionary) – **1 unit**

2. Future Housing Stock

There is a unique opportunity in Hyannis, unique on all of Cape Cod, to promote housing development that provides housing for households of all income levels in a truly mixed-income community. An appropriate balance in affordability of residential units is the goal and vision for the District.

a) Growth of Affordable Housing Stock

As discussed above, Hyannis currently contains 487 affordable units (38% of the town-wide affordable housing stock).

Barnstable adopted an inclusionary housing ordinance on June 17, 1999. The inclusionary ordinance requires the set aside of 10% of certain new residential units as affordable to households earning not more than 80% of the median area income. (See Appendix Barnstable Housing Plan, Barnstable Inclusionary Housing Ordinance, Barnstable Accessory Apartment Ordinance.) The Town’s inclusionary ordinance applies to all

new development within the District, with the single exception of workforce housing proposals located in the Medical Services District, in which case affordable inclusionary units are not required but may be provided. As a result, almost all new residential development proposals within the District will be subject to the Inclusionary Ordinance and they will create at least 10% affordable housing commensurate with new housing growth in the District.

Barnstable adopted an affordable accessory apartment ordinance on November 16, 2000, which promotes the conversion of existing accessory apartments and the creation of new accessory apartments to increase the Town's and the District's stock of affordable housing. (See attached document.) Included in the statistics provided above, the accessory apartment ordinance has resulted in 28 units of housing being added to the DHCD's subsidized housing inventory within the District (and 111 units town-wide). Because this is a voluntary program, it is not possible to accurately estimate the number of affordable units that will be produced under this ordinance over a given time period.

b) Growth of Workforce Housing Stock

The 2005 zoning addresses the need for housing for those households earning between 81% and 120% of the median area income. While these households exceed state income limits for affordable units, they have difficulty obtaining housing due to the Cape's expensive housing market. The Town addressed this income/housing gap in the latest zoning. The zoning provides density bonuses to encourage the production of workforce housing. Three of the new zoning districts, including the Office-Multifamily, Medical Services, and Hyannis Gateway Zoning Districts promote workforce housing, which is defined in the zoning as "Residential dwelling units, offered for sale or rent, affordable to families earning between 81% and 120% of the area median income, as defined by the U.S. Department of Housing and Urban Development, and provided within a multi-family structure. Such residential dwelling units shall remain affordable in perpetuity and shall provide a deed restriction, regulatory agreement and monitoring agreement and similar documentation as may be required by and approved by the Barnstable Town Attorney." These zoning density bonuses include:

Medical Services District:

By-right market units – not more than 12 units

Special permit workforce units – not more than 16 units

Office-Multifamily District:

By-right market units – not more than 6 units

Special permit workforce units – not more than 12 units per acre

Hyannis Gateway District:

By-right market units – not more than 4 units per acre

Special permit workforce units – not more than 12 units per acre

Because this is a voluntary program, it is not possible to accurately estimate the number of affordable units that will be produced under this ordinance over a given time period.

Artist Loft Housing

The 2005 zoning provides for live/work spaces for artists seeking to reside in Hyannis. Artist's lofts are allowed in the HVB, SF, OM, and HD Districts. An Artists loft is defined as: A place designed to be used as both a dwelling and a place of work by an artist, artisan, or craftsperson, including persons engaged in the application, teaching, or performance of fine arts such as drawing, vocal or instrumental music, painting, sculpture, photography, graphics, media arts, and writing. The work activities shall not adversely impact the public health, safety, and welfare, or the livability, functioning, and appearance of adjacent property."

B. Marine Resources

All property within the District that is adjacent to the Hyannis Inner Harbor and adjacent shorefront area is included in the Harbor District. See Map-1. The Harbor District contains the most restrictive zoning in the newly adopted Hyannis Village Zoning Districts. For example, Harbor District zoning establishes specific requirements to promote and preserve marine uses and public ways and views to the waterfront.

The Town has undertaken significant public works projects to enhance public ways to the waterfront and to encourage public enjoyment of the harbor. Public works projects already completed, and projects planned for the future, are outlined and more fully described in Section IV, Open Space and Cultural Amenities, of this Plan.

I. Regulatory Measures Supporting Marine Dependent Uses

The Harbor District encompasses all land uses along the shore area of the District. In terms of uses, the Harbor District Zoning promotes water-dependent uses. In terms of dimensional limitations, the Harbor District includes some of the most restrictive zoning in the Hyannis Village Zoning Districts (i.e. height is limited to 35 feet and 2.5 stories, lot coverage is limited to 70%). Some existing water-dependent uses are provided relief from height and lot coverage limitations in order to promote those uses.

a) Permitted principal uses in the Harbor District include:

- (a) Marinas
- (b) Building, sale, rental, storage and repair of boats
- (c) Retail sale of marine fishing and boating supplies
- (d) Retail sale of fishing bait, fish and shellfish
- (e) Commercial fishing, not including canning or processing of fish
- (f) Charter fishing and marine sightseeing and excursion facilities

b) Permitted Accessory Uses in the Harbor District include:

- (a) Offices to be used for ancillary activities which are directly related to a Principal permitted use in the district.
- (b) Accessory retail uses that do not exceed 1,500 square feet and which are directly related to a principal permitted use in the district.
- (c) Health club not exceeding 1,500 square feet and which is directly related to a principal permitted use in the district.

c) Dimensional Relief For Marine Uses:

In order to support water-dependent uses on the harbor, for buildings and structures used as a marina and/or used in the building, sale, rental, storage and repair of boats, so long as such buildings or structures exist as of the July 14, 2005, the following dimensional regulations apply: maximum building height 45 feet, maximum lot coverage 90%. Reference Barnstable Code Section 240-24.1-.7.C.

2. Municipal Projects and Regulatory Provisions Supporting Public Access to the Waterfront.

Municipal works projects completed and planned are outlined in Section IV, Open Space and Cultural Amenities. The Town is committed to promoting and providing for public ways and views to the waterfront and public enjoyment of this limited resource. In addition, the Hyannis Village Zoning Districts and the D&I Plan ensure that new development projects in the Harbor District will respect these goals. D&I Plan provisions include:

Goals: Enhance pedestrian access and public spaces and preserve views and public access to the waterfront” (Section B, D&I Plan Goals).

“Site development patterns must be oriented to maximize pedestrian environments, build on historic precedent, and create and preserve views to the water from public ways and places.” (D&I Plan, s. 3.1.2).

The infrastructure improvements completed, initiated, and proposed for the Hyannis Inner Harbor and the adjacent waterfront, and the coordinated regulatory provisions adopted under the zoning ordinance and D&I Plan, demonstrate the Town’s commitment to protecting and promoting marine dependant uses and public access to the waterfront.

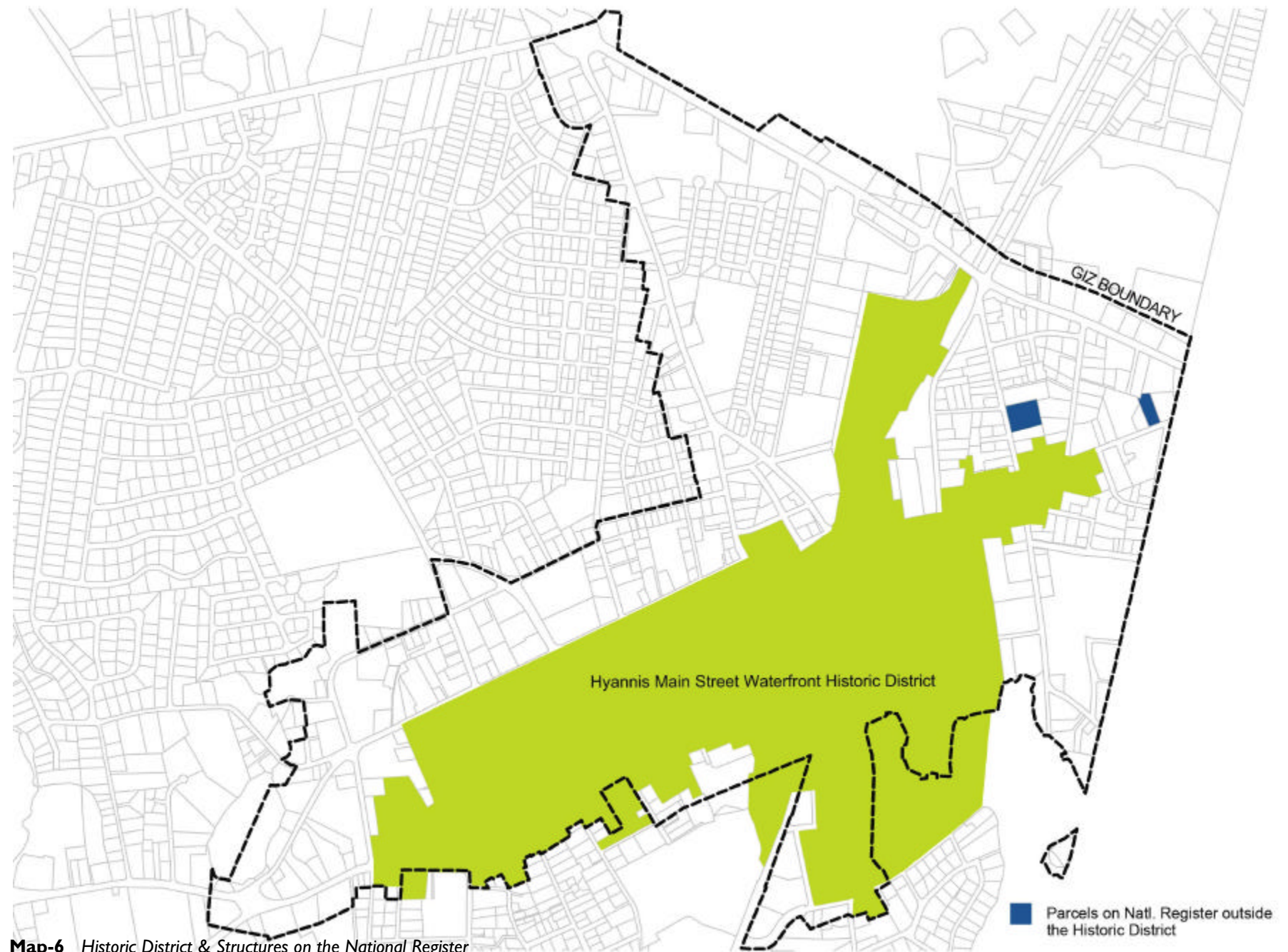
C. Historic Resources

A significant portion of the District falls within the Hyannis Main Street Waterfront Historic District (HHD). See Map 6. Within the HHD, all new development, demolitions, and changes to the exterior of existing buildings require Hyannis Historic District Commission approval. Outside the HHD, all new development and changes to existing buildings (with the exception of single family residences) must conform with the requirements of the D&I Plan, as administered through site plan review and/or special permit approvals. Site design and building design criteria in the D&I Plan (applicable in the entire District) were based upon the Hyannis Main Street Waterfront Historic District Guidelines. The Hyannis Historic District Commission and their subcommittee were consulted in developing the D&I Plan. Within the HHD, where the D&I Plan criteria and HHD Guidelines are in conflict, the HHD Guidelines are applied. Enforcement of HHD Guidelines and the design criteria in the D&I Plan will ensure that redevelopment of historically and architecturally significant structures and development in proximity to those structures will protect and preserve significant resources and their context.

The Town has undertaken a review of records of historic and architecturally significant resources in the HHD (the Form Bs, which inventory buildings and structures). The Town is committed to conduct a further study of resources both within and outside of the HHD. Within the HHD, the Town is seeking funds to conduct further analysis of the Form Bs to better identify and document historic and architectural significance of existing structures. This information will assist the Hyannis Historic District Commission in making determinations about protecting and preserving significant structures. Outside the HHD, the Town is seeking funds to conduct a baseline inventory of buildings and structures that may be eligible for nomination to the National Register of Historic Places or the Massachusetts Register of Historic Places

(Form As, which inventory an area for potentially significant buildings and structures). This information will be used to protect and preserve significant structures not currently identified. In addition, the Town is committed to providing staff resources for the protection of historic resources. At this time, the Barnstable Planning Department has committed one full-time staff member to support historic review bodies, including the Hyannis Main Street Waterfront Historic District Commission, the Barnstable Historic Commission, and the Old Kings Highway Historic Committee.

The Town has contacted the Massachusetts Historical Commission (MHC) for technical assistance in scoping the two studies described above (i.e. further detailing Form Bs within the HHD and creating Form As outside the HHD). Town officials are considering a filing to become a Certified Local Government (CLG) under the auspices of the MHC. CLG designation will increase the likelihood of state funding for the two studies. Due to funding constraints, these studies may not be finalized for some time (FY 07 or 08). In the interim, significant structures within the HHD will continue to be protected through the Hyannis Historic District Commission review. In the interim, outside the HHD the Town is committed to refer to the Cape Cod Commission as a Development of Regional Impact any project which proposes the demolition or substantial alteration of an historic structure or archeological site listed with the National Register of Historic Places or the Massachusetts Register of Historic Places.



To date, two historically significant structures outside the HHD are identified, as shown on Map-6.

D. Wastewater

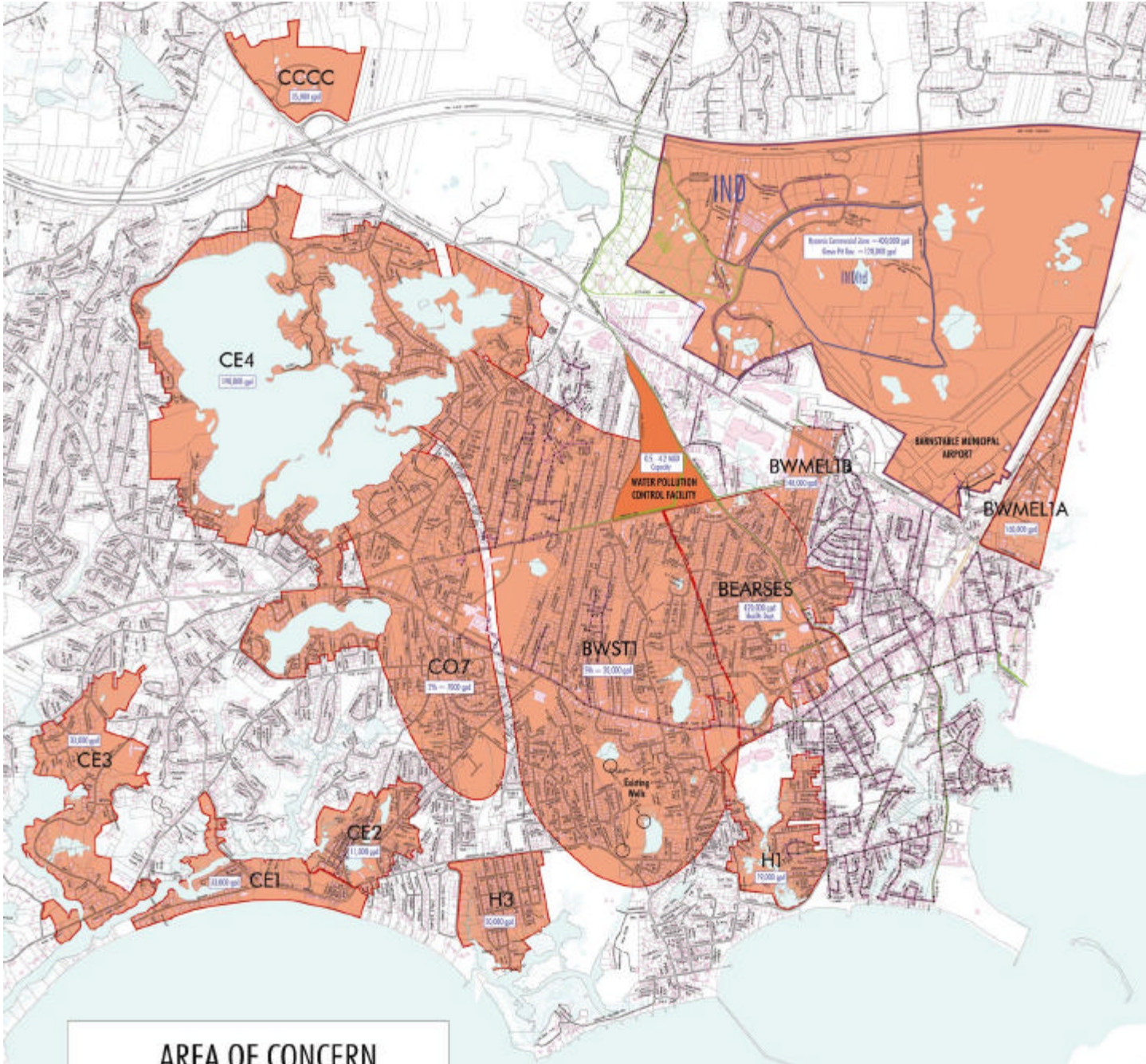
The majority of the wastewater generated in the District is disposed through the Hyannis Water Pollution Control Facility (WPCF). This Plan presents existing and anticipated wastewater flows and an analysis of existing and planned for capacity, including capital planning necessary to support anticipated need for wastewater disposal. For this reason, Hyannis is a sensible place to encourage infill and to support smart growth principles.

