Township of Egg Harbor
Atlantic County, New Jersey

Natural Resources Inventory

April 2020

Prepared For:
Egg Harbor Township
3515 Bargaintown Road
Egg Harbor Township, New Jersey 08234

Prepared By:

POLISTINA & Associates, LLC
Engineers & Planners

6684 Washington Avenue
Egg Harbor Township, NJ 08234

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Table of Contents

Tables

Figures

INTRODUCTION

This Natural Resources Inventory (NRI) has been compiled in order to re-emphasize the critical importance of appreciating and preserving those significant sites and specific artifacts associated with the Township's past. These have cumulatively contributed to, in various ways and degrees, the community that Egg Harbor Township has become and is today. The Natural Resources Inventory (NRI) is an essential document in facilitating the municipal planning process.

Within this element, a cursory history of the community is provided along with a description of the regulatory framework that currently exists in order to identify and protect significant cultural resources within the community. This report closely examines the environmental resources that define and shape the Township. The sections that follow provide information about each type of resource. Graphics and Tables depicting these resources are included in Appendices.

The purpose of the Township's NRI is to objectively identify and describe the natural resources, cultural conditions, environmental features and concerns within the municipality. The NRI provides visual (mapping) and text depictions that describe various cultural and natural resources, their sensitivities and limitations for development, and existing laws and suggested measures for protection of sensitive resources. The NRI serves as an aid for municipal planning, a guide for surveys and other scientific activities, and as an educational document. The NRI contents have been gathered from many existing resources, such as reports, studies, documents and maps provided by County, State and Federal agencies, municipal government, businesses, and organizations.

This NRI is designed to serve as a general guideline for determining resources and their locations within Egg Harbor Township. No fieldwork, within the municipality or otherwise, was conducted specifically for this report. Although the NRI is an important field companion for identifying resources, it is not a substitute for site specific surveys. Activities such as wetland delineations, wildlife studies, surface water and groundwater testing require in situ studies for conclusively determining the presence and character of various resources, impacts and other detailed site specific conditions. As available, existing studies were incorporated into the document. Additional data may be directly incorporated into the NRI in future revisions. Similar to the Egg Harbor Township Master Plan (2017), the Egg Harbor Township NRI should be periodically reviewed as municipal conditions and regulations change, and additional data become available.

A significant portion of Egg Harbor Township lies within the boundaries of the New Jersey Pinelands. This area within the Township is included in the Regional Growth Area and the Military and Federal Installment Area. These areas provide certain protection regulations to the natural resources of Egg Harbor Township. A portion of the Township also lies within the CAFRA jurisdiction and all coastal activities are reviewed and approved by the NJDEP.

A comprehensive Master Plan, prepared by the Township has been approved by the New Jersey Pinelands Commission which aids in the protection of the vital natural resources of the

Township. The current Master Plan of the Township takes into consideration many of the methods to preserve and protect those vital resources that comprise the flora and fauna of the Township.

1.0 GEOGRAPHY

The mainland portion of Egg Harbor Township is located in the east central portion of Atlantic County between longitudes 74º29' and 74º43' West, and latitudes 39º17'30" and 39º28' North. There are two detached portions of the Township separated from the larger mainland section by the eastern bordering municipalities of Pleasantville, Northfield, Linwood and Somers Point. These regions consist predominantly of salt marsh tidal wetlands and include West Atlantic City, Anchorage Point and Seaview Harbor. (See 2017 Aerial Photograph Map, Figure A)

Egg Harbor Township covers 75.55 square miles, the third largest municipality by size in Atlantic County. Bordering the Township on the north are Galloway Township and Absecon. On the west side is Hamilton Township, and to the south is Estell Manor. To the east, the Township is bordered by the tidal marsh and bay system which separate the mainland from the Absecon Island communities of Atlantic City, Ventnor, Margate and Longport. The eastern bordering municipalities discussed in the previous paragraph were once part of the Township, but their more urbanized character and specialized problems as mainland suburbs of Atlantic City led to their independence. They occupy the first mainland high ground and straddle the historic main transportation corridor – U.S. Route 9.

Egg Harbor Township includes the unincorporated villages of Bargaintown (the Tt~~t~~ownship's seat of government), Cardiff, English Creek, Farmington, Scullville (formerly known as Jeffers), Steelmanville and West Atlantic City, as well as part of McKee City. Other localities and place names located partially or completely within the Township include Devenshire, English Creek Landing, Greenwood, Idlewood, Jeffers Landing, Jobs Point, Jones Island, McKee City Station, Mount Calvary, Pleasantville Terrace, Pork Island, Rainbow Islands and Sculls Landing.

The Township is one of 56 South Jersey municipalities that are included within the New Jersey Pinelands National Reserve, a protected natural area of unique ecology covering 1,100,000 acres, which has been classified as a United States Biosphere Reserve and established by Congress in 1978 as the nation's first National Reserve. The Township is designated a Pinelands Regional Growth Area with the Pinelands Area located west of the Garden State Parkway and north of Ocean Heights Avenue.

The remainder of the Township is regulated by coastal regulations. In 1973, New Jersey enacted the Coastal Areas Facilities Review Act (CAFRA)**,** which is designed to protect the vital shore areas of New Jersey from being overdeveloped. In accordance with CAFRA, residential development, commercial development, industrial development, and public development in these areas which meet certain guidelines are regulated through permitting by the New Jersey Department of Environmental Protection (NJDEP).

2.0 COMMUNITY DEMOGRAPHICS

The Township has primarily developed in what can be referred to as a residential development pattern with existing lot sizes and unit densities dictated by current and past zoning regulations and consistent with the intent of the Pinelands Regional Growth Area, as well as the presence and extent of servicing utilities, primarily public sanitary sewerage and potable water service. The commercial centers of the Township are located along the Black Horse Pike corridor which is centrally located to the Township's higher density populations.

The 2010 US Census data reported a total Township population of 43,323 residing in a total of 14,353 households (as of 2018), generating an average household size of 2.99 persons (as of 2018). This represented a significant increase (41%) in total population from the 2000 estimate of 30,726 which represented an increase (20.3%) from the 1990 estimate of 25,544 persons. Overall from 1990 to 2010, the Township saw a substantial increase of 69.9% during this period.

Egg Harbor Township experienced major growth between 1970 and 1980, when the population more than doubled from 9,882 in 1970 to 19,381 in 1980. The chart below provides historic demographic trends in overall Township, Atlantic County and New Jersey population, provided by the US Census Bureau through 2017, which represents the latest estimate provided by the Bureau until data from the future 2020 census is made available. (US Census of Population and Housing – www.census.gov.)

Table 1
Population Changes: 1940-2017
Egg Harbor Township, Atlantic County and New Jersey

	Egg Harbor Township		**Atlantic County**		**New Jersey**	
Year	Number	Change	Number	Change	Number	Change
1940	3,066	----	124,066	----	4,160,165	----
1950	4,991	62.7%	132,399	6.7%	4,835,329	16.2%
1960	5,593	12.1%	160,880	21.5%	6,066,782	25.5%
1970	9,882	76.7%	175,043	8.8%	7,168,164	18.2%
1980	19,381	96.1%	194,119	10.9%	7,365,011	2.7%
1990	25,544	31.8%	224,327	15.6%	7,730,188	5.0%
2000	30,726	20.3%	252,552	12.6%	8,414,350	8.9%
2010	43,323	41.0%	274,549	8.7%	8,791,894	4.5%
2017	43,296	-0.1%	269,918	-1.7%	9,005,644	2.4%

Source: U.S. Census Bureau, Population Estimates Program, 2010 Census Data, .S. Census Bureau

While the Census Bureau provides a Community-wide population density of 650.5 persons/square mile overall (1.02 persons/acre), given that the acreage of the Township's Pinelands Regional Growth Area, where the overwhelming majority of Township residents reside, comprises approximately 50% of the Township's overall land area, population density statistics representative of the "developed" portions of the Township would be significantly higher.

3.0 TOPOGRAPHY

Egg Harbor Township lies within the southeastern region of the New Jersey Coastal Plain. The topography is characterized by gently sloping, less prominent uplands which divide the four major drainage basins of the Township.

The highest elevation in the Township is 78 feet above sea level, located near a gravel pit between Laurel Memorial Cemetery and the South Branch of Absecon Creek near the northwest corner of the Township. This exemplifies the trend of topography within the Coastal Plain which slopes generally downward toward the south and east. (See U.S.G.S. Topographic Map, Figure B)

The easterly "bay area" portion of the Township consists of islands and peninsulas of the salt meadows and is interspersed with numerous coastal lagoons. These land areas are below the 10-foot elevation datum and are subject to frequent tidal flooding.

Precipitation throughout the Township that does not evaporate will either percolate into the ground or runoff into the lowland areas where it will drain through various streams out of the Township. A stream and its tributaries ("stream network") drain a distinct area known as a drainage basin or watershed. Each drainage basin is separated from its neighboring drainage basin by a ridge of high ground known as a drainage divide.

Most streams and their associated tributaries transform dramatically from their source to their lower elevations close to the mouth. For example, streams in southern New Jersey generally become more swampy as they flow seaward. Consequently, the streams of Egg Harbor Township can be divided into upper and lower segments. The upper segments of streams typically cut steeper, more narrow stream valleys; possess relatively lower volumes of water; and may dry up in the summer. The lower segments of streams flow throughout the year through wider swampy valleys while possessing relatively large volumes of water. In addition, the upper segments are only fairly well drained while the lower segments tend to be more poorly drained and have a tendency to flood during the later winter and early spring when groundwater level are normally at their peaks.

The Township can be separated into upland and lowland regions based upon topographic elevation. The characteristics that differentiate each region also coincide with differences in soils, surface water drainage patterns, forest vegetation, and wildlife. The soils found in the upland regions are well drained to moderately well drained and usually possess lower water tables. The soils of the lowland regions are moderately well to poorly drained, with high water tables and in some sections tidal inundation. The soil survey of Atlantic County is the best reference for information specific to each soil type and its location within the Township.

The upland areas which represent drainage divides will determine the directional flow of stormwater runoff and the extent to which each surface water feature contributes to the drainage of the larger area. The watersheds delineated by these drainage divides are categorized in a

hierarchical order from major to secondary and so on, until the smallest land area and associated stream segment can be delineated. The primary patterns of surface water drainage within the Township are directed toward either the Great Egg Harbor River to the south or Absecon Creek to the north. Patcong Creek is a major tributary to the Great Egg Harbor River, however, due to the large size of the Patcong Creek watershed within the Township, it is considered a major watershed for purposes of this inventory. The Watersheds Maps (Figures F and G) delineate the major and secondary watersheds and the surface water bodies, including the individual streams, within the Township.

Water quality within each sub-basin and major watershed within the Township is a direct result of activities which occur within that basin. None of the three major watershed areas lie entirely within Egg Harbor Township, however, numerous sub-basins are completely within Township boundaries. Decisions are made locally which will encourage or discourage development within each watershed based upon the zoning districts established by the Egg Harbor Township Development Plan. Land use plans can set aside certain areas for preservation or management. Such land use and planning decisions are based upon numerous factors, only some of which are environmental considerations. Transportation routes, existing population centers, existing or proposed public utilities; these are just a few of the factors which influence the placement of zoning districts. From an environmental viewpoint, the best way to view the Township is on a "by watershed" basis. Each watershed contains a variety of terrain, vegetation complexes, wildlife habitats, and other unique features which set it apart from all others. The ability to preserve these critical areas depends upon the willingness of Township officials to actively pursue environmental management as a means of controlling development. In the past, zoning districts were delineated for convenience along roads or other natural features without regard for watershed boundaries. These boundaries should, however, be of primary concern when making such decisions in the future.

The watersheds of the tributary network within Egg Harbor Township share the general characteristics of streams having low flow gradients with broad, shallow floodplains and extensive swamp areas with characteristically dense lowland vegetation. Swampy conditions can also occur in upland stream segments, particularly in areas where natural streams have been dammed. An example of such a "man-induced" wetland or swamp area is located on English Creek above the dam at Mill Road, just west of English Creek Avenue. Any future damming or stream detention might lead to the expansion of swampy conditions upstream of such construction in other areas.

The forest vegetation of the uplands is dominated by the oak-pine, pine-oak forests. Non-forest upland areas include agriculture and urban development such as are found in upper sections of the South Branch of Absecon Creek and the Patcong Creek tributaries. The lowland forests contain species of the pine-oak, oak-pine, cedar swamp, hardwood swamp and pitch-pine lowland complex. The non-forest areas are comprised of streams, ponds, lakes, coastal bays, bogs, marshes and lands developed for agricultural and urban uses.

The wildlife of the upland zones is characterized generally by open-land and woodland species. These species also periodically inhabit or utilize the lowland zones. The wildlife found in the lowland zones includes birds and mammals that normally inhabit wet areas such as ponds, marshes and swamps. The upland areas of the Township can be generally delineated at about the Digital Elevation Model Map (Figure C) which shows the uplands areas in a light yellow to dark yellow, generally elevations of 20 feet and greater. The map shows contours in elevations of ten feet.

The Great Egg Harbor River flows in a southeasterly direction towards the Great Egg Harbor Bay and receives drainage from the tributaries of Miry Run, Perch Cove Run, Matthew Run, Powell Creek, Flat Creek, Nell Run, English Creek, Lakes Creek, and other unnamed tributaries and minor streams. The river forms the southern boundary of the Township and is flanked by extensive tidal salt marshes. For this reason, all land bordering the Great Egg Harbor River and the lower reaches of its tributaries may be subject to extensive flooding as a result of ocean tidal influences, especially during the passage of coastal storms or hurricanes. Therefore, stream flows alone are not sufficient indicators for predicting flood hazard potential. The Flood Hazard Areas Map (Figure D) should be used as a guide to development, as it includes areas subject to tidal flooding and river or stream floodplain areas.

Patcong Creek flows in a southerly direction and receives flow from Blackmans Branch, Mill Branch and Cedar Branch before emptying into Bargaintown Pond. Below the pond, Patcong Creek receives drainage from numerous unnamed streams and becomes tidal for a distance of about three miles prior to emptying into the Great Egg Harbor Bay.

The smallest tributary network system in Egg Harbor Township is located in the northern region of the Township. This system consists of a number of small streams converging to form Absecon Creek. The North and South Branches of Absecon Creek empty into the Atlantic City Reservoir, which is a major surface water feature within the Township.

4.0 CLIMATE

Climatic data is relevant to an environmental inventory primarily because of the effect climate has upon other parameters, such as the amount and seasonal distribution of rainfall, which in turn affects streamflow, vegetation, soils, water quality, and groundwater levels. Likewise, temperature data is important for determining the duration of the growing season for crops and indigenous vegetation species, and the ability of soils to absorb, drain, or retain water.

Climatic records for Atlantic County were compiled at the Atlantic City Weather Bureau Station located at the Atlantic City International Airport. The station is located near the northern border of Egg Harbor Township approximately ten miles west-northwest of Atlantic City. Climatological data has been collected at the facility since 1931 and generally presents the weather conditions of the entire county.

Atlantic County has a humid and temperature climate, whereby the coastal areas are substantially influenced by the moderating effects on temperature and precipitation by the Atlantic Ocean. As a result, winters are milder and summers are cooler than for interior locations at the same latitudes. This is evident in a comparison of temperatures between inland sections of the county and areas within a 10-15 mile wide belt along the coast. The moderating effect is caused by land and sea breeze circulation patterns which create a thermal differential when larger scale weather systems are not dominating the wind patterns. Hammonton, for example, located about 30 miles inland from the coast, has an average of 35 days a year above 90º F, and 102 days below 32º F. Atlantic City, however, has only 4 days above 90º F, and 69 days below 32º F in the average year. The influence which the ocean imparts on local climatic conditions decreases rapidly with distance from the shore. The extensive wetlands in the southeastern portion of the Township will affect the adjacent land area in the same way, but to a lesser extent.

