



THE TOWNSHIP OF
BRICK, NJ

NEIGHBORHOOD PLAN



Brick Barrier Island, Brick Township, New Jersey

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POST SANDY RECOVERY PHASE II PLANNING

Neighborhood Plan

Brick Barrier Island, Brick Township, New Jersey

INTRODUCTION

In a Resolution #15-00739 on February 18, 2014, the Township Council of the Township of Brick, County of Ocean and State of New Jersey approved the preparation and submission of Post “Sandy” Planning Studies and Reports, which allowed for the four Brick Neighborhood Plans. The Brick Barrier Island Neighborhood Plan is included in these Planning Studies and is intended to look at a number of factors which will affect the future viability of this defined area, from the present state of the infrastructure and the ongoing re-building efforts, to methods of providing a sense of unity and community. This Plan seeks to identify and rectify some of the challenges faced by the community in the wake of the destruction of Superstorm Sandy in order to return the neighborhood to a state of normalcy, but also to mitigate and adapt to the effects of future storms, to improve the rebuilding process, and to create a more cohesive and well-designed community.

The Barrier Island Neighborhood Plan Area extends from the border with the Borough of Mantoloking to the north to the Normandy Beach neighborhood of the Township of Toms River to the south, along N.J. Route 35 between the Atlantic Ocean to the east and Barnegat Bay to the west. The Neighborhood Plan has been prepared in conjunction with three other Brick Neighborhood Plans and is also intended to complement the Hazard Mitigation Plan (HMP) and Floodplain Management Plan (FMP) prepared by Tetra Tech, Inc. in conjunction with other Post Sandy Phase II planning projects by the Township of Brick.

This Neighborhood Plan provides an analysis of the historical and existing development pattern within the Barrier Island Neighborhood and associated bulk standards to determine specific recommendations for changes that would make the neighborhood more resilient to future storm events such as Superstorm Sandy. As noted in the project scope, the Plan uses the sustainable development principles of the Leadership in Energy and Environmental Design (LEED) rating systems; specifically LEED for Homes (LEED-Home) and LEED for Neighborhood Development (LEED-ND). The LEED-Home standards are applicable for homeowners who are renovating as well as those considering a complete demolition and rebuild. The LEED-ND standards apply to the neighborhood as a whole and relate to maintaining and enhancing connectivity (and thereby “walkability”) within the neighborhood for pedestrians and bicyclists, sustainable stormwater management, and enhancing neighborhood goods and services, parks and open

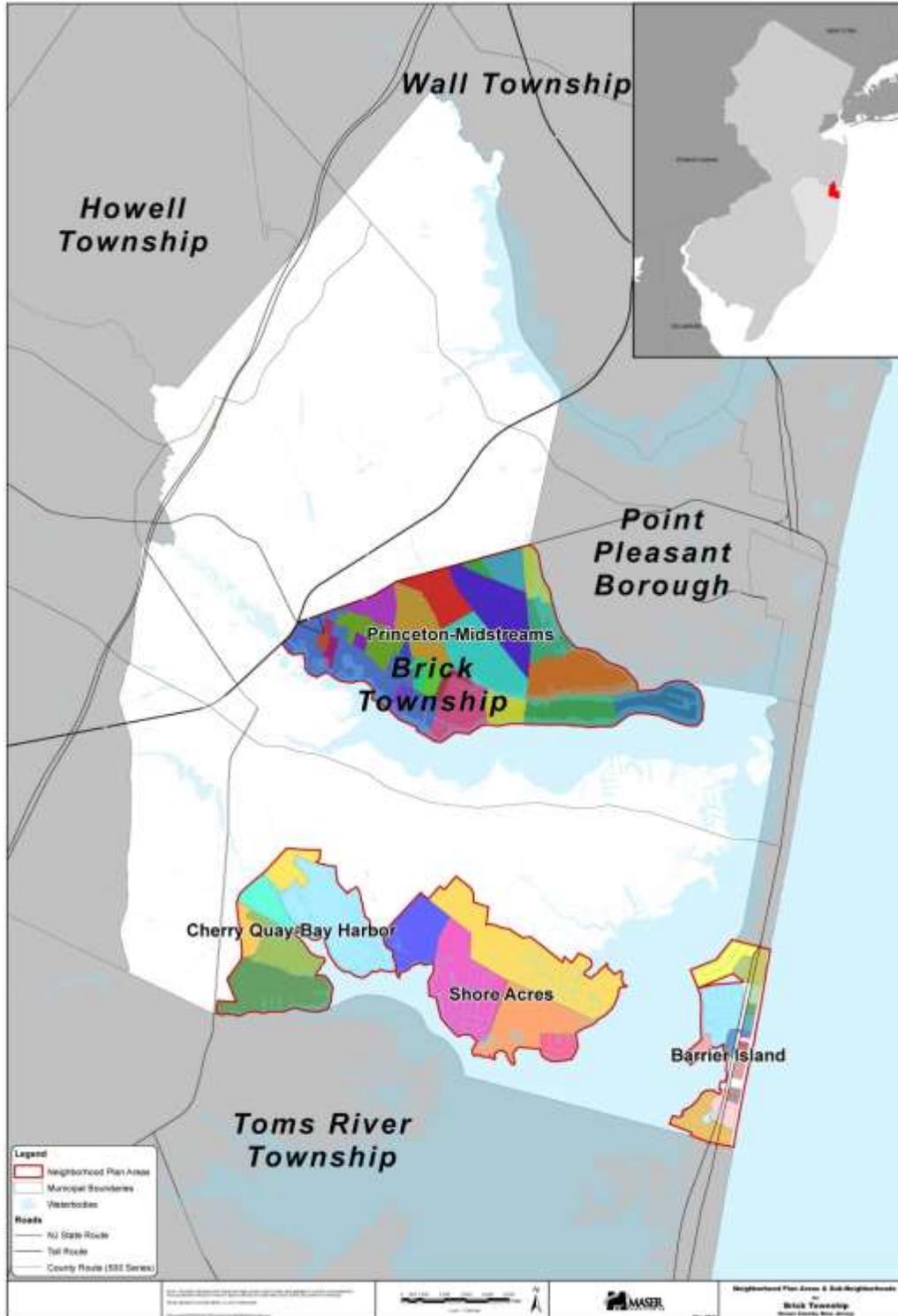


space and schools within walking distance of the homes (1/4 mile or less). The next section of the Neighborhood Plan provides design standards to assist homeowners with renovating and rebuilding.



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Map 1: Four Brick Township Neighborhood Plan Areas





NEIGHBORHOOD DESCRIPTION

The Brick Barrier Island neighborhood is located along the easternmost portion of Brick Township, Ocean County, New Jersey. As the given name suggests, it is found on the barrier island which separates the Atlantic Ocean from Barnegat Bay (part of the eastern Intracoastal Waterway) and which extends from Bay Head, New Jersey in the north to Island Beach State Park, New Jersey in the south. The Brick Barrier Island, sometimes also known as Brick Beaches, encompasses the area from the southern border of the Borough of Mantoloking to the northern border of Normandy Beach in the Township of Toms River.

Occupying approximately 384 acres of land, or 0.60 square miles, the designated neighborhood area is the smallest, but also the least densely populated neighborhood of the four Brick neighborhoods, despite being very densely developed. As of the 2010 U.S. Census, the island had a year-round population of 746 people and 1,435 residential units, equating to 2,391 units per square mile and 1,243 persons per square mile (data extrapolated to one square mile). However, the population and housing stock declined considerably in the few years after Superstorm Sandy. The very high ratio of residential units to population (nearly 2:1) is indicative of the large number of seasonal rentals and second homes, which make up nearly half of the housing stock. In addition to year-round residents, the Barrier Island experiences a population swell during the summer with part-time residents with second homes, as well as renters, which increase the population density dramatically. The Barrier Island is primarily residential, with a few commercial businesses and Township services located in the central part of the island.

The island neighborhood is accessible by vehicle from the mainland only by New Jersey State Highway (N.J.S.H.) 35 (Route 35) from the north, or one of two bridges – the Herbert Street/Route 528 Mantoloking Bridge from Brick Township to Mantoloking Borough or the New Jersey State Highway (N.J.S.H.) 37 (Route 37) Thomas A. Mathis & J. Stanley Tunney Bridges from Toms River Township to Seaside Heights Borough. The sub-neighborhoods are roughly divided up between the bay side and the ocean side of the island, as well as an interior section, which is created by the divided N.J.S.H. 35 southbound to the west and northbound to the east. Many of the sub-neighborhoods have their own private beach access for members or homeowners, as well as private roads. Private beaches extend from the property lines to the high tide marks. There are also two public beaches with parking for paying customers, known as Brick Beach I on the northern end of the island and Brick Beach III on the southern end of the island in Brick Township. One public park, Bayside/Swamp Cove Park, is located on the southern bay side of the island, and there is also a small preserved area, Swamp Cove/Bambe Cross, on the northern bay side of the island.

This neighborhood is a chain of very loosely interconnected sub-neighborhoods. There are at least seventeen (17) identified sub-neighborhoods that comprise the Barrier Island neighborhood and include various beach, homeowners, or condominium associations. The Federation of Brick Beach Associations (FOBA) includes members of all Brick Beach/Barrier Island neighborhood associations. Not all residences are included in one of the associations, however, particularly those in the center of the island between



Route 35 North and South. Map 3 shows a more detailed aerial image of the neighborhood (Herbert Street/Mantoloking Bridge is shown to the north), while all of the sub-neighborhoods are listed below in the Existing Conditions section and shown on Map 19.

The seventeen sub-neighborhoods are largely private enclaves and an apparent lack of social connectivity between the sub-neighborhoods seems to transcend into in a lack of physical connectivity or accord on development priorities. In addition to the very private nature of each association, there are very few sidewalks connecting the various sub-neighborhoods of the island and where there are sidewalks, they are often substandard. There are also no bike- or shared-lanes throughout the entirety of the Brick neighborhood, although the reconstructed Route 35 was designed with shoulders intended to be “bicycle friendly”. Crosswalks across the busy State road on either northbound or southbound side are limited and often do not meet a sidewalk. Crossing guards, employed by the Township, are utilized during the summer months in various locations to move pedestrian traffic safely east to west, as there are no existing traffic signals. Additionally, neighborhood signage, excluding State Highway or street signs, is ad hoc and decided upon by individual associations. Overall, there is little that signifies this area as a unified neighborhood or even that it is part of Brick Township.



THE TOWNSHIP OF **BRICK, NJ**

Map 2: Location of the Brick Barrier Island Neighborhood Plan Area within Brick Township





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Map 3: Detail Aerial of Barrier Island neighborhood (Mantoloking Bridge to the north)





Similar to many New Jersey barrier island communities, the Brick Barrier Island neighborhood suffered catastrophic damage during Hurricane Sandy in 2012 and still continues to rebuild, while implementing new adaptive and mitigation measures for future storms. Several sub-neighborhood areas were entirely destroyed, while many others experienced moderate to severe damage from heavy flooding from the Barnegat Bay. The location of the neighborhood between the bay and the ocean makes it particularly vulnerable to water damage from storm events and increased water levels, as well as beach erosion from wave action and wind. The beaches in Brick are replenished every year after winter and there is currently a revetment in process along the stretch of beach from The Ocean Club to 8th Avenue. Most of the island, except between Route 35 North and the property lines on the ocean side, experienced storm surge from the ocean or flooding from Barnegat Bay. This was due to the slightly higher elevation of the original sand dune line along the eastern shore. The area that was spared from the storm surge was even narrower south of The Ocean Club.

Since the storm, many remaining homes have either been demolished and rebuilt or renovated. A large number of buildings have also been raised to meet BFE requirements in order to qualify for flood insurance or FEMA grant money. This has caused some additional issues with the developable land and bulk standards as homes are being raised exceptionally high or taking up more lot coverage in an already compact area to justify the loss of developable ground floor, to obtain lower flood insurance premiums or to receive more recovery aid funding. Nearly all substantially damaged properties from Superstorm Sandy in 2012 are located in areas directly on the canals and on the tips of the peninsulas. According to the Township Flood Prevention Ordinance, “Substantial Damage” is defined as: “Damage of any origin sustained by a structure whereby the cost of restoring the structure to its condition before damage would equal or exceed 50% of the market value of the structure before the damage occurred.” In this neighborhood, 688 properties suffered substantial damage and the average year that structures on such properties were built is 1967, whereas the average year that homes were built in this neighborhood is also 1967. Newer properties were more likely to already comply with height and lot requirements and generally experienced less damage.



Figure 1: Example of damage from Sandy and new construction post-Sandy (Google Streetview, 2013)

Many decisions and processes, including the implementation of sand dunes and revetment on the beach, are not contiguous along the barrier island, whether between Townships or between neighborhoods, which ultimately compromises the ability to protect or improve the community. Low-lying and flood-prone properties and roads, a lack of neighborhood design standards, a lack of public space and natural buffers from the ocean and bay, and a lack of communication between sub-neighborhoods could prove to be the biggest issues that this community faces. The ability of these sub-neighborhoods to act



together to improve infrastructure, natural areas, and storm preparedness, in addition to the actions that are taken by the surrounding communities, will have a direct impact on the community's future resiliency.

PLAN INTEGRATION, COORDINATION, AND BUILDING BLOCK APPROACH

PLANNING COORDINATION AND PROCESS

This Neighborhood Plan is part of the larger initiative taken on by the Township of Brick to better integrate planning processes with community development, local decision-making, and hazard mitigation efforts. This effort included the concurrent development of a series of township-specific working documents that create a framework for reducing vulnerabilities to hazards, increasing safety, and limiting damages to both public and private property. Each plan leverages the findings and analysis of the other planning efforts and fulfills a unique component of a comprehensive approach to hazard mitigation and community resilience. The following documents were developed concurrently with cross-utilization of experts and stakeholders:

- Township of Brick Neighborhood Plans
- Township of Brick Master Plan: Hazard Mitigation Plan Element
- Township of Brick Floodplain Management Plan
- Township of Brick Repetitive Loss Area Analysis
- Township of Brick Capital Improvement Plan
- Township of Brick Master Plan: Green Buildings and Sustainability Element

The development of the Neighborhood Plan was led by the Township's Master Plan Sub-committee consisting of four members of the Planning Commission and supported by a public engagement process that included an open public meeting and presentation. As a result, this plan incorporates a wealth of local knowledge and ensures that recommendations align with the goals and preferences of the community.

The methodology and associated tasks incorporated into the development of the Neighborhood Plan Element are outlined below.

- Review of existing plans and studies, including but not limited to:
 - 2007 Township of Brick Master Plan, inclusive of all Master Plan elements
 - 2014 Township of Brick Strategic Recovery Planning Report
 - 2014 Township of Brick "Getting to Resilience" Recommendations Report
 - Ocean County Long Term Community Recovery Plan
- Existing conditions analysis to document trends and the current status of the community, including:
 - Population/Demographics



- Land Use and Development
- Regulations and Ordinances
- Public outreach and engagement efforts to incorporate local knowledge and values into the planning process. Public engagement included:
 - Open Houses
 - Meetings
 - Surveys
- Site visits and meetings with local officials.

NEIGHBORHOOD PLAN GOALS AND OBJECTIVES

The planning principles employed in this Neighborhood Plan are based on evaluations by the Township professional staff and interaction with Brick Beach/Barrier Island property owners through public meetings and surveys.

- To empower the Brick Barrier Island neighborhood, in partnership with the Township, to implement thoughtful, innovative, and resilient projects that will advance the visual and functional “branding” of Brick Beach as a cohesive waterfront community.
- To provide practical and affordable recommendations to make Brick Barrier Island more resilient to future threats while improving quality of life, access to parks and open space and safety for pedestrians and bicyclists.
- To fully engage stakeholders about the impacts of climate change and to develop pathways to resilience based on sound science.
- To leverage investments to help the community implement the recommendations of this Neighborhood Plan.



