

# BARNSTABLE COUNTY ASSEMBLY OF DELEGATES

In the Year Two-Thousand

Ordinance 00-11

A proposed ordinance to create a Harwich Six Ponds District of Critical Planning Concern.

*Barnstable County hereby ordains:*

## 1.0 General

As authorized by Sections 10 and 11 of the Cape Cod Commission Act the Harwich Six Ponds area, as hereinafter described, is hereby designated as a District of Critical Planning Concern ("District" or "DCPC"). The purposes of this District shall be to enhance protection of water quality within existing and potential future zones of contribution to public water supply wells; to enhance protection of water quality within Herring River watershed and the Pleasant Bay coastal embayments; to evaluate and protect potential well areas to serve future town needs; to protect the water quality of Aunt Edies, Cornelius, Walkers, Black, Olivers, and Hawksnest Ponds; to protect the District's key natural resources including rare plant and wildlife habitat, wetlands and coastal plain pondshores, unfragmented forested areas, fisheries, and wildlife corridors; to maintain the scenic character of area roads and views of pondshores and woodlands; to preserve cultural landscapes, archaeological sites, historic structures and traditional land uses within the District; to restore areas within the District that have been significantly degraded by excavation, mining, or other activities, to encourage the continued use of land within the District for open space and recreational purposes; and to foster land uses that are compatible with the resource protection goals of the District.

## 2.0 Background

On October 26, 1999, the Cape Cod Commission received a proposed nomination for the Harwich Six Ponds District of Critical Planning Concern from the Harwich Planning Board pursuant to Section 10(d) of the Cape Cod Commission Act. The Planning Board nomination was supported by the Board of Selectmen, the Board of Health, the Conservation Commission, and the Water District. The Commission voted to accept the nomination for consideration on December 2, 1999. A subcommittee of the Commission conducted public hearings on July 13, 1999 and August 10, 1999 at the Sandwich Human Services Building to take testimony regarding the District nomination. The Commission voted on January 20, 2000 to extend by 60 days the review period for the District. A subcommittee of the Commission conducted a public hearing on January 26, 2000 at Harwich High School to take testimony regarding the District nomination. Prior to the nomination the town of Harwich Planning Board also conducted several public meetings to answer questions and discuss landowners and citizens concerns regarding the proposed DCPC. Commission staff met with the town of Harwich Planning Board to discuss the nomination and significant resources in the area. The subcommittee met to discuss a draft decision on February 17, 2000. A hearing was held before the full Cape Cod Commission on March 2, 2000.

Testimony and/or written letters in support of the proposed designation were received from the following: Harwich Board of Selectmen, Harwich Planning Board, Harwich Conservation Commission, Harwich Board of Health, Harwich Water District, Association for the Preservation of Cape Cod, Harwich Conservation Trusts, Orenda Wildlife Trust, Bill Baldwin, Marilyn Barry, Lois A. Brooks, Charles Cahoon, Bill Dougherty, Bob & Peggy Fink, W. Matthew Hart, Ray Herbert, Richard Houston, Don Howell, Robert Larsen, Donna & Harold Kotzum, Sylvia Laffin, Tom Leach, Graham Leathers, Fred-Munro Ferguson, Isabel Smith, Loretta Smith, Bill Spillane, Carol Topolewski, Denice Williams. A petition signed by 56 residents of the proposed District in support of the designation was submitted to the Town of Harwich Administrator's office.

Testimony and/or letters of concern or opposition to the boundaries or regulations proposed of the District were received from Leo Cakounes and James Marceline.

After consideration of the nomination, both written and oral testimony, information submitted for the record, and a site visit to the nominated area, the subcommittee voted unanimously on February 17, 2000 to recommend that the Commission approve the nomination, forwarding it to the Assembly of Delegates for designation as a District of Critical Planning Concern pursuant to the Cape Cod Commission Act and the District of Critical Planning Concern regulations. The subcommittee also recommended approval of a decision regarding:

The reasons for designation;  
A description of the area's critical concern to the region;  
The problems of uncontrolled or inappropriate development in the area;  
The advantages of controlled development in the area  
Guidelines for development related to identified concerns; and  
A written description and map of the boundaries of the area.

On March 2, 2000, the full Commission voted unanimously to transmit this decision to the Barnstable County Assembly of Delegates.

### **3.0 Written Description of the Area**

The Harwich Six Ponds District of Critical Planning Concern encompasses approximately 1,254 acres of land and approximately 114 acres of pond surface area. This area was described by the town as "entirely contained within the Town of Harwich and bounded by the following roads: Route 6/Mid-Cape highway to the north, Route 137 to the northeast, Route 39 to the southeast, Queen Anne Road to the south and Route 124 to the west."

The Commission finds that the land and water within the Harwich Six Ponds District reasonably belong within the District. Land and water within the District form a critical area and the Commission finds that this area needs protection afforded by the Act. The area designated is a logical planning area and is suitable for the adoption of coordinated regulations for the District as a whole. Finally, the Commission finds that the boundaries of the Six Ponds District, as established, are easily identifiable, convenient, recognizable and appropriate given the purposes of the designation.

### **4.0 Type of District**

The Harwich Six Ponds District described above qualifies under Section 10(a) of the Cape Cod Commission Act for proposed designation as a District due to the following factors:

The presence of significant natural, coastal, scientific, cultural, archeological, historic, economic and recreational resources or values of regional, state-wide or national significance; and  
The presence of substantial areas of sensitive ecological conditions which render the area unsuitable for development.

In accordance with the DCPC Guidance Document issued by the Cape Cod Commission in December 1990 and preapplication consultation meetings with Commission staff, the town of Harwich identified that the area is eligible for designation for any or all of the following:

1. Water Resource Protection District
2. Wildlife, Natural or Ecological Resource District
3. Growth Management District
4. Open Space and Recreation Resource District

#### **4.1 Reasons for the District's Designation**

When proposing designation of a District, Section 10(j) of the Act requires the Commission to specify why the area is of critical concern to the region, the problems associated with uncontrolled or inappropriate development, and the advantages to be gained by the development of the area in a controlled manner.

Information available to the Cape Cod Commission supported a finding that the proposed Six Ponds Area is of regional importance, that potential problems of uncontrolled or inappropriate development exist within the district, and that there are advantages to be gained by development of the area in a controlled manner. The Commission specifically found that controlled development of land and water within the proposed Six Ponds District is important to the protection of drinking water quality, preservation of an adequate water supply, protection of surface water quality and quantity, the assurance of a safe transportation network, preservation of the area's unique scenery, cultural resources and community character, protection of rare plant and wildlife habitat and significant natural resources, the provision of open space and well-managed recreational opportunities, and the management of growth in a manner that will not result in adverse impacts on the town's infrastructure. The Commission found that there are planning and regulatory tools available which are likely to be effective in protecting or otherwise meeting the objectives of the District and that current regulatory mechanisms are not in place to control growth and development in a manner that would protect the resources within the proposed District. Further information regarding the reasons for designation of the District is provided below.

##### **4.1.1. Water Resources**

The proposed district contains attributes that are important to the local and subregional hydrologic system. These attributes include watersheds contributing ground water to ponds and sensitive marine waters, and also areas of contribution to public water-supply wells. The land proposed for DCPC designation overlies the crest of the Monomoy ground water lens. As a result, precipitation that occurs over the proposed district and percolates to the water table becomes ground water that flows below and radially away from the area. Downgradient receptors include fresh water ponds, public supply wells and marine embayments. The proposed district itself is host to six fresh-water ponds, all of which are particularly vulnerable to impacts resulting from existing and future land use in the area.

