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A Zoning Framework for East Harwich Village Center

Harwich, Massachusetts

November 24, 2009



Submitted to:
Town of Harwich
732 Main Street
Harwich Center, MA 02645

Submitted by:
Horsley Witten Group, Inc.

Draft Zoning Framework for
East Harwich Village Center

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I. Introduction

A. Background

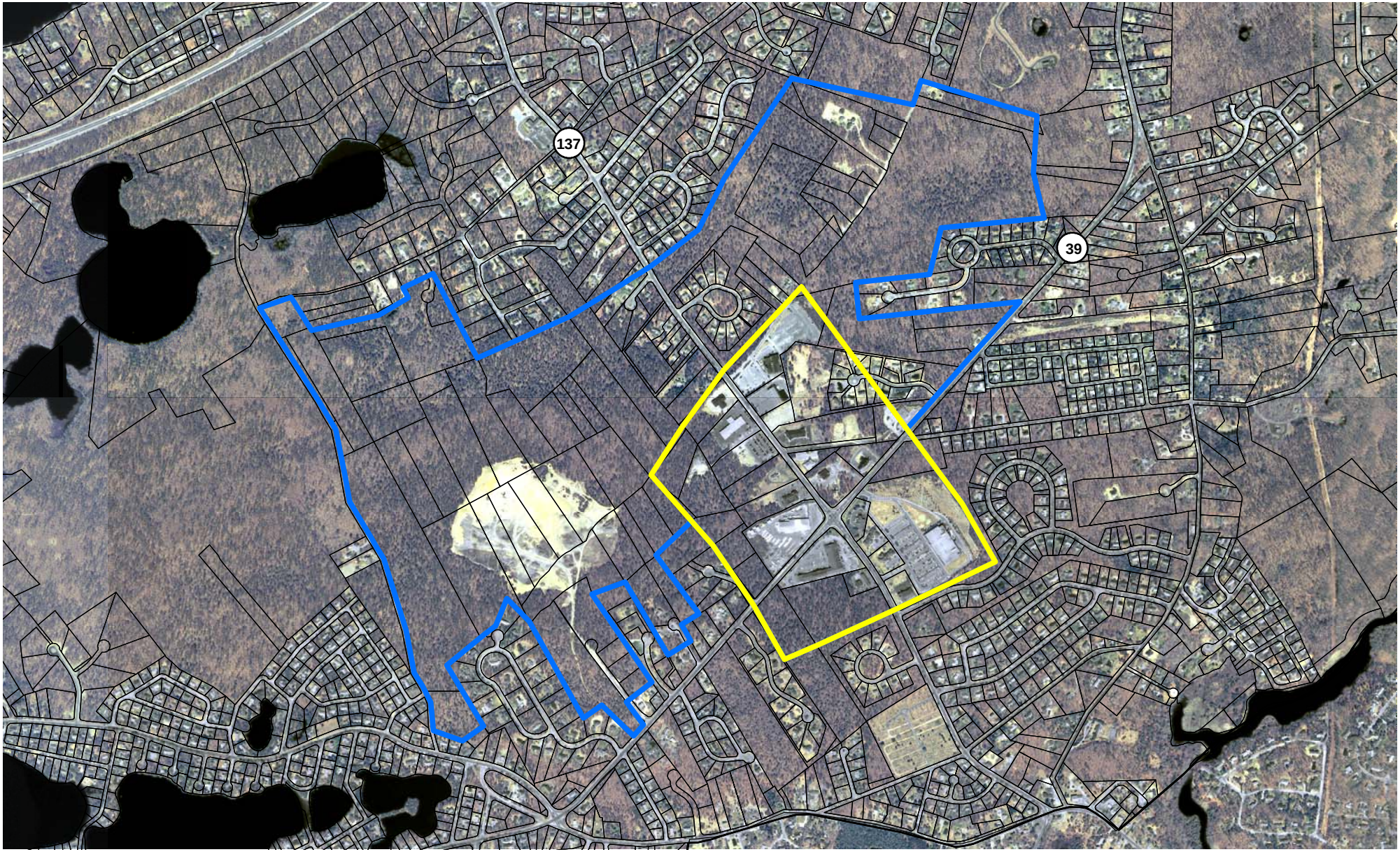
The study area identified for this report is located in Harwich, Massachusetts on Cape Cod and incorporates what is locally known as the East Harwich Village Center (EHVC) (Figure 1). Overall, the study area is generally split into "residential" and "non-residential" districts based primarily on the two different base zoning districts: Commercial Highway 2 (CH-2) and Rural Residential (RR). Additional zoning overlay districts cover a portion of the study area, such as the Six Ponds Special District, or the entirety of the study area, such as the Water Resources Protection District. These overlay districts play a critical role in shaping density and overall development patterns. As suggested by the names of these overlay districts, the study area has direct or indirect impacts on a number of natural resources including the so-called "Six Ponds" to the north, Muddy Creek and Pleasant Bay to the east, and the sole source aquifer that lies beneath.

The commercial core that exists today is split into four sections by the arterial roads of Route 137 and Route 39 and is characterized by a mix of well-kept non-residential uses in close proximity to the main roadway. Although some two-story structures exist, development is generally comprised of single-story commercial structures with a heavy presence of retail and service industries. Site development in the commercial area has historically been designed with a strong emphasis on serving motorists, as it is difficult to access different sites by any means other than with an automobile.

Several years ago, the Town identified this area as one worthy of more intensive planning study for a variety of reasons. The presence of sensitive resources, the potential for economic development, and the general lack of identity for this area all pointed to the need for a more sophisticated planning and regulatory approach. In response to this need, the EHVC Collaborative (the Collaborative) was formed by the East Harwich Community Association (the Association), the CCC, the Association for the Preservation of Cape Cod (APCC), the Business Roundtable, and Harwich municipal officials. The Collaborative hosted several public workshops which led to the development of the East Harwich Village Initiative Report (Cecil Group, et al., 2006). In the report, the Collaborative examined the basic opportunities and constraints associated with the study area and developed a set of guiding principles that continue to serve as the primary reference point for planning and local regulatory proposals. These principles include the following (Cecil Group, et al., 2006):

1. Keep it Green:
   Open and green spaces define Cape Cod and should be included in any definition of East Harwich.

2. Relate to the Pedestrian:
   The village neighborhood should not only allow but encourage walking.



Legend

Outlying Residential Study Area (Rural Residential District - RR)

East Harwich Village Center Study Area (Commercial Highway 2 - CH-2)

N

Feet

1,200

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East Harwich Village Center Study Area

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Figure 1

3. First Reuse and Redevelop:
   Expansion of commercial uses is not desired without benefits and offsets to the neighborhood and to the Town.

4. Compact Development:
   Pull development into the village center instead of allowing it to sprawl into adjacent open space.

5. Provide Offsets and Match the Carrying Capacity:
   Do not overburden existing infrastructure and the environment, particularly groundwater and wastewater.

6. Improve the Access:
   To use the land most efficiently and with the least impact, carefully design new access ways that serve the kind of development desired.

7. Retain Cape Cod Character:
   Adopt design guidelines that define a local tradition.

8. Make it Green:
   Sustainable designs help both the district and the community as a whole.

Building upon the *East Harwich Village Initiative* report, the Collaborative and municipal staff moved beyond the general visioning phase for this area and began Phase 2 of this project. This second phase, the subject of this report, used a more technical approach to planning for the area and moved the community well into the implementation strategies for the EHVC.

B. Goals and Approach

Building upon the work performed by the Collaborative to date and the input received in public venues, the goals of this portion of the EHVC study are to: 1) Develop a zoning framework that outlines all of the zoning amendments that will be necessary to realize a fully revitalized EHVC and surrounding areas; and 2) Develop illustrated design guidelines that will direct site design and architectural choices in a manner consistent with the vision developed for this area.

II. Preliminary Analyses

A. Zoning Bylaw

Consistent with previous studies, Horsley Witten Group, Inc. (HW) used the existing Zoning Bylaw as a reference point for today's development patterns and to determine how development might continue to unfold if these regulations were to remain in place. The area is complex from a zoning perspective as there are two "base" zoning districts (Commercial Highway-2 and Rural Residential) and two overlay districts (Water Resource Protection District and Six Ponds Special District) that regulate development. A summary of each of these districts is provided in the following text.

1. Rural Residential (RR) District

The RR District lies in the outskirts of the study area in the northern and western quadrants. Much of this area is undeveloped, although a significant tract in the western quadrant has been disturbed by mining activities. The RR District is generally regulated as an area for single family detached housing. The minimum lot size is set at 40,000 square feet with typical setbacks of 25, 20, and 20 feet for the front, side, and rear yards respectively.

For tracts of land over five acres, developers may propose Open Space Residential Development (OSRD) through a Special Permit process. This style of residential development is characterized by reduced dimensional requirements so that well-designed areas of preserved open space can be integrated into a residential subdivision. The number of units allowed is not greater than what would be allowed with a conventional development, but the design of these subdivisions is generally more compact and strategically locates homes so that residents can enjoy natural resources or scenic vistas. The Town's OSRD bylaw requires that 30% of the development tract be preserved as open space.

2. Commercial Highway-2 (CH-2) District

The CH-2 District, as its name suggests, is designed to provide business opportunities along major roads in environments that are generally auto-dependent. Allowable uses in the district range from general office and retail establishments to service industry and auto dealerships. Although small levels of residential use are allowed through Special Permit applications, there is little incentive to develop any residential use in the CH-2 District.

Dimensional requirements in the CH-2 District are important to consider as much of the site design for existing development has been driven by these criteria. The front yard setback, for example, is a minimum of 50 feet. This broad setback strongly encourages property owners to dedicate considerable areas of parking and/or travel lanes in the front yard setback, precluding the ability for pedestrians to pass in front of building facades in a manner that is consistent with the goals of

the Collaborative. The required side and rear setbacks set at 25 feet also ensure that buildings are situated in an isolated fashion relative to each other. Connections between buildings on adjacent lots generally have to be made across travel lanes or parking lots and are therefore best left to motorists rather than pedestrians.

3. Water Resource Protection District (WRP)

The WRP District covers the entire study area. The purpose of the WRP District is to increase protection of groundwater resources in the area with more stringent lot and building coverage restrictions by establishing a nitrogen loading limit. The WRP District allows a maximum lot coverage restriction of 40% with artificial recharge and a maximum building coverage restriction of 20% (without artificial recharge the lot coverage limit is 15%). These coverage restrictions serve to significantly reduce the amount of development that can occur in the CH-2 District when compared to the baseline zoning. The WRP District coverage restrictions do not have an impact on development in the RR District due to that district's strict coverage restrictions.

In addition to stringent coverage restrictions, the WRP District also protects the groundwater through regulating the amount of nitrogen loading that can occur within the district. This is accomplished through a requirement that all stormwater systems must be designed not to exceed a nitrogen loading limit of 5 milligrams per liter (mg/L). This performance standard minimizes impacts on the groundwater by establishing a measurable requirement that developers must abide by. Applicants for a new development in the WRP are required submit a hydrogeologic impact statement to address the requirements set forth regarding nitrogen loading.

4. Six Ponds Special District (SPSD)

The SPSD covers the western quadrant of the study area and moves northward to Route 6. This district was created in response to the designation of this area as a District of Critical Planning Concern (DCPC) through the formal CCC process. Areas receiving this designation experience a one year moratorium on development applications to allow local authorities time to properly plan and regulate the area. The SPSD is the result of that process and, as such, places significant restrictions on development in this area.

As an overlay district, the SPSD is actually divided into two zones: an "A" zone and a "B" zone. The A Zone extends from Routes 39 and 137 inward into the western quadrant for 400 feet. Within this 400 foot buffer to the arterial roads, the minimum lot size is 60,000 feet and the developed portion of a lot cannot exceed 30%. In the B Zone, where most of the land is zoned for residential use, minimum lot size is increased to 100,000 square feet with a maximum lot coverage of 15%. Although the intent of these regulations was to limit growth

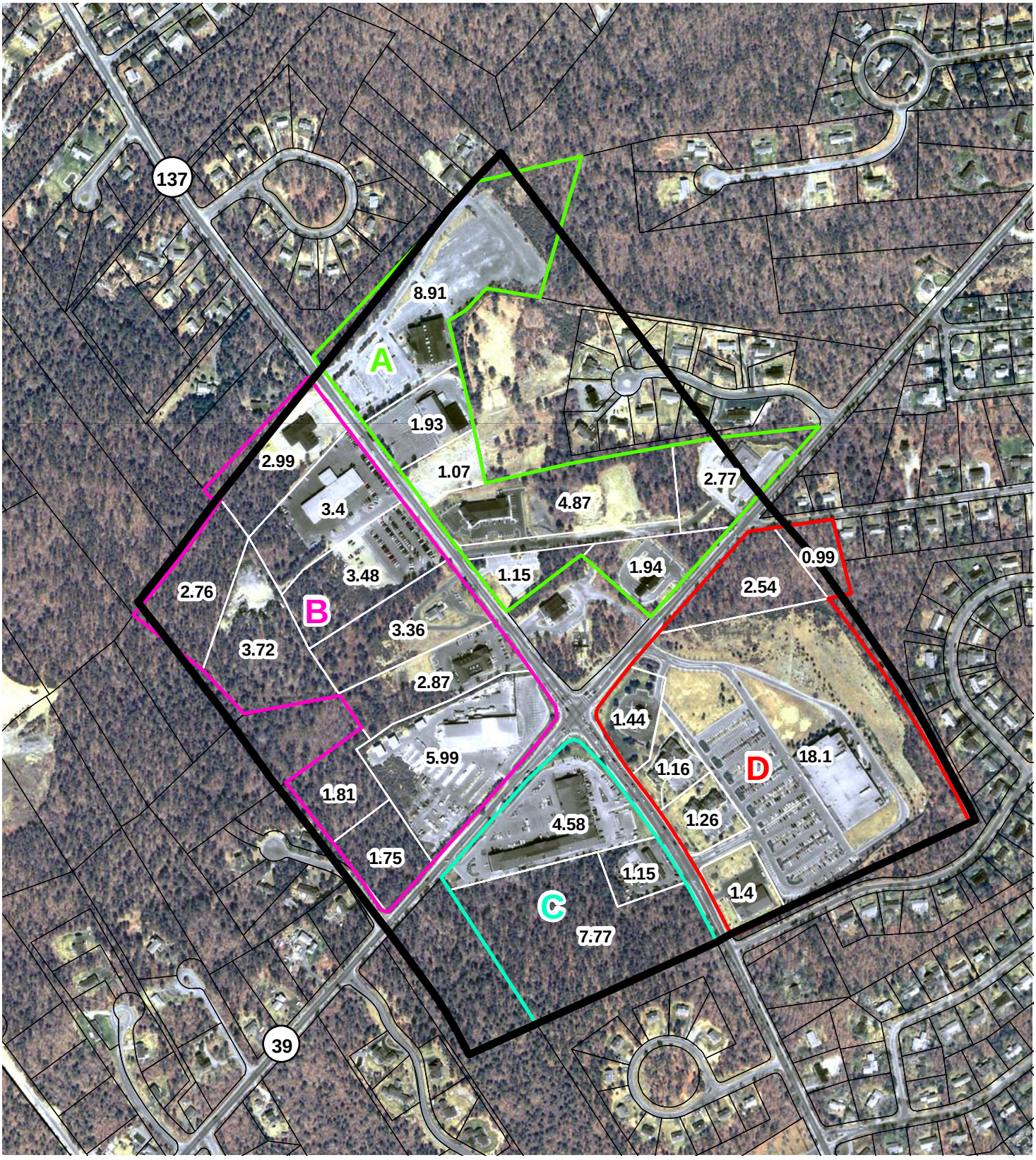
potential and increase open space, the unintended consequence has been to create fragmented development patterns that inefficiently use land, require excessive automobile use, and ultimately cause significant environmental degradation.

B. Buildout Analyses

HW developed this most recent version of the buildout model as a natural progression of work previously performed in the earlier study. In the *East Harwich Village Initiative Report*, buildout estimates were presented to the Collaborative in an effort to understand the development potential of both the CH-2 and RR Zoning Districts associated with the study area. In response to these preliminary analyses, the Collaborative reviewed the buildout analysis and suggested several refinements to the assumptions within that model. Most notably, these new assumptions included lot coverage restrictions imposed as part of the Six Ponds DCPC and the WRP District. Using the original spreadsheet format, HW incorporated the Collaborative's suggestions and developed a revised estimate for both residential and non-residential use in the study area. Revised values at that time suggested that approximately 175,000 square feet of commercial space could be added to the existing commercial uses in the CH-2 District and approximately 175 units of housing could be provided in the outlying RR District.