PUBLIC OPINION

The Township provided several opportunities for the public to voice opinions, concerns, comments, and questions about the Neighborhood Plans throughout the course of the year-long planning process. Public meetings were held for each of the four Neighborhood Plan Areas, as well as with the Township Planning Board. Residents were also able to submit comments by e-mail or by hand to a Township official or Planning Board member.



PUBLIC PRESENTATION - JULY 18, 2015

A presentation was made of observations of the neighborhood conditions and impact from storm damage at the Federation of Brick Beach Association (FOBA) meeting on July 18, 2015. Officials from the Township, consultants from Maser Consulting, and approximately 50 residents took part in a discussion about the present state, existing conditions, storm damage, and ideas for the future of Brick Beaches/Barrier Island. Below are the visuals created and distributed at this meeting.



Figure 2: Neighborhood Visual Character recommendations board presented at July 18, 2015 meeting



Additionally, a map of the sub-neighborhoods and the storm surge from Superstorm Sandy was presented (see Map 20).

NOTES FROM THE BRICK BARRIER ISLAND PUBLIC MEETING

Comments during the meeting with the Federation of Brick Beach Association (FOBA) on July 18, 2015 were synthesized and are found in Appendix I. These comments have helped to inform the Neighborhood Plan below.

RESULTS FROM PUBLIC COMMENT SHEETS

There were 13 comment sheets that were returned from the public open house on July 18, 2015 over the course of the summer. Residents were permitted to take the survey home and more were passed out through various associations by their representatives. Survey respondents answered a series of questions to rank their impression of the Barrier Island area, with “1” being strongly agree to “5” being strongly disagree. Although the individual responses varied greatly, the average for each question ranged between 1.5 and 2.5. These comments were considered in the development of this plan and can be found in Appendix II. Below is a summary of the responses:

Out of the thirteen (13) respondents, only five (5) are year-round residents, whereas the other eight (8) are seasonal residents with primary residences elsewhere. At least seven (7) are members of the Mantoloking Shores Property Owners Association (MSPOA), three (3) belong to Deauville Beach & Bay Association (DBBA), and another one (1) person belongs to Bayview Shores.

To that effect, on average most residents agreed that they like the private nature of the area and the fact that the neighborhoods are not connected is okay. Residents strongly agreed that they are familiar with their immediate neighbors; they agreed that they are familiar with their neighborhood; and they are neutral or agreed that they are familiar with other neighborhoods on the island.

Residents also agreed that they would like to see some planning for a North-South bicycle/pedestrian type of connection between various neighborhoods, public parks, and beach access. They also agreed, but slightly less so, that they would like to see some planning for improved East-West bicycle/pedestrian mobility (between bay and ocean). On average, residents somewhat agreed or were neutral that they would like to see more services encouraged on the island, such as stores and restaurants.

Residents had a neutral overall impression of the rebuilding efforts that have been done since Sandy’s impact, with some very happy with the effort and others very unhappy. Additionally, residents were asked whether they have any particular issues or concerns about the rebuilding efforts and overall safety of the area, such as traffic/access issues, flooding, repetitive loss properties, or the general appearance of the new elevations and floor heights of rebuilt properties. Additional responses to the comment sheets may be found in Appendix II.



PUBLIC PRESENTATION – MAY 14, 2016

A presentation of the draft Barrier Island Neighborhood Plan was made to the public on May 14, 2016 at the Dover-Brick Beach First Aid building at 123 2nd Avenue, Toms River, New Jersey and coordinated by the Township and the Federation of Brick Beach Association (FOBA). The intention of the meeting was to present the purpose, findings, and action plan in the Neighborhood Plan and to receive additional feedback prior to adoption of the Plan by the Township Planning Board. Members of the public had an opportunity to make comments and ask questions at the end of the presentation, write on comment sheets, or send comments via email. The comments can be found in Appendix III.



NEIGHBORHOOD HISTORY

A series of historic aerial photographs of the Barrier Island obtained online at www.historicaerials.com were analyzed to determine changes in development that took place within the neighborhood study area over the course of the past century. The earliest aerial available photography is dated from 1920.

According to the photographs, the subject neighborhood has changed drastically since at least the year 1920. The Brick Barrier Island was mostly natural and undisturbed until the second half of the twentieth century. Some sub-neighborhoods appeared by the early 1930s, but it wasn't until the mid-to-late-1950s when extensive and dense development patterns became apparent. Still, there were some untouched wetland and dune habitats that were critical to the island ecosystem. By the 1970s, nearly the entire Brick Barrier Island had been developed with very little natural space left. Most of the wetlands have been filled in and extended to make more space for development. The neighborhood has generally remained the same since that time, with the exception of major damage caused by Superstorm Sandy in 2012 and the subsequent rebuilding.

Prior to development, the Brick Barrier Island probably looked very similar to the way that Island Beach State Park in Berkeley Township, New Jersey exists today at the southern end of the barrier island. This is a protected natural area and is slightly wider than in Brick, but would have had similar features.

Until 1911, the area to the north of the Brick Barrier Island neighborhood that is the Borough of Mantoloking was also part of Brick Township and had already developed as an exclusive resort community. The Brick Township study area, on the other hand, only consisted of a handful of houses along the main road. It remained in a very natural state for a number of years, with large, vegetated sand dunes and empty beaches along the ocean side and swaths of undisturbed marshland on the bayside.



Figure 3: Large vegetated dunes that would have likely covered the beaches

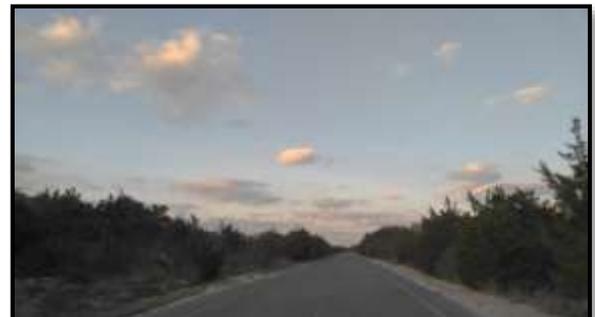


Figure 4: What the typical landscape through the center of the island may have looked like



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Figure 5: Sand dunes, shrubbery, and low-lying wetlands on the bay side



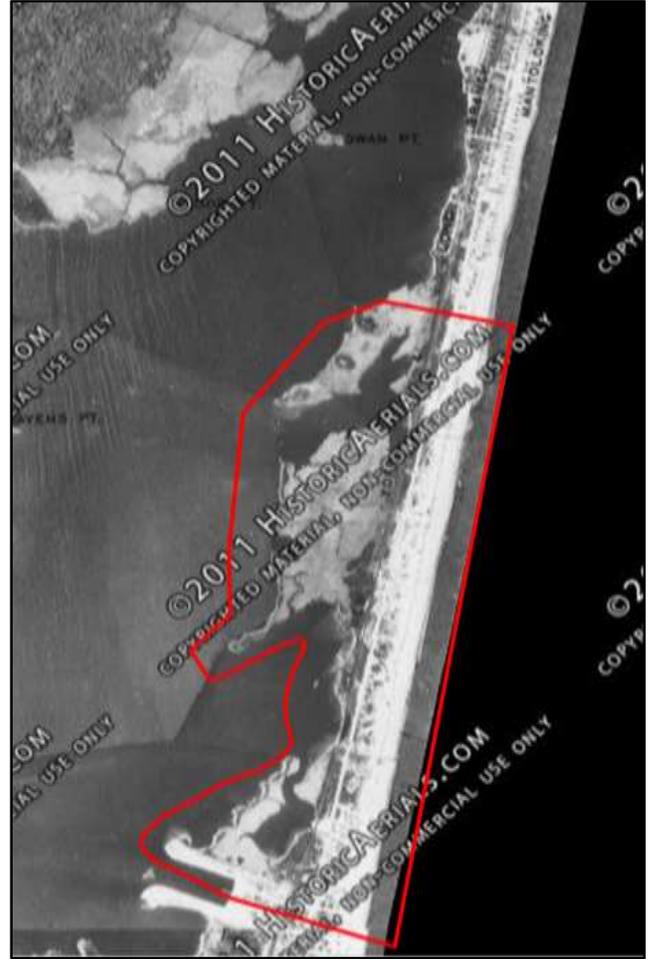
Figure 6: The beach would have been much wider and gently sloping with natural dunes

The community was historically connected by railroad, which was built in 1881 and ran along the west side of the island (now N.J.S.H. 35 South), from New York/Long Branch to Seaside Heights and then on to Philadelphia. The railroad may have been a driving factor in the growth and socioeconomic situation for the neighborhood early in its history because of the direct access to the largest cities in the region, as well as being an ideally located shore town. The Mantoloking Bridge (seen on Map 4) was originally built in 1884, connecting Mantoloking (then, Brick) to the south; however, the road extending along the island from Bay Head to Mantoloking was not completed until 1908¹. By 1920, the second bridge connecting the mainland to the island had been built to the south of Brick between Ocean Gate and Seaside Park.

¹ Benedict, Anne L. Borough of Mantoloking. *History*. Accessed May 25, 2016. http://www.mantoloking.org/?page_id=37



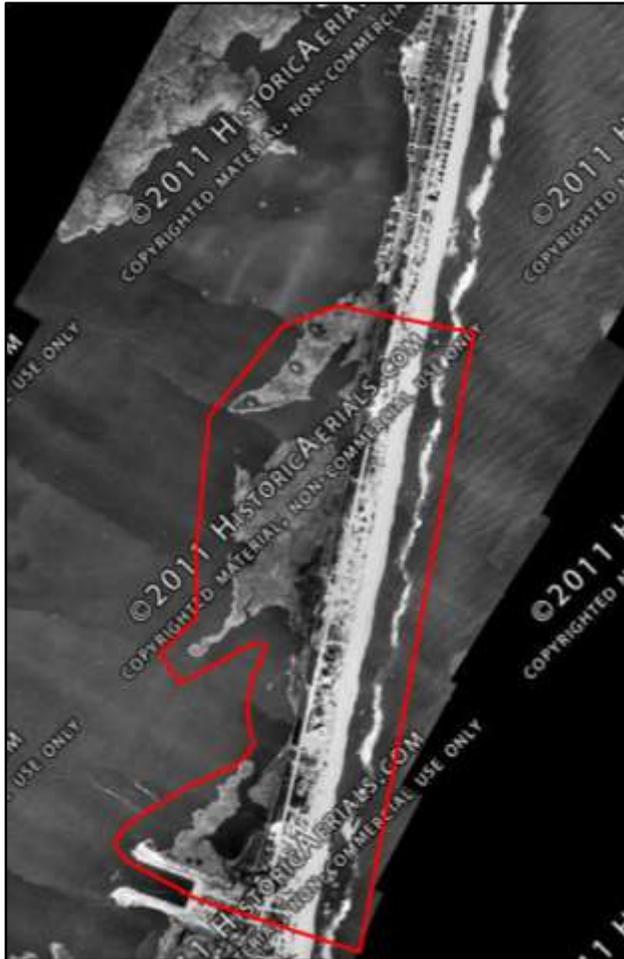
Map 4: 1920 Historic Aerial (www.historicaerials.com)



Map 5: 1931 Historic Aerial (www.historicaerials.com)

In 1931 (Map 5), the Brick Township neighborhood looked relatively the same as in 1920, with the exception of the extension of the Normandy Beach sub-neighborhood development into the southern border of Brick and westward into the marsh where new streets and a dredged basin are visible. A few more homes dotted the north-south strip along the main corridor.

Two years later, in 1933 (Map 6), more houses extended along the main north-south road (presently Route 35). Normandy Beach appears to have grown slightly more in size and density, particularly north and west; Camp Osborn also materialized in the form of a few neat rows of tiny, closely-spaced tents or cabins on the beach. Other homes do not appear to have yet been part of any distinguishable community. At this time, nearly all of the development occurred on the ocean side of Route 35. Some vegetated sand dunes still remained, but the wetlands within the Brick neighborhood were largely intact.



Map 6: 1933 Historic Aerial (www.historicaerials.com)



Map 7: 1940 Historic Aerial (www.historicaerials.com)

In 1940 (Map 7), just two years after the damaging hurricane of 1938, development in the study area had only grown slightly. Camp Osborn is particularly notable, having expanded from three to six rows with approximately ninety to one-hundred homes and grew from a village of tents to slightly more permanent structures. With the exception of a few new individual homes and the paving of some previously dirt roads, the island appears very similar to the way it did in 1933. Large, vegetated sand dunes covered parts of the eastern shore and nearly all of the marshland still remained on the western shore. However, distinct, man-made lines or channels can be made out in the marshes.



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Figure 7: Historic photograph of barrier island from approximately mid-1930s from the air – looking south from Borough of Mantoloking toward Brick Barrier Island neighborhood with approximate boundary line in red (Courtesy: Borough of Mantoloking, *History*. http://www.mantoloking.org/?page_id=37)

By 1953 (Map 8), the majority of the wetlands still remained, but it is evident that development was encroaching further. This is particularly true in the Normandy Beach neighborhood and the area that would become the eastern part of Mantoloking Shores along Route 35. These former wetlands were already transforming with new roads, sandy lots on land where it had not existed before, and wide lagoons extending through the neighborhoods like branches, which suggest that the dredged soil from the salt marsh to create the lagoons was used as landfill. Such lagoon developments were also being constructed along the mainland bayshore in Ocean County. No homes were yet built in Mantoloking Shores, but the lagoons and lots were already visible as the neighborhood began to materialize. The Deauville neighborhood was also becoming much more developed on both sides of the island and filling in the area between Normandy Beach and Camp Osborn, but at a much lower density than either adjoining neighborhood. Train service was suspended when the railroad bridge between Ocean Gate and Seaside Park burned on December 1, 1946. The tracks were removed in 1949, freeing up more land for development. Between 1949 and 1953, the railroad was replaced by southbound Route 35 from the Borough of Bay Head to Seaside Park.



Map 8: 1953 Historic Aerial (www.historicaerials.com)



Map 9: 1956 Historic Aerial (www.historicaerials.com)

The island transformed very rapidly between 1953 and 1956 (Map 9), with most of the older, inner sand dunes replaced by short east-west streets and homes where many of the sub-neighborhoods are now located. New arms of development also extended further into the wetlands along the Bay. Streets jutted out into man-made peninsulas by more dredged lagoons in the areas that would be Mantoloking Shores and Bayview Shores.



Map 10: 1963 Historic Aerial (www.historicaerials.com)



Map 11: 1972 Historic Aerial (www.historicaerials.com)

The island was almost entirely unrecognizable by 1963 (Map 10) from its state in 1920. Except for retaining the same general form, the two major natural systems that sustained the delicate balance of the barrier island – the dunes on the ocean side and salt marshes on the bay side – had been compromised beyond recovery. The majority of the island was developed with new streets and subdivisions, although many of the homes were not yet built. Dutchmans Point, part of Mantoloking Shores, and the tip of Curtis Point had the last remaining wetlands. However, by 1972 (Map 11), the last of the original wetlands had been consumed by development of these subdivisions – each street most likely built on fill generated by a dredged lagoon. Dutchmans Point, despite mostly being built out of Barnegat Bay, now occupies some of the highest land on the Brick Barrier Island. Half of Curtis Point, similarly, was built where there was previously no land; however, it was not elevated as high, which is evident by the amount of flooding each neighborhood suffered during Superstorm Sandy.



Map 12: 1986 Historic Aerial (www.historicaerials.com)



Map 13: 1995 Historic Aerial (www.historicaerials.com)

In 1986 (Map 12), the neighborhood was at its densest state yet, with increasingly more and larger homes, although it grew slightly more by 1995 (Map 13). Brick Beach III was also added by 1995 with a new large parking lot. There were still a number of pockets of natural land on the western shore, near what are today Bayside Park, Swamp Cove, and parts of the interior between Route 35 northbound and southbound.



Map 14: 2002 Historic Aerial (www.historicaerials.com)



Map 15: 2006 Historic Aerial (www.historicaerials.com)

By 2002 (Map 14), the island reached its peak for new development as there was no more available developable land. The land that was previously undisturbed was cut away until it reached what is today Swamp Cove and Bayside Park. The land in between Route 35 northbound and southbound was dedicated to more housing and parking lots, including the area across from Brick Beach III. After 2002, the physical layout of the neighborhood remained largely the same as the sub-neighborhoods were well-established, with the exception of some individual homes that may have been knocked down and replaced. The 2006 aerial (Map 15) illustrates the continuity.



