

Central Pine Barrens Comprehensive Land Use Plan

Supplemental Draft Generic Environmental Impact Statement

April 26, 1995

*Central Pine Barrens Joint Planning and Policy Commission
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**SUPPLEMENTAL DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT
FOR
THE CENTRAL PINE BARRENS
COMPREHENSIVE LAND USE PLAN**

PROJECT LOCATION: CENTRAL PINE BARRENS AREA - within the Towns of Brookhaven, Southampton and Riverhead and Villages of Quoque and Westhampton Beach

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DATE OF PREPARATION: April 1995

AVAILABILITY OF DOCUMENT: Copies of this Supplemental Draft Generic Impact Statement (SDGEIS) are available for public review and comment at the offices of the lead agency.

DATE OF ACCEPTANCE: April 26, 1995

DEADLINE FOR COMMENTS: May 30, 1995

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Preamble

This Supplemental Draft Generic Environmental Impact Statement has been prepared pursuant to the Commission's determination, as lead agency, that specific issues were not addressed or were inadequately addressed in the DGEIS because:

- (i) Changes were proposed for the project which may result in significant environmental effects and,
- (ii) Changes in circumstances have arisen which may result in significant environmental effects.

The changes to the project and the changed circumstance resulted primarily from changes in the Plan pursuant to recommendations of the individual Town Boards of Brookhaven, Riverhead and Southampton, and identification of the significant new plan elements including PBC receiving areas.

These changes affected nearly all analysis conducted for the DGEIS dated July 14, 1994. Thus nearly all of the sections of the DGEIS required substantial modification.

In consideration of the scope and breadth of the requisite modifications, and the importance of producing a clear readable, comprehensive impact analysis for the Plan, the Commission produced this SDGEIS as a stand alone document. That is, this SDGEIS incorporates all sections of the DGEIS which remain valid.

Therefore, in any instance where this SDGEIS is at variance with the DGEIS, the SDGEIS's contents supersede the contents of the DGEIS.

1. Summary

This Supplemental Draft Generic Environmental Impact Statement (SDGEIS) has been prepared for the Central Pine Barrens Comprehensive Land Use Plan (the Plan), issued January 13, 1995 and revised in April 1995. This SDGEIS specifically addresses elements of the Plan which were changed and/or added subsequent to the DGEIS dated July 14, 1994.

In the interests of creating a clear, concise, and easily understood impact analysis of the Plan, this SDGEIS incorporates the precedent DGEIS, thereby facilitating ease of use and review.

Chapter 2 of this SDGEIS includes a description of the proposed action; a comprehensive land use plan for an area known as the Central Pine Barrens (CPB) of Suffolk County, New York, prepared pursuant to the Long Island Pine Barrens Protection Act. (The Act). The Plan includes the following elements related to a Core Preservation Area (CPA) and a Compatible Growth Area, (CGA) which together comprise the CPB:

- Land Acquisition Policy
- Review procedures and jurisdiction for future development
- Standards and guidelines for land use
- Transfer of development rights program (TDR), referred to as the Pine Barrens Credit Program (PBC)
- Public lands management provisions
- Hydrogeologic recommendations
- Miscellaneous policies
- Description of future Central Pine Barrens Joint Planning and Policy Commission, created by the Act (the Commission)

Chapter 3 of the SDGEIS describes the environmental setting for the Plan, which specifically includes the CPB, and the surrounding areas in the towns of Brookhaven, Riverhead and Southampton. This environmental setting section relies heavily upon work conducted in the formulation of the Plan, referenced as Volume 2 of the January 13, 1995 Plan. Volume 2 of the Plan is a compilation of existing conditions, natural inventories, research, background, and factual information regarding to the CPB region.

Chapter 4 describes the environmental impacts related to the creation of the CPA, a contiguous 52,000 acre preserve to be created and managed pursuant to the Plan. This is generally a description of the positive, beneficial impacts of this element of the Plan.

Chapters 5 through 21 describe the potential environmental impacts of the individual elements of the Plan as they relate to the following resource areas:

- Geologic Resources
- Soils
- Groundwater Quality
- Water Supply Quantity
- Ecological Resources
- Surface Waters
- Cultural Resources
- Scenic Resources
- Open Spaces
- Demographic Patterns

- Sewage Infrastructure
- Transportation Infrastructure
- General Infrastructure
- Air Quality
- Noise
- Agricultural Lands
- Land Use and Zoning Patterns

Chapter 22 describes the Plan's consistency with New York State Coastal Zone Policies.

Chapter 23 describes the impact that the Plan's acquisition and PBC programs may have on school districts within the Central Pine Barrens.

Chapter 24 is an analysis of several alternatives to the Plan, including the no-action alternative, several alternatives with various amounts of acquisition of private CPA vacant land, and an alternative whereby infill (construction of single family homes on CPA roadfront parcels in substantially developed areas) is precluded.

Chapter 25 describes the growth inducing aspects of the Plan, and Chapter 26 evaluates the effects of the Plan on conservation of energy resources.

The SDGEIS concludes with an appendix which includes background information and data supporting the various analyses undertaken in the document.

2. Proposed Action: Central Pine Barrens Comprehensive Land Use Plan

2.1 Introduction

The proposed action for review within this supplemental draft generic environmental impact statement (SDGEIS) is the revised Central Pine Barrens Comprehensive Land Use Plan, hereinafter referred to as "the Plan." The original Plan was published along with a Draft Generic Environmental Impact Statement (DEIS) on said Plan in July, 1994. The Plan has been revised as to format and content based upon comments received from the public and the Town Boards of Brookhaven, Riverhead and Southampton. The preparation of the Plan, the original DGEIS dated July 24, 1994 and this SDGEIS fulfill specified mandates within the Central Pine Barrens Protection Act.

The passage of the Central Pine Barrens Protection Act ("the Act"), Chapter 262 as amended by 263 of the New York State Laws of 1993, led to the creation of the third largest open space preserve in New York State, the Long Island Pine Barrens. The Long Island Pine Barrens is recognized as one of the natural treasures of the Northeast and represents a globally unique ecosystem that is formed on extensive glacial deposits along the coast. The Long Island Pine Barrens originally covered 250,000 acres on Long Island and has since been reduced to approximately 100,000 acres. The Pine Barrens is home to thousands of plant and animal species, many of them endangered or threatened with extinction or extirpation. The majority of the Central Pine Barrens overlies an area where deep aquifer recharge occurs. Groundwater in this area is considered of relatively pure quality, warranting special protection as an important drinking water resource.

The Act created a Core Preservation Area of approximately 52,000 acres that is largely undeveloped. It also delineated a comparable sized Compatible Growth Area that generally surrounds the CPA. The largest portion of the Central Pine Barrens area lies within the Town of Brookhaven, with additional areas extending into the Towns of Riverhead and Southampton. Small areas are also located within the northern portion of the Villages of Quogue and Westhampton Beach.

The Act created the Central Pine Barrens Joint Planning and Policy Commission ("the Commission") whose membership is comprised of the Town Supervisors from Brookhaven, Southampton and Riverhead, the Suffolk County Executive, and the Governor or their respective designees. The Act mandates that the Commission oversee, prepare and adopt a well designed, scientifically based comprehensive management plan for the Central Pine Barrens area during a one year planning period that started with the signing of the Act into Law on July 14, 1993. Section 57-0101 (2), (3), (4) of the Law delineated specific goals and objectives for the Plan that are outlined in Volume 1, Chapter 2 of the Plan. The completion of the revised Plan on January 13, 1995 fulfilled this mandate and the goals and objectives specified in the Act.

In March, 1995, the Act was amended to extend the period of time allowed for the conduct analyses pursuant to SEQRA. This SDGEIS, which incorporates the contents of the original GEIS, represents a comprehensive analysis of the environmental impacts of the January 13, 1995 Plan as revised pursuant to comments received from the Towns of Brookhaven, Riverhead and Southampton in accordance with the revised provisions of the Act.

2.2 Purpose and Need for the Supplemental Draft Generic Environmental Impact Statement

The action for review in this SDGEIS is the Central Pine Barrens Land Use Plan. The Commission as lead agency determined that the proposed action is a Type I action that may have a significant effect on the environment and therefore a DGEIS must be prepared. A Positive Declaration on this action was issued by the Commission on April 13, 1994 and published in the Environmental Notice Bulletin, Issue Number 17 on April 27, 1994. An opportunity for public input on the content of the DGEIS was made possible during a public scoping meeting held on April 27, 1994 at the Longwood Junior High School in Middle Island.

The Long Island Central Pine Barrens Protection Act, pursuant to E.C.L. Section 57-0121(7), designated the Central Pine Barrens Joint Policy and Planning Commission as the lead agency for the original draft generic environmental impact statement prepared in July 1994, and for this SDGEIS. The law further states that the DGEIS was part of the land use plan and therefore, it appeared as a chapter within the Draft Plan. (July 14, 1994). The DGEIS analyzed the Plan chapters. The DGEIS was designed to provide an evaluation of the positive and negative cumulative impacts that may occur on the overall Pine Barrens ecosystems and groundwater resources located within the Central Pine Barrens area through its evaluation of the Plan's components.

Prior to holding a public hearing on the DGEIS, a public information meeting was held in each town. The public hearing was held on September 28, 1994 at Brookhaven Town Hall. Public comment was received at this hearing and recorded into a written transcript. A copy of the hearing transcript is available for public review at the office of the Central Pine Barrens Commission. Written comments on the Draft Plan and DGEIS were accepted through November 7, 1994. A responsiveness summary was prepared for all substantive written and oral comments received. The responsiveness summary will be incorporated into the final generic environmental impact statement (FGEIS).

During the ensuing months, the Draft Plan was revised based in part on the comments received. In keeping with the legislative milestones set by the Pine Barrens Act, the Commission, on January 13, 1995, passed a resolution to recommend the revised Plan to the three towns for adoption. In March 1995, a legislative extension (Senate bill S-2322 and Assembly bill A-3657) was passed to provide additional time to complete the review of the Plan and to produce a supplemental draft generic environmental impact statement (SDGEIS).

The purpose and scope of the SDGEIS is to address the potential cumulative environmental impacts of the Plan's components that have been revised and/or were not evaluated in the original DGEIS. This includes, but is not limited to, receiving areas designated by the three towns, changes to the original standards that are now identified as standards and guidelines, the Pine Barrens Credit Program and additional alternatives to the Plan. Criteria and conditions for future actions that are not addressed in this document shall be addressed in accordance with the requirements of Chapter 4 and 5 of the Plan and 6 NYCRR Part 617.

This SDGEIS and revised Plan will be the subject of a public hearing and a public review process as provided by the State Environmental Quality Review Act.

2.3 Plan and SDGEIS Study Area Boundaries

The boundaries of the Plan and SDGEIS study area are statutorily defined in E.C.L 57-0107(10) for the Central Pine Barrens, in E.C.L 57-0107(11) for the Core Preservation Area, and E.C.L 57-0107(12) for the Compatible Growth Area. The SDGEIS also evaluates impacts on areas outside the CPB, particularly with respect to PBC receiving areas.

2.4 Required Approvals

After the SDGEIS is accepted as complete by the Commission, a public hearings will be held during the month of May, 1995. The Commission will subsequently prepare a FGEIS. Prior to June 30, 1995 the respective town boards and the Commission must formally adopt the Plan and a findings statement under the State Environmental Quality Review Act. The adoption of the Plan must be by the unanimous approval of the Commission members, and by the signatures of the Governor, the Suffolk County Executive, and the Supervisors of the Towns of Brookhaven, Riverhead, Southampton.

3. Environmental Setting

This chapter presents an overview of the environmental conditions for the Central Pine Barrens area and areas outside of the Central Pine Barrens that may be affected by the implementation of the Plan.

3.1 Central Pine Barrens Zone

A detailed inventory of the existing environmental conditions of the Central Pine Barrens (CPB) area is provided in Volume 2 of the Central Pine Barrens Joint Planning and Policy Comprehensive Land Use Plan (the "Plan" or "Revised Plan") entitled EXISTING CONDITIONS. That is incorporated as an appendix to this SDGEIS. The description of existing conditions includes information on natural resources (i.e., geology, soils, hydrology, and Pine Barrens ecosystems), cultural resources, and physical data (i.e., population, land use, zoning, public and administrative boundaries and infrastructure) for the area. A discussion on Air Resources and Noise is included in this Environmental Setting but does not appear in Volume 2 of the Plan.

3.1.1 Geologic Overview

3.1.1.1 Surficial and Subsurface Geology

A description of the surficial and subsurface geology of Suffolk County which pertains to the Central Pine Barrens area is provided in Chapter 2 of Volume 2 of the Plan, Geologic Overview. The information for this section of the Plan was obtained from the Suffolk County Comprehensive Water Resources Management Plan, prepared for Suffolk County Health Services by Dvirka and Bartilucci, Consulting Engineers and Malcolm Pirnie, Inc., in January, 1987.

Included in Chapter 2 is a description of the different geologic time periods and events that shaped Suffolk County's geology from its bedrock to land surface. It includes a description of the sequence of stratigraphic formations that underlie Suffolk County and includes a description of the hydrogeologic units that correspond to these formations. Analyses of the geologic cross sections which run through the Central Pine Barrens are included in Chapter 2, in addition to figures that illustrate the areal extent and thickness of the specified hydrogeologic units.

3.1.1.2 Topography

The topography of the Central Pine Barrens area is generally described in Chapter 2.5 of Volume 2, Geological Overview - Topographic Relief. It includes a description of the range of elevations, slopes and land forms and their relationship to common glacial features such as moraines, outwash plains and recent geologic deposits. Generally, the elevations within the Central Pine Barrens area range from 0 feet at mean sea level where the study area borders Flanders Bay, to a high of 295 feet at Bald Hill which is on the Ronkonkoma Moraine just southwest of the Eastern Campus of Suffolk Community College, south of the Riverhead business district. Elevations are typically lowest in the areas where recent geologic deposits are found and highest in the moraine areas. Slopes on outwash plains and recent geologic deposits within the Central Pine Barrens area are generally even to gently rolling and range from 0 to 15%. However, in the moraine areas they are typically very hilly and uneven, containing slopes that range from 15 to 35% in many areas.

The Plan includes a discussion of unusual land forms such as kettle holes, kames, and swale areas that can be found in or adjacent to moraine areas in the Central Pine Barrens. The Plan identifies areas in the Central Pine Barrens that contain examples of these land forms.

3.1.2 Soils Overview

A description of the general soil associations located within the Central Pine Barrens area is provided in Chapter 3 of Volume 2 of the Plan, Soils Overview. The information in the chapter of the Plan is based on the Suffolk County Soil Survey prepared in 1975 by the United States Department of Agriculture Soil Conservation Service in cooperation with the Cornell Agricultural Experiment Station. Information on each soil association includes percent composition of the major and minor soil types. The four general soil associations located within the Central Pine Barrens area are identified below along with their approximate percentage composition of the Central Pine Barrens area:

Haven-Riverhead Association comprises approximately 25 percent of the Central Pine Barrens area

Plymouth-Carver Association-Rolling and Hilly comprises approximately 50 percent of the Central Pine Barrens area

Riverhead-Plymouth-Carver Association comprises approximately 10 percent of the Central Pine Barrens area

Plymouth-Carver Association, Nearly Level and Undulating comprises approximately 15 percent of the Central Pine Barrens area

For each soil type, a description of its physical characteristics (i.e., slope, texture, drainage, depth to substratum) is provided in addition to general vegetation that is usually associated with a particular soil type. Soils information in the Plan includes suitability or limitations for agricultural and other land uses as they relate to town and county planning (i.e., septic systems, parks, and roads). According to the Suffolk County Soil Survey, Plymouth Carver Association, Nearly Level and Undulating, and Plymouth-Carver Association Rolling and Hilly Association are generally associated with native Pine Barrens vegetation. These associations are considered poorly suited for agricultural use due to their coarse texture, high permeability and low fertility. The Riverhead-Plymouth Carver Association is somewhat limited for agricultural use due to the coarse-textured Plymouth and Carver soils, however areas of Riverhead Soils are generally suited for agricultural use. The Haven-Riverhead Association comprise the largest area of farmland in the County. (S.C. Soil Survey 1975). The high seasonal water tables of the minor soils in these soils associations restricts the use of septic systems or cesspools in these areas.

The soils chapter in the Plan includes a discussion of soils associated with environmentally sensitive resources. These soils are identified as prime agricultural soils on cleared lands and soils with high water tables that are associated with environmentally sensitive wetland and tidal marshes.

3.1.3 Hydrology and Water Quality Overview

3.1.3.1 Ground and Surface Water Resources

A description of the groundwater and surface water resources located within the Central Pine

Barrens area is provided in Volume 2, Chapter 4 of the Plan, entitled: Hydrology and Water Quality Overview. This information is based on plans and studies prepared by the United States Geological Survey, Brookhaven National Laboratory, Suffolk County Health Services' monitoring data and recent work by the State University at Stony Brook and the Suffolk County Health Services on the Peconic River and estuary system.

The information provided in Volume 2 of the Plan includes a description of the hydrogeologic formations within the Central Pine Barrens area in addition to information on groundwater and surface water hydrology, water quality and water pumpage for this area. The discussion on hydrology in Volume 2 describes the two uppermost aquifers as well as their confining layers.

The Upper Glacial Aquifer contains glacial deposits that are approximately 200 feet thick, but are sometimes thicker on moraines and in areas where the Magothy Aquifer has eroded. The depth to the water table is over 150 feet along the moraine and decreases toward the shoreline. This aquifer has a high permeability and moderate thickness, but there are some surficial silt and clay deposits as well as some local and possible subregional clay units which when present can impede groundwater flow and/or can create perched surface water systems.

The Gardiners Clay Unit is directly below the Upper Glacial Aquifer, separating it from the Magothy Aquifer. It is approximately 10 to 20 feet thick, but is not considered to be a significant hydraulic barrier to the recharge of the Magothy Aquifer from the Upper Glacial Aquifer within the Central Pine Barrens area. The Magothy Aquifer is approximately 800 to 900 feet thick and has lower hydraulic conductivities than the overlying glacial deposits.

The recharge of the Upper Glacial Aquifer is between 22 and 26 inches/year. The recharge of the Magothy Aquifer from the Upper Glacial Aquifer is greatest near the main groundwater divide and gradually decreases seaward until it is negligible at the deep recharge zone boundaries as described in the Plan.

The total pumpage in 1992 in the CPB was approximately 14.5 million gallons per day (mgd) which is equivalent to about 8% of the annual recharge. Most of this water was pumped from the Upper Glacial Aquifer and the greater percentage of it was returned to the aquifer system in the general area from which it was pumped. Chapter 4 of Volume 2 lists several of the main consumers of this water and the quantities that they have consumed.

Also, included in this chapter is a description of streamflow, pond and wetland hydrology. Approximately 25% of the precipitation recharged within the CPB area leaves the ground water system through streamflow, mainly through the Peconic and Carmans Rivers. There has not been a systematic inventory of the individual CPB wetlands and their relation to groundwater. However, Chapter 4 of Volume 2 describes their physical characteristics as well as how they were created.

3.1.3.2 Flood Plain Areas

The locations of flood plain areas in the Central Pine Barrens were identified by examining United States Geological Survey (U.S.G.S) maps. There are not many flood prone areas in the study area. Receiving areas are not designated for these areas. Those present are located within the same areas identified as wetlands in Volume 2, Chapter 5 of the Plan. Flood prone areas are generally found near ponds, creeks, rivers, and wetlands. These have been identified along the Peconic River and its tributaries, and along Sawmill and Terry Creeks in Riverhead. Other areas prone to flooding are located along various creeks in Southampton, north of Route 24 such as

Birch, Goose, Hubbards, and Mill Creeks. Areas along the Carmans River and its tributaries in Brookhaven are also flood prone. However, the area surrounding Deep Pond in Riverhead is not a flood prone area, according to the U.S.G.S. map.

3.1.4 Ecosystems Overview

3.1.4.1 Ecosystems and Ecological Processes

A description of the terrestrial and aquatic ecology within the Central Pine Barrens area is provided in Chapter 5 of Volume 2, Ecosystems Overview. It provides a detailed analysis of the Pine Barren's ecosystem and includes a description of ecological communities, processes, (i.e., vegetation, habitat availability, and soil moisture content) wildlife, and insects within the Central Pine Barrens area, including rare and endangered species. A discussion of biogeographic theory and the ecological principles of conservation reserve design are also provided in Chapter 5. This review explains the theory and concepts behind the minimum habitat area requirement necessary to ensure the diversity of wildlife supported by such habitats and to ensure that the habitats are perpetuated over time. These concepts guided the efforts to create the contiguous 52,000 acre Core Preservation Area.

This section briefly provides an overview of the ecological features and processes the Plan is tailored to protect. A more comprehensive and detailed analysis of any each is provided in Chapter 5 of Volume 2 of the Plan.

The Central Pine Barrens area represents a complex mosaic of pitch pine woodlands, pine oak forests, oak dominated hardwood forests, coastal plain ponds, swamps, marshes, bogs and streams. The Pine Barrens communities may have evolved as a result of frequent fires and other environmental factors such as; soil saturation, soil texture and nutrients, and human disturbance (i.e., clearing, logging) that controlled the vegetative types present in the Pine Barrens. In some areas, the combination of droughty, nutrient-poor soils and frequent fires have created a harsh environment to which relatively few species have been able to adapt. Biota in these areas therefore tend to be unusual and includes many rare species especially adapted to the conditions of the xeric Pine Barrens. This is also true of wildlife found within the xeric Pine Barrens area. Oak dominated hardwood forests exist in other areas where the soils are more fertile and the conditions are moister. Oak forests can be found north of the Ronkonkoma moraine. A classic example is Warbler woods in Middle Island. Over time, pine forests which are an early stage of oak forest succession, may revert to oak dominated hardwood forests, if burning or clearing does not take place.

Ecological communities identified in the Plan are classified according to the Reschke scale (N.Y. Natural Heritage Program and New York State Department of Environmental Conservation). Rare communities and species are referred to as elements by the New York Heritage Program and are ranked according to their rarity both globally and in New York State. The following natural Pine Barrens communities are identified in descending order in terms of their state rarity (see Chapter 5 of Volume 2 for a more detailed description and identification of these rankings):

- Dwarf Pine Plains
- Coastal Plain Atlantic White Cedar Swamp
- Coastal Plain Stream
- Coastal Plain Poor Fen
- Coastal Plain Pond

Coastal Plain Pondshore
Pitch Pine-Oak-Heath Woodland
Salt Panne
Pine Barrens Shrub Swamp
High Salt Marsh
Low Salt Marsh
Chestnut Oak Forest
Pitch Pine-Oak Forest
Red Maple-Hardwood Swamp
Oak Dominated Hardwood Forest

Two other communities, Pine Barrens vernal pools and wet Pine Barrens, that are not recognized by the Natural Heritage Program for the Pine Barrens, were nevertheless included in the discussion of natural communities that contain rare elements in Volume 2. In addition, the Plan includes a discussion of human created communities (i.e., successional old field, cropland/row crops, mowed areas) that contain rare elements.

The number of occurrences and general distribution of rare communities and species are identified in Volume 2, Chapter 5. A total of 52 occurrences of rare natural communities have been identified within the Central Pine Barrens area according to the Natural Heritage Program. The breakdown is as follows:

Plants: 205 occurrences of 54 rare plant species (S1-S3) in Core Area
35 occurrences of 18 rare plant species in the Compatible Growth Area

The greatest concentrations of rare plants occur in wetland habitats, that is, the Coastal Plain Ponds and Pondshores. For wildlife, the following were observed:

Wildlife: 118 (76 are vertebrate species) recent occurrences of rare wildlife (S1-S3) in the Central Pine Barrens Area
93 of the 118 recent occurrences of rare wildlife (S1-S3) in Core Preservation Area
25 of the 118 recent occurrences of rare wildlife (S1-S3) in Compatible Growth Area

The Core Preservation Area encompasses most of these communities. Furthermore, most of the rare invertebrate species occur only in Pine Barrens habitats, and are uncommon or absent elsewhere on Long Island.

3.1.4.2 Wetlands

Information on wetland communities is provided in Volume 2, Chapter 5.7, Wetland Communities. Chapter 5.7 states there are over 4,300 acres of NYSDEC regulated freshwater wetlands found in the Central Pine Barrens. This section provides a review of several of the wetland features found in the Central Pine Barrens. The majority of these wetlands are found near two principal river systems. The Peconic River, its headwaters and its associated tributaries has approximately 2,000 acres of wetlands. The Carmans River has approximately 1,000 acres of wetlands associated with it. There are 162 other wetlands in the Central Pine Barrens which comprise the remaining wetland acreage.

The locations of wetland areas within the Central Pine Barrens area are identified from an

Ecological Communities Map provided in Volume 2. The tributaries are mainly located within that part of the Central Pine Barrens that lies north of the Peconic River in the Town of Riverhead, with smaller tributaries located south of the river in the Town of Brookhaven. Additionally, there are many wetlands surrounding Deep Pond, Tarkill Pond, Grassy Pond, Round Pond, Twin Ponds, Jones Pond, and Zeeks Pond, that are along a northern tributary to the Peconic River. There are also other wetland areas along the larger tributaries to the north of the Peconic River including North Pond, Prestons Pond, Linus Pond, and Fox Pond. Many small kettles containing wetlands instead of standing water are scattered north and south of the Peconic River.

Wetland areas in the Town of Brookhaven in the Central Pine Barrens are located along the Carmans River as shown on the Ecological Communities Map in Chapter 5 of Volume 2. There are also some wetlands just south of Middle Country Road (Route 25), and to the east of Route 25 near Coram Airpark and north of Route 25 near Whiskey Road in Brookhaven. Wetlands surround Spring Lake which is located to the west of the Carmans River. There are also several wetland areas east of the Carmans River, located to the east of Middle Island Road, north of the Long Island Expressway, and west of the William Floyd Parkway.

In Southampton, there are many wetlands surrounding the various creeks along Flanders Bay and the Great Peconic Bay south of Route 24, such as Goose, Birch, Mill, and Hubbard Creek. Additional wetland areas surround Penny Pond which is to the east of Hubbard Creek. Further west in Southampton, there are wetlands surrounding Wildwood Lake which is on the southeast side of CR 63, south of the Riverhead hamlet. There are also some wetlands surrounding small creeks scattered south of Route 27 in Southampton.

Chapter 5 of Volume 2 describes several different types of wetland communities present in the Central Pine Barrens. Each wetland community is described in terms of the wildlife species present, location, water quality and hydrological characteristics and vegetation.

According to that chapter, the most common type of wetland is the hardwood swamp which is dominated by red maple (*Acer rubrum*). This type of swamp is found where soils are saturated or inundated for brief periods during the growing season. These swamps often form a border between uplands and other wetland types.

There are also coastal plain ponds and pond shore types of wetlands which usually exist where the water levels fluctuate greatly. Normally, coastal plain ponds are isolated, however within the Central Pine Barrens, many of the coastal plain ponds in the Peconic River headwaters are interconnected by surface water flow. These ponds harbor one of the largest concentrations of globally and statewide rare species in New York State. In addition, studies have revealed five distinct vegetation zones, which characterize the shorelines of these ponds. These zones need periods of both high and low water for maintaining their structure, composition, and diversity. These zones are analyzed in Chapter 5 of Volume 2.

Chapter 5 of Volume 2 also describes the Pine Barrens shrub swamps as wetlands that often occur at the margins of coastal plain ponds, serving as a transition zone between the pond shore and the surrounding Pine Barrens forest. They occur in wet depressions with little or no standing water. Volume 2 also describes the wildlife species of these areas.

Another variety of wetlands within the Central Pine Barrens is the coastal plain Atlantic white cedar swamp. These swamps occur on organic soils along streams and in poorly drained depressions. Atlantic white cedar (*Chamaecyparis thyoides*) comprise over 50% of the canopy

cover and red maple may be a codominant tree. The largest remaining cedar swamp on Long Island is in Cranberry Bog County Park in Southampton between the Peconic River and Riverhead Moriches Road. Volume 2's Chapter 5 also describes the wildlife and growth conditions of the white cedar trees in this swamp.

Also within the Central Pine Barrens are red maple hardwood swamps. Chapter 5 of Volume 2 describes the many types of wildlife species and vegetation associated with these swamps. Red maple hardwood swamps generally occur in poorly drained depressions with organic soils. Red maple and black gum (*Nyssa silvatica*) are the dominant trees. The shrubs in this swamp may be quite dense.

In the wet Pine Barrens, the pitch pine (*Pinus rigida*), red maple, and black gum are found. They make up a transition between the upland Pine Barrens and the wetland communities such as red maple swamps and shrub swamps.

Although the Pine Barrens vernal pond is not documented by the Heritage Program as a distinct community type in the Long Island Pine Barrens, it is included within the protection of Core Preservation Area where possible. These ponds are marked by seasonally fluctuating, ground water fed ponds dominated by grasses and herbs. The associated wetlands are often small, are under a tree canopy, and are carpeted with leaf litter.

For the wetland community described as the coastal plain poor fen, sphagnum moss dominates the peatlands, with scattered sedges, shrubs, and stunted trees. The largest fen on Long Island is located at Cranberry Bog County Park, and is dominated by sedges. There are also coastal plain streams along the Peconic and Carmans Rivers.

Salt marshes occur on Hubbard Creek Marsh on the Peconic Bay in Flanders. A low salt marsh extends from mean high tide down to mean sea level and is regularly flooded by semidiurnal tides. A high salt marsh occurs from mean high tide up to the limit of spring tides and is periodically flooded by spring tides and flood tides. The Plan also describes the grasses, birds, and terrapins found in this type of wetland community. The salt panne is a poorly drained, shallow depression in both low and high salt marshes. The soil-water salinities fluctuate in response to tidal flooding and rainfall. A description of the types of plants and fish found in the salt panne are included in the discussion on the salt panne found in Chapter 5 of Volume 2.

Chapter 5 of Volume 2 provides a more comprehensive analysis of the foregoing wetland types as well as an analysis of coastal plain streams and salt shrubs.

3.1.5 Cultural Resources: Historic and Archaeological

An overview of cultural resources in the Central Pine Barrens is provided in Volume 2, Chapter 7, entitled: Cultural Resources: Historic and Archaeological. The chapter describes prehistoric, Native American resources, and historic resources found in the Central Pine Barrens Area. A listing of historic resources found in each of the three towns, (Brookhaven, Riverhead, and Southampton) is included in it. It should be noted that this listing is not all inclusive of all historic resources within the three towns, and that it does not include archaeological or Native American sites.

The following five sites located within the Central Pine Barrens have been included in the National Register of Historic Places:

James Benjamin Homestead (Old Benjamin Homestead), Flanders
St. Andrew's Episcopal Church, Yaphank
Longwood (Smith) Estate, Ridge
Robert Hawkins Homestead, Yaphank
Homan-Gerard House and Mills, Yaphank

Chapter 7 of Volume 2 includes an overview of existing public and private programs that foster the protection, preservation and restoration of cultural resources and demonstration programs of traditional industries in the Central Pine Barrens.

3.1.6 Scenic Resources

An inventory of the extensive scenic resources located within the Central Pine Barrens area is provided in Volume 2, Chapter 8 of the Plan, Scenic Resources. Scenic resources are defined for the purpose of this Plan as those "landscape patterns and features which are visually or aesthetically pleasing and which therefore contribute affirmatively to the definition of a distinct community or region within the Central Pine Barrens." (Chapter 8.2, Volume 2). Scenic resources include scenic areas, open spaces, rural landscapes, vistas, country roads and other factors that interact to produce a net beneficial effect on individuals or communities.

Scenic resources are not definable in isolation from other resource categories such as historic sites and buildings, archaeological sites, surface water bodies, and shorelines. Therefore there is some overlap among these other resource categories that also exhibit certain scenic value. The definition of scenic resources and the methodology used to identify them is based on studies that were performed to identify visual preferences of residents of the New Jersey Pinelands and the Cape Cod area.

The inventory of scenic resources in Volume 2 describes the location of each scenic resource and provides a portrait of the human or natural resource elements which comprise the visible scenes. The twenty-nine scenic resources included in the inventory each have an areal extent of several acres or larger or are scenic linear features which are one half to one mile or more in length. As noted in that chapter of the Volume 2, this listing precludes listing individual historic buildings, bridges, small creeks, short trail or road segments despite their "scenic" qualities. Chapter 8 in Volume 2 of the Plan includes an overview of the protection and management needs for scenic resources.

3.1.7 Physical Data

Physical data provided in Volume 2 includes information and statistics on population, land use, public administrative boundaries and infrastructure. It is presented in Chapter 9, Physical Data - Population, Land Use, Public Administrative Boundaries and Infrastructure

3.1.7.1 Demographics

Demographic information is provided for each town, the Core Preservation Area, Compatible Growth Area and total Central Pine Barrens area. These figures are based on the 1990 Census of Population and the 1960, 1970 and 1980 census tract maps prepared by the U.S. Department of Commerce and 1993 population estimates prepared by the Long Island Lighting Company (LILCO).

Historic population information presented for the Central Pine Barrens area within each town

(Brookhaven, Riverhead and Southampton) from 1960-1990 demonstrates the dramatic increase in the number of residents in the Central Pine Barrens area that has occurred over the past thirty years.

According to the 1990 census information, 57,207 people resided in the Central Pine Barrens area. In 1960 only 12,525 lived in the area. Presently, Brookhaven Town contains the largest portion of the population in the Central Pine Barrens with 49,719 persons or 87% in the total Central Pine Barrens area. Southampton Town has 6,185 persons or 11% of the total Central Pine Barrens area and Riverhead has 1,303 persons or 2% of the Central Pine Barrens population.

The largest population increases by decade within the Central Pine Barrens area occurred during the 1960-1970 and the 1970-1980 decades. During each decade the population increased by 85% from the previous ten year period. According to the 1990 population information 93% of the population resided in the Compatible Growth Area, while 7% residing in the Core Preservation Area. The largest population in the Core Preservation Area occurs in parts of eastern Manorville, Calverton (Brookhaven Town portion), Ridge, Riverside, Flanders, and Westhampton. The communities with the largest portion in the Compatible Growth Area are Coram, Ridge, Middle Island and Manorville. According to the 1990 data, Brookhaven had the highest population density, or the most people per square mile in the Core Preservation Area, Compatible Growth Area and entire Central Pine Barrens area. Population densities are estimated to be fifteen times greater in the overall Compatible Growth Area than in the Core Preservation Area.

3.1.7.2 Housing

Contained in Chapter 9 of Volume 2 is an overview of the type and number of housing units within the three towns and the Core Preservation Area, Compatible Growth Area and overall Central Pine Barrens area. The chapter also includes information on multi-unit housing, seasonal housing, housing values, and income within the Central Pine Barrens area.

3.1.7.3 Land Use and Zoning

A description of the land use and zoning within the Central Pine Barrens area is also provided in Volume 2. It includes information on land use and zoning in terms of number of acres and percent total of the Central Pine Barrens area. This information includes specific land use and zoning categories located within the Core Preservation Area and Compatible Growth Area. The Plan presents in Volume 2, Chapter 9, an analysis of all vacant privately owned land in the Central Pine Barrens Area in terms of acreage and zoning (general categories are given: residential, commercial, industrial, open space and unknown). This chapter also presents the potential dwelling unit yield of this vacant privately owned land. It was estimated based on existing zoning. Privately owned vacant land is defined as vacant land privately owned and available for development. It does not include agriculture, parks, public open space or oversized residential parcels.

As stated in Volume 2, the major land uses within the Central Pine Barrens are vacant land (35,260 acres or 37.7%), recreation and open space (25,031 or 26.8%), residential uses (11,599 or 12.9%), institutional (10,410 or 11.1%) and agricultural (4,601 or 4.9%).

Vacant land is identified as the predominant land use category for parcels lying entirely within the Compatible Growth Area (CGA). In the Core Preservation Area there are 15,029 acres of vacant land (35.8%) of the acreage fully encompassed by the Core Preservation Area (CPA) delineation. Similarly, in the CGA vacant land comprises 41.5% or 15,029 acres of the acreage.

Recreation and open space is the dominant land use category (20,574 acres or 47%) in the Core Preservation Area, whereas in the Compatible Growth Area this category comprises only 9.7% or 3,517 acres. The second most predominant use in the Compatible Growth Area is residential (27.8% or 10,067). Parcels totalling approximately 13,435 acres of land fall both in the Core Preservation Area and Compatible Growth Area. Attributable to institutional use is 43.8% of this land which includes Brookhaven National Laboratory.

The analysis of vacant privately owned land provided in Chapter 9 indicates that 26,892 acres are vacant in the Central Pine Barrens. This land is contained within 46 different zoning categories among the three towns. This land is primarily zoned residential, (77%), while 18.7% is industrially zoned. The majority of industrially zoned vacant land located in Riverhead (59%) is defense/institutionally zoned (the Calverton Airport). A full 92% of the 10,254 acres of vacant privately owned parcels within the Core Preservation Area is zoned residential. Five (5) acre zoning constitutes 64% of this land and 15% of this land zoned for 2 acre lots.

3.1.7.4 Community Services

Community services include educational facilities, police and fire protection, health care facilities, public recreational facilities, schools and infrastructure (i.e., water, sewers, roads, electric). Information on the existing services within the Central Pine Barrens area is provided in Volume 2, Chapter 9. Information on recreational facilities is presented in Volume 2, Chapter 11, Field Management Status. Schools, fire, water, sewage and agricultural areas are listed by name of district and district number in Chapter 9. Police services are identified in terms of areas of jurisdiction and precincts within the towns of Brookhaven, Southampton and Riverhead, and for the villages of Quogue and Westhampton Beach.

3.1.7.4.1 Education and School Districts

Data on student enrollment (pre-primary, elementary/high schools for private and public schools) was collected from the 1990 Census information.

Based on the 1990 Census, the Town of Brookhaven has the largest number of enrolled students (8,850 students) in public and private pre-primary and elementary or high schools within the Central Pine Barrens area. Southampton has 1,111 enrolled students and Riverhead has 365 students enrolled in schools.