With new buildout estimates from the original spreadsheet, HW reformatted the buildout analysis to better suit the goals of this phase in the project, including developing a zoning framework that will identify the overall regulatory approach as well as many of the new standards that could be applied to the area. As such, the buildout analysis was reformatted to specifically address several of the basic zoning standards that will eventually be incorporated into the new zoning such as parking standards, height limitations, and use allowances. These standards are incorporated into the model as specific inputs or assumptions that can be adjusted to examine different density scenarios within the CH-2 District. Overall, the model accounts for a total of 21 inputs. Of these, 15 inputs are directly related to zoning standards. A detailed description of the model is included in Appendix A.

For the purposes of discussing the results of the model with the Collaborative, HW divided the study area into four quadrants (Figure 2). HW also slightly altered the boundaries of the areas which would be considered "mixed use" for the purposes of buildout based on areas that have already been developed as residential and also to better reflect existing property boundaries.



Legend

Existing CH-2 District Boundary

Acreage by Section:

A - 22.64 ✓ C - 13.5 ✓

B - 32.13 ✓ D - 26.89 ✓

N

500 Feet

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East Harwich Village Center Buildout Quadrants

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Figure 2

III. Summary of Modeled Scenarios

To illustrate the different impacts of selected zoning standards to the Collaborative, HW created four different buildout scenarios. These scenarios were designed to illustrate the effects that specific critical assumptions and/or zoning standards will have on the future development potential within this area.

A. Scenario One: Existing Conditions

The purpose of Scenario One is to illustrate the development potential of the EHVC within the framework of its existing zoning provisions. This provides the Project Team with a baseline for comparisons to potential zoning and use profile changes. Tables 1 and 2 provide a summary of the most important model input assumptions and the associated buildout values for these conditions. Figure 3 graphically depicts the overall land use profile that results from this scenario.

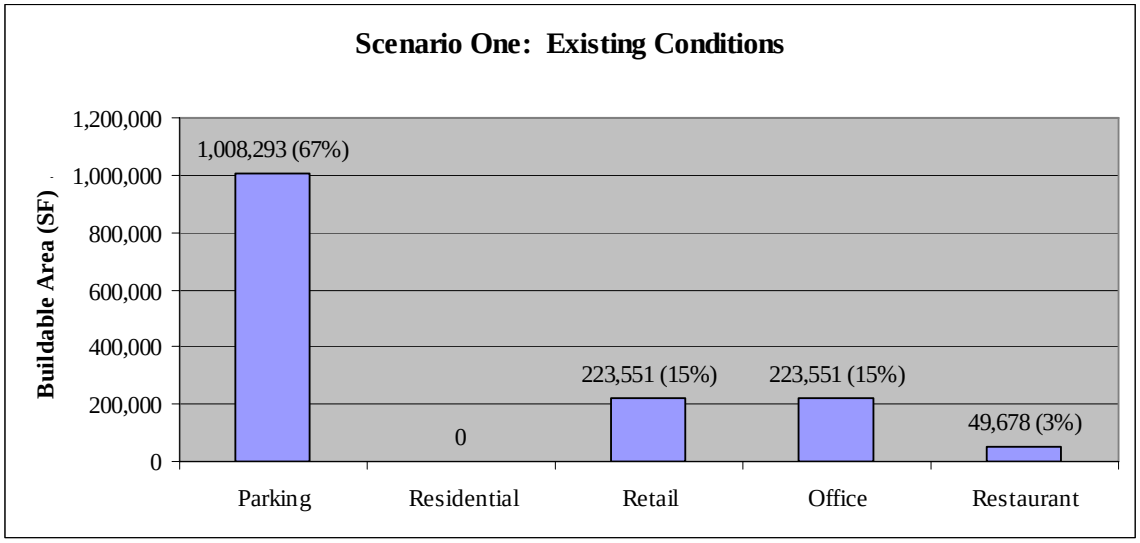
Table 1. Critical Assumptions for Buildout Scenario One

Residential	
Percent building space dedicated to residential	0%
Commercial Parking Requirements	
Spaces required per 1,000 square feet of retail	5
Spaces required per 1,000 square feet of office	6.9
Spaces required per 1,000 square feet of restaurant	4.4
Shared parking reduction for commercial requirements	0%

Table 2. Results of Existing Conditions Buildout Scenario One

	Area A	Area B	Area C	Area D	**Total**
Building Square Footage	136,449	116,905	81,363	162,064	**496,781**
Parking Coverage	276,945	237,276	165,139	328,933	**1,008,293**
Residential Space	0	0	0	0	**0**
Residential Units	0	0	0	0	**0**
Retail Space	61,402	52,607	36,614	72,929	**223,552**
Office Space	61,402	52,607	36,614	72,929	**223,552**
Restaurant Space	13,645	11,691	8,136	16,206	**49,678**
Undevelopable Coverage	591,719	1,022,048	352,836	702,797	**2,669,400**

Figure 3. Existing Conditions Buildout Summary



B. Scenario Two: No Overlay Districts

The purpose of Scenario Two is to illustrate the increased development potential of the EHVC through the removal of the lot coverage restrictions associated with the two overlay districts in the village, leaving only the underlying lot coverage restriction of the CH-2 District (Table 3). This creates a dramatic shift in the development potential as evidenced by the model calculations (Table 4 and Figure 4).

Table 3. Critical Assumptions for Buildout Scenario Two

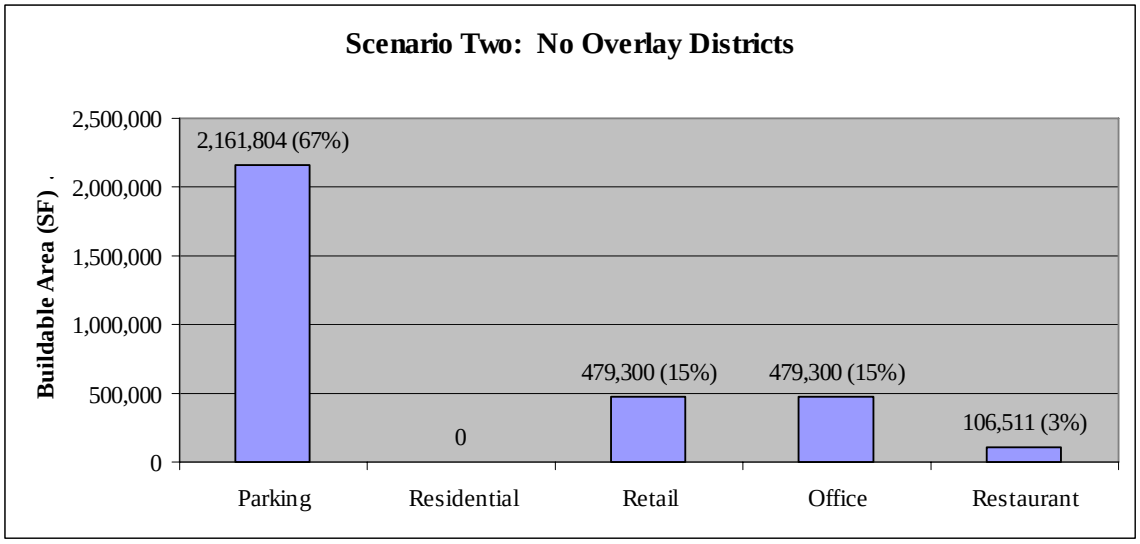
Coverage Restrictions	
CH-2 Building Coverage Restriction	30%
CH-2 Lot Coverage Restriction	70%
Overlay Coverage Restrictions	
Water Resource (WR) Building Coverage Restriction	Removed
WR Lot Coverage Restriction	Removed
Six Ponds (6P) Building Coverage Restriction- Zone A	Removed
6P Lot Coverage Restriction- Zone A	Removed
6P Building Coverage Restriction- Zone B	Removed
6P Lot Coverage Restriction- Zone B	Removed

Table 4. Results of Buildout Scenario Two

	Area A	Area B	Area C	Area D	**Total**
Building Square Footage	253,406	359,626	151,104	300,976	**1,065,112**
Parking Coverage	514,326	729,916	306,687	610,876	**2,161,804**
Residential Space	0	0	0	0	**0**
Residential Units	0	0	0	0	**0**
Retail Space	114,033	161,832	67,997	135,439	**479,300**
Office Space	114,033	161,832	67,997	135,439	**479,300**
Restaurant Space	25,341	35,963	15,110	30,098	**106,511**
Undevelopable Coverage	49,310	69,979	29,403	58,566	**207,258**

Note: Values above may not add exactly to the total building square footage due to rounding.

Figure 4. Results of Buildout Scenario Two



C. Scenario Three: Existing Overlay Restrictions, Reduced Parking Requirements

The purpose of Scenario Three is to illustrate the development potential of the village with the overlay districts still in place and a significant reduction to the parking standards. Importantly, this scenario does not include any residential development. The reduced parking standards (Table 5) represent reasonable estimates based on the formation of a mixed-use village with pedestrian amenities.

The results of this buildout scenario (Table 6 and Figure 5) represent what would occur if all of the zoning provisions for Scenario One (existing conditions) remained intact with the exception of those for parking demand. Notably, the overall commercial floor space increases by approximately 70% due to the flexibility and basic reductions in parking requirements. Also, the ratio of commercial space to parking area changes from 1:2 under existing conditions to 1:1 with provisions for reduced parking demand.

Table 5. Critical Assumptions for Buildout Scenario Three

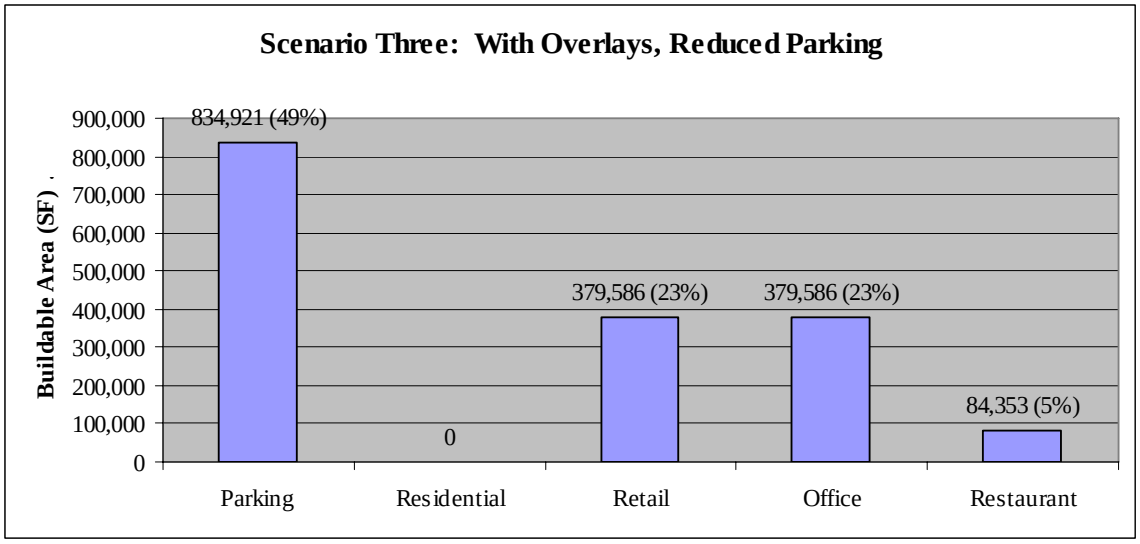
Commercial	
Spaces required per 1,000 square feet of retail	4
Spaces required per 1,000 square feet of office	4
Spaces required per 1,000 square feet of restaurant	4.4
Shared parking reduction for commercial requirements	30%

Table 6. Results of Buildout Scenario Three

	Area A	Area B	Area C	Area D	**Total**
Building Square Footage	231,688	198,502	138,153	275,181	**843,525**
Parking Coverage	229,325	196,478	136,744	272,374	**834,921**
Residential Space	0	0	0	0	**0**
Residential Units	0	0	0	0	**0**
Retail Space	104,260	89,326	62,169	123,832	**379,586**
Office Space	104,260	89,326	62,169	123,832	**379,586**
Restaurant Space	23,169	19,850	13,815	27,518	**84,353**
Undevelopable Coverage	591,719	1,022,048	352,836	702,797	**2,669,400**

Note: Values above may not add exactly to the total building square footage due to rounding.

Figure 5. Results of Buildout Scenario Three



D. Scenario Four: Existing Overlay Restrictions, Reduced Parking, Residential Use

The purpose of Scenario Four is to illustrate the development potential of the village with the inclusion of residential uses. All other parameters used within this scenario are identical to those used in Scenario Three with the exception of those differences provided in Table 7. This allows for the comparison of adding residential opportunities to meet the housing needs of the area and to meet the mixed use goals identified in previous studies of this area. Table 8 and Figure 6 provide the results of this scenario, which demonstrate a slightly reduced development potential for non-residential uses when compared with Scenario Three. This is the direct result of the general inability to share parking to the same degree once residential uses are introduced in a village setting. Overall, this scenario still represents a 27% increase in the non-residential development potential when compared with existing conditions along with the addition of approximately 300 units of housing that would simply not be possible under today's zoning.

Table 7. Critical Inputs for Buildout Scenario Four

Residential	
Percent building space dedicated to residential	33%
Average interior space needed per housing unit (SF)	1,000
Parking spaces per housing unit	1.5

Table 8. Results of Buildout Scenario Four

	Area A	Area B	Area C	Area D	**Total**
Building Square Footage	258,280	221,285	154,010	306,764	**940,339**
Parking Coverage	216,029	185,086	128,816	256,583	**786,515**
Residential Space	85,232	73,024	50,823	101,232	**310,312**
Residential Units	85	73	51	101	**310**
Residential Density (units per acre)	3.8	2.3	3.8	3.8	**3.3**
Retail Space	77,871	66,717	46,434	92,489	**283,512**
Office Space	77,871	66,717	46,434	92,489	**283,512**
Restaurant Space	17,305	14,826	10,319	20,553	**63,003**
Undevelopable Coverage	591,719	1,022,048	352,836	702,797	**2,669,400**

Note: Values above may not add exactly to the total building square footage due to rounding.

Figure 6. Results of Buildout Scenario Four

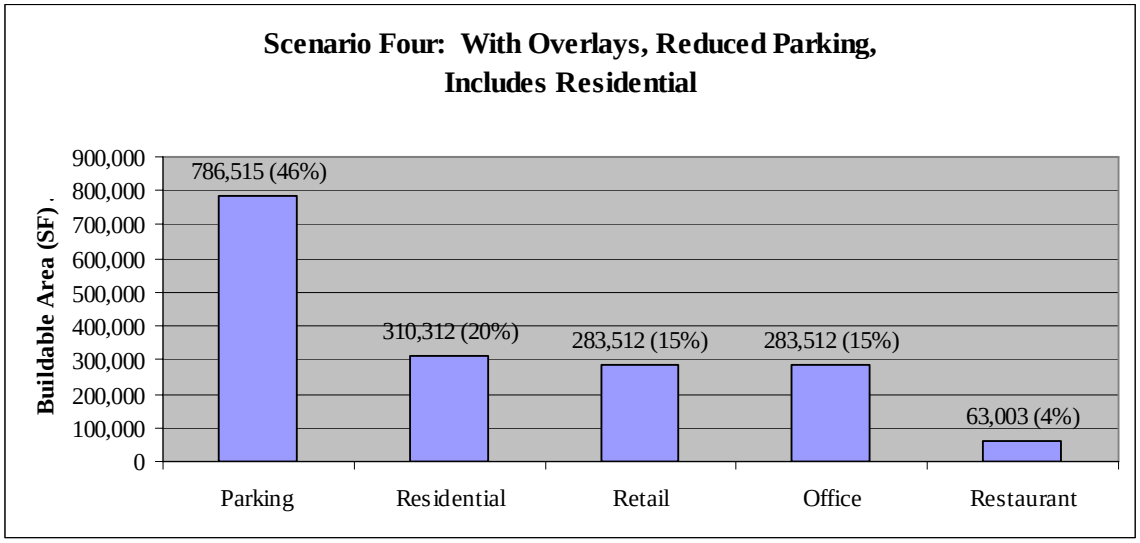


Table 9. Comparison of Key Elements of All Buildout Scenarios

	Building Floor Space (sq ft)	**Parking Coverage** (acres)	**Residential Units inside CH-2**	**Undeveloped Area inside CH-2** (acres)	**Residential Units Outside CH-2**
Scenario 1 (Existing Conditions)	496,782	23.1	0	61.3	175
Scenario 2 (No Overlay Districts)	1,065,112	49.6	0	4.8	175
Scenario 3 (Overlay Districts and Reduced Parking)	843,525	19.2	0	61.3	175
Scenario 4 (Overlay Districts, Reduced Parking, Residential Use)	940,339	18.1	310	61.3	Unknown[1]

[1]Housing in the surrounding district will likely be reduced as a result of the Zoning Bylaw language developed in response to this report. However, because the reduction depends primarily upon a voluntary Transfer of Development Rights (TDR) program, the exact level of this reduction is very difficult to predict at this time. Further, a development transfer ratio (see Section D of the report) will need to be determined to understand how many multi-family units will be required to match the value of one detached single family home. Based on the assumptions incorporated into the model, a planning level estimate for the number of houses removed from the outlying area as part of TDR would be approximately 52 (reducing the number of potential homes to 123). This estimate assumes that approximately half of the residential units in the CH-2 are the result of TDR and three multi-family units were created for the development rights to each single family home.