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Figure 8: Aerial Images of Focus Area from 1986 (left), 1995 (center), and 2002 (right) (www.historicaerials.com)

The images above (Figure 8) illustrate the progression of development and loss of the last and very limited available land on the island between 1986, 1995, and 2002, focusing specifically on the area surrounding Brick Beach III and The Ocean Club.

In 2010 (Map 16), the developed area was largely the same as it was since 2002. The purpose of showing the 2010 aerial, however, is to contrast it to that of 2013 (Map 17). 2010 was only two years prior to Superstorm Sandy and 2013 was only one year after. Although rebuilding and restoration was already in full swing by the time of the photo in 2013, the amount of damage to the island is still clearly evident, particularly along the ocean side, where many homes and some entire sub-neighborhoods were nearly obliterated, making the island appear much less dense. More contrasting images are shown in the “Impact of Superstorm Sandy” section below.



Map 16: 2010 Historic Aerial (www.historicaerials.com)



Map 17: 2013 Historic Aerial (www.historicaerials.com)

Overall, the island neighborhood has changed dramatically between 1920 and 2013, which can be seen more clearly in the comparison image below (Figure 9), which shows a sub-section of the island in 1920, 1953, 1963, and 2013. Up until 1953, the Brick neighborhood looked generally the same, with a few small homes along the main road. The most significant changes to the island occurred between 1953 and 1963, which were truly the most structurally, socially, and ecologically transformative. This is the period in which most of the subdivisions, street network, and lagoons were created, although not necessarily occupied until later. While not all of the natural space had yet been developed, it signified a major shift that it ultimately would become that way. The last major developments took place by 1972 with the occupation of what wetlands remained in Curtis Point and Dutchmans Point on the bayside. Although the island achieved its current layout by 1972, it continued to densify over the years until about 2002, where it likely reached its peak of new construction due to the lack of available land. However, homes continued to become larger and occupy smaller lots to accommodate more growth. The neighborhood appears roughly the same as it did in 2002, with the exception of damage from Superstorm Sandy.



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The sub-neighborhoods of Dutchman’s Point, along with Mantoloking Shores, Bayview Shores, Osprey Dunes, Bel Air Village, Sandcastle Condominiums, Fisherman Dunes, Ocean Heights, Ocean View, and Mantoloking Dunes, are visible in the area of the photos above. Despite the private nature of the neighborhoods today, they generally appear indistinguishable in the aerial photos. On the ground-level, this Plan attempts to distinguish each sub-neighborhood and address their issues, while making the identity and connectivity of the entire Brick neighborhood seamless. This Plan also seeks to integrate the history and ecology of the island, as described above, into the restoration of the neighborhood.



Figure 9: Neighborhood Changes 1920 (top left), 1953 (top right), 1963 (bottom left), 2013 (bottom right)

SHORELINE CHANGE

A FEAT AND A DOWNFALL OF ENGINEERING; THERE IS LAND WHERE THERE ONCE WAS WATER AND WATER WHERE THERE ONCE WAS LAND.

The shoreline of the Barrier Island has changed drastically – not only in the density of development, but in the physical shape and length of the coast and in the loss of natural vegetation and sand dune ecology that once evolved with and protected the island. The historical aerials below show the change in shoreline between 1920 and 2013 with the green outline indicating the extent of land and the green shading indicating wetlands.



Figure 10: Change in shoreline and wetlands on the Brick Barrier Island between 1920 (left) and 2013 (right)
(www.historicaerials.com)

In 1920 there were approximately 118.25 acres of wetlands based on the digitization and outlining of the topography on the historic maps. This equates to 0.19 square miles, or one-third of the island's current landmass. Due to the advancement of landfilling and structural engineering, there is more buildable land today than existed in 1920, with new land having been created where there once was water or marsh. Paradoxically, developers dredged directly through areas where there once was land and marsh to create man-made canals. Although the Barrier Island has retained a similar overall form and some of the canals



THE TOWNSHIP OF
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follow the general direction of the former natural streams, there is now land where there once was water and water where there once was land.

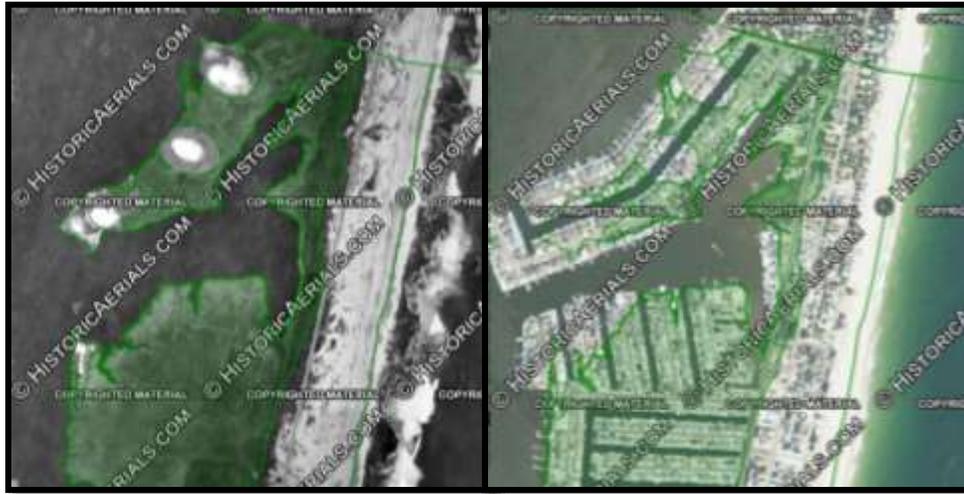


Figure 11: Detail of northern Brick Barrier Island shoreline change between 1920 (left) and 2013 (right)
(www.historicaerials.com)



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Map 18: Shoreline Change and Elevation of Barrier Island





EXISTING CONDITIONS ANALYSIS

The initial assessment for the Neighborhood Plan involved several site visits of the area with local representatives and an analysis of the information gathered by Township Planners, investigations, historic documents, and U.S. Census and American Community Survey data. From this baseline information, the following facts and observations were identified.

NEIGHBORHOOD PROFILE

The Brick Barrier Island neighborhood encompasses a total of 384 acres of land (0.60 square miles), which is the smallest of the four Brick Neighborhood Plan Areas by size. The Barrier Island is part of a chain of barrier islands that extend along the eastern coast of the United States from Pt. Pleasant Beach Borough, New Jersey in the north to the Florida Keys in the south, creating the protected channel known as the Intracoastal Waterway. The island on which the Brick Township neighborhood lies is approximately 23.5 miles in length, generally running north to south, of which the neighborhood occupies only 1.79 miles. New Jersey State Highway 35 is the primary road and runs the island’s length.

Surrounded by water, with Barnegat Bay to the west and the Atlantic Ocean to the east, the island has increasingly attracted more visitors, seasonal residents, and year-round residents over the past century due to its recreational and natural attributes, as well as its regional location. Although the neighborhood is now densely developed with few remaining ecological areas, the surrounding Bay area offers many opportunities. The high population density leaves little space for expansion or new development, with the exception of rebuilding existing lots.

SUB-NEIGHBORHOODS

The Neighborhood Plan area is divided into three general sections by New Jersey State Highway 35 (Route 35). The areas can generally be described as the “Ocean Side”, east of Route 35 North to the Atlantic Ocean; the “Center Island” between Route 35 North to the east and Route 35 South to the west; and the “Bay Side”, west of Route 35 South to Barnegat Bay.

Additionally, there are a minimum of seventeen (17) different sub-neighborhoods within the Study Area that self-identify as beach, condominium, or homeowner’s associations and mostly occupy the Ocean or Bay side, but sometimes both. However, there are some areas of the island neighborhood that do not belong to a specified association, particularly those in the Center Island. The sub-neighborhoods are listed in the sidebar as they are shown on Map 19 from north to south and described further below.

Barrier Island Sub-Neighborhoods
Curtis Point
South Mantoloking
Mantoloking Dunes
Mantoloking Shores
Ocean View
Ocean Heights
Bayview Shores
Dutchmans Point
Seneca Dunes
Fisherman Dunes
Sandcastle
Condominiums
Bel Air
Osprey Dunes
The Ocean Club
Camp Osborn
Deauville
Normandy Beach



CURTIS POINT

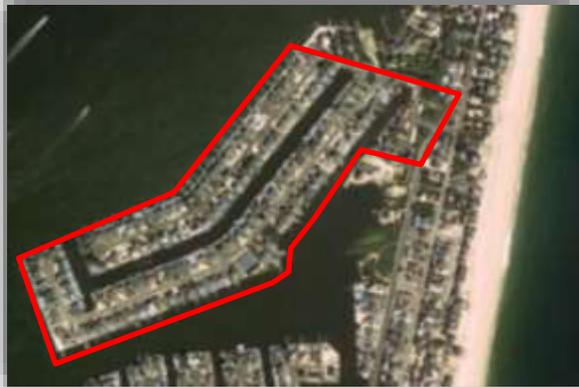


Figure 12: Aerial view of Curtis Point sub-neighborhood, outlined in red (Google Maps, 2016)

The sub-neighborhood of Curtis Point is located at the northernmost section of the Brick Barrier Island neighborhood and shares a border with the Borough of Mantoloking along Curtis Point Road. Curtis Point is accessible from Route 35 South via Curtis Point Road which then becomes a lagoon peninsula on the bayside. Squan Beach Drive splits from Curtis Point Road and forms a second peninsula on the lagoon.



Figure 13: Development of Curtis Point in 1956 (left), 1963 (center), 1970 (right) (www.historicaerials.com)

The earliest homes in the sub-neighborhood date to around 1950 or later and are the homes that front Route 35 South. The peninsula and lagoons were not developed until the late 1950s or 1960 at the earliest.

Curtis Point is located in the R-7.5 Residential zone with a minimum lot width requirement of 75 feet. The properties in Curtis Point all have waterfront along the bayside lagoons and have some of the largest homes on the Brick Barrier Island. The sub-neighborhood also has private tennis courts on Squan Beach Drive.



Figure 14: Typical (Google Streetview 2014) on Curtis Point Road in Curtis Point



SOUTH MANTOLOKING

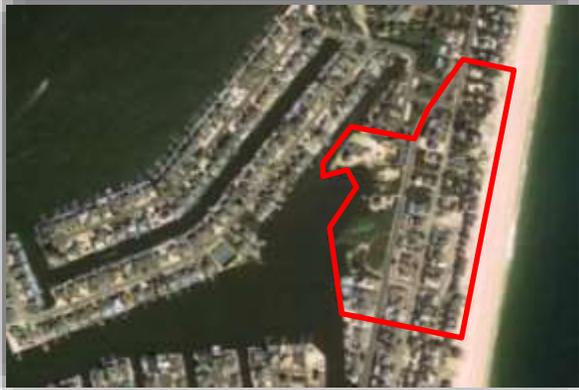


Figure 16: Aerial map of South Mantoloking (Google Maps)

Although it is in the R-7.5 Residential zone, requiring a minimum lot width of 75 feet, and there is a mix of different-sized homes, many of the lots and homes in this area are much larger than in other sub-neighborhoods.

The sub-neighborhood of South Mantoloking is located at the northeastern part of the neighborhood along the border of the Borough of Mantoloking. It lies to the east of Curtis Point along the beachfront and north of Mantoloking Dunes, covering the extent of Sunset Lane. South Mantoloking also covers both sides of Route 35.



Figure 15: Typical streetscape (Google Streetview 2014) on Route 35 North (facing south) in Mantoloking South

MANTOLOKING DUNES

Mantoloking Dunes is located along the Ocean, east of Route 35 North, south of Mantoloking Shores, and north of the Ocean View sub-neighborhood. Mantoloking Dunes also contains a portion of Sunset Lane. The northern end of the neighborhood along the beachfront sustained the most damage.



Figure 18: Typical streetscape in Mantoloking Dunes (Google Streetview 2014)

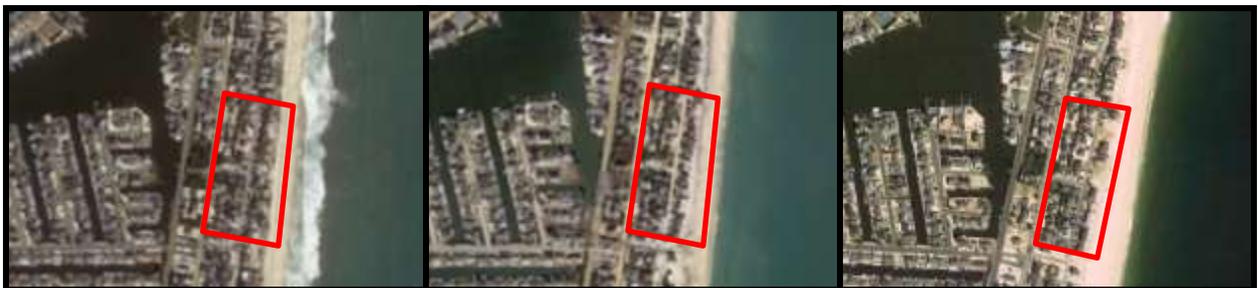


Figure 17: Mantoloking Dunes (outlined in red) in 2010 (left), post-Sandy 2012 (center), and 2016 (right) (Google Maps)



MANTOLOKING SHORES

Mantoloking Shores is the largest and most populous sub-neighborhood on the Brick Barrier Island with the most homes. The entire sub-neighborhood is located in the R-7.5 Residential zone, but homes vary in type and size. Mantoloking Shores was built by the 1970s out of the largest central wetlands area on the Brick Barrier Island. There are seventeen individual lagoons and eighteen streets and each home has lagoon



Figure 19: Typical streetscape (Google Streetview 2014) in Mantoloking Shores

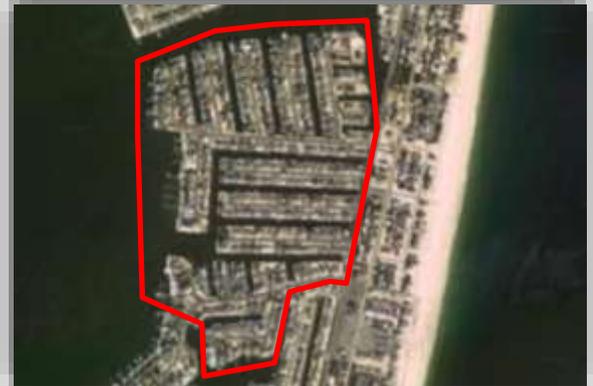


Figure 20: Location of Mantoloking Shores sub-neighborhood (Google Maps, 2016)

frontage. The sub-neighborhood also had the most substantially damaged properties from Superstorm Sandy with 176.

OCEAN VIEW

Ocean View is one of the smallest sub-neighborhoods, with fewer than ten properties. A few homes were demolished after destruction from Superstorm Sandy, but the lots have been slow to



Figure 21: Location of Ocean View sub-neighborhood (Google Maps, 2016)



Figure 22: Typical streetscape in Ocean View from Route 35 North (Google Streetview)

rebuild. Ocean View is located on Oceanview Terrace, east of Route 35 North on the beachfront. The sub-neighborhood shares Sunset Lane, to the east, with Ocean Heights to the south; however, a barrier restricts thru-access between the two. Ocean View also lies east of a major entrance to Mantoloking Shores across Route 35 on Bay Lane, as well as south of Mantoloking Dunes.



OCEAN HEIGHTS

The sub-neighborhood of Ocean Heights is located east of Route 35 North along the oceanfront; south of Ocean View, with which it shares Sunset Lane, albeit restricted access; north of Bayview Shores; and east of Mantoloking Shores across Route 35, the unclassified central median neighborhood, and Used To Be's Restaurant. Ocean Heights extends three blocks north-south and two blocks east-west.