Average expenditures per pupil are \$9,593 in the Town of Brookhaven, \$15,000 in the Town of Riverhead and \$13,808 in the Town of Southampton. Expenditures per pupil are fairly uniform across school districts in Brookhaven, however, there is significant variability in expenditure per pupil figures when examined for each school district within the Town of Southampton and to a lesser extent in the Town of Riverhead.

3.1.7.4.2 Transportation Infrastructure

The Transportation section in Volume 2, Chapter 9 of the Plan presents information on employment centers within and near the Central Pine Barrens. The section on transportation includes a survey of existing thoroughfares, a traffic analysis, proposed road improvements and identifies potential areas of traffic concern.

The majority of residents in the Pine Barrens, and its periphery, rely on automobiles for their transportation. Four major thoroughfares provide road access for this area in an east/west

direction. These are the Long Island Expressway (N.Y.S. Route 495), Sunrise Highway (N.Y.S. Route 27), North Country Road (N.Y.S. Route 25A), and Middle Country Road (N.Y.S. Route 25). Chapter 9 also lists several roads, mostly county roads, which service the Pine Barrens and periphery.

In preparing the transportation section a survey of existing thoroughfares was conducted. The results identified the locations of existing traffic problems based on theoretical values presented in that section. The discussion on existing traffic problems does not take into account frictional factors such as left turns, curb cuts, etc.

The transportation section in Volume 2, Chapter 9, lists several improvements proposed by the Suffolk County Department of Public Works (SCDPW). Additional data was provided by SCDPW and the N.Y.S. Department of Transportation. This is included in Volume 2, Appendix 5. These tables cover certain sections of county and state roads in the Pine Barrens, their mileage, most recent traffic count, year taken, raw capacity, daily 2-way Volume/Capacity (V/C) ratio, and/or exceeding capacity, previous traffic count, and growth rate. Included in Appendix 5 of Volume 2, in tabular form are V/C ratios at peak hours for state roads (hourly one way peak count).

Improvements are planned for the Long Island Railroad in terms of rolling stock, refurbishing stations, tracks and yards. Suffolk County has a private and county-operated bus system. Improvements envisioned do not include expanding capacity or service.

Not mentioned in Volume 2 of the Plan is a detailed discussion of the Calverton Naval Weapons Reserve Plant (the "Calverton site") which is located within both the Core Preservation Area and the Compatible Growth Area. The Calverton site is bounded south by Grumman Blvd., west by Wading River Road, north by Middle Country Road. The site includes approximately 2,900 acres and three parcels.

The land surface of the Calverton site has a land surface the slopes to the south towards the Peconic River system. Maximum site elevation is 88 feet above mean sea level. The lowest site elevation of 32.5 feet is in the southwest portion of the site. Steep slopes associated with surface water areas are in the northeast portion of the site. The soil associations include the Haven-Riverhead Association in the northern part of the site and the Plymouth-Carver Association in the southern part of the site. No portion of the site, except the immediate shoreline of McKay Lake, are within the 100 year flood plain.

The vegetation cover type on the site includes Pine/Oak Forest, Oak Forest, Old Fields, Grass Fields and Landscaped Areas including area of Mixed Conifers and Deciduous Plantation. (See Chapter 5 for a description of the ecological communities.) The sites contains some rare and endangered species and wetlands, ponds and swales associated with the Peconic River.

The Compatible Growth Area of the site is partially improved with 1.2 million square feet of buildings, two controlled runways totaling 17,000 linear feet, a central heating plant and various other improvements including roadways, parking areas and recreational areas.

In 1994 Congress adopted Public Law 103-c337 providing for the conveyance of the 2,900 acres to the Town of Riverhead Community Development Agency for the explicit purpose of economic redevelopment. The Public Law contemplates creation of an economic redevelopment plan for the property to be implemented by a regional Planning Commission formed for such purpose and the Town of Riverhead through land use planning and zoning initiatives.

3.1.7.4.3 Sewage Treatment in the Pine Barrens

Included in Appendix 5-3 of Volume 2 is a list of sewage treatment plants within or adjacent to the Pine Barrens and their capacities and a map indicating their location. This information was obtained from the Suffolk County Department of Public Works.

3.1.7.4.4 Water Supply

Information on public water supply is also contained in Volume 2. Presently, there are seven public water supply wells located within the Central Pine Barrens area that are operated by the Suffolk County Water Authority. The locations of these wellfields are listed below:

- Bailey Road - Middle Island
- Bridgewater Drive - Ridge
- William Floyd Parkway - Yaphank
- Country Club Drive - Moriches
- Moriches-Riverhead Road - Riverside
- Old Country Road - Westhampton
- Spinney Road - East Quogue

Total withdrawals of water from the Central Pine Barrens area in 1992 was 14.5 mgd (million gallons per day) which is equivalent to about 8% of the recharge. Only a small percentage of this pumpage is considered consumptively used, with most of the pumpage returned to the aquifer system in the general area from which it was pumped. The largest single consumptive use in this area occurs at Brookhaven National Laboratory where a quantity which is on the order of 1 mgd of cooling water is lost to the atmosphere.

3.1.8 Air Resources and Noise

3.1.8.1 Climate

The climate in Suffolk County is mild due to its coastal location. Climatic conditions vary throughout Suffolk County with changes in topography and distance from the coasts. The average temperature in Suffolk County is 71.9 degrees Fahrenheit in the summer and 32.4 degrees Fahrenheit in the winter. (National Oceanic and Atmospheric Administration, 1991). The warmest month is July and the coldest is January. (Halpin, 1988).

The long term precipitation average over approximately the last 50 years is 44.5 inches/year and the average annual humidity is 70%. The snowfall in Suffolk County generally occurs between the months of November through April, with the greatest amount falling between the months of January and March. The average snowfall for Suffolk County is 29.7 inches/year. (Halpin, 1988).

The growing season in Suffolk is long with 200 to 210 frost free days. The average annual wind velocity in Suffolk is 7 to 9 miles/hour. There are approximately 106 clear, 133 partly cloudy, and 125 cloudy days per year in Suffolk County. (Halpin, 1988).

The Suffolk County Department of Health Services Office of Water Resources monitors precipitation, temperature, and wind speed at its stations at Belmont Lake, Medford, and Riverhead. Raw data is collected weekly, but precipitation data is the only information analyzed on a regular basis. (Halpin, 1988).

3.1.8.2 Air Quality

The Clean Air Act gave the Environmental Protection Agency the authority to set national ambient air quality standards for protecting public health and the environment from pollutants in ambient air. State governments manage most of the specific programs for achieving these standards by developing State Implementation Plans (SIPs).

Seven air pollutants considered of nationwide concern have been designated by the U.S. EPA and are monitored through the Ambient Air Monitoring System administered by the New York State Department of Environmental Conservation (NYSDEC). These seven air pollutants are sulfur dioxide, carbon monoxide, ozone, inhalable particulate (PM-10), nitrogen dioxide, total suspended particles, and lead. In addition, New York State also has secondary air standards for beryllium, fluorides, hydrogen sulfide and settleable particles (Halpin, 1988).

Suffolk County is in Region 1 of the nine Air Quality Control Regions (AQCR) of New York State. At any given moment, any region is within one of three categories: attainment, unclassified or non-attainment depending on available air quality data and ambient concentrations of pollutants. The attainment category exists when the ambient concentration of a pollutant is below the National Ambient Air Quality Standards. (NAAQS). An unclassified category occurs when there is insufficient data to make a determination. The non-attainment category occurs when the concentration of a pollutant is above the National Ambient Air Quality Standards. (Halpin, 1988).

Region 1 is in compliance with ambient air standards for all of the previously stated air pollutants with the exception of ozone. Ozone is an odorless, colorless gas that is a major component of photochemical smog. It is formed by the photochemical reaction between nitrogen oxides and

reactive hydrocarbons when exposed to ultraviolet light and high temperatures. Region 1 has exceeded the ozone standard several times in the past. Thus, the region is in the non-attainment category for ozone. The ozone problem, however, is state-wide and is not specific to either Suffolk County or Region 1. (Halpin, 1988).

The concentrations of most of these air contaminants appear to have declined in Suffolk County over the last 10 years. The New York State DEC has stated that this was most likely due to the implementation of pollution control devices on vehicles, the use of unleaded and low sulfur fuels, and implementation of controls on stationary sources. (Halpin, 1988).

3.1.8.3 Noise

The physical intensity of noise can be measured in decibels, but in terms of the general public, it is a relative term that depends on the perception of the individuals involved. Suffolk County in general is still a relatively suburban and rural area. Noise related problems are sporadic and not considered to be severe at this time. Recent analysis of noise complaints in Suffolk County shows that there are approximately sixteen categories of common noise complaints received by the County. (Cohalan, 1982).

The following is a summary of various types of noise sources that are commonly heard in suburban and rural communities, and thus also pertain to Suffolk County and the Central Pine Barrens area.

Sources of Noise

Barking Dogs	Airports
Motor Vehicles	Entertainment Establishments
House Parties	Off-Road Motor Vehicles
Fireworks	Refuse Trucks
Fire Sirens	Residential Power Tools
Gun/Rifle Firing Ranges	Refuse Trucks
Automobile Racetracks	Agricultural Equipment
Street Music	Construction

Figure A presents sound levels for some of the noise sources previously identified. Sound levels for land use activities commonly found within Suffolk County that also pertain to the Central Pine Barrens area (i.e., wooded agricultural, agricultural cropland rural residential) are provided in Figure B.

Figure A - Noise Levels of Common Sounds

Figure B - Noise Levels of Common Land Uses

3.2 Receiving Areas

The foregoing environmental setting information is applicable to both Central Pine Barren and to the non-Core receiving areas. More specific information is provided for these receiving areas in the tables presented in this section.

For each receiving area the following information is supplied: location, acreage/number of parcels, unusual geologic features, (when present), topography, soils, 100 year flood plain area, vegetative cover type, rare and endangered species, wetlands, physical data (land use, zoning, school district, public water, public sewer, fire/police district, and whether in a wild, scenic and recreational corridor, (where applicable).

Information on the designation of these receiving areas and their relationship to the overall Pine Barrens Credit Program is provided in Volume 1, Chapter 6 of the Plan.

A listing of parcels identified by tax map number is provided for the receiving areas in Volume 1, Chapter 6 of the Plan in Riverhead and Southampton. A map indicates the location of Brookhaven's.

3.2.1 Town of Brookhaven

3.2.1.1 Overview

Receiving areas in the Town of Brookhaven are grouped by school district. The location of these school districts is indicated on the maps on pages 36 and 37.

Potential receiving areas in Brookhaven are all the areas zoned A1 (excluding Hydrogeologic Zone VI) and A2 in the Town of Brookhaven outside of the Core Preservation Area and exclusive of the areas specified in Volume 1, Chapter 6 of the Plan. The largest number of acres designated for receiving areas occur in the CGA, with approximately 5,100 acres eligible. The remaining eligible receiving area acreage, approximately 2200 acres, is located outside of the Central Pine Barrens area.

3.2.1.2 Demographics

The demographic information for receiving areas within the CGA is provided in Volume 2, Chapter 9 of the Plan and summarized in Section 3.1.8.1 of this SGEIS.

In general, the population in the portion of the Town of Brookhaven that lies outside of the Central Pine Barrens area is 361,011 persons. The population density for this area is 2,349 persons per square mile. Based on the 1990 Census, there are 121,707 housing units located outside of the Central Pine Barrens.

3.2.1.3 School Districts

Receiving areas are located within the following fourteen school districts.

School District	Student Enrollment 93-94
Three Village CSD	6,777
Brookhaven-Comsewogue	3,175
South County CSD	4,640
Sachem CSD at Holbrook	14,548
Mt. Sinai UFSD	2,071
Miller Place UFSD	2,664
Rocky Point UFSD	2,767
Middle Country	9,799
Longwood CSD	9,103
South Manor UFSD	1,106
Patchogue-Medford UFSD	8,478
Center Moriches	1,129
East Moriches UFSD	579
Shoreham-Wading River CSD	2,024
Eastport UFSD	787

There are 7,918 students enrolled in pre-primary (public and private) schools and 66,617 students enrolled in elementary or high school (public and private) for the area of the town located outside of the Central Pine Barrens.

There are 1,028 students enrolled in pre-primary (public and private) schools and 7,822 students enrolled in elementary or high school (public and private) in the Central Pine Barrens area.

3.2.1.4 Soils

There are five soil associations identified from the general soils map in the Suffolk County Soil Survey that are found in the area of the Town outside of the Central Pine Barrens area. The soil associations are identified in the Suffolk County Soil Survey as follows:

Carver-Plymouth-Riverhead Association
Haven-Riverhead Association
Plymouth-Carver Association, Rolling and Hilly
Riverhead-Plymouth-Carver Association
Plymouth-Carver Association, Nearly Level and Undulating.

These soil associations, except for the Carver-Plymouth-Riverhead Association, are located within the Town in bands extending from the west to the east, that also extend through the Central Pine Barrens area. A description of these soil associations which occur in the Central Pine Barrens area can be found in Volume 2, Chapter 3 of the Plan and Section 3.1.2. of this SDGEIS.

Carver-Plymouth Riverhead Association

The Carver-Plymouth-Riverhead Association is located in a narrow band that extends along the north shore along the Long Island Sound. This association is described as deep, rolling, excessively drained, coarse textured and moderately coarse textured soils on moraines. The eastern part of the area is about one-fourth of a mile wide and the western part is about 4 miles wide. This association is characterized as rolling, but has slopes that range from nearly level to steep.

This association makes up 11 percent of the County and is comprised of approximately 30 percent Carver and Plymouth soils and 30 percent Riverhead soils with minor soils comprising the remaining 40 percent. Minor soils of this association include well-drained Haven soils, well drained to moderately well-drained Montauk soils, Raynham and Wareham soils that have a high water table, and land that has been cut and filled. There are also steep bluffs and beaches in this association that occur along the Long Island Sound. Haven and Montauk soils are located on upland flats near Riverhead soils, whereas, Raynham and Wareham soils are adjacent to ponds or to tidal marshes.

Carver and Plymouth soils are both deep and excessively drained and have a surface layer and subsoil of sand. Both these soils and Riverhead soils have a substratum of sand and gravel. The depth to the substratum in Carver soils ranges from 16 to 32 inches and 20 to 36 inches in Plymouth soils. Carver soils are similar to Plymouth soils but they have a distinctive gray or light gray subsurface layer that is lacking in Plymouth soils. Carver and Plymouth soils are mainly found on the steeper parts of ridges and in rolling areas.

Riverhead soils are deep and well drained and have a surface layer and subsoils of sandy loam. The depth to the substratum ranges from 22 to 36 inches. These soils are primarily located in upland flats or gently undulating areas.

Native vegetation consists of white oak, black oak, scrub oak for Carver, Plymouth and Riverhead soils and includes pitch pine for Carver and Plymouth soils. The majority of this association in the western part of the county was originally farmed and is now in housing developments. The eastern part is wooded or contains vacation homes. This soil is poorly suited for farming due to its sandy texture and steep slopes.

Prime Agricultural Soils

Prime agricultural soils that may be located within the receiving areas are identified as follows:

Haven loam, 0 to 2 percent slopes, (HaA) - Capability Unit I-1
Haven loam, 2 to 6 percent slopes, (HaB) - Capability Unit IIe-1
Haven loam, thick surface layer - Capability Unit IIw-2
Plymouth loamy sand, silty substratum, 0 to 3 percent slopes (PsA) - Capability Unit IIs-1
Riverhead sandy loam, 0 to 3 percent slopes (RdA) - Capability Unit IIs-1
Riverhead sandy loam, 3 to 8 percent slopes (RdB) - Capability Unit IIe-2
Scio silt loam, till substratum, 2 to 6 percent slopes (ScB) - Capability Unit IIe-1
Scio silt loam, sandy substratum, 0 to 2 percent slopes (SdA) - Capability Unit IIw-1
Scio silt loam, sandy substratum, 2 to 6 percent slopes (SdB) - Capability Unit IIe-1
Sudbury sandy loam (Su) - Capability Unit IIw-1

The Capability Units I and II (as explained in Chapter 3 of Volume 2) represent soils that have few or moderate limitations that reduce the choice of plants or require moderate conservation practices.

Soils Associated with Environmentally Sensitive Areas

These tend to be soils with characteristically high seasonal water table (less than 4 feet) and are indicative of wetland and tidal marsh areas. The soil associations that may contain these soils are identified in Volume 2, Section 3.3.2 of the Plan. Soils series within associations that contain high seasonal water table include Atsion, Berryland, Canadice silt loam, Muck, Raynham, Scio, Sudbury, Walpole, Wareham, and Tidal Marsh soils and land types.

3.2.1.5 Water Supply

All receiving areas are located within the service area of the Suffolk County Water Authority. Availability of public water for a particular parcel would be confirmed upon application by the project sponsor to the Authority.

3.2.1.6 Ecosystems Overview

The description of the vegetative cover in terms of ecological communities that may be found in the receiving areas located within the CGA is provided in Volume 2, Chapter 5 of the Plan and summarized in Section 3.1.4 of this SDGEIS.

For the receiving areas located outside of the Central Pine Barrens area, the following ecological communities with their corresponding NYNHP ranking may be found depending on local environmental conditions and level of disturbance from development:

Upland Communities:

Pitch Pine-oak forest G4G5 S4
Pitch pine-oak heath woodland G3G4 S2S3

Wetland Communities:

Red maple-hardwood swamps G5 S4S5

Human-created Communities:

Successional old field G4 S4; Successional Shrubland G4 S4
 Cropland/row crops G5 S5
 Mowed lawn G5 S5; mowed lawn with trees G5 S5
 Mowed roadside/pathway G5 S5

A description of these ecological communities that occur in the Central Pine Barrens area, is provided in Volume 2, Chapter 5 of the Plan and summarized in Section 3.1.4 of this SDGEIS. The communities listed are followed by a series of letters and numbers that relate to their global and state ranking for rare communities and species that is explained in Volume 2, Chapter 5 of the Plan.

An additional upland community that may be found in the receiving areas outside of the Central Pine Barrens area is deciduous forest as identified in the Town of Brookhaven's 1990 Natural Resource Inventory. (Wade *et al.*, 1990). The deciduous forest is oak-dominated with red oak, black oak and white oak in the overstory and is generally found along the north shore areas and places of the central moraine where fire frequency is low and soil fertility and moisture are high. (Lambe, 1984). American beech, red maple, black birch, scarlet oak and sugar maple may also appear in the overstory in certain areas. The shrub layer is typically mapleleaf viburnum, black cherry, sassafras, flowering dogwood and mountain laurel and may also contain red maple, blackberry, blueberry, raspberry, and spicebush. According to the Brookhaven Open Space Study, oak-pine forests are the transitional community between the Pine Barrens and the Long Island hardwood (deciduous) forest. (Lambe, 1984).

3.2.1.7 Additional Existing Conditions Information

Item	Receiving Areas In Three Village CSD (472201)
Location	Outside of Compatible Growth Area.
Acreage/ # of Parcels	160 acres/ 15 parcels.
Unusual Geologic Features	Harbor Hill Moraine, Coastal Headlands are located within the district.
Topography	This district, which is bordered by Long Island Sound on the north is characterized by steep, coastal headlands which contain elevations of between 30' and 120'. Through the central portion of the district, the Harbor Hill moraine contains steeper slopes (exceeding 15% in some places) with ridgeline elevations of over 200'. The southern part of the district, south of the moraine, contains flatter slopes with elevations down to 110'.
100 Year Flood Plain	Not in the receiving areas.
Rare and Endangered Species	None identified in the receiving areas.
Wetlands ¹	Yes, located within tax map sections 28, 88.

¹ Presence on a specific parcel would necessitate further identification.

Physical Data:	
Land Use	55 acres (4 parcels): 210 - One Family Year Round Residence. 25 acres (3 parcels): 220 - Two Family Year Round Residence. 80 acres (8 parcels): 311 - Residential Vacant Land.
Zoning	All parcels: A Residence 1 District (A1).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FD1/ Police: Suffolk County.

Item	Receiving Areas In Brookhaven-Comsewogue UFSD (472203)
Location	Outside of Compatible Growth Area.
Acreage/ # of Parcels	125 acres/ 10 parcels.
Unusual Geologic Features	Harbor Hill Moraine - Northeast corner only.
Topography	This district has steeper slopes in northeast corner associated with Harbor Hill Moraine, highpoints of 200'. Remainder of district relatively flat sloping in a southeasterly direction to lowpoints of 120'.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands	None identified in receiving areas.
Physical Data:	
Land Use	6 acres (1 parcel): 120 - Field Crops. 26 acres (3 parcels): 210 - One Family Year Round Residence. 26 acres (4 parcels): 311 - Residential Vacant Land. 56 acres (1 parcel): 330 - Residential Vacant Land Located in Commercial Areas. 11 acres (1 parcel): 612 - School.
Zoning	All parcels: A Residence 1 District (A1).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FC1, FG1/ Police: Suffolk County.

Item	Receiving Areas In South Country CSD (472204)
Location	Outside of Compatible Growth Area.
Acreage/ # of Parcels	7 acres/ 1 parcel.
Unusual Geologic Features	Swales associated with the Carmans River and Beaverdam Creek are within district boundaries.
Topography	This district is relatively flat throughout with higher elevations in the north averaging 90' down to 5' in the south. Steeper slopes associated with swale formations running southerly through the central and eastern portions of the district.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands	None identified in receiving areas.
Physical Data:	
Land Use	7 acres (1 parcel): 210 - One Family Year Round Residence.
Zoning	A Residence 2 District (A2).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FW1/ Police: Suffolk County.

Item	Receiving Areas In Sachem CSD at Holbrook (472205)
Location	Outside of Compatible Growth Area.
Acreage/ # of Parcels	523 acres/ 11 parcels.
Unusual Geologic Features	Ronkonkoma Moraine, drainage swales associated with Canaan Lake are within district boundaries.
Topography	Steeper slopes along northern boundary of district associated with Ronkonkoma Moraine. Ridgeline highpoint of 300'. Gently sloping throughout remainder of district with average elevation of 120'. Drainage swales forming in south and southeast corner with elevations as low as 50' and steeper side slopes.
100 Year Flood Plain	No.
Rare and Endangered Species	None identified in the receiving areas.
Wetlands ²	Yes, located within tax map section 649.
Physical Data:	
Land Use	74 acres (2 parcels): 151 - Orchard Crops (Apples, Pears, Cherries, etc.). 7 acres (1 parcel): 210 - One Family Year Round Residence. 59 acres (6 parcels): 311 - Residential Vacant Land. 114 acres (1 parcel): 321 - Abandoned Agricultural Land. 15 acres (1 parcel): 612 - School.
Zoning	10 parcels (156 acres): A Residence 1 District (A1). 1 parcel (114 acres): A Residence 2 District (A2).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FW1, FU1/ Police: Suffolk County

² Presence on a specific parcel would necessitate further identification.

Item	Receiving Areas In Mt. Sinai UFSD (472207)
Location	Outside Compatible Growth Area.
Acreage/ # of Parcels	516 acres/ 32 parcels.
Unusual Geologic Features	Harbor Hill Moraine within district boundaries.
Topography	This district has steeper slopes along northern, coastal boundary of district associated with Harbor Hill Moraine with highpoint of 190'. The remainder of the district is gently sloping in a southeasterly direction to a lowpoint of 120'.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands	None identified in receiving areas.
Physical Data:	
Land Use	45 acres (6 parcels): 105 - Agricultural Vacant Land (Productive). 144 acres (4 parcels): 120 - Field Crops. 6 acres (1 parcel): 151 - Orchard Crops (apples, pears, etc.). 107 acres (2 parcels): 170 - Nursery and Greenhouse. 71 acres (6 parcels): 210 - One Family Year Round Residence. 98 acres (11 parcels): 311 - Residential Vacant Land. 12 acres (1 parcel): 330 - Vacant Land Located in Commercial Areas. 33 acres (1 parcel): 484 - Commercial One Story Small Structure.
Zoning	All parcels: A Residence 1 District (A1).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FC1, FG1, FL4, FL1/ Police: Suffolk County.

Item	Receiving Areas In Miller Place UFSD (472208)
Location	11 parcels (391 acres) in CGA. 1 parcel (9 acres) partly in CGA, partly outside of CGA. 11 parcels (135 acres) outside of CGA.
Acreage/ # of Parcels	535 acres/ 23 parcels.

Unusual Geologic Features	Harbor Hill Moraine located within district boundaries.
Topography	This district has steeper slopes in north along shoreline, associated with Harbor Hill Moraine with ridgeline highpoint of 150'. The southern portion of the district contains flatter slopes with elevations down to 100'.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands ³	Yes, located within tax map sections 235, 271.
Physical Data:	
Land Use	190 acres (3 parcels): 105 - Agricultural Vacant Land (Productive). 114 acres (3 parcels): 120 - Field Crops. 33 acres (1 parcel): 170 - Nursery and Greenhouse. 113 acres (6 parcels): 210 - One Family Year Round Residence. 6 acres (1 parcel): 219 - One Family Residence. 79 acres (9 parcels): 311 - Residential Vacant Land.
Zoning	All parcels: A Residence 1 District (A1).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FH1,FL4/ Police: Suffolk County.

³ Presence on a specific parcel would necessitate further identification.

Item	Receiving Areas In Rocky Point UFSD (472209)
Location	1 parcel (5 acres) partly in CGA and partly outside of CGA. 1 parcels (7 acres) outside of CGA.
Acreage/ # of Parcels	12 acres/ 2 parcels.
Unusual Geologic Features	Harbor Hill Moraine located within district boundaries.
Topography	This district has steeper slopes north of SR 25A associated with Harbor Hill Moraine with ridgeline highpoint of 250'. South of 25A, some knoll areas containing steep slopes but generally, gently sloping with southern elevations of 100'.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands	None identified in receiving areas.
Physical Data:	
Land Use	12 acres (2 parcels): 311 - Residential Vacant Land.
Zoning	All parcels: A Residence 1 District (A1).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FJ1/ Police: Suffolk County.

Item	Receiving Areas In Middle Country CSD (472211)
Location	Outside of Compatible Growth Area.
Acreage/ # of Parcels	132 acres/ 8 parcels.
Unusual Geologic Features	Ronkonkoma Moraine, located within district boundaries.
Topography	This district's northern portions are relatively flat containing an average elevation of 120'. Steeper slopes along southern border of district associated with Ronkonkoma moraine with ridgeline highpoints of 250'.
100 Year Flood Plain	No.
Rare and Endangered Species ⁴	Yes located within tax map section 540.
Wetlands	None identified in receiving areas.
Physical Data:	
Land Use	7 acres (1 parcel): 210 - One Family Year Round Residence. 25 acres (3 parcels): 311 - Residential Vacant Land. 22 acres (2 parcels): 330 - Vacant Land Located in Commercial Areas. 11 acres (1 parcel): 340 - Vacant Land Located in Industrial Areas. 67 acres (1 parcel): 484 - Commercial One Story Small Structure.
Zoning	All parcels: A Residence 1 District (A1).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FC1, FK4/ Police: Suffolk County.

⁴ Presence on a specific parcel would necessitate further identification.

Item	Receiving Areas In Longwood CSD (472212)
Location	In Compatible Growth Area.
Acreage/ # of Parcels	2851 acres/ 176 parcels.
Unusual Geologic Features	See Plan, Volume II, Chapter 2.
Topography	See Plan, Volume II, Chapter 2.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species ⁵	Yes, located within tax map sections 72, 242, 289, 290, 378, 379, 404, 450, 451, 495, 524, 544, 613.
Wetlands ⁶	Yes, located within tax map sections 172, 242, 289, 290, 318, 320, 376, 378, 379, 404, 451, 476, 477, 543, 544, 611, 612.
Physical Data:	
Land Use	64 acres (3 parcels): 105 - Agricultural Vacant Land (Productive). 258 acres (4 parcels): 120 - Field Crops. 294 acres (27 parcels): 210 - One Family Year Round Residence. 6 acres (1 parcel: 218) - One Family Residence. 20 acres (3 parcels): 220 - Two Family Year Round Residence. 17 acres (1 parcel): 230 - Three Family Year Round Residence. 13 acres (1 parcel): 240 - Rural Residence With Acreage. 1648 acres (113 parcels): 311 - Residential Vacant Land. 28 acres (2 parcels): 312 - Residential Land (includes a small improvement). 135 acres (6 parcels): 322 - Residential Vacant Land Over 10 Acres. 184 acres (8 parcels): 330 - Vacant Land Located in Commercial Area. 84 acres (1 parcel): 484 - Commercial One Story Small Structure. 20 acres (1 parcel): 555 - Riding Stables. 80 acres (4 parcels): 721 - Sand and Gravel.
Zoning	171 parcels (2683 acres): A Residence 1 District (A1). 5 parcels (168 acres): A Residence 2 District (A2)
Public Water	Suffolk County Water Authority.

⁵ Presence on a specific parcel would necessitate further identification.

⁶ Presence on a specific parcel would necessitate further identification.

Public Sewer	Majority of parcels not in sewer district. A few parcels are within Sewer District # 11.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FL1, FL2, FL3, FL4, FL5, FL6, FP2/ Police: Suffolk County

Item	Receiving Areas In South Manor UFSD (472221)
Location	In Compatible Growth Area.
Acreage/ # of Parcels	1000 acres/ 47 parcels.
Unusual Geologic Features	Ronkonkoma Moraine is located within district.
Topography	Lower elevations of this district average 50' and gentle slopes in the north associated with Peconic River system. Steeper slopes in the central part of the district with elevations averaging 150' associated with the moraine. Lower elevations averaging 50' and shallow swales associated with the Forge River in the south.
100 Year Flood Plain	Not within receiving areas.
Rare and Endangered Species ⁷	Yes, located within tax map sections 461, 508, 509, 559.
Wetlands ⁸	Yes, located within tax map sections 461, 507, 508, 509, 559.
Physical Data:	
Land Use	158 acres (5 parcels): 105 - Agricultural Vacant Land (Productive). 26 acres (1 parcel): 120 - Field Crops. 29 acres (1 parcel): 130 Truck Crops - Muckland. 166 acres (7 parcels): 210 - One Family Year Round Residence. 28 acres (2 parcels): 215 - One Family Year Round Residence. 41 acres (2 parcels): 218 - One Family Year Round Residence. 326 acres (22 parcels): 311 - Residential Vacant Land. 53 acres (2 parcels): 322 - Residential Vacant Land Over 10 Acres. 72 acres (3 parcels): 330 - Vacant Land Located in Commercial Areas. 15 acres (1 parcel): 340 - Vacant Land Located in Industrial Areas. 85 acres (1 parcel): 720 Mining and Quarrying.
Zoning	1 parcel (6 acres): A Residence 1 District (A1). 46 parcels (994 acres): A Residence 2 District (A2).
Public Water	Suffolk County Water Authority.

⁷ Presence on a specific parcel would necessitate further identification.

⁸ Presence on a specific parcel would necessitate further identification.

Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FM1/ Police: Suffolk County.

Item	Receiving Areas In Patchogue - Medford UFSD (472224)
Location	10 parcels (60 acres) in CGA. 34 parcels (217 acres) outside of CGA.
Acreage/ # of Parcels	277 acres/ 44 parcels.
Unusual Geologic Features	Drainage swales associated with Canaan Lake, Patchogue River and Swan Lake are located within district boundaries.
Topography	A series of swales which stretch from the northern portion of the district and run southeasterly to a series of lakes. These areas can contain steeper side slopes. Elevations in the north average 110' while the southern, coastal areas have an average elevation of 10'.
100 Year Flood Plain	Not within receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands ⁹	Yes, located within tax map sections 807, 837, 895.
Physical Data:	
Land Use	12 acres (1 parcel): 116 - Livestock and Products (donkeys and goats). 39 acres (6 parcels): 210 - One Family Year Round Residence. 12 acres (2 parcels): 218 - One Family Residence. 10 acres (1 parcel): 220 - Two Family Year Round Residence. 189 acres (32 parcels): 311 - Residential Vacant Land. 6 acres (1 parcel): 312 - Residential Land (includes a small improvement). 8 acres (1 parcel): 484 - One Story Small Structure.
Zoning	43 parcels (258 acres): A Residence 1 District (A1). 1 parcel (19 acres): A Residence 2 District (A2).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FP1, FP2/ Police: Suffolk County.

⁹ Presence on a specific parcel would necessitate further identification.

Item	Receiving Areas In Center Moriches UFSD (472233)
Location	Outside Compatible Growth Area.
Acreage/ # of Parcels	24 acres/ 1 parcels.
Unusual Geologic Features	Drainage swales associated with various creeks within district.
Topography	This district has higher elevations in the north averaging 70' with gently sloping swales running southerly to lowpoint averaging 10'.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands	None identified in receiving areas.
Physical Data:	
Land Use	24 acres (1 parcel): 170 - Nursery and Greenhouse.
Zoning	1 parcel (24 acres): A Residence 2 District (A2).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FT1/ Police: Suffolk County.

Item	Receiving Areas In East Moriches UFSD (472234)
Location	Outside of the Compatible Growth Area.
Acreage/ # of Parcels	100 acres/ 3 parcels.
Unusual Geologic Features	Drainage swale associated with Terrell River within district boundaries.
Topography	This district is relatively flat, with steeper slopes associated with swales running in a southerly direction to coastal areas. Highpoint of 70' in the north to a 10' elevation in the south.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands	None identified in receiving areas.
Physical Data:	
Land Use	86 acres (2 parcels): 105 - Agricultural Vacant Land (Productive). 14 acres (1 parcel): 311 - Residential Vacant Land.
Zoning	All parcels: A Residence 2 District (A2).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FT1, FU1/ Police: Suffolk County.

Item	Receiving Areas In Shoreham-Wading River CSD (473001)
Location	In Compatible Growth Area.
Acreage/ # of Parcels	598 acres/ 21 parcels.
Unusual Geologic Features	Harbor Hill Moraine within district boundaries.
Topography	This district has steeper slopes north of SR 25A associated with Harbor Hill Moraine with ridgeline highpoint of 150'. Relatively flat south of SR 25A with drainage swales forming along southern border of district containing an average elevation of 100'.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species	None identified in receiving areas.
Wetlands	Yes.
Physical Data:	
Land Use	188 acres (10 parcels): 105 - Agricultural Vacant Land (Productive). 62 acres (2 parcels): 120 - Field Crops. 348 acres (9 parcels): 311 - Residential Vacant Land.
Zoning	All parcels: A Residence 1 District (A1).
Public Water	Suffolk County Water Authority.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: LX1/ FD#: FJ1, FL1, FW1/ Police: Suffolk County.

Item	Receiving Areas In Eastport UFSD (473611)
Location	In Compatible Growth Area.
Acreage/ # of Parcels	759 acres/ 34 parcels.
Unusual Geologic Features	Ronkonkoma Moraine within district boundaries.
Topography	A large portion of this district includes the Ronkonkoma moraine which contains ridgeline elevations ranging from 150' - 200'. This runs through the center of the district for its entire length. The northeastern portion contains flatter slopes with elevations at 50'. The southern areas are gently sloping also averaging elevation 50'.
100 Year Flood Plain	Not in receiving areas.
Rare and Endangered Species ¹⁰	Yes, located with tax map section 509.
Wetlands ¹¹	Yes, located within tax map sections 462, 509.
Physical Data:	
Land Use	260 acres (9 parcels): 105 - Agricultural Vacant Land (Productive). 11 acres (1 parcel): 111 - Poultry and Poultry Products. 15 acres (1 parcel): 140 - Truck Crops - Not Mucklands. 10 acres (1 parcel): 210 - One Family Year Round Residence. 81 acres (6 parcels): 311 - Residential Vacant Land. 10 acres (2 parcels): 314 - Rural Vacant Lots of 10 Acres or Less. 18 acres (1 parcel): 321 - Abandoned Agricultural Land. 244 acres (9 parcels): 322 - Residential Vacant Land Over 10 Acres. 18 acres (1 parcel): 330 - Vacant Land Located in Commercial Areas. 45 acres (1 parcel): 340 - Vacant Land Located in Industrial Areas. 80 acres (2 parcels): 449 - Commercial - Other Storage, Warehouse and Distribution Facilities.
Zoning	7 parcels (121 acres): A Residence 1 District (A1). 27 parcels (638 acres): A Residence 2 District (A2).
Public Water	Suffolk County Water Authority.
Public Sewer	No.

¹⁰ Presence on a specific parcel would necessitate further identification.

¹¹ Presence on a specific parcel would necessitate further identification.

Lighting/Fire/Police District	Lighting: LX1/ FD#: FW1, FU1/ Police: Suffolk County.
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3.2.2 Town of Riverhead

3.2.2.1 Overview

There are 1,585 acres or 87 parcels that have been identified for two receiving areas (Area A and B) in the Town of Riverhead. Both of the receiving areas are located outside of the Central Pine Barrens Area and are located in the Riverhead School district. Receiving area B is located within the State designated Wild, Scenic and Recreational Peconic River Corridor.

3.2.2.2 Demographics

The population of the portion of the Town of Riverhead that lies outside of the Central Pine Barrens area is 21,627 persons. The population density for the area is 382 persons per square mile. Based on the 1990 Census, there are 10,333 housing units located in this area outside of the Central Pine Barrens.

3.2.2.3 School Districts

The Riverhead school district had 4,098 students enrolled during 1993-1994. There are 411 students enrolled in preprimary (public and private) school and 3,539 students enrolled in elementary or high school (public and private) for the area of the Town outside of the Central Pine Barrens.

The remaining environmental setting information for these receiving areas is provided in the tables that follow. The description of prime agricultural soils and soils associated with environmentally sensitive areas is provided in Chapter 3 of Volume 2. Specific soils associations located within these receiving areas are also identified in the following tables.

3.2.2.4 Additional Existing Conditions Information

Item	Riverhead Area A
Location	South of Middle Country Road (SR 25), east and west of Edwards Avenue, west of L.I.E (SR 495), exit 72 and north of LIRR and Peconic River. (Outside Central Pine Barrens).
Acreage/ # of Parcels	1222 acres/ 53 parcels.
Unusual Geologic Features	Kettlehole (associated with swale running from north to Canoe Lake site) Additional swale east of Edwards Avenue running south to Peconic River.
Topography (slopes)	Relatively flat, elevations range from 70' in the north along Route 25 to 30' in the south along LIRR. Steeper slopes associated with swales.