IV. Proposed Zoning Framework

One of the final goals of the Collaborative for this phase of the project was the development of a zoning framework that would be used as a guide for drafting future amendments for consideration at Town Meeting. HW used several sources of information to guide the development of this framework including:

- Input from Harwich residents at public presentations;
- The guiding principles listed in the *East Harwich Village Initiative Report*;
- Input from the Collaborative during internal work sessions;
- The buildout analyses developed in earlier projects and refined for this phase; and
- Other parallel studies commissioned by the Town including traffic and market analyses.

The goals of the zoning framework mirror those developed by the Collaborative and focus on increasing pedestrian activity, redirecting growth in a more sustainable fashion, and developing in a manner that is consistent with the character of the Town. As zoning is a complex tool, the framework provided by HW is comprehensive in nature and includes five basic elements that function in an integrated manner:

- Amending the existing base zoning and overlay districts on the Town's Zoning Map;
- Adding a new "East Harwich Residential Overlay District";
- Adding a new "East Harwich Village Center Overlay District";
- Implementing Transfer of Development Rights (TDR); and
- Providing Design Guidelines for development in the village center overlay district.

A. The Zoning Map

When considering Zoning Bylaw changes for a specific study area, it is necessary to consider how this area will be delineated on the Zoning Map. Today, the EHVC study area is comprised of two "base" zoning districts (RR and CH-2) (Figure 1) and is also further regulated by two overlay districts (the Six Ponds Special District and the Water Resource Protection District). The base zoning districts serve to divide the area into what is considered a residential portion (RR District) and the commercial portion (CH-2 District). The addition of overlay districts has added further restrictions designed to help protect natural resources in the area. Specifically, the Water Resource Protection District decreases the allowable lot coverage from 70% to 40% in the CH-2 District. The Six Ponds Special District further decreases the allowable lot coverage in the CH-2 District to a maximum of 30% within 400 feet of Routes 39 and 137 and 15% moving north and west of these arterials.

The presence of two base districts and two overlay districts creates a more complex situation with regard to implementing the goals identified by the Collaborative. To add

further complexity, the delineation of the existing CH-2 District is not coincident with existing property boundaries and splits several parcels. The Zoning Bylaw does not explicitly deal with this issue of split lots and it is therefore difficult to determine which standards apply to these lots and how these would be enforced.

To reframe local regulations in this area in a manner that makes it easier to determine jurisdiction and accomplish the goals for the EHVC, HW recommends the following step-by-step adjustments:

1. Re-delineate this portion of the CH-2 District to be coincident with specific parcel boundaries (Figure 7).

   The purpose of this exercise is to more precisely include those parcels that should be developed as mixed use and to exclude those parcels that have already been developed as residential. This realignment of the district boundaries will also remove any confusion relative to which standards will be applied to lots that are split by district boundaries today.

2. Re-delineate the Six Ponds Special District to exclude this section of the CH-2 District (Figure 8).

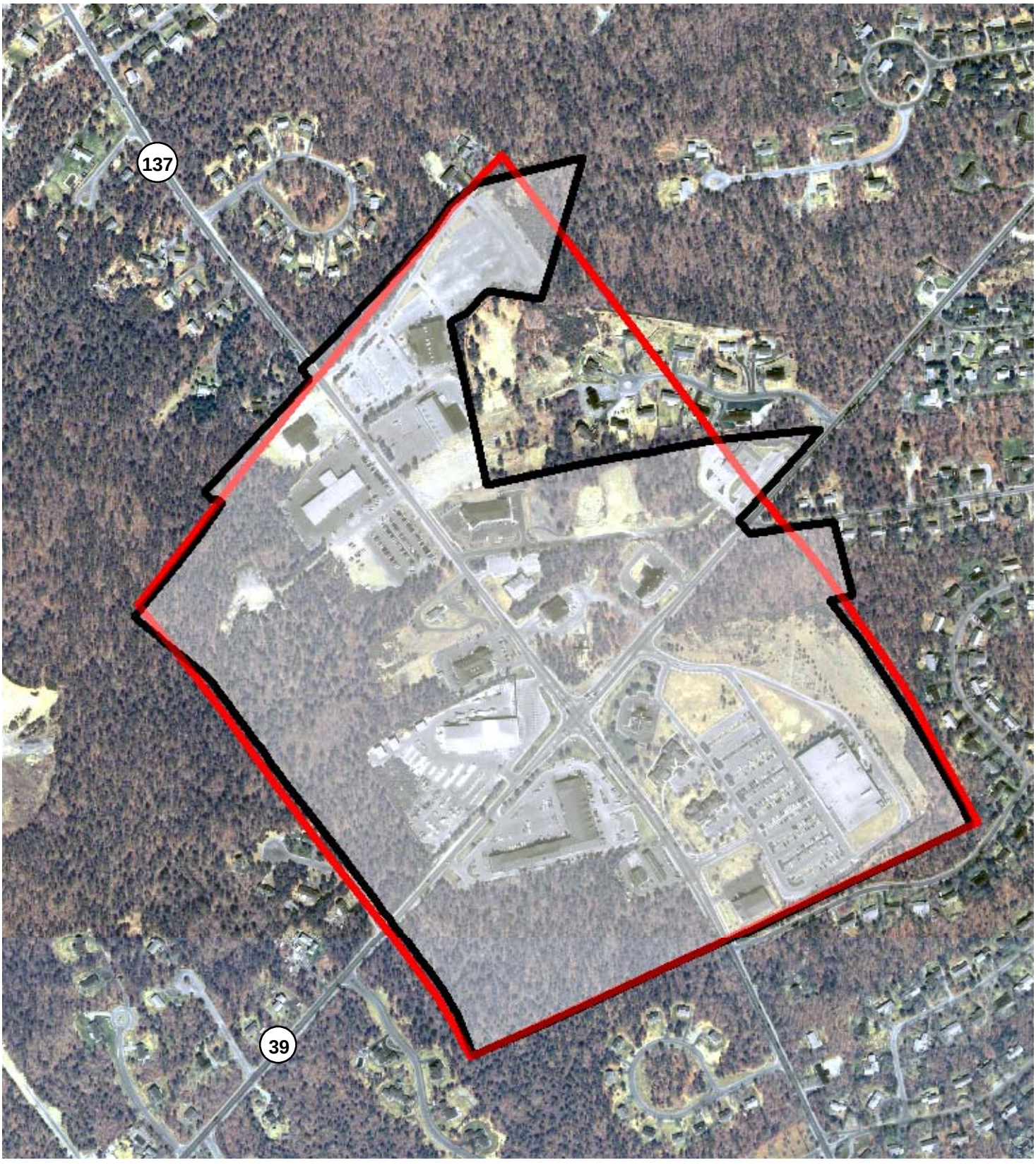
   The purpose of this exercise is primarily administrative. Removing this portion of the overlay will allow Town officials and developers to manage fewer sections of the Zoning Bylaw without sacrificing any of the development protections associated with the Six Ponds Special District. These protections will be transferred to a new overlay (described below in #3). It is important to note that changing the boundary of the Six Ponds Special District may require CCC review and approval.

3. Add a new overlay that is exactly coincident with the portion of the CH-2 District described in task number one above (Figure 9).

   This new overlay will be used to provide all of the development criteria needed to accomplish the environmental, aesthetic, and economic goals identified for the EHVC. Among the important features associated with this overlay is a focus on human-scale development and walkability, better automobile circulation, open space protection equal to what is required in the Six Ponds Special District, the ability to absorb development rights (see later discussion of TDRS, and requirements for high-quality building design.

4. Add a new overlay that covers the remaining developable, outlying portion of the study area (Figure 10).

   This final map amendment will be used to establish low impact development (LID) housing standards for this residentially zoned area and will also serve to



Legend

Potential CH-2 District Boundary

Existing CH-2 District Boundary

N

Feet

500

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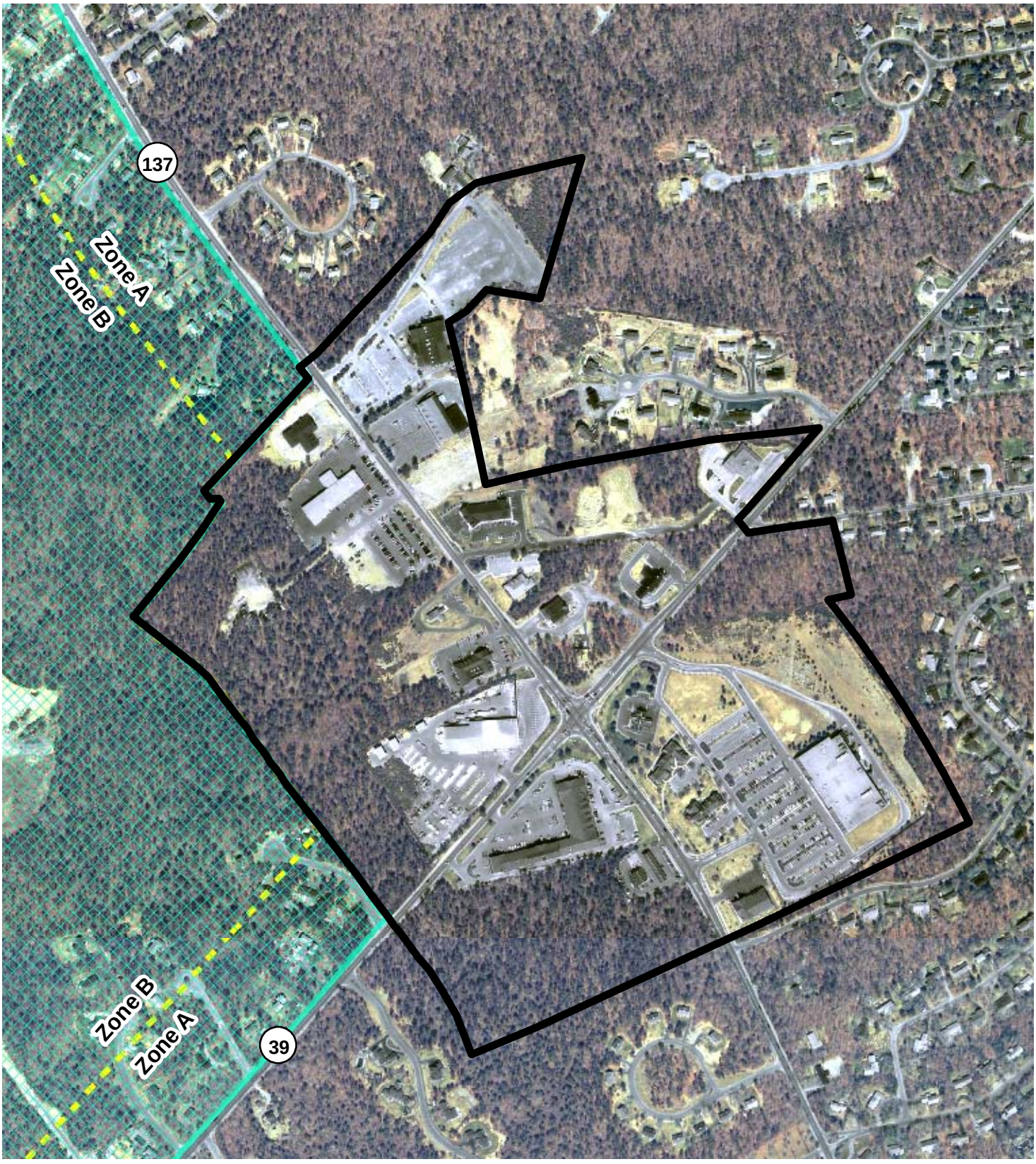
Potential Amendment to Commercial Highway 2 District

9/25/08 ec
J:\7099 East Harwich Village Center\GIS

Figure 7



Legend

Potential CH-2 District Boundary

Potential Six Ponds Overlay

N

Feet

500

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Potential Amendment to
Six Ponds Overlay District

10/23/08 ec

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Figure 8

Legend

Potential East Harwich Village Center Overlay District

Parcels

N

500 Feet

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Potential East Harwich
Village Center Overlay District

10/23/08 ec
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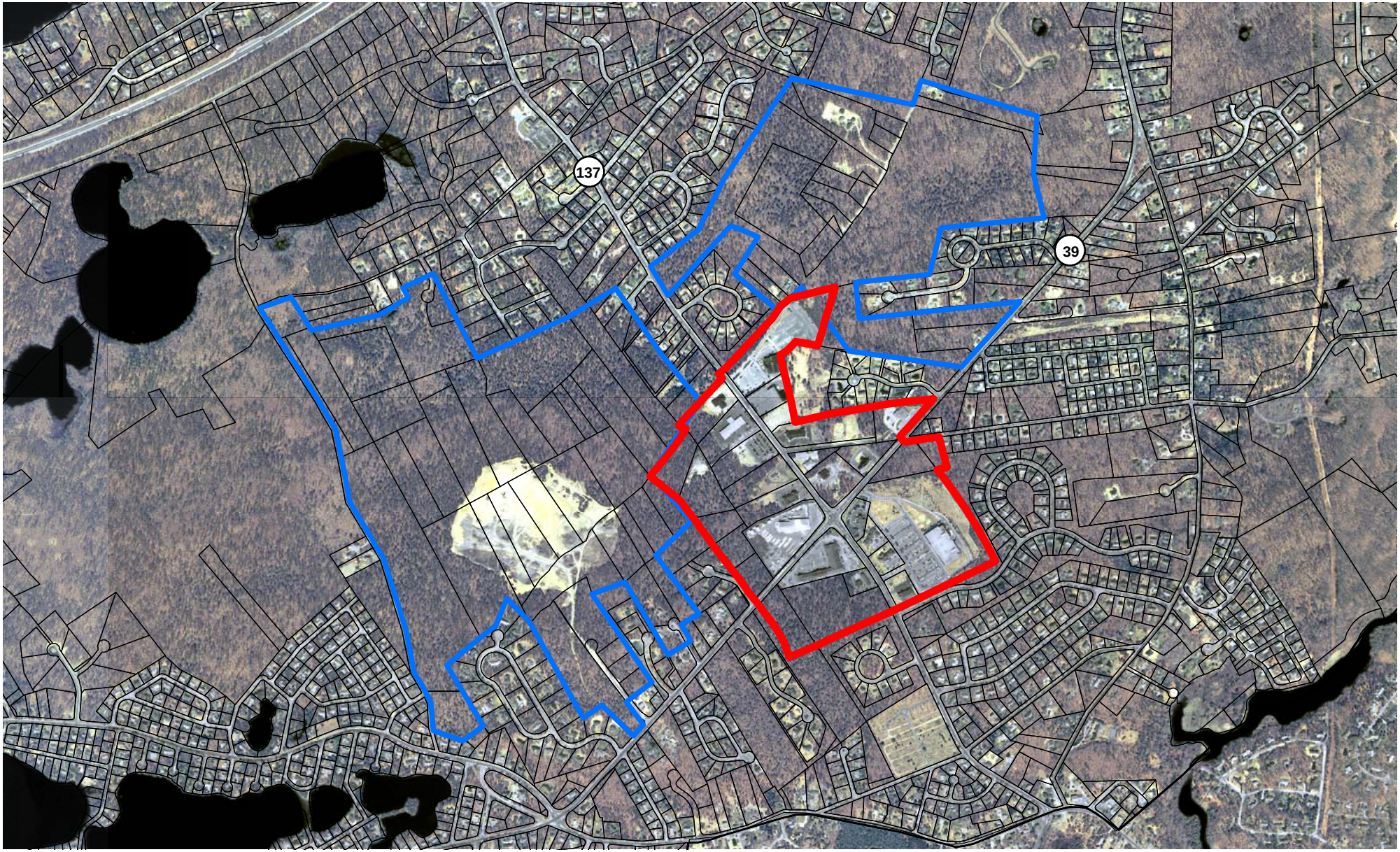
Figure 9



Legend

Potential East Harwich Special Residential Overlay District

Potential East Harwich Village Center Overlay District

N

Feet

1,200

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Potential East Harwich Special Residential Overlay District

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Figure 10

establish these lands as Sending Areas under a new Transfer of Development Rights (TDR) bylaw.