Wastewater capacity and infrastructure in the Town of Barnstable is planned and managed by the Barnstable Public Works Department. The Department's Phase I Needs Assessment and Wastewater Facilities Plan (WWFP), Phase II, estimates the gallons per day of capacity to serve the town-wide system. Growth in downtown Hyannis will be concurrent with necessary improvements in the wastewater collection, treatment and effluent disposal systems. The section below illustrates how existing and planned infrastructure will accommodate the planned for build-out in the District while preserving capacity for identified Areas of Concern and other areas with allocated wastewater flow that are located outside of the District.

I. Capacity

As further discussed below, there is sufficient capacity to support Year 1-2 and Year 2-5 scenarios for build-out within the District based upon planned capital improvements. One potential limiting factor in wastewater capacity is the existing gravity sewer connection system in South Street and the existing pump station capacity, which will require upgrades in the Year 2-5 scenario. A second potential limiting factor is the effluent recharge capacity of the WPCF. The Town is currently moving forward with the development of a second effluent discharge site or sites near Exit 6.

The following Table-8A, WPCF Future Flows, provides wastewater flow estimates from 1994 through 2014. The flows estimated in 1994, and set forth below in Table-8A, have been reliable and accurate over time. Table-8A establishes flow allocations in both sewer and non-sewered areas.



Sewering of Areas of Concern, and the sewerage of many parcels adjacent to or within close proximity to existing sewer lines has been awaiting the approval of the Town's Notice of Project Change to utilize a second effluent recharge site connected by an effluent discharge force main. The Town has adopted an aggressive schedule to obtain all necessary approvals under the Notice of Project Change and is devoting municipal resources to accomplish this goal as set forth below. (See Map-7A)

Map-7A Future Flows Map from WWFP Date: 1-16-03

Table-8A WPCF Future Flows

Future Flows to the Hyannis WPCF						
Wastewater Facilities Plan						
Town of Barnstable						
Flow Sources	Project Maximum Month Flows (mgd)					Years to Connect
	Flows Occurring at:					
	Current 1994	5 years 1999	10 years 2004	15 years 2009	20 years 2014	
Current & Future Flows (expected)						
Existing Flows @ WPCF	2.1	2.1	2.1	2.1	2.1	0
Infilling along existing sewers(developed & undeveloped)	0.00	0.10	0.20	0.25	0.30	20
Bearses Way Sewer Extension	0.00	0.03	0.03	0.03	0.03	5
Rte. 28 and Corporation Street Sewer Extension	0.00	0.01	0.01	0.01	0.01	5
Independence Park	0.00	0.10	0.20	0.30	0.40	20
Subtotal for Expected Flows	2.10	2.33	2.53	2.69	2.83	
Future Flows (speculated)						
AOC in Wastewater Facilities Plan						
AOCs H1,H3,CEI-4	0.00	0.00	0.20	0.33	0.47	20
AOCs in ZOCs	0.00	0.00	0.05	0.06	0.07	20
Infilling along proposed AOC sewers	0.00	0.00	0.02	0.04	0.05	20
Bearses Way AOC (50% of area)	0.00	0.00	0.04	0.10	0.20	20
Potential Expansion & New Growth						
Growth off existing sewer lines not currently sewered	0.00	0.00	0.05	0.10	0.20	20
Gravel Pit Development	0.00	0.00	0.02	0.07	0.13	20
Cape Cod Community College	0.00	0.00	0.02	0.03	0.03	5
North of Kids Hill Road	0.00	0.00	0.05	0.08	0.10	20
Subtotal for Speculated Flows	0.00	0.00	0.45	0.80	1.25	
Total	2.10	2.33	2.98	3.49	4.08	

The Flow Allocation Table below is derived from the Projected Maximum Month Flows (mgd) for the “15 Years” (corresponding to 2005-2009), and “20 Years” (corresponding to 2010 -2014) categories on Table-8A. Consistent with the projected flows established in Table-8A, the Town proposes to utilize the following anticipated and planned-for flows to service the District:

Flow Allocation Table

Flow Sources	Projected Flows in GPD	Notes
Current & Future Flows (expected), Infill development along existing sewer lines	100,000	This is the amount of flow expected as a result of infill along existing sewer lines that is not currently utilized, not including the Cape Cod Hospital bed expansion which is accounted for below.
Future Flows (speculated) , AOC CE-3	35,000	The Board of Health recommends removing this area from AOC consideration. See Map-7A.
Potential Expansion and New Growth	430,000	This is the amount of planned for flow expected as a result of new connections to the system.
Capacity not accounted for	120,000	Difference between 4.08 GPD and planned for 4.2 MGD
Total	685,000	

The following Table-8B estimates wastewater flows based upon Year 1-2 and Year 2-5 build-out and Title 5 flow estimates. The Town is conducting a water use rate study, through Stearns & Wheler, Barnstable GIS and the Departments of Growth Management and Public Works, to develop more representative wastewater generation rates to be used as part of an additional wastewater analysis and capacity evaluation for the planning scenarios.

Sewered areas and Areas of Concern that are planned for sewer expansion are shown on Map-7A. The sewered area generally includes Hyannis Village, Independence Park and Barnstable Village. The new Cape Cod Hospital patient bed expansion is limited to 12,000 gpd by DRI permit. It is anticipated that the expansion will be occupied in phases and that only 6,000 gpd will be utilized in the Year 1-2 scenario (although the full 12,000 has been subtracted from the allocated flows as a conservative assumption). It is estimated that 50% of the flows to the WPCF are dedicated to the District. This Plan estimates the allocated capacity available to the District (expressed in gallons per day) as follows:

685,000	From Flow Allocation Table above
<u>-12,000</u>	<u>Cape Cod Hospital Patient Bed Expansion</u>
673,000	Subtotal

Fifty-percent (50%) of the 673,000 allocated total available flow is assumed to service growth within the District. The remaining 50% of allocated flow is assumed to service growth outside the District.

$$685,000 \times .5 = 336,500 \text{ gpd}$$

As a result, 336,500 gpd is available from anticipated flows to service the District.

The Town is not aware of any planned, large-scale development projects that would require a significant sewer allocation in the Year 1-2 scenario. Hospital-related development is anticipated in the Medical Services Overlay District, however, such development is not anticipated to require significant wastewater capacity for another three to five years.

2. Anticipated Wastewater Demand

TABLE-8B

Year 1-2 Increases in Wastewater Flows	Flows Expressed in Gallons Per Day	Total Anticipated Flows Expressed in Gallons Per Day
267 Residential Units @ 2 bedrooms per unit +	220/unit	58,740
76,368 Retail s.f.	50 per 1,000 s.f.	3,819
25,809 s.f. Restaurant*	See below for calculation	14,974*
92,665 Office s.f.	75 per 1,000 s.f.	6,950
(173 Hotel Rooms) Rooms estimated demolished	110 per room	(19,030)
Year 1-2 Totals		65,453
Year 2-5 Increases in Wastewater Flows		
331 Residential Units @ 2 bedrooms per unit +	220/unit	72,820
(11,920 Retail s.f.)	50 per 1,000 s.f.	(596)
69,336 s.f. Restaurant*	See below for calculation	40,229*
332,922 s.f.	75 per 1,000 s.f.	24,969
155	110 per room	17,050
Year 2-5 Totals		154,472

+ See Page 12, Table-3 Notes.

* RESTAURANT FLOW CALCULATIONS: The District build-out estimates growth in restaurant square footage. Title 5 estimates restaurant flows by the number of seats. This Plan estimates restaurant flows by actual average daily flows per square foot based upon a representative sample of existing restaurants in the District, examined over a three year time period. See Memorandum, Barnstable GIS, November 10, 2005, attached. Based upon the GIS actual flow data, restaurant flows are estimated at 0.5802 gallons per square foot per day. The resulting restaurant flows of 14,974 (Year 1-2) and 40,229 (Year 2-5) are used to determine treatment and disposal capacity.

Based upon the estimated treatment and disposal capacity of 336,500 gpd, there is adequate capacity to support the anticipated 65,453 gpd flows in the (Year 1-2) scenario. Based on the same estimates and the planned capital improvements set forth below, there is adequate treatment and disposal capacity to support the anticipated 154,472 gpd flows in the Year 2-5 scenarios.

3. Wastewater Facilities Planning

The current WWFP planning horizon concludes in 2014. Development occurring in the 2014 and future scenarios will be planned for and accommodated in the next comprehensive wastewater planning effort which will include the Nutrient Management Program (NMP) project.

a) Effluent Disposal Capacity

The Town is currently in discussions with the MADEP and the Cape Cod Commission to identify an appropriate effluent disposal site(s) for treated effluent. The Town filed a Notice of Project Change with MEPA to obtain permission to construct an effluent discharge force main concurrent with planned improvements to Route 132 (expected public release is November 20, 2005). The force main would carry treated effluent from the WPCF along Route 132 to a second effluent recharge site (the McManus Site) adjacent to Exit 6. The planned effluent recharge facilities will be subsurface leaching facilities to accommodate open space and recreational opportunities on the site after construction.

Since April, 2001, the Town has convened a Nutrient Management Team, consisting of town staff from public works, health, a town water quality specialist, planning, representatives of MADEP and the Commission, and consultants, to develop a comprehensive approach to nitrogen loading and wastewater management. The Town is cooperating in identifying nitrogen impacts to Cape Cod's sole source aquifer and marine estuaries. As the Mass Estuaries Project moves forward, new, more stringent standards for nitrogen may be adopted relative to wastewater disposal. Until agreed-upon standards for nitrogen removal are established, the Town is proposing to develop appropriate effluent mitigation sites based upon the current WWFP project and the transition to the NMP Project.

The Town is examining re-use of treated effluent as an effluent mitigation alternative. Specifically, the Town is examining the option of disposing 0.5 to 1.0 MGD of treated effluent at an abandoned cranberry bog on the Barnstable/Yarmouth town line, and another option of disposing .5 MGD at 725 Main Street at Stewarts Creek. The Cape Cod Hospital has an existing re-use program. The Town is open to exploring the possibility of reusing a portion of its treated effluent through spray irrigation of the Hyannis Golf Course on a seasonal basis, and at other Town properties. While there are limited opportunities for large scale re-use projects, and many opportunities are seasonally limited, the Town continues to pursue opportunities for re-use.

b) Treatment Capacity

The Water Pollution Control Facility (WPCF) has capacity to treat effluent to current state and regional treatment standards. Additional treatment improvements have been funded and designed and will be completed as set forth below to treat 4.2MGD of wastewater. The limiting factor in utilizing this treatment capacity in the future is the lack of an approved disposal site or sites. The Town is seeking approval for appropriate disposal sites as set forth in the charts below.



Map-7B
 Existing Wastewater Infrastructure
 Map completed by Stearns & Wheler, LLC and graphically modified for
 this document by TOB Growth Management Department staff

4. Wastewater Capital Improvements

(1) *Actions completed over the past 3 years (FY 03 - FY 05)*

Date Completed	Action & Project Description	Capacity Considerations	How capital improvement project will meet capacity and other considerations
2002	Aeration tank conversion to MLE Process (Nitrogen removal)	Aeration tank de-rated from 4.2MGD to 2.7 MGD	Improved energy efficiency, odor reduction and treatment improvements
2003	Evaluate effluent disposal sites	NA	Preliminary investigation of potential effluent discharge sites
2004	Hydraulic modeling with USGS and Cape Cod Commission of potential effluent discharge sites	NA	Preliminary investigation of potential effluent discharge sites
2005	Hydraulic loading analysis of potential effluent discharge sites	NA	Preliminary investigation of potential effluent discharge site

(2) *Years 1-2 (FY 06 - FY 07)*

Target Completion Date	Action & Project Description	Capacity Considerations	How capital improvement project will meet capacity and other considerations
2006	Complete Wastewater Facilities Plan	Plan for 4.2 MGD	See future flows projection figure
2006	Complete the permitting of an effluent discharge site	Increase discharge capacity to approx. 4.2 MGD	In anticipation of future flows projected
2007	Complete Hyannis WPCF Improvement Project	Bring capacity back to 4.2 MGD	Project includes addition of new aeration tank with MLE Process, odor control, and other facility improvements
2007 -2008	Complete expansion of Main Street pump station (west end) and force main	TBD	In anticipation of redevelopment of Main Street and connection of areas of concern as identified in the Wastewater Facilities Plan

(3) *Years 2-5 (FY 08 - FY 10)*

Target Completion Date	Action & Project Description	Capacity Considerations	How capital improvement project will meet capacity and other considerations
2008	Construct improvements to Old Colony Pump Station and force main (if preferred option)		Old Colony Pump Station and force main will be expanded as required to handle increase in wastewater flow
2008	Complete construction of Rte 132 effluent discharge force main		
2009	Complete construction of effluent discharge system at remote site	Increase discharge capacity to approx. 4.2 MGD	See future flows projection figure
2010	Commence additional denitrifying process (e.g. denitrifying filters) at Hyannis WPCF	TBD	Capacity and level of treatment will be determined by Nutrient Management Planning.

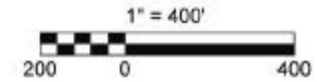


FY07- Complete expansion of aeration tanks & odor control facilities
 FY09-Add more denitrifying at WPCF

FY07- Expand Main St. Pump Station

FY09-Run forcemain to new effluent discharge site

Map-8
 Proposed Wastewater Infrastructure



E. Water Supply

I. Existing Infrastructure

In 2005 the Town of Barnstable purchased the Barnstable Water Company and associated land for approximately \$11M and gained local control of the water supply and management of water services. This purchase represents a serious commitment on the part of the Town to provide safe drinking water to Barnstable residents. As part of the purchasing process, SEA Consultants Inc. (SEA) was retained to complete a Capital Equipment and Infrastructure Review of the Barnstable Water Company. SEA evaluated the Barnstable Water Company's recent history in terms of regulatory compliance, water quality issues, property ownership, and environmental threats that may exist to the existing groundwater sources that serve as the water supply.