Soils	Carver Series (CpA - 0 to 3% slopes, CpC - 3 to 15% slopes, ¹² CpE - 15 to 35% slopes ¹³), Cut and fill land (CuB, CuC ¹⁴), Deerfield Series (De ¹⁵), Haven Series ¹⁶ (HaA - 0 to 2% slopes, HaB - 2 to 6% slopes, He)), Plymouth Series (PIA - 0 to 3% slopes, PIB - 3 to 8% slopes, PIC - 8 to 15% slopes, ¹⁷ PmB3 - 3 to 8% slopes, PmC3 - 8 to 15% slopes), Riverhead Series ¹⁸ (RdA - 0 to 3% slopes, RdB - 3 to 8% slopes, RdC 8 to 15% slopes).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Agriculture - Field Crops, abandoned, Pitch Pine - Oak Forest, Red maple - Hardwood Swamp, successional old field, see Plan Volume II Chapter 5 for description of these ecological communities. Also disturbed and built lands and horse farm.
Rare and Endangered Species	Yes.
Wetlands	Freshwater Kettleholes (~ 1 % of site).
Physical Data:	
Land Use	On-site: Agriculture and vacant predominantly, industrial, some residential, amusement park (Splish Splash). Surrounding area: Grumman Facility to the west, agricultural and some residential to the north, commercial to the east, LIRR, Long Island Expressway and Peconic River to the south.
Zoning	Industrial A and B (Light and General Industry), Business CR (rural neighborhood business).
School District	#2 - Riverhead.

¹² These soils have slight to moderate constraints on sewage disposal and/or homesites.

¹³ Soil types with severe constraints on sewage disposal and/or homesites.

¹⁴ Soil types with moderate constraints on sewage disposal and/or homesites.

¹⁵ Soil types with moderate constraints on sewage disposal and/or homesites.

¹⁶ Prime agricultural soils with a Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

¹⁷ Soils with moderate constraints on sewage disposal and/or homesites.

¹⁸ Prime agricultural soils with a Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

Public Water	No.
Public Sewer	No.
Lighting/Fire/Police Districts	Lighting: 25/ FD: #20, 23, 44/Police: Riverhead Town Police.

Item	Riverhead Area B
Location	South of Old Country Road (CR 58), north of Main Street (SR 25), east of Long Island Expressway (SR 495), exit 72-73, Riverhead. (Outside Central Pine Barrens).
Acreage/ # of Parcels	373 acres/ 49 parcels.
Unusual Geologic Features	None.
Topography (slopes)	Relatively flat, higher elevations of 50' in the northeastern corner sloping to 20' in the southerly corner.
Soils	Atsion Series (At ¹⁹), Berryland Series (Bd ²⁰), Carver Series (CpA - 0 to 3% slopes, CpC - 3 to 15% slopes, CpE - 15 to 35% slopes ²¹), Cut and fill land (CuB), Haven Series (HaA - 0 to 2% slopes ²²), Plymouth Series (PIB - 3 to 8% slopes, PIC - 8 to 15% slopes, ²³) Riverhead Series (RdB - 3 to 8% ²⁴).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Pitch Pine - Oak forest, successional old filed, Red Maple-Hardwood Swamp, see Plan, Volume II, Chapter 5 for description of these ecological communities. Disturbed and built lands.
Rare and Endangered Species	Yes.
Wetlands	Yes.
Physical Data:	

¹⁹ Soil types with severe constraints on sewage disposal and/or homesites.

²⁰ Soils with severe constraints on sewage disposal and/or homesites.

²¹ Soil types with sever constraints on sewage and/or homesites.

²² Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

²³ Soil types with moderate constraints on sewage disposal and/or homesites.

²⁴ Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

Land Use	On-site: 50% vacant, outlet center, motel, apartments, raceway, junkyard, disturbed lands. Surrounding area: industrial and agricultural to the north, commercial to the east, vacant, forested and commercial to south, Expressway to the west.
Zoning	Industrial A (Light Industry), Business F (Manufacturing Outlet Center Overlay Zone).
School District	#2 - Riverhead.
Public Water	Riverhead Water District.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: # 25/FD: #21, #44/Police: Riverhead Town Police.
Wild, Scenic, and Recreational Corridor	Yes, ~ 70 % of site.

3.2.3 Town of Southampton

3.2.3.1 Overview

There are 587 acres or 79 parcels that have been identified for receiving areas in the Town of Southampton. All of the receiving areas except for (Area J) are located within the CGA.

3.2.3.2 Demographics

The demographic information for the receiving areas within the CGA is provided in Volume 2, Chapter 9 of the Plan and is summarized in Section 3.1.8.1 of this SDGEIS. The population of the portion of the Town of Southampton that lies outside of the Central Pine Barrens area is 38,607 persons. The population density for this area is 430 persons per square mile. According to the 1990 Census, there were 30,907 housing units located in this portion of the town.

3.2.3.3 School Districts

These receiving areas are located in five different school districts.

School District	Student Enrollment 93-94
Riverhead	4,098
Hampton Bays	1,318
Eastport UFSD	787
Speonk-Remsenburg	164
Westhampton	1,465

There are 74 students enrolled in pre-primary (public and private) schools and 1,037 students enrolled in elementary or high school (public and private) for the area of the town located outside of the Central Pine Barrens.

There are 717 students enrolled in pre-primary (public and private) school and 4,597 students enrolled in elementary or high school (public and private) for the Central Pine Barrens area.

The remaining environmental setting information for these receiving areas is provided in the tables that follow. The description of prime agriculture soils and soils associated with environmental sensitive areas is provided in Chapter 3 of Volume 2. Specific soils series located within these receiving areas are also identified in the following tables.

3.2.3.4 Additional Existing Conditions Information

Item	Southampton Area 2
Location	North side Montauk Highway, south side of Sunrise Highway, west of CR 24 and Stern's shopping center, Hampton Bays. (Compatible Growth Area).
Acreage/ # of Parcels	22.6 acres/ 3 parcels.
Unusual Geologic Features	None.
Topography (slopes)	Gently rolling, with highpoints in the north around 50' to 30' in the south along Montauk Highway.
Soils	Carver Series (CpA - 0 to 3% slopes, CpC - 3 to 15% slopes), Cut and Fill (CuB).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Pitch Pine - Oak forest, see Plan Volume II Chapter 5 for description of this ecological community.
Rare and Endangered Species	None.
Wetlands	None.
Physical Data:	
Land Use	On-site: vacant and forested. Surrounding: Commercial activity to the east and south, Sunrise Highway to north, vacant and residential to the west.
Zoning	Residence - 40,000 square feet (sq.ft.)(R-40).
School District	#5 - Hampton Bays.
Public Water	Yes - Hampton Bays Water District.
Public Sewer	No.
Lighting/Fire/Police Districts	Lighting: #50, FD: #35/ Police: Southampton Town Police

Item	Southampton Area 3
Location	North side of Sunrise Highway, east of Riverhead-Hampton Bays Road (CR 24) and south of Old Riverhead Road. (Compatible Growth Area).
Acreage/ # of Parcels	16.3 acres/ 1 parcel.
Unusual Geologic Features	None.
Topography (slopes)	Gently sloping with elevations in the north around 100', down to 70' in the south along Sunrise Highway.
Soils	Carver Series (CpC - 3 to 15% slopes), Plymouth Series (PIB - 3 to 8% slopes).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Pitch Pine - Oak forest, see Plan Volume II, Chapter 5 for description of this ecological community.
Rare and Endangered Species	None.
Wetlands	None.
Physical Data:	
Land Use	On-site: vacant and forested. Surrounding: vacant and forested to the east and west, Sunrise Highway to the south, Town facilities to the north.
Zoning	Residence - 20,000 SF (R-20).
School District	#5 - Hampton Bays.
Public Water	Yes - Hampton Bays Water District.
Public Sewer	No.
Lighting/Fire/Police Districts	Lighting: #50/ FD: #35/ Police: Southampton Town Police

Item	Southampton Area A
Location	North of Old Country Road (CR 71) beginning approximately 3600' west of Speonk-Riverhead Road, Speonk. (Compatible Growth Area).
Acreage/ # of Parcels	127 acres/ 13 parcels.
Unusual Geologic Features	None.
Topography (slopes)	Flat, elevations range from 50' along the perimeter with highpoints to 59' in the middle.
Soils	Carver Series (CpC - 3 to 15% slopes), Plymouth Series (PIA - 0 to 3 percent slopes, PIB - 3 to 8% slopes), Riverhead Series (RdA - 0 to 3% slopes, ²⁵ RdB - 3 to 8% slopes ²⁶).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Agriculture - Nursery Stock.
Rare and Endangered Species	None.
Wetlands	None.
Physical Data:	
Land Use	On-site: Agriculture - Nursery Stock. Surrounding: Vacant and forested to east, west and north, residential development on the south.
Zoning	Country Residence - 60,000 sq. ft. (CR-60). Country Residence - 200,000 sq. ft. (CR-200).
School District	#1 - Speonk-Remsenburg and #11- Eastport.
Public Water	Suffolk County Water Authority 12" main runs along Old Country Road.
Public Sewer	No.
Lighting/Fire/Police District	Lighting: #50/FD: #30/Police: Southampton Town Police

²⁵ Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices

²⁶ Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

Item	Southampton Area B
Location	Southwest corner Old Country Road (CR 71) and Speonk Riverhead Road, Speonk. (Compatible Growth Area).
Acreage/ # of Parcels	158 acres/ 8 parcels.
Unusual Geologic Features	None.
Topography (slopes)	Flat, elevations range from 50' along the perimeter with highpoint of 59' at north and lowpoint of 45' at road edge.
Soils	Carver Series (CpC - 3 to 15% slopes CpE - 15 to 35% slopes ²⁷), Cut and fill land (CuB), Deerfield Sand (De ²⁸), Plymouth Series (PIA - 0 to 3 percent slopes, PIB - 3 to 8% slopes), Riverhead Series (RdA - 0 to 3% slopes ²⁹ , RdB - 3 to 8% slopes ³⁰)
100 Year Flood Plain Area	No.
Ecosystem Overview:	See Volume II, Chapter 5 for general description.
Vegetative Cover Type	Pitch Pine - Oak forest and successional old field, (See Volume II, Chapter 5 for description of these ecological communities).
Rare and Endangered Species	None.
Wetlands	Yes, ~ 5 % of site is freshwater wetlands.
Physical Data:	
Land Use	On-site: vacant, forested, residential, old field and duck research lab. Surrounding: Vacant and forested to north and west, residential and industrial on the east, residential on the south.
Zoning	Country Residence - 60,000 sq. ft. (CR-60). Country Residence - 200,000 sq. ft. (CR-200).
School District	#1- Speonk-Remsenburg and #11- Eastport.

²⁷ Soil types with severe constraints on sewage and/or homesites.

²⁸ Soil types with moderate constraints on sewage disposal and/or homesites.

²⁹ Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

³⁰ Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

Public Water	Suffolk County Water Authority 12" main runs along Old Country Road.
Public Sewer	No.
Lighting/Fire/Police Districts	Lighting:# 50/FD: #EE & #31/Police: Southampton Town Police.

Item	Southampton Area C
Location	North of Old Country Road (CR 71) and east of Speonk-Riverhead Road. (Compatible Growth Area)
Acreage/ # of Parcels	96 acres/ 10 parcels.
Unusual Geologic Features	None.
Topography (slopes)	Relatively flat with higher elevations of 50' to the north, swale running from north to south over portions of the site with elevations as low as 20'.
Soils	Carver Series (CpA - 0 to 3% slopes, CpC - 3 to 15% slopes ³¹), Plymouth Series (PIA - 0 to 3% slopes, PIB - 3 to 8% slopes), Riverhead Series (RdA - 0 to 3% slopes ³²).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Pitch Pine - Oak forest, see Plan, Volume II, Chapter 5, for description of this ecological community.
Rare and Endangered Species	No.
Wetlands	No.
Physical Data:	
Land Use	On-site: vacant and forested, some agriculture (nursery stock). Surrounding area: residential and industrial to the west, auto junk yards and sand mines to the north, raceway to the east, vacant and forested to the south.
Zoning	Country Residence - 40,000 sq. ft. (CR-40). Country Residence - 200,000 sq. ft. (CR-200).
School District	#1 - Speonk-Remsenburg and #2 - Westhampton.
Public Water	Suffolk County Water Authority 12" main runs along Old Country Road.
Public Sewer	No
Lighting/Fire/Police/Districts	Lighting: # 50/FD: #45/Police: Southampton Town Police

³¹ Soil type with slight to moderate constraints on sewage disposal and/or homesites.

³² Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

Item	Southampton Area D
Location	North of Old Country Road (CR 71), immediately south of Suffolk County Police Academy, Westhampton. (Compatible Growth Area).
Acreage/ # of Parcels	29 acres/ 4 parcels
Unusual Geologic Features	None.
Topography (slopes)	Relatively flat with highpoint of 48' to the north and lowpoint of 30' along the road. Swale runs southeasterly through center of site.
Soils	Carver Series (CpC - 3 to 15% slopes ³³), Cut and fill land (CuB ³⁴), Plymouth Series (PIA - 0 to 3% slopes, PIB - 3 to 8% slopes), Riverhead Series (RdA - 0 to 3% slopes, ³⁵ RdB - 3 to 8% slopes ³⁶).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Pitch Pine - Oak forest, see Plan, Volume II, Chapter 5 for description of this ecological community.
Rare and Endangered Species	None.
Wetlands	None.
Physical Data:	
Land Use	On-site: vacant and forested. Surrounding area: Suffolk County Police Academy to north, care center to east, raceway to west, vacant and forested to the south.
Zoning	Country Residence - 200,000 sq. ft. (CR-200).
School District	#2 - Westhampton.
Public Water	Suffolk County Water Authority 12" main runs along Old Country Road.

³³ Soil types with slight to moderate constraints on sewage disposal systems and/or homesites.

³⁴ Soil types with moderate constraints on sewage disposal and/or homesites.

³⁵ Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

³⁶ Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

Public Sewer	No.
Lighting/Fire/Police Districts	Lighting: # 50/FD: #45/Police: Southampton Town Police

Item	Southampton Area D2
Location	North of Old Country Road (CR 71), west of Summit Blvd extension. (Compatible Growth Area).
Acreage/ # of Parcels	35 acres/ 24 parcels (contains old filed maps).
Unusual Geologic Features	None.
Topography (slopes)	Flat with an average elevation of 45'.
Soils	Plymouth Series (PIA - 0 to 3% slopes), Riverhead Series (RdA - 0 to 3% slopes ³⁷).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Pitch Pine - Oak forest, see Plan, Volume II, Chapter 5 for description of this ecological community.
Rare and Endangered Species	None.
Wetlands	None.
Physical Data:	
Land Use	On-site: vacant and forested. Surrounding area: Town facilities on the west, gravel pit to the east, vacant and forested to the north and vacant and residential to the south.
Zoning	Country Residence - 200,000 sq. ft. (CR-200).
School District	#2 - Westhampton.
Public Water	Suffolk County Water Authority 12" main runs along Old Country Road.
Public Sewer	No.
Lighting/Fire/Police Districts	Lighting:# 50/FD: #45/Police: Southampton Town Police

³⁷ Prime agricultural soils with Capability Unit I or II indicating this soil type has few or moderate limitations that reduce the choice of plants or require conservation practices.

Item	Southampton Area E
Location	South of Riverhead-Hampton Bays Road (SR 24), just east of Old Quogue Road, Riverside-Flanders. (Compatible Growth Area).
Acreage/ # of Parcels	48 acres/ 2 parcels.
Unusual Geologic Features	None.
Topography (slopes)	Flat with an average elevation 20'.
Soils	Carver Series (CpA - 0 to 3% slopes), Cut and Fill land (CuB ³⁸), Deerfield Sand (De ³⁹).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Pitch Pine - Oak forest, successional old field, see Plan, Volume 2, Chapter 5 for description of these ecological communities. Also partially disturbed.
Rare and Endangered Species	None.
Wetlands	None.
Physical Data:	
Land Use	On-site: 50% of site is an abandoned movie theater and 50% of site is vacant and forested. Surrounding area: bordered by residential development on all sides and elementary school on the south.
Zoning	Highway Business - 40,000 sq. ft. (HB). Residence - 15,000 sq. ft. (R-15). Light Industry - 40,000 sq. ft. (LI-40).
School District	#2- Riverhead.
Public Water	Riverside Water District.
Public Sewer	No.
Lighting/Fire/Police Districts	Lighting: #50/FD: #36/Police: Southampton Town Police

³⁸ Soil types with moderate constraints on sewage disposal and/or homesites.

³⁹ Soil types with moderate constraints on sewage disposal and/or homesites.

Item	Southampton Area J
Location	North of Montauk Highway, west of Squiretown Road and south of Sunrise Highway, Hampton Bays. (Outside Central Pine Barrens).
Acreage/ # of Parcels	37 acres/ 2 parcels.
Geologic Features	None.
Topography (slopes)	Gently rolling with steeper slopes to the north. Elevations range from 36' in the south to 85' along Sunrise Highway.
Soils	Carver Series (CpC - 3 to 15% slopes, ⁴⁰ CpE - 15 to 35% slopes ⁴¹), Cut and fill land (CuB).
100 Year Flood Plain Area	No.
Vegetative Cover Type	Pitch Pine - Oak forest and successional old field, see Plan, Volume II, Chapter 5 for description of these ecological communities.
Rare and Endangered Species	None.
Wetlands	None.
Physical Data:	
Land Use	On-site: vacant and forested. Surrounding area: commercial on the south, residential to the east, cemetery on the west.
Zoning	Residence - 40,000 sq. ft. (R-40).
School District	#5 - Hampton Bays.
Public Water	Hampton Bays Water District.
Public Sewer	No.
Lighting/Fire/Police Districts	Lighting: # 50/FD: # 35/Police: Southampton Town Police

3.3 References

The following references were utilized in preparing the foregoing tables.

Acreage and number of parcels information: Information was gathered from tables generated by Central Pine Barrens Commission staff based on Suffolk County Tax Map Information, Town Assessor Data, 1993 and criteria developed by the towns.

⁴⁰ Soils with slight to moderate constraints on sewage disposal systems and/or homesites.

⁴¹ Soil types with severe constraints on sewage disposal and/or homesites.

Calverton Policy Section: Airport Joint Use Feasibility Study 1993. Calverton Airport. Long Island Regional Planning Board, Koppelman, Ph.D, L., *et al.*, 1993.

General: Cohalan, Peter F., County Executive, 1982. *Report to the Suffolk County Legislature, Annual Environmental Report*. Suffolk County Department of General Services, Suffolk County, New York, p. 44-57, May, 1982; Halpin, Patrick G., County Executive, 1988. *Report to the Suffolk County Legislature, Annual Environmental Report*. Suffolk County Department of General Services, Suffolk County, New York, p. 27-40, 1988; Koppelman, Ph.D. L., *et al.*, *The Long Island Comprehensive Special Groundwater Protection Area Plan*. Long Island Regional Planning Board, 1992; National Oceanic and Atmospheric Administration (NOAA), 1990-1994, *Climatological Data, New York*. NOAA Reports, Volumes 102-106.

Land use information: Town Assessors of the three towns data from 1993 was used to determine the land use activity in the area; April 1994 aerial photographs (1" = 400') prepared by Aerographics, Inc. Bohemia, New York.

School, Public Water, Public Sewer, Lighting, Fire and Police Districts boundaries: Suffolk County Tax Maps, Central Pine Barrens Comprehensive Land Use Plan, Volume II, Chapter 9 provided these boundaries.

Soils: Soil Survey of Suffolk County, New York, United States Department of Agriculture, April 1975.

Topography, Unusual Geologic Features, 100 year Flood Plain information: United States Geologic Survey Topographic Quadrangle Maps, 7.5 Minute Series (1967); Suffolk County Department of Public Works, Topographic Maps, Five Eastern Towns, prepared by Lockwood, Kessler & Bartlett, Inc., Consulting Engineers, October 1975.

Wetlands and Rare and Endangered Species: New York State Department of Environmental Conservation computer generated map based on Natural Heritage Program data, April, 1995.

Vegetation: The Comprehensive Plan Initiative for Groundwater and Pine Barrens Forest Preservation, Town of Southampton Department of Planning and Natural Resources, December 1993; April 1994 aerial photographs (1" = 400') prepared by Aerographics, Inc. Bohemia, New York; Town of Brookhaven, New York, 1990 Natural Resources Inventory, Murray Wade, et al, 1990.

Zoning: Town of Brookhaven Code; Town of Riverhead Code and Town of Southampton Code.

4. Core Preservation Area Impacts

This section provides a description of the beneficial and adverse impacts that are expected to result from the formation of a 52,500 acre Core Preservation Area (CPA) upon implementation of the Plan. According to the Plan, the CPA is to be preserved or protected by a strategy of government land acquisition, through transfer of development rights, conservation easements, gifts, land swaps and donations. Development, as defined in the Article, in the CPA shall be prohibited or redirected except for those situations identified in the Plan and the Act. Generally, permitted uses within the CPA are limited to those operations or uses which do not constitute development or are pursuant to hardship exemptions granted by the Commission, or as otherwise described in the Plan.

Development of the area under existing towns' master plans and zoning requirements must be analyzed before the impacts of the Plan can be evaluated. Appendix 8 shows the zoning classifications and acreage of property within the respective portions of the Core Preservation Area in the Towns of Brookhaven, Southampton and Riverhead, as well as the respective site clearance standards applied by each. In addition, the amount of acreage that would be allowed to be cleared in each zoning category based on the site clearance standards has been calculated. The site clearance standards within the various towns serve as guidelines for maximum vegetation clearance allowed. Actual clearance may be less depending upon the type of subdivision and buildout that actually takes place. According to existing site clearance standards, approximately 1,803 acres in the Town of Brookhaven, 1,403 acres in the Town of Southampton, and 594 acres in the Town of Riverhead would be allowed to be cleared of natural vegetation, for a total of approximately 3,800 acres within the CPA.

The Central Pine Barrens area and the CPA, contain many types of habitats, including pitch pine-oak forest, chestnut-oak forest, plantations, successional old fields, croplands (agriculture), landscaped areas, and vacant disturbed areas, as well as various types of fresh water wetlands, tidal marshes and surface waters. Although approximately 24,000 acres are already preserved in the Core as public land (including: federal, state and town parks and open space, county and town development right areas, and surface waters), it must be pointed out that the potential build out of privately-owned lands in the Core under existing town master plans and zoning would fragment the habitat within the Core Preservation Area, which is currently the largest contiguous intact pine barrens area left on Long Island. The following excerpt from the Southampton Western DGEIS is relevant to the entire Core Preservation Area. It describes the potential impacts that would incur within the CPA if development under existing town master plans and zoning takes place in the future:

Of all today's threats to the natural communities, species, and processes of the Central Pine Barrens, the most damaging are forest destruction and fragmentation, as it is these factors which lead most to loss of genetic diversity and loss of entire ecosystems. Current land-use regulations are contributing to this, as well as historically incompatible roads and building development. There is a great concern that if these patterns are allowed to continue, the remnants of the Central Pine Barrens will be too small and fragmented to protect the complete ecosystem, with thriving populations of all native species and community types, and continuance of essential natural processes.

There is little doubt that we need to move beyond the protection of individual pieces of land, to long term protection of the whole natural landscape, if we are to ensure long term preservation of the Central Pine Barrens as a functioning ecosystem. Research by conservation biologists, and ecologists is now showing that the effects of forest loss and

fragmentation may be much worse than previously thought. Not only are neotropical migrant landbirds being affected, but the entire diversity of animals - resident birdlife, large birds of prey, snakes, turtles, salamanders, mammals, even insects, such as butterflies and moths. Restricted plant communities and habitats for rare flora are being severely undermined as well. The implications of this for long term ecological stability are obviously not good. (Southampton WGEIS 1993).

From an environmental point of view, formation of the CPA under the Plan has many positive environmental effects associated with it. Although some development within the Core Preservation Area may eventually take place if hardship exemptions are granted by the Commission as provided for in the Act and under the roadfront parcel policy, there will be considerably and significantly less development within the CPA than that which would take place under existing land use scenarios.

Appendix 1 presents the Maximum Potential Residential Units for the Core Preservation Area. It shows that a total of approximately 2,688 Pine Barrens Credits associated with potential residential units within the CPA may be transferred out to respective receiving areas within the towns. This will prevent approximately 3,800 acres of habitat (see Appendix 6 and 7) within the CPA from being cleared of natural vegetation. Equally important, numerous and significant breaks in connectivity will be prevented. The creation of the CPA will ultimately result in preservation of significant contiguous habitat acreage within the Pine Barrens. This may only be affected by the number of hardship exemptions that may be granted in the future by the Commission that could diminish the amount of acreage preserved and parcels identified under the Core roadfront parcel policy.

In addition, under existing conditions approximately 3,917 residential units can be built out within the CPA when considering single and separate ownership on smaller lots. The Plan calls for the transfer of only 2,688 units, a difference of 1,229 units which will not be built within the Central Pine Barrens Compatible Growth Area or other receiving areas identified in the Towns of Brookhaven, Southampton and Riverhead. This represents a regional reduction of approximately 1,229 residential units. (See Appendix 1).

The preservation of unique ecosystems, such as Suffolk County's Pine Barrens area, is more successful when the vitality of natural processes is considered within the larger ecosystem. Taking a broad view of the land in large forest preserves can help ensure that there is sufficient space for natural processes and species propagation to continue unhampered. Many rare animals must have sufficiently large natural areas, or at least patches of geographically linked areas, to breed and live, thus sustaining their existence. Migratory as well as resident birds need corridors or large areas of appropriate habitat in order to sustain them. The Nature Conservancy has identified the coastal Pine Barrens area which includes the CPA, as one of its "last great places".

Creation and preservation of the CPA will form a bioserve which contains representative examples of all of the integrated ecosystems within the Central Pine Barrens area. In addition to containing large tracts of the more common pine barrens ecological communities such as pitch pine-oak forest, chestnut-oak forest, and fresh water wetlands and salt marshes, the CPA contains many state rare natural communities which include coastal plain pond shores, coastal plain ponds, coastal plain poor fen, coastal plain Atlantic white cedar swamps, pine barrens shrub swamps, dwarf pine plains, pitch pine-oak-heath woodland, and salt panne. Chapter 5: Ecosystems Overview, Volume 2 of the Plan notes that the Natural Heritage Program records a total of 52 occurrences of state rare natural communities in the Central Pine Barrens. Of these almost all are within the Core Preservation Area. In addition, that Chapter of the Plan states that

a total of 205 occurrences of 54 rare plant species have been documented in the CPA.

The Ecosystems Overview in Volume 2, further points out that the theory of island biogeography suggests that the size of a patch or "island" of a habitat is directly related to the diversity of the wildlife it will support. In essence, bigger patches or islands of habitat will support greater diversity of wildlife than smaller patches. Biogeographic theory also suggests that the distance between an island and the nearest similar island is important. A patch nearer a patch of the same type will support more wildlife species than a same-sized patch which is further away. In other words, closer islands support a greater diversity of wildlife because opportunities of immigration are greater.

Travel amongst habitat patches is also facilitated by travel corridors. Corridors simply connect larger patches of habitat and provide adequate cover for travel of wildlife between patches, but do not necessarily provide food or breeding sites. Formation and preservation of the CPA, therefore, will provide large areas of habitat and linkage corridors where existing wildlife populations can breed and sustain their species.

As pointed out in the Southampton Western DGEIS, the Central Pine Barrens area and the CPA contain an impressive array of animal life which significantly adds to the ecological diversity of Long Island. As many as 300 species of birds have been observed in the Central Pine Barrens and its surrounding coastal environment, of which 162 have been confirmed as nesting on Long Island. The NYSDEC in a survey of the Peconic River system in 1987, recorded 22 species of mammals. In addition, 28 species of reptiles and amphibians are known to inhabit the area of the Peconic and Carmans River watersheds.

According to Volume 2 of Chapter 5, rare species within the area are the banded sunfish, tiger salamander, eastern mud turtle, osprey, piping plover, as well as common tern and least tern. Rare invertebrate species include moths, butterflies, and damselflies. The CPA contains one of the highest concentrations of rare, endangered or threatened natural communities or plant and animal species within New York State. Its preservation will therefore be important to maintaining these communities and species of statewide distinction.

The Wild, Scenic and Recreational Rivers Program was developed to protect and preserve, in a free flowing condition, those rivers of the state that possess outstanding natural, scenic, historical, ecological, or recreational values identified as being important to present and future generations. Under the Wild, Scenic and Recreational River Systems Act (Title 27, Article 15, NYS Environmental Conservation Law), the Carmans River and Peconic River corridors have been designated for scenic and recreational purposes. The CPA contains sections of both the Carmans and Peconic Rivers which will be preserved or protected under the Plan for future generations.

Creation of the CPA under the Plan has all of these beneficial environmental impacts associated with it, many of which simply are not attainable under normal development scenarios. Therefore, implementation of the Plan and the formation of the CPA clearly has greater environmental advantages over and above the current town land use and zoning plans.

5. Impacts on Geologic Resources

As analyzed in Chapter 2, "Geologic Overview" of Volume 2, the major surficial geologic features within the Central Pine Barrens area are the Ronkonkoma terminal moraine, the Ronkonkoma ground moraine, outwash deposits and recent geologic formations which include freshwater wetland, shore, beach and salt marsh deposits. In addition, significant geologic features such as kettleholes, kames and swale areas are found at various locations throughout the study area.

The moraine area consists of very hilly and uneven topography that contain slopes that range from 15 to 35% in many areas. The outwash plains and recent geologic deposits are flatter, containing slopes that range from 0 to 15%. All of the geologic features are represented within the Core Preservation Area as well as within the CGA and areas outside the CGA. Non-Central Pine Barrens areas within Brookhaven that will be affected by the Plan contain some Ronkonkoma terminal moraine area, but are mostly outwash plains. The non-Core areas in the Town of Riverhead affected by the Plan are generally outwash plains. Southampton's areas include both Ronkonkoma terminal and ground moraine features as well as outwash plains. This can be seen from the Surficial Geologic Map in Chapter 2: "Geologic Overview" of Volume 2 of the Plan which is attached as an appendix to the SDGEIS.

5.1 Core Preservation Area Impacts

The Plan's implementation will have a beneficial impact on the Core Preservation Area because it will prohibit or redirect development from the Core, except for those situations identified in the Plan and the Act. Therefore existing geologic resources in the Core will be preserved or protected.

5.2 Non-Core Impacts

Since most of the areas outside of the Core which are affected by the Plan are to be built out under existing zoning as set forth by each town, the potential impacts of the Plan on the geologic resources within those areas are the same as would occur without the Plan. Normal development of residential, commercial, industrial sites in these areas would involve excavation activities which include those required for installation of roads, foundations, water lines, drainage and sanitary facilities. Such actions will modify the surface landscape to some extent. However, they will not alter the main geologic features, including the terminal and ground moraines as well as the outwash plains. Recent geologic deposits are closely associated with wetland environments and are, therefore, protected by existing laws.

Some increased development density or intensity will occur within the receiving areas of Brookhaven, Riverhead and Southampton, however, this will only affect the surface topography to some extent. The Plan further protects surface topographic features by providing guidelines for development within steep sloped areas to minimize impacts associated with erosion. Therefore, no significant adverse impacts to topographic features is anticipated in the CGA or in areas outside of the CGA as a result of implementation of the Plan.

5.3 Central Pine Barrens Mitigation Measures

Mitigating measures include the acquisition of private undeveloped vacant land in the Core. Acquisition of the fee interest of CPA parcels could reduce the total number of PBCs that would be transferred to the non-Core areas. This will reduce the incremental increase in development in

receiving areas attributable to the Plan.

5.3.1 Mitigating Standards and Guidelines

The Plan includes Guidelines and Standards which ameliorate the potential impacts associated with the incremental increase in density or intensity the PBC program may occasion.

Guidelines under Section 5.3.3.8 of the Plan govern the disturbance of, and construction on, steep slopes within the Pine Barrens where the removal of native vegetation may result in excessive surface water runoff and severe soil erosion. The following guidelines are set forth within the Plan in order to minimize disruption of steep slopes:

Mitigating Guidelines Contained in the Central Pine Barrens Plan	
5.3.3.8.1	Clearing envelopes should be placed upon lots within a subdivision so as to maximize the placement of those envelopes on slopes less than 10%.
5.3.3.8.2	Construction of homes, roadways and private driveways on slopes greater than 10% may be approved if technical review shows that sufficient care has been taken in the design of stabilization measures, erosion control practices and structures so as to mitigate negative environmental impacts.
5.3.3.8.3	Project review is facilitated if submissions contain a slope analysis showing slopes 0-10%, 11-15% and 15% and greater. In areas with steep slopes, slope analysis maps should be required. This may be achieved by cross hatching or shading the appropriate areas of the site plan.
5.3.3.8.4	Erosion and sediment control plans should be required in steeply sloped areas of 15% or greater slopes.
5.3.3.8.5	Roads and driveways should be designed to minimize the traversing of slopes of greater than 10% and to minimize cuts and fills.
5.3.3.8.6	Details of retaining walls and erosion control structures should be provided for roads and driveways which transverse slopes greater than 10%.

The Plan further points out that these guidelines are to be implemented by the municipalities and municipal agencies with discretionary decisions determined at the municipal level. However, the Commission will apply these guidelines under conditions specified in Chapter 4. These

situations occur where the project is proposed for the Core Preservation Area, is within a Critical Resource Area, is a development of regional significance, is a nonconforming project in the CGA or if the Commissions asserts jurisdiction over the project.

Since the proposed Commission guidelines dealing with disturbance of and construction on steep slopes are to be implemented at the discretion of the towns, the final impacts depend upon to the extent to which each individual municipality follows them. Neither the Town of Brookhaven nor Riverhead have ordinances regulating development on steeply sloped areas. The Town of Southampton regulations restrict development on slopes greater than 20%. The State Environmental Quality Review Act regulations also require that the towns consider the potential adverse environmental impacts associated with disturbing unique geologic features, requiring them to mitigate such impacts.

5.3.2 Mitigating Review Powers

The Commission has further identified 2 steeply sloped areas adjacent to the Carmans River in the Town of Brookhaven, as well as the moraine area in the vicinity of Henry's Hollow as critical resource areas. Critical Resource Area (CRA) designation by operation of Chapter 4 of Volume 1 requires the Commission to review any projects proposed in the CRA.

5.4 Mitigating Effect of Creation of a 52,000 Core Preservation Area

The creation of the Core Preservation Area will preserve or protect all of the geologic features within it. These features are representative of Long Island's glacial history. All moraines, outwash plains, recent deposits, kettleholes and kames will be preserved in an undisturbed state in this region unless exempted non-development activities occur thereon.

5.5 Unavoidable Unmitigated Impacts

Under existing conditions, minor alteration of surface topography will occur as a result of development. The Plan will not change this. However, by preserving or protecting the Core area in a natural undisturbed state, the various geologic features in that region will remain as they currently exist.

5.6 Irreversible Commitment of the geologic resources

The Plan does not change how construction currently takes place with respect to its impact on surface topography. It only changes where construction will take place. Therefore, the Plan does not have any irretrievable commitment of geologic resources over and above existing land use proposals. Minor disruption of surface topography will continue to take place due to development.

6. Impacts on Soils

Chapter 3 of Volume 2 of the Plan, "Soils Overview," provides a description of the general soil associations that are located within the Central Pine Barrens area. The soil associations in the Central Pine Barrens continue in horizontal bands through the areas outside of the Central Pine Barrens in the three towns. A map that delineates the location of prime agricultural soils is provided in Appendix I-2 of the Volume 2. Soils that have a high seasonal water table are identified in Chapter 3 of the Volume 2 as environmentally sensitive due to their association with wetland and tidal marsh areas.

6.1 Core Preservation Area Impacts

The soil associations located within the CPA are described in detail in Volume 2, Chapter 3 of the Plan.

Limited additional development could occur in the CPA from hardship exemptions granted by the Commission and the recommended legislative infill parcel exemption policy. Therefore, cutting and filling for new development in the Core would be limited. Secondary impacts that would result from limiting the disturbance of soils in the Core would be preservation of vegetative habitat associated with specific soils types. This would include the protection of wetlands and marshes that are associated with soils with a high seasonal water table.

The overall goal of the Plan and the Pine Barrens Act is to preserve the CPA through a strategy involving government land acquisition, transfer of development rights conservation easements, gifts, land swaps and donations. Implementation of this policy will reduce the amount of development in the non-Core areas and thus the disturbance of native soils.

6.2 Non-Core Impacts

The majority of the areas outside of the Core that are affected by the Plan are likely to have been built out under existing zoning as set forth by each town, in the absence of the Plan. Therefore, the potential impacts of the Plan on the soil resources within those areas are the same as would occur without the Plan. Normal development of residential, commercial, and industrial sites in these areas would involve the removal of soils during excavation activities (i.e., required for installation of roads, foundations, water lines, drainage and sanitary facilities). These actions and associated impacts (i.e., erosion, runoff) would be short term in nature since they occur mainly during the construction phase of development projects.

Some increased development density will occur within the receiving areas of Brookhaven, Riverhead and Southampton, that could potentially affect soils, including prime agricultural soils, during construction activities in these areas. Prime agricultural soils could be removed from future agricultural use if receiving areas containing these soils are developed for residential use or, in the case of the Town of Riverhead, for industrial use.

6.3 Central Pine Barrens Mitigation Measures

Mitigation measures in the Plan include the aforementioned acquisition policy and the PBC program. By acquiring private vacant developable land in the Core the number of PBCs transferred to the non-Core will be reduced. This will lessen the impacts associated with PBC generated development.

6.3.1 Mitigating Standards and Guidelines

Development would be directed away from soils that have high seasonal water tables and are associated with wetland and tidal marsh areas through the standards and guidelines for development as stated in Volume I, Chapter 5. Additional guidelines from the Plan which will mitigate the impact of soil erosion from development in areas within the CGA that have steep slopes are listed below.