B. Provisions for the East Harwich Special Residential Overlay District (SROD)

This proposed overlay is depicted in Figure 10 and essentially delineates the residentially zoned lands that are included in the study area. As discussed earlier, these lands are subject to the restrictions within the Water Resource Protection District throughout the study area and to the more restrictive Six Ponds Special District in the western quadrant. The key elements to these overlay districts are summarized in Section II of this report.

This additional overlay district would be added to the Zoning Map to help address those goals identified for the study area that are not specifically addressed in the existing zoning provisions. Proposed amendments can be divided into two general categories: 1) amendments designed to enhance the housing development that would be placed in these areas through more energy efficient design (discussed within Section IV.B.1); and 2) amendments that would allow development rights from this overlay district to be transferred to the EHVC overlay (discussed within Section IV.D).

1. Site Design and Energy Efficiency

One of the primary goals of the Collaborative is to ensure that new development takes place in a way that is environmentally sustainable throughout the study area. For residential subdivisions, a variety of techniques can be applied that would enhance the overall sustainability of the development beyond what is conventionally required in local codes. Standards that may be applicable to the residential portion of the study area include:

a) Solar Orientation

Construction of detached housing lends itself to highly flexible roadway design and building orientation. Because relatively large expanses of space exist between adjacent houses and between neighboring streets, it is generally not difficult for a developer to take advantage of exposure to prevailing solar pathways. Having space for adjustments in site design, whether in the orientation of roads or individual houses, enables the developer to align most of the streets roughly parallel to the solar pathway along with the broad side of each house. This approach to site design provides tremendous opportunities for reducing heating costs during the colder months of the year. Orienting individual homes in this manner also provides residents with the opportunity to construct solar panels on roof surfaces pre-designed to capture as much solar exposure as possible.

b) Connectivity

In requiring design amenities for outlying residential development, it is important to remember that a mixed use village will be within walking distance of new residential development. As such, design standards for new residential development must require connections with other residential roadways and to the village itself through the use of walking/bicycle trails.

c) Open Space

The Town of Harwich has already created provisions for incorporating open space into new residential development through a tool called Open Space Residential Development (OSRD) or Cluster Development. Currently, all OSRD projects in Harwich are submitted on a voluntary basis through the Special Permit process. The Zoning Bylaw has provisions for a standard Cluster Development as well as a Flexible Cluster Development (FCD) associated with the SPSD. A review of these two separate approaches demonstrates that, as its name suggests, the FCD provides a more flexible context-sensitive approach to subdivision design. As such, the FCD provisions in the Zoning Bylaw would serve as a model for the new OSRD approach. The critical difference would be that OSRD would now be allowed as a "by-right" option. This approach would require the zoning to have a more prescriptive tone relative to important design elements and would also incorporate a new Site Plan Review process specifically for this type of subdivision. The Site Plan Review mechanism would provide the Town with the forum it needs to properly review these innovative approaches, but would also provide the applicant the "by-right" incentive that will make this style of development even more attractive.

d) Roadway Design

The design of local streets plays an important role in reducing traffic speeds and creating an environment conducive to pedestrian travel. Narrow streets also cost less to build and maintain, encourage more efficient land use, improve neighborhood character, and reduce impervious surface coverage. There are several strategies that can be employed to reduce street widths and improve streetscape character within the EHVC. The most direct strategy is to reduce the numeric values of the minimum street widths for local streets in the SROD to 20-26 feet.

A second strategy is to create specific roadway standards for anticipated traffic volumes. Today, the local regulations acknowledge "local", "collector", and "arterial" roads. Each of these can have specific

standards for roadway width to tailor the design to traffic volume. For example, local streets that demonstrate low trip generation or exhibit traffic calming elements could potentially be reduced to a minimum width of 18-24 feet. Accordingly, alleyways would have a width of 14-20 feet and be designed to serve as a means of access to the rear of buildings or rear parking areas.

In addition to reducing street widths, consideration should also be given to increasing local street connectivity within the EHVC. This involves designing local streets to connect directly to the village core where feasible, and reducing the creation of new cul-de-sacs to the greatest extent practicable. In these instances, it may be necessary to consider how the right of way is divided and designed. For example, where the Town has sometimes waived the requirement for sidewalks on smaller roads, a condition of this waiver could be the provision of a clearly marked bicycle lane. Other design elements to consider can include limits on cul-de-sac streets in the SROD shall not exceed 800 feet in length. The overall purpose of cul-de-sac streets shall be to access land not otherwise accessible through a connected street pattern due to topography or other constraints.

e) Landscaping

Perhaps one of the most significant environmental impacts from residential development, especially for the minimum lot sizes required in the study area (40,000 or 100,000 square feet), is excessive water use. Within the overall water budget, irrigation of landscaped areas represents perhaps the most inefficient and excessive use of water in residential subdivisions. To prevent these water losses, a variety of local regulatory measures can be employed.

Many communities already use water conservation measures within their General Bylaws to help relieve stresses to local water resources. In addition to these conservation restrictions, a more proactive regulatory approach involves adopting prescriptive standards that deal with the practice of installing landscapes in new development. Critical elements of an advanced landscaping bylaw will include:

- Limitations on the amount of turf allowed per lot;
- Turf and plant species selection specifications (drought tolerance, non-invasive status, etc.);
- Prohibitions on automated sprinkler systems or strict specifications for high performance systems;
- Standards for landscaped areas transitioning into natural areas (shrub selection, tree drip-line buffers, etc.); and

- Cultivation requirements with regard to depth of tilling, soil amendments, avoiding compaction, soil preservation, etc.

The importance of this approach is that it addresses water consumption before landscapes are installed. This reduces the amount of outdoor irrigation that needs to be policed by local authorities during dry periods as irrigation of these landscapes is generally not required. The planting specifications listed in these bylaw provisions are not foreign to most landscape professionals and are relatively easy to implement. Installation of these landscapes will be more expensive than laying acres of turf, but the lower maintenance associated with these landscapes balances those "up front" costs in a short period of time.

To efficiently regulate plant selection within the context of a Zoning Bylaw, it is important to identify literature resources that can be incorporated by reference. This approach provides a higher perception of credibility to the bylaw, allows reference to documents that may be revised, and makes the bylaw easier to read and administer. Important references for the landscaping provisions in East Harwich will include:

- *Designing the Future to Honor the Past, Design Guidelines for Cape Cod* (Cape Cod Commission, et al. 1998): This publication provides a detailed list of plants that can be successfully used in different environments on Cape Cod (e.g., slopes, dry soils, wet soils, etc.)
- *The Vascular Plants of Massachusetts: A County Checklist* as published by the Massachusetts Division of Fisheries and Wildlife and Natural Heritage & Heritage & Endangered Species Program. This publication provides a comprehensive list of plants found on Cape Cod and their status as native or introduced.
- The Massachusetts Nursery and Landscape Association's *Pocket Guide to Native and Low Maintenance Woody Plants*. This guide provides easily accessible lists of low maintenance and native species in Massachusetts.
- Massachusetts Plant Advisory Group in the latest version of *The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list)*. This publication provides a good overview of many species that are considered invasive to different degrees.
- *Massachusetts Prohibited Plant List* as periodically updated by the Massachusetts Department of Agricultural Resources. This list is readily accessible via the Internet and provides all of the plants whose importation into Massachusetts is currently banned.

f) Heat Island Reduction

An often underestimated item to consider for any new development is the increase in urban heat islands. Urban heat islands disturb the microclimate and cause energy waste by increasing loads on cooling systems. Recently developed zoning approaches regarding this issue can reduce urban heat islands and minimize the impacts of new development on the microclimate, and human and wildlife habitat. This is regulated through a combination of strategies, two of which are potentially applicable to the study area. These include requiring a specific percentage of shade covering paved surfaces and/or restricting the Solar Reflectance Index (SRI) of paved materials.

C. The East Harwich Village Center (EHVC) Overlay District

Perhaps the centerpiece of the proposed zoning amendments, the EHVC Overlay District will attempt to combine many of the planning goals identified in the earlier phases of this project for this area. As a mixed use district, many of the site development standards in this overlay will be adjusted from the base zoning to allow for a more coordinated approach to building placement and site design from one parcel to another. Some of the more fundamental design elements to be addressed include:

1. Parking Requirements

The existing parking requirements today in the Town of Harwich are very much like other communities on Cape Cod and across Massachusetts. The approach to parking today is characterized by basically requiring a minimum amount of parking on each site. The Town does allow for parking to be located on other sites in a "shared" situation under specific conditions. However, these provisions for off-site parking do not reduce the aggregate amount needed for any of the land uses involved in the agreement. As with other communities, the "one size fits all" approach used by the Town of Harwich is relatively inflexible and has created shortages of parking in some cases, but in most situations it has created significant surpluses. The commercial lots in the study area today demonstrate how local codes have created parking areas that are generally much larger than they need to be.

In addition to the amount of parking required by the existing Zoning Bylaw, the location and design of parking areas is not prescriptive and has created site design in the study area that is contrary to many of the planning goals. With large parking areas located in many building frontage areas and minimal connections from one site to another, automobile circulation is forced onto Routes 39 and 137 more than is necessary and pedestrians have very few options to consider when moving from one store to another.

As illustrated in previous discussions of potential buildout in this area, parking is perhaps the most important site design consideration for this mixed use district. To mitigate the problems associated with the parking requirements in the study area today, the EHVC should address the essential planning issues relative to parking: limiting supply and parking area design. To most effectively achieve these goals in the suburban environment, three complementary techniques should be employed in the Zoning Bylaw:

a) Revised Minimum and New Maximum Parking Requirements.

Current trends in land use planning have clearly demonstrated that the majority of suburban parking standards found in Zoning Bylaws require a significant excess amount of parking for each site. Recent literature (*The High Cost of Free Parking*, Shoup 2005) demonstrates that many minimum standards have been adopted from Institute of Traffic Engineers (ITE) studies not designed to establish zoning standards. In fact, the ITE reports were designed to record the maximum amount of parking that could be observed in completely auto-dependent environments. What has happened, as a result, is that local planners are using the maximum amount of parking that could ever be needed as their minimum standard, with no provisions for flexibility.

One of the most important steps in limiting the unnecessary impacts from parking requirements is to place a maximum standard for each use. This ensures that developers will not voluntarily provide enormous amounts of parking that consume valuable land that could otherwise be used to generate revenue, provide housing, or be set aside as open space. Maximum parking standards represent a very different way of thinking about this infrastructure and can therefore face political resistance when faced by a community for the first time. Local planners will therefore need to take time to educate property owners about the economic benefits and viability of lower parking standards. If local developers remain skeptical, a special permit process can be built into the bylaw that would allow developers to exceed the maximum standards based on specific decision criteria.

In tandem with maximum parking standards, minimum standards will need to be revised to reflect more realistic needs and to provide developers with more flexibility. Using minimum and maximum parking standards provides a range of acceptable values and is generally well received by developers who are looking to maximize the buildable potential of their lot.

b) Provisions for Shared On-Site Parking

When observing mixed use, walkable environments, one of the recurring characteristics of well established areas is the irregular distribution of parking lots and the ability for store owners and residents to share their spaces with other uses. Although this practice was common when New England villages first made accommodations for the automobile, it has proven difficult to codify these practices when most communities simply require a minimum amount of spaces for each use on-site.

At the core of any successful shared parking arrangement is the idea that different uses have "peak demands" at different times of the day or night. For example, office use and dinner restaurants clearly have what is known as "non-competing" peak demands as one building will be occupied primarily in the day and one in the night. Even uses that overlap, such as office and retail, will have different peak demands over the course of the day and can successfully share parking. In mixed use environments, different residential and commercial uses will compete for parking spaces in a much more complex manner depending on when shoppers, diners, workers, or residents are in the area.

In order to install shared parking provisions into a Zoning Bylaw, provisions must be very clear on how proper shared parking calculations will be performed. The Zoning Bylaw must therefore provide examples of calculations for these different situations to ensure that applicant and local regulatory agencies can agree on what is acceptable. In general, parking calculations begin with adding together the aggregate demand for all of the uses in question. From that point, reductions in the overall demand can be made based on how the various peak demands are distributed across different time blocks. In general, peak daytime demands and peak nighttime demands are examined for both the weekday and weekend periods.

c) Provisions for Off-Site Parking

A final integral piece of providing parking standards conducive to village-style development is the use of off-site parking allowances. Because there are areas better suited to building placement than others, it is critical to provide developers and property owners with the flexibility to maximize their use of these key parcels. Harwich does allow for the use of agreements between property owners that would allow for parking associated with one use to be placed on another parcel. However, the Bylaw does not allow any consideration of whether or not the spaces can be shared. In the end, the full aggregate parking for each use must be built. Revised standards should allow for up to 100% of the parking needed to serve a particular use to be located on another parcel in a

manner that accounts for sharing spaces. This flexibility encourages developers to consider alternative options for the "highest and best" use of their parcel and to look for opportunities to more efficiently use land within the district. Standards that need to be considered when addressing this issue in zoning include:

1) The allowable maximum distance between the off-site parking and the use being served. Common standards range from 350 feet to 1,000 feet and will often vary depending on the size of the overall district;
2) The ease with which motorists can get from the parking area to the use being served. This becomes particularly important for residential parking and local authorities need to be assured that access ways are safe and clearly marked; and
3) The presence of a clear and binding agreement that allows the parking area owned by one party to be used by another party.

2. Basic Site Design and Building Placement

The goals of the Collaborative clearly articulate a vision for this village center that will allow visitors and residents to move easily between buildings without using an automobile. One of the most important factors in achieving this goal is the location of buildings relative to pedestrian amenities and to each other. Facilitating good site design and building placement should occur through prescriptive standards that build upon basic dimensional requirements. The core site design elements required for creating walkable villages, as they would appear in formal design guidelines, include:

a) The location of buildings, parking areas, walkways, outdoor gathering places, landscaping, utilities, loading areas, dumpsters, automobile access, travel lanes, and signs need to reflect a thoughtful approach that focuses primarily on providing optimal access and mobility for pedestrians on and between sites. On sites with multiple principal buildings, site design needs to be as compact as is feasible. To the greatest extent practicable, pedestrians will not need to cross parking areas to move from one building to another.

b) Parking areas must allow for easy access between lots for automobiles and pedestrians. Where feasible, parking lots must be connected by a travel lane within the rear or side yards to limit conflicts between pedestrians and motorists.

c) Within the front yard setback, clear pedestrian pathways must be established between buildings and across automobile travel lanes in the form of raised or distinct surfaces. Parking areas will not be developed in front yards.

d) In complexes with multiple principal buildings, landscaped areas with walkways, courtyards or arcades can be used to bring buildings closer together and enhance connectivity between them for residents and customers.

e) Building setbacks can be provided as a range (minimum and maximum). These setbacks will depend on the width and ownership associated with the right-of-way as well as the intended use of the sidewalk. Where only pedestrian passage and street trees are required, an eight to ten-foot wide sidewalk will be sufficient to effectively move pedestrians in a relaxed environment. Where outdoor seating, extensive landscaping, bicycle racks or other gathering places are required, sidewalks may need to be as wide as 25 feet.

f) Street corridors entering Routes 137 and 39 must be bordered at their connection point with buildings of at least two stories at approximately equal setbacks. These buildings act as a "frame" for the side street and invite motorists off the arterials into a more pedestrian friendly zone.

g) Wherever possible, building placement should seek to align the longer axis of the building along the solar pathway to allow for Photovoltaic-ready roofs and building fenestration strategies that utilize passive solar energy. The alignment of buildings with the solar pathway should be considered a secondary design objective with the primary objective being to establish a pedestrian oriented district.

h) Street right-of-way areas should incorporate amenities that invite bicycle travel through the district including clearly designated bicycle lanes and bicycle racks on public sidewalks.

3. Minimum Lot Size and Building/Lot Coverage

The current minimum lot sizes in the EHVC are dictated by the underlying zoning districts and also the overlay provisions of the Water Resource Protection District and the SPSD overlay. The allowable minimum lot sizes in this area today range from 50,000 square feet to 100,000 square feet depending on which overlay covers a site and the proximity of the site to major roadways. Irrespective of the existing minimum lot size, the scale of these limitations is counter-productive with the goals of the Collaborative for this area. When looking to create an economically diverse and walkable district, lot size requirements in excess of 50,000 square feet push development toward large single use "anchor" tenants and strip malls that include a series of smaller uses. Dropping the minimum lot size into the range of 5,000 to 10,000 square feet invites a greater diversity of small scale operations without precluding the possibility of collecting many smaller parcels into an integrated design. This scale of lot size will also

encourage the small scale commercial uses that were once the predominant ground floor use in almost all New England village settings.

It is important to note that adjusting the lot size in the EHVC **does not** change the overall development potential because the lot coverage and building coverage restrictions would still be used to limit overall district-wide density. Irrespective of the lot size, fixed limits on the amount of developable space as a percentage of those lots will keep buildout roughly the same. In fact, the more lots that are created in this district, the more likely site amenities such as landscaping and walkways will consume developable area and slightly reduce the overall buildout potential.