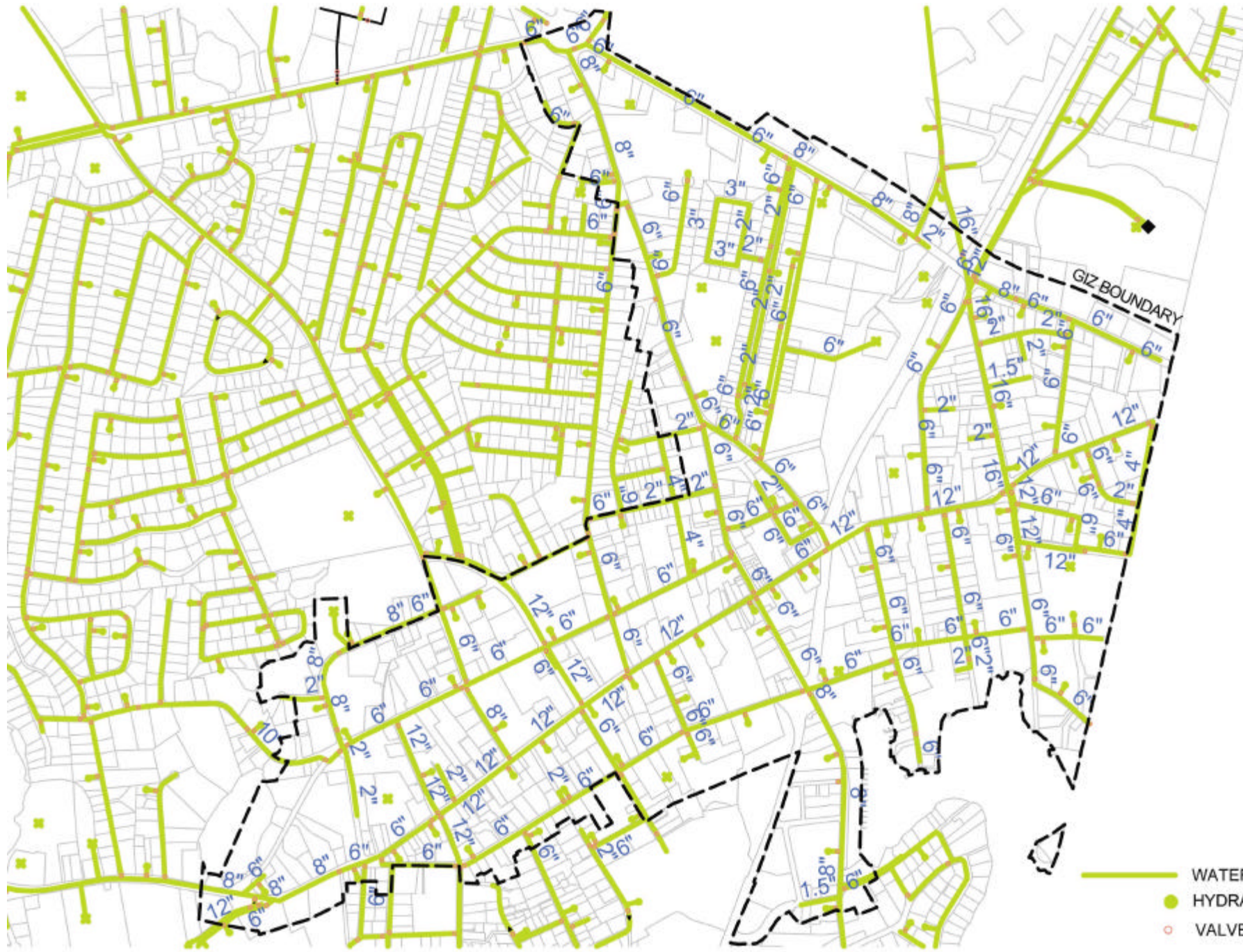
Because of the recent acquisition, the Town is undergoing capacity and water infrastructure supply studies to determine future improvements and potential water supply limitations. The system is comprised of 12 wells, 2 standpipes, 101 miles of distribution system, 806 hydrants, and 7,338 customers.

The new Town water supply is operated under a state Water Management Act permit that contains conditions limiting water withdrawals, including daily, seasonal and maximum annual withdrawals for a number of wells. The Water Management Act Permit also requires the development and implementations of a water conservation plan and a re-evaluation of water rates. The Town of Barnstable will operate the water system consistent with these conditions. The Town will also investigate opportunities to increase water conservation, including investigating opportunities to reduce I and I.

From the SEA study, it is known that the following improvements to the water supply system will need to be made within the next planning horizon:

- Sufficient land area to protect water supply is not controlled in as many as 11 or 12 wells. The Town of Barnstable will need to consider acquiring the property necessary to support these wells.
- Generally the 100 miles of distribution system piping is in fair to good condition, but the following conditions will need to be improved:
 - Approximately 80 percent of all piping in the distribution system is 8 inches in diameter or less.
 - Approximately 23 percent of all piping in the distribution system is constructed of unlined, cast iron pipe, with some of this pipe greater than 90 years old. The typical service life of this type of pipe is considered to be 100 years.
 - Approximately 40 percent of all piping in the distribution system is constructed of asbestos cement (AC). This piping was most likely installed during the period between 1950 and 1970. Typically, AC pipe has a service life of approximately 30 to 50 years, so it is logical to conclude that this pipe material is also approaching the end of its service life.

Notwithstanding the potential deficiencies identified in the SEA report, the Barnstable Department of Public Works has determined that there is a sufficient quantity of safe drinking water to service the District. In addition, it is expected that the water supply and the water supply delivery system are adequate to provide safe drinking water to the District in the Year 1-2 and Year 2-5 scenarios. The following Map-9 illustrates the water supply infrastructure recently acquired by the Town of Barnstable.



- WATER LINE
- HYDRANT
- VALVES

Map-9
Existing Water Supply
Infrastructure

2. Water Supply Capital Improvements

(1) *Actions completed over the past 3 years (FY 03 - FY 05)*

Date Completed	Action & Project Description	Increase in Capacity	How increase in capacity will meet projected demand at that time
May-05	Municipal acquisition of water supplier	NA	
May-05	Commence infrastructure planning	NA	Assure proper maintenance and capital improvements to protect capacity

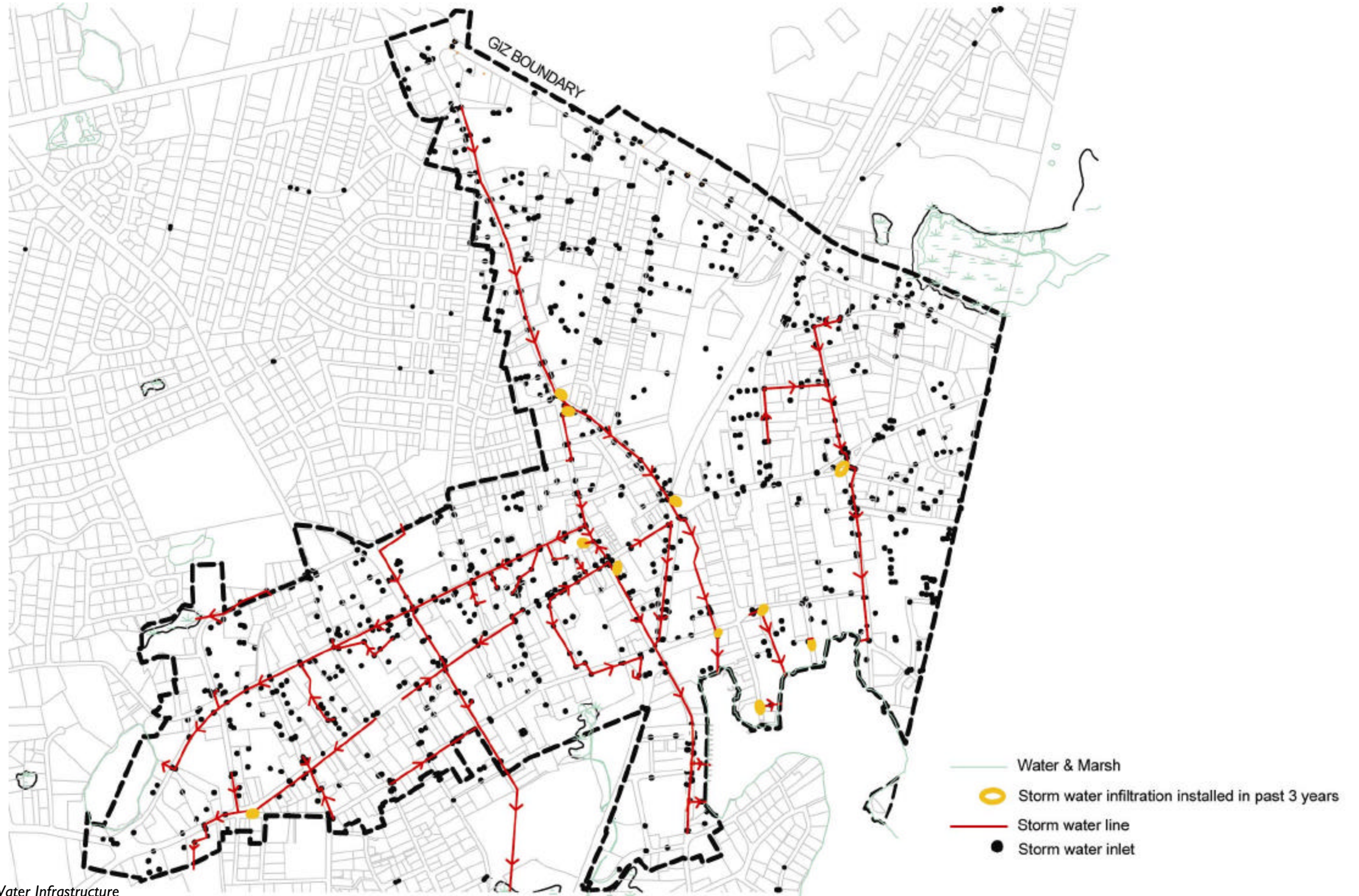
(2) *Years 1-2 (FY 06 - FY 07)*

Target Completion Date	Action & Project Description	Increase in Capacity
Dec-05	Determine contractor to operate facility for municipality	NA
Dec-05	Prepare FY 2007 CIP	NA
Dec-06	Perform hydraulic analysis of system to determine capacity constraints	NA
2006	Upgrade water line in Main Street from Sea Street to Stevens Street to a 12" main	
2006-2007	Install 12" main in Stevens Street from Main Street to North Street	

F. Storm Water

I. Existing Storm Water Infrastructure

Within the proposed GIZ boundary, storm water on *public* property and ROWS is currently collected by a series of catch basins and underground storm pipes. The catch basins filter run-off before the storm water daylights. Individual properties are required to infiltrate their own storm water into the ground on their property. If it is impossible for a particular privately-owned site to recharge storm water, the property owner can opt to pay to have the appropriate storm water drainage devices installed to tie the property into Hyannis centralized infrastructure, where capacity allows. Private development will not be allowed to connect to the system where excess capacity does not exist. The storm water collection system on Main Street (from Center Street to Stevens Street) can accommodate roof runoff from the downspouts that are currently connected to the system. These preexisting downspouts may be reused providing additional roof area is not directed to them. All other storm water is required to be disposed on site. See Code, Section 240-24.1-10.A.2, encouraging the use of rain gardens, and the D&I Plan, Site Layout & Amenities, Section 3.1.11, which states "The storm water collection system on Main Street (from Center Street to Stevens Street) can accommodate roof runoff from the downspouts that are currently connected to the system. The preexisting downspouts may be reused providing additional roof area is not directed to them. All other storm water shall be disposed of on site." The storm water system is managed and annually maintained by the Barnstable Public Works Department. Existing storm water infrastructure is illustrated on Map-10.



Map-10 Existing Storm Water Infrastructure

It is anticipated that storm water flows handled in the existing public system will actually decrease as redevelopment occurs within the proposed GIZ. Currently, significant portions of the Downtown area are covered with impervious surfaces. The D&I Plan strongly encourages the use of pervious materials where hard surfaces are required. In addition, the D&I Plan mandates that storm water must be passively collected, treated, and discharged on site. Where soil type and lot size allow, storm water is required to be treated using vegetated swales, rain gardens, constructed wetlands and planted water retention areas. Underground storm drainage must be avoided to the maximum extent possible, and can only be used when passive drainage techniques are illustrated and shown to be impractical due to site constraints. Where storm drains are needed, it is regulated that they shall separate solid particulates from water, and shall avoid discharge directly into a water body. Regular maintenance of all storm water systems is required of individual property owners to prevent pollution to surface and groundwater. (Refer to D&I Plan, Pages 20-21)

An increase in vegetated passive drainage systems will result in decreased nitrogen leaching and will help eliminate pollutants before water is recharged.

In addition, a series of best management practices for treatment, recharge and/or reuse of storm water are outlined in the D&I Plan. Technologies highly encouraged include green roofs (to collect and evapo-transpire storm water) and water harvesting (to collect storm water and re-use as irrigation to recharge water)

2. Capital Improvement Projects

Proposed storm water improvements are illustrated on Map-11 below.

(1) *Actions completed over the past 3 years (FY 03 - FY 05)*

Date Completed	Action & Project Description	Increase in Capacity
Spring 2003	Stormwater quality mitigation improvements at Hyannis Inner Harbor on South street between Ocean Street and School Street and on School Street and Pleasant Street between South Street and the Harbor. Project was constructed with a CZM grant.	Eliminated the direct discharge of stomwater from 4 drainage systems that formerly discharged directly into the harbor.
Spring 2003	Barnstable road improvement project replaced deteriorated installed infiltration systems along the route of the existing drainage system including the installation of a large system in the North Street parking lot.	Eliminated the direct discharge of stormwater to the harbor except during large storm events.
Spring 2003	Installed a large infiltration system underneath the plaza in front of the RTA building at the intersection of Center Street and Main Street.	Eliminated the direct discharge of stormwater to the harbor except during large storm events.
Fall 2005	Main Street Improvement Project. Replaced deteriorated drain pipes, manholes, and catch basins in Main Street from Center Street to Stevens Street. Constructed infiltration systems on Ocean Street and on Main Street near Stevens Street.	Enlarged system to handle runoff from the 25 year frequency storm. Eliminated the direct discharge of stormwater to the harbor except during large storm events.

Fall 2005	Ocean Street storm water improvement project. Install infiltration systems and catch basins to eliminate direct discharges and prevent street flooding.	Drainage system is designed to handle runoff from the 25 year frequency storm. Direct discharges into wetland systems are eliminated.
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(2) Years 1-2 (FY 06 - FY 07)

Target Completion Date	Action & Project Description	Increase in Capacity
Spring 2007	Upgrade the drainage system from downtown area that floods Chase Street near South Street and that discharges directly into the wetland system behind the former sixth grade school.	Upgrade system to handle the 25 year frequency storm. Eliminate direct discharges to wetlands that drains to Hyannis Harbor.
Spring 2008	Upgrade drainage system along Old Colony road between Main Street and South Street and along Center Street between Main Street and Barnstable Road. Eliminate direct discharge of stormwater into Hyannis Harbor.	Upgrade system to handle the 25 year frequency storm. Eliminate direct discharges to wetlands that drains to Hyannis Harbor.
2007	Analyze options for collecting and treating stormwater runoff within the Wellhead Protection Zone of the Transportation Hub District.	If sufficient space exists to install a collection system, this upgrade would prevent stormwater runoff from reaching public water supply wells.

(3) Years 2-5 (FY 08 - FY 10)

Target Completion Date	Action & Project Description	Increase in Capacity
2008 - 2009	Install drainage improvements to system on Main Street between Stevens Street and the 725 Main Street park. Construct wetland and infiltration system in park at 725 Main Street (to be completed after west end pump station improvements are constructed).	Drainage system will be enlarged to handle runoff from the 25 year frequency storm. Direct discharge of runoff to stream behind park will be eliminated except for an overflow during storm events larger than the 5 year frequency storm..

Spring 2010	Install drainage improvements as part of the upgrades to North Street, Pleasant Street, and South Street.	Enlarge drainage system to accommodate the 25 year frequency storm. Eliminate direct discharges to Hyannis Harbor and to wetlands.
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(4) Years 5-10 (FY 11 - FY 15)

Target Completion Date	Action & Project Description	Increase in Capacity
Spring 2013	Install drainage improvements as part of the repaving of Sea Street, Bassett Lane, Stevens Street, Cedar Street, and Winter Street.	Enlarge drainage system to accommodate the 25 year frequency storm. Eliminate direct discharges to wetlands.