Guidelines under 5.3.3.8 of the Plan, governs the disturbance of and construction on steep slopes within the Pine Barrens where the removal of native vegetation may result in excessive surface water runoff and severe soil erosion. The following guidelines are set forth within the Plan in order to minimize disruption of steep slopes:

Mitigating Guidelines Contained in the Central Pine Barrens Plan	
5.3.3.8.1	Clearing envelopes should be placed upon lots within a subdivision so as to maximize the placement of those envelopes on slopes less than 10%.
5.3.3.8.2	Construction of homes, roadways and private driveways on slopes greater than 10% may be approved if technical review shows that sufficient care has been taken in the design of stabilization measures, erosion control practices and structures so as to mitigate negative environmental impacts.
5.3.3.8.3	Project review is facilitated if submissions contain a slope analysis showing slopes 0-10%, 11-15% and 15% and greater. In areas with steep slopes, slope analysis maps should be required. This may be achieved by cross hatching or shading the appropriate areas of the site plan.
5.3.3.8.4	Erosion and sediment control plans should be required in steeply sloped areas of 15% or greater slopes.
5.3.3.8.5	Roads and driveways should be designed to minimize the traversing of slopes of greater than 10% and to minimize cuts and fills.
5.3.3.8.6	Details of retaining walls and erosion control structures should be provided for roads and driveways which transverse slopes greater than 10%.

The Plan leaves the implementation of these guidelines to the municipalities and municipal agencies, with discretionary decisions determined at the municipal level.

Since the proposed Commission guidelines dealing with disturbance of, and construction upon, steep slopes are to be implemented at the discretion of the towns, the final impacts on soils associated with steep slopes depends upon the extent to which each individual municipality follows them. Neither the Towns of Brookhaven nor Riverhead have ordinances regulating development on steeply sloped areas. The Town of Southampton regulations restrict development on slopes greater than 20%. The State Environmental Quality Review Act regulations also require that the towns consider the potential adverse environmental impacts associated with disturbing soils and requires them to mitigate such impacts.

6.3.2 Mitigating Review Powers

Chapter 4 gives the Commission powers to review several classes of development projects. Included in this class are projects within Critical Resource Areas (CRAs). These areas can include wetlands and therefore soils associated with high seasonal water tables.

6.4 Mitigating Effect of Creation of a 52,000 Core Preservation Area

The creation of the Core Preservation Area will preserve the majority of agricultural soils and soils associated with environmentally sensitive areas in it by prohibiting or redirecting development from these areas.

Potential impacts that would occur to soils that could be within this area would be significantly reduced by the Plan due to the creation of the Core Preservation Area. This effectively redirects development and associated construction activities that would disturb soils away from the CPA to areas outside of the Core (receiving areas in the CGA and outside of the Central Pine Barrens area).

6.5 Unavoidable Unmitigated Impacts

There will be an unavoidable loss of agricultural soils used for agricultural purposes in areas outside of the Core that are developed for residential use through the redemption of PBCs.

6.6 Irreversible Commitment of the soil resources

The Plan redirects where development will occur in the three towns and, therefore, does not propose an overall irretrievable commitment of soil resources over and above existing land use proposals.

7. Impacts on Groundwater Quality

7.1 Impacts of Central Pine Barrens Plan on Core Preservation Area

Implementation of the CPB Plan would have a positive impact on the quality of groundwater resources in the Core, and little or no detrimental impact on groundwater resources within receiving areas located outside the Core.

Within the Core, the plan would substantially reduce or eliminate future incremental sewage-nitrogen and other pollutant loadings, including synthetic organic chemicals (SOCs). Future sewage-nitrogen loadings would be reduced by 58,750 pounds per year, based on the elimination of 3,917 future dwelling units (D.U.s) at 3 people/D.U. at 5 pounds of sewage-nitrogen discharged through cesspools per person per year (Koppelman, 1978; CER, 1983b). (Appendix 1). Additional reductions in future incremental nitrogen loadings should also be realized through the implementation of tighter restrictions on turf and agricultural fertilization (i.e. BMPs) of existing development and farmland.

7.2 Non-Core Impacts

An impact on groundwater quality in PBC receiving areas would occur with the transfer from the Core of as many as 2,420 D.U.s (Appendix 1), which would generate over 35,000 pounds of sewage-nitrogen per year, and the Plan's recommendation (Section 6.4.5) to allow sewage flows to be increased to as much as 600 gallons per day per acre (gpd/acre) in PBC receiving areas that under present SCDHS standards are limited to 300 gpd/acre without sewers. The actual significance of this impact for any receiving area, however, would depend on the pre-existing land use on the receiving parcels, the density of surrounding development, and the proximity of public water supply wellfields and water mains.

Nitrogen loadings to groundwater would be reduced where existing farmland is developed, even at sewage discharges of 600 gpd/acre, which has been equated to a housing density of 2 dwelling units per acre (2 D.U./acre; Suffolk County Sanitary Code Article 6). Agricultural activities are generally assumed to result in groundwater nitrogen concentrations in the 7-15 ppm range (CER, 1983a and 1983b), but significantly higher concentrations have often been monitored in the field (SCDHS, unpublished data). In contrast, groundwater nitrogen recharge concentrations resulting from 2 D.U./acre development are conservatively calculated to range from 5-8 ppm, with an average of about 6 ppm; sewage flows contribute up to 5 ppm (for 3 people per household), with most of the remainder coming from lawn and landscape fertilization (Koppelman, 1978; CER, 1983b; SCDHS 1987).

Application of Pine Barrens Credits to farmland, therefore, would result in groundwater nitrogen quality improvement, even at sewage flows of 600 gpd/acre, especially if lawn and landscaping fertilization is minimized. In addition, potential impacts from agricultural pesticides would be eliminated, while the increased potential for introduction of synthetic organic compounds (SOCs) from residential development is not expected to cause significant groundwater problems (see note 43).

An increase in sanitary flows to cesspools from light-industrial uses, as is proposed by the Town of Riverhead for 268 Pine Barrens Credits, should also have minimal impact, provided that industries using SOC's are excluded.

Most of the PBCs would be used to increase housing densities on vacant parcels in existing

residential areas of the CGA or elsewhere in Hydrogeologic Zone III. The maximum receiving area density, 2 D.U./acre or 20,000 square foot lots, would not exceed what is already allowed under present Suffolk County Sanitary Code Article 6 requirements for Hydrogeologic Zones I, IV, VII and VIII, which are conservatively designed to limit total nitrogen concentrations in groundwater to 6 ppm or less.⁴² Application of these Article 6 requirements has resulted in adequate protection of public water supply wells from residential nitrogen and SOCs.

Potential impairment of private, shallow wells must be considered separately. For residences to be constructed on PBC receiving parcels of less than 40,000 square feet, private wells are excluded as the present Suffolk County Sanitary Code requires a public water supply hook-up. However, existing private wells may exist down the hydraulic gradient in new residences, where PBC redemption results in average lot sizes as small as 20,000 square feet (30,000 square feet in Brookhaven). In these instances, the Plan would not allow clustering of the new residences to lots of less than 20,000 square feet (see Plan Chapter 8).

Implementation of the CPB Plan would also decrease the overall potential for the discharge of SOCs to groundwater, since the overall number of dwelling units that could potentially be developed, and the volume of sanitary sewage that could therefore potentially be discharged, would be reduced.⁴³

There would be an increase in potential SOC impacts in PBC receiving areas; however, these are not expected to impair the use of public water supply wells based upon past experience in Suffolk, where no public wells have had to be shut down due to SOCs coming from residential development with densities of 2 D.U./acre or less. As with nitrogen, however, potential impacts on private wells are more problematic, but should be adequately addressed by existing Suffolk

⁴² Residential nitrogen contamination in groundwater was examined by the SCDHS and found generally to be less than that calculated by various nitrogen balance models or the empirical relationship developed during the 208 Study; an average nitrogen concentration of 6 ppm was found to be representative of 3 D.U./acre development, thus confirming the conservative nature of Article 6 requirements (SCDHS, 1987). The adequacy of Article 6 restrictions to protect public water supplies is further evidenced by the fact that no public supply wells in Suffolk County have exceeded the 10 ppm drinking water standard for nitrate-nitrogen as a result of residential development at 2 D.U./acre.

⁴³ Organics related to residential development have two potential sources: consumer products and "backyard industries." Consumer product usage is widespread, but occurs at very low volumes (especially since organic cesspool cleaners were banned in Suffolk County more than a decade ago); the NYSDEC's Consumer Products Project could not document any link between current (1986) consumer product usage and groundwater contamination (NYSDEC, 1986), nor did the statistical modelling studies conducted by the USGS for the Special Groundwater Protection Area program find a direct correlation between residential densities and organic groundwater contamination independent of associated commercial development (Stackelberg and Siwiec, 1992). On the other hand, the percentage of homeowners engaging in illegal backyard industries is small, but the impacts of an individual operation are potentially significant. The probability of such an operation occurring is directly proportional to the number of households, and does not appear to be related to lot size. Illegal backyard industries and, to a lesser extent, consumer product usage, are potential problems on the micro (private well) scale, but not on the macro (public well) scale, given present drinking water standards. The decrease in the total number of households under the CPB plan should reduce the overall magnitude of both sources.

Sanitary Code requirements for PBC receiving parcels and Plan recommendations for downgradient wells (see discussion, above).

As a further check on the potential for future groundwater impacts due to PBCs, the land use within contributing areas of existing glacial public supply wells (as defined in NYSDEC, 1990) proximate to the CPB were examined for existing and future residential densities, including increases due to PBCs, and other significant potential nitrogen sources such as major sewage treatment plants and higher-density old-filed maps. In no case was the average density within a zone of contribution greater than 2 D.U./acre. Thus, the unimpaired use of these glacial wells should be able to continue.

7.3 Central Pine Barrens Mitigation Measures

Any acquisitions under the Plan's 75% acquisition goal of private undeveloped land within the Core will mitigate the potential impact on groundwater quality in receiving areas. By purchasing the fee interest in these lands, the PBCs associated with them will not be transferred to the non-Core areas. Thus, as the credits are retired, the amount of development attributable to the Plan's implementation will decrease, thereby reducing the Plan's impact on the groundwater quality.

7.3.1 Mitigating Standards and Guidelines

The small incremental impacts that would be caused by implementation of the Plan in the CGA and other PBC receiving areas, over and above those presently allowed under Article 6 of the Suffolk County Sanitary Code, would be more than offset by the protection of groundwater quantity and quality in the Core. This would also protect deeper portions of the aquifer system below the CGA and in areas beyond the CGA which derive groundwater recharged through the Core.

In the Core, the use of Best Management Practices, as recommended by the Plan (Chapter 8), would reduce the impacts of remaining existing residential and agricultural activities.

In the CGA and other PBC receiving areas, impacts on groundwater and water supplies would be partially mitigated by a number of Plan recommendations, particularly the limitation (Plan Chapter 5) of non-native vegetation to 15% of parcel areas, compared to the typical 40%-50% for medium-density residential development. This would significantly reduce fertilization and pesticide requirements, and, therefore, resultant nitrogen and potential pesticide loadings to groundwater. Note that on residential lots of 1/2 acre or greater, nitrogen from turf can exceed 50% of the total nitrogen contributed to recharge.

The potential impact to existing shallow private wells located down the hydraulic gradient of receiving areas is mitigated in several ways. The Plan provides that these specific receiving areas will maintain a minimum lot size of 20,000 square feet, not to be further diminished by clustering. In addition, the Plan restrictions on non-native, fertilized vegetation, set at a maximum of 15% of the lot size, will result in nitrate and pesticide concentrations in groundwater recharge below the concentrations typically associated with such lot sizes on Long Island. Finally, the project location, in the deep flow groundwater hydrogeologic regime versus a shallow flow regime, reduces the potential for shallow wells directly intercepting upgradient sources.

Existing public and new private wells would be protected through strict, coordinated

enforcement of Sanitary Code Articles 6, 7 and 12 and other regulations (Chapters 7, and 8). Existing private wells would be protected through the Plan's recommendation (Chapter 8) to exclude clustered PBC-receiving development with parcels of less than 20,000 square feet from locations upgradient of areas without access to public water.

The transferred nitrogen loadings, if any, under the PBC program may be offset by the Plan's recommendations (Chapter 8) to improve nitrogen removal capabilities of new and expanded sewage treatment plants, and to possibly sewer areas presently developed at densities exceeding Article 6 requirements.

7.4 Mitigating Effect of Creation of a 52,000 acre Core Preservation Area

The Core Preservation Area will be a contiguous nature preserve overlying the deep aquifer recharge area. The Plan's policy of redirecting or prohibiting new development in the Core will reduce or eliminate the potential for contaminants to enter the aquifer. This will preserve the existing groundwater quality.

7.5 Unavoidable Unmitigated Impacts

Implementation of the PBC program would result in increased nitrogen in recharge (and possibly increased SOC loadings) in PBC receiving areas. These increments would be insignificant, however, compared to present and future allowable loadings (for nitrogen) and would not change the best uses of the ground or surface waters being impacted.

7.6 Irretrievable Commitment of Resources

The increased nitrogen (and possibly SOC) loadings associated with the PBC program would locally cause a small incremental degradation of water quality of recharge through PBC receiving parcels, but since this is not expected to result in an impairment of the use of such waters, no irretrievable commitment of resources would occur.

7.7 References

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8. Impacts on Water Supply Quantity

8.1 Impact of Plan Implementation on the Core Preservation Area

Implementation of the CPB Plan would have a positive impact on the quantity of CPB groundwater resources by reducing future pumpage demands and consumptive use in the CPB area, particularly in the Core Preservation Area. Current large-lot zoning in the Core has already reduced incremental (i.e., additional future) water demands there by as much as 0.62 mgd, based on a reduction of 2,075 dwelling units (5,992 - 3,917 D.U.s, see Appendix 1) at 300 gpd/D.U. This 34 percent reduction -- from 1.80 mgd to 1.18 mgd -- represents a demand savings of over 225 million gallons per year. The remaining incremental demand of 1.18 mgd would be eliminated if all developable parcels in the Core are purchased. In addition, future consumptive use of groundwater, which is generally estimated to be about 20% of residential pumpage (SCDHS, 1987), would be reduced by as much as 0.24 mgd if all vacant private undeveloped lots in the Core were acquired.

8.2 Non-Core Impacts

Application of the PBC program to all developable parcels in the Core, in contrast, would result in the transfer of as much as 0.73 mgd in water demand (based on 2,420 D.U.s, see Appendix 1, at 300 gpd/D.U.) out of the Core to the CGA and other areas. However, even the full-PBC scenario would require less than a 7% increase in the present 10.3 mgd pumpage from existing public water supply wellfields that draw groundwater from the CPB area (Plan Volume 2, Section 4.3.7). The corresponding maximum consumptive use rate of 0.15 mgd would be equal to less than one tenth of one percent of the 164-193 mgd of recharge within the CPB (Plan Volume 2, Section 4.3.1).

This pumpage and consumptive use would most likely be spread over a large area and numerous wellfields, and should not cause any regional problems related to over-consumption of groundwater resources, such as water table declines, with concomitant reductions in streamflows and wetland/pond water levels, or localized problems such as saltwater upconing at public water supply wellfields.

8.3 Central Pine Barrens Mitigation Measures

Acquisitions under the Plan's acquisition policy would mitigate the Plan's impact by reducing the number of units which may be transferred from the Core Preservation Area and developed in the non-Core areas. As private undeveloped vacant land is purchased in the Core, the associated credits are retired. Therefore the number of units which could be developed using these credits is reduced. By decreasing the incremental development generated by the Plan, the impacts on the groundwater quantity are lessened. As the number of units to be developed in the non-Core areas is reduced, the concomitant demand for increased quantities of groundwater is reduced.

8.3.1 Mitigating Standards and Guidelines

A potential impact on local groundwater quantity could occur if all PBC- transferred incremental pumpage (up to 0.73 mgd) were supplied by one public supply well -- a very unlikely scenario. Even in this case, the incremental pumpage could be supplied by one 500 gpm glacial well, which would cause only a 1-foot water table drawdown at a distance of 300 feet, and a 0.5-foot drawdown at 1,000 feet (SCDHS, 1987). In order to protect wetlands and other surface water resources from these types of drawdowns, the Plan specifically recommends against locating new

production wells where impacts on Core wetlands could occur. (Plan, Chapter 8). Furthermore, existing review procedures under the New York State Department of Environmental Conservation's Water Supply Program (ECL Art 15; 6 NYCRR Parts 601 and 602) should be sufficient to protect wetlands in the CGA, should a new well (or wells) be needed.

The small potential for impacts due to pumpage and consumptive use would be further reduced by the Plan's recommendation that no more than 15 percent of the lands area of new development be placed in non-native vegetation (Plan, Section 5.3). Since water used for lawn and landscape irrigation represents at least half of annual residential pumpage, and most of residential consumptive use (SCDHS, 1987), the real maximum increased pumpage demand and consumptive use figures under the full-PBC scenario should be considerably less than 0.73 mgd and 0.15 mgd, respectively.

8.4 Mitigating Effect of Creation of a 52,000 acre Core Preservation Area

The creation of the Core Preservation Area by prohibiting or redirecting new development to the non-Core areas mitigates the impact on water quantity by reducing the number of scattered units developed in the Core. The PBC generated units will be transferred to areas already serviced by the Suffolk County Water Authority. By reducing development in the Core, future demands on water supply will be reduced.

8.5 Unavoidable Unmitigated Impacts

Increased groundwater withdrawals of up to 0.73 mgd to supply non-Core PBC areas could occur as a result of the Plan. However, this increased demand would likely be handled by as many as two dozen existing public water supply wellfields located within the CGA or immediately downgradient of the CPB area, which presently pump more than 14 times this maximal amount without apparent impact. Consumptive use of groundwater would be increased by no more than 0.15 mgd, which represents a negligible percentage (less than 0.1%) of CPB recharge.

8.6 Irretrievable Commitment of Resources

The Plan would produce a net conservation of the quantity of CPB groundwater resources, and would not result in an irretrievable commitment of resources. The magnitude of future increased demands for water pumpage, if any, in PBC-receiving communities would be modest (less than 7%) compared to present demand levels, and could easily be offset by water conservation measures if water quantity issues become a concern in the future. Similarly, the magnitude of transferred consumptive use (less than 0.15 mgd) would be negligible (less than 0.1%) of annual recharge to the aquifer system within the CPB area.

8.7 References

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9. Impacts on Ecological Resources

9.1 Core Preservation Area Impacts

Implementation of the Plan will result in uniformly positive impacts to the ecological resources of the Core Preservation Area (CPA). This is especially true when compared with the impacts which would likely occur in the absence of the provisions for the preservation of most lands within the Core. By far, the preservation and protection of the Core will yield the greatest positive impact. The Pine Barrens Credit (PBC) Program functions in concert with the Land Acquisition and Public Lands Management Programs to protect the Pine Barrens ecosystem from new development, to restore any damaged lands and resources, and to manage the protected areas for ecosystem protection, water quality maintenance, and sustainable recreation.

The PBC program would transfer development away from the CPA to both the Compatible Growth Area (CGA) and to non-Pine Barrens receiving areas. This transfer of development would result in increased preservation of the CPA.

The land acquisition provisions of the Plan would also serve to maximize preservation of the CPA. The Plan (Chapter 3) recommends that 75% of the privately held, undeveloped, and currently unprotected lands in the CPA be acquired by various government entities or private conservation organizations. The degree of positive impact of the land acquisition aspect of the Plan upon terrestrial resources will be directly related to the future availability of public funding for the acquisitions, as well as the acquisition activities of private conservation groups.

Standards and Guidelines for Land Use apply primarily to the Compatible Growth Area and are discussed more thoroughly below. Nevertheless, these Plan features would tend to mitigate the impact of any CPA development which might be permitted pursuant to the hardship provisions as described in Chapter 4.5.1 of the Plan and in Section 57-0121 (9) of the Act. When development is permitted in the CPA, the Commission may apply the same Standards and Guidelines for Use which are applied in the CGA.

Chapter 7 of the Plan discusses public lands management. Implementation of the Plan would improve the management of those ecological resources of the Core which occur on or near public lands. Site management, such as enforcement of regulations and the resulting protection of natural resources, would be greatly enhanced through the Law Enforcement Council whose function is to integrate and coordinate enforcement policies and activities, thereby maximizing the effectiveness of all agencies' individual enforcement resources. It should be noted that the Law Enforcement Council's work will also apply to any CGA land which are in public park or preserve status.

Similarly, natural resource management, such as inventory, monitoring, applied research, and habitat management and restoration would be greatly enhanced by the coordination function of the Protected Lands Council. The Plan also offers numerous specific recommendations and guidelines for the stewardship of public conservation lands.

The hydrological policies described in Chapter 8 include several strategies which would benefit aquatic ecological resources. Several of the research and management efforts would improve the existing water quality conditions of both surface waters and groundwater. As an example, existing stormwater management structures, which frequently conduct road runoff directly into surface waters, could be replaced with the best available contemporary technology. Modern methods would contain sediments and filter pollutants before stormwater is recharged to the

groundwater.

9.2 Non-Core Impacts

Implementation of the Plan would result in minor incremental negative impacts to the terrestrial ecological resources of the non-Core Preserve Area lands when compared with the impacts which would likely obtain in the absence of the Plan's provisions: Aquatic ecological resources would remain protected at the current level of stringency by existing statutory programs, which the Plan explicitly reaffirms.

The PBC program would result in an increase in development density and intensity and the associated impacts in receiving areas in the Compatible Growth Area and outside of the Central Pine Barrens zone. However, the PBC program would not make lands subject to development that are not already subject to development. The most significant impacts would be greater clearing of naturally-vegetated lands. This would have the effect of increasing the fragmentation of habitats for both plants and animals. Fragmentation is detrimental to populations of plants and animals because it inhibits interpopulation movements (and therefore genetic mixing in extreme instances), exacerbates negative "edge effects," such as predation and interspecific competition, and reduces habitat "patch size." (see Plan, Volume 2 for extended discussion of this concept). The increased development densities would also tend to aggravate problems associated with non-native plants and animals, fertilizers and other lawn chemicals, stormwater runoff and disturbance. However, the increased fragmentation would only be incremental because these non-Core areas are otherwise subject to development under current conditions, and because examination of the Core versus compatible boundary indicates that the greatest bulk of currently contiguous, large tracts of forested areas within the overall CPB zone fall within the Core Preservation Area itself.

As with the Core Preserve Area, the discussion of Public Lands Management in Chapter 7 of the Plan suggests that implementation of the Plan would improve the management of those terrestrial ecological resources of the CGA which occur on or near public lands. Site management and natural resource management would be improved through the work of the Law Enforcement Council, the Protected Lands Council and the diverse recommendations and guidelines for the stewardship of public and semi-public lands.

9.3 Central Pine Barrens Plan Mitigation Measures

As discussed above, the Plan's PBC program would transfer development away from the CPA to the Compatible Growth Area (CGA) and other receiving areas outside of the Central Pine Barrens. This transfer of development would result in increased development density in CGA and receiving areas outside the CPB. However, the ecological impacts associated with these increased development densities would be incremental and be further mitigated by several factors.

First and foremost, the Plan limits the size of incremental increase in density over the existing zoning which can occur. Also, the Plan requires, and reaffirms, compliance with existing federal, state and local land use controls. These laws protect selected resources, such as wetlands and other surface waters, geological features, habitats of endangered species and blocks of contiguous habitats.

In this vein, efforts were also made during the development of the Plan to identify especially valuable ecological resources within the CGA; many of the resulting areas have been designated

as Critical Resource Areas and afforded special attention in the development review process. In particular, three of these Critical Resources Areas are also designated as preservation areas within the CGA, and therefore the suite of ecological elements on these three tracts will therefore be fully protected through the Pine Barrens Credit Program or the Land Acquisition Program. Finally, the Standards and Guidelines for Land Use are specifically designed to preserve critical Pine Barrens resources throughout the CGA. Each of these topics is discussed more thoroughly below.

The Plan would limit the maximum development density in any receiving area through a device known as Residential Overlay Districts (RODs). These designated zones may not be created in the Core Preservation Area or in any Critical Resource Area. Furthermore, RODs within the Town of Brookhaven, would be prohibited within land areas within five hundred (500) feet of any stream, bluff, surface water or wetlands regulated by the NYSDEC or the Town, land areas within the one hundred (100) year flood plain, public lands, the South Setauket Pine Barrens Zone or the Wild, Scenic and Recreational River corridors, which include portions of the Peconic and Carmans River. Furthermore, in Brookhaven, a parcel shall be ineligible for ROD use if forty percent (40%) of the land area of the parcel contains steep slopes (15% or greater).

The Critical Resource Areas (CRAs) are defined and described in Chapter 4. Of the fourteen CRAs, thirteen protect terrestrial features, such as steep slopes, endangered and vulnerable species and open space, and six protect aquatic features, such as wetlands, surface waters and riverfront open space. Three of the CRAs will be considered as preservation or "sending" areas while the remainder would have their most sensitive features preserved by clustering development away from elements of special concern. Any development in the CRAs of the CGA will be subject to review by the Commission (Chapter 4) and also subject to the Standards and Guidelines of Chapter 5. The Commission may also assert its review powers over projects in the CGA and non-Pine Barrens receiving areas as additional elements of concern are identified and brought to the Commission's attention by any individual Commissioner and then upon a majority vote of the Commission.

Acquisitions under the land acquisition provisions of the Plan would also serve to mitigate the ecological impacts of denser development. The Plan suggests the "full interest" (or fee title) method for acquisition of these properties. Full-interest acquisition of CPA lands would reduce the number of potentially transferrable development rights (Pine Barrens Credits) which might be sent to receiving areas. This would directly reduce the density of the full-buildout scenario.

9.3.1 Mitigating Standards and Guidelines

The Plan requires adherence to its own standards and guidelines, in addition to all existing federal, state, county and local laws. The Standards and Guidelines for Land Use of Chapter 5 create a threshold in terms of what shall be deemed permissible in the development process as it occurs in the CGA and designated receiving areas. Existing laws (summarized, except for those of the Towns, in Volume 2, Chapter 12), where more stringent, shall take precedence over the standards contained in the Plan, and any town may still exact more stringent laws as it deems necessary.

Existing federal, state and local land use laws currently protect most aquatic resources. Each of these statutory programs is flexible and allows tailoring of permits to the specific resource needs of each project. Thus, in the event that denser development in the non-Core areas is proposed near wetlands or other surface waters, protective measures, including the maintenance of naturally-vegetated buffers, can be imposed as permit conditions. In the case of New York

State's Freshwater Wetlands program, for example, buffers can be as wide as 100 feet.

The Standards and Guidelines for Land Use also mitigate the effects of denser development. These provisions of the Plan allow permitting agencies to: limit the clearing of native vegetation; protect surface waters and other vulnerable habitats; maximize the size and contiguity of open space tracts; maximize clustering; limit the use of nonnative plants; avoid pests; protect endangered species habitats; protect steep slopes; and restore naturally vegetated buffers near scenic vistas.

Some of the effects of development, such as increased edge, fragmentation and reduction of patch size, could be mitigated by the preservation of large blocks of natural landscape. Such mitigation can be maximized through those Standards and Guidelines for Land Use which call for the consolidation of contiguous blocks of natural landscape wherever practicable. Consideration of the physical relationship of a patch of habitat on developable land to other existing patches on adjacent lands is provided for under the Plan by Standard 5.3.3.6.3: "Subdivision and site design shall support preservation of large unbroken blocks that allow continuous open spaces to be established when adjacent parcels are developed." The appropriate reviewing body will have the authority to promote the creation of greenways and corridors which may, in some instances, connect with the CPA. The CPA, being left in an undeveloped state, would provide a deep and central open space which may be directly and indirectly accessible to species of the CGA and receiving areas outside of the CGA.

Furthermore, Chapter 5.3.3.3.9 of the Plan encourages coordinated design for open space management by providing Guidelines which promote the clustering technique in development planning (not below 20,000 sq. ft. if PBCs are utilized) and the creation and application of covenants and conservation easements on those portions of development properties which are to be preserved as open space.

Clearing of native vegetation on properties within the CGA and receiving areas shall be strictly limited to conform with the clearance standards set forth in the Plan. Development applications must contain calculations for the amount of clearing that would be permissible. These calculations would be recorded with filed maps. In addition, the clearing of vegetation for the construction of sumps or recharge basins is limited by Guideline 5.3.3.5.2 which strives to minimize their size, and further encourages the use of natural recharge and stormwater runoff areas in lieu of recharge basins whenever practicable.

Lists of recommended native plantings and nonnative, invasive plants that are not recommended for planting are both included in the Plan (Chapter 5, Figure 5-2). Upon implementation, this standard has the potential for encouraging habitat restoration on disturbed lands, perpetuating fast disappearing native genotypes, imitating natural ecological diversity on developed lands, avoiding the inadvertent introduction of fast-propagating exotic flora which displaces native vegetation and possibly reducing water consumption, since native species are generally more drought tolerant than non-native species and require little or no irrigation.

Aquatic ecological resources are given special attention. The proposed nitrate-nitrogen standard is at least as stringent as the existing standard. Groundwater is protected by Standard 5.3.3.1.2 which directs that "sewage treatment plant discharge shall be outside of and downgradient of the Central Pine Barrens." Surface water is protected by standard 5.3.3.5.1, which precludes stormwater disposal to off-site surface waters, and Guideline 5.3.3.5.5, which protects surface waters from construction impacts. Groundwater and surface water impacts are each considered in separate, detailed chapters elsewhere in this document.

9.4 Mitigating effect of the Creation of a 52,000 acre Core Preservation Area

Land Acquisition can serve to reduce the impacts of development in the CGA where non-Core lands are adjacent to acquired Core lands. Some of the effects of development, such as increased edge, habitat fragmentation and reduction of patch size, could be mitigated by the preservation of large blocks of natural landscape. Such mitigation can be maximized through the Standards and Guidelines for Land Use which, among other things, call for the consolidation of contiguous blocks of natural landscape wherever practicable.

Consideration of the physical relationship of a patch of habitat on developable land to other existing patches on adjacent lands is provided for under the Plan by Standard 5.3.3.6.3: "Subdivision and site design shall support preservation of large unbroken blocks that allow continuous open spaces to be established when adjacent parcels are developed." The appropriate reviewing body will have the authority to promote the creation of greenways and corridors which may, in some instances, connect with the CPA. The CPA, being left in an undeveloped state, will provide a deep and central open space which may be directly and indirectly accessible to species of the CGA and receiving areas outside of the CGA. The impact here, then, is substantially more positive than the situation that is likely without the Plan's added influence.

9.5 Unavoidable Umitigated Impacts

As a result of the transfer of development from within the Core Preservation Area, more naturally vegetated land in the non-Core areas would be developed than would be the case under existing zoning. (See Appendix 6). Thus, some valuable habitat would be lost, fragmented or disturbed.

9.6 Irretrievable Commitment of Resources

As above, a minor loss of less-critical ecological resources would result from implementation of the Plan. Generally, these resources would be the commoner terrestrial communities.

10. Impacts on Surface Water

This discussion examines the potential impacts of the Plan on surface waters with respect to nutrient inputs. Alternatives and mitigation measures are also evaluated. The analysis focuses primarily on the Peconic River watershed, since the Pine Barrens Credit (PBC) program receiving zones which may impact surface waters most are associated with that area. However, the conclusions drawn from the examination of this area are applicable to other areas in the Central Pine Barrens. Thus, general comments on the South Shore bay system and major stream corridors are also provided.

Development is associated with nutrient contamination from fertilizers, sanitary systems and other sources. Through groundwater underflow, development can contribute significant quantities of nitrogen to surface waters, potentially resulting in adverse impacts. Nutrient over-enrichment from anthropogenic sources can result in cultural eutrophication, adversely affecting sediment and water quality, depressing dissolved oxygen levels, and negatively impacting species diversity. Nitrogen is generally the limiting nutrient with regard to anthropogenic eutrophication in marine surface waters. In the case of the Peconic Estuary, control of nitrogen to the Peconic River is critical to the condition of Flanders Bay.

Development also results in phosphorus impacts (e.g., through stormwater runoff). Phosphorus is generally the limiting nutrient in freshwater systems, such as the Peconic and Carmans Rivers. Unlike nitrate, phosphate is relatively immobile in groundwater.

The hydrogeologic relationships of groundwater, stormwater runoff, and surface waters are discussed, in terms of existing conditions, in the Plan. (See Volume 2) The surface water impacts of the eventual build-out under the Plan, particularly with respect to the Peconic River system, are discussed in greater detail below.

10.1 Impact on the Core Preservation Area

The impacts on the Core Preservation Area will be extremely beneficial, as the Plan will preserve large amounts of land which would otherwise likely be developed. A significant amount of pollution input into the Core would also be avoided. Overall, the maximum potential residential units for the Core area under existing conditions (i.e., without acquisition and without a PBC program) is 3,917. Using existing local transfer of development right laws, that number could go as high as 5,992 units. (See Appendix 1).

In addition to groundwater and natural resource benefits, surface water protection will be advanced. Major stream corridors which will benefit from the Core Preservation Area include the Peconic River and Carmans River. The Core Preservation Area includes over 2,000 acres of vacant land (as of 1988), within the Peconic River groundwater-contributing area alone, with an additional 148 acres used for agriculture.

10.2 Non-Core Impacts

10.2.1 Brookhaven Town

10.2.1.1 Brookhaven Town within the Central Pine Barrens

Phosphorus, the limiting nutrient for fresh waters, may be introduced in greater quantities in

surface waters where PBCs are used on lands situated in the surface watersheds of the Carmans and Peconic Rivers, or ponds.

The following discussion contemplates the transfer of Pine Barrens credits to unsewered areas. Transfer of credits to sewerred areas has not been specifically proposed. Virtually all of the Compatible Growth Area in Brookhaven Town lies within Hydrogeologic Zone III. The proposed changes to the Suffolk County Sanitary Code, Article VI, which have been endorsed by the Central Pine Barrens Joint Planning and Policy Commission, would allow transfer of development density within Hydrogeologic Zone III. Thus, the potential impacts on the CGA within Zone III should be considered.

For this analysis it was assumed that the minimum lot size in receiving areas would be 20,000 square feet.⁴⁴ Since the “sending” credit parcels will also originate in Zone III, the net burden to the aquifer will be no greater than under existing conditions. Thus, on a regional basis, overall nitrogen loading to groundwater will not increase.

In actuality, the burden to the aquifer which discharges to surface waters, may actually be less than that which may occur under existing conditions. By reductions in potential units which are achieved by the Pine Barrens Credit allocation method for undersized lots (old file maps), the number of potential residential units are reduced from 3,917 to 2,420 throughout the Core Preservation Area; fewer units will therefore have to be transferred to the Compatible Growth Area. In Brookhaven Town alone, existing condition units are reduced from 2,583 to 1,650 through the application of the Plan's credit allocation method. (See Appendix 1).

Also, acquisition will further reduce the number of units to be transferred. Finally, credits may be transferred to other zones, so long as Suffolk County Sanitary Code requirements are met and the required local governmental permits are obtained.

The above analysis indicates that there would not be an adverse impact on surface water resources on a regional basis, as the Plan provides for “no net increase” of total allowable nitrogen to the groundwater within the CPB in Brookhaven Town. In fact, regionally, there would be a beneficial impact based on the likely significant reduction of potential units.

However, site-specific impacts on surface waters are still possible. For example, transfer of Pine Barrens credits from areas outside of the Carmans River corridor into the Carmans River groundwater-contributing area could result in increased nitrogen loading to the Carmans. This increase would be the incremental difference between current allowable density with 40,000 square foot lots, and the 20,000 square foot lots allowable using PBCs. As previously noted, nitrogen is a limiting nutrient in marine waters, and thus, the target of concern for any additional nitrogen in the Carmans River is the marine waters of the South Shore Estuary.

10.2.1.2 Brookhaven Town outside the Central Pine Barrens Area

This discussion contemplates the transfer of Pine Barrens credits to unsewered areas. Transfer of credits to sewerred areas has not been specifically proposed. With respect to surface water impacts, the discussion of the Town of Brookhaven's Compatible Growth Area is generally

⁴⁴ This analysis, based upon a 20,000 square feet lot size, is a worst case analysis. It is noted that the Plan calls for a minimum lot size of 30,000 square feet, rendering this an extremely conservative analysis.

applicable. For Zone III, the analyzed minimum lot size in receiving areas could be as low as 20,000 square feet. Since the “sending” credit parcels will also originate in Zone III, the net burden to the aquifer will not be greater than under existing conditions. Thus, on a regional basis, overall potential nitrogen loading will not increase.

The proposed changes to the Suffolk County Sanitary Code would allow transfer of Pine Barrens credits from Zone III to Zone V and VI. However, in these cases, lot sizes may not be less than 40,000 square feet in unsewered areas in Hydrogeologic Zones V and VI. Therefore, current groundwater protection policy, in terms of Suffolk County Sanitary Code requirements in Zones V and VI, would not change. In actuality, the burden to the aquifer on a regional basis may actually be less than that which may occur under existing conditions, as discussed above.

As noted in previous discussions, site-specific impacts on surface waters are still possible. For example, the transfer of Pine Barrens credits from areas outside of the Carmans River corridor into the Carmans River groundwater-contributing area could result in nitrogen loading to the Carmans greater than that which would occur under current zoning, which could have an impact on the South Shore bays. However, no receiving areas are located within approximately 1/2 mile of the Carmans River in areas outside of the CPB.

Similarly, transfers of PBCs from outside of the Carmans River surface watershed into the Carmans River surface watershed could result in phosphorus loading to the Carmans River which is greater than that which would occur under current zoning. However, with no receiving areas situated within 1/2 mile of the River, the potential for additional, new direct run-off from receiving areas is remote.

10.2.2 Riverhead Town

Pine Barrens Credit Receiving Zones

Two specific Pine Barrens Credit receiving zones have been proposed in Riverhead Town: Area A and Area B.

Area A consists of approximately 1,222 acres between the Calverton Naval Weapons Industrial Reserve Plant on the west, the LIRR on the south, the terminus of the L.I.E. on the east, and Middle Country Road on the north. Approximately 1,020 acres of this area are of concern with respect to regional surface water impacts, as they occur in the Peconic River groundwater-contributing area. Approximately 1,026 acres of Area A are currently used for agricultural production.