Today, depending on a property location, business owners are allowed to develop or "cover" 30 to 40 percent of their lot. These restrictions were put in place to control growth, as mentioned above, but also to ensure that a healthy amount of open space is retained for the purposes of aquifer protection. As such, the zoning approach developed for this project **does not** propose to reduce the overall amount of open space that would be created in the CH-2 District under today's regulations. Rather, the proposed framework would provide more flexibility in how the open space is distributed through the site, and more guidance relative to the intended uses for open space in the district.

Similar to the discussion of parking, the open space requirements for the existing CH-2 District treat each parcel in the district as an isolated development area. Open space needs to be provided on each parcel as a function of "left-over" land that was not targeted for development. This regulatory framework has created two basic conflicts with the overarching goal of creating a walkable, coordinated, mixed-use district. First, requiring open space (indirectly through lot coverage restrictions) on each lot ignores the fact that some lots will be extremely well-suited to higher levels of development while others are more suited to open space preservation. Areas in which it is possible to capture higher levels of pedestrian traffic should be concentrated with higher volumes of commercial development to optimize their economic potential and facilitate walkable access between shops, offices, and homes. Second, property owners are not being provided any guidance relative to how open space might be sited in order to create amenities in the village center rather than just "left-over" spaces.

To remedy the first conflict, from a zoning perspective, it will be essential to provide each property owner with the opportunity to set aside open space in a flexible manner. Similar to the approach to parking requirements, property owners need to demonstrate that they are providing enough open space within the district without being relegated to providing it "on-site". For example, if a property owner has ten acres of land and six acres need to be set aside pursuant to the Water Resource Protection District, the property owner should be able to provide those six acres of open space anywhere within the district. In this

manner, the aggregate open space goals will be achieved, allowing for high levels of aquifer recharge in these areas.

Further, parcels with high economic value can be developed to higher levels and open space can also be integrated into site design in a way that provides an amenity to residents as well as a benefit to the aquifer. If property owners are encouraged to establish open space in a meaningful manner, larger public spaces and strategic connections will be developed in the district.

To effectively illustrate the advantages of incorporating a more flexible approach to lot coverage, open space, and parking requirements, HW has developed a series of conceptual designs depicting the site development patterns that could result from different regulatory schemes. These figures show an evolution of site development patterns beginning with a site modeled after the existing zoning framework and progressing with sites that display the inclusion of regulatory strategies described herein.

Figure 11 illustrates the current development patterns exhibited in the East Harwich Village Center. This pattern is the result of zoning regulations that require each lot to provide all of its parking and open space requirements on-site. The outcome is a development site that hinders pedestrian mobility, does not allow for the creation of meaningful open space, and provides little flexibility for innovative site design. Figure 12 illustrates a potential development pattern that could evolve through modest amendments to zoning requirements in the district. Most effective among these amendments would be minor reductions to minimum parking requirements, and allowances for off-site and shared parking. The primary improvements displayed in Figure 12 are a higher level of pedestrian connectivity between buildings, the creation of accessible open space, and reductions to impervious cover.

Figure 13 illustrates a development pattern that could evolve through incorporating changes to parking design, but also through incentives for mixed use within a clearly articulated design framework. The primary improvements in the resulting site include the highest level of pedestrian connectivity between buildings, the most centrally placed and accessible open space, and an orientation between buildings and streets that most closely resembles the traditional New England “village scale”. From a conceptual perspective, Figure 13 most closely represents the vision articulated for the EHVC by the Collaborative.

4. Building Height

Building height in the existing CH-2 District is limited to 30 feet or 2 ½ stories. This effectively limits development in the area to two usable stories from an architectural perspective. In order for the area to achieve its goals as a mixed-use village center, the community should consider raising the maximum height to one that would allow for three-story development under special circumstances.

Development at a height over 30 feet or 2 ½ stories could be presented as part of a Special Permit density bonus associated with Transfer of Development Rights (TDR, see Section IV.D below).

Another important consideration relative to building height is potentially requiring a minimum of two stories for new development in the EHVC Overlay,

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East Harwich Village Center
Existing Regulations

Figure 11

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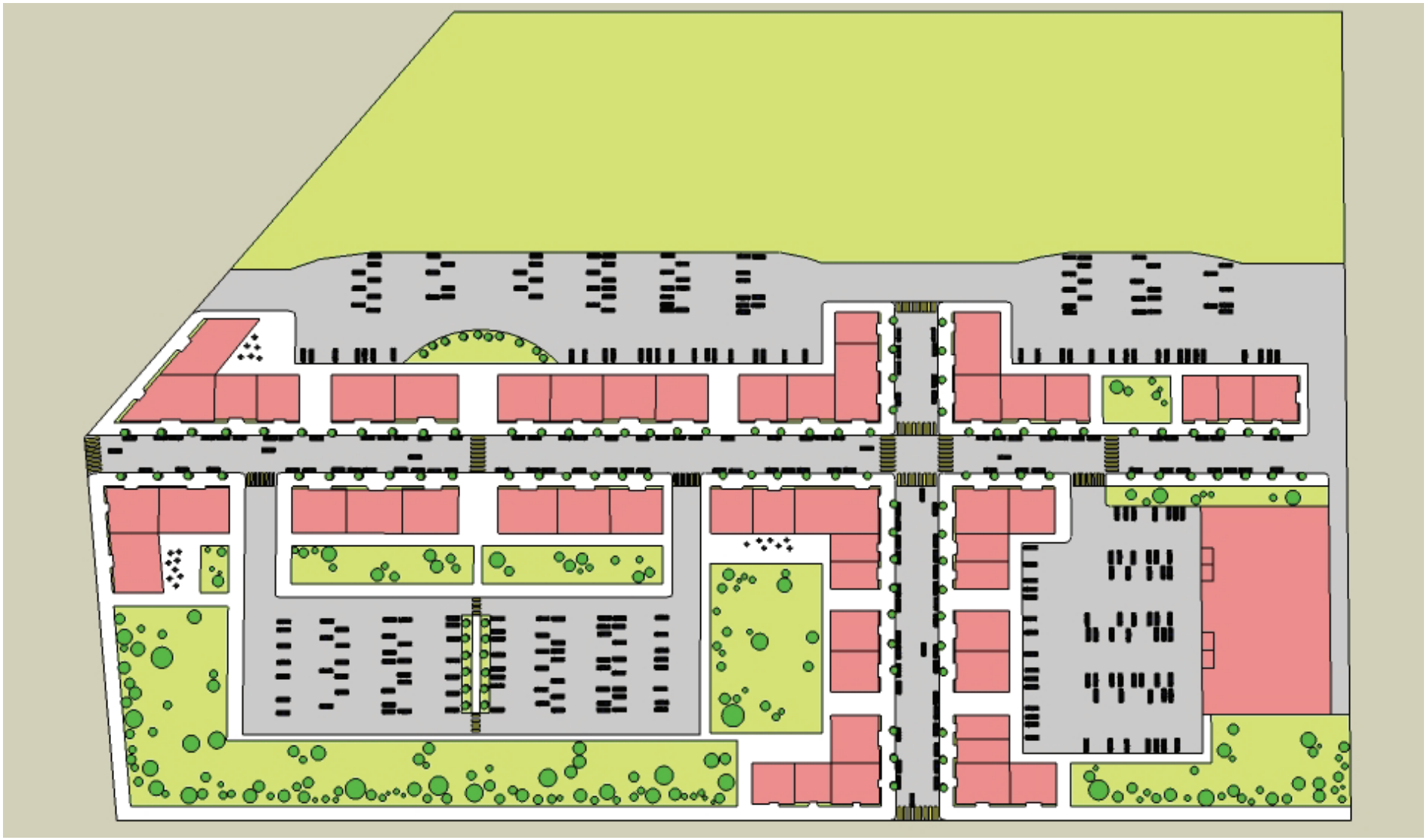
East Harwich Village Center
Reduced Parking Standards

Figure 12



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East Harwich Village Center
Reduced Parking Standards
Mixed-Use Allowances
Design Guidelines

Figure 13

or along Routes 39 and 137 at a minimum. Even in the smallest historic New England Villages, single-story buildings rarely dominate the streetscape as it has always been recognized that "top-of-the-shop" housing or lower traffic non-residential uses add to the vibrancy and critical mass of pedestrians integral to local economic centers. From an architectural perspective, taller buildings lined along a street edge create a sense of enclosure for both motorists and pedestrians. In these environments, motorists are compelled to slow their travel speeds and look for points of interest or available parking. Pedestrians enjoy a streetscape where it is easy to visit a variety of establishments and spend more time in a place they view as a "destination" rather than a quick stop to run a single errand.

It is important to recognize that requiring a second story on all new buildings may make it more difficult for certain uses to be constructed. Restaurants are a primary example of this issue. Although some developers may be well accustomed to developing multiple stories above restaurants, others may be uncomfortable with the technical design, costs, and increased insurance requirements associated with higher levels of fire protection and unique exhaust/ventilation requirements. Exceptions can therefore be written into local zoning that reduce these burdens through the use of architectural "step back" designs without losing the overall massing and scale required for a walkable New England village.

5. Use Regulations

    a) General. The district will encourage a balanced mix of uses to allow for a diversity of residential and commercial properties within the area. Although residential uses are currently allowed within the CH-2 District to a very limited extent, there is little incentive to pursue this area as a mixed-use district under the current regulations. Allowing for mixed-uses that include multi-family residential is a major component to encouraging a walkable village in which one can live, work, and shop within the core of the village. This greatly reduces the need for vehicle trips for those residents living within the village and creates a critical mass of site users to support a viable center of activity.

        To achieve the vision for the EHVC as set forth by the project guiding principles, multi-family residential use shall be allowed in the EHVC as part of multi-story development in a by-right context. It is important to note that within the overall zoning framework, an extensive amount of open space will be required consistent with today's requirements. As a result, developable land will be at a premium. For each lot to achieve its full economic potential, commercial uses should be required to occupy the ground floors of all buildings. In cases where residential and commercial uses share a building, residential uses shall occupy the upper floors as is consistent

with the "top of the shop" development pattern exhibited throughout village scale developments across New England.

b) Formula Businesses. The term "formula business" refers to a particular type of service-oriented chain establishment. The Town of Nantucket's Zoning Bylaw, for example, defines a formula business as follows:

"A type of retail sales establishment, restaurant, tavern, bar, or take-out food establishment which is under common ownership or control or is a franchise, and is one of 14 or more other businesses or establishments worldwide maintaining three or more of the following features:

(1) Standardized menu or standardized array of merchandise with 50% or more of in-stock merchandise from a single distributor bearing uniform markings.

(2) Trademark or service mark, defined as a word, phrase, symbol or design, or a combination of words, phrases, symbols or designs that identifies and distinguishes the source of the goods from one party from those of others, on products or as part of store design.

(3) Standardized color scheme used throughout the interior or exterior of the establishment.

(4) Standardized uniform including but not limited to aprons, pants, shirts, smocks or dresses, hat, and pins (other than name tags)."

The manner in which these businesses are defined in various bylaws and ordinances varies slightly across the country. The various thresholds within the definition, such as the number of businesses in the chain or the amount of stock from a single distributor can vary. However, the purpose for identifying these businesses is almost always for one of two reasons: 1) to prohibit them from historic districts or other areas of special concern; or 2) to provide more regulatory control over the design of these businesses as their generic appearance can detract from the village atmosphere that so many communities are looking to create.

In the case of the EHVC Overlay, using a Special Permit process to potentially allow for these businesses would provide the Town with the power to deny these uses or strictly condition their approval. Examples of the conditions for approval that would help to ensure the compatibility of these business include strict adherence to the design guidelines associated with the district and consistency with the nine

guiding principles developed during the first phase of the EHVC project.

c) Drive-Thru Facilities. Drive-thru facilities represent a challenging issue for any municipality looking to regulate mixed use centers. These facilities are currently not permitted in this district. Continuing to prohibit drive-thru facilities would be consistent with the guiding principles for this study.

d) Large-Scale Retail. A final important consideration for the EHVC Overlay relative to land use is in regard to the size of individual retailers. Where arterial intersections provide the primary access for motorists, such as Routes 137 and 39, large retail chains find these areas highly desirable and will look to dominate the various quadrants with stores that range from 40,000 to over 100,000 square feet of building footprint. Although these uses can be viable from their own economic standpoint, they can also create a situation where smaller retail stores cannot compete and the village-scale buildings that represent the clearly stated goals for the EHVC Overlay would not likely be successful. Furthermore, large-scale retailers generally rely on site design practices that prioritize the motorist over the pedestrian with extremely large parking lots and limited opportunities for safe walking or bicycling.

   To address these concerns, the Town should consider limiting the size of individual retailers to 20,000 square feet of building footprint. This allows for many smaller national chains to consider doing business in the district, but eliminates the possibility of "big box" retailers establishing themselves and effectively precluding the Town's ability to align the district with many of the nine principles developed during the first phase of the project.

6. Housing Diversity

During the course of discussions with local stakeholders and the Collaborative, the idea of leveraging the development of a mixed use center to help the Town provide a diverse housing stock was a high priority. Several sections of the zoning framework (as well as the buildout analyses) address the desire for classic "top of the shop" housing that will add multi-family opportunities and foster a self-sustaining, walkable village. In addition to this pattern of housing development, other housing issues that are important to address include housing affordability and alternative models such as senior housing or other quasi-institutional models.

a) Affordable Housing. Village centers, because of their compact design and varied architectural styles, provide greater opportunities to

develop a highly diverse housing stock that serves many different demographic groups. Single family home subdivisions simply cannot reach as broad a market with their more uniform approach to design. As a result, the creation of a true village-scale center in East Harwich will provide the Town with a unique opportunity to integrate affordable units into the community in a sustainable manner.

As with many other Massachusetts communities, East Harwich will need to consider aligning its goals for providing affordable housing with the requirements in the 40b statute. In summary, the state requires that each municipality ensure at least 10% of its housing stock is affordable to families that are "low" to "moderate" income households. These designations refer to families making below 50% of the area median income (low income) or between 50% and 80% of the area median income (moderate). Failure to meet the 10% threshold places communities in a position where they may be forced to consider development proposals through the Comprehensive Permit process. These applications can potentially circumvent local zoning and subdivision requirements and remove local control over issues related to density and design. The guidelines for determining how this statutory threshold translates into actual housing targets are provided by the Massachusetts Department of Housing and Community Development (DHCD). Communities are encouraged by the state to develop Planned Production Plans that explicitly identify a municipality's housing needs and strategies for addressing those needs.

In the context of zoning, the development of affordable housing can be accomplished through two fundamental approaches. The first is known as "inclusionary" zoning, which essentially requires a certain percentage of newly developed housing to be deed restricted to affordable sales prices over a specific period of time. The second approach uses incentives to provide developers with density bonuses in exchange for voluntary deed restrictions on a certain percentage of housing units for affordable pricing.

To effectively administer inclusionary zoning in a mixed use environment, it is important to first set limits on the number of housing units that can be developed as a matter of right in the district. For a two-story mixed-use environment, eight units per acre represents a density that can easily be absorbed by the traditional New England village pattern. This density is recommended by HW as a viable base "by right" density. Once the Town has set this limit in the Zoning Bylaw, they would then require a certain number of units to be deed restricted for developments that exceed a certain size threshold. The

bylaw would then allow for a modest density increase as compensation to the developer.

As an example, the Town could adopt a bylaw that requires 15% of housing in the EHVC Overlay to be deed restricted for affordability for any development that includes eight or more units of housing. Under the system described above, if a developer proposed eight units on an acre of land, two of those units would be deed restricted (fractions of units get rounded up). The Town could then allow an additional two units of market rate housing to be developed on the site as compensation. The total number of units developed would be ten, with two units (or 20%) restricted for affordability. Table 10 below shows how these numbers would be calculated for a range of proposals.

An incentive-based approach would work in a similar fashion as inclusionary zoning, except the provision of affordable units would be "voluntary" instead of "required". A developer would be given the option to include affordable housing by Special Permit and receive a density bonus in return. In these programs, where the inclusion of affordable units is voluntary, it is necessary to provide bigger density incentives. As an example, using the eight unit proposal as a model, the bonuses might allow the addition of two market rate units for each of the original eight that would be deed restricted to affordable prices. The Town would need to specify a density cap to ensure the density remains consistent with community character. For this approach, HW recommends a cap of 50% increase over the original yield. In the eight unit example, a developer could restrict two of the original units and receive a bonus of four market rate units. This would result in developing 12 units of housing on one acre (Table 11).