Potential impacts to water resources resulting from unrestricted land use and growth include increased addition of gasoline and oil compounds, nutrients and pesticides to ground and surface waters. Occurrence of these contaminants in ground and surface waters can be expected in proportion to area development. Sources of nutrients such as phosphorous and nitrogen include septic systems and fertilizers. Sources of phosphorous to ponds also include sediment input resulting from stormwater runoff. Fresh-water ponds tend to be most sensitive to phosphorous input rates. Excessive phosphorous loading results in increased plant growth and dissolved oxygen depletion in ponds that, in turn, can lead to fish kills and the release of additional phosphorous from pond sediments. Although water quality studies for ponds within the proposed district are limited, Long Pond may be considered as a model for gaining insight into potential impacts of land use in the area. Although Long Pond exists outside of the proposed district, it receives ground water from the proposed district area. Long Pond has a history of algal blooms and fish kills during the late 1990's. These events are attributable to water quality problems associated with land use within the pond's watershed (CCC, 1999). Water quality has been reportedly documented for Aunt Edies Pond by residents abutting the pond. Results from this study should be incorporated into an expanded water-quality study of all six ponds within the proposed DCPC such that 1) a 'baseline' of existing water quality may be documented and from which land-use impacts or improvements afforded by land use restrictions may be gauged, 2) sources of nutrient may be identified, and 3) critical eutrophic levels may be established. Gauging of impacts or

improvements would require on-going water quality monitoring. Other components of a comprehensive study should include determination of each pond's watershed, bathymetry, seasonal stratification patterns, and shoreline erosion and stormwater impacts.

Other sensitive receptors include drinking-water supply wells and coastal estuaries that may be sensitive to increased nitrogen loading from land use within the proposed district. All of Harwich's public drinking-water supply wells are located downgradient of the proposed district. Therefore, nitrogen additions to ground water in the proposed district will contribute to increased nitrogen levels in water withdrawn from those wells. The Regional Policy Plan specifies 5 ppm-N as a maximum acceptable level for nitrogen in drinking water. The potential for exceedance of this level exists for Harwich's public water-supply wells over the long term (CCC, 1996). Moreover, development within the proposed district can be expected to result in nitrogen additions to the Herring River system via the Long Pond-Hinckleys Pond system. Evaluation of the nitrogen sensitivity of Herring River marine embayment has not been determined.

Nutrient loading to ground water may be limited through establishment of surface-water protection buffers for ponds in the proposed district. These buffers should encompass areas within at least 300' of fresh-water ponds. Regulations should require that construction permits for projects within the buffer zones be withheld pending determination of critical eutrophic levels for respective surface waters. Phosphorous loading beyond critical levels should be prohibited. Nitrogen loading to ground water can be reduced by requiring DEP-approved denitrifying septic systems for future development. Because natural attenuation of nitrogen is limited, denitrifying systems should be use within the entire proposed district in order to meet a 5 ppm-N nitrogen standard. Further development in the Marine Water Recharge Area for Herring River and coincident with the proposed district should be forestalled until a critical nitrogen load is established for the Herring River marine embayment and its watershed and such that additions over the proscribed limit will be prohibited.

Other restrictions that should be adopted include sharp curbs on the extent of sand and gravel excavation activities currently being conducted within the proposed district. The removal of vegetation that accompanies sand and gravel excavation increases erosion. The observed depth of the sand pit located at the end of the Captain Barse residential cul-de-sac suggests that mining and woodwaste activities occur close to the water table. The close proximity of the water table to the land surface made possible by the excavation exposes ground water to contaminants associated with activities within the sand pit. The risks include contamination of ground water by gasoline and oil compounds associated with trucking and creosote and other contaminants leaching from woodwaste to ground water. Excavation activities in other areas of the proposed district have been reported as repositories of other waste, whether authorized by property owners or not.

Pond water levels naturally fluctuate as a function of precipitation and evaporation rates. McHorney (1997) recognized that water-table fluctuations are reflected in surface-water level fluctuations on Cape Cod. This was demonstrated at Mary Dunn Pond in Barnstable, where surface-water levels were lowered as a result of well pumping. Average daily water demand from Harwich public water-supply wells downgradient of the proposed district is expected to increase by 22.2% by the year 2020 (CCC, 1996). Long-term drawdown of the ground-water lens from "pre-development" levels was estimated by Masterson and Barlow (1994) to be in excess of 1 foot within the proposed district as of 1989. An additional drawdown of up to 2 feet is expected through the year 2020 as a result of future development and increased ground-water withdrawals. Therefore, realization of projected long-term declines of water-table elevation of the Monomoy ground water lens can be expected to have a corresponding impact upon associated fresh-water ponds, as well as the flora and fauna that are dependent upon the health of those ponds.

Curbs on development within the proposed district can be expected to curb projected future water demand and drawdown of the Monomoy ground-water lens. However, the extent of these curbs

must be evaluated based upon ongoing assessments of realized ground-water withdrawal rate increases. Tracts of land across Cape Cod have been rated by the Cape Cod Commission in accordance with their suitability for public water-supply development (CCC, 1999). These tracts are comprised of contiguous parcels previously identified in the Regional Policy Plan as potential future well-head areas. The tracts are prioritized based on the compatibility of their attributes with public water-supply development. For example, tracts are promoted if they are town owned and of sufficient size for wellhead protection. Tracts are demoted if they are in the proximity of sensitive natural resources such as endangered species and wetland habitat, surface waters, or if they abut incompatible land usage. Each tract is designated as one of four classifications for wellhead development potential: highest, medium, fair and lowest potential. Although large tracts within the proposed DCPC were previously identified as potentially suitable for future wellhead(s), only a small portion of the land was given 'medium potential' status (CCC, 1999). No parcels in the proposed district were given 'highest potential' status, in part due to their proximity to sensitive areas in the area (i.e. endangered species and wetland habitat, and surface waters). Tracts to the south of the proposed area have received more favorable consideration as 'highest potential' tracts for water-supply development. However, further development in the proposed district, if not curbed, has the potential to lower the viability of these downgradient parcels as future water supplies.

From a water-resources standpoint, Harwich has much to gain from the proposed area being designated as a District of Critical Planning Concern. A reduction in projected water demand is a primary benefit of limiting development in the proposed area. Such a reduction would help reduce projected water-supply deficits for the Town of Harwich, slow further drawdown of the Monomoy ground-water lens and reduce projected wastewater discharge rates to ground water in the proposed district. The nutrients resulting from projected wastewater discharge to ground water will otherwise further degrade the Lower Cape's drinking-water resources, potentially to substandard levels over the long-term. The consequences of protecting the proposed district have far-reaching benefits for the drinking water and natural/recreational water resources at and beyond the proposed district.

#### **4.1.2. Natural Resources**

The proposed District contains a wealth of important natural resources, in large part due to its size and relatively undeveloped condition. To date, there has not been a comprehensive study of the resources within the proposed District, although some information has been gathered in the course of various research projects and is summarized below.