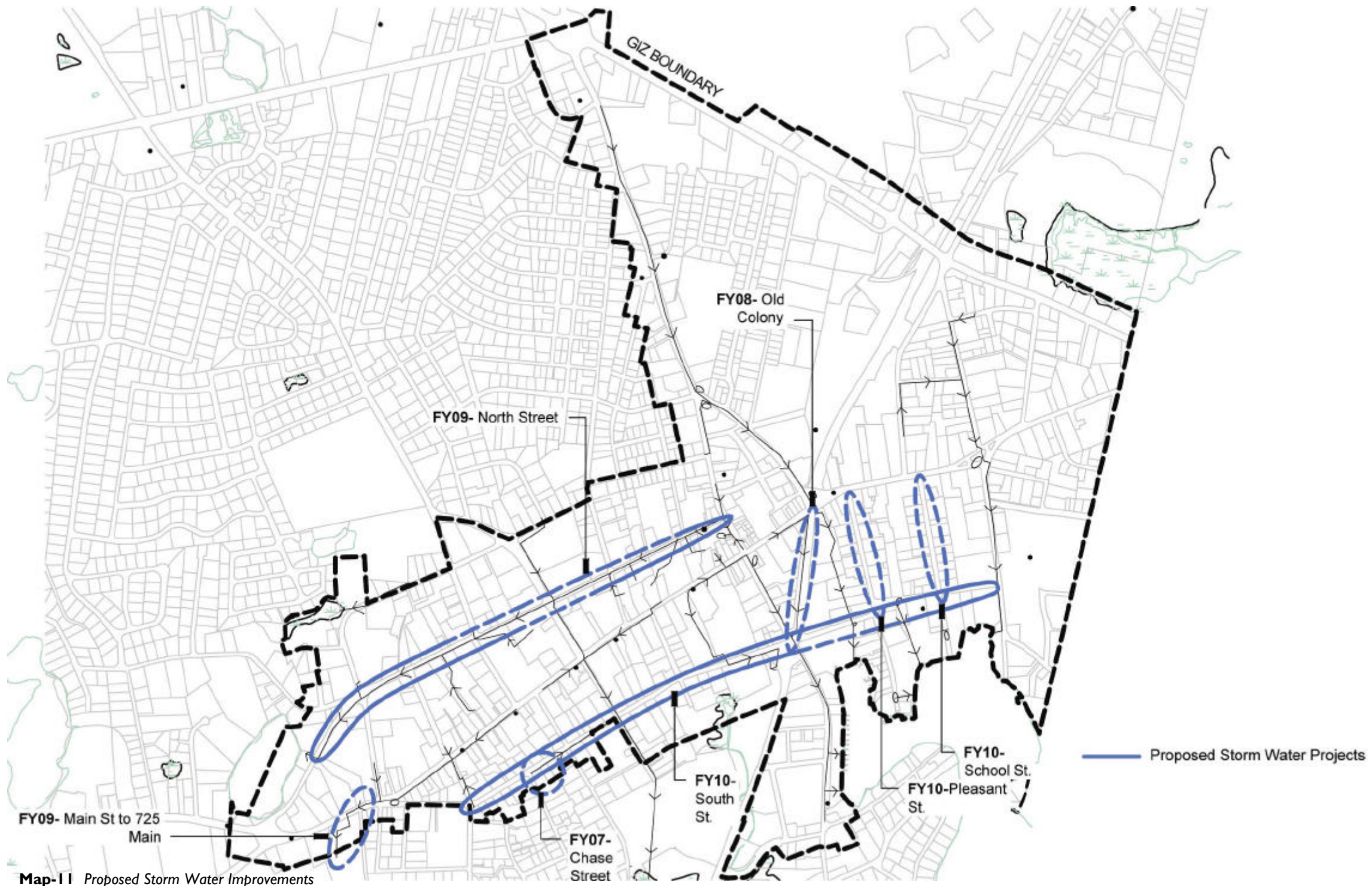
3. Offsets: Storm water mitigation through offsets

a) Regulatory Offsets

The increased regulatory standards requiring all properties within the GIZ boundary to use passive vegetated collection techniques will create a significant offset to the amount of storm water that is currently discharged traditionally without cleansing. Since a significant portion of existing land within the GIZ boundary is already impervious, storm water mitigation through these regulatory offsets will occur concurrent with new development and expansions to existing development within the District.

b) Open Space Acquisition Offsets

Recent openspace acquisitions totaling 786.6 acres, and the down-zoning of 26,817 acres of land provide significant offsets in potential new storm water impacts. The potential development removed from these parcels provides critical water recharge area, significantly reduces impervious areas thereby reducing storm water generation, reduces nitrogen leaching from extensive fertilization of blue grass lawns, and reduces the potential for automobile pollutant run-off.



Map-11 Proposed Storm Water Improvements

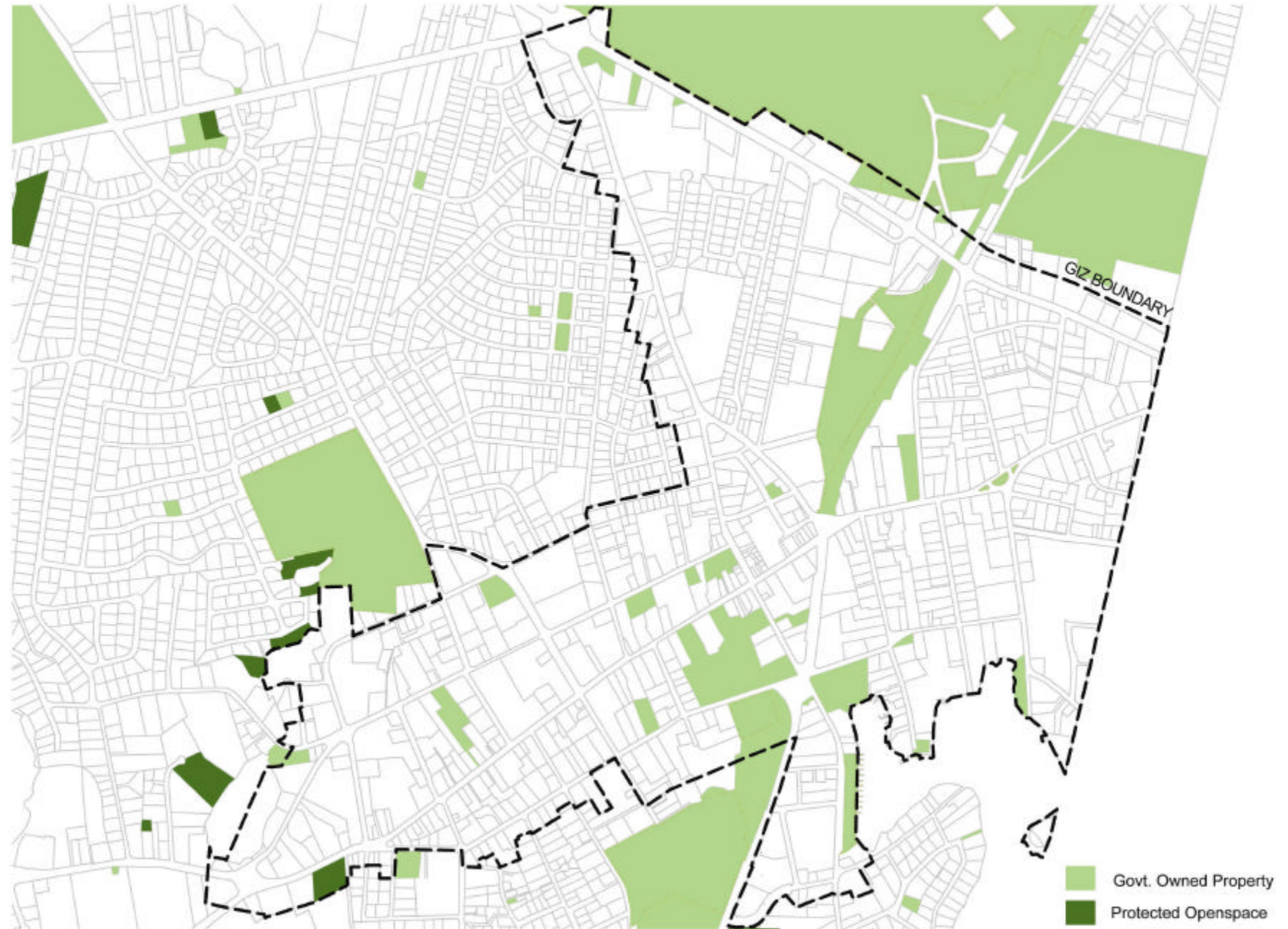
G. Open Space & Cultural Amenities

I. Overview

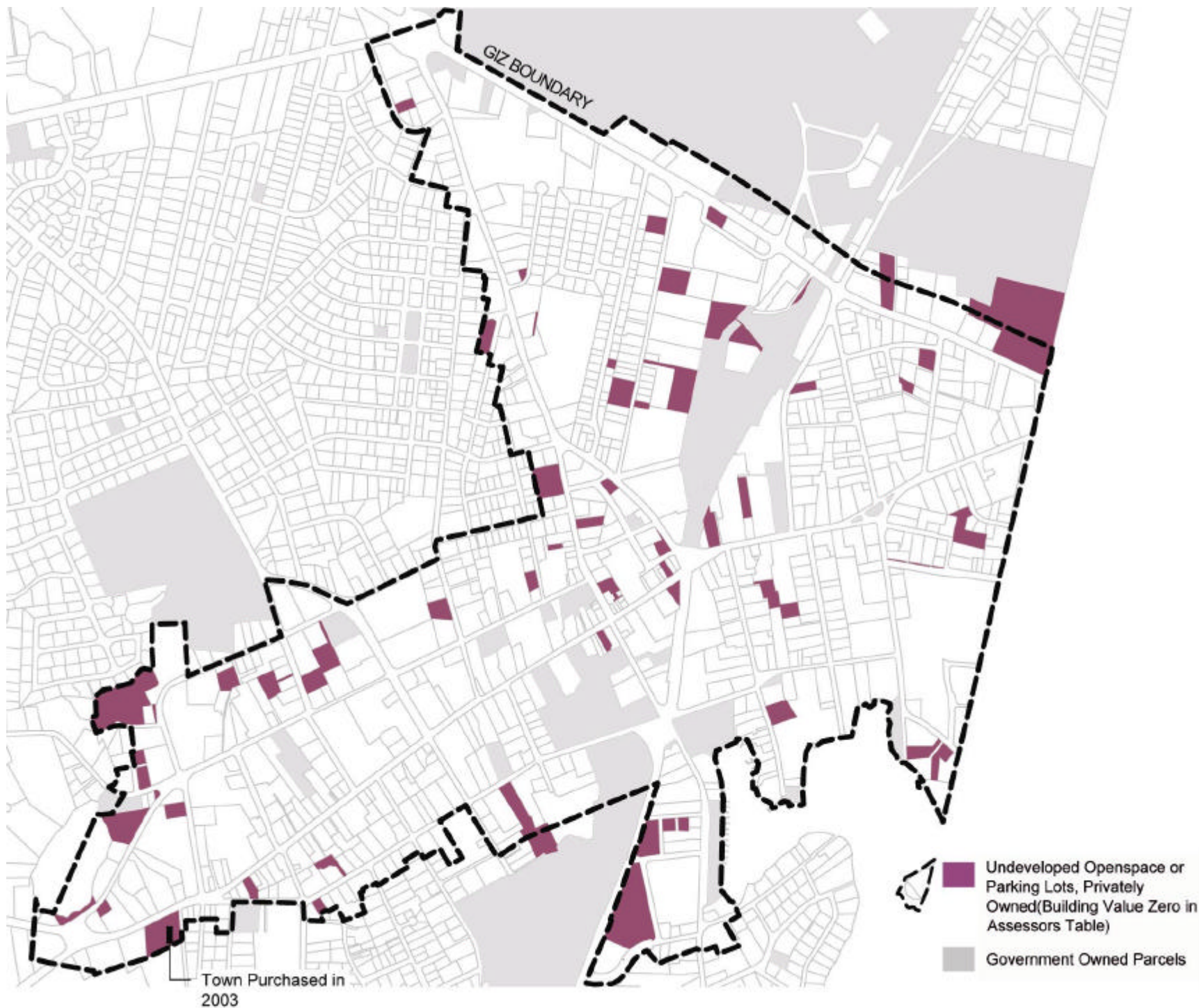
The Town of Barnstable has recently drafted a Town-wide Open Space Plan to address the future open space and recreational needs of residents and the open space needs of natural systems. To compliment this plan, the following Open Space Strategy has been developed to outline, in greater detail, the landscape network needed in and around Downtown Hyannis to compliment village growth. Through the use of municipal, conservation, and private open spaces, significant open space and cultural amenities will be provided in the District.

Downtown Hyannis has a number of existing Town-owned open spaces and other open spaces that create recreational, habitat and water recharge amenities for the area. (See Map-12.) These destination spots create anchor points for the Downtown Hyannis community. Valuable open space connections protect walkways and habitat corridors, linking the community. As Downtown Hyannis grows, it is critical to provide open space relief within denser building areas. Strategic Downtown Hyannis open space projects are identified in the charts below, and their relationship to the overall open space network is mapped. (See Map-14)

Currently, the entire village of Hyannis (including areas lying outside the District) has 1,443 acres of



Map-12
Protected open space and undeveloped land



open land; beaches along Nantucket sound account for 76.8 acres. Hyannis schools account for 156.4 acres (which include outdoor playgrounds, ball fields, court and track facilities) Hyannis has 76.59 acres of protected land. (From Barnstable GIS.)

Map-13 provides parcels that are government owned, or which are assumed to be undeveloped because they have a building value of zero in the Town of Barnstable Assessors data base. Those parcels with a zero building value are not necessarily undeveloped. Many of the identified parcels likely include parking areas. Empirical evidence suggests that almost all of the lots within the District are already developed in one way or another.

Map-13 Parcels in the GIZ with a building value of zero (from assessors table) & Government owned parcels

2. Open Space Capital Improvements

(1) *Actions completed over the past 3 years (FY 03 - FY 05)*

Date Completed	Action & Project Description	How open space project offsets and compliments downtown Hyannis growth
2003	Walkway to the Sea (Part One: Main Street to Asleton Park)	Part One of the Walkway to the Sea connects Main Street residents and visitors with public open space provided at Hyannis Harbor. It provides a recreational amenity for the Town encouraging walking and passive outdoor activities.
2004	Hyannis Golf Course Purchase	Totalling 125.63 acres, the golf course acquisition provides the Town with an additional water supply recharge and habitat resource. In addition, recreational opportunities for citizens are enhanced.
November 2005	Main Street Improvements Project: Streetscape	The streetscape improvements project widened Main Street sidewalks, connecting users and future downtown Hyannis residents with open space amenities.
2003	725 Main Street Open Space Purchase	Formerly a gas station, 725 Main Street was purchased by the Town of Barnstable to serve as both a recreational and storm water recharge amenity. The new parcel will house infrastructure improvements that will directly benefit future growth in downtown Hyannis including new constructed wetlands and a waste water pump station. The design will contribute to wildlife habitat through the use of all native plant materials.
July 2005	Bismore Park, Harbor Your Arts	A recreational boardwalk and seven artists shanties were constructed to house local artists along the edge of Hyannis Harbor. This open space amenity serves to bring residents and visitors together to appreciate Hyannis maritime culture.
October 2005	JFK museum renovation	The renovation of the JFK museum focused on preserving the existing historic landmark structure and adding open space improvements to the Hyannis Main Street pocket park. The redesigned openspace provides a passive recreational and cultural amenity for the Town.

(2) *Years 1-2 (FY 06 - FY 07)*

Target Completion Date	Action & Project Description	How open space project offsets and compliments downtown Hyannis growth
Spring 2006	Sherman Square	Located at the western gateway to Hyannis Main Street, Sherman square will provide a visual open space amenity for the Town. New improvements under consideration include a new public water fountain and ornamental plantings.
Spring 2007	Walkway to the Sea (Part Two: Asleton to Kalmus Beach)	Part Two of the Walkway to the Sea, connecting Asleton Park and Main Street pedestrians to Kalmus beach will provide critical openspace connections in downtown Hyannis, joining residents with the beach.

(3) Years 2-5 (FY 08 - FY 10)

Target Completion Date	Action & Project Description	How open space project offsets and compliments downtown Hyannis growth
2008	Walkway to the Sea (Part Three: Asleton to Baxter Pier)	Part Three of the Walkway of the sea will connect Asleton Park with a newly proposed downtown open space on Baxter Pier. The walkway will connect other town open spaces with the water front.
2007	Downtown Hyannis Signage Plan	The Signage plan will connects users to openspace system through way-finding devices. Currently signage has no natural hierarchy and is difficult to follow. The plan will create a unique identity for downtown Hyannis.
2008	Baxter Pier Park	Located on the prominent Baxter Pier next to the Steamship Authority, this currently vacant parcel will become an active public open space and working dock. The park will provide recreational opportunities for visitors and residents of downtown Hyannis.
2008	Construct improvements to Ridgewood Park	Install fend, construct playground and landscaping.
2009	Farmers Market	Attracts people to the Downtown area, provides service to residents of the District.
2009	725 Main Street Wetland Garden/ Park Construction	See above



Open Space Projects

- A Bismore Park
- B Baxter Pier
- C Asleton Park
- D Walkway to the Sea (Part One)
- E Village Green
- F JFK Museum
- H RTA Improvements
- I Sherman Square
- J 725 Main Street
- K Ridgewood Park

Map-14
Town Open space projects

3. Privately Owned Open Space

Developments and re-developments with privately owned open space areas must maintain well-used open spaces, courtyards and plazas for pedestrian use. In the HVB District, alleyways are strongly encouraged, and through-lot parcels (parcels in the HVB District with frontage on two streets, but not a corner lot) must consider providing mid-block connections from one public ROW to the opposite public ROW (See Code, Section 240-24.1-3.C.5 and 7). Also in the HVB District, building frontages are encouraged to provide permanent public plazas, sidewalk cafes, public spaces or amenities or landscaping between the building façade and the street (See Code, Section 240-24.1-3.C.1.a and D&I Plan, Site Layout & Amenities, Sections 3.1.1, 3.1.2, and Site Design & Criteria HVB District, Section 3.2.2).