Egg Harbor Township has an average rainfall of 41.75 inches per year, with the monthly distribution of that precipitation relatively even throughout the year (Table 2). The month of highest precipitation occurs in April with an average of 4.21" of rainfall, and the months of lowest precipitation occur in June and February with respective average of 3.11" and 2.87". The amount of precipitation can vary on an annual basis due to the variability of tropical storm patterns traveling northward (Table 3).

Table 2
Average Monthly Temperature and Precipitation
Atlantic City International Airport, Egg Harbor Township

Month	Temperature (ºF)	Precipitation (inches)
January	33.0	3.22
February	35.3	2.87
March	42.2	4.21
April	51.7	3.63
May	61.1	3.35
June	70.9	3.11
July	76.2	3.72
August	74.4	4.11

Table 2 (cont.)
Average Monthly Temperature and Precipitation
Atlantic City International Airport, Egg Harbor Township

Month	Temperature (ºF)	Precipitation (inches)
September	67.2	3.15
October	56.1	3.42
November	46.8	3.27
December	37.2	3.69

Mean annual temperature - 54.3ºF
Total precipitation - 41.75 inches

Source: NOAA Regional Climate Centers, Atlantic City Weather Station (Atlantic City WSO AP 28-0311)

Table 3
Average Rainfall Intensity
Atlantic City International Airport, Egg Harbor Township

Storm Frequency (years)	Storm Duration (minutes)	Mass Rainfall	24-Hour Rainfall Intensity (inches)
2	15 30 60 120	0.841 1.16 1.46 1.81	3.31
5	15 30 60 120	0.998 1.42 1.48 2.28	4.30
10	15 30 60 120	1.12 1.62 2.11 2.68	5.16
25	15 30 60	1.25 1.87 2.49	6.46

The average 24-hour rainfall intensity for frequencies of 50- and 100-year storms is 7.61 and 8.90 inches, respectively.

Source: NJDEP Stormwater & NRCS Chapter 2 Engineering Field Handbook, NJ Supplement, NOAA Hydrometeorological Design Studies Center Precipitation Frequency Data Server (PFDS)

The average length of the growing season is 182 days. The average date of the last killing frost is April 21, and the first frost in autumn is October 21. While these facts appear precise, they are again an average drawn from many years of data which vary over a wide range. Farmers and gardeners are often not aware that the probability of frost occurrences after the so-called "last day of killing frost" is still 50%, since average dates represent median values. Actually, the chances of later frosts are much higher since the tables refer to standard level observations and not to the plant habitat which may be only several inches above the ground surface. In the

absence of circulating breezes, temperatures can vary 5º-10º F or more between the ground surface and the 6 foot height where temperatures are normally recorded. New Jersey data indicates that, even within relatively small areas, differences of about five weeks exist between the dates of first and last frosts in coastal locations versus inland valleys. Under favorable terrain and soil-moisture conditions, the number of frosts near the ground may be a multiple of the 6 foot value, and since the "critical temperatures" indicative of plant tissue damage vary considerably with species, varieties, and phase of development (plant sensitivity generally increasing rapidly with growth), the user of such data will have to study the particular microclimatic conditions of his fields or orchards before he will be able to take maximum advantage of the data.

The vegetative growing season is actually much longer than the "frostless season" since plant growth generally starts when the average temperature rises above 43º F, and dormancy begins in the fall when the average temperature falls below this biological threshold. Individual plant species have their own critical periods based upon individual tolerances to temperature.

5.0 HYDROLOGY

Major Surface Water Features / Drainage Basins

A watershed is an area of land that drains into a body of water such as a stream, lake, river or bay. It includes not only the waterway itself but also the entire land area that drains to it. Topographic features such as hills and slopes define the boundaries of watershed management areas. These watershed management areas are comprised of Drainage Basins which are large watersheds that encompass watersheds of many smaller river and streams. NJDEP manages watersheds by dividing the State into twenty (20) large Watershed Management Areas (WMAs) and five (5) Water Regions. Egg Harbor Township is located exclusively within WMA 15 - Great Egg Harbor, in the Atlantic Coastal Water Region (WR). See Figure E in the Appendix for the NJDEP Watershed Management Areas Map.

The Great Egg Harbor Watershed covers most of Atlantic County and portions of Camden, Gloucester, Cumberland and Cape May Counties. The watershed management area includes watersheds draining to Great Egg Harbor Bay in Atlantic County. The management area encompasses waters draining eastern Gloucester and Camden Counties. This WMA watershed includes the Great Egg Harbor River, Tuckahoe River, Absecon Creek and Patcong Creek. The Great Egg Harbor River is 49 miles long and drains an area of 304 square miles. It originates in eastern Gloucester and Camden Counties, an agricultural and suburban area, before flowing through the Pinelands region. The river drains into Great Egg Harbor Bay before emptying into the Atlantic Ocean and the river is tidal downstream of the dam at Mays Landing. The waters in the Great Egg Harbor watershed are classified as FW-2 Nontrout, Pinelands Waters, FW-1 and SE-1.

HUC-11 Watersheds & HUC-14 Subwatersheds

Within each WMA, there are multiple watersheds and subwatersheds. The US Geological Survey has mapped and identified watersheds using a hierarchical numbering system. Each watershed or "hydrologic unit" is identified by a unique hydrologic unit code (HUC) consisting of up to fourteen (14) digits, for the smallest mapped (sub) watersheds. There are one hundred fifty (150) HUC-11 watersheds in New Jersey ranging in size from 0.1 to 143 square miles, with an average size of 51.9 square miles. There are nine hundred twenty-one (921) HUC14 subwatersheds in New Jersey, ranging in size from 0.1 to 42 square miles, with an average size of 8.5 square miles.

Egg Harbor Township contains fifteen (15) HUC-14 subwatersheds, within three HUC-11 watersheds, Absecon Creek, Great Egg Harbor River and Patcong Creek (Figure F in Appendix). These Subwatersheds are listed in Table 4 of this Section.

In addition to small streams, waterbodies are mapped for the State by NJDEP. These waterbody features include sections of larger stream courses; lakes, ponds, and bays. These waterbodies are

generally artificial lakes or wider impounded areas along streams and scattered throughout the municipality.

Table 4
Watersheds and Subwatersheds
Egg Harbor Township, Atlantic County

HUC-11 Watershed	HUC-14 Subwatershed
Absecon Creek	Absecon Creek North Branch
Absecon Creek	Absecon Creek South Branch
Absecon Creek	Absecon Creek (AC Reservoirs)
Absecon Creek	Absecon Creek
Great Egg Harbor River (below Lake Lenape)	Gravelly Run (above Gravelly Run Road)
Great Egg Harbor River (below Lake Lenape)	Great Egg Harbor River (Miry Run to Lake Lenape)
Great Egg Harbor River (below Lake Lenape)	Miry Run
Great Egg Harbor River (below Lake Lenape)	Great Egg Harbor River (Gibson Creek to Miry Run)
Great Egg Harbor River (below Lake Lenape)	English Creek / Flat Creek / Cranberry Creek
Great Egg Harbor River (below Lake Lenape)	Lakes Creek (Great Egg Harbor River)
Great Egg Harbor River (below Lake Lenape)	Great Egg Harbor River (Great Egg Harbor Bay to Gibson Creek)
Patcong Creek	Mill Branch
Patcong Creek	Maple Run / Mill Branch
Patcong Creek	Great Egg Harbor Bay / Lakes Bay / Skull Bay / Peck Bay
Patcong Creek	Patcong Creek (Somers Avenue to Zion Road

Surface Water Resources

Figures F and G in the Appendix of this report depict the watersheds, subwatersheds and water bodies of the Township. The western, or mainland portion of the Township lies within the three major watersheds of the Lower Great Egg Harbor River, Patcong Creek, and Absecon Creek. The eastern portion of the Township lies within the general direct drainage area of the back bay region between Great Egg Harbor Bay and Lakes Bay.

Of the three major watersheds of the mainland portion of the Township, only Patcong Creek originates wholly within Egg Harbor Township. As Figure G indicates, however, the origin or headwater areas of many secondary watersheds are located entirely within Township boundaries. Due to those particular circumstances, the Township is in a unique position to protect these critical headwater areas and associated environs through the adoption of guidelines and regulations which are sensitive to the potential environmental impacts of development activities. Headwater areas of streams are regarded as a particularly sensitive environmental resource. During periods of low stream flow, which normally recur on an annual basis in this region, dilution rates fall and normally safe levels of pollutants may exceed threshold concentrations for certain species in the river's ecosystem. If even one plant or animal species is eliminated, or its population greatly reduced, the balance of the food chain may never return to its original state of equilibrium.

Typically, the value of these resources is measured in terms of the unique recreational and scenic opportunities afforded. An evaluation of the land uses in the community revealed little public access to the vast open water areas available to Township residents. Accordingly, it is recommended that an increased emphasis be directed at policies which encourage public access to the Township's vast network of streams, lakes and estuarine areas. Concurrent with the study regarding inclusion of the Great Egg Harbor River system into the Wild and Scenic Rivers inventory, the Township should coordinate any efforts for expanded recreational opportunities in this area with the appropriate governmental agency. Since many of the existing settlements owe their origins to a linkage with water-borne commerce, recognition and identification of these areas may provide an opportunity to realize their historical significance and revitalize an important cultural resource.

In recent years, the deteriorating quality of our nation's waters has become a source of major concern. In response, new Federal policies were established to improve water quality nationwide, with a stated goal of "swimable and fishable" waters by the early 1980's. A realization of the importance of water quality to the maintenance of the unique Pinelands ecosystems has focused a great deal of attention on the subject from the Pinelands Commission as well. The focus of most of the effort, however, has been toward the common goal of identifying the complex relationships which exist between human activity, particularly land development and uses of different types, and the resultant impacts upon water quality.

Public Law 92-500 was enacted in 1978 to provide a comprehensive program of measures aimed at restoring and maintaining the "chemical, physical, and biological integrity" of surface water resources in the United States. In reality, implementation of this program involved the efforts of the U.S. Environmental Protection Agency (EPA), N.J. Department of Environmental Protection (NJDEP), and most recently, the New Jersey Pinelands Commission.

Characteristic streams of the region are closely spaced, relatively parallel, and are typically slow moving and shallow because of the low topographic gradient of the area. Surface waters are brownish, or tea colored as a result of the natural abundance of an organic iron complex derived from the oxidation of iron ions dissolved in groundwater. Most streamflow actually originates from groundwater emerging in low-lying areas such as swamps, bogs, or stream channels. The high iron content of this water mixes with decomposing vegetation at the surface to produce the characteristic color. Waters are characteristically low in hardness, alkalinity, and pH value, and most are high in humic complex, especially during the growing season.

Relatively little data is available on local water quality because monitoring programs are most frequently conducted in areas where serious problems are detected or probable due to high levels of development. That data which is available for the Township waters is presented below.

Surface Water Quality Classification

As part of New Jersey's responsibility to protect, restore and enhance surface waters, surface water quality is evaluated with respect to Surface Water Quality Standards (SWQS) and water quality concerns occur when SWQS are not met or are threatened. New Jersey's Surface Water Quality Standards (N.J.A.C. 7:9B, et seq.) establish the water quality goals and policies underlying the management of the State's water quality.

The highest quality surface waters in New Jersey are referred to as Outstanding Natural Resource Waters (ONRW). These waters are typically in State or National Parks and are not subject to any wastewater discharges or increases in runoff (these waters may be identified as Freshwater 1 [FW1] or Pinelands [PL] Waters). Remaining waters are identified as Freshwater 2 (FW2) Waters, Non-trout, and SE-1. Most of Egg Harbor Township's waters are classified as Pinelands [PL] Waters, which is the typical designation of the portions of New Jersey located in the Pinelands, FW2-NT, freshwater non-trout and FW2-NT/SE1, where there may be a salt water / fresh water interface. Many of these waterways are incorporated into the New Jersey Wild and Scenic River System program.

Pineland waters are all waters located within the boundaries of the Pinelands Area, except those waters designated as FW1 in N.J.A.C. 7:9B-1.15(j), as established in the Pinelands Protection Act (N.J.S.A. 13:18A-1 et seq.) (per N.J.A.C. 7:9B-1.4). There are no subcategories to list.

Surface Water Quality Assessments

The surface water quality for rivers and creeks is evaluated in New Jersey using various testing methods. One significant method employed by NJDEP is a protocol termed Ambient Biological Monitoring Network (AMNET) for rapidly assessing water quality. In addition, under the Federal Clean Water Act Section 303 (d), States are required to list the health status of their streams. The 303(d) list is generated using the AMNET and other stream monitoring data such as that generated by the NJDEP Clean Lakes Program, NJDEP Shellfish Monitoring Program, Fish Tissue Monitoring and NJDEP/ USGS chemical and physical water quality monitoring.

Point Source Pollution

Point source pollution comes from a defined "point" in the landscape such as an industrial or stormwater discharge pipe. Point source discharges to surface and ground water are regulated by the NJDEP under the New Jersey Pollution Elimination Discharge System (NJPDES) Program (N.J.A.C. 7:14a). Much of this program was created in 1972 by the Federal Clean Water Act. To accomplish the goals of the program, permits are issued that limit the mass and/or concentration of pollutants, which may be discharged into the ground or surface water. These types of permits often require monitoring and include maintenance and Best Management Practices (BMP) to ensure that they are functioning properly. The types of permitted facilities range from campgrounds, schools and shopping centers to large industrial and municipal wastewater facilities.

The most recent April 2020 NJPDES list in Figure H indicates there are sixty (60) stormwater permits and sixteen (16) sanitary subsurface disposal permits in Egg Harbor Township currently on file with the NJDEP on the Active Permit List. The remaining active permits include activities for landfills, scrap metal and concrete and hot mix asphalt.

Nonpoint Source Pollution

Nonpoint sources of pollution are somewhat difficult to identify since they do not discharge directly from a pipe or a "point source." These nonpoint sources are instead transferred into receiving waters from broad areas and multiple sources. The most common nonpoint pollutants include solid waste/ floatables, sediment; nutrients, pesticides; metals, road salts, petroleum hydrocarbons and pathogens. Examples include stormwater that runs off of impervious surfaces and from agricultural areas that are subject to erosion. Stormwater that runs off of pavement or is stored in detention basins is also often heated, which raises the temperature of the receiving waters. The consequences of nonpoint source pollution result in significant stream and habitat degradation.

Egg Harbor Township is active in preventing non-point source pollution through their adoption of the suggestions under N.J.A.C. 7:8, Stormwater Management rules and the Municipal Stormwater Regulation Program. Efforts have been made to locate all stormwater inlets, manholes and headwalls for cleaning and maintenance purposes. Also, under rules of the New Jersey Pinelands Commission, stormwater recharge through retention basins have been the preferred method of control of non-point source pollutions for the last 10 to 15 years. This enhances the quality of the surface waters of the Township, keeping a vital resource as natural as possible.

Groundwater Resources

Egg Harbor Township, by virtue of its location within the outer portion of the Atlantic Coastal Plain, possesses abundant water resources, both on the surface and underground. The region's rainfall, abundant and evenly distributed throughout the year, falls on porous, sandy soils which effectively filter and store vast quantities of high quality fresh water.

The solid bedrock foundation beneath Egg Harbor Township lies at a depth of about 3,000 feet below the surface, sloping gradually downward toward the east. Overlying these sedimentary rocks are numerous layers of sand, gravels and clays. These unconsolidated, water bearing formations are known as aquifers which can range in thickness from a few feet to hundreds of feet. They may underlie several acres or many square miles and can be classified as follows:

- Unconfined aquifer has an upper surface of permeable material which does not confine the water therein under pressure. An unconfined aquifer has a surface called a water table which represents the depth from the surface to the area or zone of saturation within the formation.

- Confined aquifer occurs when groundwater is confined between impermeable layers of rock or clay. A confined aquifer is also known as an artesian or pressure aquifer.