Area B comprises approximately 373 acres bounded by Route 25 on the south, Route 58 on the north, and the terminus of the L.I.E. on the west; the eastern boundary is west of Mill Road. All of Area B is within the Peconic River groundwater-contributing area.

The areas used for receiving areas A and B for purposes of this analysis were computed using Geographic Information System land use coverages generated for the Brown Tide Comprehensive Assessment and Management Program in 1988, updated with significant changes detected during the 1994 land use work for the Peconic Estuary Program (see following discussion). The BTCAMP land use maps were digitized from generalized base maps, not actual Suffolk County Tax Map coverages; therefore, they were subject to mapping and digitizing

errors.

Area B was analyzed for accuracy of the BTCAMP information. A review of actual tax map parcel data indicates that there are 373 acres in Area B, rather than the 317 acres estimated from digitizing an Area B boundary on the BTCAMP land use data. However, the BTCAMP land use information used in this analysis did not include approximately 20 acres of those transportation/utility corridors which extended beyond Area B, since the "polygons" in the 1988 land use information were "open" and did not fall entirely within Area B. The error range (12%) in acreage is within that reasonably anticipated for the methodologies used in the BTCAMP land use work, and is appropriate for the types of regional estimation techniques used in this analysis, especially where differences in impacts of various management scenarios are ultimately characterized in terms of orders of magnitude (see discussion below).

Brown Tide Comprehensive Assessment and Management Program (BTCAMP) and Peconic Estuary Program (PEP) Recommendations

The relevant recommendations of BTCAMP, as adopted by the PEP, are not focused on the protection of the freshwater portions of the Peconic River, but, rather, are focused on the attainment of the marine surface water quality guideline for the tidal Peconic River and Flanders Bay. Based on analysis of Flanders Bay data which relates total nitrogen (TN) concentrations to chlorophyll-a, and then relates levels of chlorophyll-a to diurnal dissolved oxygen (D.O.) variations, a surface water total nitrogen concentration limit of 0.5 mg/l will ensure attainment of the dissolved oxygen standard of 5.0 mg/l.

Portions of the western Peconic Bay system contravene this TN guideline (typical TN levels as high as 0.8 mg/l), and occasionally experience depressed D.O. in violation of the standard. However, these areas apparently do not exhibit advanced eutrophication in terms of conventional nutrients (i.e., nitrogen and phosphorous macronutrients cause extended algal blooms resulting in routine and sustained dissolved oxygen depletion over extended geographic areas). Water quality in the eastern Peconic Estuary is excellent with respect to the nitrogen guideline.

In contrast to the marine waters of the western Peconic Estuary, water quality in the freshwater portion of the Peconic River is generally excellent with respect to nitrogen concentration (approximately 0.5 mg/l at USGS gauge upstream of Riverhead STP; better than rainfall water quality, and significantly cleaner than most streams in Suffolk County). Despite excellent water quality, as a result of its high flow, the Peconic River contributes substantial nitrogen (avg. of 130 pounds per day, range of 20 to 500 pounds per day) to Flanders Bay.

The high degree of undeveloped land in the Peconic River watershed (26% of 15,900 acres was open space, such as parkland and 25% was vacant in 1988) has spared the river from excessive pollution in recent years. While the area's land use has not changed drastically between 1976 and 1988, substantial potential exists for future development in the Peconic River area (34% of acreage remained developable in 1988).

Mathematical modelling and sampling have established that increased development intensity adversely impacts groundwater quality through the contribution of nitrogen from on-site sanitary systems, fertilizers, animal waste, etc. The L.I. 208 Study modelling indicates that slight changes in groundwater quality may have significant impacts on Peconic River nitrogen concentrations, and current modelling shows that Flanders Bay nitrogen concentrations are very sensitive to Peconic River loadings.

The relationship between land use and surface water quality, coupled with the amount of developable land in the study area, highlights the need for stringent development controls to prevent degradation of the Peconic River and Flanders Bay.

In light of this situation, BTCAMP recommended various land management techniques to protect the Peconic River watershed, including acquisitions and transfer of development rights. Absent a mechanism to protect all of the land in the watershed, an analysis of pollutant loadings was performed. It was found that substantial groundwater quality benefits are accrued with density reductions to one unit per two acres. BTCAMP did not recommend more onerous development restrictions (i.e., even lower densities) because associated incremental groundwater quality improvements were relatively small. Other benefits, including natural resources factors, were recognized as important aspects of less intensive zoning.

Existing Land Use in Receiving Zones

In assessing the impacts of the Pine Barrens Plan on nitrogen loading to surface waters of the Peconic River, an analysis of land uses within receiving areas A and B within the Peconic River groundwater-contributing area was performed. Approximate acreage using 1988 land use information provided by the Suffolk County Planning Department for BTCAMP is contained in Tables 1 and 2. The Planning Department's 1994 notes on Peconic Estuary Program land use were evaluated, and changes in land use were tallied in Tables 1 and 2. Table 3 shows current land uses in Areas A and B.

Area A is characterized by extensive agricultural uses (814 acres; 80% of Area A land in Peconic River groundwater-contributing area). An estimated 87 acres in Area A are vacant (non-agricultural). Area B, at approximately 317 acres, is significantly smaller than Area A. Approximately 146 acres in Area B are vacant (46% of Area B), with 21 acres in agricultural use.

Qualitative Assessment of Impacts Within Receiving Zones

The Town of Riverhead has proposed locating 268 "equivalent units" in receiving areas A and B through the Pine Barrens Credit program. All of these would be non-residential. However, the allowable sanitary flow for each non-residential "equivalent unit" is equal to that of a single family residence. Therefore, this discussion analyzes the existing allowable density in unsewered areas of receiving areas A and B, as per Suffolk County Sanitary Code limits, as one equivalent unit per acre, assuming 268 acres will be developed at two equivalent units per acre under the Pine Barrens Credit Program.

Approximate resulting nitrogen recharge concentrations from these densities are shown in Table 4. At one unit per acre, the average nitrogen concentration in recharge is calculated to be 3.8 mg/l. At two units per acre, the recharge's nitrogen concentration is calculated to be 5.8 mg/l. These numbers coincide well with the L. I. 208 Study and Suffolk County Sanitary Code allocations of 4 mg/l and 6 mg/l for 1 D.U./acre and 2 D.U./acre land uses (on a County-wide basis), respectively. Agricultural land uses result in approximately 8.1 mg/l total nitrogen, higher than recharge from land uses at two units per acre.

It is important to state that estimation of residential recharge concentrations are subject to significant variation based on assumptions (e.g., household size) and site-specific soil and land use conditions (e.g., fertilization rates). Agricultural recharge rates can vary even more greatly than residential rates due to differences in crop type, soil conditions, irrigation practices, and fertilization rate, type, and timing. The estimates that are used herein are the ones utilized in

BTCAMP Volume II, Section 6, where a detailed discussion of nitrogen loading rates is present. As discussed in BTCAMP, the estimates are believed to be appropriate for the Peconic Estuary area in light of verification using actual data in the Comprehensive Water Resources Management Plan, extensive verification of actual groundwater data in BTCAMP, and the applicability of the primary reference modelling document (i.e., Cornell University modelling for Southold).

TABLE 5: Nitrogen Impacts Within Areas A and B

Nitrogen Loading Impact of Pine Barrens Credits
On Existing Conditions In Receiving Areas A and B*

<-----Nitrogen Loading (lb/year)----->

	Existing Land Use* (acres)	Existing Nit. Loading (lb/year)	TDR to Ag. Land	TDR Uses All Vacant Land	TDR to Ag./Vacant In Proportion to Existing Ratio
Agriculture	836	50,996	46,172	50,366	47,216
Vacant**	233	186	186	10,019	2,634
Total	1,069	51,182	46,358	60,385	49,850

Nitrogen Loading Impact of Pine Barrens Credits
On Allowable Development Nitrogen Loading In Receiving Areas A and B*

<-----Nitrogen Loading (lb/year)----->

	Existing Land Use* (acres)	Existing Nit. Loading (lb/year)	Buildout of 268 Units with No TDR (proportionally assigned to ag/vacant)	Buildout of 536 Units Using TDR
Agriculture	836	50,996	43,541	47,216
Vacant**	233	186	1,619	2,634
Total	1,069	51,182	45,160	49,850

*In Peconic River Groundwater-Contributing Area

**Assumes natural Pine Barrens (0.8 lb. N/acre/year N leached)

TABLE 6

Nitrogen Loading Impact of Developing Vacant/Agricultural Lands
In Peconic River Groundwater-Contributing Area

<-----Nitrogen Loading (lb/year)----->

	Existing Land Use* (acres)	Existing Nit. Loading (lb/year)	Vacant & Ag. Land Developed (1 DU/Acre)	Vacant & Ag. Land Developed (Pine Barrens Plan)
Agriculture	1,537	93,757	44,448	48,123
Vacant**	3,520	2,816	89,760	37,695
Total	5,057	96,573	134,208	85,817

Note: Assumes 2,149 acres of vacant land and 148 acres of agriculture land in Core Preservation Area would not be developed under the Plan. In the Core Preservation Area 148 agriculture acres assumed to remain in agricultural use. In Areas A and B, 58 credits are assigned to vacant lands and 210 to agricultural lands.

*1988 BTCAMP land use, adjusted for current conditions in receiving zones A and B.

**Undeveloped vacant land loading assumed to be 0.8 lb N/acre/year.

A qualitative analysis indicates that a total of 836 acres in area A in the Peconic River groundwater contributing area are agricultural, at approximately 8.1 mg/l total nitrogen, while 233 are vacant; as a best-case scenario, these vacant lands are at or near 1 mg/l total nitrogen (assumed best case, as vacant lands in the subject area are often old field, intermittently farmed, or proximate to farms). Assuming the Pine Barrens Credits are allocated in proportion to existing agricultural and vacant lands, 210 acres of agricultural lands would experience improvements in groundwater quality from 8.1 mg/l (existing agriculture) to 5.8 mg/l (two equivalent units per acre). Thus, a substantial acreage could realize moderate improvements. In terms of the vacant land, 58 acres could experience groundwater recharge degradation from 1 mg/l to approximately 5.8 mg/l.

On balance, in terms of changes to existing conditions, 210 acres could improve from 8.1 to 5.8 mg/l total nitrogen (2.3 mg/l improvement) while 58 acres could degrade from 1 mg/l (best case) to 5.8 mg/l (4.8 mg/l degradation). On a mass balance basis, there would be little net change in the receiving area.

Actual impacts may vary based on site-specific conditions and uses and allocation among vacant and agricultural lands. Impacts are evaluated quantitatively in greater detail as follows.

Quantitative Estimate of Nitrogen Loading Changes Within Receiving Zones

Table 5 shows estimated impacts of the Pine Barrens Credit program on receiving areas A and B in terms of pounds of nitrogen loading per year.

When all credits are transferred to agricultural lands, nitrogen loading would decrease by 4,824 lb/year, approximately 9% of the current agricultural and vacant nitrogen loading of 51,182 pounds per year. If all vacant lands were exhausted, nitrogen loading would increase by 9,203 lb/year, an 18% increase in receiving areas A and B. These represent the “best case” and “worst case” changes in nitrogen loading.

A reasonable assumption is that Pine Barrens credits would be redeemed in given land uses in proportion to existing vacant and agricultural land uses. In this scenario, there would be a slight reduction in nitrogen loading (1332 lb/year reduction; 2.6% of existing loading).

In addition to assessing impacts of the PBC program by comparison with existing conditions, a comparison can also be made between the potential nitrogen loading associated with existing allowable build-out versus build-out under the Plan. The baseline is assumed to be existing conditions with 268 additional units developed at 1 D.U./acre. The impact of the Plan would be measured by comparing 536 units at 2 D.U. per acre. The assumption is that Pine Barrens credits would be redeemed in given land uses in proportion to existing vacant and agricultural land uses. In this analysis, there would be a 4,690 pound per year nitrogen increase (10% greater than hypothetical baseline). However, it would still be an improvement over existing conditions, as stated above.

It must be noted that the changes in nitrogen loading within areas A and B are relatively small in relation to the nitrogen loading within the entire watershed. BTCAMP estimated that over 191,000 pounds per year of nitrogen were leached, as of 1988, from residential and agricultural land uses (corrected for changes in land uses in Areas A and B). In this light, the maximum decrease or increase in areas A and B would be 2 to 5% of the watershed’s residential and agricultural nitrogen loading.

The above analysis is confined to within Areas A and B. From a regional perspective, the impacts of nitrogen loading of the Plan must be evaluated for the entire Peconic River groundwater-contributing area. This assessment is discussed as follows.

Peconic River Watershed-Wide Impacts

An analysis of 1988 BTCAMP land use data indicates that, within the three Towns, approximately 2,149 acres of vacant land in the Core Preservation Area would not be developed as a result of the Pine Barrens plan. To assess the impacts of the Plan most broadly and accurately, an assessment of nitrogen loading over the entire watershed was performed. The only receiving areas considered were areas A and B in Riverhead, as the receiving area in Southampton was excluded for purposes of this analysis due to its relatively small size and insignificant loadings.

Under a “full build-out” of vacant and agricultural lands at 1 D.U. per acre, the allowable density under Suffolk County Sanitary Code regulations for unsewered areas, 37,635 additional pounds per year of nitrogen, as compared with existing loading in agricultural and vacant lands, would be discharged to groundwater (see Table 6). Under the Plan, a reduction of 10,756 pounds per year would be realized. Thus, the Plan would save approximately 48,000 pounds per year of nitrogen from being discharged to groundwater, and would represent a significant net improvement over the hypothetical potential “full build-out” scenario.

Isolating site-specific Core benefits, and not accounting for additional benefits accrued by conversion of agricultural lands or burdens from development of non-Core lands, 2149 Core acres preserved would result in preventing approximately 54,000 pounds of nitrogen per year from entering the system (25 pounds per year per acre for 1 D.U. per acre). The 268 Pine Barrens Credits would place a burden of approximately 4,700 pound per year nitrogen on the watershed (difference between 2 D.U./acre and 1 D.U./acre). Thus, the benefits from the Pine Barrens Plan are approximately an order of magnitude higher than the Plan’s burdens in terms of nitrogen loading to the Peconic River groundwater-contributing area.

10.2.3 Southampton Town

To the extent that the regional intensity of development is not changed by the Pine Barrens Credit program, there will be no adverse impacts under the Plan; rather, impacts will be beneficial. However, site-specific impacts may still be possible, and should be addressed as discussed.

With respect to surface water protection of the Peconic Estuary, the Plan would represent a deviation from existing zoning and land use policy insofar as it would allow a Pine Barrens Credit receiving zone (SCTM 0900-141-1-9.2, 10.2, *et al*) within the groundwater-contributing area to the Peconic River.

The subject receiving zone is a relatively small area (approximately 50 acres) within Groundwater Management Zone III. Under Suffolk County Sanitary Code requirements, with the amendments discussed above, an unsewered equivalent density of up to 2 dwelling units (D.U.)/acre would be allowed in the receiving zone if the Pine Barrens Credits originated within Zone III. This would result in a groundwater nitrogen recharge concentration of approximately 6 mg/l, which is higher than the 4 mg/l approximate average that would occur under a 1 D.U. per acre scenario. Alternatively, if 4 dwelling units per acre were allowed in this receiving area, a

sewage treatment system would be required and the potential nitrogen loadings would be mitigated.

Given the relative size of the project (50 acres, compared with Peconic River groundwater-contributing area of approximately 16,000 acres), the individual impacts from this receiving zone are anticipated to be minimal. Also, although current land use tabulations are not available, a review of land use maps produced for BTCAMP indicate that, due to preservation of Core Preservation Areas in Southampton Town in the Peconic River groundwater-contributing area, the benefits gained from Pine Barrens preservation in Southampton Town outweigh the potential for increased nitrogen loading in the receiving area.

While the above analysis indicates there would be no significant impact on marine surface water resources, there remains the potential for project specific impacts to fresh surface waters, resulting from increased densities allowed under the PBC program. For example, the use of credits could intensify impacts to surface water, via stormwater runoff or groundwater recharge nutrient loadings, if projects are situated proximal to surface waters. These potential impacts would have to be mitigated by specific project design considerations, as provided for in the section which follows.

10.3 Central Pine Barrens Mitigation Measures

Based on the foregoing analysis of impacts, regional impacts on surface waters will be beneficial, in varying degrees. With respect to surface water impacts on receiving areas in the Peconic River watershed, the Plan will likely have beneficial nutrient loading impacts as compared with existing conditions. When Peconic River watershed-wide impacts are analyzed, considering potential nitrogen loading under existing Suffolk County Sanitary Code regulations, impacts will be extremely beneficial.

Due to likely acquisitions and reductions in allowable units under the Pine Barrens Credit allocation method, the regional burden on the aquifer will be reduced, and any potential adverse impacts on surface waters on a regional basis will be further reduced.

Thus, the creation of a Core Preservation Area which precludes development on significant tracts of vacant land in the groundwatersheds of the Carmans and Peconic Rivers, regionally mitigates the impacts of the Plan's additional development densities and intensities on these river systems and the estuaries they feed. Nevertheless, there exist additional opportunities to further optimize surface water protection on a regional basis, as well as in site specific cases.

One of the most significant potential impacts noted was that associated with additional development densities allowed (the PBC program in the Plan) within the surface watershed and/or the ground watershed of the Carmans River. While a detailed analysis of the Peconic River System demonstrated that the Plan could actually diminish existing nutrient loadings in the Peconic River, such detailed analysis could not be accomplished for the Carmans River, as a study such as BTCAMP which formed the basis for the Peconic River analysis, has not been undertaken for the Carmans River.

The Plan, however, contains a number of provisions which mitigate the potential impacts to the Carmans River and its watershed. Most importantly, the Plan was crafted so as to avoid substantial increased development densities along the Carmans River. While the actual shape and extent of the Carmans River groundwatershed has not been mapped, an analysis of the lands within 1/2 mile of the River reveals that for such a corridor, receiving areas with a total capacity of only approximately 61 additional units are provided for in the Plan. Moreover, none of the

properties involved abut the River, and all are situated in the CGA and Hydrogeologic Zone III (deep flow recharge). In Hydrogeologic Zone VI, the shallow flow system more likely to effect water quality in the River and marine receiving waters, contains no such receiving areas.

The above noted receiving areas all result from lands currently zoned for 1 du/ac being potentially developed, under the PBC Program, at a density of 1 du/30,000 square feet. The most significant groundwater contaminant of concern for residential development is nitrogen. The calculated nitrogen concentration in recharge from residential areas developed at a density of 1 D.U./acre is 4 ppm, and for areas developed at 1 D.U./20,000 square feet, 6 ppm. It is fair to say that the concentration of nitrogen in recharge from a development density of 1 D.U./30,000 square feet would fall in this range, and would potentially increase nitrogen concentration in recharge from these receiving areas by an increment of about 1 ppm beyond that which would be allowed under existing zoning.

This small increment, potentially available through the use of a maximum of 61 PBCs within 1/2 mile of the entire Carmans River, is considered de minimis. It is further noted that such impact, if realized, would be more than mitigated by the creation of the Core Preservation Area, wherein significant tracts of land in the Carmans River watershed will be protected from development (this was the case in the Peconic River watershed, noted earlier).

As none of the receiving sites actually front on or abut the River, the potential impacts from stormwater run-off are assumed to be insignificant. However, a number of important mitigation measures have been incorporated into the Plan concerning impacts to surface waters associated with stormwater run-off. These measures not only relate to development in receiving areas, but also to any future development in the CGA, as described in the following sections.

One additional mitigating measure related specifically to the Carmans River corridor is the Plan's designation of two parcels along the River as Critical Resource Areas. The recommended management technique for these 2 specific Critical Resource Areas is protection through PBC allocation, to redirect development from the lots or full fee acquisition. Upon completion of either protective strategy, the potential associated stormwater and groundwater impacts due to currently permitted development would be avoided.

The following features of the Plan mitigate its effect on surface waters, and in fact may mitigate impacts of existing land uses as well:

Protected Lands Council and Law Enforcement Council: While the Plan provides for vast protected open spaces, enforcement is required to ensure that illegal activities do not degrade surface waters. These two Councils will bring all law enforcement and management agencies together, providing for such benefits as cross training. Thus, the limited resources of each such agency, when utilized in a coordinated fashion, will provide far greater protection than is currently achieved.

TDR Program: Receiving areas were chosen to avoid areas adjacent to surface waters and/or containing or abutting wetlands and ponds.

Recreation: Numerous recommendations exist in Chapter 7 of Volume 1 for limiting the impacts of recreational activity on wetlands and ponds.

Existing Storm Drainage: The Plan recommends that existing storm drainage systems which impact surface waters should be retrofit with run-off control structures or systems, when practical

and feasible, to limit existing stormwater impacts. Thus, such activity would further mitigate any potential impacts to surface waters associated with the Plan. Similar recommendations are also included in Chapter 8, Volume I.

Surface Water Studies: Chapter 8 provides recommendations for specific, additional studies and data collection which, if accomplished, could refine the current understanding of the natural phenomena that affect individual ponds and wetlands in the CPB. Such refinement may result in discovery of new management techniques for enhancing these pond and wetland systems.

10.3.1 Mitigating Standards and Guidelines

The Standards and Guidelines in Chapter 5 of the Plan require that all stormwater be recharged, and where practicable, this recharge must be on site. Thus, the potential for stormwater run-off impacts to surface waters, including bays, rivers, wetlands and ponds, is mitigated. Erosive impacts are eliminated, and nutrient loadings, particularly phosphorus, are mitigated by forcing recharge versus direct runoff.

The concern with nutrient loadings is further mitigated by the Standards and Guidelines, as the Plan provides for the use of natural swales and depressions, which would be vegetated, in favor of constructed recharge basins. Such naturally vegetated recharge areas provide an opportunity for nutrient uptake by plants prior to recharge of stormwater.

For all surface waters, including ponds and wetlands, the Plan's Standards and Guidelines provide for stringent buffer areas and setbacks, consistent with requirements posed by NYSDEC, pursuant to the tidal wetlands regulations, freshwater wetland regulations, and the Wild, Scenic and Recreational Rivers Act. The Plan further provides local government with an opportunity to increase setbacks as appropriate.

Many of the Plan's land use standards have the effect of mitigating the potential contaminant loading to groundwater associated with development. Where the affected groundwaters discharge to surface waters, these land use standards are important mitigating factors. Two such standards involve the strict limitations on clearing for development in the CGA, and concurrent limitation on the use of non-native (fertilized) vegetation, including turf, for landscaping. This mitigation is considerable, given that no more than 15% of any site may be placed into non-native vegetation, or turf use. This compares with 40 to 50% turf for typical 1/2 acre or greater residential lots on Long Island, where as much as one half of the total nitrogen recharged to groundwater can be from fertilized turf.

The clearing standard mentioned above is equally important. By strictly limiting clearance, (see Figure 5-1 in the Plan), and making such limitations a part of the filed map for development, broad, contiguous areas of native vegetation are preserved (see Standards and Guidelines, Section 5.3.3.6). As noted earlier in these discussions, nitrogen in recharge to groundwater from such areas is very low (see also Volume 2, Hydrology and Water Quality Overview).

Other mitigation measures included in the Standards and Guidelines in the Plan which address potential impacts to surface waters associated with stormwater discharge and/or groundwater quality are listed below:

Soils: The Plan provides for limits on building footprints, building upon steep slopes, and limiting potential erosion during and subsequent to construction. This mitigates the potential impacts of sedimentation in any potentially affected surface waters.

Agriculture and Horticulture: Best Management Practices (BMPs) for irrigation, pesticide/herbicide use (including Integrated Pest Management; IPM) and fertilization are required under the Plan. This limits impacts to groundwater associated with these permitted uses.

Coordinated design for open space management: The Plan not only provides for clustering (to limit disturbance of native vegetation), but further provides for the linkage and management of the open spaces thus created. In so doing, the opportunity for illegal dumping, clearing, or other activities which could effect ground and surface water is diminished.

More protective nitrate goal: The Plan provides local government with the opportunity to set a goal of 2.5 ppm nitrate in recharge to groundwater to protect surface water for projects near ponds or wetlands in the Compatible Growth Area. However, no impacts to ponds or wetlands are identified in the Plan or SDGEIS for which this groundwater goal would be appropriate mitigation. The Volume 2 discussions of Ponds and Wetlands and the Hydrologic information in Volume 2 and this SDGEIS indicate nitrogen in non-pristine ponds and wetlands is not a limiting nutrient. Thus, in CGA ponds and wetlands which are not pristine, such a goal has no separate and distinct positive impact beyond that which is achieved by the other limitations on development contained in the Plan. For marine surface waters, however, nitrate is a limiting nutrient, as identified in the impacts discussion earlier in this section. However, as also explained, the Plan and PBC program, as crafted, and without additional nitrogen limitations beyond those provided elsewhere in the Standards and Guidelines, will not increase nitrogen loadings to marine surface waters, and for the Peconic River, may even decrease loadings association with existing Land Use.

10.4 Mitigating Effect of Creation of a 52,000 acre Core Preservation Area

The mitigation and benefits to surface waters accomplished by creation of a Core Preservation Area are fully explored and analyzed in the prior sections describing impacts to surface waters.

10.5 Unavoidable Unmitigated Impacts

Where the Plan, through the PBC program provides for additional development densities, and where such development is situated within the surface or groundwatershed of a surface water body, an incremental nutrient loading increase to such surface water body may result. However, where such potential impacts have been identified, the potential increases noted have been mitigated and have been limited to that which would be characterized as de minimis.

10.6 Irretrievable Commitment of Resources

None identified.

11. Impacts on Cultural Resources

11.1 Impact on Core Preservation Area

The Central Pine Barrens Plan automatically provides increased protection for cultural resources in the Core Preservation Area because the Core Preservation Area is essentially to be preserved with the implementation of the Plan. With the exception of statutory exemptions and future hardship waivers, the existing cultural resources in the Core will be preserved because the land on which they are located will not be developed.

11.2 Impact on Non-Core Cultural Resources

The Central Pine Barrens Plan will have an overall beneficial impact on cultural resources in the Compatible Growth Area. First, unlike other past land use plans or initiatives, Volume II of the Plan provides a significant public education component in elevating the status of cultural resources to that of other resources, such as ecological or groundwater resources. The detailed discussion of the general concept of cultural resources provided in the Plan helps to foster and increase public awareness of the importance of these resources. Educating the public about the importance of cultural resources will in itself lead to greater protection for them because public interest and concern will be generated in the short term, which will likely lead to public advocacy for their protection in the long term.

Furthermore, Volume 2 also provides a site listing of many of the known historic resources in the Central Pine Barrens, including the Compatible Growth Area. This identification process is beneficial in that it will provide for additional public awareness of, and concern for, these specific historic sites and will help to ensure that more of these sites are preserved in the future, as interested individuals advocate on their behalf.

Volume 2 also provides a synopsis of the myriad of existing programs and regulations which have been developed for the protection of cultural resources. Again, at a minimum, this summary will provide for additional public awareness of the many regulatory and programmatic tools for both fostering and actually implementing cultural resource preservation.

Further, this summary provides a starting place for developers, cultural resource preservation advocates and the general public to turn to for ensuring that existing regulations are being adhered to in the CGA. The summary also represents a resource in and of itself in that it provides a listing and of initial contacts for cultural resource preservation programs for those interested in utilizing these programs for sites in the CGA.

Receiving areas located outside of the Central Pine Barrens altogether will likely not receive the additional protection contained in the Plan, since the Plan does not provide specific recommendations in its Standards and Guidelines for these areas. These areas will not therefore receive the public awareness conferred upon specific sites within the Central Pine Barrens which are mentioned in Volume 2. Although areas outside the Central Pine Barrens will still be protected by existing cultural resources regulations and programs, a potential increase in adverse impacts may occur to cultural resources in these areas due to the incremental increase in development in turn induced by the transfer of additional development credits.

11.3 Central Pine Barrens Mitigation Measures

It should also be noted that the Plan does not diminish or hinder the existing powers of

governmental agencies or their existing regulations regarding cultural resource preservation and protection.

11.3.1 Mitigating Standards and Guidelines

Guidelines in the section of the Plan entitled "Coordinated design for open space management" and "Scenic, historic and cultural resources" help to mitigate potential impacts of the Plan on cultural resources.

Guidelines in the Plan "Coordinated design for open space management" may allow for some additional protection for cultural resources by encouraging clustering away from any significant cultural resources found on a development site.

Guidelines in the Plan regarding "Scenic, historic and cultural resources" also provide protection for cultural resources in the CGA because they help to foster and increase public awareness of the importance of these resources and ultimately public advocacy for their protection in the long term. These Guidelines also strongly encourage that potential impacts to cultural resources be considered in review of development and that appropriate mitigation be initiated.

Volume 1, Chapter 5: Standards for Land Use also provides protection for cultural resources in the CGA because, again like the Volume II discussion, its mere presence helps to foster and increase public awareness of the importance of these resources and ultimately public advocacy for their protection in the long term.

This part of the Plan also strongly encourages that potential impacts to cultural resources be considered in review of development and that appropriate mitigation be proposed. Overall, then, the aforementioned parts of the Plan do provide for greater protection of cultural resources in the CGA than currently exists.

It should be noted that although the CGA will have additional protection conferred by the Plan, there is a potential for adverse impacts to cultural resources because of increased development, above and beyond that which could already occur, induced by the transfer of development credits from the Core into the CGA. However, the closer the Plan comes to achieving its goal of 75% acquisition, the more this potential adverse effect will be reduced, since the total quantity of transferred development would be reduced.

11.3.2 Mitigating Review Powers

Once the Plan is implemented, the Commission's review powers are limited to certain discrete categories of projects, namely development in the Core, Developments of Regional Significance, projects within the CGA which do not conform to the Standards, projects in Critical Resource Areas of the CGA and projects elevated to Commission review by petition of a Commissioner and by majority vote of the Commission.

Cultural resources on any development within the Core or on any development of regional significance would likely receive additional protection via the Commission's review powers because the Commission would analyze potential impacts of the project on any significant resources, including cultural. If a project falls into one of the other categories, similar scrutiny and protection would be afforded to cultural resources, but only if cultural resources are cited as one of the reasons for a project's designation in such a category. Overall, under the Commission's review powers, impacts to cultural resources may not always be mitigated due to

other needs but it is expected that an analysis of such impacts can be provided for and weighed against the need to protect other resources or socioeconomic factors associated with development.

11.4 Mitigating Effect of Creation of a 52,000 acre Core Preservation Area

As noted earlier, the Central Pine Barrens Plan provides increased protection for cultural resources in the Core because the Core is proposed for preservation. In general, the majority of the existing cultural resources in the Core should be preserved because the land on which they are located will not be developed.

11.5 Unavoidable Unmitigated Impacts

No unavoidable unmitigated impacts are anticipated as a result of the Plan. However, the Plan may help to increase awareness of the significance of cultural resources and therefore will help to ensure that more sites are surveyed for the presence of cultural resources. This will ensure that potential impacts to any newly-identified cultural resources are mitigated.

The Plan may increase the potential for conflicts between development and the cultural resources in the CGA due to the transfer of increased units, above the level which could be currently generated in the CGA. However, such potential impacts are not necessarily unavoidable or unmitigated. This is due to the fact that once cultural resources have been identified on a development site in the CGA, appropriate mitigation must be considered.

11.6 Irretrievable Commitment of Resource

This Plan may result in irretrievable commitment of some cultural resources in the CGA as a result of the increased densities allowed by PBC from the Core. A conscious decision may need to be made in some future cases of development where cultural resources present on some receiving sites may need to be sacrificed for the good of other resources, such as ecological, on the same site and to ensure preservation of specific areas of the Core.

12. Impacts on Scenic Resources

12.1 Impact of Plan Implementation on the Core Preservation Area

In creating a 52,000 acre contiguous Core Preservation Area, the existing scenic resources of the Core will not be adversely impacted. Specifically, the Commission has adopted a long-term goal of 75% acquisition of the "privately held, undeveloped and currently unprotected lands within the Core Preservation Area." If this is accomplished, minimal, if any, deterioration of scenic resources within the Core will occur due to new development.

12.2 Non-Core Preservation Area Impacts on the Scenic Resources of the Central Pine Barrens Plan

One impact of the Plan upon scenic resources outside the Core Preservation Area will be due to greater density of development in residential areas resulting from the transfer of PBCs. Absent proper design criteria, new incremental development due to redemption of PBCs could impact scenic resources. However, development generated pursuant to the Plan only represents an incremental increase, given that normal development will occur in the areas affected by the Plan. The associated impact of this increased density should be minimal. In fact, according to Appendices 6 and 7, the clearings associated with this increased development will be actually be less than that which would occur without the Plan.

The analysis of this Plan examines the increased effect of development directed away from the Core Preservation Area. The efficacy of the PBC component of the Plan rests upon an increased in density or intensity in compact, orderly and efficient designs outside the Core Preservation Area. More houses will be built on less land than would be built based upon current zoning.

If PBCs are used to move commercial and/or industrial development into the CGA at densities equivalent to residential development, a similar impact would be observed. Woodland views or agricultural vistas on vacant land could be impacted.

12.3 Central Pine Barrens Plan Mitigation Measures

Mitigation measures are those activities which may be taken to reduce the impacts associated with the Plan. Several mitigating measures are inherent in the Plan namely the Standards and Guidelines and Review Procedures. One mitigation measure contained in the Plan is the 75% acquisition policy. By purchasing large intact areas of the Core Preservation Area, scenic resources would be preserved. Additionally, the purchase of these areas would reduce the number of credits which could be transferred to the Compatible Growth area, thus reducing the incremental development pressure on this area. This would protect some scenic resources which may otherwise be degraded. Mitigation measures could also include the use of vegetative buffers to mask development projects. By utilizing such development techniques the actual associated clearings will be minimized. Furthermore, if architectural considerations and other design criteria as found in Volume 2, Chapter 14, Design Guidelines are utilized the character and sense of place of communities will be fostered. In addition, through the use of PBC, development at higher density can occur which will allow project sponsors the ability to create "village settings."

12.3.1 Mitigating Standards and Guidelines

The following standards and guidelines will mitigate associated impacts because they will

encourage compact, orderly and efficient development which will preserve scenic resources to the maximum extent possible.

Section 5.3.3.4 Wetlands	Buffering of wetlands preserves their scenic value. Development must be in compliance with applicable state or local acts or ordinances.
Section 5.3.3.5 Recharge Basins	Natural drainage depressions are more attractive than excavated holes in the ground.
Section 5.3.3.5 Drainage Systems	Ponds may only be created if they are to accommodate stormwater runoff, not solely for aesthetic purposes.
Section 5.3.3.6 Native Vegetation	Subdivision and site designs should preserve large blocks of unbroken pine barrens vegetation.
Standard 5.3.3.6 Non-Native Vegetation	Allows 15% non-native vegetation to provide transitional zones between native vegetation and developed areas.
Section 5.3.3.7 Natural Heritage Plants and Animals	Preserves rare and endangered species to be viewed by current and future residents. Appropriate state, county or local government agency has jurisdiction.
Section 5.3.3.8 Soils	Protects changes in grade greater than 15% that can frame distant views.
Section 5.3.3.8 Soils	Constrains construction on steep slopes; in swales, constrains cut and fill to enable the preservation of the scenic value of natural terrain.
Section 5.3.3.8.6 Retaining Walls	Can be an attractive design element on slopes; more pleasant visually than eroded slopes.
Section 5.3.3.9 Coordinated design for open space management	Well designed cluster development not only preserves the scenic values attributed to open space, but also enhances the visual appearance of residential communities.
Section 5.3.3.9 Open Space	Specifically protects open space and visual resources through a variety of legal mechanisms.
Section 5.3.3.11 Scenic, Historic and Cultural Resources	Protection of trails will provide diverse opportunities for viewing scenic resources at all scales: up close, through breaks in vegetation, across fields, from hilltops, etc.

Section 5.3.3.11 Scenic, Historic and Cultural Resources	Protection of scenic corridors will provide diverse opportunities for viewing scenic resources at greater speeds as from a vehicle rather than on foot.
Section 5.3.3.11 Scenic, Historic and Cultural Resources	Sites of historical or cultural significance will be protected for their scenic qualities in addition to their inherent community values.
Section 5.3.3.11 Scenic, Historic and Cultural Resources	Degraded scenery can be improved through creative use of buffers.
Section 5.3.3.11 Scenic, Historic and Cultural Resources	Creative use of buffers can enhance quality views and screen degraded landscapes.

12.3.2 Mitigating Review Powers

Commissioner's review powers can mitigate impacts from non-conforming development, developments of regional significance, development within CRAs, and by asserting jurisdiction in certain instances provided by the law. Only those activities which are nondevelopment as defined by E.C.L. 57, grandfathered by E.C.L. 57, projects which receive a hardship exemption based on a finding of extraordinary hardship or compelling public need from the Commission or are within the road front exemption can occur in the Core.

Where applications fall within the above categories, the Commission has broadly defined review powers to mitigate impacts on scenic resources. Where applications meet all the land-use standards, adherence to those standards, as previously described, will mitigate impacts on visual resources. In these instances the Commission is bound by the Plan to encourage compact, orderly and efficient development. Care in designing any development will mitigate adverse visual impacts. Adherence to basic, accepted standards of good design will largely mitigate adverse impacts on scenic resources.

12.4 Mitigating Effect of Creation of a 52,000 Core Preservation Area

Creation of the Core Preservation Area, and thereby prohibiting or redirecting development from it, preserves its visual resources. In addition, by creating the third largest forest preserve in the state, additional opportunities for trails and other passive recreational activities are increased. The preservation of the Core from the pressures of development will enhance those existing scenic resources. Potential scenic resources exist, but until they are quantified and qualified they are difficult to analyze. However, it is a safe assumption that the creation of the Core will create numerous additional opportunities for the public to discover and enjoy these resources in the future.

12.5 Unavoidable Unmitigated Impacts

If the Plan is followed there should be no long unavoidable term unmitigated impacts.

12.6 Irretrievable Commitment of Scenic Resources

Open spaces in the CGA may be diminished due to additional incremental development density. Notwithstanding the above, present visual resources will be encroached upon due to existing

development pressures unaffected by the Plan's adoption.