The area proposed for DCPC designation includes six relatively undeveloped fresh-water ponds: Aunt Edies Pond, Cornelius Pond, Walkers Pond, Black Pond, Hawksnest Pond, and Olivers Pond. All but Cornelius Pond are listed in the APCC Critical Habitats Atlas as providing coastal plain pond shore habitat. According to the Association for the Preservation of Cape Cod (1990), these are an extremely important and uncommon habitat that harbors a wide variety of rare plant and invertebrate species. While they are common throughout Cape Cod and southern Plymouth County, they occur in few other places worldwide and are considered globally rare. The ponds are connected to the water table and their water levels rise and fall in response to groundwater fluctuations. As a result, a diverse group of plants have adapted to these changing conditions and flourish between low and high water levels. Since the global distribution of this type of pond is extremely limited, the plants that grow along its margin tend to be correspondingly rare. In general, small ponds and the sheltered coves of large ponds tend to have the greatest species diversity because the shorelines experience little wave erosion. Both development and unmanaged recreational use of the shoreline, including use of off-road vehicles, threaten the habitat's continued viability.

The six ponds in the proposed District vary in size and characteristics:

Hawksnest Pond (also known historically as Walkers Pond and Wolf's Field Pond) is the largest pond in the District at 30 acres, with 0.83 miles of shoreline. The pond is almost completely protected, with only 2 privately owned parcels including one small camp along the shoreline. One of these is located on the eastern side of the pond and one is located on the western side of the pond. Most of the pond has steep wooded banks with a narrow isthmus of land separating it from Black Pond. The pond has an average depth of 14' and a maximum depth of 27'. In a 1969 survey of ponds conducted by the MA Bureau of Sport Fisheries and Wildlife, the pond was listed as not stratified and remarkably clear, with as much as 27' of transparency. It is still unusually clear today. The pond is mixed in temperature, providing marginal habitat for both warm water and cold water fish. In the 1969 survey the pond was listed as receiving light use including hunting, fishing and ice fishing with high aesthetic values, likely due to its visibility from roads to the north.

Olivers Pond (aka Kenney's Pond or Hawksnest Pond) is 13 acres in size with 0.53 miles of shoreline. It is the only pond within the proposed District that has a shoreline that is completely protected by conservation holdings (and one of the few ponds on Cape Cod to have that level of protection). The pond is clear with a shallow wooded bank. There is a small wetland at the eastern end of the pond and a long abandoned cranberry bog at the western end.

Black Pond is the smallest pond in the District with 9 acres of surface area and 0.53 acres of wooded shoreline. The pond has a shallow bank around its entire perimeter and is connected with Hawksnest Pond during periods of high water. Approximately 50% of the shoreline on the southern and eastern sides of the pond is within Hawksnest State Park; the remainder of the pond is privately owned. The 1969 survey identified moderate use of the pond for its wildlife values and hunting as well as high aesthetic values. There are a number of wetland areas fringing the pond.

Walkers Pond (also known as Eldridges Pond) is 25 acres in size with 1.2 miles of shoreline. There is no protected land around the pond. The pond shore is a mix of low bank and medium slopes that are primarily wooded. The pond has an average depth of 14' and a maximum depth of 27'. The pond was listed in the 1969 survey as clear with 18' of transparency. The pond serves as a warm water fishery with management for chain pickerel, bull head and yellow perch. The survey cited light use of the pond for boating, swimming, water-skiing, fishing, ice fishing, skating and camping as well as high aesthetic values. In 1969, 20-30% of the shoreline was residentially developed. Today the amount of development around the pond has increased, with recent subdivisions at the northern end of the pond. A large abandoned cranberry bog connects to the pond on the northwestern side.

Cornelius Pond (also known as Eldridge Pond and Briar Pond) is 16 acres with 0.61 miles of shoreline. There is no protected land around the pond's shallow banks which provide rich bird habitat. The pond is clear, with swampy edges, and serves as a warm water fishery. The 1969 survey lists the pond as 10% residentially developed along the shoreline, today it is closer to 40-50%, with a recent subdivision along the southern shore of the pond. At current water levels, the northern and southern portions of the Pond are completely separated by a low-lying land area. USGS maps and aerial photographs depict a surface hydrologic connection between Walkers Pond and Cornelius Pond, continuing south out of the proposed District toward the Herring River system.

Aunt Edies Pond has been identified as between 16 and 21 acres with 0.76 miles of shoreline. There is no protected land along the steep sloping shoreline. The 1969 survey lists the pond as clear with 18' of transparency and cites light use for ice fishing as well as high aesthetic values. At that time, 20-30% of the shoreline was residentially developed. Today, closer to 50-60% of the shoreline is developed. An abandoned cranberry bog is located to the north of the pond and a large, deep kettle wetland area lies to the east. This wetland provides outstanding wildlife habitat.

The 1997-1998 edition of the atlas published the Massachusetts Natural Heritage and Endangered Species Program (NHESP) has identified portions of the ponds within the proposed District and their shorelines as significant with regard to habitat protection. More specifically, Olivers-Hawksnest-Black Pond Complex and Cornelius Pond and their shorelines are identified as "Priority Sites of Rare Species and Exemplary Natural Communities." In addition, "Estimated Habitat of Rare Wildlife" has been identified in a large area within the proposed District encompassing Olivers, Hawksnest, Black and Walkers Pond and the surrounding upland area. These designations are used in planning for the protection of both upland and wetland habitats for rare plant and animal species. In addition, almost all of the land area within the proposed District has been mapped by the Cape Cod Commission on its Significant Natural Resources Areas map for its multiple natural resource values including rare species habitat, unfragmented forest habitat, and existing and potential water supply protection. This relatively undeveloped land within the District, in conjunction with adjacent protected land, provides important interior wildlife habitat, as well as wildlife migration corridors.

The NHESP has provided additional information documenting the significance of the rare species habitat associated with the ponds. Specifically, a number of rare plant species have been documented along the shorelines of these ponds including three plants of special concern: Plymouth Gentian (*Sabatia kennedyana*), Redroot (*Lachnanthes carolinana*) and Pondshore Knotweed (*Polygonum puritanorum*). In addition two rare damselflies, the threatened Pine Barrens Bluet (*Enallagma recurvatum*) and the New England Bluet (*E. laterale*), a species of special concern, are found in the area.

The following information about rare species within the proposed district is taken from Natural Heritage Program rare species data sheets. As can be seen, all of the rare plant species associated with the ponds are sensitive to the impacts of development as well as dependent on natural water level fluctuations that characterize the Cape's coastal plain pond shores.

Pondshore Knotweed [Special Concern] is an annual with pink flowers that blooms in mid-July to early October. It is found along the shores of coastal plain ponds and appears when the water level drops. There have been 10 occurrences of this plant documented in Massachusetts since 1978. It is adversely affected by development and recreational uses around ponds.

Plymouth Gentian [Special Concern] is a perennial herb with pink flowers that can bloom from early July to mid September, depending on water levels. This plant is found only on the shorelines of coastal plain ponds within a narrow geographic range (including Plymouth and Barnstable County) and is dependent on fluctuating water levels for survival. It is threatened by development, recreational use of shorelines and pond contamination by runoff and failing septic systems.

Redroot [Special Concern] is also a perennial herb with yellow flowers which blooms from early July to late August and also inhabits the shores of coastal plain ponds along their middle and upper margins. They are also dependent on fluctuating water levels. Since 1978, only 21 occurrences of this plant have been documented. It is threatened by the same activities as the other two plant species.

The New England Bluet Damselfly [Special Concern] is a small semi-aquatic damselfly with blue and black bands on its very long and slender abdomen and a blue and black head. Its preferred habitat is pondshores with emergent vegetation and good water quality, but it also utilizes adjacent woodland and shrub areas for shelter and for mating and resting areas. Adults are most abundant during the month of June. Habitat disturbance is the major factor contributing to the rarity of this species. Other threats include residential and recreational use, herbicide and insecticide application, highway runoff, aquatic vegetation removal

projects, and changes in water level resulting from drawdown. Liming of ponds and similar measures to reduce acidity can adversely affect their habitat. Maintaining buffer areas along pond shores is also important for protecting their upland habitat and maintaining water quality.