Aquifer outcrop areas are those areas where the geologic formation comprising the aquifer is exposed at the surface. It is the rainwater falling over outcrop areas and percolating through the soil which recharges the groundwater reservoir. In general, the greater the area of outcrop, the greater the quantity of water an aquifer can yield.

Unquestionably, the most important aquifer to Egg Harbor Township and the rest of Southern New Jersey is the Cohansey Sand Formation. This formation is distinguished by extensive outcrops throughout the Township, except where overlain by the thin, discontinuous Bridgeton and Cape May Formation deposits. The latter were derived from erosion and redistribution of Cohansey Sand and Beacon Hill Gravel. Remnants of the Bridgeton Formation cap the higher hills and upper slopes of pronounced ridges. Because there is no confining layer beneath these isolated deposits, they are considered to be hydraulically linked to the Cohansey Sand. The Cohansey Sand Formation typically consists of unconsolidated, fine to coarse grained quartzose sand with gravel lenses usually less than 1 foot thick. Individual sand grains are angular to well rounded and have an iron oxide surface stain which gives an orange or reddish color. Some sand beds are, however, light gray to white. The total thickness of the Cohansey Sand aquifer in Atlantic County ranges from about 70 feet to 211 feet. The thickness varies throughout, but in general the Cohansey thickens to the southeast and is potentially the most productive aquifer in the New Jersey Coastal Plain. Since it is composed predominantly of highly permeable and generally well sorted sands and gravels, it is thus able to store and transmit large quantities of water. It outcrops, either at the surface or beneath the veneer of permeable Bridgeton deposits, over an area of 2,350 square miles, which is more than the outcrop area of all other aquifers in the New Jersey Coastal Plain. Because of its size, the aquifer is exposed to and able to absorb vast quantities of recharge from precipitation. A considerable part of its total volume, 30 percent or more, is void space capable of holding water and yielding a substantial portion of that store for human use.

The water table in the Cohansey Formation is typically shallow, generally less than 10 feet below the surface. Its cyclical fluctuations in response to discharge and recharge rarely exceed 7 feet. The underground reservoir of fresh groundwater is derived entirely from precipitation over the outcrop area. Losses to evapotranspiration have been estimated at 50%, and to overland flow at 11%, leaving 39% for recharge. Therefore, about 20 inches of rainfall reach groundwater each year, or 950,000 gallons per day per square mile. Excess groundwater discharges through swamps and bogs to support 89 percent of the stream flow in the Pinelands. Typically, average annual stream discharges (volume per unit area) are low. Flow rates throughout the year tend to be relatively uniform, and peak discharges from storms are low. Rainfall is absorbed by the porous soil, held in storage in the large groundwater reservoir, and gradually released throughout the year.

Based on the experiences of other areas with similar hydrogeologic characteristics in Long Island and Delaware, it can be inferred that the Cohansey aquifer is highly susceptible to pollution. Significant pollution sources, actual or potential, include septic tanks, landfills, chemical spills and dumping, chemical storage leaks, industrial waste lagoons, highway de-icing, and agricultural chemicals. These sources may have immediate local impacts, and also pose a long-term, cumulative threat. For these reasons, land management regulations and reviews of proposed development on a case by case basis are necessary to insure the protection of this vast, yet essential natural resource. The Cohansey Sand Formation is the source of virtually all individual wells for potable water within Egg Harbor Township.

The quality of water in the Cohansey Sand is largely determined by local conditions at the land surface. Since the aquifer is recharged by the direct percolation of precipitation, soluble material in the soil or on the land surface is readily leached into the aquifer and may contribute to the degradation of water quality. Thus, the most productive aquifer of the region is also the one that is most exposed to damage from human activity and in need of careful management. Generally, the waters from the Cohansey are slightly mineralized and soft with only localized concentrations of iron presenting occasional problems for human use.

All areas of Egg Harbor Township are classified within the groundwater classification area GW-2, which is defined as those areas where the natural background concentration of Total Dissolved Solids (TDS) is less than or equal to 500 mg/1. This classification reflects the naturally high quality of groundwater in the Township. Since all water for consumption is drawn from the groundwater aquifer, it is appropriate that high standards be established for the protection of this valuable resource. Those standards and designated uses established by the NJDEP are as follows. The maximum limits for a specific criterion shall be exceeded only as a result of natural conditions.

Groundwater Class GW-2 – Designated Uses

Class GW-2 groundwater having a natural total dissolved solids (TDS) concentration of 500 mg/l or less shall be suitable for potable, industrial, or agricultural water supply, after conventional water treatment for hardness, pH, Fe, Mn and chlorination where necessary, or for the continual replenishment of surface waters to maintain the quantity and quality of the surface waters of the State, and other reasonable uses.

Table 5
Groundwater Quality Criteria - Class GW-2
Primary Standards/Toxic Pollutants

Pollutant, Substance or Chemical	Groundwater Quality Criteria
Aldrin/Dieldrin	0.003 µg/l
Arsenic and Compounds	0.05 mg/l
Barium	1.0 mg/l
Benzidine	0.0001 mg/l
Cadmium and Compounds	0.01 mg/l
Chromium (Hexavalent) & Compounds	0.05 mg/l

Table 5 (cont.)
Groundwater Quality Criteria - Class GW-2
Primary Standards/Toxic Pollutants

Pollutant, Substance or Chemical	Groundwater Quality Criteria
Cyanide	0.2 mg/l
DDT-and Metabolites	0.001 µg/l
Endrin	0.004 µg/l
Lead and Compounds	0.05 mg/l
Mercury and Compounds	0.002 mg/l
Nitrate-Nitrogen	10 m g/l
Phenol	3.5 mg/l
Polychlorinated Biphenyls	0.001 µg/l
Radionuclides	Prevailing regulations adopted by the USEPA pursuant to Sections 1412, 1415, and 1450 the Public Health Services Act as amended by the Safe Drinking Water Act (PL 93-523)
Selenium and Compounds	0.01 mg/l
Silver and Compounds	0.05 mg/l
Toxaphene	0.005 µg/1

Table 6
Groundwater Quality Criteria - Class GW-2
Secondary Standards/Toxic Pollutants

Pollutant, Substance or Chemical	Groundwater Quality Criteria
Ammonia	0.5 mg/l
Chloride	250 mg/l
Coliform Bacteria	a) by membrane filtration, not to exceed four per 100 ml in more than one sample when less than 20 are examined per month, or b) by fermentation tube, with a standard 10 ml portion, not to be present in three or more portions in more than one sample when less than 20 are examined per month, or c) prevailing criteria adopted pursuant to the Federal Safe Drinking Water Act (PL 93-523)
Color	None Noticeable
Copper	1.0 mg/l
Fluoride	2.0 mg/l
Foaming Agents	0.5 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Odor and Taste	None Noticeable
Oil and Grease and Petroleum Hydrocarbons	None Noticeable
pH (Standard Units)	5-9
Phenol	0.3 mg/l
Sodium	50 mg/l
Sulfate	250 mg/l
Total Dissolved Solids (TDS)	500 mg/l
Zinc and Compounds	5 mg/l
BOD (5-day)	3 mg/l
Phosphate, Total	0.7 mg/l

Floodplains & Flood Hazard Area Control Act Rules

Activities in floodplains (Flood Hazard Areas) are regulated by the NJDEP under NJ Flood Hazard Area Control Act (FHACA; N.J.S.A. 58:16A-50 et seq.). A Flood Hazard Area (FHA) is defined in N.J.A.C. 7:13-1.2 as the land and space above that land, which lies below the Flood Hazard Area Design Flood elevation. There are two (2) types of flood hazard areas:

1. Tidal flood hazard areas, in which the flood hazard area design flood elevation is governed by tidal flooding from the Atlantic Ocean. Flooding in a tidal flood hazard area may be contributed to or influenced by stormwater runoff from inland area, but the depth of flooding generated by tidal rise and fall of the Atlantic Ocean is greater than flooding from any fluvial sources; and

2. Fluvial flood hazard area, in which the flood hazard area design elevation is governed by stormwater runoff. Flooding in a fluvial flood hazard area may be contributed to or influenced by elevated water levels generated by tidal rise and fall of the Atlantic Ocean but the depth of flooding generated by stormwater runoff is greater than flooding from the Atlantic Ocean.

The Flood Hazard Area includes both the floodway and flood fringe. The floodway is the channel and inner portions of the floodplain adjoining the channel which are reasonably required to carry and discharge the regulatory flood.

The floodway is subject to high velocity flows during flooding events and development within a floodway is highly restricted. The flood fringe is the portion of the floodplain contiguous with the floodway. The flood fringe experiences flooding, but is inundated to a lesser degree than the floodway. Delineated Flood Hazard Areas have been established and officially adopted by the State of New Jersey for certain watercourses. Flood profiles, mapping and corresponding computer models for delineated watercourses may be obtained from the NJDEP.

The Flood Insurance Program, administered by the U.S. Flood Emergency Management Agency (FEMA) has also prepared mapping and classifies floodplain areas in a manner similar to the State of New Jersey. Within the FHACA Rules (N.J.A.C. 7:13-3), NJDEP has established methodologies and circumstances for using FEMA floodplain mapping for determining the Flood Hazard Area for FHACA applications. Mapping of Egg Harbor Township's floodplains (standard 100-year floodplain) based on FEMA Flood Insurance Rate Maps (FIRM) mapping is included in Figure D in the Appendix.

Certain types of development activities within the Flood Hazard Area (the floodway and flood fringe) and Riparian Zone (see below) must be authorized by a Flood Hazard Area Permit issued by NJDEP in accordance with the NJ Flood Hazard Area Control Act (FHACA) Rules. The Flood Hazard Area Rules (N.J.A.C. 7:13) were updated and last amended in April 2018. Similar to the NJDEP Wetlands Permit Structure, Flood Hazard Area General Permits have been created

for various activities within the Flood Hazard Area. If an activity does not fall under one of the designated General Permits, the activity may require the application of a Flood Hazard Area Individual Permit, depending on the nature and location of the proposed activity within the Flood Hazard Area. The application process may also require NJDEP verification of the lines of the Flood Hazard Area or Floodway, which would need to be shown on a plan signed and sealed by a professional engineer.

Additional activities are covered under various Permits-By-Rule identified within FHACA Rules (N.J.A.C. 7:13-7). Permits-By-Rule have been created for a variety of reconstruction or regular maintenance activities within a flood hazard area. Permit-By-Rule (PBR) activities do not require a flood hazard area permit application, however certain Permits-By-Rule do require a minimum fourteen (14) day notification to NJDEP prior to the start of activities.

In addition to the Flood Hazard Area, an additional regulated area referred to as the Riparian Zone has been established under the revised rules (N.J.A.C. 7:13-4.1). Activities involving vegetation clearing within the Riparian Zone are regulated, and amounts of permitted clearing have been established within the rules. The Riparian Zone exists along every regulated water (as defined in the Flood Hazard Area Rules N.J.A.C. 7:13-1.2) and includes the land and vegetation in the regulated water and a portion of land extending from the top of bank and/or the centerline of a linear feature such as a stream or from the normal water surface limit for a pond or lake. The size of the regulated Riparian Zone depends on several factors as listed below.

For Category 1 (C1) streams and upstream waters within the same HUC-14 subwatershed, the regulated Riparian Zone would be 300 feet. Trout production waters and waters one (1) mile upstream from trout production waters are also subject to a 300-foot Riparian Zone. As Egg Harbor Township's waters are all classified as Outstanding National Resource Waters (FW1 and PL) and not within the close vicinity of trout production waters, it is not expected that the 300 foot Riparian Zone would apply to municipal portions of streams.

The Riparian Zone of 150 feet is established if the water body is trout maintenance or within one (1) mile upstream of trout maintenance waters. All of Egg Harbor Township's streams and immediate adjacent waters are listed as Non-trout and, therefore, trout maintenance would not apply to Egg Harbor Township. However, areas containing the habitat of critically water dependent endangered threatened species or up to one (1) mile upstream from these habitats are also subject to a 150 foot Riparian Zone. Most of Egg Harbor Township surface water features are Pineland designated waters and where critical wildlife exists, 300 foot buffers are already imposed. Therefore, a Verification (N.J.A.C. 7:13-5) under the NJDEP FHACA Rules would be used to officially verify the Riparian Zone width relative to the corresponding Pinelands designated water features.

By regulating and limiting development in the Flood Hazard Area and Riparian Zone, not only is the floodplain protected as a resource, but potential property loss is minimized as well. Filling and development of floodplains removes the capacity of the floodplain to provide flood storage benefits which increase the likelihood of increased upstream and downstream flooding.

Vegetated floodplains reduce the velocity of stormwater, thereby reducing erosion and increasing flood storage. Floodplains also provide vital habitat and travel corridors for wildlife.

Egg Harbor Township Flood Hazard Areas

Hurricane Sandy struck the coast of New Jersey on October 29, 2012, causing severe damage throughout Egg Harbor Township. The storm's wind, flooding, and storm surges from the nearby water bodies caused extensive damage to the Township's infrastructures, community facilities, public and private property. The storm has also caused long-term impacts on the Township, including factors such as insurance payouts, flood insurance regulations, and rebuilding of structures by residents, businesses and the Township.

The Township is bounded by tidal waterways on the east and south and is potentially exposed to flooding from two sources – rising sea level and storm events (e.g. coastal flooding, ponding, urban drainage, etc.). While the change in sea level is a slow process and storm flooding more immediate, there is a linkage between the two, since as the shoreline changes, there is a corresponding change to the upper limits of the 100-year flood plain. The potential impact of these changes is significant.

Portions of the Township, notably the West Atlantic City, Anchorage Poynte and Seaview Harbor neighborhoods, are not contiguous to the main body of the municipality, having been separated from the mainland portion of the Township as municipalities were formed. These areas are more susceptible to flooding as they are located within flood zones.

The flood hazard areas of the Township of Egg Harbor are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare. These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazard which increase flood heights and velocities, and when inadequately anchored, causes damage in other areas. Uses that are inadequately floodproofed, elevated or otherwise protected from flood damage also contribute to the flood loss.

In April 2017, the Township Committee of Egg Harbor Township passed Ordinance No. 8 of 2017 to amend the Code of the Township of Egg Harbor specifically by deleting and repealing Chapter 113 thereof entitled "Flood Damage Prevention" and replacing it with a new Chapter 113, to be entitled "Flood Damage Prevention." The purpose of the new chapter is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. The new chapter includes methods and provisions for reducing flood losses and applies to all areas of special flood hazards within the jurisdiction of the Township of Egg Harbor.

The Township is utilizing the Best Available Flood Hazard Data and adopted these maps as part of the chapter. The Township has established penalties for noncompliance, and both general and

specific standards for flood hazard reduction to discourage property owners from building in high risk areas. The adoption of this new chapter will minimize damage to public facilities and utilities, minimize expenditure of public money for costly flood control projects, minimize the need for rescue and relief efforts associated with flooding and will protect human life and health.

Within Egg Harbor Township the most sprawling FEMA mapped floodplains are associated with the areas along the bay and the streams. (See Figure D in Appendix) All of the Township's major water bodies fall into the Zone A category under FEMA's Delineated Flood Hazard Areas. Zone A is considered a high risk area. It is defined as an area with a 1% annual chance of flooding in any given year. Because detailed hydraulic analyses have not been performed on these areas, no base flood elevations are shown. Areas of the Township along the southeastern border and along the bay, including West Atlantic City, are primarily located within Zone AE. Zone AE is an area subject to a 1% or greater chance of flooding in any given year. Base flood elevations are shown as derived from detailed hydraulic analyses.

The upland areas of the Township are located in Zone X, areas of minimal flood hazard from the principal source of flood in the area and determined to be outside the 0.2 percent chance floodplain.