Figure 23: Location of Ocean Heights sub-neighborhood
(Google Maps, 2016)



Figure 24: Typical streetscape in Ocean Heights from Route
35 North (Google Streetview)

BAYVIEW SHORES

Bayview Shores is a sub-neighborhood in the central part of the island with a combination of a Bay/lagoon community and a beachfront community. Residents have access to both areas. The sub-neighborhood is located south and east of Mantoloking Shores, south of Ocean Heights, and north and west of Seneca Dunes, Brick Beach I, Fisherman Dunes, Sandcastle Condominiums, and Bel Air. Bayview Shores contains one internal road adjacent to Route 35 South, separated by a planted median. Although it is in an R-7.5 zone, the homes tend to be smaller and very modest.



Figure 25: Typical streetscape in Bayview Shores, Bay side
(Google Streetview)

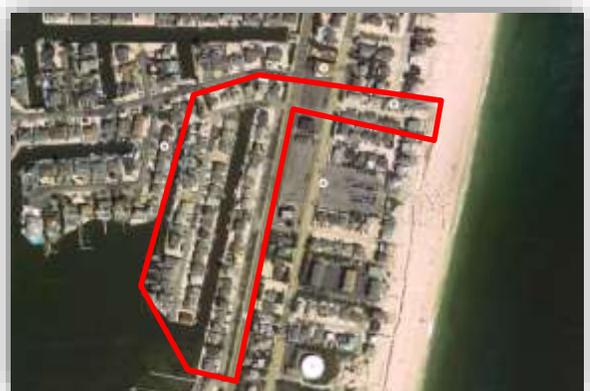


Figure 26: Location of Bayview Shores sub-neighborhood
(Google Maps, 2016)



DUTCHMANS POINT

Dutchmans Point is located off of Tide Pond Road, which becomes Dutchmans Point Road. The sub-neighborhood on the Bay is accessible only through Mantoloking Shores, but constitutes its own sub-neighborhood. The point on which it was developed was one of the last remaining wetland areas on the Brick Barrier Island. Although many areas on former wetlands are low-lying and subject to consistent flooding, Dutchmans Point was built on fill at a higher elevation than most of the island – approximately 8 to 10 feet above sea level – and, therefore, there was much less flood damage in this section during Sandy and only one property was substantially damaged – the least of any sub-neighborhood. However, the road into the sub-neighborhood is at a lower level. The homes in Dutchmans Point are in the R-7.5 Residential zone and are some of the largest on the island, particularly Bayside. Post-Sandy, homes that have been rebuilt tend to occupy as much of the lot as permitted and appear oversized.

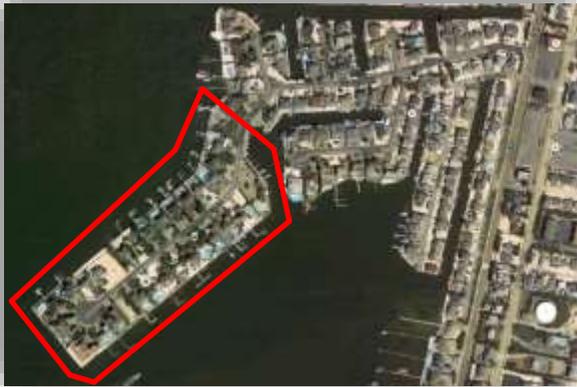


Figure 28: Location of Dutchmans Point sub-neighborhood
(Google Maps, 2016)



Figure 27: Streetscape in Dutchmans Point at entrance
(Google Streetview)

SENECA DUNES

Seneca Dunes is located east of Route 35 North along the beachfront; south of the Bayview Shores beachfront sub-neighborhood; and north of Brick Beach I. It is also located across from the island's fire station. The sub-neighborhood, located in the R-7.5 Residential zone, contains mostly two-story homes along one dead-end street.



Figure 29: Location of Seneca Dunes sub-neighborhood
(Google Maps, 2016)



Figure 30: Typical streetscape in Seneca Dunes, from
Route 35 North (Google Streetview)

FISHERMAN DUNES

Fisherman Dunes, on the south side of Brick Beach I, is very similar to some of the other beachfront sub-neighborhoods, such as Seneca Dunes, but with slightly more modest homes. The one dead-end road community is located east of Route 35 North and north of the Sandcastle Condominiums.



Figure 31: Location of Fisherman Dunes sub-neighborhood
(Google Maps, 2016)



Figure 32: Typical streetscape in Fisherman Dunes, from
Route 35 North (Google Streetview)

SANDCASTLE CONDOMINIUMS

Sandcastle Condominiums is a condominium association located in the central part of the island's beachfront, east of Route 35 North. The sub-neighborhood is south of Fisherman Dunes, north of Bel Air, and east of the Bay and unnamed central district. The three two-story condominium buildings are setback from Route 35, unlike many other homes, and have hedges and wooden fencing around the perimeter. This is the only other condominium complex than the Ocean Club, but very different in layout.



Figure 33: Typical streetscape at Sandcastle Condominiums, from Route 35 North (Google Streetview)



Figure 34: Location of Sandcastle Condominiums sub-neighborhood (Google Maps, 2016)

BEL AIR

Bel Air is a small one dead-end road sub-neighborhood, similar to Fisherman Dunes, with modest homes of a similar size and located in the R-7.5 Residential zone. The beachfront sub-neighborhood is east of Route 35 North and the Bay, north of Brick Beach II, and south of Sandcastle Condominiums. Although this area sustained major damage, Bel Air had the fewest substantially damaged properties from Superstorm Sandy, after Dutchmans Point, with five properties.



Figure 35: Typical streetscape in Bel Air, from Route 35 North (Google Streetview)



Figure 36: Location of Bel Air sub-neighborhood (Google Maps, 2016)



OSPREY DUNES

Osprey Dunes is a private beach association located east of Route 35 North along the beachfront, north of Brick Beach III and south of Brick Beach II. Osprey Dunes is entirely residential and contains homes along two dead-end streets, Ospray Lane and Faber Lane, as well as some facing directly onto Route 35 North. The sub-neighborhood is in the R-7.5 zone, requiring lot widths of 75 feet or greater. Homes in this sub-neighborhood are some of the largest on the Brick Barrier Island. In fact, some lots are nearly as large as some of the other sub-neighborhoods on the Barrier Island.

The first homes in the sub-neighborhood were originally built around the late 1930s, but the area was still largely sand dunes and unbuilt. It wasn't until sometime between 1972 and 1986 that Osprey Dunes began to take some form as a sub-neighborhood and not until 1995 that the roads and most of the homes were built.

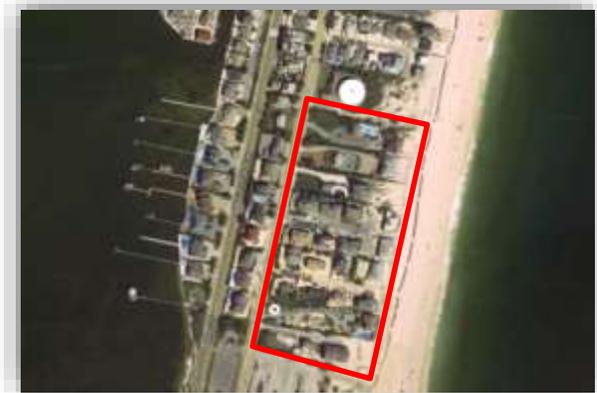


Figure 37: Location of Osprey Dunes (Google Maps, 2016)



Figure 38: Typical streetscape (Google Streetview 2013) in Osprey Dunes

THE OCEAN CLUB

The Ocean Club is a private condominium association consisting of one building on Block 36, Lot 31, east of Route 35 North along the beach, north of Camp Osborn, and south of Brick Beach III. Due to its size, secluded nature, and function as a separate association, the Ocean Club is considered a sub-neighborhood for the purpose of this Plan. The Ocean Club was built in 1969, but was substantially damaged during Superstorm Sandy requiring major renovations.

Figure 39: The Ocean Club post-Sandy 2013 (top) & 2014 (bottom) (Google Streetview)



The building was nearly completely renovated by 2014. The property is located in the R-7.5 Residential zone, which requires a minimum lot width of 75 feet. The Ocean Club property is approximately 250 feet in width along Route 35 and has a large section of beachfront. However, this is one of the narrowest sections of beach on the Brick Barrier Island and the revetment wall has created a significant elevation drop from the building to the ocean.



Figure 40: Location of the Ocean Club (Google Maps, 2016)

CAMP OSBORN



Figure 41: Camp Osborn (outlined in red) in 2010 (left), post-Sandy 2012 (center), and 2014 (right) (Google Maps)

Camp Osborn is the second oldest of the sub-neighborhoods on the Brick Barrier Island, built by the early 1930s. The sub-neighborhood is located on small area of land east of Route 35 North along the ocean-side beach and nestled south of The Ocean Club and north and east of Deauville.

Camp Osborn originated as a camp of tents and small cabins for fishermen, but quickly grew into small community of beach homes that would be passed between generations of families. As the families grew, the homes grew to accommodate them, albeit much smaller than in other neighborhoods. There were approximately fifty-eight homes on a 1.59 acre piece of land, which often only had a setback of a couple of feet from one another.



Figure 42: Typical streetscape (pre- and post-Sandy) in Camp Osborn (Google Streetview 2008 & 2013)

When Superstorm Sandy hit in 2012, the low elevation of the homes, unstable construction, and the close proximity of homes were factors that contributed to the destruction of the entire sub-neighborhood. Homes were washed into one another, which created a chaotic cleanup situation and

required all of the homes to be demolished. The owners are continuing to try to find a solution of how to rebuild in a way that would be more compliant with zoning, but allow families to return.

DEAUVILLE

Although there were other homes appearing on the island around the same time between the 1930s and 1940, Deauville was more well-defined as a sub-neighborhood as it filled in the area between the existing sub-neighborhoods of Normandy Beach to the south and Camp Osborn to the northeast.



Figure 43: Typical street grid (Google Maps, 2013) and streetscape (Google Streetview, 2013) in Deauville at Deauville Road

Unlike most of the Barrier Island sub-neighborhoods, Deauville crosses Route 35 and includes both beachfront and bayfront. Deauville is also adjacent to Bayside Park/Swamp Cove. The sub-neighborhood is also home to a few of the businesses on the Brick Barrier Island, including a marina, restaurant, and bait and tackle shop.

Despite the slightly larger lots, setbacks, and homes than its predecessors, Deauville is also in the R-5 zone with a minimum 50 foot lot width, although not all properties meet this requirement. Deauville also experienced some of the most significant damage of the Brick Barrier Island sub-neighborhoods during Superstorm Sandy.

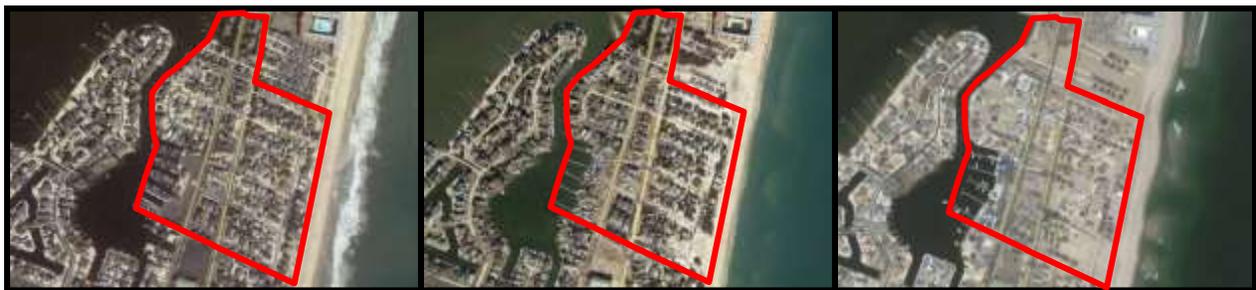


Figure 44: Deauville (outlined in red) in 2010 (left), post-Sandy 2012 (center), and 2014 (right)

NORMANDY BEACH

Normandy Beach is the oldest of the Brick Barrier Island sub-neighborhoods, which began to be developed between 1920 and 1931. The sub-neighborhood is also currently located in the R-5 Residential zone with a minimum 50-foot lot width. Therefore, many of the lots and homes have historically been much smaller than the rest of the Brick Barrier Island. Normandy Beach also suffered



some of the worst damage from Superstorm Sandy – partly due to the close proximity of homes and the aging structures built prior to flood regulations.



Figure 45: Typical street grid (Google Maps, 2013) and streetscape (Google Streetview, 2013) in Normandy Beach, Brick at East 6th Avenue

This sub-neighborhood is located on the very southern end of the Brick Barrier Island neighborhood and is unique because, as a homeowners association and social network, it also extends into the Township of Toms River to the south and shares various services. The Dover-Brick Beach First Aid building in Normandy Beach is located on the Toms River side and the Federation of Brick Beach Associations (FOBA) holds its meetings at this location. Normandy Beach is also one of the few sub-neighborhoods that extend from the beachfront to the bayfront and also has a Normandy Beach Improvement Association Bay Beach House with tennis courts, a basketball court, and a playground.

The Brick side of Normandy Beach also shares similar streetscape characteristics and has the highest density of commercial businesses, which comprises part of a larger “business area” that extends into Toms River along Route 35 North. The former church, Our Lady of Peace, was located in Deauville between 7th Avenue and Jeanette Street between Route 35 North and South and occupied one of the largest lots in the island neighborhood. The building was significantly damaged during Superstorm Sandy and is currently in the process of being demolished to make way for twenty-one approved subdivision homes.



Figure 46: Normandy Beach, Brick Township side (outlined in red) in 2010 (left), post-Sandy 2012 (center), and 2014 (right)



DEMOGRAPHICS

According to the 2010 U.S. Census, the Barrier Island neighborhood of Brick Township had a population of 746. By 2013 the population had dropped 23 percent to 574 people, although slightly up from 2012. This dramatic change was due almost entirely to the damage caused by Superstorm Sandy in 2012. However, the population has been steadily decreasing since 2000, when it was at 956 people. Therefore, in the past thirteen years, the population lost 382 people, or a total of 40 percent (see Figure 47). Based on the year-round average number of persons per unit, the summer (June through August) population is approximately 2,885 persons per unit. However, more people tend to visit during the summer and live together with families and friends and requiring less space. Therefore, the summer population could easily be above 3,000 persons.

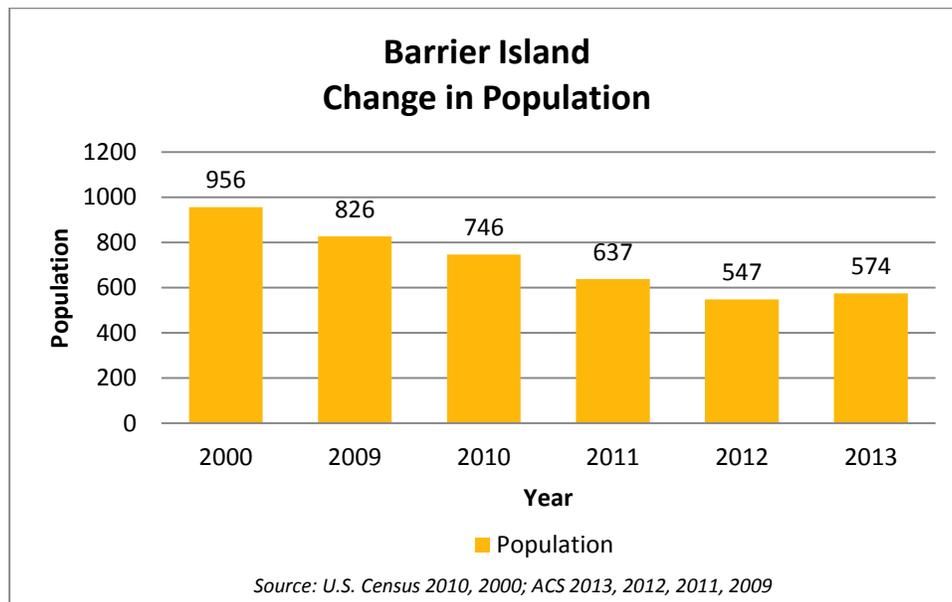


Figure 47: Barrier Island, Change in Population 2000-2013

Meanwhile, Brick Township as a whole has also been losing some population. Each decade since 1950 through 2000 saw between 10,000 and 20,000 people added to the total population. After rapidly increasing in population for half a century, it began to plateau in 2000 at 76,119. Only another couple thousand people were added to the population by 2000, and by the following year the population lost over 3,000 people. The cause of the sudden decrease in population has not been determined. Since then, the population has hovered around 75,000 (see Figure 48). The population density of Brick Township in 2000-2005 was estimated to be 2,979 persons per square mile, according to the Township of Brick 2007 Master Plan². By 2009, the population spiked to 78,321, but then decreased to 75,072 by the following year. Even with the impact of Superstorm Sandy, the Township population did not alter very

² Township of Brick, Division of Land Use and Planning. "Township of Brick Master Plan". June 6, 2007.



much between 2011 and 2014. Although the Barrier Island lost some population, the Township as a whole has been slowly gaining population.