Table 10. Sample of Results for Inclusionary Approach to Affordable Housing Development in the EHVC Overlay

Number of Base Units Proposed	**8**	**10**	**12**	**14**	**16**	**18**	**20**
Number of Affordable Units[1]	2	2	2	3	3	3	3
Number of Bonus Units	2	2	2	3	3	3	3
Total Units	10	12	14	17	19	21	23
Percent Affordable	20.0%	16.7%	14.3%	17.6%	15.8%	14.3%	13.0%

[1] Assumes 15% is required and the resulting calculation is rounded up to the nearest integer.

Table 11. Sample of Results for Incentive Approach to Affordable Housing Development in the EHVC Overlay

Number of Base Units Proposed	8	10	12	14	16	18	20
Number of Affordable Units[1]	2	2	3	3	4	4	5
Number of Bonus Units	4	4	6	6	8	8	10
Total Units	12	14	18	20	24	24	30
Percent Affordable	16.7%	14.3%	16.7%	15.0%	16.7%	15.4%	16.7%

[1] Assumes 15% of the original yield is required at a minimum and the resulting calculation is rounded up to the nearest integer. Also assumes the developer is including the maximum amount of affordable housing that will approach the 50% density bonus.

One of the advantages associated with the inclusionary zoning model summarized above is the predictability involved with the approach. The required percentage of affordable housing is fixed (in this example, at 15%). With the incentive based approach, the Town is never certain whether the voluntary option will be implemented at all. Further, if it is implemented, the developer can choose to provide somewhere between a fixed minimum (in this example 15%) and a fixed maximum (in this example, one which would eventually yield a 50% bonus). That number could vary slightly, especially with larger proposals.

As with many zoning strategies, examining these two approaches presents a fundamental policy question that can only be answered after a thorough community discussion. "Mandating" versus "incentivizing" affordable housing needs to be explored locally before settling on the most appropriate strategy for the community. In either case, it is important to note that each strategy presented in this report never yields an affordability percentage less than 10. This ensures that, in either case, the zoning bylaw is bringing the Town closer to the 10% threshold promulgated by the state when the bonuses are granted.

b) Alternative High Density Housing Models. Developing a mixed use center will provide the Town with the ability to better serve many residents from the perspective of housing affordability, proximity to services and general concerns relative to mobility. Accordingly, the EHVC will provide unique opportunities to integrate alternative housing models into the area. Housing for aging or disabled populations, as an example, can be included through a variety of styles that are well-suited to the mixed use model proposed in this report. The designs used for these developments today often incorporate the very elements that would be required through the design guidelines (Section VI) including open space, pedestrian elements and high

quality architecture. Campus configurations, breezeways, courtyards, gazebos and other similar features are common elements of these developments and lend themselves to easy integration into the fabric of the proposed built environment.

The largest scale of these higher density models are often complexes designed as homes for aging populations in need of assistance. Terms used for these developments include "Age Qualified Villages", "Residential Care Continuums", "Assisted Living Facilities" and others. These complexes can be designed for a variety of demographics ranging from completely independent retirees looking for smaller accommodations closer to amenities, to elderly and disabled people in need of assistance for daily needs and medical conditions.

Regardless of the target demographic, allowing for the potential integration of these communities provides a much more socially sustainable model for housing development. Whether dealing with retirees or disabled populations, integrating this housing into a village setting creates the type of diversity that feeds the success of these settings. In the context of this zoning framework, these uses need to be clearly defined for the EHVC and allowed through a Special Permit process.

7. Low Impact Stormwater Management

Harwich currently has provisions in place that regulate nitrogen loading within new and existing developments. Regulations such as this are an important first step in protecting groundwater quality but they do not address other issues relative to stormwater runoff. Advanced stormwater techniques seek to reduce pollutant loadings from stormwater discharges, reduce peak flow rates to minimize erosion, and maintain or restore chemical, physical, and biological integrity of downstream waterways. To prepare for a comprehensive approach to stormwater management, it is necessary to include provisions that go beyond typical drain and pipe solutions and focus on increasing on-site stormwater recharge. A common benchmark used within advanced stormwater management is to achieve on-site recharge levels equivalent to pre-development (natural) recharge. Attaining this benchmark is a critical component to maintaining a regional hydrologic balance.

The Commonwealth of Massachusetts has recently revised its stormwater management regulations to incorporate advanced techniques. The EHVC will incorporate an approach to stormwater management that is consistent with state regulations and will stress the inclusion of several LID techniques. Examples of such techniques include use of landscaped bio-swales, stormwater planters, and bio-retention basin. Infrastructure techniques include use of "open sections"

roadways with roadside swales as opposed to using roadside curbs. Where curbs are deemed necessary to protect the roadside's edge, other installations such as perforated curbs (that allow runoff to flow into swales) or invisible curbs (flush with the roadside surface) can be utilized to provide better stormwater management.

D. Transfer of Development Rights (TDR) and Allowable Density

TDR is a concept that has been considered for several decades on Cape Cod. The existence of historic village centers or more recently developed strip malls combined with the seemingly innumerable sensitive resources speaks to the possibility that this complex planning tool may be useful across Cape Cod. If it were possible to simultaneously relieve development pressures in sensitive areas while enhancing the walkability, affordability and economic viability of commercial areas, many of the goals already identified in local Comprehensive Plans would be achieved. Unfortunately, TDR has had limited applicability on Cape Cod as it is a very complex tool and may require density incentives that some communities are not ready to accept. Furthermore, many communities on Cape Cod have significant development limitations resulting from a lack of infrastructure. In East Harwich, it is important to note that the use of TDR will be made more difficult in the absence of centralized wastewater disposal. Current discussions within the community are exploring the idea of centralized wastewater disposal to help protect the quality of groundwater, the health of coastal embayments, and, where appropriate, to encourage the redevelopment of vibrant mixed use communities.

1. Transferring from Residentially Zoned Areas to the Village Center

The goals established by the Collaborative to guide the process of re-zoning EHVC clearly call for more efficient use of land and higher levels of density in the village core as compared with the outlying residential areas. There is probably no planning tool better suited to accomplishing these goals than TDR. The concept of TDR essentially involves quantifying the amount of "development rights" associated with a piece of land, then transferring these rights to another piece of land. The result of this process is that the ability to develop on the original piece of land is removed through a preservation restriction, while the ability to develop on the second piece of land is increased.

In TDR, the preserved area is known as the "sending area" and the highly developed area is called the "receiving area". Within the East Harwich study area, the most readily identifiable sending area is the outlying residentially zoned land. Likewise, the logical receiving area is the EHVC as identified by the Collaborative as a prime candidate for increased economic development and the integration of housing into a walkable village setting. Implemented in this fashion, the primary advantage to this regulatory tool is that it accomplishes two

major objectives with a single transaction. First, open space in sensitive areas is permanently preserved instead of being developed into suburban sprawl. Second, areas with infrastructure can receive higher levels of development and increase the economic contributions of districts well-suited to increases in density.

The disadvantage of TDR is that it is one of the most complex zoning tools for achieving better development patterns. Property values play an important role in implementing TDR and, because property values can change dramatically over short periods of time, TDR programs may need to be changed annually in order to reflect these market fluctuations. Furthermore, the level of planning and analysis required for a successful transaction places a much higher burden on the applicant. Incentives must be very attractive in order to entice developers into a TDR permitting process instead of taking the path of least resistance with a lower scale by-right development option. These development incentives are determined primarily by the increases in density allowed through the TDR. Communities need to carefully consider whether they can accept the levels of density increases needed to make a TDR program viable.

Based on discussions with the Collaborative and feedback from stakeholders at public meetings, the by-right development options in the EHVC should represent what would minimally be required to create a viable pedestrian friendly village. As such, HW recommends that two-story mixed use serve as the "baseline" for what developers can propose without any special permits (see previous sections on Building Height and Allowable Uses). In a situation where flexible parking provisions exist in a mixed use environment and multi-family housing will be the predominant form of residential development, residential densities can significantly increase over what was originally allowed. Unfortunately, densities at this level for two-story structures could promote the development of buildings that have a more sprawling footprint and tend to move away from the attractive rooflines and architectural features traditional for Cape Cod. It will therefore be advisable to have a density cap built into the zoning to ensure that building scale and massing remain compatible with the vision for this district. A cap of eight units per buildable acre for standard by-right development, for example, would represent a more "human scale" pattern of development. This cap would encourage the development of smaller buildings throughout the district and the use of classic New England "top of the shop" housing.

In order to make TDR an attractive option for the development community, the allowable density for residential development would need to be increased beyond the baseline by-right allowance. Similar to the by-right allowances, these increases should be considered in the context of building scale and massing in the district. If two-story structures represent the highest possible by-right building that developers can hope to construct, then a successful TDR transaction could allow an additional story to be added through a Special Permit process. For attractive three-story buildings that incorporate housing on the top two floors,

densities up to 16 units per buildable acre can be accommodated in a manner that uses all of the more attractive elements of Cape Cod architecture.

2. Transferring Development Rights within the EHVC

A second form of TDR that should be considered for the study area is a program that would allow for development rights within the EHVC to be moved from one parcel to another inside the EHVC. This "intra-district" approach would provide higher levels of flexibility in site design, allowing for increased densities on a receiving parcel while a sending parcel becomes well-situated public open space. The sending area parcel could become a park, while the receiving area parcel becomes a well designed three-story mixed use building. Similar to the "inter-district" approach described above, these transactions would require an increase in allowable densities and building height to accommodate the transfer of development rights.

In order to properly execute the use of this form of TDR, limitations will be required in the zoning to ensure that the TDR process is not abused by applicants. For example, if an applicant is approved to TDR from one parcel to another within the EHVC, that "sending" parcel must be restricted from using TDR to re-establish its development rights. Future applications cannot include the transfer of development rights to that restricted parcel from within or from outside the EHVC. The bylaw would likely use a series of mandatory conditions within the special permit process to ensure that any land dedicated as open space within the TDR process shall remain that way as the village continues to mature.

3. Tracking Mechanisms for TDR

When implementing TDR, it is necessary to provide clear mechanisms for tracking transactions both within and outside the permitting process. To that end the Town may consider a couple of different models that have been used by other communities. The first model is the development of a TDR Bank that is administered by the Town and enforces the recording, transfer of ownership and extinguishing of development rights during all phases of the process. This model has proven effective in many other jurisdictions outside of Massachusetts and provides a predictable mechanism for property owners, municipal officials and developers. The potential disadvantage with this approach is that a bank may be cumbersome to establish as the Town will need to consider which departments become involved, whether new staffing is required, and all of the new local enabling legislation that will be required just to establish the entity.

A second more flexible model involves the use of TDR Certificates in a less centralized approach. This model follows the following process:

a) Property owners in the Sending Area can submit a yield plan to the Town that establishes the potential number of units that could be developed.
b) Once the Town agrees to the potential yield, the property owner places a conservation restriction on the property removing the ability to develop these homes.
c) In return for the conservation restriction, the Town provides a Certificate of Development Rights officially vesting that number of development rights with the bearer of the certificate.
d) Developers may then negotiate with the bearer to purchase any or all of those rights.
e) At any time, the Certificate of Development Rights can be sold, bequeathed, or gifted to another party. However, any such transaction must be recorded with the Town so that they can track ownership and, where applicable, extinguish any development rights that are being used to increase density in the Receiving Area.

E. Physical and Market Limitations on Density Bonuses

It is important to note that two potential density bonuses are proposed for consideration in this report. One is the TDR bonus discussed in the previous section. The other is the potential density bonus associated with incorporating affordable housing into a proposed development. When considering the interplay between these bonuses, it will be important for the Town to consider what is physically possible under the zoning constraints (i.e., What can we fit under the maximum height?) and what is economically feasible in the marketplace.

The EHVC, as discussed in this report, would have a "by right" allowable height of two stories and a maximum "bonus" height of three stories. This one story differential does not provide a significant amount of space to absorb density bonuses. For example, depending on how these bonuses are structured, it may not be possible for a developer to fit both TDR and affordable housing bonuses in a single story. Furthermore, attempting to include both bonus mechanisms into a proposed development may not be economically feasible. Therefore, considering the limited amount of space available to absorb these bonuses, the EHVC bonus structure will likely require an "either/or" approach. In other words, if a developer is considering the use of TDR, he/she may need full or partial relief from affordable housing requirements that are part of a mandatory inclusionary model (see Section C.6.a). The intricacies of how these bonuses fit or do not fit with one another will be determined by a closer examination of the market realities associated with buying development rights and subsidizing affordable units.

V. Zoning Framework Summary

1. Map Amendments

Item	Description
Re-delineation of the CH-2 District	Administrative amendment designed to facilitate redevelopment.
Re-delineation of the SPSD	Administrative amendment designed to limit confusion.
East Harwich Special Residential Overlay District	Overlay requiring LID housing and allowing development rights to be transferred.
East Harwich Village Center Overlay District	Overlay district requiring walkable design and allowing development rights to be received.

2. East Harwich Special Residential Overlay District

Item	Description
Minimum residential lot size at 100,000 square feet in western quadrant and 40,000 square feet in the northern quadrant	Keep minimum residential lot sizes existing today.
Street standards for solar orientation	Orient streets and front/rear of buildings along solar pathway.
"PV Ready" buildings	Incorporate pre-designed roof surfaces for solar panels.
Connectivity	Require walkways/bikeways to village core.
Open Space	Adopt by right Open Space Residential Development.
Roadway Design	Reduce roadway widths and open channel drainage.
Sustainable Landscaping	Limit use of turf and create specifications for plant selection, high performance sprinklers, etc.
Solar Reflectance Index	Adopt LEED ND standards to reduce heat island effect.

3. East Harwich Village Center Overlay District

Item	Description
Baseline Height and Density	Create density cap of eight units per acres for two-story and 16 units per acre for three-story as part of affordable housing bonus and/or TDR.
Dimensional Standards	Optimize pedestrian mobility with flexible setbacks, roadway designs and parking lots.
Flexible lot coverage standards	Concentrate open space to create usable parks and natural areas.
Flexible parking standards	Revise minimum and maximum requirements; provide shared parking and off-site parking provisions.
Baseline height restriction of 30 feet	Raise height restriction and create incentives as part of TDR.
Building placement	Allow multiple principal buildings on one lot and use buildings to "frame" streets.
Landscaping and Solar Reflectance Index (SRI)	Incorporate landscaping requirements to reduce heat island effects and treat stormwater where appropriate; and LEED ND standards to reduce heat island effect.
Allowable Uses	Allow diverse types of multifamily residential. Regulate formula business and prohibit drive-thru facilities.
Affordable Housing	Consider inclusionary or incentive based approach.
Low Impact Stormwater Management	Incorporate State standards and require specific LID landscaping and infrastructure techniques.

4. Transfer of Development Rights

Item	Description
Sending and Receiving Areas	Add two new overlay districts and allow for "intra-district" transfers within the EHVC.
Permanent Restrictions	Require conservation restrictions in outlying residential district and on any newly established park land in the EHVC where appropriate.
Height and Density Bonuses	Create incentives to increase height to three stories and density to 16 units per acre within the receiving area.

VI. Design Guidelines

An integral part of this phase of the project is the development of design guidelines that will assist local authorities in shaping development proposals in a manner that suits the goals of this district. Initial discussions with the Collaborative made it clear that design guidelines should be used in a manner that frames the desired aesthetic character of the district without creating standards that are so prescriptive that they would inevitably create a homogenous group of buildings with very little character. Design guidelines for the EHVC should provide room for interpretation relative to many elements and should not serve as a disincentive for any future development in the area. As such, design guidelines will be required to address a wide array of issues. Some of the broadest aspects of site design will need to be included along with fairly prescriptive language on individual building elements.

The design guidelines developed for this project must be considered "preliminary" as it is not possible to anticipate all of the issues that will need to be addressed in these guidelines until the new Zoning Bylaw provisions are adopted. The scale of development, the final allowable uses, minimum lot sizes and density bonuses will each have a significant effect on the substance of design guidelines. For example, acceptable building heights will inform the need for protective site lines on roof top infrastructure. And the amount of parking and loading required for each use will affect the manner in which sites are connected or buffered from one another. With that understanding, it is possible to anticipate many of the design elements that will be required to foster the development of a truly walkable mixed-use environment that successfully connects to the architectural heritage of Harwich while incorporating 21st century planning concepts. The following text represents a starting point for how design guidelines may be incorporated into the Zoning Bylaw for EHVC.

East Harwich Village Center Design Guidelines

A. Purposes

In the EHVC, the following architectural and site design guidelines are provided to establish and eventually maintain the district as a vibrant pedestrian-friendly mixed use center. The standards and guidelines recognize the importance of consistency in building materials, massing, scale, articulation, design elements and motifs that represent the region's architectural heritage and shall be used to shape development that is consistent with the goals of the Town as set forth in [INSERT PROPER ZONING BYLAW REFERENCE]. It is not the intent of these standards and guidelines to create a homogenous district in which all buildings closely resemble one another in a unified design concept. Rather, these standards and guidelines provide a framework for development that will ensure a high quality of design that is consistent with the most appealing aspects of Harwich's community character.