6.0 GEOLOGY AND SOILS

The soils found in Egg Harbor Township are the result of interaction upon the parent materials by climate and weathering processes, plant and animal life, and topographic relief over geologic time. Local differences between soils within the Township are primarily associated with different parent materials and variations in topography. All soils of Egg Harbor Township originated from the unconsolidated sand and gravelly sand deposits which make up the Outer Coastal Plain Geologic Province. These materials were initially distributed, stratified, and eroded. The most extensive deposits are associated with the Cohansey Formation which underlies the entire Township, but is covered in some areas by thin, more recent deposits from the more severely eroded Bridgeton Formation. The parent materials of the Cohansey Formation are mainly quartz sands, with localized "lenses" or thin strata of light colored clay or gravel. The remnants of the Bridgeton Formation contain relatively more gravel and clay, occurring as reddish deposits which cap the more prominent uplands areas of the Township.

Lowland soils generally contain significant upper layers of dark colored, moisture retaining organic material accumulated from decomposed plant and animal life which is generally more abundant in wet or formerly wet areas.

All soils have various physical and chemical properties which define their capability to support different types and intensities of land development. The environmental sensitivity or development potential of an area can be defined by the naturally occurring conditions. Soils information can be used to determine severe flood hazard areas, high water table areas, lands susceptible to erosion and areas capable of supporting unique or prime vegetation. Soil data can be used to rate the limitation of an area for specific uses. For example, buildings on soils with a frequent potential for flooding or extremely high water table may result in flooded basement or structural damage. Soils that are too clayey or too wet are not suitable for septic tank absorption fields.

The development limitations of various soils have been identified by the Cape Atlantic Soil Conservation Service and presented within its survey of soil types for Atlantic County. These limitations are usually rated in terms of degree – "slight," "moderate" or "severe." Explanations of these rating are as follows:

- A "slight" rating means little or no limitation for the specified use. Any limitation which exists is easily corrected using conventional practices of construction and normal equipment.
- A "moderate" rating means the presence of some limitation for the specified use, which can normally be overcome by careful design and management, however, at somewhat greater costs than on soils with a slight limitation.
- A "severe" rating means that the limitations are those which cannot normally be overcome except with costly and/or complex measures.

Figure I displays the soil types that have been identified within Egg Harbor Township according to the Natural Resources Conservation Service's Web Soil Survey.

It is important to note that the broad scale soil survey data and descriptions cannot replace detailed onsite investigations and testing for design and development review purposes. The intended use of the soil information which has been provided with this report is to assist the community in locating natural resources and formulating resource management policies based upon their distribution within the Township, not to assess the suitability of specific sites for development.

Description of Soils

The soil types within Egg Harbor Township are described in the Atlantic County Soil Survey, prepared by the Natural Resource Conservation Service and the Cape Atlantic Soil Conservation District.

Soils having similar profiles make up a soil series. The soils of one series contain major horizons of similar thickness, arrangement, and other important characteristics. Each series is named for a town or other geographic feature near the place where it was first observed by the soil scientists who surveyed the landscape.

Soils of one series can differ in texture, slope or other characteristic that affects its suitability for various uses. These differences are the basis for dividing a soil series into phases or types. The name of a soil type indicates the variations of features which distinguish it from the other soils of the series. For example, HcA – Hammonton Loamy Sand Clayey Substratum, 0 to 2 percent slopes, is one of several phases in the Hammonton series. The Hammonton series also contains HaA, HmA, and HnA phases within Egg Harbor Township. The soils map indicates the dominantly recognized soil phases or types. However, due to sampling and interpretation accuracy, and the scale at which the county-wide survey was prepared, the indicated soil type is only likely to be present in 80 percent of its mapped areas. In areas of the soil survey map where soil materials are so variable that they cannot be classified by a soil series, a descriptive name or land type is used, such as tidal marsh, muck, fill land, and gravel pit.

Following is a list of the soil series found within Egg Harbor Township with a brief description and characteristics of each.

> Appoquinimink Series - This soil is very frequently flooded. It is very poorly drained and annual ponding is frequent. The seasonal water table is at the surface. The parent material consists of loamy stream sediments over herbaceous material. This soil type is considered hydric. The following soil type is found in Egg Harbor Township:
>
> > AptAv - Appoquinimink-Transquaking-Mispillion Complex, 0 to 1 percent slopes

Atsion Series – Soils are located on broad flat depressional areas and narrow drainageways, occupying low positions on the landscape. Atsion soils have naturally low fertility, are well drained, and contain some organic matter. These soils usually possess a rapid permeability and when well drained, have a low available water capacity. In some areas, Atsion soils have a clayey substratum, usually below 40 inches from the surface.

The seasonal high water table is the major limitation for use of this soil for building purposes, but it is well suited for ground water ponds. When this soil is located near streams, it receives runoff from higher elevations and therefore is frequently flooded.

Natural vegetation most common to Atsion soils are pitch pine, blackgum, swamp maple, grey birch, Atlantic white cedar and a dense understory of highbush blueberry, sheep laurel, sweet pepperbush, gallberry, and greenbrier. The soils are naturally very acidic. This series includes the following soil type within Egg Harbor Township:

AtsA – Atsion Sand

Aura Series – These soils are located on the highest hilltops and ridges on the landscape. They are usually well-drained, loamy soils with a firm gravelly sandy clay loam in the lower part of the subsoil. These soils are usually located above thick bedded sand or gravel deposits.

Natural vegetation occurring on these soils consists of black, scarlet, and chestnut oaks, scattered pines, and a low-growing understory of laurel, sassafras, low bush blueberry, winterberry, and scattered bayberry. If forest fires have been severe and/or frequent, scrub oak, blackjack oak, and pitch pine dominate.

Natural fertility, content of organic matter, and available water capacity is moderate. Permeability is moderately slow. This series includes the following soil types:

AucB – Aura Loamy Sand, 0 to 5 percent slopes
AugA – Aura Sandy Loam, 0 to 2 percent slopes
AugB – Aura Sandy Loam, 2 to 5 percent slopes

Berryland Series – These soils are found in low positions of the landscape, in areas of wide depressions and broad flat lowlands. They are naturally low in fertility, very acidic and contain a high amount of organic matter. Permeability is moderately rapid, and when drained, they have a low water capacity.

Wetness from a high water table is the major limitation of these soils for building, but they are well suited for groundwater ponds. Since these soils are located near streams, they will receive runoff from higher elevations and are subject to flooding.
Vegetation native to berryland soils includes pitch pine, scattered Atlantic white cedar, blackgum, red maple, grey birch, and sweetgum. The understory is dense, containing

holly, sweet pepperbush, highbush blueberry and gallberry. This series includes the following soil type:

BerAr – Berryland Sand

Downer Series – These soils are located on level to gently sloping areas within the Township's upland sections. They are usually well drained, with either sand or loamy textures, and a medium natural fertility. Downer soils contain low amounts of organic matter, are highly acidic with moderate to moderately rapid permeability, and a moderate available water capacity. The water table within such soils can rise to within 5 feet of the surface during seasonally wet times of the year.

The most common vegetation species found on Downer soils are white, black, red and chestnut oak, and scattered pitch, shortleaf, and Virginia pine. The understory contains sassafras, holly, low bush blueberry, mountain and sheep laurel. The Downer Series contains the following soil type:

DocB – Downer Loamy Sand, 0 to 5 percent slopes

Evesboro Series – These soils are also found in higher positions on the landscape which is nearly level or gently sloping. Evesboro soils are excessively drained, usually sandy, naturally low in fertility, and have a low content or organic matter. They are very strongly acidic, with a low available water capacity. Permeability of Evesboro soils is rapid near the surface but becomes moderately rapid to slow in their substratum due to high contents of clay. The seasonal high water table is at a depth of 5 feet or greater.

The natural vegetation found on these soils includes black, white and chestnut oak and Virginia, shortleaf, and pitch pine. Frequent forest fires will favor growth of pitch pine, scrub oak, and blackjack oak. The understory species include sheep laurel, lowbush blueberry, scattered bayberry and inkberry. The soil type from this series found within Egg Harbor Township is:

EveB – Evesboro sand, 0 to 5 percent slopes

Fort Mott Series – This soil type is found on level to gently sloping high positions in the landscape. It is well drained with a thick, sandy surface layer and a finer textured subsoil. The soil is highly acidic and permeability is moderate to moderately rapid. Fort Mott soils are naturally low in fertility and organic matter content. Available water capacity is low near the surface and moderate in the subsoil.

The most common vegetation found on such soils are red, white, black and chestnut oak, and scattered pitch, shortleaf and Virginia pine. The understory has sassafras, holly, lowbush blueberry, mountain and sheep laurel. Limitations for urban uses are slight,

except for dust and erosion hazards. The following soil type from this series is found in Egg Harbor Township:

FobB – Fort Mott sand, 0 to 5 percent slopes

Galloway Series - Galloway soils are deep, moderately well-drained soils found in uplands areas. the seasonal high water table may reach 21 inches below the surface. Galloway soils are very acidic, sandy, and low in both natural fertility and organic matter. Permeability is rapid above the clay layers and slow within it. Available water capacity is moderate, but becomes low when drained.

Galloway soils have a 1.5 to 4 foot depth to seasonal high water table and, therefore, possess severe limitations for septic disposal systems and houses with basements. Some of these soils are located near streams and receive runoff from higher elevations which makes them flood prone.

The common vegetation of Galloway soils are black, scarlet, red, and white oak; black, sweet and sour gum; Virginia and pitch pine; and understory species including low bush blueberry, sheep laurel, sassafras, gallberry, holly and huckleberry. The following soil types of the Galloway Series are found in Egg Harbor Township:

GamB - Galloway Loamy Sand, 0 to 5 percent slopes
GamkB - Galloway Loamy Sand, clayey substratum, 0 to 5 percent slopes

Hammonton Series – Hammonton soils are located on nearly level, broad flat or depressional areas in intermediate positions on the landscape. They may receive runoff from higher positions. These soils usually have a fair natural fertility and low or moderate content of organic matter. Acidity varies from extreme near the surface to very strong in lower horizons. The soils have a moderate available water capacity and permeability, except for soils with a clayey substratum.

The seasonal high water table is 1.5 to 4 feet below the surface, which may indicate serious constraints for urban development unless sanitary sewer service is available.

The most common vegetation found in these soils are white, red and black oak, pitch pine, and an understory of holly, mountain and sheep laurel, gallberry, high and low bush blueberry, huckleberry, inkberry and greenbrier. The following soil types from this series are found in Egg Harbor Township:

HbmB – Hammonton Loamy Sand, 0 to 3 percent slopes
HbmkB – Hammonton Loamy Sand, Clayey substratum, 0 to 2 percent slopes
HboA – Hammonton Sandy Loam, 0 to 2 percent slopes
HbokA – Hammonton Sandy Loam, Clayey substratum, 0 to 2 percent slopes

Lakehurst Series – Soils are located on nearly level slopes and occupy intermediate positions on the landscape. The soil is very acidic, very low in natural fertility, and low in organic content. Lakehurst soils are well drained to poorly drained according to their position on the landscape, the majority being moderately well drained. Permeability is rapid because Lakehurst soils are sandy or loamy sand. Available water capacity is low. Seasonal high ground water is 1.5 to 4 feet below the surface, and they are, therefore, unsuitable for conventional septic disposal systems.

Vegetation species common to Lakehurst soils are pitch pine, white black, red and blackjack oak, and the gum tree varieties. The understory contains low and high bush blueberry, sheep and mountain laurel, and scattered gallberry. The following soil type from the Lakehurst Series is found in Egg Harbor Township:

LakB – Lakehurst Sand, 0 to 5 percent slopes

Lakewood Series – Soils are on nearly level to sloping, high positions on the landscape. Lakewood soils are highly acidic, excessively drained sand with quartz sediments. Natural fertility is low and there is little organic content. Permeability is rapid, available water capacity is low, and the seasonal high ground water is greater than 5 feet below the surface. These soil conditions can cause ground water pollution from septic systems due to rapid permeability.

Indigenous vegetation to these soils are large stands of pitch pine, chestnut, black and white oak. The understory contains low bush blueberry, gallberry, sheep laurel, scattered bayberry and leather leaf. The soil type of the Lakewood Series found in Egg Harbor Township is:

LasB – Lakewood Sand, 0 to 5 percent slopes

Manahawkin Series - This soil is a very deep, poorly drained soil found in low-lying areas such as back swamps lake basins and along freshwater channels where they meet tidal waters. Annual flooding and ponding are frequent. The seasonal high water table reaches the surface. This is a hydric soil.

Muck soil is extremely acidic, with a medium natural fertility and a high content or organic matter. The permeability of muck is rapid, and available water capacity is high. The ground water is at or near the surface most of the year, except when extended dry periods occur. Muck is frequently flooded and not suited for development.

Vegetation common to muck soils includes Atlantic white cedar and swamp red maple. The understory species include dense stands of sweet pepper bush, swamp azalea, high bush blueberry, greenbrier and sweet bay magnolia. The following soil type from the Manahawkin Series is found in Egg Harbor Township:

MakAt - Manahawkin Muck, 0 to 2 percent slopes, frequently flooded

Matawan Series – Soils are located on level to slightly depressional, intermediate positions on the landscape. Matawan soils are extremely acidic, sandy-loam to sandy-clay loam, moderately fertile, and a have a medium organic content. Drainage permeability and available water capacity of these soils are moderate. Seasonal high water table in the Matawan series ranges between 1.5 to 3 feet below the surface. Limitations for septic systems are severe for these soils and if cleared, there is a high possibility of erosion. Vegetation common to this soil type includes scarlet, white, and black oak; and scattered pitch pine. The understory has sassafras, holly, mountain and sheep laurel, and huckleberry. The soil type of the Matawan series found in Egg Harbor Township is:

MbtB – Matawan Sandy Loam, 0 to 5 percent slopes

Mullica Series – Soils are found on nearly level, broad swampy depressions and narrow drainageways located in very low positions on the landscape. This soil is extremely acidic, sandy loam to sand type, poorly drained, high in organic content with medium fertility. Permeability of the Mullica series is moderate if drained, and the available water capacity is medium. Seasonal high water table is located near or at the surface and only drops a few feet in the summer. This soil frequently receives runoff from higher elevations and is subject to occasional flooding if located near a stream. The common vegetation supported by Mullica soils are black gum, sweetgum, red maple, sweet bay magnolia, white, red, pin, and willow oak, holly and scattered pitch pine. The understory common on these soils includes dense thickets of high bush blueberry, huckleberry, swamp azalea, leather leaf, gallberry, and greenbrier. When drained, these soils are used for truck crop, blueberries and pasture. The soil of the Mullica Series found in Egg Harbor Township is:

MumA – Mullica Sandy Loam, 0 to 2 percent slopes

Pits, Sand and Gravel - This soil mapping unit consists of gravel pits, which are anthropogenic features. The result is sandy material disturbed by human activity These soils are well-drained and annual flooding and annual flooding do not occur.

PHG - Pits, Sand and Gravel

Psamments - Psamments are in areas where the natural soils have been greatly altered by extensive grading and filling. A typical pedon and the sequence, depth, and composition of the layers of these soils are not provided because soil properties vary. Fill areas are mainly where earthy materials have been pumped from river channels for use as foundation materials for general urban development such as roads and buildings, for landfills, or, in a very few instances, for agriculture. These soils are moderately well drained. The soil type found in Egg Harbor Township is:

PssA - Psamments, 0 to 3 percent slopes

Psammaquent - Psammaquents are in areas where the natural soils have been greatly altered by extensive grading and filling. A typical pedon and the sequence, depth, and composition of the layers of these soils are not provided because soil properties vary. Fill areas are mainly where earthy materials have been pumped from river channels. These soils are subject to frequent flooding. These soils are very poorly drained. The soil type found in Egg Harbor Township is:

PstAt - Psammaquents, sulfidic substratum, 0 to 3 percent slopes, frequently flooded

Sassafras Series – Soils are found on nearly level to gently sloping areas located on the higher positions of the landscape. These soils are extremely acidic and are well drained, consisting of sandy loams, sandy clay loams, or loamy sands, with clay and gravel deposits intermixed. The natural fertility and organic content of these soils is moderate. The available water capacity of Sassafras soils is high and their permeability is medium. Depth to season high water table is usually 5 feet or greater.