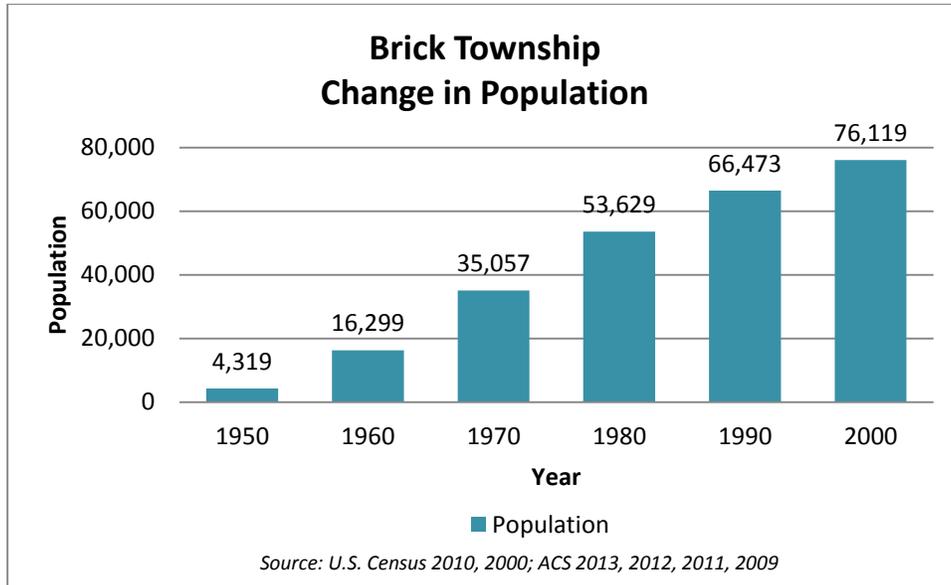


Figure 48: Change in Population 1950-2000

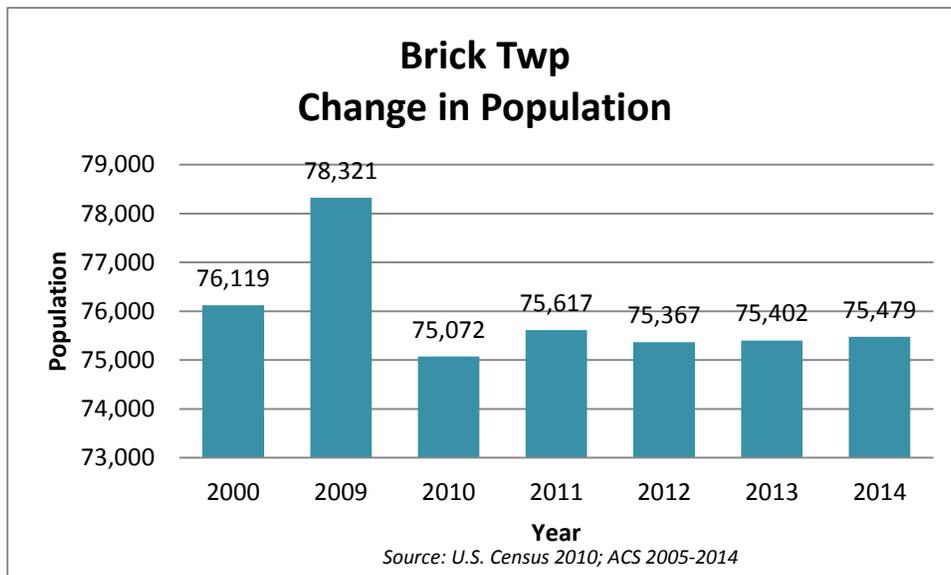


Figure 49: Change in Population, Brick Township 2000-2014

Of the Brick Barrier Island population, the median age is 62.9 years. Over 30 percent of the population is between 60 and 69 years of age, whereas the entire population under 50 years equates to less than a



quarter of the total (see Figure 50). According to the 2010 U.S. Census, 43.7 percent of the Barrier Island population is over 65 years old, whereas 17.9 percent of the total Brick population is over 65 years old.³

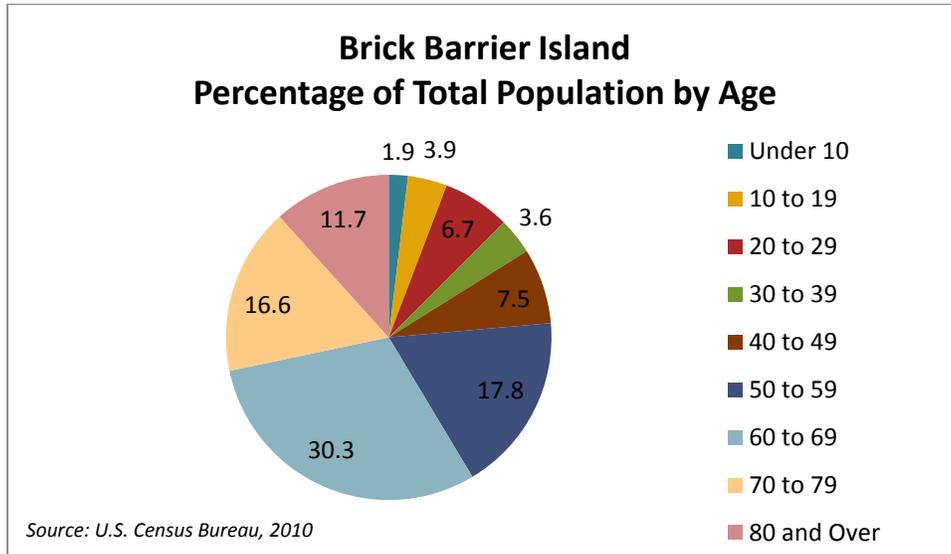


Figure 50: Percentage of Total Neighborhood Population by Age (2010)

Out of the total Barrier Island population in 2010, 351 were male and 395 were female. Additionally, 743 people are of one race and 3 are of two or more races. 98.4 percent, or 734 people, identified as White alone, whereas 2.3 percent, or 17 people, identified as Hispanic or Latino/a, 0.9 percent are Asian, 0.4 percent is two or more races, 0.1 is American Indian or Alaska Native, and 0.1 is Some Other Race.

HOUSING

In 2010, there were 1,435 total housing units in the Brick Barrier Island neighborhood⁴. Of those units, 372 were occupied housing units, while 1,063 were vacant. This equates to approximately 2.01 persons per household. The majority of these units (1,046 units) represent vacancies because they are for seasonal, recreational, or occasional use. Of 416 owner-occupied units, 137 (32.9%) were valued at \$1,000,000 or more and the median value was \$732,800.

By 2012, there were a total of 1,446 housing units with 297 (20.5%) occupied and 1,149 (79.5%) vacant units⁵. The median value of the 297 owner-occupied units had fallen to \$726,000, although 121 units, or 40.7%, were valued at \$1,000,000 or more. Despite there being 11 more total units in 2012, there were 75 fewer occupied units and 86 more vacant properties than in 2010. This shift is most likely due to the

³ Source: U.S. Census 2010, U.S. Census Bureau, Tract 7144

⁴ Source: U.S. Census 2010, U.S. Census Bureau, Tract 7144

⁵ Source: U.S. Census Bureau 2008-2012, 5-Year American Community Survey, Tract 7144



damage caused by Superstorm Sandy in 2012, which prevented many people from living in their homes for several years, as well as destroying many homes entirely.

According to the most recent American Community Survey for this tract in 2013, there were a total of 1,366 housing units, of which 292 (21.4%) were occupied and 1,074 (78.6%) were vacant.⁶ Therefore, just between 2012 and 2013, there were 80 fewer housing units with 5 fewer occupied units, and 75 fewer vacant properties. These numbers show that 80 housing units had been removed by this point in time, whether for being destroyed or purposefully removed. Especially for those housing units that were restored or rebuilt, 117 (42.2%) of all owner-occupied units were valued at \$1,000,000 or more. The median value, in dollars, was \$832,000, representing an increase of \$106,000 since the prior year.

The average built year of all homes in the Brick Barrier Island neighborhood is 1967, although the earliest existing structure was built in 1830 and there are several that have been built between 2014 and 2015. The oldest neighborhood is Camp Osborn, where the average year built is 1945. The newest housing is in Dutchmans Point where the average built year is 1983. However, Camp Osborn, which was a bungalow neighborhood, was destroyed by both the surge of Superstorm Sandy and the natural gas fire that was triggered by the storm and burned it to the ground because it could not be reached by firefighters.

Table 1: Average Year Built of Structures by Sub-Neighborhood

Sub-Neighborhood	Avg. Year Built
Camp Osborn	1945
Deauville	1956
Fisherman Dunes	1957
Bel Air	1963
Sandcastle Condominiums	1963
Ocean Heights	1964
Ocean View	1965
South Mantoloking	1965
Seneca Dunes	1966
Bayview Shores	1967
Mantoloking Dunes	1967
Normandy Beach	1968
The Ocean Club	1969
Barrier Island Undefined	1971
Mantoloking Shores	1972
Curtis Point	1976
Osprey Dunes	1977

⁶ Source: U.S. Census Bureau 2009-2013, 5-Year American Community Survey, Tract 7144



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Dutchmans Point	1983
Barrier Island Unidentified	1973
Barrier Island (Total)	1967

IMPACT OF SUPERSTORM SANDY

On October 29, 2012, Superstorm Sandy hit the State of New Jersey and caused severe damage along the coastline from wind, flooding, and wave action. The damage occurred primarily at the points of lowest elevation where the storm surge inundated the island and caused severe coastal flooding. However, as a barrier island, most of the neighborhood is at a very low elevation. In fact, all of the Brick Township area on the barrier island has an elevation 10 feet above sea level or below.

The storm surge from the catastrophic weather event covered the majority of the island, with the exception of the area between Route 35 northbound and the beaches, as well as Dutchmans Point (see Map 20). Dutchmans Point is the newest area of the island and, therefore, is raised higher than much of the rest of the neighborhood. The area east of Route 35 is naturally elevated where the area was built over the original sand dunes that formed the island. Despite the slightly higher land on the ocean side, there were few existing sand dunes to protect the beach and eastern neighborhoods from flooding and erosion.



Figure 51: New sand dunes being built on the beachfront
(date: 6-8-15)



Figure 52: Damaged home on bayside (date: 6-8-15)

The bayside of the island, however, is the most vulnerable to major flooding as there are virtually no protective elements, such as wetlands or sand dunes, although it does not typically experience as much wave action or erosion as the ocean side. During Superstorm Sandy, Barnegat Bay was breached and opened up to the Atlantic Ocean in several places, allowing water to flow inland, in addition to being high tide and a full moon, which created even higher tides. The excessive amount of water overwhelmed roads and storm drains.



Figure 53: Damaged/Gutted home on the bayside (date: 4-24-15)



Figure 54: Land/Streets are regularly very low relative to the level of the bay (date: 4-24-15)



Figure 55: Focus Area Comparison of Pre-Sandy 2010 (left) and Post-Sandy 2013 (right)

Figure 55 above shows a comparison of the neighborhood between Deauville (bottom of the image) and the Ocean Club (top of the image) from 2010 and 2013. This was one of the hardest hit areas of Brick Township during Superstorm Sandy, particularly Camp Osborn to the north, just below The Ocean Club. All of the small homes in that sub-neighborhood were washed away or have been leveled. Since the storm, a lot of recovery efforts have



Figure 56: Internet image of removal of debris from Camp Osborn after Sandy



occurred, although certain parts of the island, such as this one, have been slower to recover. One of the major efforts has been to use a revetment wall along the beach on the ocean to protect the community and prevent major erosion. This process can be seen in the 2013 image where the thick dark line runs along the beach in the center-right part of the image and is also pictured in Figure 57 and Figure 58 below.



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Map 20: Neighborhood Map with Impact of Storm Surge from Superstorm Sandy





Figure 57: Revetment wall in front of The Ocean Club (date: 4-24-15)



Figure 58: Revetment wall north of Brick Beach III (date: 4-24-15)

The majority of the neighborhood is at or only slightly above sea level. Only a narrow area of land is a maximum of ten feet above sea level. While it appears from a review of FEMA storm surge boundaries on Map 20 below that only the west or bay side of the Barrier Island neighborhood experienced storm surge, photos such as that shown in Figure 59 confirm what the world saw during Sandy when the brunt of the wind driven surge hit the ocean side of the island. The only surge on the barrier island was from the Atlantic Ocean and there was not a second surge from the Barnegat Bay, as previously thought.



Figure 59: Diagram of Wind Surge on Barnegat Bay (www.professorsak.com)

However, research found on a blog by “Professor Sak”, a researcher with Rutgers University in partnership with the National Estuarine Research Reserve System (a sub-group of NOAA), provides some insight to the perceived phenomenon of the “reverse surge” from the bay. In a blog post on June 6, 2013, data from a weather station in Brick Township that survived and provided data through Sandy was analyzed and described a shift in wind direction that had water rising in the Barnegat Bay through the



inlet and driven north by SSE winds from wider areas of the bay to narrower areas during the same period that the ocean surge hit the barrier islands. While the ocean surge did the damage as it swept across to the bay, the funneled wind driven water in the bay swelled up and exacerbated the flooding of bayfront properties on both the barrier island and the mainland.⁷

Residents were unable to move back into their neighborhoods and homes for several months after the storm due to the widespread damage. After a couple of weeks, they were only able to go back for two hours with one suitcase and when they were allowed back, residents could only take one car per family with a permit sticker. Many residents are continuing to rebuild their homes into 2016.

There are also three public safety services located on the island, which were impacted. These include the Township of Brick Police Substation, Brick Township Pioneer Hose Co. 1 House 2 Fire Department, and the Dover-Brick Beaches First Aid Squad. The Police Substation is located at Seabreeze Way between West Central Avenue (Route 35 southbound) and Ocean Avenue (Route 35 northbound), south of Bay Boulevard. The Fire Department is located at 301 Bay Boulevard between West Central Avenue and Ocean Avenue. Dover-Brick Beaches First Aid Squad is located at 123 2nd Avenue, Normandy Beach, Toms River. Although the First Aid Squad is technically in the Township of Toms River, it also serves Brick Township and is an important resource for the community. The First Aid Squad building was heavily damaged and required renovations due to flooding of the entire building during Superstorm Sandy. While it is historically a dry area at a slightly higher elevation, the facility received 4 feet of water during Sandy.

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Program, *Substantial Damage* refers to “damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value before the damage occurred.”^{8,9} In total, there were approximately 688 substantially damaged properties on the Brick Barrier Island alone through 2015, which equates to 48 percent of the total housing stock. This number includes, but is not necessarily limited to properties damaged by Superstorm Sandy.

The age of structures or the year in which they were built also has a strong correlation to the amount of damage that properties were likely to receive. The base flood elevation (BFE) level requirement, which was first implemented in the Township in 1972, allows homes which are elevated to regulation to qualify for flood insurance. Homes that sit on higher ground or that have been elevated, whether by regulation or by personal decision, are naturally less likely to receive as much flood damage as older homes built

⁷ Blog entitled “Barrier Islands in Cross Section and How it Plays Out During Storm Surge Events”, posted on June 6, 2013 at <http://professorsak.com>.