13. Impacts on Open Spaces

The impact of the implementation of the Central Pines Barrens Plan on open spaces will be examined in this section. Chapter 8 of Volume 2, while devoted to scenic resources, also discusses open spaces which are scenic resources. Therefore, there is an interplay between an analysis of impacts on scenic resources and impacts on open spaces.

Defining the term "open spaces" is problematic, given the subjective nature of the topic. However, the results of a New Jersey Pinelands survey reveal that "landscapes with surface water, undisturbed forests and scenes showing small degrees of human impact were found to be preferable over suburban, commercial excavated or otherwise extensively disturbed landscapes." (Chapter 8.2, Volume 2) The Plan's impact on the following three segments can be analyzed. The segments are:

Natural Open Spaces: Included in this category would be wooded or marsh landscapes, with minimal to no presence of man-made elements.

Maintained Open Spaces: This consists of low density residential/recreational development and is characterized by low ground cover and/or a few small trees.

Developed Open Spaces: Open spaces associated with some form of development such as a cemetery, golf-course, or power line right-of-way. Their distinguishing characteristic is that they are perceived as developed areas, but may exhibit some compatibility with the environment.

13.1 Impact of Plan on Core Preservation Area

Implementation of the Plan will result in the creation of the 52,000 Core Preservation Area, where new development is to be prohibited or redirected. By creating this vast contiguous preserve, large open spaces will be preserved and maintained in perpetuity. This, coupled with the long term 75% acquisition goal of private vacant Core area land, will ensure that the open spaces are preserved. Although the Plan prohibits or redirects development from the Core to areas outside the Core, certain minimal amount of development will occur, given the existence of grandfathered projects and projects which qualify for statutory exemptions.

13.2 Non-Core Preservation Impact

The Plan's implementation will have a negligible impact on open spaces, given the normal development patterns currently existing within these areas. The Plan will allow incremental increased intensity of development. Redemption of Pine Barrens Credits will enable developers to increase the density and intensity of development in order to have a greater percentage of open spaces unspoiled. Absent the Plan, the same area will be developed albeit not at the higher density and intensity without the open space enhancement.

13.3 Central Pine Barrens Plan Mitigation Measures

The Plan includes mitigation measures contained in the Standards and Guidelines, and Review Procedures Section. A further mitigation measure of the Plan is the Commission policy calling for the acquisition of 75% of the remaining private, vacant land within the Core Preservation Area. This mitigates the Plan in two ways: First, by purchasing the land the existing open spaces thereon are preserved. Additionally, by acquiring land within the Core Preservation Area the

number of credits to be transferred from the Core is reduced. This would lessen the number of PBC induced units to be built in the Non-Core Areas, which preserves open spaces. Furthermore, mitigation measures not enumerated within the Plan, but in common practice include the use of vegetative masks during a construction program. In addition, the Plan does not usurp the existing powers of governmental agencies in their existing regulations regarding open space management, preservation, or protection.

13.3.1 Mitigating Effect of the Standards and Guidelines

By characterizing each open space by its affected resources, potential impacts can be analyzed and mitigated according to the applicable Standards and Guidelines, or local legislative controls.

<i>Natural Open Spaces</i>	
Section 5.3.3.9	Guidelines for the compact, orderly and efficient development, with emphasis on clustering or legal remedies to maintain these natural areas to their fullest extent.
Section 5.3.3.11	Guidelines providing protective measures for sites with cultural significance. Several examples are enumerated such as use of buffers as well as criteria for man-made structures.
Section 5.3.3.11 and others	Guidelines provide for the protection of the visual resource such as scenic vistas, with restrictions on land clearing and provisions for buffers. Local jurisdictions have ultimate authority to make these determinations.
Section 5.3.3.6	Standards detailing site clearance restrictions of vegetation, provisions for clustering to preserve native vegetation and restrictions on amounts of natural on-site native and non-native vegetation

<i>Maintained Open Spaces:</i>	
Section 5.3.3.8	These guidelines sites in sloped areas, and if followed, would mitigate soil disturbance impacts.

Section 5.3.3.11	Guidelines detailing protection measures designed to prevent impairment of cultural resources, as well as measures to limit clearing and maintain standards consistent with the area character.
Section 5.3.3.11	Guidelines provide for the protection of the visual resource, such as agriculture lands, with restrictions on land clearing and provisions for buffers. Local jurisdictions have ultimate authority to make these determinations.
Section 5.3.3.6	Land clearing Standards related to the use and clearance of native and non-native vegetation.

<i>Developed Open Spaces</i>	
Section 5.3.3.9	Guidelines for the compact, orderly and efficient development. Emphasis in clustering and/or other legal remedies to protect and enhance open spaces.
Section 5.3.3.9 and 5.3.3.11	Guidelines detailing protection measures designed to prevent the impairment of cultural resources, as well as measures to limit clearing and maintain standards consistent with the area character.
Section 5.3.3.8	Standards and Guidelines to control stormwater runoff and protect against runoff and soil erosion.
Section 5.3.3.9	Standards limiting vegetation clearance for example: roads, building sites and drainage structures. Use of clustering.
Section 5.3.3.8	Guidelines for disturbance of steep sloped soils; erosion and sediment control.

13.3.2 Mitigating Review Powers

Volume 1, Chapter 4 describes project review powers which mitigate the impact upon open spaces. These include review of nonconforming development of projects within the CGA in order to foster compact, orderly and efficient development; jurisdiction to determine whether an impact has regional significance; ability of the Commission to review proposals within the Compatible Growth Area to further insure compact, orderly and efficient development; and,

limited authority over Critical Resource Area projects.

13.4 Mitigating Effect of Creation of a 52,000 Core Preservation Area

The overall adverse impacts for each "open space" category are mitigated by the creation of the Core Preservation Area, the third largest forest preserve in New York State. The net effect is to preserve vast areas of open spaces and to ensure their perpetual maintenance by operation of the Plan. (See Chapter 7, Public Lands Management) The incremental increase in density or intensity in areas which will be developed regardless of adoption and implementation of the Plan, is offset by the creation of the contiguous Core Preservation Area. Additionally, the Plan, through its management program, will maintain these open areas.

13.5 Unavoidable Unmitigated Impacts

There will be an incremental loss of open space in the non-Core areas due to development. However, these losses would occur without the Plan due to the existing development pressures on these resources. If the Plan is followed, there should be no long term adverse affects, as the losses are mitigated the presence and confromation of the Core Preservation Area.

13.6 Irretrievable Commitment of Resources

There will be an irretrievable commitment of open spaces if these areas in the non-Core areas are developed.

14. Impacts on Current Demographic Patterns

Sections 9.2 through 9.5 of Volume 2 of the Plan discuss historic and current demographic patterns in the Central Pine Barrens. As stated in section 9.2.1 of Volume 2 of the Plan, an analysis of 1990 Census data revealed that within the Compatible Growth Area the population was 47,392 in Brookhaven, 957 in Riverhead, and 4,946 in Southampton, for a total CGA population of 53,295. Existing population in the Core Preservation Area was much smaller, totalling just 3,912 (2,327 in Brookhaven, 346 in Riverhead and 1,239 in Southampton).

Population growth in the entire Pine Barrens has been substantial during the past 30 years. Its total population increased by 85% during the 1960s, another 85% in the 1970s, and 33% during the 1980s. The Pine Barrens population growth rate slowed somewhat during the 1990s, according to 1993 LILCO population estimates, but was significant nevertheless. Correspondingly, population density has been increasing rapidly in the Central Pine Barrens, as have the number of housing units.

Population density in the Core stood at 48 persons per square mile in 1990. This figure is dwarfed by the population density in the CGA (717 persons per square mile), and by the density for the entire town of Brookhaven (including that part of the town in the Pine Barrens) of 1,573 persons per square mile.

Of the 29 multi-unit housing complexes existing in the Pine Barrens (which comprise almost half of all Pine Barrens housing units), only one complex is located in the Core. Few of the housing units in the Central Pine Barrens are seasonal units, and housing values in the Pine Barrens are somewhat lower than housing values outside the area. Income levels of Pine Barrens residents were found to be 14% lower than income of all Suffolk County residents, according to the analysis of 1990 Census data.

14.1 Impact on the Demographics of the Core Preservation Area

Adoption of the Plan will not significantly affect existing demographic characteristics of the Core Preservation Area. Uses currently existing will be permitted to remain, and a very small number of additional residential units will be added to this area.

The actual number of residential units that will be allowed to be built is very limited due to the development criteria imposed under the Plan. The number of housing units and persons will be significantly less than that estimated for units under the full build-out scenario for the Core area. The table "Maximum Potential Residential Units For Core Area" contains data on the number of additional housing units that could be built in the Core Preservation Area. (Appendix 1).

In Brookhaven, 2,583 residential units could be built under existing conditions, in Riverhead that figure is 564 units, and in Southampton 770 units, for a total of 3,917 units. For the most part, implementation of the Plan will result in these units not being built in the Core. Based on LILCO 1994 population estimates, there were an estimated 2.9 persons per household in the three Pine Barrens towns. Therefore, at 2.9 persons per household, the effect of the Plan on the Core is to reduce future population expected in the Core by 7,491 persons in Brookhaven, 1,636 persons in Riverhead, and 2,233 persons in Southampton, for a decrease in saturation population in the Core of 11,360 persons. (Appendix 1).

14.2 Non-Core Impacts

Adoption of the Plan will not significantly affect existing demographic characteristics or trends within the Compatible Growth Area. Uses currently existing will be permitted to remain. Future uses, for the most part, have already been set by existing zoning within each individual town. Population will continue to increase as land within the CGA is developed with additional residential units. Outside the receiving areas, the Plan will not increase the number of housing units (and therefore population) within the CGA over and above the increase which is expected to come from development under existing zoning.

Pine Barrens Credits generated from within the Core area of each town are to be transferred to receiving areas within that town, and generally will not be transferred to receiving areas in other towns. The receiving areas for each town are located either within or outside the CGA. Each Pine Barrens Credit could be used for increasing the number of residential housing units per acre or additional square footage for commercial and industrial purposes. In the Town of Riverhead, no credits will be redeemed for residential units. In Brookhaven and Southampton, it is expected that credits will be used predominantly for residential housing units.

If lands currently available for residential development are removed from potential development due to the Acquisition Policy recommended by the Plan, then potential future population increases in each town where acquisition occurs will be limited, since the PBCs generated by those lands will not be used for development. In this way, the current pattern of population increase may slow and future saturation population will be lower as a result of the Plan's recommendations for acquisition of land.

Upon implementation of the Plan, future population growth would be redirected from the Core and transferred to receiving areas outside the Core through the use of Pine Barrens Credits. The Plan would therefore redirect population density from the Core to areas outside the Core. Population increases can be mitigated through acquisitions in the Core Preservation Area and by the use of PBCs for nonresidential purposes. However, the Plan will result in a net reduction in the total population of both areas taken together.

Population differences will occur in each Pine Barrens town because of each town's different plan for the use of Pine Barrens credits. In the Town of Riverhead, since no Pine Barrens credits transferred from the Core will become residential units, the effect of the Plan is to reduce to zero the number of potential additional housing units that would be built in receiving areas outside the Core. In Southampton, the number of credits transferred out of the Core will equal the total number of units that will potentially be developed in receiving areas outside the Core. In Brookhaven, the number of potential units to be built in the Core translates into fewer total units shifted to areas outside the Core. Therefore, because of the Plan, the overall eventual total number of housing units generated within the towns will be lower than that under existing zoning.

The Plan will result in substantially fewer total units to be built in the Town of Brookhaven when compared to the current "transfer" program described in Section 85-388 of the Brookhaven Town Code. Under that program, a person with land zoned A Residence 5 or A Residence 10 may transfer the number of units that could have been built under the parcel's previous zoning. The maximum number of residential units that could be transferred under this program is estimated to be 4,658. (See Appendix 1).

Based on data contained in the table "Maximum Potential Residential Units For Core Area," the number of additional housing units which may be redirected to receiving areas due to Pine Barrens Credits is 1,650 in the Town of Brookhaven, 0 in the Town of Riverhead, and 770 in the

Town of Southampton, for a total of 2,420 residential units. (See Appendix 1).

The Plan would have maximum impact on current demographic patterns outside the Core of the three towns if all credits were used for residential purposes in Brookhaven and Southampton. However, not all Pine Barrens Credits will necessarily be used for residential units. Additionally, governmental acquisition of land in the Core will also reduce the number of Pine Barrens credits available, thereby reducing potential intensification of development above zoning in receiving areas. In addition, Pine Barrens Credits will be used for development gradually over a period of years and some Pine Barrens Credits may never be used, thereby reducing the demographic impact of the Plan.

The following table indicates the number of housing units shifted outside the Core based on the potential range of utilization of Pine Barrens Credits for residential units in Brookhaven and Southampton.

ADDITIONAL HOUSING UNITS REDIRECTED FROM THE CORE

% Utilization of Pine Barrens Credits For Residential Units	Brookhaven	Southampton	TOTAL
0%	0	0	0
25%	413	193	606
50%	825	385	1,210
75%	1,238	578	1,816
100%	1,650	770	2,420

If all Pine Barrens Credits are redeemed, then the maximum number of units to be redirected outside the Core because of the Plan would be 2,420. When Core area and receiving areas are considered together the Plan will result in a net reduction in housing units of approximately 1,497 units, assuming all Pine Barrens Credits in Brookhaven and Southampton are utilized for residential development in receiving areas. This reduction in residential units will be greater if acquisitions of Core Preservation Area property occurs or if the PBCs are redeemed for non-residential uses.

According to Chapter 3 of Volume 1 of the Plan, the long-range goal of the Plan is for 75% of the privately held, undeveloped and currently unprotected land within the Core to be protected through land acquisition. If 75% of private undeveloped land in the Core is acquired, then 25% of that land would be left for development. Therefore, under the 75% acquisition strategy, only roughly 25% of the Pine Barrens credits will actually be used for residential units in Brookhaven and Southampton. Using the table above, the resulting net demographic effect of such a policy would be redirecting 605 housing units outside the Core in Brookhaven and Southampton towns.

Based on LILCO 1994 population estimates, there were an estimated 2.9 persons per household in the three Pine Barrens towns. The following table shows the expected population shift that will occur in each town to areas outside the Core area because of the Pine Barrens Credit program, for various percentage utilizations of the credits for residential purposes.

POPULATION REDIRECTED FROM THE CORE

% Utilization of Pine Barrens Credits For Residential Units	Brookhaven	Southampton	TOTAL
0%	0	0	0
25%	1,198	560	1,758
50%	2,393	1,117	3,510
75%	3,590	1,676	5,266
100%	4,785	2,233	7,018

The potential additional population redirected outside the Core in Riverhead due to the Plan is zero. In Brookhaven the maximum potential redirected population is estimated to be 4,785 and in Southampton, 2,233 for a total of 7,018 additional persons in the receiving areas. However, if 75% of the credits are removed from potential use through acquisition, then a maximum of only 1,758 additional persons can be expected to be redirected to areas outside the Core in Brookhaven and Southampton because of the Plan, as the table above shows.

The following table shows the expected additional percentage population increase that will occur in each town outside the Core area because of the Pine Barrens Credit program, for various percentage utilizations of the credits for residential purposes.

% INCREASE IN POPULATION REDIRECTED FROM THE CORE

% Utilization of Pine Barrens Credits For Residential Units	Brookhaven	Southampton
0%	0%	0%
25%	0.3%	1.2%
50%	0.5%	2.4%
75%	0.8%	3.5%
100%	1.1%	4.7%

When the Core area and the receiving areas are considered together the Plan will result in a net reduction in population of approximately 4,341 persons, assuming all PBCs in Brookhaven and Southampton are utilized for residential development in receiving areas. The reduction in net population will be greater if acquisition of privately owned vacant land in the Core Preservation Area occurs or if PBCs are redeemed for non-residential uses.

14.3 Central Pine Barrens Mitigation Measures

Since the Plan will result in a net regional decrease in future population growth, no mitigation is required on a regional basis. However, some localized impacts may result in greater future

population growth. The Commission has set a policy of acquisition of 75% of the private vacant land within the Core Preservation Area. The public acquisition of the fee interest in Core area property may decrease the total number of PBCs that could be utilized in receiving areas, thus mitigating potential future population growth in localized areas. An alternative mitigation measure of potential future population growth in localized areas is to establish uses for PBCs in receiving areas for nonresidential development. Through this method, the Town of Riverhead has mitigated all potential localized population impacts.

14.4 Mitigating Effect of Creation of a 52,000 Core Preservation Area

The mitigating effect of the creation of the Core Preservation Area is twofold. First, as the acquisition goal of 75% of private undeveloped land within the Core Preservation Area is approached, the corresponding number of transferrable PBCs is reduced. This reduces the number of people which can be anticipated in the area. Secondly, as the Core Preservation Area is protected by the transfer of PBCs to Non-Core areas, compact, efficient and orderly development will occur.

14.5 Unavoidable Unmitigated Impacts

None on a regional basis given the redirection of population from the Core. However, there may be a localized increase in population in the non-Core areas attributable to PBC generated development.

14.6 Irretrievable Commitment of Resources

The irretrievable commitment of resources which will affect the demographics of the Central Pine Barrens area is the Core Preservation Area acquisition policy. As private vacant land in the Core is purchased by public entities or not-for profits, the amount of development is reduced. This, in turn, reduces any anticipated demographic increase because the units supporting the people will not be built.

15. Impacts on Sewage Infrastructure

This section analyzes the impacts of the Plan's implementation on existing sewage treatment facilities in the Central Pine Barrens area. The Central Pine Barrens Plan recommends an amendment to the Suffolk County Sanitary Code Article 6 to increase the permitted densities and double the allowable sewage flow, from 300 gallons per day to 600 gallons per day per 40,000 square feet (SF) for parcels in the specific PBC receiving areas located in Groundwater Management Zone III. Based on above, the PBC receiving areas have the ability to accommodate the full transfer with only the need for on-site septic/cesspool disposal systems instead of community sewerage systems. If Article 6 is not amended as proposed, build-out lots on less than 40,000 SF in Groundwater Management Zone III will require community sewerage system(s) to accommodate the additional sewage flow generated from parcels utilized in the Pine Barrens PBC Receiving Areas.

15.1 Impact on the Core Preservation Area

15.1.1 Impact on Town of Brookhaven's Core Preservation Area

There is no impact on sewage treatment infrastructure in the Core Preservation Area in the Town of Brookhaven because the Plan redirects or prohibits new development from occurring within the Core. Therefore the Plan has little to no negative impact on the Core. Furthermore, absent implementation of the Plan, up to 2,583 units could be built in the Core Preservation Area. In order to comply with the provisions of the Suffolk County Sanitary Code, those nonconforming lots would need to utilize a sewage treatment plant. Thus, absent the Plan sewage treatment infrastructure could be affected. (See Appendix 1).

15.1.2 Impact on Town of Riverhead's Core Preservation Area

The Plan has little to no detrimental effect on the Core Preservation Area of the Town of Riverhead. In fact, the implementation of the Plan will result in a positive impact, namely the creation of the Core Preservation Area. In this Preserve, new development will be prohibited or redirected to the non-Core areas. However, without the Plan, 564 residential units could be built in this deep aquifer recharge area. Therefore the impact of the Plan on the Core is beneficial. (See Appendix 1).

15.1.3 Impact on Town of Southampton's Core Preservation Area

The implementation of the Plan will create the Core Preservation Area in which development is either prohibited or redirected to the non-Core areas. Absent the Plan, up to 770 units could be built in the Town of Southampton's Core Preservation Area. However, under the Plan's provisions these units will be transferred to non-Core areas. Therefore, the Plan's impacts on the Core will be beneficial. (See Appendix 1).

15.2 Impact on Non-Core Areas

The proposed receiving areas utilized in the PBC program located outside the Core are also within Groundwater Management Zones III and VI. The Pine Barrens Plan recommends an amendment to Suffolk County Sanitary Code Article 6 to increase the permitted densities and double the allowable sewage flow from 300 gallons per day to 600 gallons per day per 40,000 square feet (SF) for parcels utilized in the specific PBC receiving areas located in Groundwater

Management Zone III. Parcels located in Groundwater Management Zone VI will maintain the current allowable sewage flow of 300 gallons per day per 40,000 SF.

Based on the above, the PBC receiving areas for both Zone III and Zone VI have the ability to accommodate the full areas of transfer with only the need for on-site septic/cesspool disposal systems instead of community sewerage systems as required for Zone III. Absent the Article 6 amendment, build-out on lots less than 40,000 SF in Groundwater Management Zone III will require community sewerage treatment system(s) to accommodate the additional sewage flow generated from parcels utilized in the Pine Barrens PBC receiving areas. Thus, there is no potential impact of the Plan on the existing sewage treatment infrastructure.

15.3 Central Pine Barrens Mitigation Measures

The Plan contains several measures to mitigate its implementation effect. For example, the 75% acquisition policy, which calls for the purchase of private vacant developable land in the Core Preservation Area, will reduce the number of credits being transferred from the Core. As noted, absent the PBC program additional units could be built in the Core Preservation Area, overlying the deep aquifer recharge areas.

Additionally, the Plan's Standards require that all development proposals subject to Article 6 of the Suffolk County Sanitary Code meet all applicable requirements of the Suffolk County Department of Health Services. This ensures that nitrate-nitrogen emanating from a site would not contravene the State of New York's drinking water standard.

15.4 Mitigating Effect of the Creation of a 52,000 Core Preservation Area

The Core Preservation Area was delineated to encompass the deep aquifer recharge areas. One of the stated goals of the statute is to preserve the water quality of this region. Therefore, the Plan mitigates the impact on sewage treatment infrastructure in that it prohibits or redirects development in these areas which if otherwise could occur may have required the use of a sewage treatment facility.

15.5 Unavoidable Unmitigated Impacts

The impact of the Plan is no greater than the existing condition since no new sewage treatment plants have to be built and the existing sewage treatment infrastructure is not impacted. Thus, there are no unavoidable, unmitigated impacts of the Plan on the existing sewage treatment infrastructure.

15.6 Irretrievable Commitment of Resources

The impact of the Plan is no greater than the existing condition since no new sewage treatment plants have to be built and the existing sewage treatment infrastructure is not impacted. Thus, there are no irretrievable commitments of the existing sewage treatment infrastructure.

16. Impacts on Transportation Infrastructure

16.1 Impact of Implementation of the Plan on the Core Preservation Area

16.1.1 Town of Brookhaven's Core Preservation Area

The implementation of the Central Pine Barrens Plan will create a 52,000 acre Core Preservation Area where new development will be directed or prohibited (with a few statutory exceptions). However, absent the Plan, 2,583 residential units could be built in the Core under existing conditions. The associated vehicle trips generated from these units could impact the existing transportation infrastructure in the Core. (See Appendix 1).

16.1.2 Town of Riverhead's Core Preservation Area

Implementation of the Plan will have no adverse impact on the current transportation infrastructure in the Core Preservation Area. The Plan both creates the Core and prohibits or redirects development from it. Under existing conditions, that is, in the absence of the Plan, 564 residential units could be built in the Core. These units are converted into potential commercial development to be sited at the identified areas outside of the Core. Therefore, since no new development will occur in the Core (although development based on statutory exemptions may occur in the Core) there should be no increase in demands on the existing infrastructure. (See Appendix 1).

16.1.3 Town of Southampton's Core Preservation Area

The implementation of the Central Pine Barrens Plan will create the Core Preservation Area. In this area, new development is either prohibited or redirected through the PBC program to areas outside the Core. According to the Plan's provisions, 770 residential units will be transferred from the Core to identified receiving areas in the Town of Southampton. Under existing conditions, these units could be built in the Core, thereby taxing the existing transportation infrastructure. Under the Plan, the vehicle trips generated by these residential units will be redirected to the non-Core areas. Therefore the impact of the Plan on the Core transportation infrastructure is beneficial. (See Appendix 1).

16.2 Non-Core Impacts

16.2.1 Town of Brookhaven

The Pine Barrens Plan recommends that the area of Zone III (as defined by the Suffolk County Sanitary Code, Article 6, Groundwater Management Zones), outside of the Core Preservation Area contain the receiving districts for the 1,650 Pine Barrens Credits available from Brookhaven's portion of the Core Preservation Area. To accommodate this additional development, the plan could permit a doubling of the number of permissible single-family residential lots in areas zoned "A1" and "A2". Through this zoning change, Brookhaven would provide a possible 4,456 sites to absorb the 1,650 credits transferred from the Core. coming out of the Core Preservation Area. This worst case scenario, the doubling of density, was analyzed for the purposes of this document. In analyzing the potential impacts of this plan, two points must be considered. (Appendix 1).

The first is the impact to the Town's overall roadway system and the second is the impact of the

development of a specific site on the roadways immediately adjoining it.

In the first case, it is the opinion of Suffolk County Department of Public Works (SCDPW) that the Town of Brookhaven's overall highway system can easily service the additional vehicle trips that 1,650 new homes would generate. This determination is made based upon SCDPW analysis.

The methodology utilized was to analyze all potential eligible potential receiving lots. Then the maximum potential buildout of each lot was determined, making this a worst case analysis. Then, the anticipated vehicle trips per unit was determined. Finally, the impacts associated with these anticipated trips were assessed with respect to the existing transportation infrastructure. This resulted in the conclusion that the incremental increase in vehicle trips would have inconsequential impacts on overall transportation infrastructure. However, ingress, egress, and access to existing roadways from new development areas would be project specific determinations and therefore could not be directly assessed in this analysis.

The second analysis, which studies site-specific impacts, is too detailed for a generic impact statement. However, SCDPW has the following recommendations.

1. The development of the "A1" properties listed below, which are large parcels, and those immediately adjacent should be predicated on a traffic impact study that includes the parcel in question as well as those immediately adjacent to it. If this is not possible, then the parcel's development limit should be capped at the Town-recommended limits of existing zoning.

SECTION	BLOCK	LOT
434	2	6.001
128	1	16
213	8	39
238.2	1	5.001
242	1	1.001
120	4	1.001
118	3	3.002
127	1	4
504	1	1.001
104	2	21.001
495	5	3

2. All other areas of "A1" and "A2" zoning may be developed as recommended in the plan. SCDPW staff has determined that the incremental increased number of vehicle trips generated by the proposed plan, as opposed to the existing zoning, is not significant. However, the Town of Brookhaven should exercise the right to require a traffic impact analysis for any parcel which the Town believes may have a significant negative impact on the adjoining road system.

16.2.2 Town of Riverhead

The land designated by the Town of Riverhead as "Pine Barrens Receiving Area" is located in two areas immediately adjacent to NYS Route 25 in the vicinity of the Long Island Expressway interchange. The receiving district is broken into two areas. Area A is 1,222 acres of light-industry "A" zoned property bordered on the north by NYS Route 25, west by the Grumman Property and south and east by the Long Island Expressway. Similarly, Area B is 373 acres of light-industry "A" zoned property bordered on the north by County Road 58, Old Country Road, south by NYS Route 25, west by the Long Island Expressway and east by privately owned lands.

Given the restrictions imposed by Article 7 of the Sanitary Code, it has been assumed that the permissible square feet of building footprint will be equal to 15% of the available lot. Gross lot

size has been reduced by 10% to accommodate infrastructure improvements (road networks, recharge basins, etc.). Table A below presents the square feet of property available for building construction in Areas A and B.

TABLE A: EXISTING ZONING BUILD-OUT

	Area I	Area II	Total
Gross Area Available (Ac)	1,220	306	1,506
10% Reduction for Infrastructure (Ac)	120	31	251
Net Area Available (Ac)	1,100	275	1,375
15% Build-out (Ac)	165	41	206
Build-out in Thousand Square Feet	7,200	1,800	9,000

The proposed Pine Barrens Plan will permit a doubling of the permissible building square footage on 268 acres of the 1,506 available in the receiving districts. When reduced by 10% for infrastructure, this 268 acres becomes 241 acres net available for additional development. For the purposes of this analysis, it is assumed that this additional permissible development will occur in proportion to the overall size of the receiving area. In other words, since Area A comprises 81% of the total area in the receiving district, then it will receive 81% of the increased permissible development (195 acres) and likewise 19% for Area B (46 acres). Table B shows the effect of the additional development.

TABLE B: PINE BARRENS PLAN PROPOSED BUILD-OUT

	Area I	Area II	Total
Gross Area Available	1,220	306	1,526
10% Reduction for Infrastructure (Ac)	120	31	151
Net Area Available (Ac)	1,100	275	1,375
Area Available for 15% Build-out	905	229	1,134
Area Available for 30% Build-out	195	46	241
15% Build-out (Ac)	136	4	140
30% Build-out (Ac)	58	14	72
Total Build-out in Thousand Square Feet	8,460	2,100	10,560

Given the information in Table B and in conjunction with the Institute of Traffic Engineers (ITE) Trip Generation Handbook (5th Edition), the estimated number of vehicle trips can be determined for the two receiving areas.

TABLE C: ESTIMATED NUMBER OF VEHICLE TRIPS

	Area I	Area II	Total
Peak Hour Trips Produced under Existing Zoning	10,100	2,400	12,500
Peak Hour Trips Produced under Pine Barrens Plan	11,900	2,860	14,760
Incremental Difference	1,800	460	2,200

As Table "C" demonstrates, the Pine Barrens Plan results in 18% increase in the evening peak hour traffic volumes generated by the receiving areas. This analysis assumes that of the additional 1,800 VPH generated by Area I, 60% will utilize Edwards Avenue. Therefore, in order to accommodate this additional 1,100 VPH, an additional lane for each direction will be required on Edwards Avenue if the PBC receiving areas are fully developed. The remaining

incremental traffic can be absorbed into future improvements necessitated by the existing zoning build-out.

16.2.3 Town of Southampton

The Pine Barrens Plan has designated ten receiving districts within the Town of Southampton. They are designated A, B, C, D, D1, D2, E, J, 2 and 3. In total, these receiving districts have an existing zoning build-out of 179 single family units. Under the Pine Barrens Plan, 945 additional single-family units could be accommodated within these districts utilizing the maximum density scenario. Consequently, this section will analyze the incremental impact of the 945 single-family units on the Town's roadway system.

For the purposes of this analysis, the receiving districts will be grouped by geographic proximity in order to best determine their impact. Generally, it is the opinion of SCDPW that the existing road system of the Town of Southampton will be able to handle the relatively minor impact that 730 units will cause. However, a more careful review of their impact to those roads immediately adjacent to the receiving districts is warranted.

GROUP I - Receiving Districts A, B, C, D, D1, and D2

These districts are located in the southwestern corner of the Town and are bordered on the south by Old Country Road. Under existing zoning regulations, only 73 units could be built in this group of receiving districts. The proposed plan would permit an additional 652 units, for a total of 725. The construction of 725 new homes along approximately 2-3/4 miles of Old Country Road will have an impact on traffic flow during the peak hours.

GROUP II - Receiving District E

This group is comprised of receiving district E which is located in the northwestern part of the Town near the Hamlet of Riverhead. Current zoning would permit the building of 38 homes in the acreage provided. The proposed plan would allow 190 attached units. This could have a minor impact on Old Quogue Road, NYS Route 24, Riverhead-Hampton Bays Road or Ludlam Avenue, which serve this area.

Group III - Receiving Districts J, 2 and 3

Receiving areas J, 2 and 3 are located in Hampton Bays. Area J is situated north of Montauk Highway just west of its intersection with NYS Route 24. Area 2 is located north of Montauk Highway just west of Squiretown Road and area 3 is located north of Sunrise Highway and south of Old Riverhead Road east of NYS Route 24. Current zoning would permit 18 units in area 2 and 26 units in area 3. The Plan would allow the development of 2 and 3 to be four units per acre, hence increasing the number of units from 44 to 155. Area J under current zoning, would yield 28 units with a permitted increase to 58. There is presently some congestion on County Road 80, Montauk Highway, between NYS Route 24 and Ponquogue Avenue. However, SCDPW has determined that the proposed development of Area J, taking access from Squiretown Road and Old Riverhead Road, would not greatly exacerbate this situation. Similarly, the proposed development of areas 2 and 3 will not have a significant impact on traffic flow. This determination is based on an analysis of the current traffic patterns of the areas and the effects of the increase in units the Plan will allow.

16.3 Central Pine Barrens Plan Mitigating Measures

The Central Pine Barrens Plan contains several measures which will mitigate its impact on the traffic infrastructure. To begin, the Plan has a 75% acquisition policy of PBC generating private vacant undeveloped lands within the Core Preservation Area. As this policy is implemented the number of parcels generating PBCs in the Core will decrease. As public entities or non-for-profits acquire PBC generating parcels, the PBCs are retired. Therefore, those PBCs could not be transferred to the non-Core areas. This would lessen the amount of development in the non-Core attributable to this Plan, thus reducing the impact of the Plan on the transportation infrastructure. However, existing development forces will not be affected, only the incremental increase in development attributable to the PBC program will cease.

Furthermore, Chapter 6 requires a streamlined process for the redemption of PBCs. SEQRA review of the redemption of credits would be limited to site specific analysis of impacts not covered by this SDGEIS. Traffic impacts may need to be addressed in future SEQRA review if they are not within the scope of this document.

Additionally, the statute calls for compact, efficient, and orderly development. If the design practices contained in Chapter 14 of Volume 2, an appendix, are adhered to then the number of vehicle trips generated by the PBC generated units should decrease because essential services will be located near the new units. The associated impacts of vehicle trips on the existing infrastructure will be diminish as the number of vehicle trips is reduced.

Lastly, the impacts associated with Group I receiving areas in Southampton can be mitigated in the following ways:

- 1) Every effort should be made to consolidate the many parcels in these districts into larger tracts which would limit driveway cuts and access roads.
- 2) Frontage along Old Country Road should be dedicated to the Town of Southampton to provide sufficient right-of-way width to accommodate left turn lanes into the new subdivisions.
- 3) The alignment of Old Country Road across the railroad tracks should be improved.

16.3.1 Mitigating Standards and Guidelines

Section 5.3.2 requires a project sponsor to comply with SEQRA in the event a governmental agency identifies a significant environmental affect outside this SDGEIS. Therefore, site specific traffic impact analysis may be required by Brookhaven Town if any of the listed lots or those adjacent to them are developed or if the Town determines the associated impacts of a project is potentially beyond the scope of this SDGEIS.

16.3.2 Mitigating Review Powers

The Commissioners retain review powers over several types of development as defined in Chapter 4. Thus any development which occurs in the Core Preservation Area, nonconforming development in the Compatible Growth Area, developments of regional significance, development within Critical Resource Areas or if the Commission asserts jurisdiction over a project in the Compatible Growth Area. Furthermore, the Plan specifically defines developments of regional significance as projects which result in "a traffic impact which would reduce service by two levels below existing conditions or to a level of service of D or below." If the

Commission reviews a project it may require a more detailed analysis of the impact on the transportation infrastructure.

16.4 Mitigating Effect of Creation of a 52,000 acre Core Preservation Area

The mitigating effect of the Core's creation is the reduction in the number of units to be transferred or which can be built in the Core.

16.5 Unavoidable Unmitigated Impacts

All of the impacts identified can be adequately mitigated through the identified measures, including requiring site specific traffic analysis, therefore there are no unavoidable unmitigated impacts.

16.6 Irretrievable Commitment of Resources

The implementation of this Plan shall not cause any irretrievable commitment of resources.

17. Impacts on Other Infrastructure Services

This section identifies the potential impacts that may occur to infrastructure requirements related to roads and utilities as a result of implementing the Plan.

17.1 Impact on Core Preservation Area

The impacts of implementing the Plan in infrastructure related to roads and utilities in the Core Preservation Area would be minimal since the Plan would transfer development and associated infrastructure requirements to the non-Core areas. The statute has a policy which prohibits or redirects development in the Core Preservation Area to the non-Core areas.

The Plan recommends a legislative amendment to the Pine Barrens Act to allow construction of single-family homes and customary accessory uses on certain infill lots. Development under this provision would be limited to lots on existing improved roads in substantially built areas and therefore minimal impacts would be incurred on infrastructure in the Core Preservation Area, and would not require extension of infrastructure into the Core Preservation Area. Additional development can occur in the Core if an applicant satisfies one of the statutory exemptions of E.C.L. 57.

17.2 Non-Core Impacts

Appendix 9 shows the major residential zoning categories in the Towns of Brookhaven and Southampton. The Town of Riverhead was not included in this analysis because all of its receiving areas will be used for commercial development. The table presents minimum lot sizes, minimum front yard setbacks and minimum lot widths for each category. These were used to calculate the minimum linear footage of roads and utilities needed per unit. Utilities are defined as water, electric and telephone lines, and includes the distance from the front of the house to the utility lines as well as the line along the road. This does not take into account recharge basins, variable street layouts or flag lots which are allowed in the Town of Southampton with as little as 20 feet of road frontage. It is clear from the chart that the larger the minimum lot size the greater the amount of roads and utilities needed per unit.

In Brookhaven, the half acre category (B Residence 1) requires a minimum of 62.5 feet of roads and 127.5 feet of utilities per unit, while the 5-acre category (A Residence 1) requires at least 150 feet of roads and 245 feet of utilities. The chart also contains the number of Pine Barren Credits (PBCs) and the current zoning from where they are being transferred. This multiplied by the minimum, yields the amount of roads and utilities needed under the current zoning. For Brookhaven receiving areas, PBCs would require a total of 191,863 feet of roads and 335,098 feet of utilities under the current zoning. For the Town of Southampton receiving areas, PBC's would require 72,125 feet of roads and 162,295 feet of utilities. (See Appendix 9).

By applying the total number of PBCs to each zoning category it can be determined how many feet of roads and utilities would be needed if all PBCs were used to develop according to each zoning category. In Brookhaven, the 1,650 PBCs when transferred to the receiving areas would require approximately 103,000 feet of roads and 210,000 feet of utilities under the (B Residence 1) zoning category. (See Appendix 9). This would be approximately 46% decline in roads and a 37% decline in utilities as compared to what would be needed under current zoning. Even developing all of the PBCs at the two-acre zoning category (A Residence 2) would result in a decrease of approximately 14% in roads and 9% in utilities. Since all zoning categories with less

than two acre minimum lot sizes require less roads and utilities than under current zoning, PBCs used in receiving areas for any combination of these zoning categories will result in a decrease in roads and utilities. In Brookhaven the result would be a decrease in roads of at least 14% and a decrease in utilities of more than 9%. In Southampton roads would be decreased at least 6% and utilities at least 8%. (Appendix 9).