Vegetative species native to such soils are the black, white, red, scarlet, and chestnut oak, and pitch and short leaf pine. The understory species include sheep and mountain laurel, sassafras, lowbush blueberry, leatherleaf, huckleberry and gallberry. The following soil types of the Sassafras Series are found in Egg Harbor Township:

SacA – Sassafras Sandy Loam, 0 to 2 percent slopes
SacB – Sassafras Sandy Loam, 2 to 5 percent slopes

Transquaking Series – Transquaking and similar soils in Egg Harbor Township occur along the lower sections of the streams and rivers where tidal fluctuations in water levels occur daily, such as tidal flats. The parent material is herbaceous organic material over loamy sediments. The following type of Transquaking soil is found in Egg Harbor Township:

TrkAv – Transquaking mucky peat, 0 to 1 percent slopes, very frequently flooded

Udorthents Series - The soils in this series are well-drained. This unit consists of fill material that has formed low hills. The parent material is comprised of loamy deposits spread over organic material. Annual flooding and ponding do not occur. This soil is not suitable for cultivated crops. The soil type found in Egg Harbor Township is:

UdrB - Udorthents, refuse substratum, 0 to 8 percent slopes

Woodstown Series – These soils occupy nearly level positions in intermediate elevations on the landscape. These soils are extremely acidic at the surface, loamy and moderately well drained. The natural fertility and organic content is medium. Woodstown soils receive some runoff from higher elevations. Permeability and available water capacity are moderate. Seasonal high water ranges between 1.5 to 4 feet below the surface, but is below 5 feet in the summer. They are normally unsuitable for septic disposal systems.

Vegetation commonly found on Woodstown soils consists of white, red and black oak; pitch pine; and an understory of holly, mountain and sheep laurel, lowbush blueberry, gallberry, leather leaf and greenbrier. The following soil type of the Woodstown Series is found in Egg Harbor Township:

WoeA – Woodstown Sandy Loam, 0 to 2 percent slopes

7.0 BIOLOGICAL RESOURCES

The State of New Jersey's Landscape Project Version 3.3 mapping uses the State's land use/land cover GIS data and biotics species occurrence data to model species habitat locations in the state. The landscape regions are broken down into six (6) regions: Atlantic Coastal, Delaware Bay, Piedmont Plains, Pinelands, Skyland and Marine. Egg Harbor Township is primarily located within the Pinelands Landscape Region. The southern portion of the Township, along the Great Egg Harbor River, is located within the Delaware Bay Landscape Region, and the eastern portion of the Township is located within the Atlantic Coastal Landscape Region (see Figure J). This mapping is a guide for strategic wildlife habitat conservation design to identify not only threatened and endangered species in New Jersey but to identify and protect the habitats in which they live. It is a full ecosystem-level approach for long term protection. The habitats located in Egg Harbor Township fall under Suitable or Critical Habitats in every land use category. Critical habitats are areas identified with a higher number of threatened and endangered species, and therefore have a more urgent need for conservation of the habitat.

Perhaps more than any other single natural feature, the unique patterns of vegetation in Egg Harbor Township define the region's distinctive, essential character. While vegetation refers generally to an area's plant cover, the distribution of specific vegetation types in a localized area is governed by a combination of factors which make up the local habitat. Climate, soil, animals, man, fire, time, and other plants are just some of the factors which interact to produce the environment, or habitat in which a plant grows. Climate is a measure of temperature, rainfall, snowfall, wind and other types of weather factors. Animals may affect plants by grazing or transporting their seeds. Soils affect plants by their ability to support roots and hold water and nutrients. Fire may eliminate species of plants unable to reproduce by resprouting, and may cause an increase in those that can resprout.

Vegetation, whether a forest or an old field, changes like an individual organism in appearance and structure over time. Forests age very slowly, requiring hundreds, even thousands of years to reach a stable state of species size and composition, known as a climax state. For this reason, changes due to aging of a forest are frequently hard for humans to recognize. As time goes on, some forest species become less suited to the slowly changing conditions for survival while others become better suited. The result is a decrease in the numbers of some species while the proportions of other competing species increase. Such changes in the composition of species through time is known as succession.

The single factor which is most important for differentiation of plant habitats within Egg Harbor Township is the amount of moisture within the soil substrate, that medium in which the plants are rooted. Different plant species differ in their requirements for water as well as their ability to tolerate extremes of excessive water or drought. Certain plants can live only in standing water while others are adapted to much drier conditions, and still others are best suited to various gradations of saturation between the two extremes. Since rainfall distribution is virtually the same throughout the Township, the amount of water available to plants through the soil is controlled primarily by the relief of the land surface and the depth to groundwater. Groundwater

levels are frequently at or above the surface in lowlying or depressional areas. In upland areas, rainfall normally percolates rapidly through the sandy soils to groundwater level which may never be higher than 5' - 10' or more below the surface. In tidal areas in the vicinity of Green Bank, the river normally floods the land twice daily to depths ranging from a few inches to several feet during storms. The water is brackish, having a varying salt content due to variable mixing of the fresh water flowing downstream with the saline water of the estuary.

In addition to soil moisture, acidity of soils appears to be another major factor influencing the successful development of certain plants on particular sites. In some lowlands, because of poor drainage (where there is little or no movement of water) dead plant and other organic materials do not fully decompose but form soil material called peat. Accumulations of peat are accompanied by very acidic conditions and low fertility to which some plant species are intolerant, and others are well adapted. These strongly acidic conditions are most prevalent in the tidal marsh areas, but also occur in the numerous swamps and bogs throughout the Township where drainage is sluggish.

The two broad categories of vegetation complexes which can most readily be distinguished are uplands and lowlands. Lowland types exist in areas where the groundwater is near or above the surface during some part of the year. Upland forest and vegetation complexes, therefore, occupy the remaining area.

The Vegetation Map (Figure K) indicates those natural vegetation complexes which exist on undisturbed lands within Egg Harbor Township and on areas cleared for active agriculture or some form of development. Although somewhat generalized, the map can serve as a good indicator of vegetation conditions on any site within the Township. An examination of the Vegetation Map in conjunction with the other maps of the series indicates the relationship of vegetation types to those other environmental features which were mapped. Topography, soil types, wetness or depth to groundwater, and location within watersheds are all factors which help determine the naturally occurring vegetation complex which may be found on undisturbed sites. Since the transition from one vegetative type to another is generally gradual due to gentle slopes and correspondingly gradual changes in moisture or soil types, care should be taken when a site lies near a boundary between vegetation types. The map should never take the place of onsite investigation by qualified individuals because changes in land use may have occurred since the mapping data was obtained, or details too small for mapping may have significance for certain types of proposed development and should be assessed on an individual basis.

Upland Complex

Upland habitats are characterized by two major vegetation associations: the pine-oak forest and the oak-pine forest, distinguished from each other primarily by the species of dominance. If left undisturbed, natural succession will favor the establishment of strongly oak-dominated forest. This occurs where fire and other disturbances are minimal, since pine seedlings will readily establish themselves in cleared or burned over areas where there is little accumulation of plant litter. Oak seedlings will not appear until a substantial amount of litter accumulates, but under

those conditions, pines will no longer grow from seed. For this reason, pines will dominate the upland forest initially, but given a long enough period of time, oaks will naturally tend to replace them. The opportunistic pines will mature and die off without being able to set seed, while at the same time oak seedlings continue to establish themselves and eventually dominate under favorable conditions.

Wildfires have been an integral factor in shaping the distribution of Pine Barrens vegetation throughout history. Typically dry soils and occasional droughty conditions coupled with high winds and favorable fuel conditions are especially prevalent in spring and early summer, and favor the periodic recurrence of wildfires.

As the Vegetation Map indicates, most forested uplands in Egg Harbor Township are inhabited by oak-pine forest rather than pine dominated pine-oak forest. This can be explained in terms of the upland forest succession process described above. Forested areas of the Township are distinctly divided by natural and man-made firebreaks such as roads, agricultural fields, and other forms of development as well as numerous wetland corridors. These conditions tend to limit the spread of wildfires or provide access for firefighting equipment. As a result, the natural succession toward oak dominated uplands is aided.

The following table lists those tree species common to the oak-pine and pine-oak forest types. They may occur in different distributions in different areas due to the sites' history of disturbance or fire, with some influence by soil types and adjacent land uses or vegetation. Except for the pitch pine (Pinus rigida) which is common to both upland and certain wet lowland sites, most species will be distinct from the inhabitants of the various lowland forest types.

Table 7
Upland Forest Species

Common Name	Scientific Name
Trees	
Pitch Pine	Pinus rigida
Shortleaf Pine	Pinus echinata
Virginia Pine	Pinus virginiana
Red Cedar	Juniperus virginiana
Black Oak	Quercus velutina
White Oak	Quercus alba
Chestnut Oak	Quercus prinus
Blackjack Oak	Quercus marilandica
Post Oak	Quercus stellata
Scarlet Oak	Quercus coccinea
Southern Red Oak	Quercus falcata
Shrubs	
Lowbush Blueberry	Vaccinium vacillans
Black Huckleberry	Gaylussacia bacata
Scrub Oak (Bear Oak)	Quercus ilicifolia
Mountain Laurel	Kalmia latifolia

Table 7 (cont.)
Upland Forest Species

Common Name	Scientific Name
Grasses And Herbs	
Firesedge	Cyperaceae fam.
Orange Broomsedge	Andropogon virginicus
Switchgrass	Panicum virgatum
Bracken Fern	Pteridium aquilinum
Wintergreen	Chimaphilia maculata

Source: McCormick, Jack, Pine Barrens: Ecosystem and Landscape. Forman, R.T., ed., 1979.

Lowland Complex

Distinguished from the upland complex forest types mainly by soil wetness which favors dominance by water tolerant species, the lowland forest complexes consist of species which are grouped into several distinct associations based upon local conditions and the site's history.

Lowland forest types which occur within Egg Harbor Township include Atlantic white cedar swamps, hardwood swamps, pitch pine lowlands, bogs, and inland marshes. Each contains species associations which distinguish it from the others, although there is certainly some overlapping of individuals between the types, especially in transitional zones. Those dominant species which distinguish each lowland forest type are identified in Tables 8 through 11.

Lowlands have been identified as a relatively scarce and fragile resource. They comprise the habitat not only for many animal species designated as threatened or endangered by the N.J. Department of Environmental Protection and the U.S. Department of the Interior, but for many other species as well. More rare plant species occur in lowland than in upland habitats. Finally, lowland habitats influence the quality, quantity, and distribution of surface and groundwater in the ecosystem. They tend to retain water during dry periods while during wet periods they slow runoff and minimize the effects of erosion by trapping silt and sediment from upland areas.

The lowland complex which occupies the "highest of the lowland" sites is known as pitch pine lowland forest. Most stands of this forest type occur as narrow bands in those transitional areas between upland areas and hardwood swamp or cedar swamp forests. As water levels in stream corridors fluctuate, there may be standing water above the ground surface or it may be saturated for a period, while in drier periods it may appear completely dry. A distinguishing characteristic of the pitch pine lowland forest is the dense, high understory shrub growth (5' or higher) frequently with impenetrable walls of greenbrier vines.

Table 8
Lowland Forest Species
Pitch Pine Lowland Forest

Common Name	Scientific Name
Trees	
Pitch Pine	Pinus rigida
Red Maple	Acer rubrum
Blackgum (Sour Gum)	Nyssa sylvatica
Gray Birch	Betula populifolia
Sassafras	Sassafras albidum
Sweet Gum	Liquidambar styraciflua
Shrubs	
Sheep Laurel	Kalmia angustifolia
Dangleberry	Gaylussacia frondosa
Black Huckleberry	Gaylussacia baccata
Grouseberry	Gaylussacia dumosa
Winterberry	Ilex verticillata
Staggerbush	Lyonia mariana
Highbush Blueberry	Vaccinium corymbosum
Sweet Pepperbush	Clethra alnifolia
Swamp Azalea	Rhododendron viscosum
Maleberry	Lyonia ligustrina
Fetterbush	Leucothoe racemosa
Catbrier	Smilax glauca
Bullbrier	Smilax rotundifolia
Scrub Oak	Quercus ilicifolia
Herbs	
Wintergreen	Chimaphilia maculata
Bracken Fern	Pteridium aquilinum
Cinnamon Fern	Osmundia cinamomea
Turkeybeard	Xerophyllum asphodeloides
Sphagnum Moss	Sphagnum spp.
Haircap Moss	Polytrichum juniperinum
Other Bryophytes	

Source: McCormick, Jack, Pine Barrens: Ecosystem and Landscape. Forman, R.T. ed. 1979.

The other two major forest types of the lowlands are closely intermingled and highly competitive. While cedar swamp forests tend to occupy the very wettest positions, however, hardwood or broadleaf swamp forests will readily replace cedar swamps in areas where cedar is harvested unless management practices are instituted. Although the largest cedar stands are already gone, cedar swamps were once the most extensive swamp forest type in the Pinelands. The logging of cedar, especially from smaller or mixed stands will favor natural succession to hardwoods because shade-intolerant cedar saplings will not develop unless sufficiently large areas are clear cut to allow cedars to grow in full sun.

Table 9
Lowland Forest Species
Hardwood Swamp Forest

Common Name	Scientific Name
Trees	
Trident Red Maple	Acer rubrum
Blackgum (Sour Gum)	Nyssa sylvatica
Sweetbay Magnolia	Magnolia virginiana
Gray Birch	Betula populifolia
Sassafras	Sassafras albidum
Shrubs	
Highbush Blueberry	Vaccinium corymbosum
Sweet Pepperbush	Clethra alnifolia
Swamp Azalea	Rhododendron viscosum
Leatherleaf	Chamaedaphne calyculata
Fetterbush	Leucothoe racemosa
Black Huckleberry	Gaylussacia baccata
Dangleberry	Gaylussacia frondosa
Herbs	
Chain Fern	Woodwardia spp.
Bladderwort	Utricularia spp.
Sundew	Drosera spp.
Sphagnum Moss	Sphagnum spp.

Source: Vegetation of New Jersey. Robichaud, B., Buell, M., 1973.
McCormick, Jack, Pine Barrens: Ecosystem and Landscape. Forman, R.T., ed., 1979.

Table 10
Lowland Forest Species
Cedar Swamp Forest

Common Name	Scientific Name
Trees	
Southern White Cedar	Chamaecyparis thyoides
Trident Read Maple*	Acer rubrum
Blackgum* (Sour Gum)	Nyssa sylvatica
Sweetbay Magnolia*	Magnolia virginiana
Pitch Pine*	Pinus rigida
Shrubs	
Highbush Blueberry	Vaccinium corymbosum
Dangleberry	Gaylussacia frondosa
Swamp Azalea	Rhododendron viscosum
Sweet Pepperbush	Clethra alnifolia
Fetterbush	Leucothoe racemosa

**Generally sparse or understory species*

Table 10 (cont.)
Lowland Forest Species
Cedar Swamp Forest

Common Name	Scientific Name
Herbs	
Chain Fern	Woodwardia spp.
Bladderwort	Utricularia spp.
Sundew	Drosera spp.
Pitcherplant	Sarracenia purpurea
Swamp Pink	Helonias bullata
Partridgeberry	Mitchella repens
Curly Grass Fern	Schizaea pusilla
Sphagnum Moss	Sphagnum spp.

Source: McCormick, Jack, Pine Barrens: Ecosystem and Landscape. Forman, R.T., ed., 1979.