⁸ Township of Brick, New Jersey. *Chapter 196. Flood Damage Prevention Ordinance*. Thursday, May 28, 2015.

⁹ www.fema.gov. NFIP Substantial Improvement/Substantial Damage Desk Reference. Chapter 3: Requirements and Definitions. Page 3-5. 2013.



before the requirement. Additionally, the BFE has been updated several times and generally increased the requirements in 1984, 1992, 1998, 2006, and 2015.

Consistent with the average built year of all buildings on the Barrier Island, the average built year of all structures that have suffered significant damage is 1967, and most likely due to Superstorm Sandy. The first BFE requirements were not in place until five years later. Accordingly, the most significant damage occurred in Camp Osborn, which was the oldest sub-neighborhood and which was entirely destroyed, as well as Bayview Shores, The Ocean Club, Normandy Beach, Deauville, Mantoloking Shores, Ocean View, and Sandcastle Condominiums. Only six out of eighteen neighborhoods had substantial damage averaging post-1972, and all substantially damaged properties, with the exception of Sandcastle Condominiums were built before 1984. Only one property in Dutchmans Point was significantly damaged.

Map 21: 1998 FEMA BFE Map

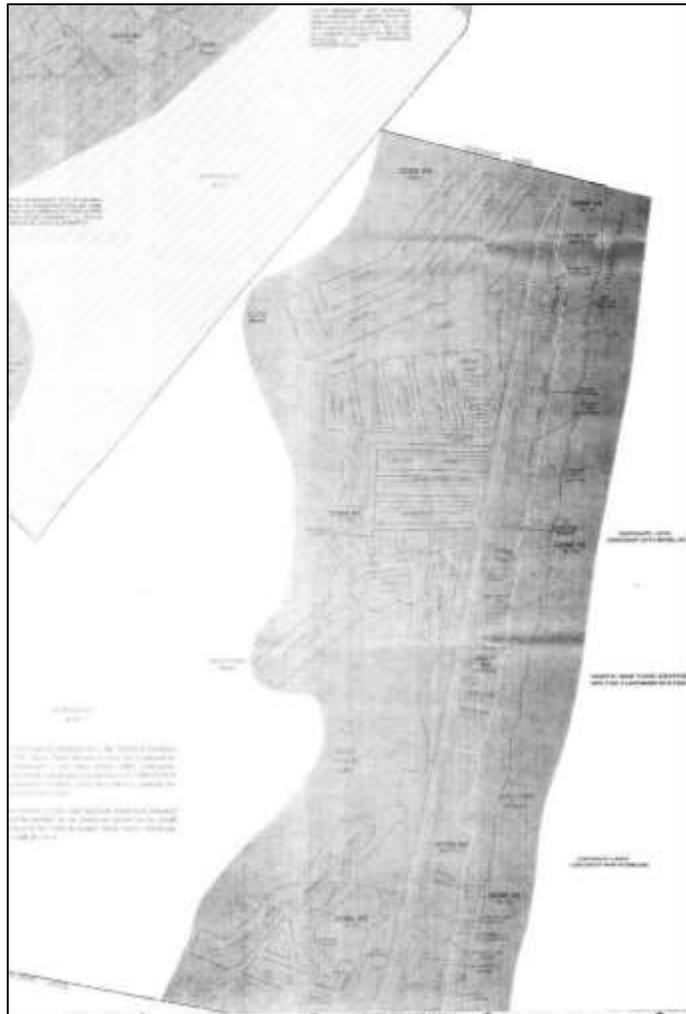




Table 2: Substantially Damaged Properties by Sub-Neighborhood¹⁰

Sub-Neighborhood	# of Properties Substantially Damaged	Avg. Year Built of Substantially Damaged Properties	Average Year Built of All Properties
Camp Osborn	N/A	1935	1945
Deauville	106	1957	1956
Fisherman Dunes	N/A	1957	1957
Bel Air	5	1971	1963
Sandcastle Condominiums	14	1986	1963
Ocean Heights	22	1968	1964
Ocean View	14	1962	1965
South Mantoloking	19	1957	1965
Seneca Dunes	3	1979	1966
Bayview Shores	43	1970	1967
Mantoloking Dunes	9	1973	1967
Normandy Beach	166	1965	1968
The Ocean Club	1	1969	1969
Mantoloking Shores	176	1971	1972
Curtis Point	19	1957	1976
Osprey Dunes	11	1980	1977
Dutchmans Point	1	1978	1983
Barrier Island Undefined	26	1973	1971
Barrier Island (Total)	635*	1967	1967

*Total does not include properties in Camp Osborn or Fisherman Dunes, but may be included in the 688 count

¹⁰ Data collected by Tetra Tech, Inc. for Brick Township. 2015.



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Map 22: Areas with Substantially Damaged Properties



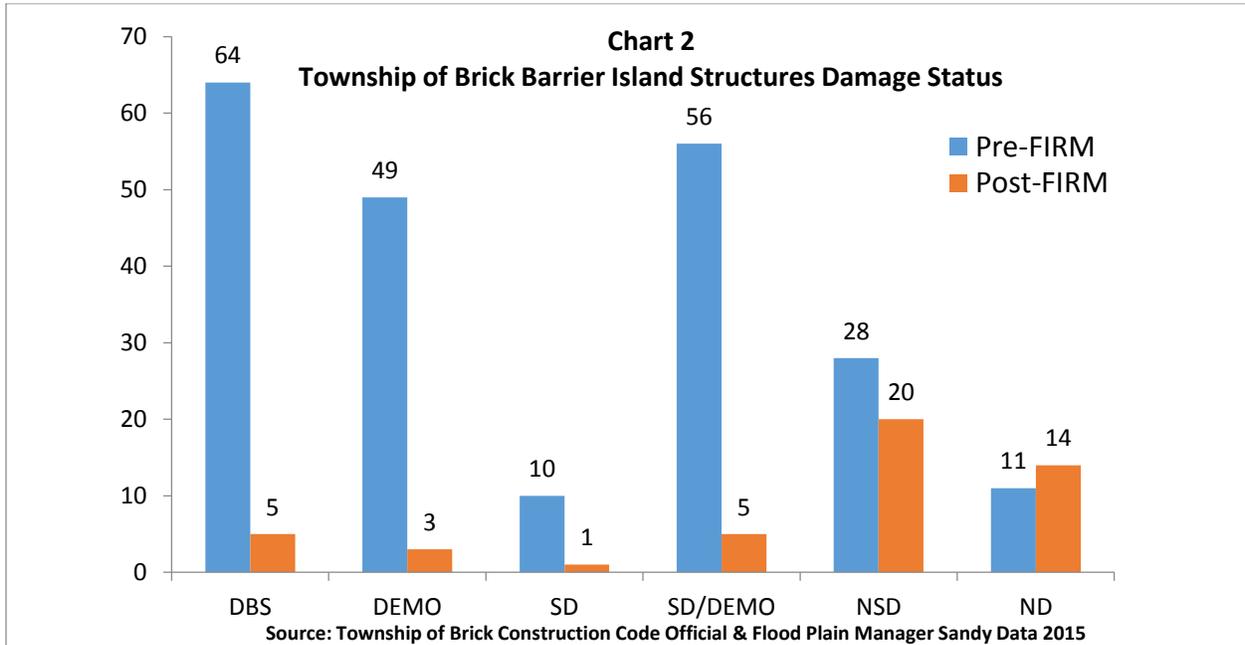


Figure 60: Damage Status of pre-FIRM (pre-1974 maps) and post-FIRM (post-1974) Barrier Island Structures from “Rebuild or Retreat: The Future of Planning Flood Zones”, Paxton, Tara B., AICP/PP. (“Down by Storm” is depicted as (DBS), “Demolished” as (DEMO), “Substantially Damaged” as (SD), “Not Substantially Damaged” as (NSD) and “No Damage” as (ND))

Despite the apparent correlation, substantial damage faced by homes on the Barrier Island was much more circumstantial than the age and elevation of structures. Location (distance from the breach); type of construction; stillwater versus surge; velocity of water; and debris are also significant factors in considering the causes of substantial damage.¹¹

Following the storm, the Federal Emergency Management Agency (FEMA) revised the base flood elevation levels and advisory flood levels to reflect the approximate levels during Superstorm Sandy. The levels that Sandy reached were closer to what was considered the 500 Year Flood Plain, but is now used as the 100 Year Flood Plain as major storms are predicted to become more frequent.

Coastal flooding is a result of the storm surge where local sea levels rise often resulting in weakened or destroyed coastal structures. Hurricanes and tropical storms, severe storms, and Nor’easters cause most of the coastal flooding in New Jersey. Much of the damage on the Brick Barrier Island is attributed to storm surge and wave action. Figure 61 illustrates the effects of water energy dissipation and regeneration of a wave as it moves inland through the V-zone, Coastal A-zone, and A-zone.

¹¹ Paxton, Tara B., AICP/PP. “Rebuild or Retreat: The Future of Planning Flood Zones.” Spring 2015.

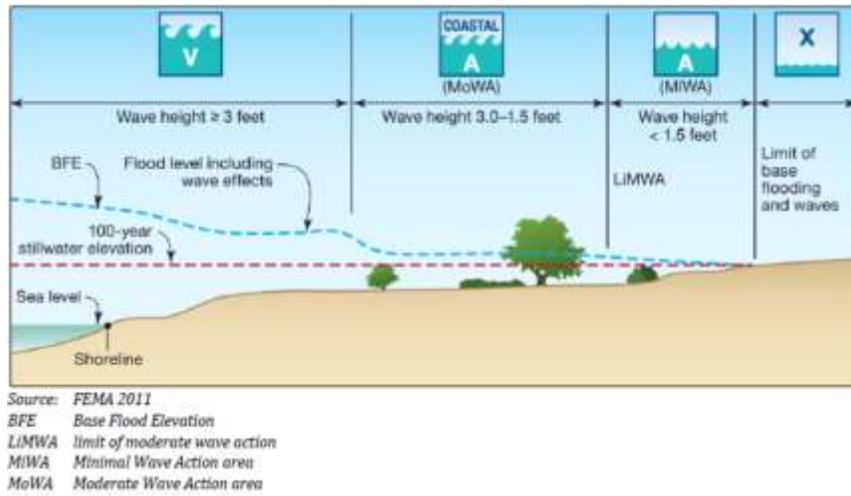


Figure 61: Transect Schematic of Zone V, Coastal A-Zone, and Zone A

Map 23 below depicts the elevation, 1% Annual Chance Flood Hazard Area, Advisory Zones A, V, and X, and the Limit of Moderate Wave Action (LiMWA) and area. The interior of the island surrounding the Route 35 corridor is generally located within the Advisory Zone A, while the rest of the island is within the Advisory Zone V, and a large Advisory Area of Moderate Wave Action extends along much of the western side of the island to Route 35 southbound. These are the most recent zones, although they have changed over the years.



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Map 23: Preliminary FEMA Flood Levels Post-Superstorm Sandy



NEIGHBORHOOD PHYSICAL CHARACTERISTICS

The Barrier Island is characterized by its beaches that run along the Oceanside of the narrow strip of land. Development on the island is oriented along the main north-south streets – being Route 35 North and South – running the length of the island. Route 35 is a divided state road with southbound to the west and northbound to the east. Both sides are two-lane roads from the Township of Brick/Borough of Mantoloking border to the Township of Brick/Township of Toms River border. The sub-neighborhoods of the island are generally located either east or west of Route 35 and have private roads, canals, and beach access. The neighborhood is oriented for private automobiles, whereas there is virtually little to no public transportation, pedestrian or bicycle facilities.

BEACHES AND DUNES

The beaches and sand dunes are the spine of the Barrier Island and are both a result of and contribute to the formation of the spit of land separating the mainland and Bay from the Atlantic Ocean. Historically, the dunes worked in a fragile ecological balance with the rear wetlands of the Bay and the natural sand replenishment and wave action of the ocean. The sand dunes generally covered the eastern/oceanfront portion of the island, while the wetlands occupied the western/bayside of the island. The existing beaches and dunes on the barrier island are also the reason for its development and population, the strong sense of place, as well as for its vulnerability to storms and sea level rise. Barrier island dunes are the first line of defense for communities on the island and on the mainland against waves and storms.

The diagrams below show the typical natural cross-section of a barrier island with sand dunes and natural sand dune succession. The island is generally highest along the oceanfront where the dunes amass, and then slopes down toward an estuary between the island and the mainland. However, islands and the dunes upon which they develop are ephemeral and constantly shifting.

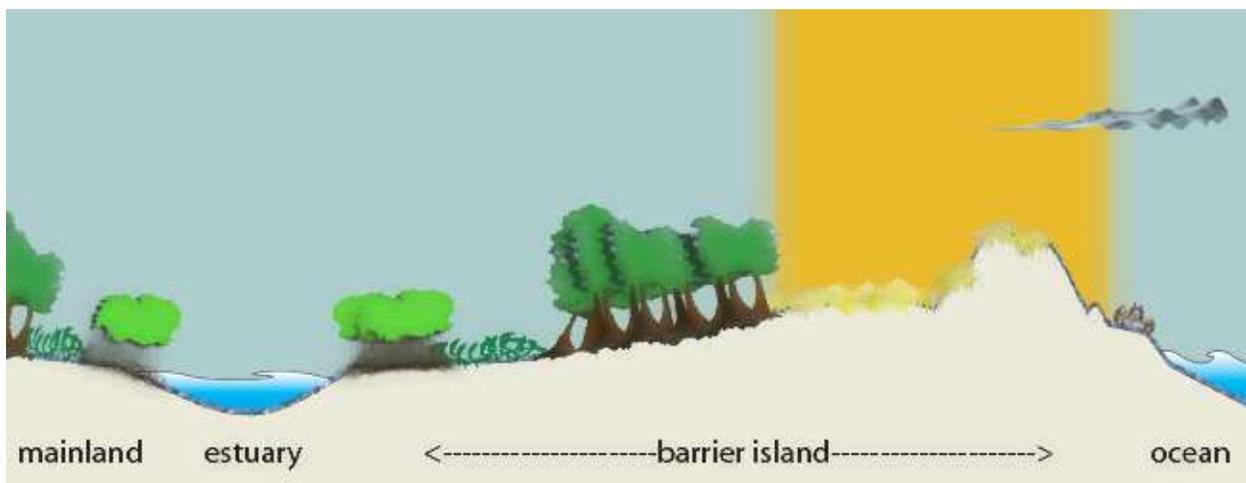


Figure 62: Barrier Island Cross-section (Dr. Rusty Feagin, Texas A&M University. <http://rustyfeagin.tamu.edu/sand-dunes.html>)



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The diagram to the right shows the natural succession of sand dunes from the strandline to fixed dunes based on the prevailing winds off the ocean pushing them toward the mainland. Although, this is slightly different and not necessarily to the same scale as a barrier island, it

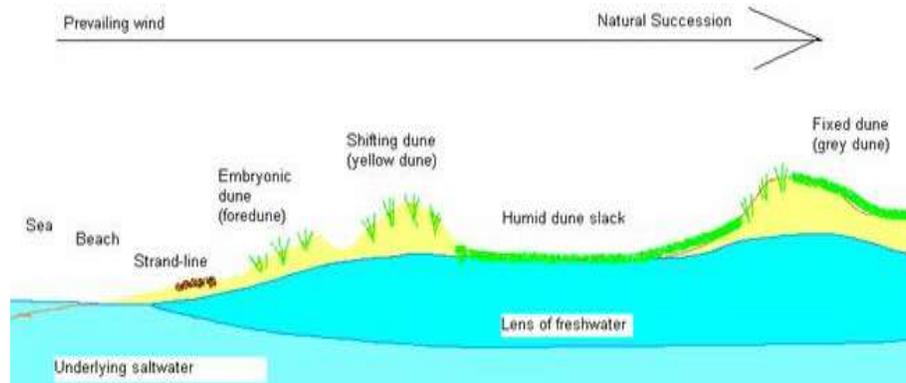


Figure 63: Diagram of the Natural Succession of Dunes
(<http://angleseynature.co.uk/sanddunes.html>)

represents the concept of how the beachfront might appear otherwise without development. Similarly, the diagram in Figure 46 shows the variety of dunes in more detail, albeit without the estuary/bayside. Primary dunes with dune grass on the oceanfront eventually form secondary dunes toward the center of the island where a wind-sheared dune forest would take hold and then back dunes toward the Bay, where they meet the salt grass and cordgrass in the estuary.