17.3 Central Pine Barrens Mitigating Measures

Mitigating measures within the Central Pine Barrens Plan include the Pine Barrens Credit Program which creates the mechanisms for redirecting or transferring new development from the Core Preservation Area. As noted, as the credits are redeemed in the non-Core areas the infrastructure requirements will decrease in the percentage of roads and utilities that would occur in the Core area of Brookhaven and Southampton.

17.3.1 Mitigating Standards and Guidelines

The Plan will foster compact, efficient, and orderly development in the non-Core areas based on its Standards and Guidelines presented in Chapter 5.

17.3.2 Mitigating Review Powers

The potential impacts to existing infrastructure that may result from development considered of regional significance in the CGA as defined under the Plan would be mitigated by the Commission review procedures for these areas as stated in Chapter 4.

17.4 Mitigating Effect of the Creation of a 52,000 Core Preservation Area

The creation of the Core Preservation Area will mitigate potential impacts to existing infrastructure since potential development in the Core Preservation Area will be transferred to areas outside the Core, thereby decreasing future demands on existing infrastructure in the Core.

17.5 Unavoidable Unmitigated Impacts

The overall impact of the Plan on the Core and non-Core areas affected by the Plan will be a decrease in the demand on existing infrastructure as discussed under the Core and non-Core impacts in this section.

17.6 Irretrievable Commitment of Resources

No irretrievable commitment of resources for infrastructure requirements related to roads and utilities is anticipated beyond what would have occurred as result of development without the Plan.

18. Impacts on Air Quality

A regional analysis of the air quality in the Central Pine Barrens as affected by the implementation of the Plan is presented.

18.1 Impact on Core Preservation Area

The implementation of the Plan will have beneficial impacts on the air quality of the Core Preservation Area. Under existing conditions, that is absent the Plan, 3,917 units could be developed in the Core (See Appendix 1). Under the Plan, only new development permitted by the statute will occur within the Core Preservation Area. The minimal amount of development which does occur will result in slight increase in air pollution emissions that would be of a short duration. The primary source of potential emissions is from fugitive dust resulting from site clearing and grading operations for those statutory exempted parcels. Fugitive dust consists of soil particles which become airborne either when disturbed by heavy equipment operations or through wind erosion of exposed soil after ground cover is removed.

To a lesser extent, other construction related air emissions will arise from the operation of construction equipment at the locations where permitted uses are being constructed and from vehicle travel by workers to and from the sites. All of these construction related air quality impacts will be of a short duration. Furthermore, as the statutory permitted uses are extremely limited and subject to substantial clearing restrictions, the short term impacts on ambient air quality are expected to be negligible.

After project completion, the minor increase in traffic volume associated with permitted uses will result in a minimal increase in carbon monoxide levels. This potentially long term impact is not considered to be significant and will be far less than anticipated if the Core Preservation Area was developed in accordance with existing zoning. A beneficial long term impact that could occur to air quality in this area since traffic and development will be less in the Core.

18.2 Non-Core Impacts

The construction of residential, commercial and industrial uses in the non-Core areas will result in short-term and long-term increases in air pollution emissions. The primary short-term source of potential emissions is from fugitive dust resulting from site clearing and grading operations for individual developments. Fugitive dust consists of soil particles which become airborne either when disturbed by heavy equipment operations at the construction site, or through wind erosion of the exposed soil after the ground cover is removed. To a lesser extent, other construction related air emissions will arise from the operation of construction equipment at the locations where development is being constructed, as well as from vehicle travel by workers going to and from the site. All of these construction related impacts will be relatively of short duration. Since development within the CGA will not take place all at once, but occur over many years, the impacts on ambient air quality from such operations are expected to be negligible.

18.2.1 Short Term

The increased air pollution resulting from the incremental construction proposed by the Plan will be of a temporary nature and will have no permanent adverse impacts on the community.

18.2.2 Long Term

Pollutants that can be traced principally, or in large measure, to motor vehicles are those that are of relevance to evaluating the impacts of the Pine Barrens Plan. These include CO, HC, NO_x, O₃, and lead. Transportation sources account for a very small percentage of regional emissions of SO_x and particulate matter (PM10), and therefore detailed analyses for these contaminants are not warranted.

Motor vehicles have historically constituted a major source of lead emissions to the atmosphere. Lead levels have decreased significantly and will continue to do so, due to the mandated decrease and elimination of lead in gasoline. In addition, previous monitoring studies reviewed by FHWA have shown that lead concentrations along high-volume highways did not violate NAAQS. Therefore, a detailed analysis of the impact of lead emissions is also not warranted. CO impacts are localized. Even under the worst meteorological conditions and most congested traffic conditions, high concentrations are limited to within a relatively short distance (300 to 600 feet) of heavily travelled roadways. Consequently, it is appropriate to predict concentrations of CO on a localized or "microscale" basis.

The incremental change in the density of development within the non-Core areas will not have a significant impact on the air quality environment. The roadway infrastructure improvements which will be required to service the demands created by existing zoning patterns will permit a level of service that should preclude the occurrence of carbon monoxide hot spots at intersections within the non-Core areas.

18.3 Central Pine Barrens Mitigation Measures

The Plan mitigates the potential impacts the incremental increase in development outside the Core by having a 75% acquisition policy of private vacant undeveloped land within the Core. As these lands are purchased the number of units to be transferred to the Non-Core areas will decrease. Since the units will not be built they will not have an impact on the existing air quality.

Additionally as PBCs are redeemed to create compact, efficient, and orderly developments, the impacts on air quality should be reduced because the number of vehicle trips per unit should decrease. This will lessen the amount of sources degrading the air quality.

18.3.1 Mitigating Standards and Guidelines

Chapter 5 of the Plan contains clustering provisions which encourage development which is compact, orderly and efficient. Such development reduces the necessary vehicle trips generated per unit which reduces emissions which contribute to air quality degradation. In addition, such development reduces the total area and mileage of roads which need to be created.

18.4 Mitigating Effect of Creation of a 52,000 acre Core Preservation Area

The creation of Core Preservation Area will encourage better regional air quality. First, the air quality in the Preserve should not be degraded from its existing levels. In addition, by prohibiting or redirecting new development from the Core, new geographic sources of air emissions will not be created. By transferring the PBCs to the non-Core areas and fostering compact, orderly and efficient development, sprawl will be avoided in the Core which will reduce the number and duration of vehicle trips which would occur without the Plan, thereby reducing emissions.

18.5 Unavoidable Unmitigated Impact

There are no unavoidable unmitigated impacts.

18.6 Irretrievable Commitment of Resources

There are no irretrievable commitment of resources.

19. Impacts on Existing Noise Levels

Noise impacts were analyzed by the Suffolk County Department of Public Works (SCDPW) in order to determine how the Plan's implementation will affect existing noise patterns in the Central Pine Barrens area.

19.1 Effect of Implementation on the Core Preservation Area

The Plan will prohibit or redirect new development from the Core creating a 52,000 preserve. It is expected that the long term impact on noise levels occurring from routine vehicular and pedestrian traffic in the Core Preservation Area after full development of permitted uses will be significantly less than if development occurred according to existing conditions.

19.2 Impacts on Non-Core Areas

The following table is promulgated by the Federal Highway Administration to quantify noise impacts.

FHWA NOISE ABATEMENT CRITERIA

Activity Category	Hourly A-Weighted Sound Level decibels (dBA)* Leq (h)** L10 (h)***		Description of Activity Category
A	57 (Exterior)	60 (Exterior)	Land for which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, and parks, residences, motels, hotels, schools, churches, libraries, and hospitals.

C	72 (Exterior)	75 (Exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	-----	-----	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

- * Either L10 (h) or Leq (h) (but not both) may be used on a project.
- ** Leg is a measure of the constant noise level over a period of time equivalent in energy to a fluctuating (or brief noise) average over that period of time.
- *** L(10) is the hourly sound level exceeded 10% of the time.

19.2.1 Short Term

The increased noise pollution resulting from the incremental increase in construction intensity associated with receiving areas under the Plan will be of a temporary nature and will have no permanent adverse impacts on the community. All machines used within the non-Core areas will meet current noise standards and will result with or without the adoption of the plan.

19.2.2 Long Term

A highway-related noise impact, as defined by the FHPM 7-7-3, occurs where the predicted traffic noise levels approach or exceed the FHWA criteria (See table N-1) or when the predicted traffic noise levels are substantially higher than the existing noise levels. The FHWA provides no criteria for determining when the predicted noise levels "substantially exceed" existing levels. In the absence of some quantitative guidelines the following generally acceptable relationships are used:

NOISE IMPACT CRITERION		
Predicted Traffic-Noise Increase over Existing Noise (dBA)	Subject Effect	Noise Impact per NYS DOT
0 to 5	No Impact	No
6 to 10	Some Impact	Yes
greater than 10	Significant Impacts	Yes

Note: A 10-decibel increase in noise is generally regarded as a doubling of "subjective loudness."

Site Analysis:

An in-depth analysis of all potential development sites within the three towns is beyond the scope of this Generic Environmental Impact Statement. However, it is the opinion of SCDPW that the incremental increase in noise levels between the existing zoning "build-out" and the Plan's proposed development does not present a significant impact.

This determination is based on the results of a noise model which SCDPW prepared to analyze the traffic generated noise on Edwards Avenue in Riverhead. The model predicted peak hour noise levels at a site approximately 85 feet from the centerline of Edwards Avenue. The model showed that under the existing build-out, the noise level along the Edwards Avenue Corridor (LIE to NYS Route 25) would have been 70.6 db (Leq.). Under the proposed plan, it will increase to 71.6 db (Leq.). This incremental increase of 1.0 db is not significant (see Table N-2). Since the incremental volumes in the receiving districts of Brookhaven and Southampton will not approach those in Riverhead, it can reasonably be assumed that the incremental traffic noise levels in those towns will also not have a significant impact on the environment.

20. Impacts on Agricultural Lands

The preservation of farmlands has been a significant concern that prompted New York State, Suffolk County and the Towns of Southold, East Hampton, Southampton and Riverhead to institute programs to preserve these lands through a variety of methods. The New York State Agriculture and Markets Law (Article 25AA) allows the establishment of Agricultural Districts to help preserve farming. To date, Suffolk County has 11,764 acres of farms in seven Agricultural Districts. Suffolk County and the Towns of Southold, East Hampton and Southampton have preserved 6,050 acres of farmland through a Purchase of Development Rights programs. Riverhead has a Transfer of Development Rights Program.

Total acreage in farms in Suffolk County has been declining rapidly. Over a 23 year interval (1969-1992) Suffolk County has lost approximately 1,138 acres per year. Despite the last recession the amount of farmland lost between 1987 and 1992 averaged 1,289 acres per year. There is 4,601 acres in agricultural use within the Central Pine Barrens area at present. This represents 856 acres in the Core and 3,551 acres in the CGA. The remaining 195 acres lie partially in the Core and partially in the CGA.

The receiving areas within the three towns comprise 3,631 acres in agricultural use. This includes 835 acres that are located in New York State Agricultural Districts pursuant to Article 25AA of the New York State Agriculture and Markets Law.

20.1 Impact of Plan Implementation on the Core

The implementation of the Plan will have a beneficial impact on existing agricultural activity in the CPA since it contains a provision in Volume I, Chapter 5 of the Plan to preserve existing agricultural and horticultural uses within this area: *"Any existing, expanded, or new activity involving agriculture or horticulture in the Core Preservation Area is an allowable land use if it does not involve material alteration of native vegetation."* The Plan also contains a hardship provision which may allow agriculture or horticulture uses that would involve material alteration of native vegetation.

The Plan goal of 75% acquisition of the CPA privately held vacant land should not have the impact of encouraging or discouraging agricultural activity in the CPA, as lands now or formerly in agricultural use typically do not represent priority acquisitions for government agencies. This is because the active or fallow farmlands are disturbed lands, and do not represent an optimal opportunity to preserve native vegetation, habitat, or even watershed. Thus, suitable CPA farmlands will not likely be removed from current or future agricultural or horticultural use through acquisitions.

Conversely, one could argue, that expansion of agricultural and horticultural land use in the CPA may be discouraged by the 75% acquisition policy, given that native Pine Barrens which are acquired may not be used to establish new farming activity in the future. Such a conclusion, however, is unfounded. There has not been a significant demand for new farmland in recent history, and none is anticipated. As noted above, the last two decades have witness a steady decline in agricultural acreage. Moreover, lands currently in native Pine Barrens vegetation are not considered suitable for agricultural or horticultural use, and their conversion to such uses would be not be compatible with the Core Preservation Area goals of the statute.

Thus, given current and anticipated trends in agricultural land use, and the fact that CPA lands are to be acquired and preserved are not suitable for agriculture, the Plan will not discourage

agricultural land use in the CPA, but rather, as the statute requires, will promote compatible agricultural and horticultural uses within the framework of maintaining a Pine Barrens environment.

The Plan will minimize any potential impacts to the Pine Barrens environment in the CPA by requiring that a Core area hardship application be sought before the clearing of native vegetation is allowed.

20.2 Non-Core Impact

In the non-Core areas, the implementation of the PBC program could potentially have an adverse impact on farmland preservation if these areas are utilized as PBC receiving sites. This would increase the pressure on developable farmland, which includes 3,631 acres in receiving area for conversion to nonfarm uses. These receiving areas represent one tenth of the remaining farmland in Suffolk County.

20.3 Central Pine Barrens Mitigation Measures

The Towns of Riverhead and Southampton have partially mitigated the negative impacts on farming in their selection of receiving areas. Receiving areas in Riverhead are located away from the farmland areas the Town is seeking to preserve through its own TDR Program. In Southampton there are no receiving areas in their Agricultural Overlay Districts. Neither town has receiving areas adjacent to a concentration of farmland where the farmland development rights have been purchased by either the Town or County. In Riverhead none of the nearly one thousand farm acres in the receiving areas are also in an Agricultural District.

As discussed in the prior sections, the Core area provisions of the Plan remove existing agricultural lands in the Core from development pressure and encourage the use of previously farmed or disturbed lands for agricultural and horticultural use. The potential additional development pressure on non-Core agricultural lands will be mitigated by the Plan's acquisition component. The acquisition of land in the Core would lessen development pressure on Core agricultural lands, and also reduce development pressure on agricultural land in non-Core areas, since less PBCs would be transferred from the Core area.

Mitigating measures that exist independently of the Plan include agricultural districts. These are effective tools for keeping land in agriculture. Participating farm owners are prohibited from developing their farm for eight years, and, in return, the owner receives lower taxes and protection from unreasonable local regulation. The owner is free to sell the farmland; however if the farm is developed the owner must pay a penalty. After eight years, owners then have the option to not continue in the Agricultural District and develop their land without penalty or renew their status for another eight years.

The Pine Barrens Plan addresses the problem of farmers' lines of credit and Pine Barrens Credits in that PBCs will be able to be utilized for their equity in order to finance their operations or they can sell the credits. This is similar to the current Suffolk County Farmland Preservation Program.

20.4 Mitigating Effect of Creation of a 52,000 Core Preservation Area

The creation of the Core Preservation Area will mitigate the impacts to agricultural land by removing the development pressures on agricultural lands in the Core. Existing uses in the Core

will continue unaffected by the Plan's adoption. However, new development will either be prohibited or redirected from the Core (with a few statutory exceptions).

20.5 Unavoidable Unmitigated Impacts

The unavoidable, unmitigated impact of the Plan is that more development pressure may be brought to bear on farmland, in particular on the 3,631 acres in the non-Core areas. Once this farmland is converted for non-farming development (i.e., industrial, residential), it cannot be reclaimed. However, farmland has been converted to non-farming uses at a rate in excess of 1,100 acres per year for the last two decades, and this would be anticipated to continue even without the adoption of the Plan.

Development pressures attributable to the Central Pine Barrens Plan implementation represent an incremental increase over existing conditions for all three Towns. However, in Brookhaven, implementation of the Plan would actually reduce the development pressure on lands outside of the Core. Without the Plan, under the existing Town of Brookhaven TDR program 4,658 credits could be allocated for Core area lands. The units generated by redemption of these credits would occur outside the Core area. Redemption of these credits would place far greater development pressure on agricultural lands than would the 1,650 PBCs generated by the Plan.

20.6 Irretrievable Commitment of Resources

The loss of agricultural acreage due to development in non-Core areas would result in an irretrievable/irreversible commitment of this resource. However, as stated previously, farmland has been converting to non-farm uses at a rate in excess of 1,100 acres per year for the last two decades, and it is assumed it will continue to be converted outside of the Core due to development pressure, regardless of the Plan.

21. Impacts on Existing Land Use and Zoning Patterns

This section analyzes the impact the Plan's implementation will occasion on the existing land use and zoning patterns of the Central Pine Barrens region.

21.1 Impact on the Core Preservation Area

Implementation of the Central Pine Barrens Plan will impact land use and zoning to a great extent. With regard to land use, existing uses will be permitted to remain in the Core Preservation Area. However, with the exception of the statutory or Plan based permitted uses, the majority of all other development potential will be either directed away from the Core Preservation Area to the non-Core areas through the PBC program or reduced through acquisition.

The Commission has adopted a policy which advocates a statutory change allowing development of certain vacant private lots fronting on an existing improved roadways in substantially developed areas in the Core (infill). The development of these lots will result in significantly less land clearing than that associated with the full Core buildout, under existing conditions, of the 3,917 units, and such clearing would take in the immediate vicinity of existing residences. (See Appendix 1).

The vast majority of acres of Pine Barrens land in the Core Preservation Area that would have been subject to development in the Plan's absence will now be preserved in perpetuity.

A secondary impact that may result from changes in the land use and zoning in the Core Preservation Area due to the Plan's implementation would be a possible decrease in infrastructure needs since the amount of new development in this area will be decreased. (See Appendix 9). Therefore, the overall costs for infrastructure are anticipated to be significantly less than if the Core was allowed to be developed at the current zoning requirements. Another secondary and long term impact on existing land use and zoning will be the preservation and management of significant large tracts of open land areas within the Core Area that are required for the protection and perpetuation of the Pine Barrens ecosystem.

21.2 Non-Core Impacts

21.2.1 Town of Brookhaven

The impacts on land use and zoning from the transfer of the 1,650 Pine Barrens Credits is difficult to assess due to the scattered nature of the designated receiving areas both inside and outside the C.G.A. The dispersion of the 1,650 Pines Barrens Credits into the designated receiving areas of 5,568 acres amounts to a worst case (without acquisition) average density increase of .30, which appears to be moderate and may be accommodated with appropriate planned development between the larger undeveloped parcels. This would allow coordination of access and circulation to lessen the impact of the increased development on the roads and surrounding areas and to ensure the efficient use of the developable land. It is noted that density increases provide cost effective and efficient use of utilities, roads and services while adding the negative effect of increased maintenance, runoff, water and air pollution.

21.2.2 Town of Riverhead

The impacts on land use and zoning from the transfer of the 268 Pine Barrens Credits from the Core area into the designated receiving areas appears to be moderate. The dispersion of the non-residential credits in the 1,574 acre receiving area amounts to a worst case (without acquisition) average density increase of .17 units/acre. This is a relatively moderate increase which can be accommodated in the designated areas by appropriate planned development of the larger undeveloped parcels. Co-ordination of access and circulation will lessen the impact of the increased development on the roads and surrounding areas and ensure the efficient use of the developable land. It is noted that density increases provide more cost effective and efficient use of utilities, roads and services while adding the negative effect of increased maintenance, runoff, water and air pollution.

Section 57-0121(1) of the Act states that where local plans exist, the Commission shall evaluate and incorporate such plans as is appropriate in the Plan. Riverhead has developed a preliminary plan concerning the Calverton Naval Weapons Industrial Reserve Plant (the "Calverton site") pursuant to Public Law 103-c337 providing for the conveyance of the 2,900 acres to the Town of Riverhead Community Development Agency for the explicit purpose of economic redevelopment. While the Commission made the determination that all economic development activity upon the land at the site does not constitute development within the meaning of all sections of the Pine Barrens Protection Act, the following, pursuant to the preliminary plan developed by the Town, is appropriate for inclusion in the Plan as it relates to the Compatible Growth Area.

The Compatible Growth Area section of the Calverton site currently is zoned Defense Institutional and that would likely change in order to accommodate a Planned Development District (PDD) to regulate future land uses to occur on the CGA portion of the property. Such a PDD could incorporate any of the following uses:

1. Manufacturing - Regional, national and international manufacturers providing skilled employment for the region with particular attention focusing on aircraft related manufacturing.
2. Research and Development - The site has potential for the development of a center for joint use by industry and academia for the development of commercially significant technologies, including those technologies which would benefit from accessibility to an air transportation facility.
3. International Free Trade Zone - The site has a potential for use as an international free trade zone encouraging the location of manufacturing and industry to take advantage of direct shipments of goods to and from facilities to benefit from duty and excise tax savings.
4. Aviation Industry - The use of the existing infrastructure of the site for the aviation industry is evident. These include the potential for a general aviation airport and the marketing of existing hangars to fixed base operators for aircraft maintenance, repair, aviation instruction and aircraft sales.
5. Planned Office and Industrial Park - Existing infrastructure and site amenities provide support for this use.
6. Entertainment Industry - The use of the property for theme entertainment and film or

television production. The existing air facility supports this use.

The 1993 Airport Joint Use Feasibility Study (Koppelman, *et al.*) completed detailed site constraint analysis and saturation buildout scenarios for the subject real property. The conclusions of the study revealed a potential buildout of 7,000,000 square feet of building for airport use, aviation maintenance, foreign trade zone and industrial park; uses which could occur upon the site without significant impact to freshwater wetlands, surface waters or Pine Barrens habitat. The benefit of such development to the social environment was described in terms of the creation of approximately 12,000 employment opportunities at the site, as well as associated real property tax generation.

Presumably then, a PDD within the CGA portion of the site which included a buildout scenario of up to 7,000,000 square feet of building for any of the above uses would be consistent with the Plan provided any localized environmental constraints on the site were further analyzed on a site specific basis under existing environmental regulations through an Environmental Impact Statement pursuant Environmental Conservation Law Article 8. While such development could occur without significant impact to freshwater wetlands, surface waters or Pine Barrens habitat, an Environmental Impact Statement should assess the level of impact resulting from development at various intensities upon the natural and social environment and should provide an enumeration of those measures necessary to mitigate the impacts upon groundwater, natural features, Pine Barrens habitat, surface water resources, the effects of noise and the effects of increased motor vehicle generation.

21.2.3 Town of Southampton

The worst case impact, without any acquisition of Core PBC generating land, on land use and zoning from the transfer of the 770 Pine Barrens Credits from the Core Area into the designated receiving areas appears to be moderate. The dispersion of the residential credits in the receiving area of 3,560 acres amounts to an average density increase of .22 units/acre. This is not a significant amount, and should be accommodated in the designated areas with appropriate planned development between the larger undeveloped parcels, allowing coordination of access and circulation to lessen the impact of the increased development on the roads and surrounding areas and to ensure the efficient use of the developable land. It is noted that density increases provide cost effective and efficient use of utilities, roads and services while adding the negative effect of increased maintenance, runoff, water and air pollution.

21.3 Unavoidable Unmitigated impacts of the Plan

Incremental increases in density, air and water pollution, clearance of developable land, and traffic impacts on existing roads will result in the CGA with adoption and implementation of the Plan over what what is excepted given normal pre-Plan development patterns.

21.4 Irretrievable Commitment of Resources

If the plan is adopted and implemented, the same or less development and clearing will occur within each town. Therefore, there will be an overall decrease in the irretrievable commitment of resources.

22. Consistency with State Coastal Policies

This section addresses the consistency of the Plan with the applicable state coastal policies set forth at 19 NYCRR 600.5. Portions of the Core Preservation Area are in the designated Coastal Area. Less than five acres of the Compatible Growth Area (CGA) are in the Coastal Area and, as a result, limited development is anticipated compared to the entire 48,000-acre CGA. It is anticipated that there will not be material development in the portions of the Central Pine Barrens that are found in the Coastal Area. Additionally, there are approximately 20 acres outside the Central Pine Barrens that are receiving areas where residential development may be allowed at an increased density. This area is currently zoned for residential uses.

The state coastal policy set forth at 619 NYCRR § 600.5 are separated into the following policy categories: (a) Development, (b) Fish and Wildlife, (c) Agricultural Land, (d) Scenic Quality, (e) Public Access, (f) Recreation, (g) Flooding and Erosion Hazards, and (h) Water Resources. The effect of the Plan on these policies will be controlled by the limitations on development in the Core Preservation Area.

The coastal Development Policy set forth at Section 600.5(a)(1) to (5) will not be impacted since development, as defined under Article 57, is not anticipated in the Core Preservation Area except pursuant to a hardship permit. The policy for Fish and Wildlife, 600.5(b)(1) to (4) addresses the protection of significant fish and wildlife habitats, the expansion of recreational use of fish and wildlife resources, the development of such resources, and the performance of appropriate ice management practices to avoid damage to such habitats. The Plan will conform to such policies as development is prohibited in the Core Preservation Area except pursuant to a hardship permit.

The Agricultural Lands Policy set forth at 600.5(c) states that an action shall not result in a loss nor impair the productivity of agricultural lands. The Plan allows for the continued utilization of agricultural land in the Core Preservation Area.

The Scenic Quality Policies, 600.5(d)(1) and (2) calls for the preservation of scenic resources of statewide significance and the protection, restoration and enhancement of natural and man-made resources which are not of state-wide significance but contribute to scenic quality in the coastal area. As the Core Preservation Area shall not be developed except in accordance with a hardship permit, the Plan would conform to the Scenic Quality Policies.

The Public Access Policies, 600.5(e)(1) and (2) provides for the protection, maintenance and increase of public access to water-related recreation and access to publicly-owned lands immediately adjacent to the water's edge. While, article 57 limits development in the Core Preservation Area, it provides that recreational uses should be promoted. The Plan does not place any limitations on public access and in Chapter 7, Volume 1 recommends funding for additional parking and launching access to enhance recreational opportunities.

The Recreation Policies, 600.5(f)(1) to (3) encourages water-dependent and water-enhanced recreation, development that provides for water-related recreation, and the protection and restoration of structures that are significant from an historical, architectural, archeological, or cultural prospective. While, the Plan, as explained above, substantially limits development in the Core Preservation Area, it nevertheless, conforms with these policies since Article 57 and the Plan will not limit or prevent the recreational use of water-dependent recreational activities, and the Plan provides enhanced recreational access, and increased protection of cultural and historical resources.

Flooding and Erosion Hazards Policies, 600.5(g)(1) to (6) addresses flooding and erosion damage and control. The policies specifically provide for utilizing non-structural measures to minimize damage to natural resources and property through building setbacks, planting of vegetation, and reshaping of bluffs; that mining, excavation, and dredging will not significantly interfere with coastal processes; that construction or reconstruction of erosion protection structures shall only occur if there is a reasonable probability that such structures will control erosion for at least 30 years; that activities or development will be undertaken to minimize damage to natural resources; and that there will be no measurable increase in erosion or flooding. The Policies also state that public funds will only be used for erosion protective structures when necessary for protection of life and new development which requires a location within or adjacent to erosion hazard areas. Article 57 and the Plan prohibit development in the Core Preservation Area except in accordance with a hardship permit. As a result, the development of new man-made structures that would impact flooding or erosion will be substantially limited. It is anticipated that new structures would not be added that will increase or alter flooding or erosion control hazards. As a result, the Plan is conformance with the Flooding and Erosion Hazards Policies.

The Water Resources Policies, 600.5(h)(1) to (5) provide that state coastal policies will be considered when classifying coastal waters and modifying water quality standards; that alternative or innovative sanitary waste systems in small communities will be encouraged; and that best management practice will be used to control stormwater runoff, combined sewer outflows non-point discharges. By limiting development in the Core Preservation Area, sanitary waste systems and non-point discharge will be dramatically limited.

Based on the above review of the State Coastal Policies, the Plan is consistent with the state's coastal policies.

23. Impacts on School Districts

The Plan may result in impacts to school districts on a short term or long term basis because the Plan results in changes in land use patterns, densities and intensities over the course of time. These changes in land use patterns, densities and intensities result in changes in demographic patterns and land values. School districts are impacted by changes in demographic patterns because they impact student enrollments. School districts are impacted by changes in actual land values because actual land values are the basis of assessed land values which, in turn, are the basis for real property tax revenues. Tax revenues from real property taxes make up a substantial portion of the revenue used for school district operations; the other major portion is derived through the State aid formula.

In general, an increase in residential units within a school district results in an increase in student enrollment, and a decrease in residential units results in a decrease in student enrollment. An increase in the number of residential units within a district increases the tax base of the district, but the increase of one residential unit, by itself, is generally not recognized to offset the costs associated with the increased enrollment resulting from the additional unit. Unless a school district has a declining enrollment or is under-utilizing its capacity, additional residential units are usually not considered advantageous by school districts from a financial perspective.

On the other hand, increases in the amount of non-residential development, increases the tax base of the district without increasing student enrollment. From a financial perspective, school districts should welcome non-residential development. Under conventional development scenarios, non-residential development is likely to occur after residential development because the non-residential development needs a sufficient population base to support it. This tendency creates a temporary strain on school districts because they have to accommodate the additional enrollment associated with additional residential units before the financially favorable non-residential development occurs.

The Pine Barrens Credit Program has a built-in tendency to mitigate any temporary strain that could be experienced by school districts due to potential residential development from Pine Barrens Credit transfers. Under certain circumstances under the Plan when Pine Barrens Credits are redeemed within Hydrogeologic Zone III, the redemption will allow for an increase in density or intensity of use of the receiving parcel of up to 300 gallons per day per acre of rated sewage flow pursuant to *Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other Than Single Family Residences*. In general, Pine Barrens Credits may be redeemed for 300 gallons per day of rated sewage flow within Hydrogeologic Zone III for any permitted use in the receiving zone under local zoning ordinances in accordance with these standards.

For example, in Hydrogeologic Zone III it currently takes 3.3 acres of appropriately zoned land to build a 100 seat restaurant. Under the Pine Barrens Credit Program, that same restaurant could be built on only 1.65 acres of appropriately zoned land with the redemption of 1.65 Pine Barrens Credits without violating the local zoning code. For school districts, this means that up to twice as much financially favorable non-residential development could occur on the same non-residentially zoned property.

When redeemed for non-residential uses, Pine Barrens Credits are likely to have a value two to three times greater than a Pine Barrens Credit utilized for residential development. This condition occurs because the per acre value of non-residentially zoned property is much greater than residentially zoned property. Thus, when a Pine Barrens Credit is redeemed for an increase in intensity on non-residentially zoned property, it is worth much more than if it were redeemed

for an increase in residential density. This fact tends to create an incentive for holders of Pine Barrens Credits to utilize their credits for non-residential uses, or alternatively, to utilize them on the available non-residentially zoned property before using them for residential development. This is how the Pine Barrens Credit Program tends to mitigate the temporary strain some residential development may have on school districts under the above described development scenario.

The Pine Barrens Credit Program further mitigates the potential negative financial impacts of residential development on school districts which have vacant residentially zoned property in the Core area by reducing the total number of potential units and by allowing potential residential units to be converted into non-residential uses. First, the total number of residential units for school districts with residential property in the Core area will decrease under the Plan, when compared to current conditions, based on the Plan's allocation formula for residential property. (See Appendix 1). This is because the Plan allocates fractional credits to property which may currently enjoy an exemption from Article VI of the Suffolk County Sanitary Code. Second, the program allocates in total approximately 2,688 Pine Barrens Credits for residentially zoned property in the Core area. Each time one of these credits is redeemed for a non-residential use a potential residential unit is converted to financially favorable non-residential use. For example, the Town of Riverhead has a program designed to accommodate only non-residential uses so of the 268 potential Pine Barrens Credits in Riverhead, all will be redeemed for non-residential uses. (See Appendix 1).

Another potential impact to school districts is the Plan's acquisition policy which calls for a long-range goal of acquiring 75% of the currently undeveloped and unprotected lands within the Core Preservation Area. In general when a governmental entity acquires vacant land, the tax revenue associated with it is lost to a school district. The short term impact of government acquisition of land is a loss of revenue. However, government acquisition of residential property turns into a long term positive impact to a school district that is at its current capacity for students. This is because the residential units associated with the residential vacant land will never be built, and the increased enrollments from those residential units will never have to be accommodated by the district. School districts that are at or near their capacity should welcome government acquisition of land from a long term perspective even though there may short term revenue impacts because increases in enrollment will force expansion of the school district's capacity.

23.1 Town of Brookhaven

Within the Town of Brookhaven five school districts have been identified as having vacant privately owned property in the Core area. They are Rocky Point, Longwood, South Manor, Eastport and Riverhead. Fifteen school districts have receiving districts pursuant to Section 6.4.2.2 of the Plan. They are Three Village, Brookhaven-Comsewogue, South Country, Sachem at Holbrook, Mt. Sinai, Miller Place, Rocky Point, Shoreham-Wading River, Middle Country, Longwood, South Manor, Patchogue-Medford, Eastport, Center Moriches and East Moriches.

23.1.1 Three Village CSD

Three Village school district has 15 parcels totaling 160 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. Four parcels and 55.23 acres are partially improved with single family residences; three parcels and 24.51 acres are partially improved with two family residences; eight parcels and 80.30 acres are vacant residential land.

Under a worst case scenario, Three Village school district could be impacted by an additional 58

residential units under the Plan because the district has up to 58 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1). If the credits were spread proportionately by school district to all receiving areas within the town, Three Village school district would receive only 37 additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town.

Three Village school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.2 Brookhaven-Comsewogue UFSD

Brookhaven-Comsewogue school district has 10 parcels totaling 73.30 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. One parcel and 5.66 acres are farm land; three parcels and 26.19 acres are partially improved with single family residences; four parcels and 25.80 are vacant residential land located in commercial areas; one parcel and 4.50 acres are vacant residential land; one parcel and 11.15 acres are vacant land owned by the school district.

Under a worst case scenario, Brookhaven-Comsewogue school district could be impacted by an additional 48 residential units under the Plan because the district has up to 48 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1). If the credits were spread proportionately by school district to all receiving areas within the town, Brookhaven-Comsewogue school district would receive only 30 additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town.

Brookhaven-Comsewogue school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.3 South Country CSD

South Country school district has one parcel of 7.47 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. The parcel is partially improved with a single family residence.

Under a worst case scenario, South Country school district could be impacted by an additional two residential units under the Plan because the district has up to two Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in

the town. (See Appendix 1). If the credits were spread proportionately by school district to all receiving areas within the town, South Country school district would receive only one additional residential unit as a result of the Plan.

No mitigation of such an impact is required.

South Country school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.4 Sachem CSD at Holbrook

Sachem school district has 11 parcels totaling 269.07 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. Two parcels and 73.91 acres are partially improved farm land; one parcel and 6.82 acres are partially improved with a single family residence; six parcels and 59.46 acres are vacant residential land; one parcel and 113.97 acres are abandoned agricultural land; one parcel and 14.91 acres are vacant land owned by the school district.

Under a worst case scenario, Sachem school district could be impacted by an additional 81 residential units under the Plan because the district has up to 81 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendices 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Sachem school district would receive only 51 additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town.

Sachem school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.5 Mt. Sinai UFSD

Mt. Sinai school district has 31 parcels totaling 516.15 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. 12 parcels and 303.09 acres are farm land; six parcels and 70.92 acres are partially improved with single family residences; 11 parcels and 97.49 acres are vacant residential land; one parcel and 11.54 acres are vacant residential land located in a commercial area; one parcel and 33.11 acres are lands improved by a one story small structure.

Under a worst case scenario, Mt. Sinai school district could be impacted by an additional 203 residential units under the Plan because the district has up to 203 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Mt. Sinai school district would receive only 129 additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy

because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town. Mt. Sinai school district has property located within Hydrogeologic Zone III. Increases in potential residential development could be mitigated through the use of Pine Barrens Credits for non-residential development as described in the introductory portion of this chapter. In addition, Section 6.4.2.1 has identified other uses for credits such as Planned Development Districts (PDDs), Planned Retirement Communities (PRCs), and the use of "R" Districts and other zoning incentives, all of which would reduce the potential use of credits for residential development and increase the potential for financially favorable development.

Mt. Sinai school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.6 Miller Place UFSD

Miller Place school district has 22 parcels totaling 535.42 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. Seven parcels and 337.31 acres are farm land; seven parcels and 119.03 acres are partially improved with single family residences; nine parcels and 79.08 acres are vacant residential land.

Under a worst case scenario, Miller Place school district could be impacted by an additional 212 residential units under the Plan because the district has up to 212 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Miller Place school district would receive only 135 additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town. Miller Place school district has property located within Hydrogeologic Zone III. Increases in potential residential development could be mitigated through the use of Pine Barrens Credits for non-residential development as described in the introductory portion of this chapter. In addition, Section 6.4.2.1 has identified other uses for credits such as Planned Development Districts (PDDs), Planned Retirement Communities (PRCs), and the use of "R" Districts and other zoning incentives, all of which would reduce the potential use of credits for residential development and increase the potential for financially favorable development.

Miller Place school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.7 Rocky Point UFSD

Rocky Point school district has two parcels totaling 11.95 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. Both parcels and the 11.95 acres are vacant residential land.

Under a worst case scenario, Rocky Point school district could be impacted by an additional five residential units under the Plan because the district has up to five Pine Barrens Credit receiving

sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Rocky Point school district would receive only three additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town.

Rocky Point school district has vacant residentially zoned property in the Core area. Under current conditions, it is estimated that up to 35 residential units could be built on this property. There are estimated to be 33 Pine Barrens Credits available for allocation for this vacant residentially zoned property in the Core area in Rocky Point School District. (See Appendix 2). Because there are only five potential Pine Barrens Credit receiving sites, the district will have its potential for residential development reduced by approximately 30 units when compared to current conditions assuming there are no acquisitions of Core area property in the district.

Since Rocky Point school district has land located in the Core area, it could be impacted by acquisitions under the Plan's acquisition of vacant undeveloped land policy.