Table 11
Lowland Species
Pond and Bog-Shrub Wetland

Common Name	Scientific Name
Pond; Water Areas	
White Waterlillies	Nymphaea odorata
Spatterdock	Nuphar variegatum
Bladderworts	Utricularia spp.
Shoreline, Shallow Water Zone	
Sphagnum Mosses	Sphagnum spp.
Sedges	Carex spp.
Rushes	Juncus spp.
Pipeworts	Eriocaulon spp.
Chain Ferns	Woodwardia spp.
Seasonally Inundated Zones	
Lowland Broomsedge	Andropogon virginicus var. abbrevatus
Bullsedge	Carex bullata
Shrubby Wetland	
Leatherleaf	Chamaedaphne calyculata
Highbush Blueberry	Vaccinium corymbosum
Peat Mosses	Sphagnum spp.
Chain Ferns	Woodwardia spp.
Sheep Laurel	Kalmia angustifolia
Staggerbush	Lyonia mariana

Source: McCormick, Jack, Pine Barrens: Ecosystem and Landscape. Forman, R.T., 1979.

Table 12
Saltwater Marsh Species

Common Name	Scientific Name
Zone Nearest Water	
Salt-Marsh Cordgrass	Spartina alterniflora
Inner Zones	
Salt-Meadow Grass	Spartina patens
Black Marsh Grass	Juncus gerardi
Spike Grass	Distichlis spp.
In Saline Depressions	
Glasswort	Salicornea spp
Sea Blite	Suaeda spp.
Marsh Fleabane	Pluchea spp.
Orache	Atriplex patula
Saltwort	Salsola kali
On Higher Ground	
Sea Lavender	Limonium spp.
Salt-Marsh Aster	Aster tenuifolius
Marsh Mallow	Hibiscus palustris
Seaside Goldenrod	Solidago sempervirens
Sea Myrtle (Shrub)	Baccharis halimifolia
Marsh Elder (Shrub)	Iva frutescens

Source: Vegetation of New Jersey. Robichaud, B., Buell, M., 1973.

Wetlands

The foregoing sections describing Egg Harbor Township soils and vegetation types provide the information necessary to understand the meaning of wetlands. According to the Pinelands Commission and the New Jersey Coastal Area Facilities Review Act (CAFRA), wetlands are defined as those lands which are inundated or saturated by water at a magnitude, duration and frequency sufficient to support the growth of water tolerant plant species classified as hydrophytes. Wetlands include lands with poorly drained or very poorly drained soils as designated by the National Cooperative Soils Survey of the Soil Conservation Service of the United State Department of Agriculture. Wetlands include coastal wetlands, inland wetlands and submerged lands. See Figure L in the Appendix of this report for the Wetlands Map.

The definition of wetlands is, therefore, twofold, entailing a soils and a vegetation component. As described previously, however, the degree to which soils, topography, and wetness correspond to the naturally occurring vegetation type dictates that the two components of the definition will occur in the same locations or areas most of the time.

Table 13
Wetlands Type
Egg Harbor Township

Wetlands Type (from NJDEP)	Acres
Agricultural Wetlands (Modified)	75.63
Atlantic White Cedar Wetlands	357.19
Coniferous Scrub/Shrub Wetlands	85.47
Coniferous Wooded Wetlands	1,119.94
Deciduous Scrub/Shrub Wetlands	181.36
Deciduous Wooded Wetlands	765.85
Disturbed Wetlands (Modified)	27.96
Former Agricultural Wetland (Becoming shrubby, not built)	0.99
Herbaceous Wetlands	56.07
Managed Wetland in Built-up Maintained Recreation Area	13.98
Managed Wetland in Maintained Lawn Greenspace	1.60
Mixed Scrub/Shrub Wetlands (Coniferous Dominate)	115.87
Mixed Scrub/Shrub Wetlands (Deciduous Dominate)	188.05
Mixed Wooded Wetlands(Coniferous Dominate)	1,750.22
Mixed Wooded Wetlands (Deciduous Dominate)	1,028.16
Phragmites Dominate Coastal Wetlands	273.64
Phragmites Dominate Interior Wetlands	56.13
Phragmites Dominate Urban Area	4.64
Saline Marsh (High Marsh)	31.48
Saline Marsh (Low Marsh)	7,433.13
Vegetated Dune Communities	31.60
Wetland Rights-of-Way	51.84

Those soils types that occur in Egg Harbor Township and are defined as wetland soils are the following:

AtsA - Atsion Sand
BerAr - Berryland Sand
HbmB - Hammonton Loamy Sand
HboA - Hammonton Sandy Loam
MakAt - Manahawkin Muck
MumA - Mullica Sandy Loam
TrkAv - Transquaking Mucky Peat

Both soils maps and vegetation maps should be consulted for determining the presence of wetlands. The wetlands species list adopted by the Pinelands Commission shall be considered the official list for local planning and regulatory purposes. Those vegetation types which contain hydrophytes as predominant species are the following:

Cedar Swamp Forest
Hardwood Swamp Forest
Pitch Pine Lowlands
Bogs - Shrub Wetlands, aka Inland Marshes
Tidal Marsh

Natural Heritage Priority Sites

Through its Natural Heritage Database, the Office of Natural Lands Management (ONLM) identifies critically important areas to conserve New Jersey's biological diversity, with particular emphasis on rare plant species and ecological communities. The database provides detailed information on rare species and ecological communities to planners, developers, and conservation agencies for use in resource management, environmental impact assessment, and both public and private land protection efforts.

Using the database, ONLM has identified 343 Natural Heritage Priority Sites, representing some of the best remaining habitat for rare species and rare ecological communities in the state. Although the primary focus of these sites is rare plant species and ecological communities, the DEP Endangered and Nongame Species Program also provided key information and assisted with the delineation of a number of the sites that encompass significant habitats for rare animals. These areas should be considered to be top priorities for the preservation of biological diversity in New Jersey. If these sites become degraded or destroyed, we may lose some of the unique components of our natural heritage.

Natural Heritage Priority Site maps are used by individuals and agencies concerned with the protection and management of land. The maps have been used by municipalities preparing natural resource inventories; public and private conservation organizations preparing open space acquisition goals; land developers and consultants identifying environmentally sensitive lands; and public and private landowners developing land management plans. However, the coverage was not developed for regulatory purposes, and should not be used as a substitute for the on-site surveys and Natural Heritage Database searches required by regulatory agencies.

Natural Heritage Priority Sites contain some of the best and most viable occurrences of rare plant species and ecological communities, but they do not cover all known habitat for these elements or most rare animal species in New Jersey. Most of the state has not been surveyed for rare species and ecological communities. If information is needed on whether or not endangered or threatened species have been documented from a particular area, a Natural Heritage Database search can be requested by contacting the Office of Natural Lands Management.

The boundaries of each Natural Heritage Priority Site are drawn to encompass critical habitat for the rare species or ecological communities. In Egg Harbor Township, two sites have been identified as Natural Heritage Priority Sites, as shown on Figure M in the Appendix of this report.

Bill Henry Pond is a large, 5 acre coastal plain, intermittent pond surrounded by undeveloped pine-oak forest. The boundaries include the topographic drainage basin of the pond. This is located in the western portion of the Township close to the municipal border of Hamilton Township. The site is located near the Miry Run tributary south of Ocean Heights Avenue. Good quality globally rare natural community and several globally rare or state significant plant species.

The second site identified by the NJDEP is listed as "Longport" in their records. This site is a tidal salt marsh island near the mouth of the Great Egg Harbor Inlet with some sand beach habitat along the southern portion of the Island. The boundary was drawn to include summer nesting habitat for several bird species and also critical migratory bird stopover (feeding and resting) habitat. This site is among the top-20 migratory bird concentration sites in the nation. The site contains a globally rare State-endangered bird species and several other State-imperiled bird species and is among the top-20 migratory bird concentration sites in the nation.

CAFRA Critical Wildlife Habitat Bank

Approved by the NJDEP in November 2016, Magnolia's Critical Wildlife Habitat (CWH) Mitigation Bank contains approximately 207.32 acres. The Mitigation Site is composed of a mostly forested wetlands upland mosaic. The mitigation bank links existing conservation areas in the CAFRA zone and creates forested natural resource corridor between Riverbed Park, an unnamed state-owned conservation area, and the Egg Harbor Township Nature Reserve. The conservation site also supports habitat for several state-listed species of concern including wood thrush, great blue heron, worm-eating warbler, barred owl, and several woodpecker species, per the New Jersey Landscape Project database. The Project is located at latitude 39.366411 N and longitude -74.683641 W (approximate center point) in Egg Harbor Township, Atlantic County, New Jersey. See Figure N in the Appendix of this report for a location map of the mitigation site.

8.0 CULTURAL RESOURCES

Great Egg Harbour got its name from explorer Cornelius Jacobsen Mey. During the Dutch desires for settlement and expansion in the "New World" in 1614, Mey came upon the inlet to this river. The meadows were so covered with shorebird and waterfowl eggs that he called it "Eyren Haven" (Egg Harbor).

Great Egg Harbor was originally part of Gloucester County. In 1694 a law was passed that read "forasmuch as there are families settled upon the Egg Harbor, and of right ought to be under some jurisdiction, be it enacted by the authority aforesaid that the inhabitants of the said Egg Harbor shall and do belong to the jurisdiction of Gloucester." Previously Cape May County seems to have exercised some control over Egg Harbor for in 1693 John Somers of Great Egg Harbor was appointed by their Court to "keep a ferry across the Great Egg Harbour for Hors and Kattle."

In 1710, by an Act of the Legislature, legal boundaries of Gloucester County were set and it covered the area from the Delaware River, along the Burlington County line to the sea and back up the Great Egg Harbor River to the Delaware River. At that time Great Egg Harbor encompassed all that we know as Atlantic County today. In 1837 Atlantic County was set apart from Gloucester County and the Townships were: Egg Harbor, Weymouth, Hamilton and Galloway.

Egg Harbor Township, as it remains today, encompasses 41,600 acres. It includes the villages of Bargaintown (the seat of government), English Creek, Scullville, Steelmanville, McKee City, Cardiff, Farmington and West Atlantic City.

Some of the earliest families that settled the area were the Scull, Steelman, Blackman, English, Lake, Ireland, Smith, Somers, Jeffrey, Frambes, and Van Sant's. They were millers, shipbuilders, farmers, seamen, and tavern keepers.

New Jersey and National Registers of Historic Places

The following sites are listed in the NJDEP Historic Preservation Office's list of New Jersey and National Registers of Historic Places, last updated March 17, 2020:

Camden and Atlantic Railroad Historic District (ID #3862)
Railroad right-of-way from Pennsauken and Camden to Atlantic City
SHPO Opinion: 9/17/2001
COE: 10/25/2012

Cannon Court Roadside Cabins (ID #4331)
6124 Black Horse Pike
SHPO Opinion: 9/28/2004

Garden State Parkway Historic District (ID #3874)
Entire Garden State Parkway right-of-way
SHPO Opinion: 10/21/2001

Captain John Jeffries Burial Marker (ID #414)
Palestine Bible Church Cemetery, County Route 559
National Register: 6/14/1984 (NR Reference # 84002511)
State Register: 5/1/1984

Lakes Creek Prehistoric Site (28-At-96) (ID #413)
SHPO Opinion: 5/6/1992

Morris Beach Historic District (ID #5624)
Bounded by Great Egg Harbor Bay to the southwest, Block 9306, Lots 8 & 9 to the southeast, Block 9302, Lot 1 to the northeast and Block 9101, Lot 36, Block 9312, Lots 1 & 2 to the northwest
SHPO Opinion: 4/9/2018

Andrew B. Scull House (ID #4722)
1647 Mays Landing-Somers Point Road (CR 559)
SHPO Opinion: 5/15/2007

Studebaker Showroom (ID #310)
North West Corner Verona and Toulon Avenues
SHPO Opinion: 12/18/1995

West Jersey and Atlantic Railroad Historic District (ID #2938)
Mays Landing, Hamilton Township to Pleasantville City, Atlantic County
SHPO Opinion: 8/28/1996

The map in the Appendix, Figure O, shows the location of the historic districts within the Township. Historic Districts possess a significant concentration, linkage, or continuity of buildings, sites, structures, or objects united historically or aesthetically by plan or physical development. This map layer, created by the NJDEP, represents the polygon boundaries of historic districts that:

1. Are National Historic Landmarks,
2. Are included in the New Jersey or National Registers of Historic Places,
3. Have been determined Eligible for inclusion in the registers through federal or state processes administered by the HPO,
4. Have been designated as Local Historic Districts by local government, or
5. Have been identified through cultural resource survey or other documentation on file at the HPO.

The majority of features in the dataset represent categories 1, 2, and 3 above. HPO is still in the process of comprehensive digitizing for categories 4 and 5. Inclusion in this dataset does not preclude the existence of other historic districts as yet unidentified, unrecorded, or undocumented.

9.0 PUBLIC OPEN SPACE

The Egg Harbor Township Department of Parks and Recreation sponsors activities such as soccer, fencing, dance, football, flag football, tennis, karate, basketball, arts and crafts, street hockey, wrestling, swimming, and aquatics. The Township owns twelve (12) facilities throughout the Township including Veteran's Memorial Park/Castle Park, Childs-Kirk Memorial Park, Delilah Oaks Park, M.K. Betterment Park, Oakland/Tremont Park, EHT Nature Preserve & Arboretum, Tony Canale Park, Shires Park, Ridge Avenue Ready-to-Ride Facility, Tilton Road Center, Temple Tract. Tony Canale Park, Childs-Kirk Park, M.K. Betterment Park, and Spruce & Ninth Avenues are being targeted for expansion. The current inventory of parks and facilities at each park is listed in Table 14.

Table 14
Open Space Facilities Throughout the Township
Egg Harbor Township, Atlantic County, New Jersey

Location	Amphitheater	Boating	BMX Track	Court (Basketball)	Courts (Pickle ball)	Courts (Tennis)	Court (Volleyball)	Court (Wallball)	Field (Baseball/Softball)	Fields (Soccer/Football)	Fishing	Fields (Unprogrammed)	Parking Spaces (Dedicated)	Pedestrian Paths	Playground	Refreshment	Restrooms	Seating	Street Hockey Court	Swimming	Walking Trails	Water Sports
Veterans Memorial Park/Castle Park			1			1			11	5					2		2			3		
Childs-Kirk Memorial Park									7	1					1		1					
Delilah Oaks Park				1	3	1						1										
Oakland/Tremont Park				1																		
Tony Canale/Pine Oak Park	1			1		4	3		1	4					1		1					
Shires Park				1					1	1											1	
Bargaintown Park				1		5			1	2					1							
Egg Harbor Township Nature Reserve															1							1
MK Betterment				1			1															
Total	***1***		***1***	***6***	***3***	***11***	***4***		***21***	***13***		***1***			***6***		***4***			***3***	***1***	***1***

Egg Harbor Township's recreation and open space amenities extend beyond what is listed on the Recreation and Open Space Inventory. Both public and private landowners provide recreation options and conservation holdings in the Township, and these holdings have grown throughout the twenty-first century as open space funding became available and residents grew concerned with the pace of development in the Township. The 2007 Livable Communities Plan identified 6,356 acres of open space in Egg Harbor Township divided amongst the Township, nonprofits, Atlantic County, and other institutions. These totals were reexamined and updated as part of this element and are described in Table 15 below:

Table 15
Parks and Open Space Throughout the Township
Egg Harbor Township, Atlantic County, New Jersey
(2007-2016)

Owner	Name	Acreage (2007)	Acreage (2016)	Percent Change
Egg Harbor Township	ROSI	569	592.7	+ 4.1%
Egg Harbor Township	Non-ROSI Parks/Open Space	---	TBD	
Egg Harbor Township Board of Education	Schools Property	263	343.53	+ 30.6%
Atlantic County		1,774	2,221.3	+ 25.2%
Golf Courses (excl. Green Tree)		1,889	1,889	+ 0%
NJDEP	Natural Lands Trust	168	211.96	+ 26.1%
NJDEP	Division of Fish, Game, and Wildlife	1,486	2,591.37	+ 74.4%
Private Open Space		64	412.3	+ 544%
Total		***6,356***	***8,262.16***	***+ 30%***

A total list of the current Recreation and Open Space Inventory (ROSI) from the NJDEP is included as Figure P in the Appendix of this document. Figure Q in the Appendix in this report was created using the New Jersey Open Space dataset containing Green Acres encumbered and unencumbered protected open space and recreation areas. The Green Acres encumbered lands are owned in fee simple interest by either the state, county, municipality, or a nonprofit agency and have either received funding through the Green Acres State or Local Assistance Program or are listed on a Green Acres approved Recreation and Open Space Inventory (ROSI). The unencumbered open space lands do not fall under Green Acres rules and regulations and therefore have a lesser level of protection. Types of open space property in this data layer include parks, conservation areas, preserves, historic sites, recreational fields, beaches, etc. The data was derived from a variety of mapped sources which vary in scale and level of accuracy. These sources are inclusive of but not exclusive of tax maps, surveys, deeds, digital aerial photography, as well as USGS topographic maps.