B. Site Design

(1) The location of buildings, parking areas, walkways, outdoor gathering places, landscaping, utilities, loading areas, dumpsters, automobile access, travel lanes, and signs shall reflect a thoughtful approach that focuses primarily on providing optimal access and mobility for pedestrians on and between sites.
(2) Parking areas shall allow for easy access between lots for automobiles and pedestrians. Where feasible, parking lots shall be connected by a travel lane within the rear yard to provide an opportunity for pedestrians and motorists to pass from one site to another without using established rights of way.
(3) Within the front yard setback, clear pedestrian pathways shall be provided between buildings and across automobile travel lanes in the form of raised or distinct surfaces such as stamped concrete or grid pavers, arcades, colonnades or other similar features.
(4) In complexes with multiple principal buildings, landscaped areas with walkways, courtyards or arcades shall be used in conjunction with compact site design to bring buildings closer together and enhance connectivity between them for residents and customers.

C. Building Placement

(1) Building setbacks shall comply with the applicable provisions in Zoning Bylaw.
(2) On sites with multiple principal buildings, site design shall be as compact as is feasible. To the greatest extent practicable, pedestrians shall not need to cross parking areas to move from one building to another.

D. Loading, Garages and Driveways

(1) Loading docks, service areas and trash disposal facilities shall not face a public gathering space or a public street.
(2) Garages shall be subordinate in size, height and location to the overall building and shall be located with entrances behind the principal building(s);
(3) Common or shared driveways and parking lots are encouraged to reduce curb cuts and enhance pedestrian circulation.

E. Building Size, Height & Scale

(1) In order to modulate their scale, multi-story buildings shall clearly articulate the base, middle and top of the building through the use of cornices, stepbacks, borders of distinct material or other articulating features.

(2) Larger buildings with long façades shall articulate the façade with varied rooflines, distinct signage for multiple tenants, awnings, arcades, pilasters, columns, recessed spaces and/or entrances and any other features that serve to add texture to these longer façades. Unbroken façades in excess of fifty (50) feet shall not be allowed.

(3) Large, flat, unadorned, blank walls shall be avoided for any side or rear walls of buildings. Where windows are not feasible, raised or recessed vertical surfaces may be used in conjunction with awnings, window-shaped depressions and decorative lighting to make these surfaces more attractive.

(4) Awnings shall be made of canvas and/or weather-coated materials or glass. Each awning should be distinct from its neighbor and continuous awnings over several stores are discouraged.

F. Entranceways

(1) All buildings shall have a principal façade and entry (with operable doors) facing a street or other area dedicated to pedestrian circulation. Buildings may have more than one principal façade and/or entry. Primary entrances not facing a street shall open onto sidewalks or other pedestrian features at least ten (10) feet in width.

(2) Main entrances shall incorporate architectural features that draw attention to the entrance. These features may include covered porches, porticos, recessed doorways and awnings.

(3) Street level frontage shall be primarily devoted to entrances, shop windows or other displays.

G. Fenestration

(1) The width-to-height ratio of bays in façades above street level shall have a minimum width to height ratio of 1:2. Multiple bays may be placed immediately adjacent to one another in order to create larger window areas.

(2) Mullion pattern and thickness shall reflect traditional New England design with broad decorative surfaces between windows. Any mullion finishes that would be highly reflective or industrial in nature shall be discouraged.

(3) Clear, non-reflective glass with minimal tinting shall be used at street level to allow maximum visual interaction between pedestrians and the interior of the building.

(4) Street level façades shall have a transparency of at least sixty (60) percent.

(5) All windows (except storefront windows) shall be operable.

H. Dormers

(1) On pitched rooflines, dormers shall be used to break up roof surfaces and shall be provided at a minimum frequency of one per thirty (30) feet or fraction thereof. Where the provision of dormers would preclude the successful installation or functioning of solar panels, this standard shall not apply.
(2) Dormer styles may include doghouse, eyebrow or shed dormers.
(3) Windows shall fill the face wall of the dormer to the maximum extent practicable and match the windows in the rest of the building.

I. Roofline Articulation

(1) The roof design shall provide a variety of building heights and varied roofline articulation. Local models reflecting traditional Cape Cod architecture shall be considered in the selection of roof forms. These models generally include gables, gambrels and any jointed configuration of these styles. Decorative spires or towers may also be used to articulate rooflines and to provide focal points within a complex of principal buildings.
(2) Industrial style metal roofing visible from the street shall not be permitted.
(3) Downspouts shall match gutters in material and finish.
(4) Utilities and protuberances through or on the front of roofs are highly discouraged and should generally be shielded from view.

J. Building Materials

(1) Materials and building treatments shall be used that reduce the visibility of buildings from distant vantage points and shall be consistent and compatible with traditional New England design.
(2) Where more than one material is used, traditionally heavier materials (stone, brick, concrete with stucco, etc.) shall be located below lighter materials (wood, fiber cement board, siding, etc). The change in material shall occur along a horizontal line, preferably at the floor level.
(3) Natural materials, such as brick, stone, wood/concrete clapboards and shingles, and slate shall be used in contrast with industrial materials such as unfinished concrete, sheet metal, asphalt shingles, vinyl and plastic synthetic siding and windows and insulated steel doors; especially those that can be seen at the pedestrian level.

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K. Landscaping

(1) Requirement for landscaping and landscaping plans in the EHVC shall be consistent with those listed in the Zoning Bylaw under section (INSERT APPROPRIATE ZONING BYLAW REFERENCE).

Commentary: For this particular guideline, the Zoning Bylaw would provide a fully prescriptive set of standards as described in Section IV.B.1.e of this report. Landscaping is recommended for the Zoning Bylaw, as opposed to the Design Guidelines, in order to strengthen the Town's capacity to enforce these standards.

L. Lighting

(1) Light standards shall not exceed fifteen (15) feet in height.
(2) Light posts and fixtures shall be decorative in nature and shall not use standard industrial-finish poles or shades.

M. Signage

(1) Wall mounted or projected signs should typically be located above the ground floor storefront and just below the second floor windows. Signs should not obscure architectural features or windows and should be integrated with the design of the building.
(2) Sign colors should be selected to enhance sign legibility for both day and nighttime viewing. Contrasting colors can be used effectively to increase clarity. Sign colors and finishes should be compatible with the color of the building or development.
(3) Sign materials should be of high quality and compatible with the design of the building and façade on which they are placed.
(4) Externally illuminating signs should have downward-directed, wall mounted lights with fully-shielded decorative lamps that do not obscure the graphics of the sign.
(5) Internally illuminated plastic or fiberglass cabinet (can) signs are not allowed. Where internal illumination or back-lighting is proposed, solid letters (reverse channel) are a preferred alternative.
(6) Signage on awnings is permitted only on the apron portion of the awning for business identification or to advertise particular goods and/or services.
(7) Free-standing single pole (lollipop) signs are not allowed. Where free-standing signs are proposed, monument or structured signs are preferred. Free-standing signs should incorporate design details, materials and colors of the associated buildings. The base or support elements of freestanding signs should be integrated with the surrounding environment and should incorporate ornamental landscaping where possible.

APPENDIX A: BUILDOUT ASSUMPTION AND METHODOLOGY

1. Buildout Model Assumptions and Inputs

The buildout model was structured to answer specific questions about the development potential of the EHVC. The majority of the model inputs are based on zoning standards. In many cases, zoning standards are not easily quantifiable so additional interpretation was needed to determine best incorporate them into the calculations. Many of the model inputs were based on best engineering practices that were the result of HW's experience in overseeing site development. A discussion of the underlying principles behind each input and its implications on site development are provided below. Summaries of each assumption and input for the four development scenarios are attached to the end of this appendix.

a. Average building height in usable stories: This input value is based on zoning restrictions intended to maintain an average building height across the district. The current zoning standard within the EHVC stipulates buildings may be no taller then "30 feet" or "2.5 stories" (Section VI. Table 3: Height & Bulk Restrictions, CH-2 District). It is important to note that the input value should be interpreted to mean "usable stories", so that half stories that serve strictly as storage space such as attics or basements are not included in this input. Therefore, if the intention of the current zoning standard of 2.5 stories is to create two-story buildings with additional attic space then the model's input should be entered as two stories. Correspondingly, an input of 2.5 stories should be interpreted to represent a mix of two- and three-story buildings.

b. Percent of lot dedicated to utilities: This input value is based on best engineering practices to account for the typical area needed to supply the site with stormwater and wastewater infrastructure. It is important to note that the land area dedicated to utilities is subtracted strictly from the buildable portion of the lot as dictated by the lot coverage restriction, and may not include space dedicated to parking or building envelope.

c. Average exterior area needed per parking space: This input has been determined through analysis of the Harwich dimensional regulations for parking as well as best engineering practices. Harwich zoning regulations incorporated into this analysis include: Parking Space and Aisle Design Criteria (Section IX. 9.3.5.11), and Parking Landscaping Requirements (Section IX. 9.3.6). Although the exact figure may vary on a site-by-site basis depending on parking lot size and layout, the input value represents an approximation of the average amount of exterior area needed to support one parking space. This area includes consideration for the parking stall,

overhang strip, vehicular circulation lanes, access to/from parking areas, and landscaping.

d. Percent of floor space dedicated to residential: This input is perhaps the most discretionary of all the values associated with the model. The input represents an estimate of how much floor space within the CH-2 District will be dedicated to residential use and is therefore highly sensitive to market forces that will fluctuate over time.

e. Average interior space needed per housing unit: This input attempts to account for a range of unit types from studio to two-bedroom apartment units. This input is also discretionary depending on the Town's housing goals for the village and may be affected by other zoning restrictions such as those for age-restricted or affordable housing. This interior space includes consideration for the housing unit and shared spaces such as hallways, staircases, and lobby areas.

f. Parking spaces per housing unit: This input is based on zoning requirements for multi-family or apartments that are "incidental to commercial use". Although the language "incidental to commercial space" may be interpreted in different ways, for the purposes of this analysis the corresponding requirement of 1.5 spaces per unit was applied (Section IX. 9.3 Off Street Parking Schedule). This is an appropriate requirement for meeting the demands of housing units within a mixed-use district.

g. Percent commercial space dedicated to retail, office, and restaurant: These three inputs are based on an appropriate land use profile for village center developments. As with estimating floor space for residential uses, these percentages are subject to future fluctuations in market demand. However the assumed values of 45% retail, 45% office, and 10% restaurant approximate a suitable formula for mixed-use development within the village setting.

h. Parking spaces required per 1,000 square feet (SF) of floor space for retail, office and restaurant: These three inputs are designed to reflect the zoning standards for parking requirements for these commercial uses. The model was initially developed to represent the current minimum zoning requirements which are as follows: (Section IX. 9.3 Off Street Parking Schedule)

- Retail: one space per 150 square feet of floor space dedicated to customer use or display, but not less then 70% of the total area.

- Office: one space per employee maximum shift, plus one space per 250 square feet of floor area.
- Restaurant: one space per four seats including outdoor seating, plus one space per employee at maximum shift.

For the purpose of efficient integration into the buildout model, each of these zoning standards was converted into an equivalent value that approximates the number of spaces required per 1,000 square feet of interior space. After the conversion, the inputs representing the current standards became: retail=5.0 spaces, office=6.9 spaces, and restaurant=4.4 spaces per 1,000 square feet. These new values include assumptions for a typical number of maximum shift employees per square feet within each commercial use, and 75% of floor space dedicated to customer use within retail square footage.

Model inputs for minimum parking requirements, more so than others discussed herein, present a favorable opportunity for reducing current standards to reflect more appropriate requirements within a village center setting. Rationale for reducing requirements includes the proximity of the lots to each other, the intended inclusion of pedestrian amenities, and the district's mixed-use profile. Reducing commercial parking standards can have a dramatic impact on the amount of area available for building envelopes or open space.

i. Shared parking reduction for commercial requirements: Shared parking provisions are not currently included within the regulations for the EHVC, thus this value should be set to 0% to represent current zoning. However, given the opportunity to pursue such innovative parking strategies, a shared parking input was included for the purpose of projecting how these adjustments could impact future development patterns. Shared parking provisions are most efficiently incorporated into districts that exhibit a mix of uses with divergent peak parking demands and with parking lots connected by pedestrian amenities. Accordingly, the intended development of the EHVC suggests that it would make an appropriate candidate for the inclusion of shared parking provisions. Although the zoning provisions that would provide for shared parking are more complex, the results of these standards will create overall parking reductions ranging from 10% to 40% depending on how aggressive the allowable reductions are and on what the emerging use profile turns out to be.

j. Coverage restrictions: The newly formatted buildout model includes eight potentially applicable standards for lot coverage and building coverage restrictions within the EHVC. These standards within the study area

include those for the underlying district (CH-2), and the Water Resource Protection District and Six Ponds Special District (designated District of Critical Planning Concern). The current regulations are as follows:

- Section VI. Table 3: Height & Bulk Restrictions[1]
  - CH-2:
    - Maximum Building Coverage: 30%
    - Maximum Site Coverage: 70%
  - Water Resource Protection District (Overlay):
    - Maximum Building Coverage: 20%
    - Maximum Site Coverage: 40%
- Section XVII. Six Ponds Special District (Overlay)
  - Six Ponds Zone A (areas within 400 feet of major roadways):
    - Maximum Building Coverage: 10%
    - Maximum Site Coverage: 30%
  - Six Ponds Zone B (areas farther then 400 feet of major roadways):
    - Maximum Building Coverage: 10%
    - Maximum Site Coverage: 15%

Lot coverage restrictions limit development in a very direct way to ensure that only a certain percentage of the lot is developable. It is important to note that any space dedicated as open space through a lot coverage restriction is not used for any other purpose such as parking areas, land dedicated to utilities, and landscaping requirements within parking lots. The buildout model inputs were initially developed to project the current zoning standards as a baseline for analysis. However, the current zoning standards provide only one possible buildout scenario for the EHVC. As examined with the Buildout Scenarios present in Section III of this report, alternative buildout scenarios can be explored by adjusting any of these assumptions.

2. Model Outputs

The outputs of the model include a variety of calculations associated with potential CH-2 development. Most notably, these outputs include those for non-residential floor space

[1] Although the title of this section of the Zoning Bylaw is "Height & Bulk Restrictions", only bulk provisions are summarized here for the purposes of this discussion.

and the number of residential units that can be expected under various conditions. A total of 17 different statistics are provided for each buildout scenario, the most notable include:

- Total floor area and parking demand for restaurant use;
- Total floor area and parking demand for office use;
- Total floor area and parking demand for retail use;
- Total number of residential units with associated parking demand; and
- Total area required for parking.

These aggregate outputs were also grouped into different CH-2 District quadrants to better understand the development potential of each area within the EHVC.