H. Traffic and Transit

I. Existing Infrastructure

A November 10, 2005 preliminary study by Vollmer Associates LLP, funded by Barnstable County, assesses the current capacity of roadways in and around Downtown Hyannis (the entire text of the preliminary study and supporting documents is attached). Future traffic demands were studied based on the build-out provided in Section II of this Plan.

Mitigation to accommodate downtown traffic growth will not only require improvements within the District, but will also necessitate improvements at critical intersections and roadway links around the District. This includes improvements to Route 28, a state highway. Currently, forty percent (40%) of traffic on Main Street is estimated to be through traffic, meaning users choose to drive down Main Street rather than take Rt. 28 and encounter back-ups at the rotary. In order to address Downtown traffic concerns, an outline of town-wide strategies for roadway improvements and improvements in transit systems and alternative transportation modes is included below.

2. Capacity

a) Land Use Alternatives

- The Town of Barnstable has developed balanced mixed-use alternatives describing potential development under the new zoning districts proposed for Downtown Hyannis (See Build-out Analysis, Section II and Attachment A to the Vollmer Associates, LLP preliminary study).

3. Future Demand

Intersection Performance of the Alternatives

Vollmer evaluated the potential effects of the alternatives on ten major intersections in Downtown Hyannis for both weekday afternoon and Saturday noon peak hours. See Figures 1 and 2 for maps locating the intersections that were studied as well as showing their traffic capacities. The analysis is based on 2004-2005 field counts performed by the Cape Cod Commission (CCC.)

The Highway Capacity Manual (TRB/NRC, 2000) defines the Level of Service (LOS) scale used to rate intersection performance at various levels of traffic demand. LOS A represents free flow and LOS F represents congested operations. The rating is based on seconds of delay at intersections. For this analysis, the Cape Cod Commission and Town of Barnstable agreed that LOS E (55.1 to 80 seconds of delay) would be the criterion for acceptable intersection performance in Downtown Hyannis during peak hour and peak season. Delay will be less during off-peak hours and non-summer conditions..

The weekday afternoon and Saturday noon peak hour LOS analysis is based on applying the 39%/61% shares of through/local traffic on Main Street to all intersections being studied. The CCC regional traffic model will be used to refine this assumption later in the study. Further details of the methodology are presented in the attached preliminary study. Table I below summarizes the preliminary findings with existing mode shares (~91% of downtown trips in private cars) and enhanced mode share (~88% in private cars.)

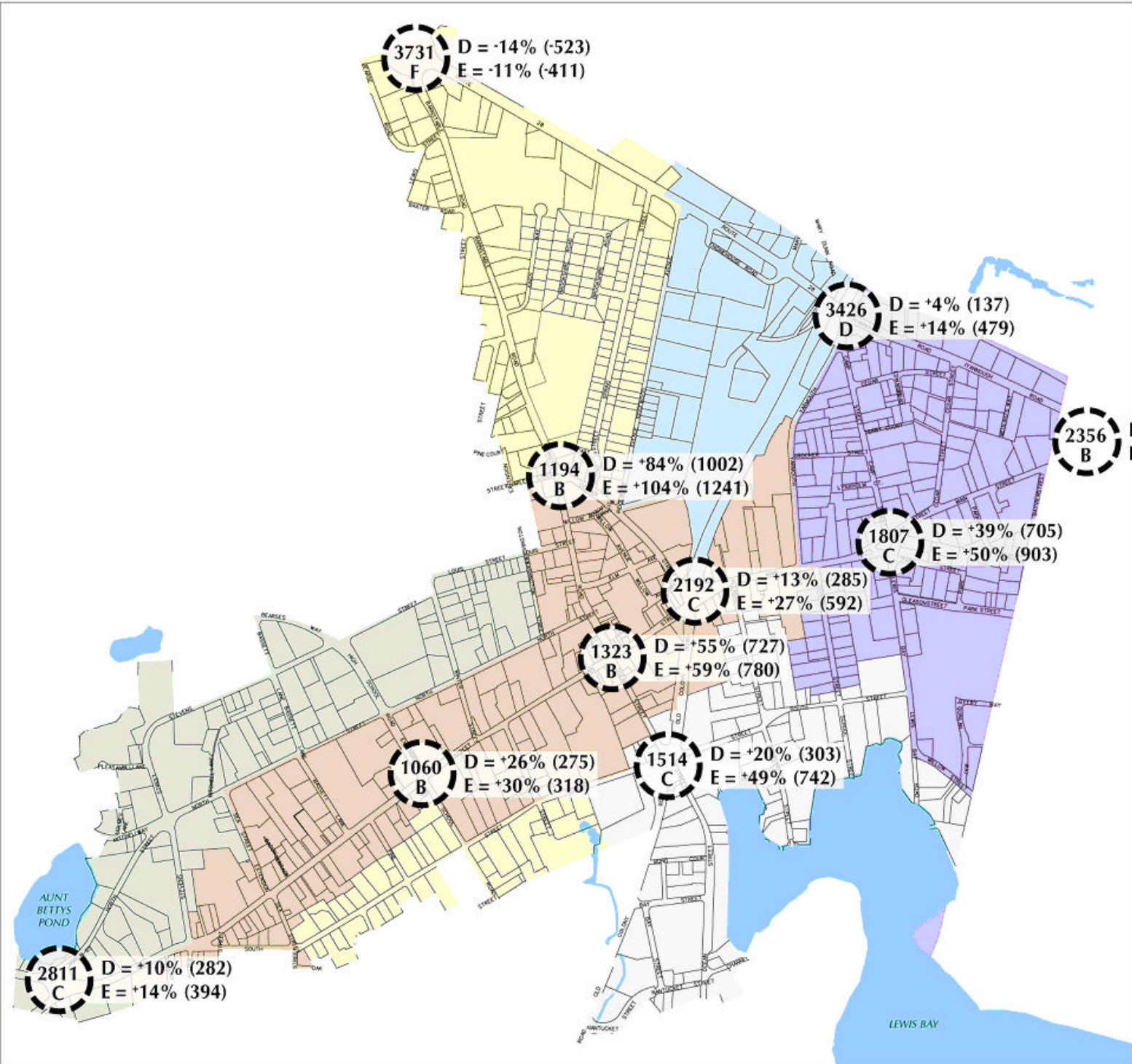
Mode Share	With ~91% of trips in cars		With ~88% of trips in cars	
Alternatives	Weekday PM	Saturday Noon	Weekday PM	Saturday Noon
2005 Baseline	1	1	1	1
Years 1-2	1	1	1	1
Years 2-5	2	1	1	1
Years 5-10	3	1	2	1
Years 10-20	4	1	4	1
Years 20+	4	1	4	1
Maximum Buildout	5	3	5	4

Table 1: Number of Intersections which exceed LOS E, by alternative and mode shares

Weekday and Saturday LOS for the Years 1 to 2 Alternative is the same as for existing conditions, i.e. only the Airport Rotary is at LOS F. With the Years 2 to 5 Alternative, the West End Rotary and Rte 28/Yarmouth Road go to LOS F; an increase of 3% in the combined walk/bike/transit mode share would remedy that. The Airport Rotary operates at LOS F and will continue to do so until it is reconfigured. The Airport Rotary could be improved by adding signage and line striping. However, until the Airport Rotary is reconfigured and improvements are made at the Yarmouth Road/Route 28 intersection, the rotary will continue to have delays under summertime peak hour conditions.

Figure 1

Downtown Hyannis
 2004 Weekday PM Intersection
 Capacity and Volume vs. Level
 of Service (LOS)



Legend

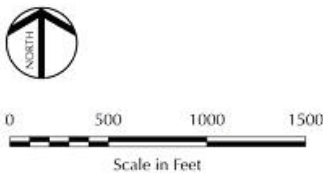
2004 Volume

#

% to LOS D (#) from 2004 Volume

% to LOS E (#) from 2004 Volume

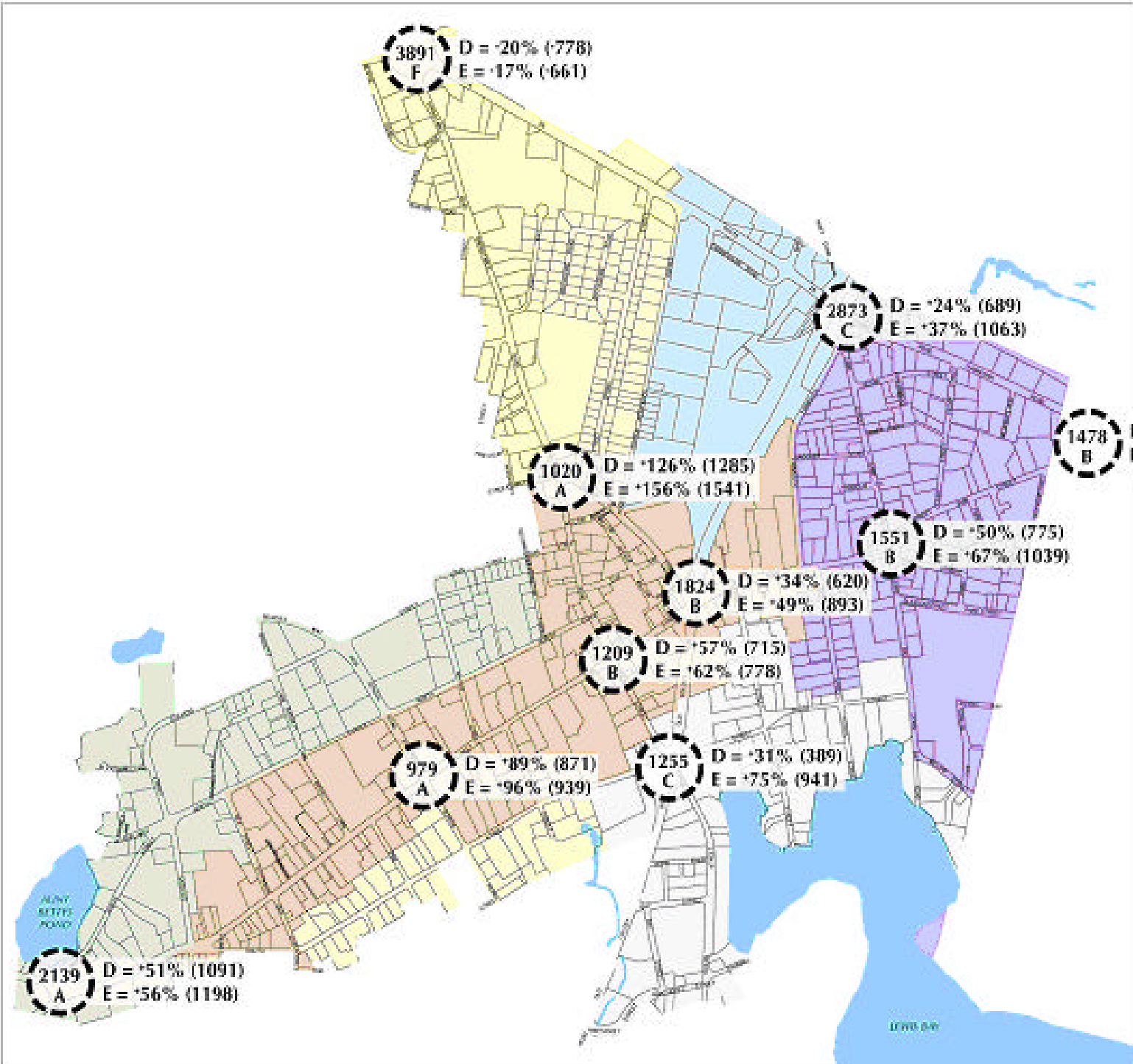
2004 LOS



Prepared by:

Figure 2

Downtown Hyannis
 2004 Saturday Noon Intersection
 Capacity and Volume vs. Level
 of Service (LOS)



Legend

2004 Volume

% to LOS D (D) from 2004 Volume

X % to LOS E (E) from 2004 Volume

2004 LOS



Prepared by:

WILLIAMS ASSOCIATES, LLP

Figure 3 below summarizes the LOS findings for each intersection and alternative for weekday afternoon peak hour conditions. The first chart illustrates LOS with the existing mode walk/bike/transit share of just under 10%. Increasing this share to just under 12% results in a significant decrease in the number of intersections performing at LOS F. In particular, this improvement would result in making the performance of the Years 1- 2 and Years 2-5 Alternatives meet the LOS E criterion of acceptable performance set by the Town and CCC.

Figure 3: Weekday Intersection LOS with Different Walk/Bike/Transit Shares

Intersections	2005 Conditions				Walk/Transit = 9%			Cars = 91%
	2005 Existing	Years 1 to 2	Years 2 to 5	Years 5 to 10	Years 10 to 20	Years 20+	Max Buildout	
Main/High School + ped ph	B	D	D	D	F	F	F	
Barnstable/Center	B	D	D	D	D	D	E	
Main/Barnstable + ped ph	B	D	D	D	D	D	F	
South/Ocean/Old Colony	C	D	D	E	E	E	F	
Main/Lewis Bay	C	D	D	D	D	E	F	
Main/Center/Old Colony	C	D	E	E	F	F	F	
Route 28/ E Main	B	D	D	D	D	E	E	
West End Rotary	C	D	F	F	F	F	F	
Route 28/Yarmouth Rd	D	E	F	F	F	F	F	
Airport Rotary	F	F	F	F	F	F	F	

Intersections	Enhanced Mode Shares				Walk/Transit = 12%			Cars = 88%
	2005 Existing	Years 1 to 2	Years 2 to 5	Years 5 to 10	Years 10 to 20	Years 20+	Max Buildout	
Main/High School + ped ph	B	D	D	D	E	F	F	
Barnstable/Center	B	D	D	D	D	D	D	
Main/Barnstable + ped ph	B	D	D	D	D	D	E	
South/Ocean/Old Colony	C	D	D	D	E	E	F	
Main/Lewis Bay	C	D	D	D	D	E	F	
Main/Center/Old Colony	C	D	E	E	F	F	F	
Route 28/ E Main	B	D	D	D	D	D	E	
West End Rotary	C	D	E	F	F	F	F	
Route 28/Yarmouth Rd	D	D	E	F	F	F	F	
Airport Rotary	F	F	F	F	F	F	F	

As can be seen in Figures 4 and 5 below, intersections generally perform better on Saturdays than on weekdays because there are fewer turning movements and hence fewer constraints on car movements. However, as the alternatives increase land use density, they generate more trips and cause more intersections to exceed LOS E. Increasing the percentage of pedestrians and transit users counteracts this effect although it would take a walk/transit share of approximately 50% to fully eliminate all LOS F conditions, except at the Airport Rotary.