The Barrens Bluet Damselfly [Threatened] is similar to the New England Bluet Damselfly, but is more black than blue in coloration. It is found only near coastal plain ponds and prefers sandy shores with emergent vegetation. Similar to the New England species, the wooded/shrub buffer area along the ponds is important to the survival of this species. Adults are most common during the month of June and produce only one generation of offspring. Prior to a survey in 1986, this species was thought to be extirpated in Massachusetts. As a result of the survey, 40 populations in 14 towns were identified, leading to a change in its status from extirpated to threatened. Threats are similar to those of the New England Bluet.

There are a number of other wetlands within the proposed District that appear on assessors and other maps of the area, including numerous abandoned cranberry bogs, although no field survey has been completed to identify wetland areas in the field. In addition to the wetlands identified in conjunction with the six ponds described above, other known wetland areas include: a tiny open water wetland to the north of Queen Anne Rd., a small wetland to the west of Oak St., several abandoned bogs between Cornelius and Walkers Pond, and several small wetlands to the south of Walkers Pond.

No field work has yet been conducted to identify wildlife migration corridors in the proposed District. However given the large and relatively unfragmented nature of the woodlands in the District, it is likely that interior forest species utilize the area.

Development of the land within the District in a manner consistent with the Harwich Zoning Bylaws would likely result in fragmentation and loss of habitat within the District including rare species habitat and forested woodlands. Town bylaws generally do not contain standards that would provide for protection of these resources. There are a number of possible changes in development bylaws that could be adopted to protect the resources within the proposed District including creation of pondshore and wetland buffers, requirements to revegetate disturbed areas, requirements for natural resource evaluations prior to development, limitations on clearing and grading and increased scrutiny of projects within rare species habitat.

#### **4.1.3. Open Space/Recreational Resources**

The proposed District provides outstanding open space and recreational resources on both public and private holdings.

State Lands: The Commonwealth of Massachusetts owns a total of 284.44 acres of land within the proposed DCPC, including Hawksnest State Park, owned and managed by the Department of Environmental Management. The state lands largely border or surround Olivers Pond, Hawksnest Pond and Black Pond. There are no developed facilities at this state park, although trails are used extensively for walking and riding, and Hawksnest Pond is used for swimming, canoeing and kayaking. Acquisition of Hawksnest State Park was originally planned for two phases - Phase 1 was 217 acres and Phase 2 was 482 acres. Only Phase 1 was completed.

In the early 1970s, the MA Department of Natural Resources prepared a plan to create a large visitor complex at Phase 1 of Hawksnest State Park (which it had recently purchased for \$150,000) to supplement the camping facilities at Nickerson State Park. The plan included construction of roads, 163 campsites, a recreation hall, playing fields and 2 beaches, as well as parking lots for 182 vehicles, all on the land acquired for Phase 1. Preliminary plans for the Phase



2 acquisition (which was never completed) called for an additional 406 campsites as well as 8 large group camping areas, a beach for 500 people and parking for 120 cars on Hawksnest Pond.

Today, these plans are no longer on the drawing board, and a more ecologically-based approach to planning for the area is contained in long-range plans for this land. The Department of Environmental Management has a GOALS (Guidelines for Operations and Land Stewardship) Plan for both Nickerson and Hawksnest State Parks. With regard to Hawksnest, the plan includes as action items:

- \* coordination with the town, the Natural Heritage Program and The Nature Conservancy on protection of sensitive natural resources. The plan recommends a cooperative agreement for monitoring and management as well as a permanent staff of 2 to accomplish this
- \* erosion control on trails leading to the shoreline of Hawksnest Pond and regrading of roads in some locations
- \* Gates to control access in a few locations
- \* Consideration of modest harvesting of forest resources

The Plan also states that in the long term "DEM may assess the potential for increased recreation in the future given increased demand. Any development of recreation facilities would have to take into consideration the protection of sensitive natural and cultural resources."

Town lands: Town holdings within the proposed District include 7.39 acres under the custody and control of the Board of Selectmen, 12.42 acres under the custody and control of the Harwich Conservation Commission and 24.43 acres under the custody and control of the Harwich Water Department. The Conservation and Water Department land lies to the north of Olivers Pond between the pond and Spruce Rd. and was purchased by the town with assistance from the state.

Cape Cod Pathways: The area proposed for DCPC designation contains extensive trails and cart roads on both public and private lands. These trails are used for walking, horseback riding and mountain biking. A portion of the District was recently the subject of an in-depth study by the Cape Cod Commission to identify a north-south trail that would link Nickerson State Park in Brewster with Hawksnest State Park and the Cape Cod Rail Trail extension in Harwich. This study, entitled the Nickerson-Walker Trail Feasibility Study and Land Protection Plan, was completed by the Cape Cod Commission in 1997. The study identified three possible routes for the trail, all of which are located within the proposed District. These options all enter the proposed District from the north on Spruce Road, and travel along the northern shore of Olivers Pond, heading south on Hawksnest Road between Olivers Pond and Hawksnest Pond. From there, the alternatives diverge, either heading west along the southern side of Hawksnest, Black and Walkers Pond on Nathan Walker Road (an ancient way) or heading south along Hawksnest Rd., then crossing Queen Anne Road. Several recent Cape Cod Pathways hikes have traversed this area. Little, if any, new trail would be required to be constructed and enhanced trail management could reduce current inappropriate trail uses (dirt bikes, littering, etc.) However, it is important that new development along the trail route be designed in a manner that maintains and enhances these trail connections.

Other Open Space Holdings:

Pond Access: All of the ponds within the proposed District except Black Pond are classified as Great Ponds, since they are greater than 10 acres in size. For these ponds, the Commonwealth owns the land under the ponds out to the high water mark. There is limited public access to these ponds at present. These include a public access located on the southwest corner of Hawksnest Pond with a small parking area at the end of Round Cove Rd. Olivers Pond, Walkers Pond and

Cornelius Pond are also listed in the open space and recreation plan as having public access. Access is not well marked, and known principally to local residents. Black Pond has limited access and Aunt Edie's Pond has none. One of the issues that can be addressed through the DCPC process is management of pond access and associated recreational uses.

The town of Harwich has recently completed an update of its Open Space and Recreation Plan and is thus eligible to receive state matching funds for open space acquisition. The town also has funds through the Cape Cod Land Bank as well as an active land trust, the Harwich Conservation Trust. Open space protection, including the use of conservation restrictions and increased use of cluster development, are likely to be an important elements of the proposed district in order to achieve the town's stated goals in the nomination application. In fact, the town has expressed an interest in doubling the amount of protected land within the proposed District. Objectives in open space preservation are the maintenance of wildlife corridors and the provision of adequate buffers to sensitive resources including ponds and wetlands. Additionally, open space preservation should be planned as much as possible to retain critical natural resource values and viewsheds. Open space preservation in this area will also provide an opportunity to plan for and incorporate a regional trail network, as is currently ongoing as part of the Cape Cod Pathways effort.

#### 4.1.4. Transportation

The proposed boundary of the Harwich 6 Ponds District of Critical Planning Concern (DCPC) includes numerous local roads (Hawksnest Road, Round Cove Road, Spruce Road, Oak Street, etc.) and the regional roadways of Route 137, Route 39, Queen Anne Road and Route 124. It is estimated that 425 new residential homes could be built in the DCPC area.