Egg Harbor Township Parks and Recreation Department is responsible for operating the Township's open spaces. In addition to parks and open space areas, the department also hosts fitness, youth, and adult activities.

The following section details and inventories properties operated and maintained by Egg Harbor Township Parks & Recreation Department:

Egg Harbor Township Community Center

Located at 5045 English Creek Avenue, the Community Center was constructed in 2008. The center is located on a 17.18-acre site. The Community Center has: basketball courts, classrooms, conference/meeting rooms, fitness rooms, a gymnasium, multi-purpose rooms, a kitchen, a pickleball court and a playground area. The multi-purpose room is leased to Atlantic County for its Senior Nutrition Program. A wing of the building is leased to Cygnus Creative Art Centre, which serves as the Township's Local Arts Agency.

Veterans Memorial Park

Veterans Memorial Park is located at 2153 Ocean Heights Avenue on 40 acres. This park is home to the EHT Youth Organization, EHT Bicycle Moto-Cross Association, the EHT Baseball Association and the EHT Street Hockey Association. Veterans Memorial Park has the following facilities:

- Four football fields– Three (3) lighted
- Practice field – lighted
- Tennis courts (closed)
- Three street hockey courts– lighted
- Eleven baseball fields– Two (2) lighted – Babe Ruth and Cal Ripken Fields
- Bicycle moto-cross track – Lighted
- Two playground areas – home of "Castle Park"
- Two refreshment stands
- Two bathrooms

The Egg Harbor Township Community Playground, Inc., was a non-profit group organized in 1992 to develop a community playground. This group designed and constructed a playground - Castle Park - adjacent to Veterans Memorial Park off of Ocean Heights Avenue. This playground is unique not only because of its design, but also because of the sense of community fostered in the volunteers involved in this planning effort.

Childs-Kirk Memorial Park

Located at 31 Idlewood Avenue on 15 acres, the park is home to the EHT Softball Association. Childs-Kirk Park contains the following facilities:

- Soccer field
- Seven softball fields– Two (2) lighted
- Playground area

- Refreshment stand
- Bathrooms
- Walking path

Delilah Oaks Park

Located on 5.61 acres on Kent Drive, the park contains the following facilities:

- Multi-purpose athletic field
- Basketball court
- Tennis court
- Pickleball courts (3)

Oakland and Tremont **Avenues** Park

Located at the southeast corner of Oakland and Tremont avenues, the park comprises 0.75 acres and contains a basketball court.

Tony Canale Park

Located at Sycamore near Dogwood Avenue, this park contains 35 acres and houses the following facilities:

- Baseball/softball field
- Four soccer fields– One lighted
- Three volleyball courts
- Four tennis courts
- Four multipurpose fields
- Playground area
- Amphitheater - home of Rhythm in the Park Concert Series and Under the Stars Outdoor Movies
- Bathrooms

An expansion of Canale Park to add a youth football facility is being planned.

Shires Park

Located south of the Home Depot and west of the English Creek Shopping Center on 6.47 acres, the park contains the following facilities:

- Baseball/softball field
- Basketball court
- Walking track

Bargaintown Park

Located at 300 Delaware Avenue on 23.74 acres, it contains the following facilities:

- Two soccer fields
- Adult Baseball field – lighted
- Five tennis courts
- Basketball court
- Playground area

Egg Harbor Nature Reserve & Arboretum

The Nature Reserve covers approximately 220 acres and is comprised of three components: an environmental learning center (14 acres) which offers multiple habitats including wooded areas, wetlands, and meadows; a 45-acre man-made lake with 35 acres of uplands; and 125 acres of woodlands. The diversity in habitat provides for a bevy of plants and animals. A parking lot is located at 318 Zion Road and access is also provided via the environmental learning center. The passive park offers many activities such as biking, hiking, fishing, and bird watching. Motorized vehicles and motorized boats are prohibited. Future plans to the Nature Reserve is to provide an observation deck, gazebo, and ADA-compliant accessibility. Picnic tables, benches, and informative signs will be placed throughout the Reserve to make it more user-friendly.

10.0 LAND USE AND ZONING

As noted, Figure A of this report includes a 2017 aerial photograph of the Township in which the primary land uses, developed and undeveloped, are depicted. The densely vegetated expanses of the conservation areas can clearly be seen along with the tidal marshes of Great Egg Harbor Bay, Patcong Creek, Great Egg Harbor River, and its tributaries.

Large scale, commercial uses are evident as are the linear development patterns along major roadways in the Township, inclusive of US Route 322/40, Fire Road, Tilton Road, Ocean Heights Avenue, and English Creek Road. For the most part, single-family, detached residential uses, at various densities, institutional uses, in the form of elementary schools, several developed park sites and vacant lands comprise the majority of the remaining "infill" areas within the Township.

From a broad quantitative perspective, Table 16 details the following categories of land uses currently comprise the Township's land base, listed by acreage and as a percentage of the overall community's land area. This data has been compiled utilizing current MOD4 tax assessment data, and should be seen as a broad measure of current uses across the Township. (See Figure R in the Appendix at the end of this report for the Land Use Map.)

Table 16
Land Use
Egg Harbor Township, Atlantic County, New Jersey

Land Use	Acreage in Township	% of Total Area in Township
Agricultural	6,328.66 acres	13.10%
Commercial	4,106.04 acres	8.49%
Conservation	12,909.18 acres	26.70%
Industrial	5,848.29 acres	12.10%
Park	190.34 acres	0.39%
Residential	18,960.25 acres	39.22%

Egg Harbor Township is situated within the Pinelands Management Areas and the CAFRA Planning Areas. Any development or activity is regulated by either the Pinelands Commission or the New Jersey Department of Environmental Protection. This includes any construction or any associated land disturbance

The New Jersey Pinelands Commission is an independent state agency whose stated mission is to "preserve, protect, and enhance the natural and cultural resources of the Pinelands National Reserve, and to encourage compatible economic and other human activities consistent with that purpose."

To accomplish its mission, the Commission implements a comprehensive plan that guides land use, development and natural resource protection programs in the 938,000-acre Pinelands Area of southern New Jersey. The New Jersey Pinelands Commission protects the Pinelands through

its implementation of the Comprehensive Management Plan (CMP). The CMP contains the rules that guide land-use, development and natural resource protection programs in the state Pinelands Area.

The Pinelands Protection Act requires that all municipalities and counties with land in the Pinelands Area revise their master plan and land use ordinances to implement the objectives and standards of the Pinelands Comprehensive Management Plan (CMP). The Township of Egg Harbor is one of the 53 municipalities and all seven Pinelands counties certified as being in conformance with the CMP. The Township's conformance process is ongoing, as all amendments to municipal master plans and land use ordinances affecting the Pinelands Area must be reviewed and approved by the Commission before they can take effect.

As part of the Pinelands regulations, the Pinelands Development Credit (PDC) Program impacts the Township's zoning in the Pinelands Area. This program is a regional transfer of development rights that preserves important agricultural and ecological land. PDCs are allocated by the Commission to landowners in the Pineland's Preservation Area District, Special Agricultural Production Area and Agricultural Production Area, which are the sending areas. These credits can be purchased by property owners and developers who are interested in developing land in Pinelands Regional Growth Areas, which serve as the receiving areas. Typically, PDCs are used to increase residential densities in Regional Growth Areas. A portion of the Township is a designated Regional Growth Area. PDCs may also be used in association with municipal variances in Regional Growth Areas, as well as for waivers of strict compliance approved by the Commission in any Pinelands management area. Once PDCs are "severed" from a sending area property, that property is permanently protected by a conservation or agricultural deed restriction. The credits associated with that property can then be sold. Credits are bought and sold in one-quarter credit units called "rights."

The Coastal Area Facility Review Act of 1973 (CAFRA) established the CAFRA zone, as the bounds of CAFRA regulation. Certain activities undertaken within the CAFRA zone are regulated by the Division of Land Use Regulation. For a detailed description of activities requiring a permit within the CAFRA zone, as well as activities that are not regulated within the CAFRA zone, please refer to the Coastal Zone Management rules at N.J.A.C. 7:7.

Figure S in the Appendix of this report is a map of the Pinelands Management Areas and the CAFRA Planning Areas.

The Zoning Map (Figure T) shows all of the zoning districts located in Egg Harbor Township. Descriptions of each zoning district are described in Table 17 below. The geographic description of each zoning district is listed below the table.

Table 17
Municipal Zoning
Egg Harbor Township, Atlantic County, New Jersey

Zone	Description	Use	Min. Lot Area	Min. Lot Area*	Min. Density	Max. Density	Total Acres in Twp.
CB	Community Business	Commercial	60,000 sf	-	-	-	88.58
CRW	Conservation Recreational Wetlands	Conservation	5 acres	-	-	-	12909.18
GC	General Commercial	Commercial	40,000 sf	-	-	-	854.67
HB	Highway Business	Commercial	80,000 sf	-	-	-	899.37
M-1	Light Industrial	Industrial	2 acres	-	-	-	5736.09
MC	Marine Commercial	Commercial	5 acres	-	-	-	249.67
NB	Neighborhood Business	Commercial	40,000 sf	-	-	-	691.11
PO-1	Professional Offices	Commercial	2.5 acres	-	-	-	375.83
R-1	Residential	Residential	40,000 sf	-	-	-	4011.54
R-2	Low Density Single-Family Residential	Residential	30,000 sf	-	-	-	1297.24
R-3	Residential Single-Family Detached	Residential	15,000 sf	-	-	-	1492.81
R-4	Residential	Residential	10,000 sf	-	-	-	128.04
R-5	Residential	Residential	6,000 sf	-	-	-	147.09
R-5 (APT)	Apt. Residential	Residential	6,000 sf	-	-	-	457.79
R-6	Residential	Residential	5,000 sf	-	-	-	47.19
R-I	Restricted Industrial	Industrial	2 acres	-	-	-	112.21
RA	Rural Agriculture	Agricultural	100,000 sf	-	-	-	6328.66
RCD	Regional Commercial Development District	Commercial	3 acres	-	-	-	892.24
RG-1	Residential Single-Family Detached*	Residential	30,000 sf	17,200 sf	1.00	1.50	4977.31
RG-2	Residential Growth*	Residential	16,000 sf	10,000 sf	2.00	3.00	4322.76
RG-3	Residential Growth*	Residential	10,000 sf	5,500 sf	3.00	4.50	499.25
RG-4	Residential Growth*	Residential	7,000 sf	3,500 sf	4.00	6.00	827.51
RG-5	Residential Growth*	Residential	6,500 sf	2,800 sf	5.00	7.50	751.72
RP	Recreational Park	Park	175 acres	-	-	-	190.34
SHD	Special Highway District	Commercial	80,000 sf	-	-	-	54.57

Sources: Atlantic County Office of GIS
Information was last revised on 2/15/2010
Numbers may not total to 100% due to rounding or assessment discrepancies
**Lot sizes may be reduced with the purchase of Pinelands Development Credits*

Residential - Non-Pinelands

RA: The Rural Agriculture District is located within the western portion of the Township, between Somers Point-Mays Landing Road and Ocean Heights Avenue and the adjacent Hamilton Township municipal boundary.

R-1: This Residential Zone is located to the east of the RA district, between Ocean Heights Avenue and Mays Landing-Somers Point Road.

R-2: This Residential Zone is located toward the eastern portion of the Township, and is generally between Robert Best Road and Steelmanville Road, south of Ocean Heights Avenue.

R-3: This Residential Zone is located along Zion Road and Robert Best Road.

R-4: This Residential Zone is located in the eastern portion of the Township, adjacent to the City of Northfield.

R-5: This Residential Zone is located in West Atlantic City along the Black Horse Pike.

R-5 APT: This Residential Zone is located in West Atlantic City among the Bayport Townhomes.

R-6: This Residential Zone is bordered by environmentally sensitive areas in the CRW district. The developments known as Anchorage Point and Seaview Harbor are located within this district.

Residential - Pinelands

The existing Land Use Plan provides for five (5) categories of residential uses within the Pinelands Regional Growth Area of the Township. These residential zoning districts permit a range of densities and housing types and encourage clustering as a means of preserving open space. Access to public sewerage is a necessary prerequisite for cluster development and for conventional development on lots less than one (1.0) acre in size. No increase in density above the maximum stated within each respective district is to be permitted.

Establishment of the residential districts is based on both the Township's desire to locate the majority of the Pinelands-induced growth in areas where infrastructure and services are either available or planned, the maintenance of existing neighborhoods and the widely recognized need to protect sensitive environment areas. Single-family residential development, which is to be served by conventional septic systems, shall conform to the CMP requirement for minimum lot area of three and two-tenths (3.2) acres. The densities and minimum lot sizes outlined herein for

each respective zone presume public sewerage availability. The Pinelands Development Credit (PDC) Program impacts permitted densities as indicated in Table 16.

RG-1: This district is the most distant from any existing and /or proposed public sewerage facilities and is located in the southwest corner of the Regional Growth Area. The primary intent of this district is to encourage the development of detached single-family dwelling units at low densities.

RG-2: The intent in designating this district is to maintain the low-density single-family character of this area and protect environmentally sensitive lands. This district is generally conterminous with the Garden State Parkway, the Black Horse Pike, and Mill Road.

RG-3: In keeping with the development type recommended for the RG-1 and RG-2 districts, single-family detached dwellings at a density of 3 DU/Acre on lots of at least ten thousand square feet (10,000 SF) are required for this district. Purchase of PDCs enable an increase in densities.

RG-4: The location of the RG-4 district is intended to incorporate similar land uses and provide a transition between differing densities. This district is recommended for residential development at 4 Dwelling Units (DU)/Acre and 6 DU/Acre with PDCs.

RG-5: This district is divided into two areas. The first portion of this district is located along English Creek Avenue and Delilah Road, and the second section is located along the Garden State Parkway and Wescoat Road.

AH-RG-4: Permitted principal uses of the Affordable Housing Residential Zone district are inclusionary housing developments, in conformance with the conditions of the settlement agreement between English Creek Manor and the Township of Egg Harbor, consisting of a mix of the following: Single-family detached dwellings, flats are permitted to be integrated into the buildings containing the single-family affordable dwelling units. In addition, public parks, playgrounds, and active and passive recreation, and single-family attached dwellings are permitted uses in this zoning district.

AHO-A: The Planning Board has adopted a housing element and fair share plan element of the Master Plan that recommends that this area be utilized for one-hundred-percent affordable housing. The Purpose of the Affordable Housing Overlay Zone A (AHO-A) is to establish an option to develop an industrial zoned area into a one-hundred-percent affordable housing development when said uses can be adequately serviced by the sanitary sewer system. Permitted principal uses in this district include one-hundred-percent affordable multifamily attached housing developments.