East Harwich Village Center Buildout Analysis

Scenario 1: Existing Conditions

Inputs

General

Average building height in usable stories	2	*"Usable stories" excludes attics/basements used for storage.*
Percent of lot dedicated to utilities	5%	*Based on Best Engineering Practices.*
Average exterior area needed per parking space (SF)	350	*Includes parking stall, travel lanes, access ways, landscaping.*

Residential

Percent building space dedicated to residential	0%	*Assumed percentage*
Average interior space needed per housing unit (SF)	1000	*Includes housing unit, shared hallways, staircases, lobbies.*
Parking spaces per housing unit	1.5	*Based on off-street requirements for multi-family residential.*

Commercial

Percent commercial space dedicated to retail	45%	*Assumed percentage*
Percent commercial space dedicated to office	45%	*Assumed percentage*
Percent commercial space dedicated to restaurant	10%	*Assumed percentage*
Percent building space dedicated to retail	45.0%	
Percent building space dedicated to office	45.0%	
Percent building space dedicated to restaurant	10.0%	
Spaces required per 1,000 square feet of retail	5	*Based on current zoning requirements.*
Spaces required per 1,000 square feet of office	6.9	*Based on current zoning requirements.*
Spaces required per 1,000 square feet of restaurant	4.4	*Based on current zoning requirements.*
Shared parking reduction for commercial requirements	0%	

Coverage Restrictions

C-H-2 Building Coverage Restriction	30%	*Based on current zoning requirements.*
C-H-2 Lot Coverage Restriction	70%	*Based on current zoning requirements.*

Overlay Coverage Restrictions

Water Resource (WR) Building Coverage Restriction	20%	*Based on current zoning requirements.*
Water Resource (WR) Lot Coverage Restriction	40%	*Based on current zoning requirements.*
Six Ponds (6P) Building Coverage Restriction- Zone A	10%	*Based on current zoning requirements.*
Six Ponds (6P) Lot Coverage Restriction- Zone A	30%	*Based on current zoning requirements.*
Six Ponds (6P) Building Coverage Restriction- Zone B	10%	*Based on current zoning requirements.*
Six Ponds (6P) Lot Coverage Restriction- Zone B	15%	*Based on current zoning requirements.*

Lot Coverage Outputs

	Underlying Zoning		With Overlay Restrictions		
		Ratio	WR	6P- Zone A	6P- Zone B
Percent of Lot Undevelopable	30.0%		60.0%	70.0%	85.0%
Percent of Lot Dedicated to Utilities	5.0%		5.0%	5.0%	5.0%
Percent of Lot Parking Coverage	52.2%	*4.1*	28.1%	20.1%	8.0%
Percent of Lot Building Footprint Coverage	12.8%	*1.0*	6.9%	4.9%	2.0%
Percent of Lot Building Square Footage	25.7%		13.8%	9.9%	4.0%
Percent of Lot Residential Square Footage	0.0%		0.0%	0.0%	0.0%
Percent of Lot Retail Square Footage	11.6%		6.2%	4.4%	1.8%
Percent of Lot Office Square Footage	11.6%		6.2%	4.4%	1.8%
Percent of Lot Restaurant Square Footage	2.6%		1.4%	1.0%	0.4%

Development Outputs

With Overlay Restrictions	Area A (WR)	Area B (6P)	Area C (WR)	Area D (WR)	**Total**
Total Lot Area (SF)	986,198	1,399,583	588,060	1,171,328	**4,145,170**
Building Footprint Coverage	68,225	58,452	40,682	81,032	**248,391**
Building Square Footage	136,449	116,905	81,363	162,064	**496,782**
Parking Coverage	276,945	237,276	165,139	328,933	**1,008,293**
Residential Space	0	0	0	0	**0**
Residential Units	0	0	0	0	**0**
Residential Density (units per acre)	0.0	0.0	0.0	0.0	**0.0**
Retail Space	61,402	52,607	36,614	72,929	**223,552**
Office Space	61,402	52,607	36,614	72,929	**223,552**
Restaurant Space	13,645	11,690	8,136	16,206	**49,678**
Undevelopable Coverage	591,719	1,022,048	352,836	702,797	**2,669,400**
Residential Parking Demand (spaces)	0.0	0.0	0.0	0.0	**0.0**
Retail Parking Demand (spaces)	307.0	263.0	183.1	364.6	**1,117.8**
Office Parking Demand (spaces)	424.2	363.5	253.0	503.9	**1,544.5**
Restaurant Parking Demand (spaces)	60.0	51.4	35.8	71.3	**218.6**
Total Parking Demand (spaces)	791.3	677.9	471.8	939.8	**2,880.8**
Total Parking Demand After Reduction (spaces)	791.3	677.9	471.8	939.8	**2,880.8**

East Harwich Village Center Buildout Analysis

Scenario 2: No Overlays

Inputs

General

Average building height in usable stories	2	*"Usable stories" excludes attics/basements used for storage.*
Percent of lot dedicated to utilities	5%	*Based on Best Engineering Practices.*
Average exterior area needed per parking space (SF)	350	*Includes parking stall, travel lanes, access ways, landscaping.*

Residential

Percent building space dedicated to residential	0%	*Assumed percentage*
Average interior space needed per housing unit (SF)	1000	*Includes housing unit, shared hallways, staircases, lobbies.*
Parking spaces per housing unit	1.5	*Based on off-street requirements for multi-family residential.*

Commercial

Percent commercial space dedicated to retail	45%	*Assumed percentage*
Percent commercial space dedicated to office	45%	*Assumed percentage*
Percent commercial space dedicated to restaurant	10%	*Assumed percentage*
Percent building space dedicated to retail	45.0%	
Percent building space dedicated to office	45.0%	
Percent building space dedicated to restaurant	10.0%	
Spaces required per 1,000 square feet of retail	5	*Based on current zoning requirements.*
Spaces required per 1,000 square feet of office	6.9	*Based on current zoning requirements.*
Spaces required per 1,000 square feet of restaurant	4.4	*Based on current zoning requirements.*
Shared parking reduction for commercial requirements	0%	

Coverage Restrictions

C-H-2 Building Coverage Restriction	30%	*Based on current zoning requirements.*
C-H-2 Lot Coverage Restriction	70%	*Based on current zoning requirements.*

Overlay Coverage Restrictions

Water Resource (WR) Building Coverage Restriction	20%	*Based on current zoning requirements.*
Water Resource (WR) Lot Coverage Restriction	40%	*Based on current zoning requirements.*
Six Ponds (6P) Building Coverage Restriction- Zone A	10%	*Based on current zoning requirements.*
Six Ponds (6P) Lot Coverage Restriction- Zone A	30%	*Based on current zoning requirements.*
Six Ponds (6P) Building Coverage Restriction- Zone B	10%	*Based on current zoning requirements.*
Six Ponds (6P) Lot Coverage Restriction- Zone B	15%	*Based on current zoning requirements.*

Lot Coverage Outputs

	Underlying Zoning		With Overlay Restrictions		
		Ratio	WR	6P- Zone A	6P- Zone B
Percent of Lot Undevelopable	30.0%		60.0%	70.0%	85.0%
Percent of Lot Dedicated to Utilities	5.0%		5.0%	5.0%	5.0%
Percent of Lot Parking Coverage	52.2%	*4.1*	28.1%	20.1%	8.0%
Percent of Lot Building Footprint Coverage	12.8%	*1.0*	6.9%	4.9%	2.0%
Percent of Lot Building Square Footage	25.7%		13.8%	9.9%	4.0%
Percent of Lot Residential Square Footage	0.0%		0.0%	0.0%	0.0%
Percent of Lot Retail Square Footage	11.6%		6.2%	4.4%	1.8%
Percent of Lot Office Square Footage	11.6%		6.2%	4.4%	1.8%
Percent of Lot Restaurant Square Footage	2.6%		1.4%	1.0%	0.4%

Development Outputs

Underlying Zoning (overlays removed)	Area A	Area B	Area C	Area D	**Total**
Total Lot Area (SF)	986,198	1,399,583	588,060	1,171,328	**4,145,170**
Building Footprint Coverage	126,703	179,813	75,552	150,488	**532,556**
Building Square Footage	253,406	359,626	151,103	300,976	**1,065,111**
Parking Coverage	514,326	729,916	306,687	610,876	**2,161,805**
Residential Space	0	0	0	0	**0**
Residential Units	0	0	0	0	**0**
Residential Density (units per acre)	0.0	0.0	0.0	0.0	**0.0**
Retail Space	114,033	161,832	67,997	135,439	**479,300**
Office Space	114,033	161,832	67,997	135,439	**479,300**
Restaurant Space	25,341	35,963	15,110	30,098	**106,511**
Undevelopable Coverage	49,310	69,979	29,403	58,566	**207,258**
Residential Parking Demand (spaces)	0.0	0.0	0.0	0.0	**0.0**
Retail Parking Demand (spaces)	570.2	809.2	340.0	677.2	**2,396.5**
Office Parking Demand (spaces)	787.8	1,118.1	469.8	935.7	**3,311.4**
Restaurant Parking Demand (spaces)	111.5	158.2	66.5	132.4	**468.6**
Total Parking Demand (spaces)	1,469.5	2,085.5	876.2	1,745.4	**6,176.6**
Total Parking Demand After Reduction (spaces)	1,469.5	2,085.5	876.2	1,745.4	**6,176.6**

East Harwich Village Center Buildout Analysis

Scenario 3: Existing Overlays and Reduced Parking

Inputs

General		
Average building height in usable stories	2	*"Usable stories" excludes attics/basements used for storage.*
Percent of lot dedicated to utilities	5%	*Based on Best Engineering Practices.*
Average exterior area needed per parking space (SF)	350	*Includes parking stall, travel lanes, access ways, landscaping.*
Residential		
Percent building space dedicated to residential	0%	*Assumed percentage*
Average interior space needed per housing unit (SF)	1,000	*Includes housing unit, shared hallways, staircases, lobbies.*
Parking spaces per housing unit	1.5	*Based on off-street requirements for multi-family residential.*
Commercial		
Percent commercial space dedicated to retail	45%	*Assumed percentage*
Percent commercial space dedicated to office	45%	*Assumed percentage*
Percent commercial space dedicated to restaurant	10%	*Assumed percentage*
Percent building space dedicated to retail	45.0%	
Percent building space dedicated to office	45.0%	
Percent building space dedicated to restaurant	10.0%	
Spaces required per 1,000 square feet of retail	4	*More typical suburban standards*
Spaces required per 1,000 square feet of office	4	*More typical suburban standards*
Spaces required per 1,000 square feet of restaurant	4.4	*More typical suburban standards*
Shared parking reduction for commercial requirements	30%	*Appropriate due to lot proximity and divergent peak demands.*
Coverage Restrictions		
C-H-2 Building Coverage Restriction	30%	*Based on current zoning requirements.*
C-H-2 Lot Coverage Restriction	70%	*Based on current zoning requirements.*
Overlay Coverage Restrictions		
Water Resource (WR) Building Coverage Restriction	20%	*Based on current zoning requirements.*
Water Resource (WR) Lot Coverage Restriction	40%	*Based on current zoning requirements.*
Six Ponds (6P) Building Coverage Restriction- Zone A	10%	*Based on current zoning requirements.*
Six Ponds (6P) Lot Coverage Restriction- Zone A	30%	*Based on current zoning requirements.*
Six Ponds (6P) Building Coverage Restriction- Zone B	10%	*Based on current zoning requirements.*
Six Ponds (6P) Lot Coverage Restriction- Zone B	15%	*Based on current zoning requirements.*

Lot Coverage Outputs

	Underlying Zoning		With Overlay Restrictions		
		Ratio	WR	6P- Zone A	6P- Zone B
Percent of Lot Undevelopable	30.0%		60.0%	70.0%	85.0%
Percent of Lot Dedicated to Utilities	5.0%		5.0%	5.0%	5.0%
Percent of Lot Parking Coverage	43.2%	*2.0*	23.3%	16.6%	6.6%
Percent of Lot Building Footprint Coverage	21.8%	*1.0*	11.7%	8.4%	3.4%
Percent of Lot Building Square Footage	43.6%		23.5%	16.8%	6.7%
Percent of Lot Residential Square Footage	0.0%		0.0%	0.0%	0.0%
Percent of Lot Retail Square Footage	19.6%		10.6%	7.6%	3.0%
Percent of Lot Office Square Footage	19.6%		10.6%	7.6%	3.0%
Percent of Lot Restaurant Square Footage	4.4%		2.3%	1.7%	0.7%

With Overlay Restrictions	Area A (WR)	Area B (6P)	Area C (WR)	Area D (WR)	**Total**
Total Lot Area (SF)	986,198	1,399,583	588,060	1,171,328	**4,145,170**
Building Footprint Coverage	115,844	99,251	69,077	137,591	**421,763**
Building Square Footage	231,688	198,502	138,153	275,181	**843,525**
Parking Coverage	229,325	196,478	136,744	272,374	**834,921**
Residential Space	0	0	0	0	**0**
Residential Units	0	0	0	0	**0**
Residential Density (units per acre)	0.0	0.0	0.0	0.0	**0.0**
Retail Space	104,260	89,326	62,169	123,832	**379,586**
Office Space	104,260	89,326	62,169	123,832	**379,586**
Restaurant Space	23,169	19,850	13,815	27,518	**84,353**
Undevelopable Coverage	591,719	1,022,048	352,836	702,797	**2,669,400**
Residential Parking Demand (spaces)	0.0	0.0	0.0	0.0	**0.0**
Retail Parking Demand (spaces)	417.0	357.3	248.7	495.3	**1,518.3**
Office Parking Demand (spaces)	417.0	357.3	248.7	495.3	**1,518.3**
Restaurant Parking Demand (spaces)	101.9	87.3	60.8	121.1	**371.2**
Total Parking Demand (spaces)	936.0	801.9	558.1	1,111.7	**3,407.8**
Total Parking Demand After Reduction (spaces)	655.2	561.4	390.7	778.2	**2,385.5**

East Harwich Village Center Buildout Analysis

Scenario 4: Existing Overlays, Reduced Parking and Residential Use

Inputs

General		
Average building height in usable stories	2	*"Usable stories" excludes attics/basements used for storage.*
Percent of lot dedicated to utilities	5%	*Based on Best Engineering Practices.*
Average exterior area needed per parking space (SF)	350	*Includes parking stall, travel lanes, access ways, landscaping.*
Residential		
Percent building space dedicated to residential	33%	*Assumed percentage*
Average interior space needed per housing unit (SF)	1000	*Includes housing unit, shared hallways, staircases, lobbies.*
Parking spaces per housing unit	1.5	*Based on off-street requirements for multi-family residential.*
Commercial		
Percent commercial space dedicated to retail	45%	*Assumed percentage*
Percent commercial space dedicated to office	45%	*Assumed percentage*
Percent commercial space dedicated to restaurant	10%	*Assumed percentage*
Percent building space dedicated to retail	30.2%	
Percent building space dedicated to office	30.2%	
Percent building space dedicated to restaurant	6.7%	
Spaces required per 1,000 square feet of retail	4	*More typical suburban standards*
Spaces required per 1,000 square feet of office	4	*More typical suburban standards*
Spaces required per 1,000 square feet of restaurant	4.4	*More typical suburban standards*
Shared parking reduction for commercial requirements	30%	*Appropriate due to lot proximity and divergent peak demands.*
Coverage Restrictions		
C-H-2 Building Coverage Restriction	30%	*Based on current zoning requirements.*
C-H-2 Lot Coverage Restriction	70%	*Based on current zoning requirements.*
Overlay Coverage Restrictions		
Water Resource (WR) Building Coverage Restriction	20%	*Based on current zoning requirements.*
Water Resource (WR) Lot Coverage Restriction	40%	*Based on current zoning requirements.*
Six Ponds (6P) Building Coverage Restriction- Zone A	10%	*Based on current zoning requirements.*
Six Ponds (6P) Lot Coverage Restriction- Zone A	30%	*Based on current zoning requirements.*
Six Ponds (6P) Building Coverage Restriction- Zone B	10%	*Based on current zoning requirements.*
Six Ponds (6P) Lot Coverage Restriction- Zone B	15%	*Based on current zoning requirements.*

Lot Coverage Outputs

	Underlying Zoning		With Overlay Restrictions		
		Ratio	WR	6P- Zone A	6P- Zone B
Percent of Lot Undevelopable	30.0%		60.0%	70.0%	85.0%
Percent of Lot Dedicated to Utilities	5.0%		5.0%	5.0%	5.0%
Percent of Lot Parking Coverage	40.7%	*1.7*	21.9%	15.6%	6.3%
Percent of Lot Building Footprint Coverage	24.3%	*1.0*	13.1%	9.4%	3.7%
Percent of Lot Building Square Footage	48.6%		26.2%	18.7%	7.5%
Percent of Lot Residential Square Footage	16.1%		8.6%	6.2%	2.5%
Percent of Lot Retail Square Footage	14.7%		7.9%	5.6%	2.3%
Percent of Lot Office Square Footage	14.7%		7.9%	5.6%	2.3%
Percent of Lot Restaurant Square Footage	3.3%		1.8%	1.3%	0.5%

Development Outputs

With Overlay Restrictions	Area A (WR)	Area B (6P)	Area C (WR)	Area D (WR)	**Total**
Total Lot Area (SF)	986,198	1,399,583	588,060	1,171,328	**4,145,170**
Building Footprint Coverage	129,140	110,643	77,005	153,382	**470,170**
Building Square Footage	258,280	221,285	154,010	306,764	**940,339**
Parking Coverage	216,029	185,086	128,816	256,583	**786,515**
Residential Space	85,232	73,024	50,823	101,232	**310,312**
Residential Units	85	73	51	101	**310**
Residential Density (units per acre)	3.8	2.3	3.8	3.8	**3.3**
Retail Space	77,871	66,717	46,434	92,489	**283,512**
Office Space	77,871	66,717	46,434	92,489	**283,512**
Restaurant Space	17,305	14,826	10,319	20,553	**63,003**
Undevelopable Coverage	591,719	1,022,048	352,836	702,797	**2,669,400**
Residential Parking Demand (spaces)	127.8	109.5	76.2	151.8	**465.5**
Retail Parking Demand (NOT REDUCED)	311.5	266.9	185.7	370.0	**1,134.0**
Office Parking Demand (NOT REDUCED)	311.5	266.9	185.7	370.0	**1,134.0**
Restaurant Parking Demand (NOT REDUCED)	76.1	65.2	45.4	90.4	**277.2**
Total Parking Demand (NOT POSSIBLE)	827.0	708.5	493.1	982.2	**3,010.8**
Total Parking Demand After Reduction (spaces)	617.2	528.8	368.0	733.1	**2,247.2**