##### Existing Conditions

##### Traffic Counts

As stated above the Harwich 6 Ponds DCPC is bound by the Regional Roadways of the Route 6 (Mid Cape Highway), Route 137 (Harwich Chatham Road, Route 39 (Orleans Harwich Road), Queen Anne Road and Route 124 (Pleasant Lake Avenue. Historical traffic counts on file with the Cape Cod Commission are not available for roadways within the interior of the DCPC. However, traffic count data for the perimeter roadways include the following:

Route 137	13,400 Vehicles per day
Route 39	6,400 Vehicles per day
Route 124	9,590 Vehicles per day
Queen Anne Road	3,150 Vehicles per day

##### Accidents

A review of traffic accident data for the on file with the Cape Cod Commission reveals the following:

<u>Intersections</u>	<u>Accidents</u>
Route 124/Queen Anne Road	21
Queen Anne Road/Route 39	11
Route 137/Route 39	20

The intersection of Route 124/Queen Anne Road and Queen Anne Road/Route 39 were listed in the latest Massachusetts Highway Department High Accident Locations. Not reported in the MHD top 1000 accident location is a fatal accident that recently occurred at the intersection of Queen Anne Road and Route 39.

##### Roadways

Roadways within the DCPC and defining the perimeter of the DCPC are rural in nature. Route

124, Queen Anne Road, Route 39 and Route 137 are all regional roads as classified in the Regional Policy Plan. The physical characteristics, roadway geometry and traffic control devices for the existing roadways in the DCPC area are described below.

Route 124 is a two-way 50-foot wide four lane roadway narrowing to two lanes (26-foot wide) just north of the intersection of Route 124 and Queen Anne Road. Route 124 traveling from Route 6 to Queen Anne Road defines the westerly boundary of the Six Ponds DCPC area. The roadway surface is made up of bituminous concrete and appears in good condition. No sidewalk or usable shoulders are provided on this roadway. The posted speed limit is 25 MPH at the approaches to the Route 124/Queen Anne Road intersection. The intersection of Route 124 and Queen Anne Road is under four-way stop sign control.

Queen Anne Road is a two-way 26-foot wide roadway traveling from Route 124 southeasterly along the southern boundary of the Six Ponds DCPC to Route 39. Queen Anne Road is a winding country road with numerous vertical and horizontal curves. The roadway surface is made up of bituminous concrete and appears in good condition. No sidewalks or roadway shoulders are provided on this roadway. The posted speed limit varies from 30 MPH to 40 MPH. Queen Anne Road is posted with stop signs at its intersection with Route 39.

Route 39 is a two-way 24-foot wide roadway traveling east to west through the Six Ponds DCPC. The roadway surface is made up of bituminous concrete and appears in good condition. No sidewalks or roadway shoulders are provided on this roadway although a worn pedestrian path is evident on the south side of Route 39. The posted speed limit is 45 MPH. The intersection of Route 39 and Route 137 is under traffic signal control.

Route 137 is a two-way 24-foot wide roadway traveling north to south from Route 39 to Route 6 along the eastern boundary of the Six Ponds DCPC. The roadway surface is made up of bituminous concrete and appears in good condition. No sidewalks are provided on this roadway. Route 137 is posted at 40 MPH and intersection with Route 6. The Route 137/Route 6 intersection consists of a grade separated half cloverleaf interchange. Route 137 widens to four lanes at its intersection with Route 6.

The following streets are typical of the dozens of roadways within the DCPC area:

Spruce Road is a two-way 20-foot wide roadway traveling east to west from Route 137 along the northern boundary of the DCPC. Spruce Street abuts Route 6 to the north and is typical of the service roads found in the mid-cape area. The roadway surface is made up of chip seal and terminates at a residential subdivision. The chip seal roadway surface is in good condition. This roadway surface type would not hold up to traffic impacts as well as a bituminous concrete surface. No sidewalks or roadway shoulders are provided on this roadway.

Oak Street is a two-way 20-foot wide roadway traveling north to south from Queen Anne Road to its terminus within the DCPC. Oak Street is a winding country road with numerous vertical and horizontal curves. The roadway surface is made up of chip seal and ends before the Route 6 limited access line. The chip seal roadway surface is in good condition. This roadway surface type would not hold up to traffic impacts as well as a bituminous concrete surface. No sidewalks or roadway shoulders are provided on this roadway. Oak Street is posted with a stop sign at Queen Anne Road.

Hawksnest Road is an unpaved dirt roadway (12-foot wide) open to two way traffic. Hawksnest Road is a winding country road with numerous vertical and horizontal curves traveling south to north from Queen Anne Road into the interior of the DCPC. This roadway surface type would not hold up to traffic impacts. No sidewalks or roadway shoulders are provided on this roadway.

### Potential Traffic Impacts/Growth Issues

#### Traffic Congestion

According to Trip Generation (6th edition, Institute of Transportation Engineers) each dwelling unit generates an average of 10 trips per day. The National Personal Transportation Survey estimates that average trip length for residential land use to be 9 miles. Based on these estimates, travel generated by the potential 425 dwelling units corresponds to 4,250 vehicle trips per day and 38,250 miles of vehicle travel per day.

#### Access

If the vehicle access for the 425 residential homes were to utilize Queen Anne Road, the 4,250 vehicle trips per day would double the average daily traffic on Queen Anne Road. Resulting in virtually all vehicle traffic traveling through an intersection (Route 124/Queen Anne Road or Queen Anne Road/Route 39) listed in the Massachusetts Highway Department top 1000 accident locations.

According to Commission Technical Bulletin 96-003, each driveway creates nine new points of conflict (based on the potential for collision between the various turning movements). The American Association of State Highway Transportation Officials (AASHTO) reports that the number of accidents increases proportionally to the number of access points on rural roads. Another study reports that accidents are more prevalent on roadways having combinations of sharp curves and steep grades. The addition of 425 new driveways on the rural roadways within the DCPC would increase the accident potential on these roadways.

Roadway layouts, vehicle access, traffic control devices and traffic calming measures should all be planned within the DCPC area. Some traffic calming measures such as roundabouts can provide both traffic calming (reduced speeds) as well as safety improvements at DCPC area intersections. Consideration should be given to access management, (combining driveways) and providing traffic calming measures (roundabouts, speed humps, etc) both on the internal DCPC roadways and on the perimeter roadways.

#### Roadway Design

While all of the 4,250 trips would travel on DCPC roads, their effect (the majority of the 38,250-vehicle mileage) would be felt on the surrounding areas and to some extent on other parts of the Cape. The 4,250 vehicle trips per day will have impacts on the existing roadways within the DCPC. The increase in daily traffic will have an effect on the life expectancy of the roadway. The roadways within the DCPC will not last as long with the increase in average daily traffic. And when the time comes to rebuild the roadways, greater impacts may be felt because of the increase in average daily traffic from the 425 residential houses.

The increase in average daily traffic may change the functional classification of the roadways within the DCPC. Functional classification determines the design standards for future reconstruction of the roadways. Design standards control horizontal and vertical alignment, required sight distance, grades, clear zones, and shoulder and roadway widths of the roadways. Generally the higher the functional classification, the more imposing the design standards become on the surrounding environment to accommodate for the roadway. When the roadway ultimately fails and the time comes for reconstructing the roadway, the required alignment, sight distances, grades, clear zones and roadway widths may lead to removing a significant amount of trees and changing the topography of the land within the DCPC.