23.1.8 Shoreham-Wading River CSD

Shoreham-Wading River school district has 21 parcels totaling 597.72 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. Twelve (12) parcels and 249.03 acres are farm land; nine parcels and 348.63 acres are vacant residential land.

Under a worst case scenario, Shoreham-Wading River school district could be impacted by an additional 239 residential units under the Plan because the district has up to 239 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Shoreham-Wading River school district would receive only 152 additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town. Shoreham-Wading River school district has property located within Hydrogeologic Zone III. Increases in potential residential development could be mitigated through the use of Pine Barrens Credits for non-residential development as described in the introductory portion of this chapter. In addition, Section 6.4.2.1 has identified other uses for credits such as Planned Development Districts (PDDs), Planned Retirement Communities (PRCs), and the use of "R" Districts and other zoning incentives, all of which would reduce the potential use of credits for residential development and increase the potential for financially favorable development.

Shoreham-Wading River school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.9 Middle Country CSD

Middle Country school district has eight parcels totaling 131.54 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. One parcel and 6.89 acres are partially improved with single family residences; three parcels and 24.49 acres are vacant residential land; two parcels and 21.90 acres are vacant land located in commercial areas; one parcel and 10.90 acres are vacant land located in industrial areas; one parcel and 67.36 acres are land partially improved with a one story small structure.

Under a worst case scenario, Middle Country school district could be impacted by an additional 54 residential units under the Plan because the district has up to 54 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Middle Country school district would receive only 34 additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town. Middle Country school district has property located within Hydrogeologic Zone III. Increases in potential residential development could be mitigated through the use of Pine Barrens Credits for non-residential development as described in the introductory portion of this chapter. In addition, Section 6.4.2.1 has identified other uses for credits such as Planned Development Districts (PDDs), Planned Retirement Communities (PRCs), and the use of "R" Districts and other zoning incentives, all of which would reduce the potential use of credits for residential development and increase the potential for financially favorable development.

Middle Country school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.10 Longwood CSD

Longwood school district has 176 parcels totaling 2,851.15 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. Seven parcels and 321.96 acres are farm land; 28 parcels and 299.81 acres are partially improved with single family residences; three parcels and 20.16 acres are partially improved with two family residences; one parcel and 16.81 acres are partially improved with a three family residence; one parcel and 13.55 acres are partially improved with a rural residence; 121 parcels and 1,811.29 acres are vacant residential land; eight parcels and 184.39 acres are vacant land located in commercial areas; one parcel and 83.78 acres are vacant land located in industrial areas; two parcels and 19.62 acres are riding stables; four parcels and 79.78 acres are used in mining or quarrying.

Under a worst case scenario, Longwood school district could be impacted by an additional 408 residential units under the Plan when compared to current conditions. This is based upon the fact that under current conditions an estimated 673 units could potentially be built upon Core area residential vacant land. Since these units will not be built in the Core area, this number is subtracted from the 1,081 credit sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites

available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Longwood school district would have only 686 credit sites utilized as a result of the Plan, probably over the course of several years. When the 673 units that could have been built in the Core area are subtracted from the 686 credit sites that are likely to be utilized, the potential increase in the number of residential units in the district as a result of the Plan without any acquisition is likely to be 13 units.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town. Longwood school district has property located within Hydrogeologic Zone III. Increases in potential residential development could be mitigated through the use of Pine Barrens Credits for non-residential development as described in the introductory portion of this chapter. In addition, Section 6.4.2.1 has identified other uses for credits such as Planned Development Districts (PDDs), Planned Retirement Communities (PRCs), and the use of "R" Districts and other zoning incentives, all of which would reduce the potential use of credits for residential development and increase the potential for financially favorable development.

Since Longwood school district has land located in the Core area, it could be impacted by acquisitions under the Plan's acquisition of vacant undeveloped land policy.

23.1.11 South Manor UFSD

South Manor school district has 47 parcels totaling 999.92 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. Seven parcels and 212.80 acres are farm land; 11 parcels and 235.29 acres are partially improved with single family residences; 24 parcels and 379.54 acres are vacant residential land; three parcels and 71.95 acres are vacant land located in commercial areas; one parcel and 14.98 acres are vacant land located in industrial areas; one parcel and 85.36 acres are used in mining or quarrying.

Under a worst case scenario, South Manor school district could be impacted by the loss of two potential residential units under the Plan when compared to current conditions. This is based upon the fact that under current conditions an estimated 195 units could potentially be built upon Core area residential vacant land. Since these units will not be built in the Core area, this number is subtracted from the 193 credit sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, South Manor school district would have only 122 credit sites utilized as a result of the Plan, probably over the course of several years. When the 195 units that could have been built in the Core area are subtracted from the 122 credit sites that are likely to be utilized, the potential decrease in the number of residential units in the district as a result of the Plan without any acquisition is likely to be 73 units.

These potential impacts could be further mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town. South Manor school district has property located within Hydrogeologic Zone III. Increases in potential residential development could be mitigated through the use of Pine Barrens Credits for non-residential development as described in the introductory portion of this chapter. In addition, Section 6.4.2.1 has identified other uses for credits such as Planned Development Districts (PDDs), Planned Retirement Communities

(PRCs), and the use of "R" Districts and other zoning incentives, all of which would reduce the potential use of credits for residential development and increase the potential for financially favorable development.

Since South Manor school district has land located in the Core area, it could be impacted by acquisitions under the Plan's acquisition of vacant undeveloped land policy.

23.1.12 Patchogue-Medford UFSD

Patchogue-Medford school district has 44 parcels totaling 276.51 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. One parcel and 12.40 acres are farm land; eight parcels and 51.64 acres are partially improved with single family residences; one parcel and 9.96 acres are partially improved with two family residences; 33 parcels and 195.01 acres are vacant residential land; one parcel and 7.50 acres are partially improved with a one story small structure.

Under a worst case scenario, Patchogue-Medford school district could be impacted by an additional 239 residential units under the Plan because the district has up to 239 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Patchogue-Medford school district would receive only 152 additional residential units as a result of the Plan, probably over the course of several years.

These potential impacts could be mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town. Patchogue-Medford school district has property located within Hydrogeologic Zone III. Increases in potential residential development could be mitigated through the use of Pine Barrens Credits for non-residential development as described in the introductory portion of this chapter. In addition, Section 6.4.2.1 has identified other uses for credits such as Planned Development Districts (PDDs), Planned Retirement Communities (PRCs), and the use of "R" Districts and other zoning incentives, all of which would reduce the potential use of credits for residential development and increase the potential for financially favorable development.

Patchogue-Medford school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.13 Eastport UFSD

Eastport school district has 34 parcels totaling 758.95 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. 11 parcels and 286.31 acres are farm land; one parcel and 10.34 acres are partially improved with a single family residence; 18 parcels and 353.00 acres are vacant residential land; one parcel and 18.24 acres are vacant land located in a commercial area; one parcel and 44.53 acres are vacant land located in an industrial area; two parcels and 80.12 acres are partially improved with storage facilities.

Under a worst case scenario, Eastport school district could be impacted by the loss of 1,054 potential residential units under the Plan when compared to current conditions. This is based upon the fact that under current conditions an estimated 1,230 units could potentially be built

upon Core area residential vacant land. (See Appendix 2). Since these units will not be built in the Core area, this number is subtracted from the 176 credit sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Eastport school district would have only 112 credit sites utilized as a result of the Plan, probably over the course of several years. When the 1,230 units that could have been built in the Core area are subtracted from the 112 credit sites that are likely to be utilized, the potential decrease in the number of residential units in the district as a result of the Plan without any acquisition is likely to be 1,118 units.

These potential impacts could be further mitigated by acquisitions under the Plan's acquisition policy because acquisition of the fee interest in land would result in fewer Pine Barrens Credits available for allocation within the town. Eastport school district has property located within Hydrogeologic Zone III. Increases in potential residential development could be mitigated through the use of Pine Barrens Credits for non-residential development as described in the introductory portion of this chapter. In addition, Section 6.4.2.1 has identified other uses for credits such as Planned Development Districts (PDDs), Planned Retirement Communities (PRCs), and the use of "R" Districts and other zoning incentives, all of which would reduce the potential use of credits for residential development and increase the potential for financially favorable development.

Since Eastport school district has land located in the Core area, it could be impacted by acquisitions under the Plan's acquisition of vacant undeveloped land policy.

23.1.14 Center Moriches UFSD

Center Moriches school district has one parcel of 23.63 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. The parcel is farm land.

Under a worst case scenario, Center Moriches school district could be impacted by an additional four residential units under the Plan because the district has up to four Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, Center Moriches school district would receive only three additional residential units as a result of the Plan.

No mitigation of such an impact is required.

Center Moriches school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.15 East Moriches UFSD

East Moriches school district has three parcels and 100.08 acres in receiving areas pursuant to Section 6.4.2.2 of the Plan. Two parcels and 86.14 acres are farm land; one parcel and 13.94 acres are vacant residential land.

Under a worst case scenario, East Moriches school district could be impacted by an additional 20 residential units under the Plan because the district has up to 20 Pine Barrens Credit receiving sites identified by the Plan. However, it is unlikely that all Pine Barrens Credit sites identified will be utilized. There are 1650 Pine Barrens Credits available for allocation in the Town of Brookhaven under the Plan, and there are a total of 2600 credit sites available for use in the town. (See Appendix 1 and 3). If the credits were spread proportionately by school district to all receiving areas within the town, East Moriches school district would receive only 13 additional residential units as a result of the Plan.

No mitigation of such an impact is required.

East Moriches school district has no land located within the Core area, so the Plan will result in no negative impacts associated with the acquisition of vacant undeveloped land policy.

23.1.16 Riverhead CSD

Riverhead school district has no receiving areas pursuant to Section 6.4.2.2 of the Plan within the Town of Brookhaven. However, it does have receiving areas associated with the Pine Barrens Credit Plan under the Town of Riverhead section of the Program.

Under a worst case scenario, the portion of Riverhead school district located within the Town of Brookhaven could be impacted by the loss of 450 potential residential units under the Plan when compared to current conditions. This is based upon the fact that under current conditions an estimated 450 units could potentially be built upon Core area residential vacant land located within the Town of Brookhaven. (See Appendix 2).

Since Riverhead school district has land located in the Core area, it could be impacted by acquisitions under the Plan's acquisition of vacant undeveloped land policy.

23.2 Town of Riverhead

Within the Town of Riverhead only one school district, Riverhead school district, has been identified as having vacant privately owned property in the Core area. Similarly, only one school district, Riverhead school district, has receiving districts pursuant to Section 6.4.3 of the Plan.

23.2.1 Riverhead CSD

Riverhead school district has 84 parcels totaling 1,470.29 acres in receiving areas pursuant to Section 6.4.3 of the Plan. 26 parcels and 1048 acres are farm land; ten parcels and 7.47 acres are partially improved with single family residences; five parcels and 27.19 acres are vacant rural land; seven parcels and 134.30 acres are vacant land located in a commercial areas; five parcels and 67.59 acres are vacant land located in industrial areas; one parcel and 4.89 acres are fully improved with apartments; two parcels and 9.50 acres are fully improved with a motels; one parcel and .77 acres are fully improved with a bar; three parcels and 3.50 acres are fully improved with gas stations; one parcel and 2.00 acres are fully improved with liquid petroleum storage; one parcel and 2.40 acres of property are fully improved with a lumber yard; one parcel and 4.00 acres are improved with a trucking terminal; 11 parcels and 53.3 acres are partially improved with storage and warehouse facilities; one parcel is improved with professional offices; four parcels and 8.80 acres are improved with one story small structures; one parcel and 24.80 acres are improved with a race track; one parcel and 27.86 acres are improved with an amusement park; one parcel and 24.50 acres are partially improved with religious facilities; one

parcel and 6.60 acres is for electric transmission.

Riverhead school district could be impacted by the loss of up to 564 potential residential units under the Plan when compared to current conditions. This is based upon the fact that under current conditions an estimated 564 units could potentially be built upon Core area residential vacant land. (See Appendix 1).

Because Riverhead's receiving areas are located within Hydrogeologic Zone III, Pine Barrens Credits may be utilized for non-residential development for use in accordance with the parcel's current zoning, Industrial A. An increase in land use intensity will be allowed as described in the introductory portion of this chapter and Section 6.4.3.1 of the Plan. These uses all result in financially favorable development within the school district.

Since Riverhead school district has land located in the Core area, it could be impacted by acquisitions under the Plan's acquisition of vacant undeveloped land policy.

23.3 Town of Southampton

Within the Town of Southampton five school districts have been identified as having vacant privately owned property in the Core area. They are Riverhead, Remsenburg-Speonk, Westhampton Beach, Hampton Bays, and Eastport. Five have receiving districts pursuant to Section 6.4.4.2 of the Plan. They are Riverhead, Remsenburg-Speonk, Westhampton Beach, Hampton Bays, and Eastport.

Pursuant to Section 6.4.4.2 of the Plan, receiving areas are designed to accommodate the Pine Barrens from the Core area property located within the same school district as of right. In no case will it be necessary to cross school district boundaries on as of right basis. Furthermore, under the Plan the number of residential units that will be built is approximately equal to the total number of units that could have been built under current conditions. (See Appendix 1). The location of the units will be clustered within the same school district out of the Core area. Therefore, there will be no impacts to school district based upon as of right use of Pine Barrens Credits.

All school districts have land located in the Core area, they all could be impacted by acquisitions under the Plan's acquisition of vacant undeveloped land policy.

23.3.1 Riverhead CSD

Riverhead school district within the Town of Southampton has two parcels totaling 47.50 acres pursuant to Section 6.4.4.2 of the Plan. Both parcels are vacant land.

23.3.2 Remsenburg-Speonk UFSD

Remsenburg-Speonk school district has 14 parcels totaling 254.30 acres pursuant to Section 6.4.4.2 of the Plan. Three parcels and 38.10 acres are farm land; nine parcels and 171.40 acres are vacant residential land; one parcel and 36.00 acres are rural vacant land; one parcel and 8.80 acres are used for miscellaneous services.

23.3.3 Westhampton Beach UFSD

Westhampton Beach school district has 54 parcels totaling 108.54 acres pursuant to Section

6.4.4.2 of the Plan. Two parcels and 5.96 acres are partially improved with single family residences; three parcels and 8.20 acres are residential vacant residential land; 39 parcels and 83.34 acres are rural vacant land; one parcel and 10.50 acres are partially improved with a one story small structure; one parcel and .54 acres are vacant land under section 480 of the RPTL.

23.3.3 Hampton Bays UFSD

Hampton Bays school district has six parcels totaling 75.90 acres pursuant to Section 6.4.4.2 of the Plan. Three parcels and 53.30 acres are residential vacant residential land; three parcels and 22.60 acres are vacant land located in commercial areas.

23.3.4 Eastport UFSD

Eastport school district has ten parcels totaling 92.60 acres pursuant to Section 6.4.4.2 of the Plan. Three parcels and 43.40 acres are farm land; two parcels and 7.80 acres are partially improved with single family residences; three parcels and 23.90 acres are residential vacant residential land; one parcel and 12 acres are partially improved for retail services; one parcel and 5.50 acres are improved with miscellaneous services.

24. Impacts on Other Special Districts

24.1 Fire Districts

The geographic identification of local fire districts within the region is especially difficult because of the lack of computerized maps. With this caveat, there are two concerns with respect to fire districts which should be noted as they could create economic hardships for certain local fire districts.

The first concern may affect local fire districts with substantial areas included in the core preservation area. As shown in Exhibit 10, depending upon whether the courts determine that the PBC credits are real property and subject to the local property tax, these fire districts could face property tax base losses of sufficient magnitude to threaten their economic viability. This would be especially true for any such districts which lie wholly or in large measure within the core preservation area.

The second concern is a more general one relating to the ongoing management activities of land in the core preservation area, and in particular the need to periodically burn regions within the pine barrens.⁴⁵ While the draft plan is clear that "Volunteer fire departments are not expected to be the lead agencies or to provide crews or equipment," the plan does not set forth a fire management program and thus it is unclear what responsibilities or obligations will fall on local fire districts and whether or not there will be resources provided to permit these districts to carry out these responsibilities.

24.2 Sewer Districts

As with the transportation system, the impacts of the Pine Barrens Credit Program on sewer districts in the region are likely to be negligible in general, though possibly significant in certain localized situations. Thus, for example, the commercial and industrial receiving districts identified in Riverhead, if developed fully and rapidly, may require additional sewerage capacities to permit development. In most situations, these requirements will be handled locally, between the developer and the town according to established building codes and zoning requirements, and as with specialized transportation improvements, will likely involve requirements imposed on the developers to adequately address sewerage issues.

⁴⁵ Fire is necessary not only to create the conditions suitable for pitch pine germination and survival, but to rejuvenate and maintain the entire assemblage of plant, animal and insect species that comprise the Pine Barrens.

25. Alternatives to the Central Pine Barrens Land Use Plan

25.1 No action alternative (i.e., Development according to existing conditions including SGPA)

The no-action alternative to the Plan may be evaluated, theoretically, as two distinctly different scenarios. In one case, no-action can be construed to be a no-build scenario, whereby no development would be allowed in the CPB.

In the alternate case, no-action could refer to the Commission taking no action; in essence, a scenario whereby existing land use, zoning, development criteria, and municipal requirements continue to govern development in the CPB.

The no-action alternative evaluated herein is the latter case. The former case, a no-build scenario, is not considered to be a reasonable alternative, as no administrative or fiscal means of creating such a scenario either exists or could reasonably be expected. Thus, the no-build scenario is not given further consideration.

Under the no-action scenario, one must presume that development will occur in an as-of-right manner, consisting with existing zoning, local ordinances, environmental constraints and law, and to the extent practicable, local and regional master plans. To assume otherwise would be unreasonably speculative.

Potential Build Out

One direct way of envisioning future development in the absence of the Plan is to assume the build out of remaining privately owned, vacant undeveloped residential land in the Core Area, consistent with existing zoning. Such lands include 6061 acres in the Town of Brookhaven, 1042 acres in the Town of Riverhead, and 3760 acres in the Town of Southampton. The total potential additional residential units which could be constructed on these lands would be 2,583 units in Brookhaven, 564 units in Riverhead, and 770 units in Southampton. This buildout takes into account substandard lots on old file maps, inasmuch as they are considered exempt from the lot area requirements of the Suffolk County Sanitary Code Article 6.

This projected build out, which totals 3,917 units in the Core Preservation Area, could be compared with the Plan's goal of no additional units, however, as a practical matter, it should be compared to a buildout of approximately 200 units, which the Plan could potentially allow as infill or the Statute (Article 57) would exempt. In either case, the potential buildout in the Core Preservation Area under the Plan is de minimis when compared to buildout under existing conditions.

Existing Environmental Protection Mechanisms

The foregoing comparison of potential build out scenarios, while informative, is simplistic and incomplete. Additional elements of existing conditions must be evaluated, including the Town of Brookhaven's existing TDR program, the Town of Southampton's existing TDR program, other state and local laws, and the Special Groundwater Protection Area (SGPA) Plan.

The Town of Brookhaven's existing TDR program, like the PBC program in the Plan, could

preserve portions of the Core Preservation Area lands by transferring development rights out of the Core Preservation Area to locations elsewhere in the town. The existing Brookhaven program, however, yields a far greater number of potential units for receiving areas than does the Plan, (1650 PBC units in Plan, 4658 units in Brookhaven TDR program) and therefore the non-Core Preservation Area development impacts would be more intense under existing conditions than they would be under the Plan. (See Appendix 1).

Another significant difference between this existing TDR program and that of the Plan is implementation. Under the Plan, a bank is established to facilitate PBC transactions, while, under the existing program, landowners need to unilaterally organize and cooperate in order to bring about individual TDR projects. Thus, the long term success of the existing program is not ensured, and further, cannot be counted upon as a means of establishing a contiguous preservation area like the Core Preservation Area established in the Plan.

The Town of Southampton TDR program can preserve Core Preservation Area lands. However, it does not preclude TDRs being utilized on lands located within the Core Preservation Area. As a result, while this program preserves open spaces, it cannot be used to establish a contiguous Core Preservation Area to the same extent as the Plan does.

Unlike the Plan, Southampton does not have a bank to facilitate TDR transactions. However, the potential maximum number of residential units eligible to receive credits under the current Southampton program would be approximately the same as under the PBC program.

The potential build out in the Core Area under existing conditions, estimated earlier as 3,917 units under existing zoning, should be diminished somewhat by the existence of state and local laws and regulations which restrict development in certain instances. For example, State wetland regulations, which include setback requirements, as well as the State Wild Scenic and Recreational Rivers Act, could limit yield on certain lots to below that allowed under current zoning. Other such constraints on yield could occur due to local regulation of construction on steep slopes or environmentally sensitive and culturally special lands. Finally, the environmental review process for such development often reveals other conditions which preclude a full yield under the current zoning.

While the existing mechanisms are recognized, successful and important means of protecting the environment at large, and, to some degree, creating preserved open spaces, they have not in the past provided a mechanism for creating a broad, contiguous open space such as the Core Preservation Area under the Plan.

Moreover, it would be unrealistic to presume that such existing laws and ordinances could be utilized to create and protect an area analogous to the Core in the future.

SGPA Plan

A final component of the no-action scenario is the SGPA Plan. The SGPA Plan, prepared pursuant to E.C.L. Article 55, included numerous recommendations for a "Central Suffolk SGPA" which is essentially the same area as the CPB. It recommended techniques such as acquisition, replatting of old file maps, cluster development, and utilization of TDR to preserve land masses and corridors in the SGPA. It provided a list of opportunities for utilizing these techniques, and described and illustrated the landscape that would result if such opportunities were realized.

For instance, the SGPA plan indicated that most of the zoning in the Pine Barrens area is low density residential use on lot sizes ranging from one acre to 5 acres/dwelling unit. Most of Brookhaven is zoned at 1, 2, and 5 acres/dwelling unit. In Southampton the zoning is 1, 1.5, 2, 3, or 5 acres/unit. Riverhead is zoned for 4 acres near the Calverton facility and 1 acre for much of the farmland. The SGPA Plan noted that if these areas were all up-zoned to 5 acres/unit, with clustering of new developments at 1 acre/unit, then hypothetically 80% of the Pine Barrens land could be preserved. These actions would preserve 12,745.54 acres of the 15,931.93 privately held acres of vacant land in Brookhaven Town, 2,753.45 acres of the 3,454.33 acres privately owned vacant land in Riverhead Town, and 6,004.20 acres of the 7,505.25 acres of privately owned vacant land in Southampton.

The SGPA plan postulated that rezoning of property and clustering in Brookhaven Town could secure dedicated acreage adjacent to the Peconic River, preserve an open Pine Barrens corridor along the Long Island Expressway, add to some of the holdings in the eastern portion of Manorville, add to the parcel that the County has set aside for a Suffolk County Nature Preserve, and provide additional open space. It stated that Brookhaven could consider further rezonings as necessary to limit residential development beyond the periphery of already committed areas. In addition, it noted that a series of acquisitions extending from Route 25A on the north to the Long Island Expressway on the south could further protect the water resources of the area. The acquisition of some of these properties when combined with a coordinated clustering of new development would make it possible to create a series of north-south and east-west interconnected public and private properties that could be used as walkway, hiking trails, or similar types of linear park use. By acquiring land around the headwaters of the Peconic River and in the area east of Route 111 in Manorville, public lands could then form a continuous corridor of open space extending from central Brookhaven through the edge of Riverhead and into the Town of Southampton.

The SGPA plan proposed that Suffolk County should continue to upgrade, consolidate, and expand sewage collection and treatment within the northwestern portion of the sector (Brookhaven), as well as concentrate commercial and industrial activities to the maximum extent permitted by existing land uses in these areas. The plan postulated that if sewerage could be extended to serve existing higher density and new development, effluent quality could be assured, and ground water quality would be improved.

The SGPA plan presumed that most of the land in the Southeastern Section (Southampton portion) of the Central Suffolk SGPA was being preserved by means of major watershed acquisitions, but noted there are some opportunities for clustering which could secure dedicated acreage adjacent to Peconic River properties, preserve an open Pine Barrens corridor along the Long Island Expressway and could add to some of the holdings in the eastern portion of Manorville. Such clustering could also provide pockets of open space in the more developed portions of Manorville and preserve some wetlands adjacent to State property.

The SGPA plan proposed that Suffolk County establish a Dwarf Pines Preserve to the north and west of the Suffolk County Airport which would constitute part of an open corridor along the south side of Sunrise Highway, and would compliment the public lands on the north side. It further proposed that the Towns of Brookhaven and Southampton should attempt to acquire the development rights or otherwise preserve the Swan Pond and the Long Island golf clubs. These towns should also facilitate the conversion of obsolete or inappropriately located extractive and industrial properties to residential use and install sewage treatment plants in order to protect the groundwater.

The SGPA plan concludes that in the Riverhead portion of the Northeast Sector of the Central Suffolk SGPA, it would be most desirable to transfer the development rights of properties that are surrounded by protected farmland to areas north of Sound Avenue or around the hamlet of Riverhead. It stated that Riverhead should provide for the transfer of development rights to non-farm sites outside the SGPA at one dwelling unit per two acres, and require clustering of development on those parcels where TDR was not possible. The acquisition of selected woodland and other non-farm parcels could facilitate watershed preservation and wellhead protection in Riverhead. Also, smaller acquisitions in the Town of Riverhead could enhance the already partially protected Peconic River corridor by acquiring areas such as the Canoe Lake area, the unused portion of Camp Wauwepex, and part or all of several small parcels along the Peconic River.

The SGPA plan also proposed that commercial development in Riverhead could be confined to present locations outside the SGPA, and new business development could be sited at locations outside the SGPA or within the boundaries of existing commercial areas within the SGPA, in order to help maintain the integrity of the agricultural and opens space lands that protect the groundwater and surface waters in this sector.

The SGPA plan, if implemented as described above could provide for preservation of open spaces, protection of significant assemblages of habitat, and ground and surface water protection in the Central Pine Barrens. Such preservation and protection, while not the equivalent of a 52,000 acre Core preservation Area, would certainly be wholly consistent with the goals for the CPB articulated in Article 57.

It must be noted, however, that implementation of the elements of the SGPA plan were not assured under Article 55 of the E.C.L. For example, Article 55 did not provide for enabling analyses of the SGPA plan such as an Environmental Impact Statement (EIS) or economic impact analysis. Article 55 also failed to provide a source of funding for the acquisitions or TDR proposals contained therein. Finally, Article 55 did not provide a means to make the SGPA plan elements binding upon the state or local governments.

These limitations of Article 55 limit the impact which the SGPA plan may have on development under the no-action alternative. While it may be presumed that numerous proposals in the SGPA plan would be implemented in the future, it is certain that the majority of its elements could not be implemented without additional funding, environmental analyses, economic analyses, and government actions.

Thus, the SGPA plan, which in many ways is consistent with the proposed action and Article 57 in terms of environmental and ecological goals, was not crafted so as to create a contiguous Core Preservation Area, and cannot be relied upon to preclude piecemeal and scattered development or assure orderly and compact development.

Comparison

The existing conditions described above clearly provide for the protection of the environment and creation of open spaces without the proposed action (the Plan). State and local laws are ambitiously protective of groundwater, surface water, and habitat, and comprehensive plans such as the SGPA plan provide guidance as to how specific environmental and ecological goals may be achieved.

The fundamental differences between the no-action alternative and the Plan is the force of law, funding, and a viable PBC program. The Plan will create and protect a contiguous core preservation area of 52,000 acres. No combination of existing conditions can reasonably be relied upon to achieve this.

As a result, for the Core Preservation Area it is fair to conclude that the Plan would provide far greater protection of ground and surface waters than would the no-action alternative. Similarly, ecological protection, habitat preservation and connectivity in the Core Area would be greater under the Plan than under the no-action alternative. These conclusions are rooted in the Plan's ability to create, preserve, and manage a 52,000 acre contiguous land area.

Conversely, it must be noted that under existing conditions, buildout in the CGA and areas outside of the CPB would likely be less intense than under the Plan, largely due to the absence of the Plan's PBC program.⁴⁶ However, a detailed comparison of impacts of the Plan and the no-action alternative, as they relate to these areas, quickly becomes speculative as the actual regional landscape that would result from build out under existing conditions is impossible to predict. Moreover, this comparison is largely the focus of the individual impact analyses that comprise this SDGEIS.

Beyond these comparisons, the broader long term implications of the Plan versus the no action alternative are evident. The Plan represents a known result, a contiguous Core Preservation Area with surrounding compact and orderly development, whereas the no-action alternative would yield a less predictable future landscape resulting from equal application of existing environmental protection mechanisms across the entire CPB.

⁴⁶ This increased intensity or density due to the Plan's PBC Program presumes minimal implementation of the Town of Brookhaven's existing TDR program which, if ambitiously implemented, could actually result in more CPB residential units than that expected under the Plan. (See Appendix 1).

25.2 Analysis of the Plan Without a Core Roadfront Parcel Policy Alternative

Section 9.1.1 describes additions to Environmental Conservation Law Section 57-0107(13), which would allow residential development on lots on, or taking access from, an existing, improved road contained within a substantially developed area within the Core area. The Plan identifies 106 parcels ranging in size from .15 acres to 6.7 acres that qualify for single family residential development under the policy. One residential unit could be built out on each parcel. The total acreage for the 106 parcels is 129.81 acres.

In many cases these roadfront parcels would qualify for a hardship exemption under the Core area hardship exemption provisions of the Act. A parcel which qualifies for a hardship under the Act would then become a buildable lot under the Pine Barrens Act. In some instances, the value of such a building lot could go as high as \$60,000. If all of the identified lots under the Core roadfront exception policy were acquired at \$60,000 per plot, the total cost of all the identified parcels under this policy would be \$6,360,000. This translates into a \$49,000 per acre cost for the 129.81 acres under consideration.

If these parcels were acquired under this alternative, they would be very difficult to manage, by definition given their location. Management of public property is significantly easier and more effective in large contiguous tracts. Small parcels interspersed with privately owned and developed parcels often become local dumping grounds, require frequent visits and involve excessive cleanup costs.

25.3 Analysis of Plan With a 25%, 50% or 100% Acquisition of Vacant Land Policy

Chapter 3 of the Plan establishes a long-range goal to acquire 75% of the privately held, undeveloped and unprotected land within the Core Preservation Area. Possible alternatives would be to establish a Plan with acquisition goals of 25%, 50% or 100%.

The Commission has no direct resources with which to make acquisitions. Rather, it relies upon the State and County to make acquisitions of Core area properties. Appropriations for acquisitions must be made on a yearly basis through the State budgetary process for State acquisitions, and County acquisitions are made through the Drinking Water Protection Program and must be approved by the Suffolk County Legislature. Analysis of the Plan assumes that there would be no acquisitions, and generally recognizes that any environmental impacts due to the Plan in receiving areas could be mitigated through acquisitions of Core area property.

The establishment of a Plan with a 25% or a 50% acquisition policy would mean that the Commission would stop seeking further acquisitions after 25% or 50% of the privately held, undeveloped and unprotected land within the Core Preservation Area were made, respectively. Under a 100% acquisition policy, the Commission would seek to acquire all the Core Area property acquired. The costs associated with 100% acquisition were estimated on pages 338-340 of the Draft Environmental Impact Statement published July 14, 1994.

26. Growth Inducing Aspects of the Plan

Growth inducing aspects relate to the potential for further development due to implementation of the Plan. Specifically, the SEQRA Handbook (NYSDEC 1992) suggests that further development may be "triggered" by significant population increases or increased development potential due to infrastructure extension.

The implementation of the Plan will have limited growth inducing consequences. As Chapter 14 of this SDGEIS illustrates from a regional perspective, implementation of the Plan will actually reduce the number of persons this area will have to support. Even if all eligible sites in the Core Preservation Area are allocated PBCs, and these credits are utilized in the receiving areas as residential units a net reduction of approximately 4,341 persons from under a full buildout under existing conditions scenario.

Localized population increases may occur beyond that which could occur under existing conditions given an increase in intensity or density attributable to PBC redemption. However, this impacts are adequately mitigated by the Plan's provisions.

The Plan will reduce the expansion of infrastructure as demonstrated in Appendix 9. By redirecting development from the Core Preservation Area, significant amounts of new infrastructure will not be built. Furthermore, implementation of the PBC program will redirect development to areas already serviced by infrastructure. Thus, the Plan will not increase the development potential of areas beyond existing conditions. Additionally, it will curtail the incursion of infrastructure into the Core Preservation Area.

27. Effects on Land Use and Conservation of Energy Resources

The implementation of the Plan will result in a decrease in the energy needs for the Core Preservation Area, since development will be directed away from this area through the Pine Barrens Credit Program. Energy needs will also be decreased in the Core, and the extent of reduction will depend upon the amount of land that is acquired in this area. Acquisition would remove these areas from future development and eliminate future energy needs associated with development.

The overall effect on the use and conservation of energy resources within the three towns as a result of the Plan would actually be lower since there would be less housing units that would use energy resources than what would occur under existing zoning. (See Appendix 1). Even within the receiving areas, the focus of development through the use of PBCs will result in more efficient use of energy resources since a portion of the development will occur in receiving areas that are located near existing hamlets. This will minimize the amount of infrastructure required to be constructed or maintained for these new units.

The use of clustering techniques in these areas as recommended in the guidelines stated in Volume I, Chapter 5 of the Plan will likewise conserve energy resources. Energy required to be supplied to these communities through municipal services would be reduced to amounts less than those to be required under full buildout under existing conditions. Less vehicle travel will occur, and therefore less energy will be expended in terms of the creation of roads and the use of fuel. Any increase will likely occur in receiving areas given their proximity to essential services.

In addition, the Plan's goal of 75 % acquisition of privately owned vacant land in the Core will reduce the number of PBCs to be transferred to receiving areas and thereby reduce the demands upon on energy resources in these areas.

Appendix 1
MAXIMUM POTENTIAL RESIDENTIAL UNITS FOR CORE AREA¹
 (Without Acquisition)

	Pine Barrens Plan ²	Existing Conditions ³	Local "TDR" Laws ²
Brookhaven	1,650⁴	2,583⁵	4,658⁶
Riverhead	N/A⁷	564⁵	564^{5,8}
Southampton	770^{4,9}	770⁹	770⁹
TOTAL	2,420	3,917	5,992

**MAXIMUM POTENTIAL SEWAGE FLOW FOR CORE DEVELOPMENT
 POTENTIAL¹**
 (Without Acquisition)

¹ Does not consider proposed in-fill legislative amendments.

² Note that development of these units would occur outside the Core area.

³ Note that development of these units would occur within the Core area.

⁴ Based upon total Pine Barrens Credits available for allocation and assumes that all credits land as residential units.

⁵ Based upon lots exempt from the lot area requirements of Suffolk County Sanitary Code Article 6; assumes that lots 6,000 square feet or greater in lot area can accommodate a septic tank and water line; assumes all existing lots fall within one of the exemption categories of Suffolk County Sanitary Code Section 760-609(B).

⁶ Based upon potential transfers that occur in accordance with Brookhaven Town Law Section 85-388.

⁷ Of the 268 potential Pine Barrens Credits in Riverhead, none will become residential units.

⁸ Although Riverhead Town does not have a "TDR" program for Central Pine Barrens land, 564 units would still potentially be built pursuant to existing conditions within the Core area.

⁹ Assumes the Southampton Town's "TDR" program covers all residential lands within the Core; does not consider nonresidentially zoned lands.

¹ Does not consider proposed in-fill legislative amendments; all numbers based upon minimum design sewage flow rate of 300 gallons per day per single family residence or single family residence equivalent.

	Pine Barrens Plan² (gallons per day)	Existing Conditions³ (gallons per day)	Local "TDR" Laws² (gallons per day)
Brookhaven	495,000⁴	774,900⁵	1,397,400⁶
Riverhead	80,400^{4,7}	169,200⁵	169,200^{3,5,8}
Southampton	231,000^{4,9}	231,000⁹	231,000⁹
TOTAL	806,400	1,175,100	1,797,600

² Note that all sewage flow would occur outside the Core area.

³ Note that this sewage flow would occur within the Core area.

⁴ Based upon the redemption of each Pine Barrens Credit for 300 gallons per day of rated sewage flow per credit.

⁵ Based upon lots exempt from the lot area requirements of Suffolk County Sanitary Code Article 6; assumes that lots 6,000 square feet or greater in lot area can accommodate a septic tank and water line; assumes all existing lots fall within one of the exemption categories of Suffolk County Sanitary Code Section 760-609(B).

⁶ Based upon transfers that occur in accordance with Brookhaven Town Law Section 85-388.

⁷ Note that all sewage flow would occur outside the Central Pine Barrens.

⁸ Although Riverhead Town does not have a "TDR" program for Central Pine Barrens land, 564 potential residential units would still generate 169,200 gallons per day of rated sewage flow.

⁹ Assumes the Southampton Town "TDR" program covers all residential lands within the Core; does not consider nonresidentially zoned lands.

Appendix 2
BROOKHAVEN SENDING AREA

PINE BARRENS CREDITS AND BUILDOUT UNDER EXISTING CONDITIONS

School District	Pine Barrens Plan (Pine Barrens Credits)	Existing Conditions (Residential Units)
Rocky Point UFSD (4722209)	33	35
Longwood CSD (472212)	476	673
South Manor UFSD (472221)	105	195
Eastport UFSD (473611)	755	1,230
Riverhead UFSD (473002)	281	450
TOTAL	1650	2583

Appendix 3
Analyzed Brookhaven Pine Barrens Credit Sites

Appendix 4
Analyzed Riverhead Pine Barrens Credit Sites

Appendix 5
Analyzed Southampton Pine Barrens Credit Sites

Appendix 6

Clearance Comparison: Buildout under Current Conditions and Buildout under Plan - Town of Brookhaven

Clearance Comparison: Buildout under Current Conditions and Buildout Under Plan - Town of Southampton

Appendix 7
Site Clearance Standards of Towns of Brookhaven, Riverhead and Southampton

Appendix 8
Site Clearance Standards for Standard Subdivisions

Appendix 9
A Visual Comparison Of Development at Different Densities

Appendix 10
Zoning Requirements

Appendix 11
Central Pine Barrens Comprehensive Land Use Plan Volume 2
(Available upon request from Commission)