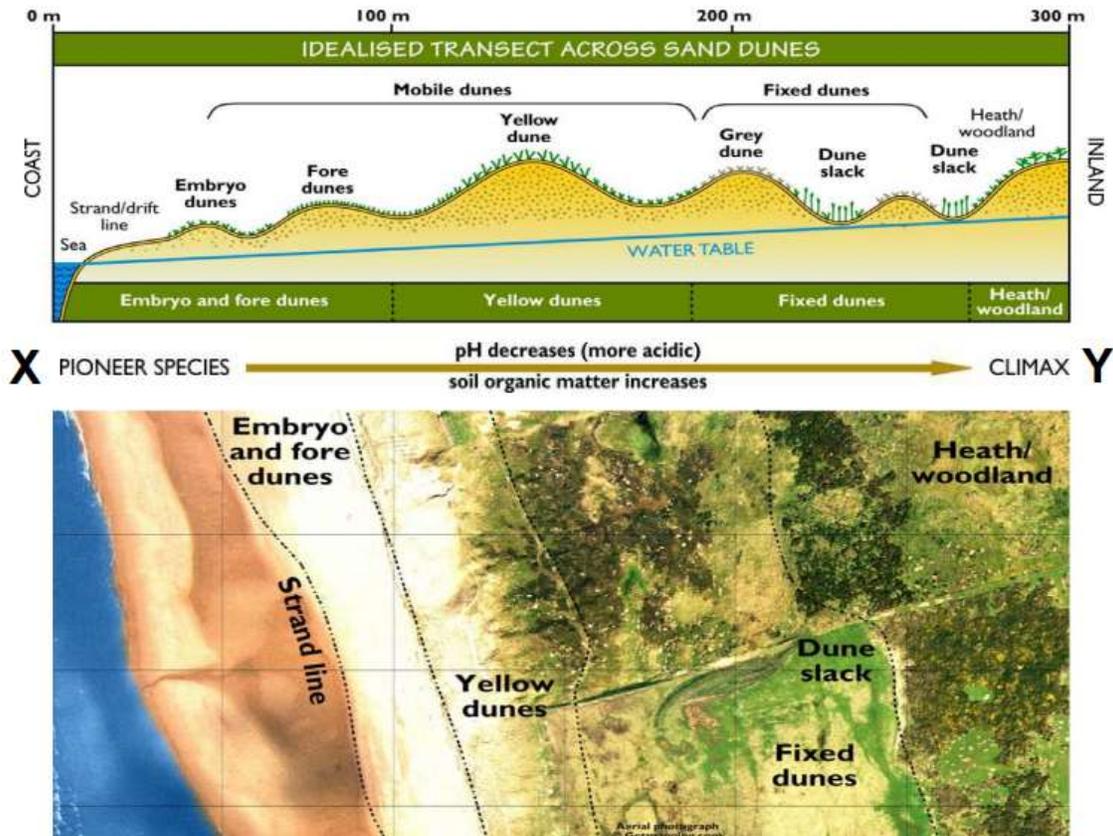


Figure 64: Idealised Transect Across Sand Dunes (The Macaulay Institute.
<http://www.macaulay.ac.uk/soilquality/Dune%20Succession.pdf>)

The cross-section below from Google Earth confirms the higher elevation of the beachfront around 20 feet and sloping toward the Bay and Dutchman’s Point with a slightly higher elevation than other sub-neighborhoods around 8 to 9 feet in elevation.

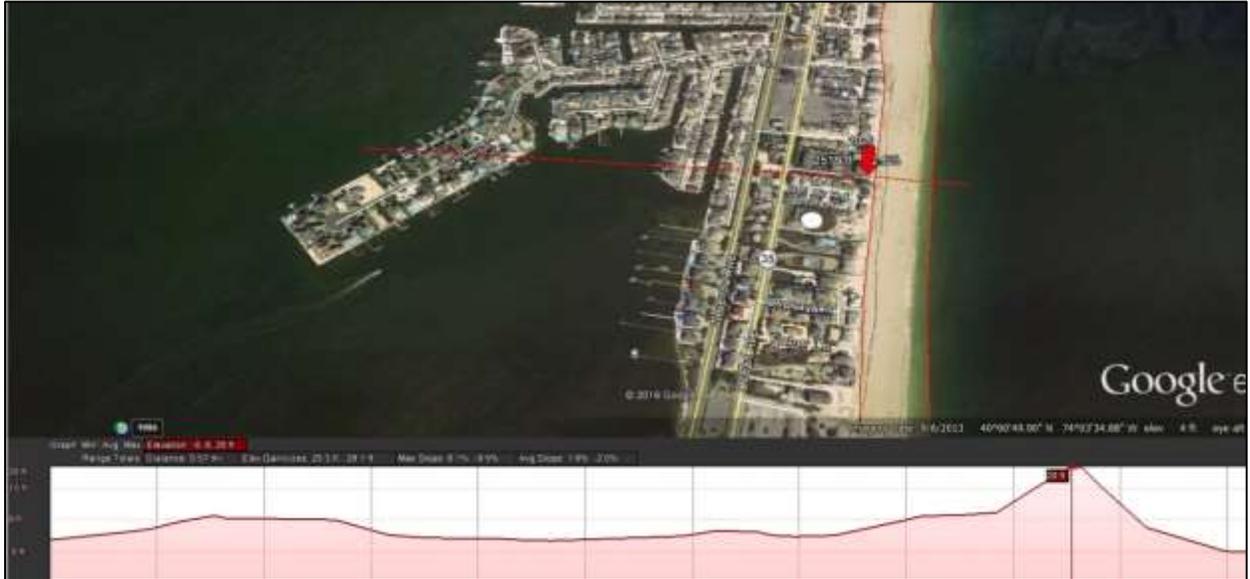


Figure 65: A transect of the Barrier Island from Dutchman’s Point to Bel Air with elevation (Google Earth)

Throughout the years of development detailed in the Neighborhood History above, the natural formation of the dunes and beaches have been severely compromised, leaving structures more exposed to natural hazards. The beaches naturally erode and/or replenish over time in various sections as a result of ocean currents, wind, and storms. Erosion is often exacerbated by man-made structures. The Brick Township beaches have generally been eroding and are regularly replenished before the summer season by pumps that bring in sand from off-shore.

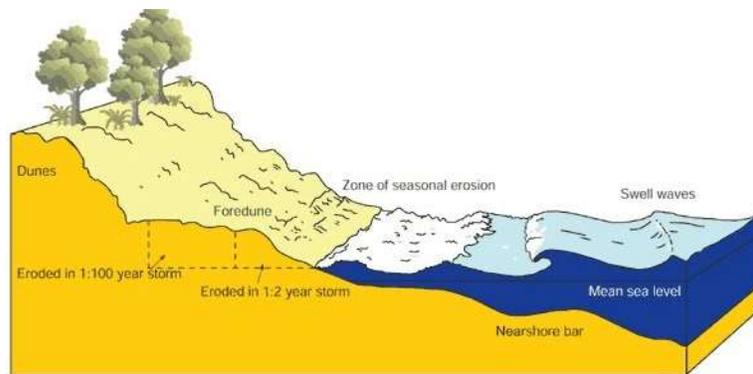


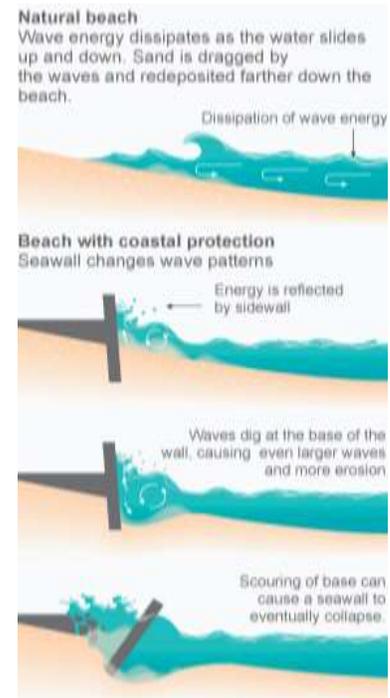
Figure 66: Cross-section of a sandy beach showing the significant difference in the volume of sediment eroded in high-magnitude storms (1:100 year) compared to seasonal erosional events (<http://northcoastvoices.blogspot.com/2010/03/is-this-your-favourite-beach-mapping.html>)



Beach erosion from Superstorm Sandy was very severe up and down the New Jersey coast. The cross-section above shows the amount of sand eroded during a high magnitude storm versus seasonal events. For barrier island communities with beachfront development, narrow beaches, and without dunes, the waves took out structures instead of sand in some cases.

Between 2014 and 2015, a revetment wall was built along the centerline of the beach in Brick Township and was intended to protect the island from further severe erosion. However, with the stalled Army Corps project and a lack of dunes, the built revetment wall was exposed again as the waves ate away at the sand in front and made the erosion more noticeable. By Spring 2015, there was a drop of nearly three to four feet between the sand at the top of the wall and the level below, creating an enormous physical hazard for beachgoers (see bottom left of Figure 68).

In 2016, the wall is being re-covered with sand for the summer season to allow safe public access. The Army Corps has not yet begun their project due to easement holdouts along the entire Barrier Island, meaning that beach replenishment is temporary and the wall will likely be exposed again by winter. Additionally, dune systems cannot be properly developed until the project is complete. The montage below shows some examples of the current state of beaches and temporary dunes on the Brick Barrier Island, which directly abut many homes and are not vegetated. When left untreated without dunes and consistently replenished beaches, hard structures such as seawalls, revetments, and bulkheads may lead to further habitat destruction.



Source: U.S. Army Corps of Engineers

Figure 67: Coastal protection by revetments can lead to a more destructive wave energy dissipation that compromises the structure



Figure 68: Examples of the existing state of Brick's dunes (above) and beaches (below) (April & June 2015)

The Ocean County 2014 Multi-Jurisdictional All Hazard Mitigation Plan shows the susceptibility of the dunes throughout the Ocean County barrier island municipalities from 10-year storm events and 100-year storm events (see Figure 69 and Figure 70 below). In both cases, the majority of the Brick Barrier Island neighborhood foredunes are much less susceptible than most of the other island municipalities. The exception lies with Island Beach State Park, which has significantly wider beaches, large dunes, and no development, and with a portion of the Borough of Bay Head to the north, which has a large rock wall buried beneath the dunes. In the event of a 100-year storm, like Superstorm Sandy, Brick Township is much more susceptible, but still slightly less than the rest of the barrier island.

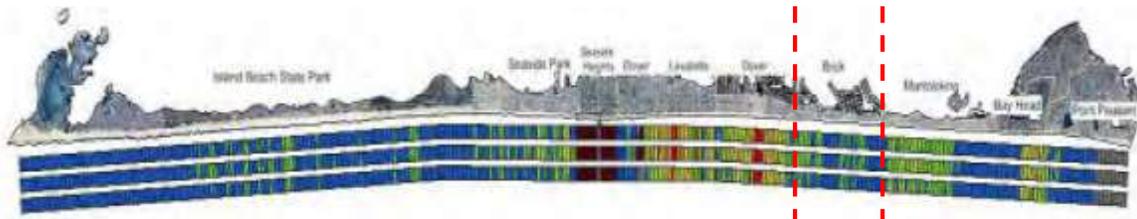


Figure 69: Northern Ocean County, 10-year storm event susceptibility (Stockton College 2013)¹²

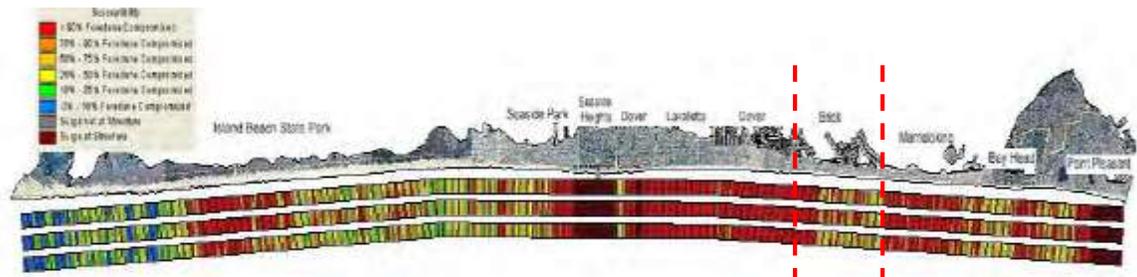


Figure 70: Northern Ocean County, 100-year storm event susceptibility (Stockton College 2013)¹³

Between 25 percent and over 90 percent of the foredune would be compromised in Brick. However, this varies throughout the neighborhood, with the southern end (Normandy Beach) over 90 percent and the northern end (Mantoloking Shores) between 25-50 percent and the middle section inconsistent.

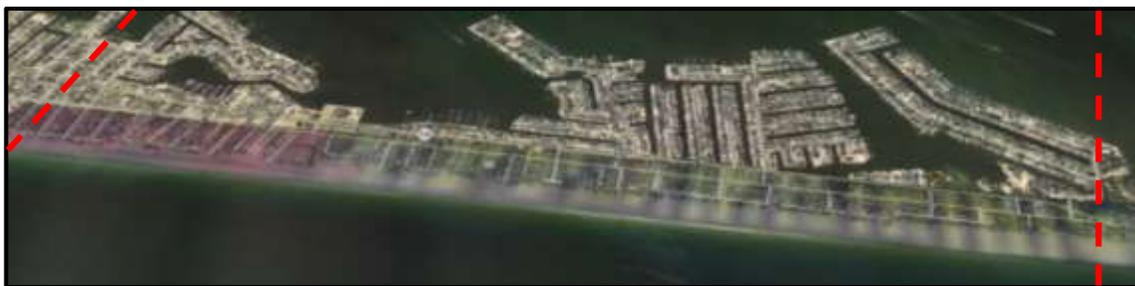


Figure 71: 100-year storm event susceptibility overlaid on aerial map of Brick Barrier Island (using Stockton College 2013 model)

¹² Figure 4.3.1-12. Ocean County 2014 Multi-Jurisdictional All Hazard Mitigation Plan. Page 58.

¹³ Figure 4.3.1-13. Ocean County 2014 Multi-Jurisdictional All Hazard Mitigation Plan. Page 58.



With the state of the beaches in the recent past, taxpayers in the State of New Jersey have spent hundreds of millions of dollars, if not more, to dump new sand on the eroding shoreline since 1990. The entire State imports 97.4 million cubic yards of sand, ranked second only to Florida.