#### **4.1.5. Heritage Resources/Community Character**

The proposed district has historically been one of the less densely developed areas of Harwich,

known for its cranberry bogs, unspoiled woodlands and pondshores. In recent decades the cranberry bogs in the area of the proposed district have largely been abandoned as have most of the farming operations that once existed in the area. Generally, it is the lack of development in the proposed District and the relatively unspoiled state of the area's forests and pondshores that define the area's importance in terms of community character. The District's undeveloped forests and pondshores serve as an important scenic resource area and as one of the less developed areas of Harwich, a connection to the town's heritage as a rural Cape Cod town. As described in the Natural Resources section of this Staff Report most of the important resource areas associated with the proposed District are presently unprotected and vulnerable to extensive residential development.

The six ponds within the proposed District serve as a valuable year-round scenic and recreational resource. Each pond is unique and views onto and from the ponds vary significantly. Some of the ponds such as Aunt Edies have shorelines that are both developed and undeveloped, with scattered development consisting of a mix of primarily newer residences occupied throughout the year, and smaller seasonal cottages that have existed on the ponds for several decades. In most cases development is partially screened from the pond. Other shoreline areas are densely wooded without any cottages, single family residences or other types of development.

Some ponds such as Hawksnest and Black Ponds have shorelines that have almost no shoreline development, with the exception of a solitary cabin and a few informal beach areas. Olivers Pond represents one of the town's more recent and most significant land preservation projects. The pond was one of the few great ponds (10 plus acres) on Cape Cod with no development of any kind on its shoreline, and no protection for any of the lands surrounding the pond. Correspondingly the pondshore was under intense development pressure when the town, state conservation agencies, and private land protection organizations cooperated to protect all of the land surrounding the pond. The conservation effort was successfully implemented just as development of the land was to commence, preserving the pond and its surrounding lands in a wild state forever.

Several roads in or on the perimeter of the proposed District provide scenic views related to the natural and/or built environment. The 1993 Harwich Master Plan update identified Queen Anne Road and Route 39 and Church Street as having one of the greatest concentrations of pre-1900 homes in East Harwich.

As stated in the Regional Policy Plan "the most significant problem relative to town character is the consumptive pattern of development on the Cape." Under current zoning the Six Ponds area will be suburbanized. Although Harwich has a cluster bylaw that concentrates development on less land, the number of new subdivisions and the intensity of development possible under current zoning in the proposed District (even with the implementation of cluster development) would result in a development pattern that would largely eliminate the present rural character of the area. Given the fragility of the large areas of unfragmented forests and unspoiled pondshores that define the character of the proposed district, development in the proposed District needs to be planned in a comprehensive manner, if the unique character of the Six Ponds area is to be preserved. DCPC designation would help to protect these resources by allowing for the establishment of special overlay districts and subdivision regulations that better protect the area's scenic and natural resources. It would also provide time for the exploration of non-regulatory initiatives to identify and protect these resources. A scenic overlay district could be created to protect the undeveloped character of the district as seen from local roadways and from the ponds. Such a district could also address economic and other incentives to encourage development in the most appropriate locations. Subdivision regulations could be revised to guide development away from unfragmented forests, open landscapes, and pondshores. In addition, DCPC designation would allow for further study of the area's archaeological sensitivity and identification of significant sites that need protection.

#### 4.1.6. Growth Planning, Capacity and Infrastructure Issues

In recent decades, Harwich has experienced rapid growth and development. New residential development has been a constant in Harwich since 1980 resulting in a significant increase in year round population. Town population has increased from 8,971 in 1980 to 10,275 in 1990, representing a 15% increase. In 1998, the population of Harwich was estimated by the U.S. Census Bureau to be 11,675, an increase of 15% during the eight year period despite the recession of the early 1990s. An average of 125 residential units were developed in Harwich annually between 1984 and 1995.

The impacts associated with the development boom in recent years have been significant and extensive. Rapid residential growth has significantly increased the school age population, wastewater generation, and water consumption in the town. In the face of intensive development, schools, municipal services, roadways and other Harwich facilities that impact municipal fiscal health and the overall quality of life in the town have been strained.

At the beginning of the 21st century as growth in Harwich continues at a robust rate, the prospect of full buildout is becoming a tangible reality that the town is actively seeking to address. The population projections developed in 1990 for the 1993 Harwich Comprehensive Plan estimated that under established zoning, the Town's population would level off at about 20,000 residents at full development. Changes in zoning and proactive land acquisition for preservation purposes have been identified as two primary methods of reducing the town's ultimate buildout population. Reducing the town's ultimate buildout population would also reduce the overall increase in the number of vehicle trips, number of school age children, as well as the overall impact on a wide range of municipal facilities including new water supply wells and wastewater facilities that would be needed with a higher level of growth.

Within the proposed District, the town has estimated that a maximum of 425 single family residences could be constructed under current zoning. While this number reflects only a fraction of the total number of residential units that are potentially developable on a town-wide basis, the impacts to the entire town related to such development within the proposed district are significant. Several of the key associated impacts are discussed in more detail below.

One of the most significant impacts associated with additional residential development is related to increases in the school aged population. In 1999 the school age population for the Town of Harwich was 1,750. Further residential development within the proposed district, as allowed under current zoning could add an estimated 170 students to Harwich schools, an increase of nearly 10%. The impact of this potential population increase of 170 students is particularly acute, given the fact that Harwich Public Schools are already at or over capacity. The addition of 170 students would necessitate the construction of new classrooms and the hiring of additional school staff. The fiscal impacts are significant as well. The state mandated foundation budget standard for annual per pupil spending is \$5,500. Increasing the school enrollment by 170 students could translate into an increase in the town's annual per pupil spending by over \$935,000.

The Town of Harwich recognizes the importance of protecting and improving the quality of quantity of water resource areas and the public water supply. Five of the Six Ponds in the proposed District fall within the Department of Environmental Protection's Zone II recharge area boundaries for wells in Harwich, as well as Chatham and Brewster. Residential development in this area as allowable under existing zoning would significantly impact the quality and quantity of this critical water supply source. Residential lawn and stormwater runoff, associated with new residential development has been cited as a primary reason for increased eutrophication of a number of ponds on Cape Cod. The level of development in the proposed District will have a direct impact on the water quality of the six ponds. As well, water withdrawals from many private and public wells associated with single family residences would likely impact pond levels and the

rare and fragile pondshore ecosystems.

Increased traffic generation is another impact associated with increased residential development both within the proposed district and townwide. As noted earlier, the 340-425 potential dwelling units within the proposed district would result in an estimated additional 4,067 vehicle trips per day and miles of vehicles travel per day, and have the potential of degrading the level of service on roadways within the proposed district. These increased trips would impact key roadways within and adjacent to the proposed District that are already significantly overburdened a significant portion of the year, including Route 6, the region's primary transportation artery.

#### 4.1.7. Regulatory Framework

The principal existing regulatory framework within the approximately 1,368 acre proposed District consists of the Harwich Zoning Bylaws, Subdivision Rules and Regulations, Board of Health Regulations and wetlands regulations.

The majority of the land within the proposed District is within the Residential Rural Estate (RR) District. The minimum lot area in the R-R district is 40,000 sq.ft. with 150' of road frontage required for any lot. A small area of the proposed district is within the Commercial Highway II (CH-2) District that comprises the busy commercial area located in the vicinity of the intersection of Routes 39 & 137. This area is now a primary retail center for Harwich and surrounding towns and has experienced rapid growth during the past two decades. Only a small number of lots within the proposed District located within the CH-2 district have not been developed, and as currently proposed land located in the proposed District that is zoned CH-2 would not be subject to the development moratorium while the DCPC designation is in effect.