Figure 4: Weekday Intersection Level of Service By Alternative (~10% Walk/Transit Mode Share)

Traffic Growth/Year(CCC:MHD) = **1.16%**
 2004 %Walk/Bike/Work@Home = **7.7%**
 Alts %Walk/Bike/Work@Home = **7.7%**

Percent Local Traffic = **61%**
 2004 Baseline % Transit = **1.6%**
 Alternatives % Transit = **1.6%**

Walk+Transit
9.3%
9.3%

Vehicle %
2004 Baseline %Vehicles = 90.7%
Alternatives %Vehicles = 90.7%

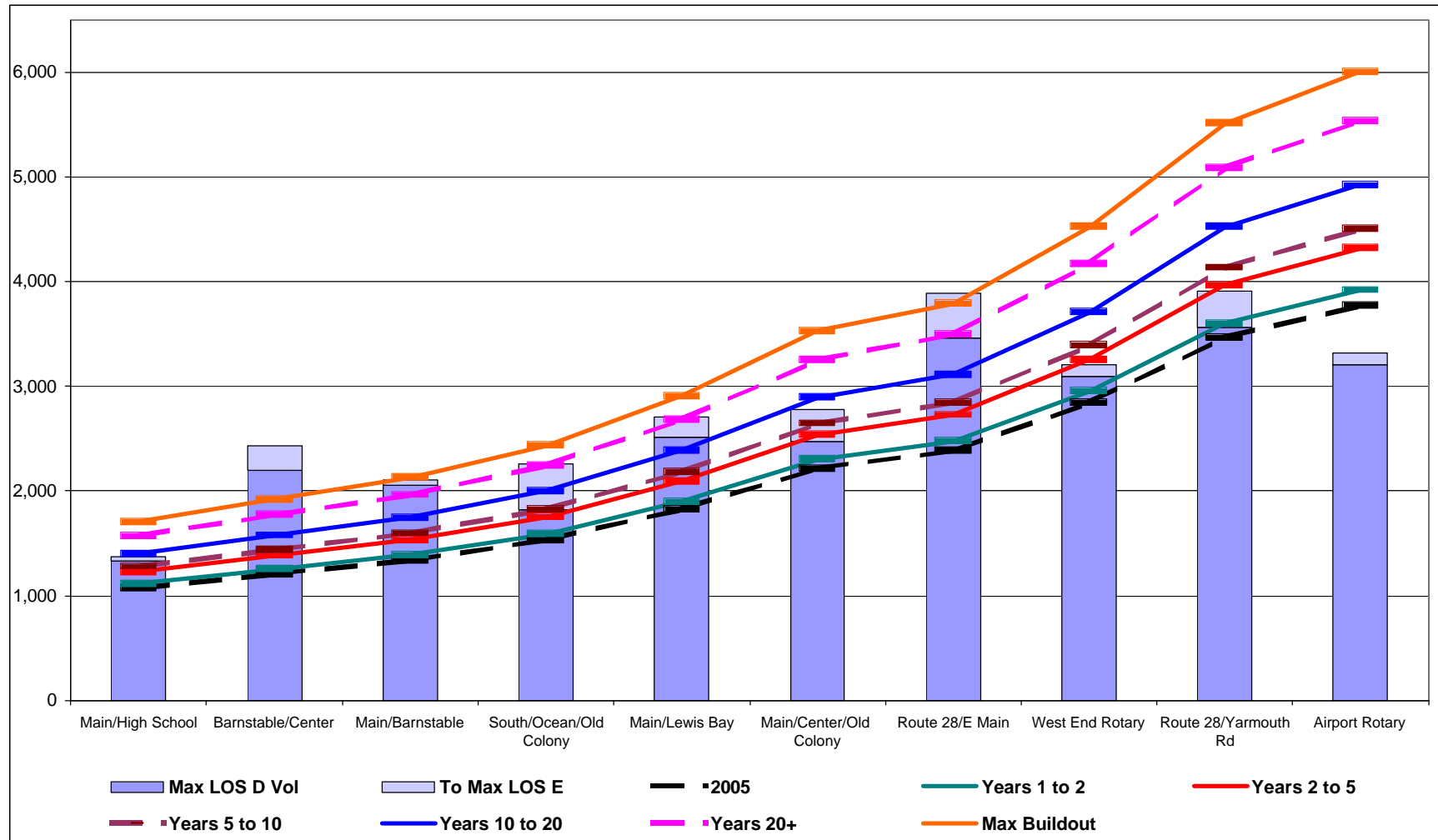
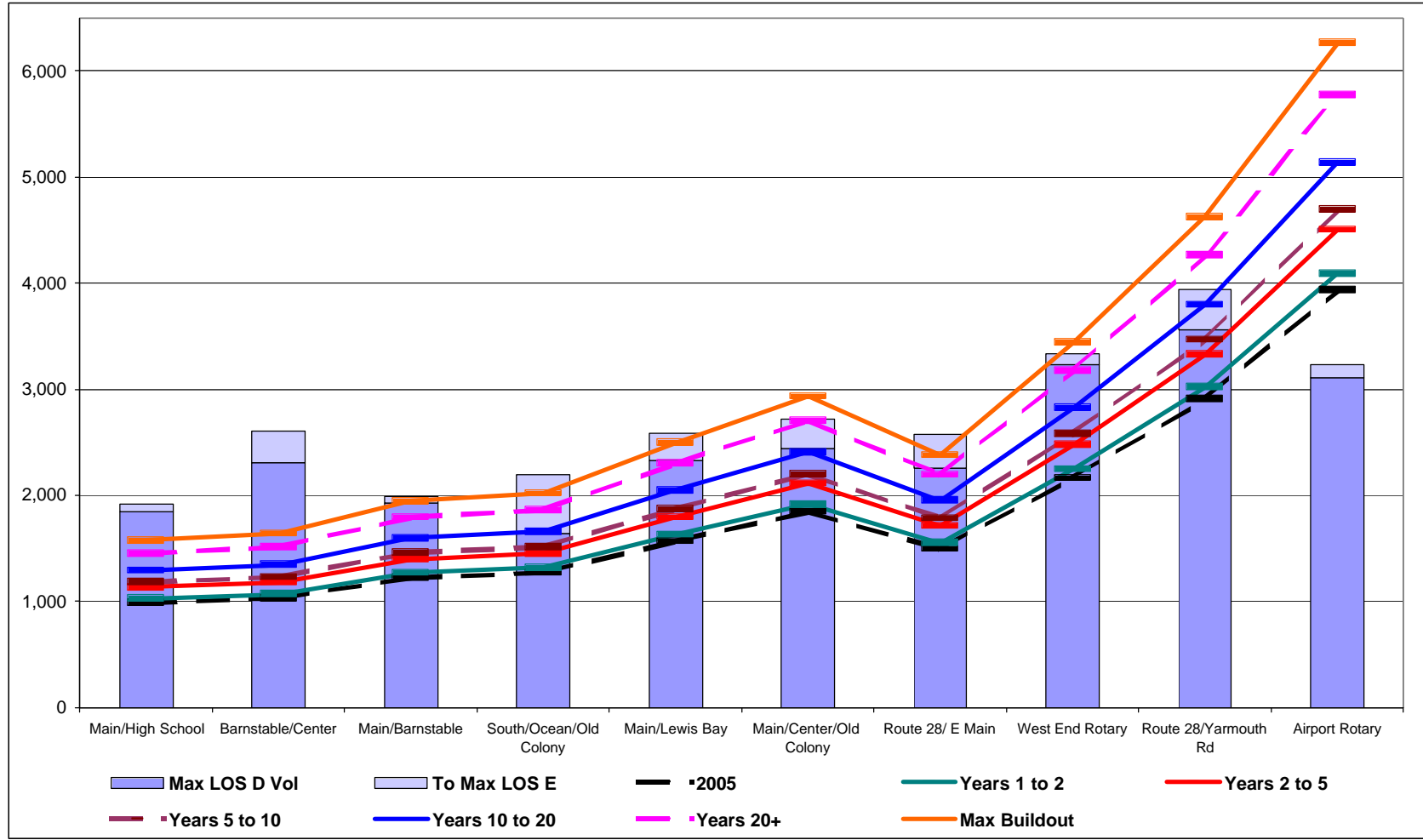


Figure 5: Saturday Intersection Level of Service By Alternative (~10% Walk/Transit Mode Share)

Traffic Growth/Year(CCC:MHD) = 1.16%	Percent Local Traffic = 61%	Walk+Transit	Vehicle %
2004 %Walk/Bike/Work@Home = 7.7%	2004 Baseline % Transit = 1.6%	9.3%	2004 Baseline %Vehicles = 90.7%
Alts %Walk/Bike/Work@Home = 7.7%	Alternatives % Transit = 1.6%	9.3%	Alternatives %Vehicles = 90.7%



Automobile Use Reduction and Automobile Alternatives

Identified methods to reduce automobile use in the District include upgrading and adding sidewalks, adding bike racks, lanes and paths, providing additional transit infrastructure between municipal parking and destination spots, and participating in Travel Demand Management (TDM) programs to encourage car pooling and employing other measures to reduce dependence on the automobile.

Sidewalks

Almost all of the roadways in the District have sidewalks. A wide, pedestrian-friendly sidewalk was recently constructed on Hyannis Main Street as part of the downtown improvements. There are a few, smaller roadways in the District that do not currently have sidewalks (See Map-15). All of those roadways are scheduled for sidewalk construction in FY2007 as discussed below. In addition, sidewalk improvements are planned concurrent with roadway work going forward. See below for more details.

Bicycle Racks, Lanes and Paths

In FY 2007, the Town plans to install bicycle racks in the District to encourage the use of the bicycle as an alternative to the automobile. With respect to bicycle lanes and paths, the Town hopes to connect Hyannis to the Cape Cod Rail Trail system of bicycle trails via a bike path and/or lane that connects to Yarmouth in the North and continues down to the Hyannis Harbor (See Map-15). For the Rail Trail interconnection, the most likely means of safely transporting bicyclists across Route 28 is at a signalized intersection. Another identified potential bike lane includes marking a dedicated bike lane on Route 132 and Bearses' Way as those roadways are improved and repaved. This potential bike path/lane could be continued down High School Road, connecting Hyannis Main Street with outlying commercial areas. The Town will work aggressively to identify roadways with sufficient right-of-way and other opportunities for increasing bicycle travel in and outside the District in order to provide safe bicycle travel within the District and to link the District to other destination spots.

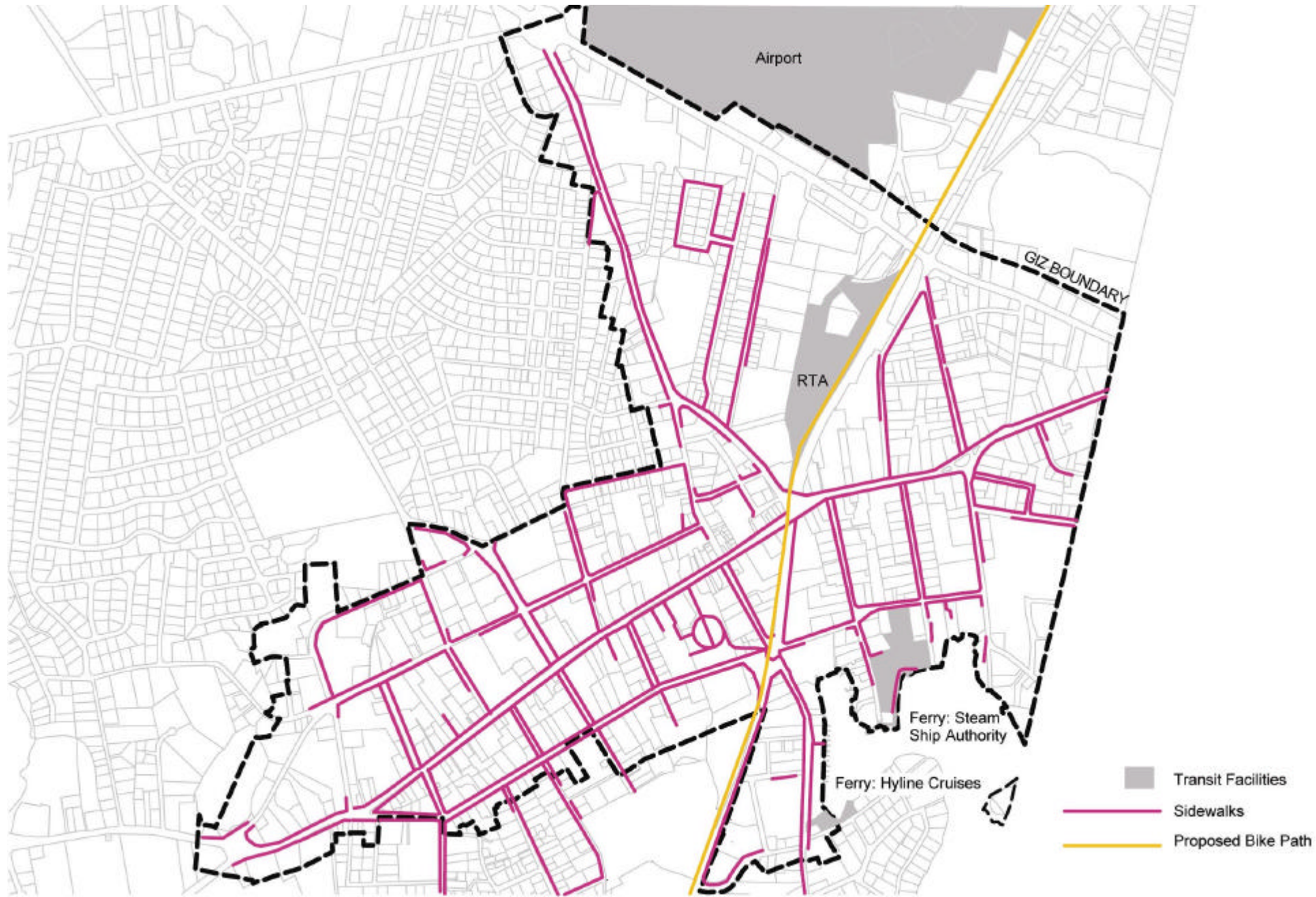
Transit

In addition to providing increased levels of bus service, the Town is considering an electronic trolley route to link parking with downtown and the harbor. The Capital Improvements Plan establishes FY08 for investigating the feasibility of such a system.

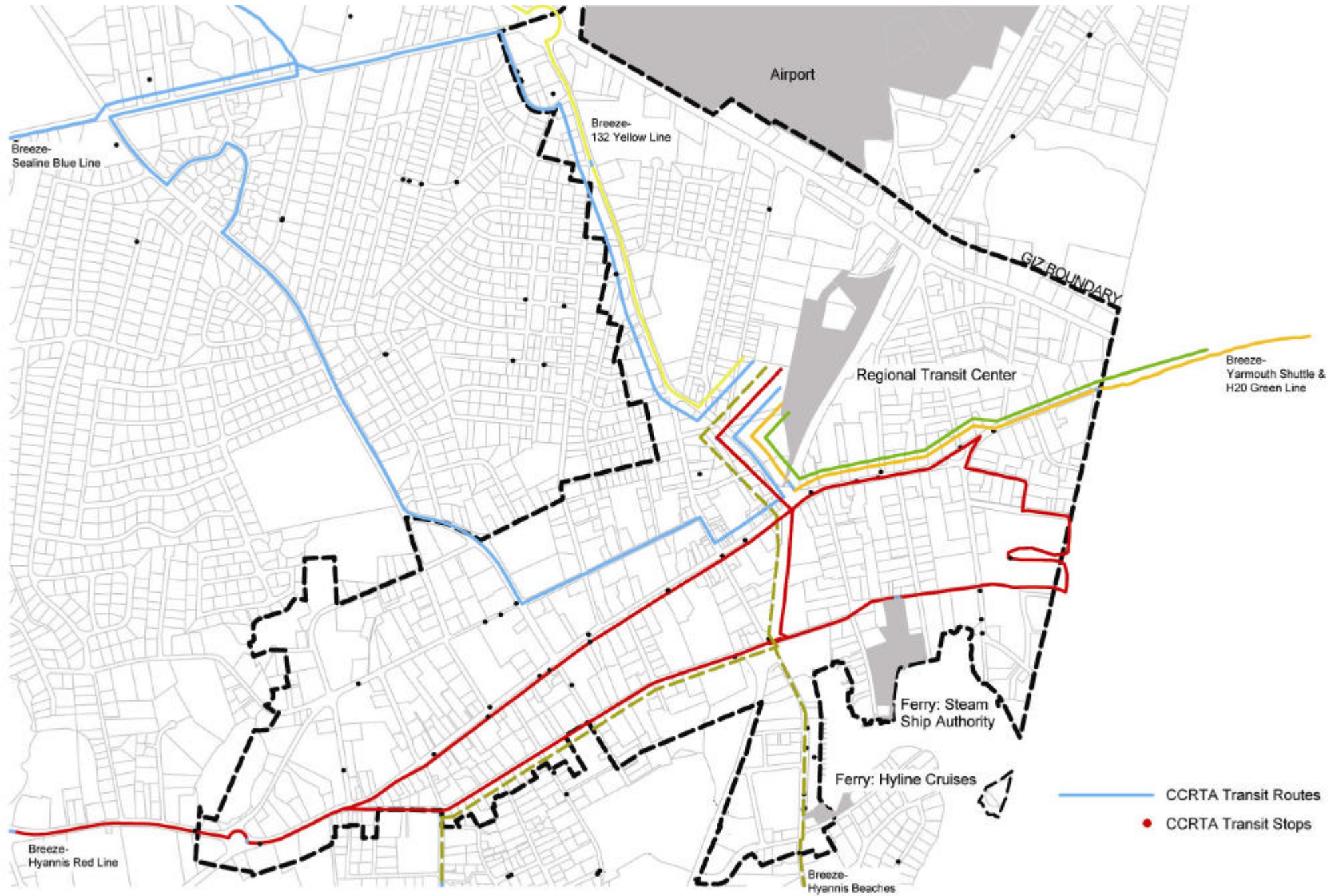
TDM

When the RTA opened its regional transit center in Hyannis, the Town participated in a Job Rides program, which provided discounted bus passes to Town employees. To publicize the program, the Town posted many fliers, sent out emails, and provided an insert with payroll checks. Five discounted passes were sold. In investigating why the program did not generate more interest, it was determined that the limited hours and limited bus stops prevented employees from participating. To reinvigorate the effort to reduce dependence on individual automobiles, the Town has contacted MassRides to discuss the potential for instituting a Travel Demand Management program for the District. The Town will become a partner in the MassRides, Commute.Com program. Under this program, the Town will notify its employees, via electronic notices, newsletters, payroll inserts, etc. that they can go to the Commute.Com website to individually seek out commuting partners. The MassRides program offers participating individuals 4-days per year of cab fare in the event an individual's commuting partner cannot provide an anticipated ride, and employee appreciation gifts for those who participate in the program. The Town could also take advantage of employee car-pool signs for the Town parking lot which are provided by MassRides.