AHO-B: The Planning Board has adopted a housing element and fair share plan element of the Master Plan that recommends that this area be utilized for one-hundred-percent affordable housing. The Purpose of the Affordable Housing Overlay Zone B (AHO-B) is to establish an option to develop a commercial zoned area into a one-hundred-percent affordable housing development when said uses can be adequately serviced by the sanitary sewer system. Permitted principal uses in this district include one-hundred-percent affordable multifamily attached housing developments.

Commercial, Business & Recreation Districts

HB: Highway Business. In view of the demand for services anticipated by realization of the Pineland's mandated housing, provisions should be made to expand the Township's commercial and retail services. One of the primary objectives of the commercial districts is to provide convenient shopping and service areas for existing and developing residential areas. The most extensive of these zones is the Highway Business (HB) district, which roughly parallels both sides of the Black Horse Pike.

NB & CB: The Neighborhood Business (NB) and Community Business (CB) Zones both permit essentially the same principal uses; however, the CB district requires a larger minimum lot size and is intended to service a larger geographic area. The NB district also permits the use of various commercial recreation facilities, whereas the CB district does not. These commercial zones are relatively compact and have become established in certain locations where traffic generation and development have created a need for the services these zones provide. Expansion of these commercial nodes is limited to maintain existing neighborhood character, while simultaneously accommodating the growing need for these services.

RCD: The Regional Commercial Development district is located toward the Eastern portion of the Township, between Washington Avenue and Mill Road. The minimum lot size required for development in the RCD district are three (3) acres.

MC: The intent and purpose of the Marine Commercial Zone is to provide and encourage the development of waterfront facilities for recreational purposes and thereby provide for public access to the vast Egg Harbor waterfront area. The district is not to be construed nor is it intended to include year-round occupied residential facilities as permitted uses. Recommended uses permitted in the district include new and used boat sales, marinas, buildings for the storage, repair and construction of boats, but excluding boats designed and/or used as permanent residential facilities, marine supply shops, and PWTF not to exceed 120 feet in height.

GC: The General Commercial district is located between Delilah Road and the Atlantic City Expressway.

PO-1: The Professional Office district is generally bisected by English Creek Avenue, and is intended as a means for providing land for a variety of business and limited industrial and commercial uses, while not impacting an area with an inappropriate volume of truck traffic. In order to create a campus-type environment within the PO-1 district, generous setbacks for both parking areas and buildings, and preservation of wooded areas are encouraged.

RP: The Recreational Park district is located along Ocean Heights Avenue. The former Pinelands Park Landfill is located directly across from the existing R-I district and is now contained in the Recreation Park (RP) zone. The landfill was closed in August 1990. The landfill closure was certified in 1999 and the site is currently known as McCullough's Emerald Golf Links, an 18-hole golf course. Permitted uses in this district include golf courses, commercial recreation, municipal parks, playgrounds and other such municipal buildings and uses as are deemed appropriate and necessary by the Township Committee, and PWTF not to exceed 120 feet in height.

CRW: The Conservation-Recreation-Wetland district is located along the Great Egg Harbor River and the Southeastern portion of the Township. The CRW district permits farming and agricultural operations, single-family dwellings, churches and other similar places of worship, golf courses, stables and horse farms, private schools, museums, nonprofit clubs, fraternal organizations and volunteer independent fire companies, rescue squads and first-aid squads, and marinas.

SHD: The Special Highway Development district is located along the Black Horse Pike in West Atlantic City.

ASO: The Auto Services Overlay district is located along Zion Road within the R-1 district. Permitted uses in this district include auto body and auto repair, including engine, brake and transmission repairs, which do not sell gasoline, wholesale and retail sales of automobiles and auto parts displayed out of doors in accordance with a site plan approved by the Planning Board, and PWTF and Personal Wireless Telecommunications Equipment Facility (PWTEF).

Industrial

The Township's zoning ordinance identifies two (2) industrial districts distinguishable by the relative intensity and class of use permitted. The existing Light Industrial (M-1) district permits various uses in addition to the uses allowed in the more stringent Restricted Industrial (R-I) zone.

M-1: The M-1 Industrial district is located North of the Atlantic City Expressway and adjacent to the FAATC facility, and the area east of Fire Road adjacent to

Northfield are designated as Light Industrial (LI). The M-1 district adjacent to Washington Avenue and the area south of the Black Horse Pike adjacent to Pleasantville are also designated Light Industrial (LI).

R-I: The R-I district bisected by Ocean Heights Avenue between Zion Road and Steelmanville Road contains several industrial uses.

11.0 INFRASTRUCTURE

Roadways / Transportation

A number of multi-modal transportation facilities serve the Township of Egg Harbor and include the following:

- Highways:
    - Garden State Parkway
    - Atlantic City Expressway
    - Black Horse Pike (U.S. Route 322/40)

- County Routes :
    - 559 - Somers Point-Mays Landing Road
    - 559-Alt - Ocean Heights Avenue
    - 563 - Tilton Road / Northfield-Margate Boulevard
    - 575 / 603 / 604 - English Creek Avenue
    - 608 - Washington Avenue
    - 615 - Zion Road
    - 629 - J.F.K. Memorial Bridge (County Owned Bridge)
    - 646 - Delilah Road
    - 651- Steelmanville Road / Fire Road / Jeffers Landing Road / Bargaintown Road
    - 661 - Central Avenue
    - 662 - Mill Road
    - 663 - California Avenue
    - 684 - Spruce Avenue
    - 685 - Wescoat Road
    - 687 - Old Egg Harbor Road

- Commercial Airline Services:
    - Atlantic City International Airport

- Fixed route transit service provided by New Jersey Transit Corporation

The above noted roadways provide vehicular access to the South Jersey region and surrounding Atlantic County communities. The noted County roads generally provide circulation needs throughout the region. Bus facilities also provide these vital services and routes needed by commuters, which in turn contribute in a positive manner to a higher quality of life. The Atlantic City International Airport provides air transportation for the area, an alternative to the region's other international airports, Philadelphia or Newark. Figure U of this report displays the roadway network including local roads, county routes and major highways which traverse Egg Harbor Township.

Public Transportation / Alternate Modes

The English Creek-Tilton Road Community Shuttle, a deviated fixed-route service, serving the general public through Egg Harbor Township and the City of Northfield. The English Creek-Tilton Road Community Shuttle is a partnership between The County of Atlantic, the Pascale Sykes Foundation, the South Jersey Transportation Authority, Atlantic Cape Family Support Organization, NJ TRANSIT and Cross County Connection Transportation Management Association.

The Atlantic County Park System maintains the 7.56 mile bike and pedestrian path running between Harbor Square (formerly Shore Mall) in Egg Harbor Township and the Atlantic County Institute of Technology in Hamilton Township. A traffic signal with pedestrian activation for safe crossings is located at English Creek Avenue.

The bike path has three trail head parking areas, located at the Harbor Square, the Atlantic County Institute of Technology, and at English Creek Avenue. Location maps are placed at the three trail heads with approximate distances along the path. Additional signage provides information on Pinelands plants and animals and the history of the Pennsylvania Reading Seashore rail line.

Potable Water / Sanitary Sewer System

The availability of potable water and sanitary sewer infrastructure allows land development to occur at greater intensities than with individual water supply wells and the utilization of on-site wastewater disposal systems.

A portion of Egg Harbor Township is within the service area of New Jersey American Water Company, the largest water service provider in the state, serving approximately 2.7 million people in 192 communities. Areas which do not have public water service utilize individual water supply wells.

The Pinelands Comprehensive Management Plan (CMP), and the NJDEP CAFRA regulations, as well as the Township's current zoning ordinance, allows the extension and use of public water systems and sanitary sewer infrastructure within the Township's Regional Growth Areas in order to accommodate both higher housing densities, as well as a variety of commercial and institutional uses while meeting the stringent groundwater quality standards required by the CMP.

The Township's current sewer infrastructure system generally serves much of the designated Regional Growth Area and the areas within the Suburban and Metropolitan CAFRA Planning Areas. The Egg Harbor Township Municipal Utilities Authority (EHTMUA) serves approximately 13,600 residential customers and 600 commercial properties in the Township. The EHTMUA maintains and operates 52 sanitary sewer pump stations and about 22 miles of sanitary sewer mains in the Township. The sanitary sewer system discharges to the Atlantic

County Utilities Authority City Island Plant for treatment.

Areas outside of the NJDEP sewer service area are serviced by onsite individual septic systems regulated by the Atlantic County Department of Health, with additional regulations by the Pinelands Commission for any areas within the Pinelands Management Areas.

The provision of sewer infrastructure alleviates concern over groundwater pollution caused by septic systems which have individually malfunctioned or which are situated too close to a proximity to function effectively in disposing sanitary wastewater effluent.

Figure V of this report displays the current extent of the sanitary sewer service area within the Township, and Figure S displays the sewer service area in relation to the Pinelands Management Areas and the CAFRA Planning Areas.

12.0 KNOWN CONTAMINATED SITES

The New Jersey Department of Environmental Protection maintains a list of Known Contaminated Sites where contamination has either been identified or is suspected in the soil, surface water or groundwater. Sites are ranked with a remedial level of increasing severity and complexity from B, C1, C2, C3 or D. Code D sites are usually designated as a Superfund site by the U.S. Environmental Protection Agency.

As noted on Table 18, there are 29 known contaminated sites in Egg Harbor Township. See Known Contaminated Sites Map, Appendix W, for locations of contaminated sites and areas of groundwater contamination. It should be noted that GIS maps of contaminated sites are stored as points having no area. A particular point may represent a GPS position fix or a more appropriate estimate of the location based on a GIS interpolation of the site's street address against an address range for a particular city block (i.e. an address match). Therefore, GIS site locations may not represent the precise area of the actual contaminated soil, ground water etc., but rather the approximate location of the property where the contamination occurred.

Table 18
Known Contaminated Sites
Egg Harbor Township, Atlantic County, New Jersey

Site ID	Name	Address	Lead Agency*	Status	Remedial Level
15865	177 Fighter Wing NJANG	400 Langley Road	EPA	Active	C3
647342	179 Steelmanville Road	179 Steelmanville Road	UHOT	Active	C1
122669	2043 Ocean Heights Avenue	2043 Ocean Heights Avenue	LSRP	Active	C2
13088	617 Corporation	2534 Saw Mill Road	LSRP	Active	C2
459713	7016 Black Horse Pike	7016 Black Horse Pike	LSRP	Active	C2
12523	AE Stone Incorporated	1435 Doughty Road	LSRP	Active	B
12684	Airport Circle Sunoco	6501 Delilah Road	LSRP	Active	C2
15571	Atlantic City Gas	8006 Black Horse Pike	LSRP	Active	C2
225300	Atlantic City Naval Air Station	Tilton Road	EPA	Active	D
15742	Atlantic County Utilities Authority Fuel Island	6700 Delilah Road	LSRP	Active	B
125589	Avalon Carpet Tile & Flooring	3157 Fire Road	LSRP	Active-RAP	C2
3018	Bennett Chevrolet Inc.	6721 Black Horse Pike	LSRP	Active	C2
64373	Delancy Avenue Ground Water Contamination	Delancy Avenue	Publicly Funded	Active	C3
65427	Delilah Oaks Ground Water Contamination	Delilah Road & Kingsley Drive	Publicly Funded	Active-RAP	C3
56345	Deltona Discount Tires Incorporated	6700 Black Horse Pike	LSRP	Active	C2
125798	Dino's Deli & Subs	402 Zion Road	LSRP	Active	C2
64181	Egg Harbor Township Ground Water Contamination	Zion Road & Robert Best Road	Pub Funded	Active	C3
27953	FAA William J. Hughes Technical Center	Tilton Road	EPA	Active	D

Table 18 (cont.)
Known Contaminated Sites
Egg Harbor Township, Atlantic County, New Jersey

Site ID	Name	Address	Lead Agency*	Status	Remedial Level
64161	Farmington II Ground Water Contamination	Doughty Road & Fire Road & Spruce Avenue	Publicly Funded	Active	C3
12688	Getty #00673	6710 Black Horse Pike	LSRP	Active	C2
65507	Ivins Ave. & Madison Ave. Ground Water Contamination	Ivins Avenue & Madison Avenue	Publicly Funded	Active	C3
459755	Joseph D'Amore Estate	48 S. Mount Airy Road	LSRP	Active	C1
12718	Lukoil 57201	6752 Black Horse Pike	LSRP	Active	C2
12708	Lukoil 57725	6101 Black Horse Pike	LSRP	Active	C2
12720	Mobil #57290	Black Horse Pike & Tilton Road	LSRP	Active	C2
12695	Tilton Road Sunoco	6801 Tilton Road	LSRP	Active	C2
52177	Universal Aluminum Extrusion Corporation	5 Canale Drive	EPA	Active	C2
35497	Weed's Texaco	6223 Black Horse Pike	LSRP	Active	C2
74360	Zion Road Ground Water Contamination	Various Locations	Publicly Funded	Active	C3

LSRP - *Case under Licensed Site Remediation Professional Program*
EPA - *Traditional Department oversight is maintained for CERCLA sites where EPA is the lead agency and at Federal Facilities under Federal agreements. Traditional oversight is also applicable at CERCLA sites where the Department is the lead agency. All traditional oversight cases are handled by the Bureau of Case Management (BCM).*
PUBLICLY FUNDED - *NJDEP Publicly Funded case. Sites where targeted remediation is undertaken by the Department's Publicly Funded Element for situations where the responsible entity is unknown, unwilling or unable to perform the necessary remediation to ensure that the health and safety of the public and/or the environment are not jeopardized*
UHOT - *Unregulated Heating Oil Tank Program*
RAP - Remedial Action Permit - *Case falls under auspices of the Bureau of Remedial Action Permits, with biennial certification required*

The Known Contaminated Sites Map, Figure W in the Appendix of this report, shows the Currently Known Extent of Groundwater Contamination Areas. The NJDEP has listed seven (7) areas within Egg Harbor Township which contain known areas of groundwater contamination.

CKEs are geographically defined areas within which the local ground water resources are known to be compromised because the water quality exceeds drinking water and ground water quality standards for specific contaminants. Historically, a number of the CKEs have also been identified as Well Restriction Areas (WRAs). The regulatory authority for developing CKEs is in N.J.A.C. 7:1J, entitled Processing of Damage Claims Pursuant to the Spill Compensation and Control Act. CKEs are used by NJDEP staff, water purveyors, and local officials to make decisions concerning appropriate treatment and/or replacement of contaminated drinking water supplies. The CKE areas, as shown, are intended to provide information to the public about contaminated ground water areas in the state. Unless precautionary measures are taken to protect potable users, well installation should be avoided. This information is being made available so informed decisions can be made on well location, design, or treatment before wells are proposed,

permitted, and installed. The Department is currently engaged in the reassessment and investigation of existing CKEs; however, it is important to note that CKEs are approximations of the actual aerial extent of ground water contamination and the boundaries presented here may change over time as new information is developed and plume migration occurs.

At this time, the records of the CKEs in this database may include a list of the specific ground water contaminants where available. Also, it should be noted that CKE areas might overlap with other CKEs and Classification Exception Areas (CEAs). Revisions and additions will be used to update the CKE database as new information is received and processed. The CKE area will usually follow the property boundary lines of all the contiguous properties with contaminated wells when the wells are within 1,000 feet of each other. However, on properties larger than 3.5 acres the boundary of the CKE may be based on the location of the contaminated well and may not encompass the entire property. Also, in some areas contaminated wells may have been detected in proximity to an established CKE but have not been included within the boundary of the CKE because the well is outside the 1,000 foot radius.

13.0 BIBLIOGRAPHY

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3. Federal Emergency Management Agency Flood Insurance Rate Map, Egg Harbor Township, Atlantic County.

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5. Pinelands Comprehensive Management Plan, prepared by State of New Jersey Pinelands Commission, updated November 19, 2018.

6. Vegetation Geography of the Pine Barrens, by Jack McCormick, published by the New Jersey State Museum, 1973.

7. Zoning Code, Chapter 225,Township of Egg Harbor.