The following uses are permitted within the R-R Residence District by right:

Single Family Dwellings	Camper Storage
Swimming Pool	Accessory Storage Bldg.
Church	School (public, private, etc..)
Non-profit recreation club	Non-profit hunting club
Cemetery	Non-profit medical facility
Cranberry operations	Agricultural production, sales
Forestry	Golf Course
Community Antennas	Landfills

The following uses are permitted with a special permit from the Harwich Zoning Board of Appeals or Planning Board:

Dwelling w. accessory apt.	Cluster Development
Non-profit camp	Non-profit library
Essential Services	Septage Treatment Facility
Raising of pigs/swine	Hospital
Scientific research	Shared elderly housing

Structures within the R-R district must meet setbacks of 25' front yard; 20' side and front yard. Lot coverage is limited to 15% and the maximum building height is 30'.

The Town of Harwich has a Wetlands Protection by-law. The purpose of the by-law is to protect the foreshores and wetlands of the Town of Harwich, by controlling activities deemed to have a significant effect upon wetland values. The Town Conservation Commission is empowered to deny permission for any removal, dredging, filling or altering of subject lands within the Town if,

in its judgment, such denial is necessary to fulfill the purposes of this by-law on either the subject lands or land within one hundred feet (100') of subject lands.

On January 11, 2000 at a Special Town Meeting voters approved a Development Scheduling Bylaw that limits the number of building permits that can be issued for the construction of new single family dwellings in a calendar year to 50 permits.

### Subdivision Rules and Regulations

The current Town of Harwich's Subdivision Rules and Regulations were last revised on January 21, 1997. Subdivisions constructed within the proposed District would likely have 24' wide collector streets or 20' wide minor streets. The dead end road length limit is 1200'. Design requirements for subdivision stormwater management systems are based on a 25-year storm. The town requires that all stormwater shall be disposed of through subsurface leaching or drainage easements. The town prohibits runoff from paved surface runoff into open stream channels or vegetative wetlands as defined in the Harwich Wetland by-law. In addition to the creation of new lots via subdivision, the configuration of the undeveloped parcels allows for the development of approval not required lots along existing roadways in the proposed District.

### Summary

As noted above, the level of development possible within the proposed district could have significant impacts on the resources proposed for protection through this DCPC nomination despite the existing regulatory framework. The demand for public water to meet the needs of the additional development would increase, perhaps requiring additional public supply wells. New development would increase the density of septic systems in zones of contribution to public supply wells, potentially degrading water quality. The amount of residential development allowed under zoning would increase traffic generation, which could significantly reduce safety and levels of service on local and regional roadways. The character of scenic roads would be altered, and unprotected historic and archaeological resources could be disturbed or lost. Forest habitat in the area would be significantly reduced, limiting wildlife corridors and placing more pressure on rare species habitats. Residential development based on existing subdivision or cluster subdivision regulations would affect the character of the area. Other permitted uses within the District could result in highly land intensive uses such as earth removal, excavation, golf courses, hospitals, and landfills. The appropriateness of these uses merits further consideration.

Current zoning district boundaries and regulations have little relationship to the significant resources that the town hopes to preserve. Both development density and appropriate uses need to be evaluated to determine what forms of development can occur in conjunction with resource protection goals.

## **5.0 Guidelines for Development**

### **5.1 Introduction and General Guidelines**

The following Guidelines ("Guidelines") are hereby adopted by ordinance to guide the development of regulations within the Harwich Six Ponds District. The objective of these Guidelines is to ensure full protection of the Goals and Interests of the District set forth in Section 5.2 through establishment of Implementing Regulations by the town of Harwich. Regulations which conform to these Guidelines will control development and protect resources and the public health within the Harwich Six Ponds District.



### **5.1.1. Process for Development of Implementing Regulations**

The Harwich Board of Selectmen and the Harwich Planning Board shall oversee the development, adoption, and enforcement of Implementing Regulations consistent with the Guidelines described herein. Implementing Regulations for the District may take the form of zoning bylaws, regulations, management initiatives, or other means identified in the town of Harwich which help to achieve the goals and interests of the District. To the extent that some of the resources identified in the goals and interests are currently being evaluated, the level of protection required will be determined by the analysis developed as part of this study. The town of Harwich shall propose Implementing Regulations for the District to the Cape Cod Commission which shall be reviewed and approved by the Cape Cod Commission in accordance with Section 11 of the Cape Cod Commission Act.

The Cape Cod Commission may certify regulations that are different than those suggested herein if the Commission finds that such regulations sufficiently advance the purpose of the Act and the goals and interests of the DCPC as described in Section 5.2. The Commission shall determine whether the Implementing Regulations proposed by the Town are sufficient to protect the Goals and Interests of the DCPC and may then issue a Certificate of Consistency. Upon the adoption of certified Implementing Regulations, the local permitting previously stayed by the DCPC nomination may proceed consistent with the newly adopted Implementing Regulations.

### **5.1.2. Flexibility in Application and Property Equity**

The Implementing Regulations shall address the issue of property equity and shall adopt regulations concerning property equity that are directed toward avoiding regulatory takings. The Implementing Regulations shall investigate methods of addressing property equity, with a strong preference for the use of transfer of development rights (TDR) and other creative methods to minimize the impacts of development on the resources of concern within the District.

Variations should be issued only when necessary to meet constitutional requirements. The Town may, as permitted by law, decide on a case-by-case basis how the pursuant regulations will be applied, in order to take account of differences in lot area and type, the particular nature of the resources at stake, and the type of development proposed.

## **5.2 Goals and Interests**

The goals and interests of this District shall be:

- \* to enhance protection of water quality within existing and potential future zones of contribution to public water supply wells;
- \* to enhance protection of water quality within Herring River and the Pleasant Bay coastal embayments;
- \* to evaluate and protect potential well areas to serve future town needs;
- \* to protect and enhance the water quality of Aunt Edies, Cornelius, Walkers, Black, Olivers, and Hawksnest Ponds;
- \* to maintain the scenic character of area roads and views of pondshores and woodlands;
- \* to preserve cultural landscapes, archaeological sites, historic structures and traditional land uses;
- \* to protect the Districts key natural resources including rare plant and wildlife habitat, wetlands

and coastal plain pondshores, unfragmented forested areas, fisheries, and wildlife corridors;

\* to protect and enhance existing vegetative cover in order to maintain water quality and wildlife habitats;

\* to encourage the restoration of resources degraded by excavation operations of other activities within the District;

\* to encourage the continued use of land within the District for open space and recreational purposes;

\* to enhance recreational opportunities within the District that are compatible with resource protection and to ensure appropriate management and uses of existing recreational facilities;

\* to foster land uses that are compatible with the resource protection goals of the District and to manage growth in a manner that will not result in adverse impacts on the town's infrastructure;

\* to develop and implement a public education program for property owners, visitors and others that will provide suggestions for reducing or eliminating impacts to the goals and interests of the District;

\* to evaluate existing pond uses and development of guidelines for public access to and recreational use of the lands and waters within the District, including the control of inappropriate uses and potential linkages in the Cape Cod Pathways network;

\* to identify priority acquisitions, conservation restrictions or other land protection techniques that would be appropriate to the District; and

\* to identify restoration measures for areas of the District and related resources that have been degraded by excavation operations.

### **5.3 Definitions**

Definitions shall be the same as those included in the Cape Cod Commission Act, the Regional Policy Plan, and the town of Harwich Bylaws and Regulations.