In addition to becoming a MassRides partner, the Town's Growth Management Department will contact the Hyannis Business Improvement District and the Hyannis Area Chamber of Commerce to identify opportunities to partner business with business and businesses with the Town to identify opportunities for reducing vehicle dependence.



Map-15
Existing Sidewalks and Pedestrian Connections



Map-16
Existing Bus Transit Infrastructure

4. Traffic Mitigation Strategies including increase in projected capacity

(1) *Actions completed over the past 3 years (FY 03 - FY 05)*

Date Completed	Action & Project Description	Increase in Capacity	How increase in capacity will meet projected demand at that time
July 2002	North Street: Improved traffic signals to be fully actuated closed loop traffic responsive systems that will adjust for traffic volumes and can be interconnected and controlled by a centralized computer system.	Not Available	Not Available
April 2003	RTA: Built regional transit center for Cape Cod. Local bus services capacity was increased.	Not Available	Not Available
June 2003	Barnstable Road Improvements: Installed signals at two intersections to alleviate safety problems and improve traffic flow at Winter Street and Center Street and create safer left hand turns. Reconstructed roads and sidewalks.	Barnstable Road/Center Street intersection is presently operating at LOS B during the summertime 3:00 pm peak hour.	In the study year of 2023 with a projected growth rate of 1% per year the Barnstable Road/Center Street intersection is projected to operate at LOS D in 2023 during the summertime 3:00 pm peak hour.
July 2004	Park Square: Reconfigured intersection and installed traffic signals. Changed intersection from rotary to signals increasing safety and flow.	Not Available	Not Available
May 2004	Walk to Sea Project: Constructed a 10 foot wide brick and granite walkway that connects Main Street to the Hyannis Harbor area.	An improvement in pedestrian access reduces the need to drive.	Not Applicable
November 2005	Main Street Improvements Project: Install new traffic signals at three intersections (Barnstable Road, High School Road, and Sea Street). Install pedestrian signals at Sea Street where none previously existed. Traffic signals will be fully actuated closed loop traffic responsive systems that will adjust for traffic volumes and can be interconnected and controlled by a centralized computer system. Extend curbs to the traffic side of parking lanes where pedestrians cross the road to lesson distance to cross the street, improve visibility, and make crossing easier and safer.	Increase level of service (LOS) on Main Street at Barnstable Road from a D service level to a B service level. Main Street at Sea St and High School road will be at level of service A. Side streets have a level of service of C.	In the design year of 2013 with a projected growth 1% per year the Barnstable Road intersection will be at a level of service (LOS) C and the Sea Street and High School road intersections will be at level of service B.

(2) *Years 1-2 (FY 06 - FY 07)*

Target Completion Date	Action & Project Description	Increase in Capacity	How increase in capacity will meet projected demand at that time
Fall 2006	Design Improvements to sidewalks and parking in Harbor area.		
Spring 2006	Repave road on Ocean Street between South Street and Hawes Avenue. Rebuild sidewalk on Ocean Street between Nantucket Street and Gosnold Street.		

Spring 2006	Upgrade signals and add turning lane on Route 132 at the Route 132/Independence Drive Intersection.	Increase capacity by providing an additional lane.	
Spring 2006	Rebuild sidewalk on Ocean Street between South Street and Nantucket Street		
Fall 2007	Bearses Way Improvements: Construct a sidewalk and reconstruct the road from Pitchers Way to Route 28. Install a traffic signal and turning lanes at the Enterprise road intersection. Provide wider road shoulders that will be usable by bicyclists.	With the construction of this project LOS on Enterprise Road at its intersection with Bearse's Way increases from F to A. LOS of Bearse's Way at route 28 increases from D to C in the morning and E to D in the evening.	In the design Year of 2021 with a projected traffic growth rate of 1.5% per year - the LOS at enterprise Road will be at level A. The LOS at the route 28 intersection will be D in the morning and F in the evening.
Spring 2007	Repave South Street	Not Applicable	
Spring 2007	Install Bicycle Racks in Downtown Area	Encouraging Bicycle traffic will reduce automobile traffic.	
Spring 2007	Begin creation of Traffic computer model. Obtain data for model and for traffic signal interconnection program.	Important first step necessary toward traffic signal interconnection and to evaluate the most cost effective improvements to road network.	
Spring 2007	Design reconstruction for Center Street and Old Colony Boulevard from Center Street to South Street. Install new traffic signals at the Main Street and south Street intersections. Install pedestrian signals at Main Street where none presently exist. Construct a sidewalk on the east side of Old Colony road. Upgrade drainage system.	LOS at the Main Street intersection is presently at F during the summertime 3:00 pm peak hour. The LOS at the South Street intersection is presently at C during the summertime 3:00 pm peak hour. The intersection improvements have not been designed and the improvement of the LOS (if any) with optimized traffic signals has not been determined.	In the design Year of 2021 with a projected traffic growth rate of 1% per year - the LOS at the Main Street intersection will remain at F in the year 2023 under existing conditions but the delay times will increase from 98 seconds to 179 seconds. The LOS at the South Street intersection will deteriorate to a D. The improvement of the LOS (if any) with optimized signals is unknown at this time.
2007	Install sidewalks on Stevens Street between Main Street and North Street.		
2007	Design and permit changes to Barnstable Airport access.		

(3) Years 2-5 (FY 08 - FY 10)

Target Completion Date	Action & Project Description	Increase in Capacity	How increase in capacity will meet projected demand at that time
Spring 2008	Construct improvements to sidewalks and public parking in Harbor area.		
Spring 2008	Reconstruct intersection of High School Road with Bassett Lane.		
2008	Design of upgrades to airport rotary and Yarmouth Road.	TBD	
2008	Reconstruct Center Street and Old Colony Boulevard from Center Street to South Street. Install new traffic signals at the Main Street and south Street intersections. Install pedestrian signals at Main Street where none presently exist. Construct a sidewalk on the east side of Old Colony road. Upgrade drainage system.		
Fall 2008	Begin feasibility study of public transit improvements – Electric trolley route connecting parking areas, downtown, and harbor.	Use of remote parking areas would reduce passenger car traffic in the immediate downtown area. Trolley would ease need to drive downtown and between feature areas.	
Spring 2008	Upgrade traffic signals at the South Street/Sea Street intersection.	Upgrade of signals will reduce delays.	
Spring 2009	I32 Improvements Project: Expansion of route 132 from Route 6 to Phinneys Lane from a landscaped parkway with two full lanes of traffic. At the completion of the project there will be 7 signalized intersections rather than the present 4 signalized intersections.	The widening of Route 132 from two lanes to four lanes will increase lane capacity from approximately 20,000 vehicles per day to approximately 40,000 vehicles per day. The signalization of unsignalized intersections will improve level of service as noted to the right.	If no improvements are done the Level of Service (LOS) in 2022 (based upon a 2% per year traffic growth rate plus traffic projections for known specific developments) is projected to be F at 6 out of 8 intersections along this section of route 132. With the improvements made the only intersection that will have an F rating in 2022 is the unsignalized intersection at Strawberry Hill Road.
Spring 2009	Complete traffic Computer model.		
Spring 2009	Upgrade Main Street between West end Rotary and West Main Street and between Center Street and Lewis Bay Road. Study feasibility of replacing west end rotary with traffic signals.		
2009	Construct changes to Barnstable Airport access.		
Spring 2010	Bike Path Construction – Construct Bike Path to connect with adjacent towns.	Encouraging Bicycle traffic will reduce automobile traffic.	
Spring 2010	Upgrade North Street, School Street, and Pleasant Street.		

Spring 2010	Interconnect traffic signals and utilize capability to control intersections in the immediate downtown area from a central location.	According to an ITE report travel times can be reduced from 8% to 25% by interconnecting signals and optimizing timing.	Increase in capacity by the interconnecting of signals has the potential to improve the level of service at intersections.
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(4) Years 5-10 (FY 11 - FY 15)

Target Completion Date	Action & Project Description	Increase in Capacity
Spring 2011	Install "intelligent" road system signs on route 6 at exit 6 east bound and 7 west bound informing public of traffic congestion and directing drivers to alternative routes.	Direction of drivers to less congested routes will reduce delays driving into downtown Hyannis and ensure more efficient use of the existing road network.
Spring 2013	Repave Sea Street, Bassett Lane, Stevens Street, Cedar Street, and Winter Street.	
Spring 2015	Upgrade Yarmouth Road north of route 28.	
Spring 2015	Public Transit Improvements: Electric trolley route implemented.	Use of remote parking areas would reduce passenger car traffic in the immediate downtown area. Trolley would ease need to drive downtown and between feature areas.

(5) Years 10-20 (FY 16 - FY 26)

Target Completion Date	Action & Project Description	Increase in Capacity
2016	Airport Rotary Redesign	Airport Rotary will be in dire need of upgrade/replacement to reduce long traffic delays at the rotary.
2020	Install traffic signals on south street at Lewis Bay road, Main Street at Yarmouth road, and South Street at High School Road.	Installation of traffic signals will reduce delays at these intersections.

I. Parking

I. Existing Infrastructure

A study of Hyannis parking was completed in 2002 by Rich and Associates. Barnstable's parking occupancy data revealed that in general, there is adequate parking in the downtown for the existing building uses and occupancies. The shortfall in the parking system occurs mainly as a result of the tourism and ferry service out of the Hyannis Inner Harbor.

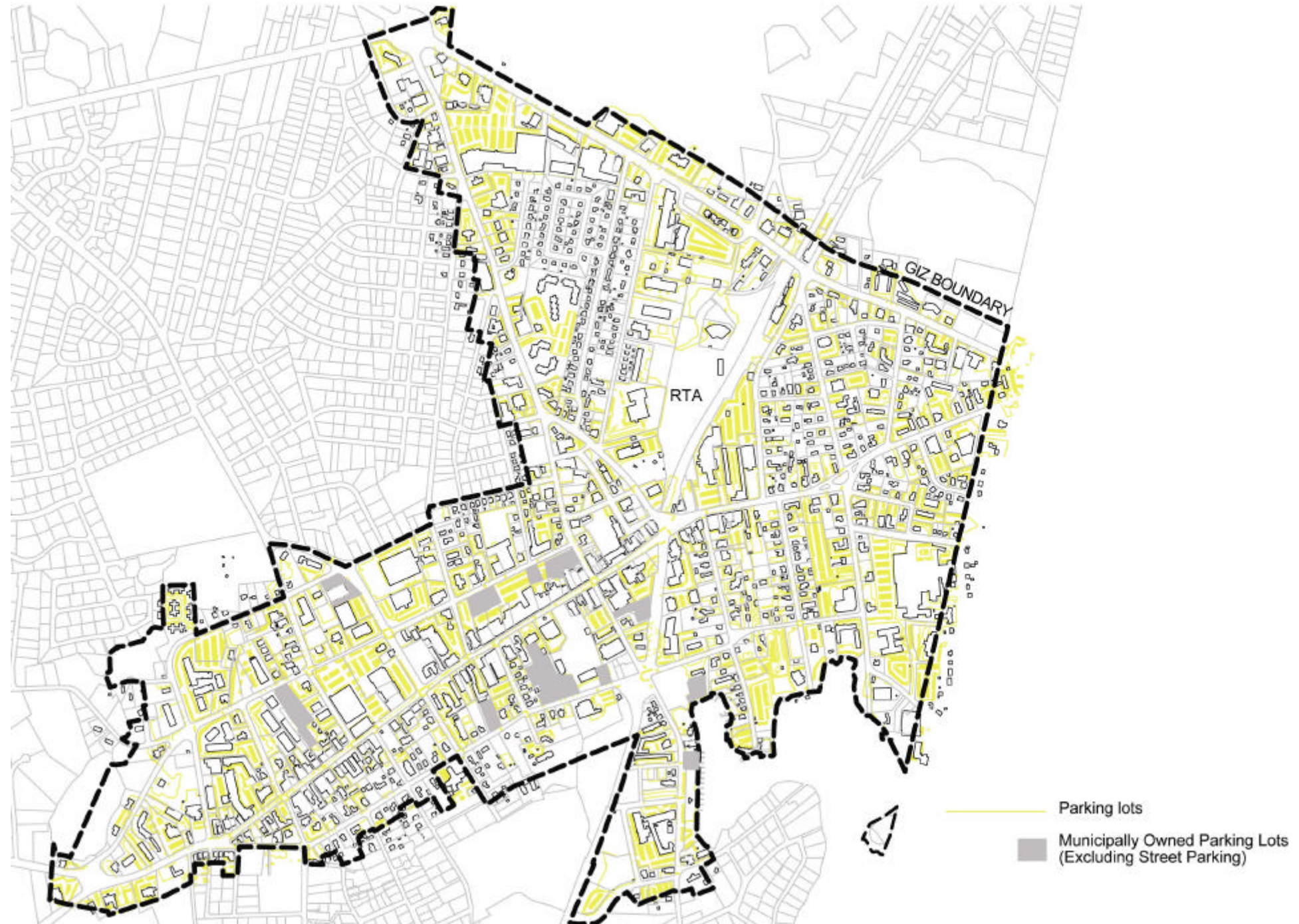
Recommendations for improvements to the parking system include ensuring that all new developments provide adequate on-site and off-site parking, and providing remote parking areas with transit services to support the parking needs of ferry customers.

2. Current Capacity

Existing shared parking lots and municipal parking spaces meet current local demand. However, Hyannis is the staging area for ferry services to the islands of Nantucket and Martha's Vineyard. Like Woods Hole, Hyannis experiences parking needs and traffic flow impacts directly related to demand for ferry parking.

Map-17

Existing Parking Infrastructure



Based on Hyannis data, Rich and Associates estimated a shortfall in parking of approximately 630 parking stalls needed to serve tourism and other activities related to the ferry service. There are approximately 103 private parking stalls on various lots on South Street and in the vicinity of the ferry. If those private parking stalls become unavailable there would be up to 733 parking stalls needed to support ferry parking. In total, the number of parking stalls needed to accommodate the Harbor's ferry service and cruise ship operations is currently 3,793. Projections for growth in ferry activity is primarily limited by available parking and the capacity of the ferry and cruise ship operations. Further, as the level of business activity grows in the District, additional parking will be necessary to accommodate the commercial growth.

The 2005 zoning requires that office and residential uses in the HVB District shall provide all parking on-site for residential and office uses (See Code, Section 240-24.1-3.D.2-4). The 2005 zoning also provides alternatives to on-site parking in the form of shared parking and potential impact fees to support municipal parking facilities in strategic locations in the District (See Code, Section 240-24.1-10). In the event a system of impact fees is adopted for the District, it is anticipated that a parking impact fee and related parking fund will be established.

In general, ticket revenues collected within the Town are earmarked for the general fund. The Town currently employs one full-time parking enforcement officer. Three additional parking enforcement officers are hired on a seasonal basis. The only area in Town with metered parking is the Bismore Park area; the existing meters collect 25 cents per hour. Parking meter revenue from Bismore Park is earmarked for improvements at the Park. Annually the meters generated approximately \$25,000 to \$30,000. The Town is investigating installing a parking kiosk in place of the meters in the Year 5 – 10 scenario.

3. Demand

Future parking demand generated by new and increased uses will be met, since the construction of adequate parking spaces is required as part of the Hyannis Village zoning. Many spaces, however, to accommodate specialty retail events, festivals and cultural events will need to be provided by Town. The following parking strategies will be enacted by the town to ensure that adequate parking is available.

4. Parking Management Strategies including increase in projected capacity

(1) *Actions completed over the past 3 years (FY 03 - FY 05)*

Date Completed	Action & Project Description	Increase in Capacity	How increase in capacity will meet projected demand at that time
July 2005	Zoning encourages shared parking, including requirement in HVB District that office and residential parking is included on-site.	Office and residential uses will increase parking capacity.	Office and residential uses provide parking concurrent with their development.
September 2005	Town Hall Parking Lot: Improve exits and entrances to the parking lot. Widen sidewalks and add an additional driveway off of South Street.		
2006	Three seasonal parking enforcement officers hired.		