### **5.4 Review of Developments of Regional Impact (DRI) within the DCPC**

The regulations adopted pursuant to these Guidelines in no way alters the process for the referral and review of Developments of Regional Impact according to the Act and Regulations of the Cape Cod Commission.

### **5.5 Water Resources**

The town shall establish adequate protections for ground and surface water quality and quantity within the District.

5.5.1. The town should apply a 5 ppm-N nitrogen loading standard throughout the district to protect existing water supplies and potential future supplies. DEP-approved denitrifying septic systems should be used by projects to meet this requirement as needed.

5.5.2 Future public water-supply well sites in the District should be identified consistent with projected demand. No development should be permitted within 400' of future public water-supply wells.

5.5.3. Board of Health regulations should require a minimum 300' setback from all pond shorelines for soil adsorption systems (SAS) for all new construction, including single-family homes. For cases where lots are too small or in cases of existing systems with inadequate setback, SAS should be located at the maximum possible distance from ponds. If adequate water-quality study has been completed and the results indicate that acceptable water quality will be maintained now and at buildout, this requirement should be waived.

5.5.4. The town should adopt a surface-water recharge protection overlay district to protect pond water quality in Aunt Edies, Cornelius, Walkers, Black, Hawksnest, and Oliver's Ponds.

5.5.5. Town stormwater regulations should ensure that stormwater from roads and other land uses within the District is either discharged outside 300' buffer areas around ponds or is adequately treated for phosphorous. Consideration should also be given to enhanced treatment in areas with steeper slopes. If an adequate water-quality study of the pond has been completed and the results indicate that acceptable water quality will be maintained now and at buildout, this requirement should be waived.

5.5.6. Town wetland regulations should ensure that adequate natural buffer strips are maintained on shoreline properties.

## **5.6 Wildlife and Ecological Resources**

The town shall establish adequate protections for wetland resources, rare or significant wildlife species habitat, fisheries, unfragmented forest habitat and wildlife travel corridors within the District.

5.6.1. The town should complete a natural resources inventory of lands within the District and revise zoning and land use regulations based on land suitability and carrying capacity.

5.6.2. The town should establish enhanced protections for wetland resources, rare species habitat, coastal plain pond shores and other sensitive natural resources within the District.

5.6.3. The town should adopt clearing and vista pruning limitations for land areas within the District directed toward maintaining unfragmented forest and wildlife corridors

5.6.4. The town should consider establishing an undisturbed buffer requirement along the shorelines of coastal plain ponds and key wetlands.

5.6.5. The town should consider the creation of an overlay district to protect significant resources within the District, as well as the establishment of other mechanisms for habitat conservation planning and protection within the District.

5.6.6. The town should prioritize open space protection efforts within the within the District based upon resource values and the protection of resources through land conservation and management.

5.6.7. The town should promote the identification and certification of vernal pools within the District and provide protection for such areas through Conservation Commission regulations.

5.6.8 The town should revise existing zoning regulations that allow permitted uses that are land consumptive and/or have the potential for negative impacts on important resources in the District.

## **5.7 Cultural and Scenic Resources**

The town shall establish means for protecting the rural and scenic character of the District and for

increasing protection of historic and archaeological resources and distinctive cultural landscapes.

5.7.1. Regulations should be established to protect the rural character of the District. Regulations limiting the impact of development on important scenic resources should be considered, including an increased setback for pondshore related development, and a 100 foot vegetated buffer along the roadways, incentives for shared curb cuts/common driveways and other means of reducing the need for structural improvements which would be inconsistent with the character of the District.

5.7.2. The town should consider establishing a scenic overlay district to limit development potential within identified cultural landscapes and scenic vistas, limit the height of structures, and offer incentives for relocating development to more appropriate locations.

5.7.3. The town should consider regulations that limit fragmentation of the Districts forests and related impacts on wildlife, scenic vistas, and recreational resources.

## **5.8 Growth Management/Community Character**

The town shall review the zoning bylaw and subdivision regulations for inconsistencies with the goals of the District and propose zoning amendments, as necessary, to achieve all of the goals set forth in Section 5.2 of this decision.

5.8.1. The town should consider revising its cluster development bylaw. Revisions should require mandatory clustering within the District and changes that would result in less fragmentation of open space resources than the town's existing cluster bylaw. An open space plan for the District should be developed to guide the design of cluster developments.

5.8.2. The town should revise the table of uses and dimensional standards in the zoning bylaw to eliminate land intensive or inappropriate uses and encourage compatible uses as well as to reduce the impact of permitted development.

5.8.3. The town should explore mechanisms to reduce or redistribute density within the District in accordance with the water quality, transportation, natural resources, open space and community character resources within the District. Mechanisms to reduce or redistribute density which should be explored including open space protection (fee and less than fee interests), downzoning, and transfer of development rights.

5.8.4. A special permit process should be considered for major residential developments to provide opportunities to protect significant environmental and cultural resources and limit demands on community infrastructure from new development.

5.8.5. The town should consider measures to preserve the rural character of the District's roadways. Development should be limited to that which can be accommodated by the existing roadway conditions without resulting in operational or safety hazards and without the need for roadway widening and other structural improvements.

5.8.6. The Town should establish a typical roadway cross section that considers "country" drainage, roadway widths that do not exceed 20 feet and roadway alternatives that eliminate or reduce any guardrail.

5.8.7. The Town should establish access management guidelines limiting the maximum number of curb cuts per roadway mile. Combining driveways will assist in reducing the negative effect of conflict points associated with each curb cut. The Town should pursue banning any new curb cuts on the perimeter roads.

5.8.8. The subdivision regulations should be revised to require interconnection between adjacent land parcels. Pedestrian/bicycle interconnects between cul-de-sacs should be mandatory and vehicle interconnects should be considered.

5.8.9. The Town should consider establishing roadway layout, traffic control devices and traffic calming measures (roundabouts, speed humps, etc) both on the internal DCPC roadways and on the perimeter roadways.

### 5.9 Open Space and Recreational Resources

The town shall take measures to foster the permanent protection of open space and the appropriate use of recreational facilities within the District.

5.9.1. The town should use the natural resources inventory identified in Section 5.6.1. to identify the most critical open space resources and work to permanently protect these lands for their open space values.

5.9.2. The town should continue to identify the most feasible route for the Cape Cod Pathways/Cross Cape Trail and develop regulations to ensure that key linkages are maintained when land is proposed for development.

5.9.3. The town should take steps to safeguard the permanent open space status of existing town landings, cluster open space and homeowner association open space.

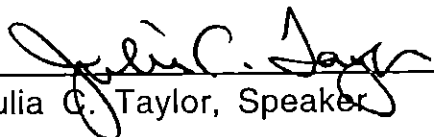
5.9.4. The town should develop regulations for the construction of private docks and piers, and the use of shared facilities where appropriate, within the District to ensure that the resources of ponds are not adversely affected by such construction.

5.9.5. The town should review existing uses and develop regulations to ensure appropriate recreational uses of the lands and waters within the District including management of access points in a manner that will not derogate from the values of the District and control of inappropriate off-road vehicle use.

5.9.6. The Town should develop an open space plan for the District that prioritizes the protection of parcels based upon resource values and an overall protection strategy for the District.

5.9.7. The Town should require clustering development into neighborhoods to retain open space, reduce the negative impacts of new streets and improve efficiency for public transit.

Adopted on May 3, 2000 by the Assembly of Delegates.

  
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Julia C. Taylor, Speaker

Approved by the Board of County Commissioners, May 10, 2000, at, 11:00 a.m.  
Date Time

    
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Mary J. C. Robert M. Chris D.