(2) *Years 1-2 (FY 06 - FY 07)*

Target Completion Date	Action & Project Description	Increase in Capacity	How increase in capacity will meet projected demand at that time
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2006	Increase support to Regulatory Services through Growth Management Dept.	TBD	Further evaluate prior parking plans and GIS data for existing and projected parking needs and options.
2006	Establish a parking repair and replacement fund, incl. installation of kiosk to replace Bismore Park meters.	Improving existing spaces	
2007	Develop a comprehensive parking signage program.		
2007	Develop a comprehensive parking program for ferry and District-wide needs.	TBD	

(3) Years 2-5 (FY 08 - FY 10)

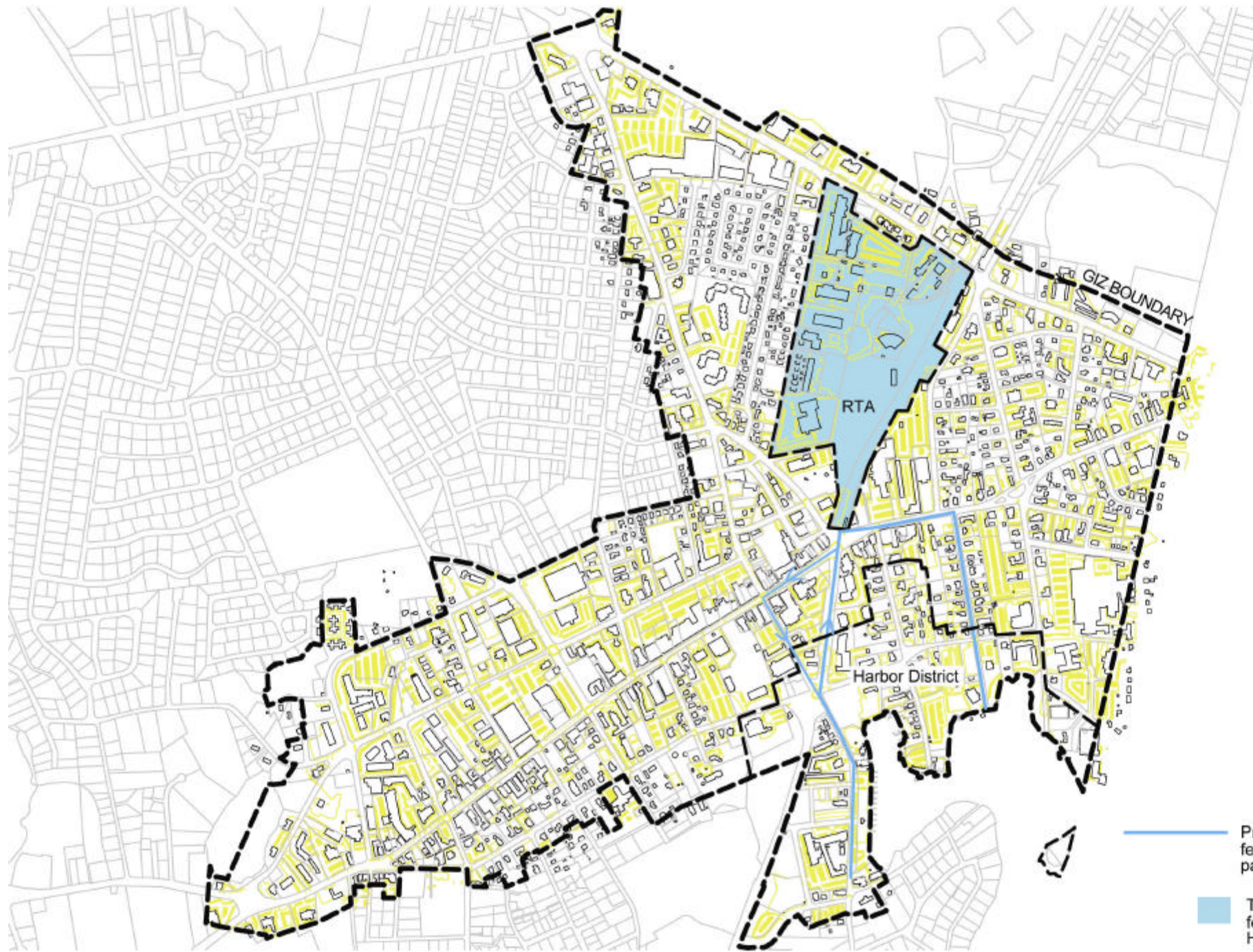
Target Completion Date	Action & Project Description	Increase in Capacity
2008-2009	Reconstruct public lot on Ocean Street between Main Street and South Street.	
08/09	Purchase electronic ticket writers (handheld computers).	Increases funding for improvements
08/09	Consolidate off-street parking areas under Town control.	Increase parking stalls and consolidate municipal parking



(4) Years 5-10 (FY 11 - FY 15)

Target Completion Date	Action & Project Description
TBD	Public Transit Improvements: Electric trolley route implemented connecting periphery parking lots with Main Street and the Harbor
TBD	Establishing a parking pricing model.
TBD	Designate off-street locations for residential permit parking.
TBD	Install pay and display parking meters (kiosk) in off-street parking.
TBD	Construction of park and ride lots.

(5) Years 10-20 (FY 16 - FY 26)

Target Completion Date	Action & Project Description
	Public Garage construction at RTA property



-  Proposed shuttle/trolley to transfer ferry-goers from new centralized parking facility
-  Transportation District: Area to centralize ferry parking to remove parking from Harbor District and other areas

Map-17 Proposed Parking Improvements

VI. Capital Improvements Plan/ Financial Strategy

	TRAFFIC	WASTEWATER	WATER	STORMWATER	SIDEWALKS	PARKING
2006	Design and implement Improvements to sidewalks and parking on Ocean Street in Harbor Area.	Complete Facilities Plan			Design and implement Improvements to sidewalks and parking on Ocean Street in Harbor Area.	Design and implement Improvements to sidewalks and parking on Ocean Street in Harbor Area.
	Upgrade Signals and add turning lane on Route 132 at Independence Park Road.	Analyze options to determine the preferred combination of the expansion of the Main Street (west end) Pump Station, force mains to the WPCF, the Old Colony Road Pump Station and South Street Sewer. Complete design plans for preferred option.	Upgrade water line in Main Street from Sea Street to Stevens Street to a 12" main.			
	Pave South Street from School Street to Lewis Bay Road					
2007	Begin creation of Traffic Computer Model. Obtain data for model and for traffic signal interconnection and coordination.	Complete Expansion of Aeration Tank with MLE Process and Odor Control Facilities	Perform hydraulic analysis of the water system to determine capacity constraints	Upgrade drainage system at Chase Street and South Street		
	Permit and Design changes to Barnstable Airport Access.		Install a 12" Main in Stevens Street from Main Street to North Street.			
	Design reconstruction of Center Street and Old Colony Road from Barnstable Road to South Street and Ocean Street from Main Street to South Street including new traffic signals at the Main Street and South Street Intersections and pedestrian signals at Main Street where none presently exist. Include upgrade of drainage, water, and sewer system as needed.	Design sewers as needed in Center Street from Barnstable Road to Main Street and in Old Colony Road from Main Street to South Street.	Design water mains as needed in Center Street from Barnstable Road to Main Street and in Old Colony Road from Main Street to South Street.	Design upgrade to drainage system in Center Street from Barnstable Road to Main Street and in Old Colony Road from Main Street to South Street.	Design improvements to the sidewalks in Center Street and Old Colony Road from Barnstable Road to South Street and construct a sidewalk on the east side of Old Colony Road from Barnstable Road to South Street.	Design reconstruction of Parking lot on Ocean Street between Main Street and South Street.
	Reconstruction of Bearse's Way Route 28 to Pitcher's Way. Enterprise Road Signal. Wider shoulders for Bicyclists.	Install sewer in Pleasant Street from South Street To the southern end of Pleasant Street.			Install sidewalks on the the east side of Bearse's Way from Route 28 to Pitcher's Way	
	Repave Bearse's Way from High School Road Extension to Route 28, High School Road Extension from Bearse's Way to Main Street, and Bassett Lane from Bearse's Way to Main Street. Line Stripe wide shoulders for Bicyclists.	Complete permitting of effluent discharge site.		Analyze options for collecting and treating stormwater runoff within the WP Zone of the Transportation Hub District.		
2008	Begin feasibility study of public transit improvements - Electric trolley route connecting parking areas with downtown and the harbor.					
	Design of Upgrade to airport rotary and Yarmouth Road.					

	TRAFFIC	WASTEWATER	WATER	STORMWATER	SIDEWALKS	PARKING
	Reconstruction of Center Street and Old Colony Road from Barnstable Road to South Street and Ocean Street from Main Street to South Street including new traffic signals at the Main Street and South Street Intersections and pedestrian signals at Main Street where none presently exist. Reconstruct sidewalks and construct a sidewalk on the east side of Old Colony Road from Barnstable Road to South Street where none presently exists. Upgrade the drainage, water, and sewer system as needed.	Upgrade sewer system as needed in Center Street from Barnstable Road to Main Street and install water main in Old Colony Road from Main street to South Street.	Upgrade water main as needed in Center Street from Barnstable Road to Main Street and install water main in Old Colony Road from Main street to South Street.	Upgrade drainage system as needed in Center Street from Barnstable Road to Main Street and in Old Colony Road from Main street to South Street.	Reconstruct Sidewalks on Center Street and Old Colony Road from Barnstable Road to South Street and construct a sidewalk on the east side of Old Colony Road from Barnstable Road to South Street.	Reconstruct Parking lot on Ocean Street between Main Street and South Street.
	Design upgrade of North Street between Main Street and Barnstable Road. Provide wide shoulder for bicyclists if possible.	Design upgrade to the sewer on North Street as needed.	Design upgrade to the water main on North Street as needed.	Design upgrade to the drainage system in North Street.	Design improvements to sidewalks on North Street and construct new sidewalk between West End rotary and Stevens Street.	
	Design improvements to Main Street between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road	Design improvements to sewer as needed on Main Street between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road	Design improvements to water main on Main Street between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road	Design drainage improvements to system on Main Street between Stevens Street and the 725 Main Street Park. Construct wetland and infiltration system in park at 725 Main Street	Design improvements to sidewalks on Main Street between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road.	
		Complete construction of the preferred option for expansion of the Main Street (west end) Pump Station, force mains to the WPCF, the Old Colony Road Pump station and South Street Sewer.			Construct improvements to the sidewalks in the Bismore Park area.	
	Upgrade Traffic Signals at the South Street/Sea Street intersection.	Complete construction of Rte 132 Force Main				
2009	Install Bike Racks in Downtown area					
	Completion of the route 132 improvement project from Phinneys Lane to Route 6.	Complete construction of Effluent discharge System @ Remote Site.				
	Reconstruct intersection of Bearse's Way with Bassett Lane.					
	Complete traffic computer model					
	Construct changes to Barnstable Airport Access.					
	Upgrade West End Rotary and Main Street and between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road.	Upgrade sewer on Main Street as needed between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road.	Upgrade water main on Main Street as needed between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road.	Upgrade drainage in Main Street between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road. Construct drainage improvements to system on Main Street between Stevens Street and the 725 Main Street Park. Construct wetland and infiltration system in park at 725 Main Street	Reconstruct sidewalks on Main Street between West End Rotary and Stevens Street and between Center Street and Lewis Bay Road.	

	TRAFFIC	WASTEWATER	WATER	STORMWATER	SIDEWALKS	PARKING
2010	Upgrade North Street between Main Street and Barnstable Road. Provide wide shoulder for bicyclists if possible.	Upgrade the sewer on North Street as needed.	Upgrade the water main on North Street as needed.	Upgrade drainage in North Street.	Reconstruct sidewalks on North Street and construct new sidewalk between West End rotary and Stevens Street.	
	Design upgrade of South Street between Stevens Street and Lewis Bay Road including new traffic signal at Sea Street and possible signals at High School Road and Lewis Bay Road. Provide wider shoulder for bicyclists if possible.	Upgrade sewer as needed on South Street between Stevens Street and Lewis Bay Road.	Upgrade water main as needed on South Street between Stevens Street and Lewis Bay Road.	Upgrade drainage in South Street between Stevens Street and Lewis Bay Road.	Reconstruct sidewalks on South Street between Stevens Street and Lewis Bay Road.	
	Interconnect traffic signals and coordinate signals to control intersections from a central location.			Install drainage improvements as part of upgrades to North St., Pleasant St, and South St. Eliminate direct discharge to Harbor.		
	Upgrade of South Street between Stevens Street and Lewis Bay Road including new traffic signal at Sea Street and (if warranted) signals at High School Road and Lewis Bay Road. Provide wider shoulder for bicyclists if possible.	Upgrade sewer on South Street between Stevens Street and Lewis Bay Road.	Upgrade water main on South Street between Stevens Street and Lewis Bay Road.	Upgrade drainage in South Street between Stevens Street and Lewis Bay Road.	Reconstruct sidewalks on South Street between Stevens Street and Lewis Bay Road.	
	Upgrade School Street, and Pleasant Street.	Construct additional denitrifying process at WPCF.				
	Upgrade Bike Path to connect with adjacent towns					
	Upgrade Yarmouth Road north of route 28 to Yarmouth town line					
2011	Airport rotary redesign					
2011	Install Intelligent Road signs on route 6 at exit 6 east bound and exit 7 west bound informing public of traffic congestion and directing drivers to alternative routes.					Construct park and ride lots.
2012						
2013	Repave Sea Street, Stevens Street (North Street to Winter Street), Cedar Street, and Winter Street.	Upgrade sewer as needed Sea Street, Stevens Street (North Street to Winter Street), Cedar Street, and Winter Street as part of street repaving.	Upgrade water line as needed Sea Street, Stevens Street (North Street to Winter Street), Cedar Street, and Winter Street as part of street repaving.	Upgrade drainage as needed Sea Street, Stevens Street (North Street to Winter Street), Cedar Street, and Winter Street as part of street repaving.	Repave sidewalks as needed on Sea Street, Stevens Street (North Street to Winter Street), Cedar Street, and Winter Street as part of street repaving.	Install pay and display parking meters in off-street parking lots.
2014						
2015	Public Transit Improvements: Electric trolley route implemented if found feasible.					
2020						Public Garage Construction at RTA Property

VII. List of Regulations that apply to the District

Barnstable Code of Ordinances, including general and zoning ordinances.
Barnstable Administrative Code, Site Plan Review
Downtown Hyannis Design and Infrastructure Plan
Planning Board Rules and Regulations
Board of Appeals Rules and Regulations
Hyannis Main Street Waterfront Historic District Guidelines
Barnstable Conservation Commission Regulations
Barnstable Board of Health Regulations

VIII. Attached Documents

The documents listed below will be submitted with the GIZ application to the Cape Cod Commission. The same documents are available for review and copying by the public at the Growth Management Department, 3rd Floor of Town Hall, 267 Main Street, and the Planning Department, 200 Main Street. Documents denoted by an asterisk are available at the Town of Barnstable website, www.town.barnstable.ma.us.

1. Zoning; Hyannis Village Zoning Districts*
2. Downtown Hyannis Design and Infrastructure Plan*
3. Town of Barnstable Local Comprehensive Plan*
4. RKG Study, February, 2003* (on website under Economic and Community Development, Hyannis Market Study)
5. Community Report, Greater Downtown Hyannis Area., Shared Values For A Livable Community, February, 2005*
6. Barnstable Housing Plan (DHCD Approved)*
7. Barnstable Inclusionary Housing Ordinance*
8. Barnstable Accessory Apartment Ordinance*
9. Barnstable Phase I Needs Assessment and Wastewater Facilities Plan Phase II
10. Barnstable Economic Development Plan, Local Comprehensive Plan Update, Section 3.0*

11. 2005 Wellhead Inventory of Hazardous Materials and Wastes, Barnstable Board of Health
12. Onsite Sewage Disposal Regulations, shared and innovative systems regulations*
13. Town of Barnstable Open Space Plan, Barnstable Local Comprehensive Plan Update, Section 6.0*
14. Density of Multi-Family Affordable Housing Developments, Barnstable Growth Management Department, November 3, 2005
15. Hyannis Downtown Build-out: Detailed Tables
16. Barnstable Town-wide Build-out Update, Town of Barnstable Planning Division, May 17, 2001
17. Assumptions, Water Use Rate Study, Restaurant Uses, Barnstable GIS Dept., November 10, 2005
18. Rich and Associates Parking Study , January 11, 2002
19. Vollmer Associates LLP, Preliminary Study of Findings, Intersection Performance, November 10 , 2005