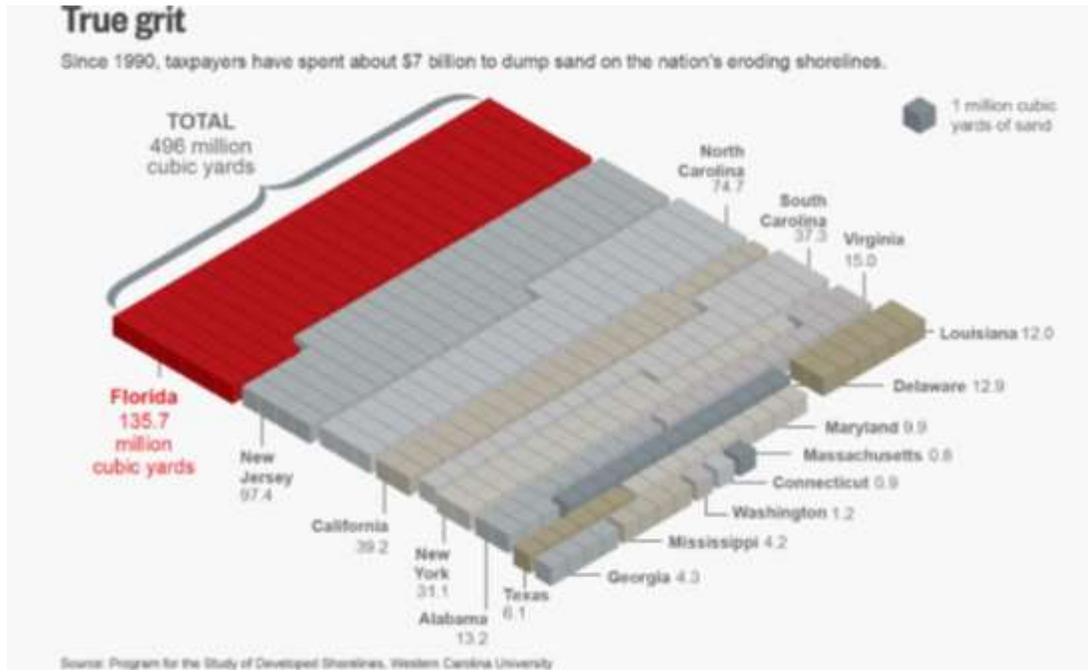


Figure 72: Graphic showing millions of cubic yards of sand imported to beaches in different states as of 2014 (<http://www.reuters.com/investigates/special-report/waters-edge-the-crisis-of-rising-sea-levels/>)

TOWNSHIP OF BRICK – CHAPTER 162: DUNE PRESERVATION

The Township has made an effort to protect the dune ecology and prevent significant damage by adopting a Dune Preservation ordinance (Chapter 162). Through this ordinance, the Township recognizes in the Declaration and Purpose (§162-1) that:

A. Effective protection of the oceanfront and adjacent coastal areas in the intermediate term against high tides and flooding and against damage by the ocean under storm conditions requires sufficient elevation and breadth in the beach and dune areas, hereinafter defined, to dissipate the force of the waves. The dunes should provide an uninterrupted barrier and a source of sand to mitigate the effect of storm waves for the benefit of the entire Township, interior lands as well as oceanfront premises and a beach for the recreational purposes of all. Accordingly, the Township has a vital interest in the continued maintenance and protection of the beach and dune areas and in the right to cause their restoration in the event of damage or destruction.”

B. Dune areas are vulnerable to erosion by wind, water, the absence of good husbandry by those responsible for their maintenance and preservation and by indiscriminate trespass, construction or other acts which might destroy or damage them.”



C. A proven and available means of protecting dune areas against erosion is by preventing indiscriminate trespassing, construction or other acts which might destroy or damage them and, through the aggressive use of native plantings supplemented, when necessary, by sand fencing and other protective devices, or combinations thereof, designed to prevent the erosion of dune areas and to promote the root accumulations, normal contours and other features found in natural dune systems.

The purpose of this ordinance to define the affected areas and to establish regulations to assure their continued effectiveness (§162-1.E.) and is an exercise of the police power in the interest of safety and welfare for the protection of persons and property (§162-1.G.). The ordinance recognizes the need to limit development on beaches and dunes (§162-3), as well as to create regulations for private beach and dune areas (§162-4), of which there are many. However, the discussion of beaches and dunes in this Plan primarily focuses on the public realm.

§162-3 *Development on beaches and dunes states:*

A. Development is prohibited on beaches, except for development that has no prudent or feasible alternative in an area other than a beach and that will not cause significant adverse long-term impacts on the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances or activities. Examples of acceptable activities are:

- (1) Demolition and removal of paving and structures.*
- (2) Dune creation and related sand fencing and planting of vegetation for dune stabilization.*
- (3) The reconstruction of existing amusement and fishing piers and boardwalks.*
- (4) Temporary recreation structures for public safety such as first aid and lifeguard stations.*

B. Development is prohibited on dunes, except for development that has no prudent or feasible alternative in an area other than a dune and that will not cause significant adverse long-term impacts on the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances or activities. Examples of acceptable activities are:

- (1) Demolition and removal of paving and structures.*
- (2) Limited, designated accessways for pedestrians and authorized motor vehicles between public streets and the beach that provide for the minimum feasible interference with the beach and dune system and are oriented so as to provide the minimum feasible threat of breaching or overtopping as a result of storm surge or wave run-up.*
- (3) Limited stairs, walkways, pathways and boardwalks to permit access across dunes to beaches, provided that they cause minimum feasible interference with the beach and dune system.*
- (4) The planting of native vegetation to stabilize dunes.*
- (5) Sand fencing to accumulate sand and aid in dune formation.*



C. The municipality shall not undertake any mechanical manipulation, including but not limited to bulldozing, grading and scraping, of the beach and dune area unless written authorization is received from the Division of Coastal Resources.

D. The municipality shall be responsible for the continuation of its current public access practices pertaining to beach access.

The Dune Preservation ordinance is enforced by the Chief of Police and in all event the Township Council shall enforce the affirmative duty of each oceanfront owner (§162-5). Although an ordinance and the beaches and dunes themselves cannot solve all of the issues presented by erosion and flooding of the island, it allows the Township to take a more proactive and progressive role.

MOBILITY

WALKABILITY

There are no consistent design standards for streetscape treatments and pedestrian sidewalks throughout the Brick Barrier Island neighborhood. Most sections of the island do not have sidewalks and those that do are scattered, substandard, and inconsistent. For example, sidewalks attached to the curb (5-7' wide), sidewalk with a curb strip, no sidewalk at all, no curbing at all, stone without edging, etc. There is a need for a standardization of sidewalk and curb treatments that can be modified to fit various applications. For example, the neighborhood could feature one sidewalk pattern with variations for the smaller and broader crossing streets.

However, between the end of 2015 and mid-2016 most of the extent of Route 35 North and South received new sidewalk, crosswalk, and bicycle lane treatment by the New Jersey Department of Transportation. These new facilities will dramatically improve connectivity and accessibility for persons of all abilities along the north-south corridors, particularly in the coming high-traffic summer months. On the other hand, the connections east to west are still problematic. Map 24 shows the existing sidewalks prior to the Route 35 sidewalk extensions.



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Map 24: Overview map of existing sidewalks in Barrier Island neighborhood (shown in white lines)

The existing sidewalks are located in the following areas, as shown on Map 24 above:

1. West side of West Central Avenue (Route 35 South) from Bay Avenue South to 195 West Central Avenue (last house on block);
2. East side of West Central Avenue (Route 35 South) from Used-To-Be's Bar & Restaurant to Bay Boulevard;
3. West side of West Central Avenue (Route 35 South) from 361 West Central Avenue (first property south of South Bay Drive) to 391 West Central Avenue (last house on block);



4. West side of West Central Avenue (Route 35 South) from Baytree Court to mid-block of Kupper Drive West;
5. East side of West Central Avenue (Route 35 South) from Deauville Drive to 7th Avenue;
6. East side of Ocean Avenue North (Route 35 North) from Township of Brick/Township of Toms River border to Georgian Drive;
7. West side of Ocean Avenue North (Route 35 North) from Township of Brick/Township of Toms River border to 6th Avenue;
8. West side of Ocean Avenue North (Route 35 North) from 549 Ocean Ave North (between 6th and 5th Avenues) to Deauville Drive;
9. West side of Ocean Avenue North (Route 35 North) from 479 Ocean Avenue North (mid-block between Georgian Drive and Kupper Drive) to 475 Ocean Avenue North (south of Kupper Drive);
10. West side of Ocean Avenue North (Route 35 North) from 466 Ocean Avenue North (mid-block north of Kupper Drive) to 462 Ocean Avenue North (south of Baytree Court);
11. East side of Ocean Avenue North (Route 35 North) from south corner of The Ocean Club to Seneca Dunes Road;
12. West side of Ocean Avenue North (Route 35 North) from 398 Ocean Avenue North (first house on block, mid-block north of Brick Beach parking lot) to 361 Ocean Avenue North;
13. East side of Ocean Avenue North (Route 35 North) from 357 Ocean Avenue North to 348 Ocean Avenue;
14. East side of Ocean Avenue North (Route 35 North) from south end of Brick Beach I to north end of Brick Beach I;
15. East side of Ocean Avenue North (Route 35 North) from 286 Ocean Avenue North (across from Used To Be's Restaurant) to 218 Ocean Avenue North (three houses north of Oceanview Terrace)
16. West side of Ocean Avenue North (Route 35 North) from 287 NJ-35 (Used To Be's Restaurant) to Grandview Boulevard;
17. West side of Ocean Avenue North (Route 35 North) from 195 Ocean Avenue North to Bay Avenue;
18. West side of Ocean Avenue North (Route 35 North) from 151 Ocean Avenue North to 176 Ocean Avenue North;
19. North and south sides of Bay Avenue;
20. North and south sides of Oceanview Terrace;
21. North and south sides of Grandview Boulevard;
22. East and west sides of Sunset Lane (Ocean Heights, Ocean View);
23. North and south sides of Carlton Place;
24. North side of road between Bayside Park and Ocean Club;
25. North and south sides of Deauville Drive (East);
26. North and south sides of 8th Avenue (East);
27. North and south sides of 7th Avenue (East);
28. North and south sides of 6th Avenue;



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29. East side of Broad Avenue from Township of Brick/Township of Toms River border to 549 Broad Avenue;
30. North and south sides of Baytree Court (west of Route 35 South);
31. North side of Bay Lane from Ketch Road, west to Pointe Drive;
32. East and West sides of Pointe Drive;
33. East and West sides of Valhalla Drive;
34. East and West sides of Buccaneer Way;
35. East and West sides of Helm Road



Figure 73: Pedestrians on road, Bay Lane (Google Streetview, August 2013)

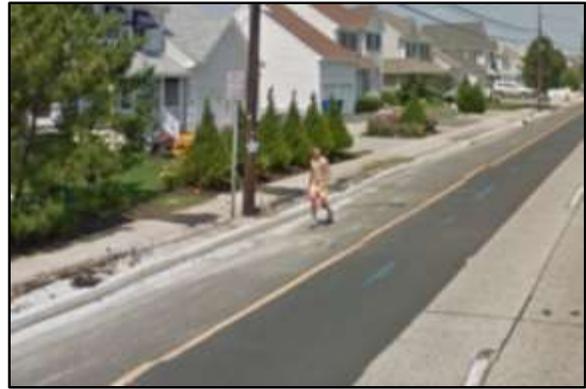


Figure 74: Pedestrian on road, Route 35 North (Google Streetview)



Figure 75: Pedestrians on road shoulder, Route 35 South (Google Streetview)

There are a total of sixteen (16) streets that cross NJDOT Route 35 east and west within the Plan Area and thirty-seven (37) streets that meet Route 35 at some point. Despite the many street crossings on the 1.79 mile stretch of island, there are only two traffic signals in the entirety of the Neighborhood Plan and both are located at the southern border with Toms River. The signals are found at Route 35 North and 6th Avenue and Route 35 South and 6th Avenue. Similarly, there are only fourteen (14) crosswalks



around the entire island and some do not meet a sidewalk. These crosswalks exist in the following locations:

1. Ocean Avenue North (Route 35 North) from north side of Bay Lane to north side of Oceanview Terrace (west);
2. West Central Avenue (Route 35 South) north side of Bay Lane to north side of Bay Lane;
3. Bay Boulevard (south) east to mid-block by Caspian Sea Drive;
4. East Kupper Drive (south) to Kupper Drive (walkway)
5. West Central Avenue (Route 35 South) from West Kupper Drive (north) to Kupper Drive (walkway)
6. West Central Avenue (Route 35 South) from Bayside Park across Ocean Avenue North (Route 35 North) to The Ocean Club

Pedestrian Crossing Guards are employed seasonally at certain intersections of high pedestrian and vehicular traffic to allow pedestrians to move between the east and west side of the island during the summer months because there are not any stop signs or traffic lights. The following intersections have seasonal pedestrian crossings with guards:

1. West Central Avenue (Route 35 South) at Curtis Point Road
2. West Central Avenue (Route 35 South) at Bay Lane
3. West Central Avenue (Route 35 South) at Bay Boulevard
4. Ocean Avenue North (Route 35 North) at Bay Boulevard (crosswalk stops mid-block/no side walk)
5. Ocean Avenue North (Route 35 North) at Bay Lane/Oceanview Terrace
6. Ocean Avenue North (Route 35 North) at Curtis Point Road



Figure 76: Seasonal crossing guard at Bay Lane (Google Streetview, August 2013)



Figure 77: Seasonal crossing guard at Curtis Point Drive (Google Streetview, August 2014)

Route 35 tends to be a high-speed area, although the speed limit along this stretch of NJDOT Route 35 North and South is 35 miles per hour. Although there are very few crosswalks, streetlights, crossing guards, and heavy traffic, there haven't been any recorded fatal accidents between vehicles or vehicles and pedestrians along Route 35 in Brick between 2011 and 2013, according to data from the National



Highway Traffic Safety Administration (NHTSA). Most neighborhoods have slower, local traffic with posted speeds around 15 to 20 miles per hour.

According to www.walkscore.com, which measures the walkability of any address by “analyz[ing] hundred of routes to nearby amenities”, the Barrier Island neighborhood has a Walk Score® of 7 out of 100 points. “Points are awarded based on the distance to amenities in each category. Amenities within a 5 minute walk (.25 miles) are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30 minute walk. Walk Score also measures pedestrian friendliness by analyzing population density. Data sources include Google, Education.com, Open Street Map, the U.S. Census, Localeze, and places added by the Walk Score user community.”¹⁴ An address at Buccaneer Way, Mantoloking Shores, was chosen for its central location in the neighborhood and typical neighborhood design to calculate the Walk Score.

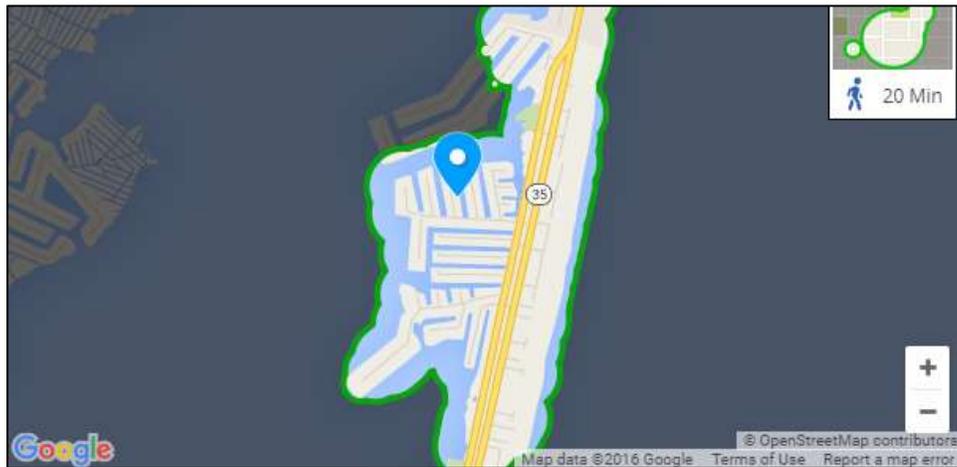


Figure 78: Map of address location and walkable area within 20 minutes of address (www.walkscore.com)

Based on the calculation from this location, one can likely walk just past the Borough of Mantoloking border with Brick to the north or to Brick Beach III in approximately twenty minutes. However, a Walk Score of 7 out of 100 indicates that this location is car-dependent and that nearly all errands require a car. Essentially, the only destinations that are walkable in a reasonable time or manner are a few drinking and dining establishments and the beaches. These destinations are still not easily accessible for all on the Barrier Island.

¹⁴ <https://www.walkscore.com/methodology.shtml>. Accessed May 2016.



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Figure 79: Walk Score categories (www.walkscore.com)

BIKEABILITY

Bicyclists, oftentimes including children going to and from the beaches, use both shoulders of busy roads to bike and are often seen biking in the wrong direction, in large groups extending into the roadway, or on the sidewalks where they exist. If there are cyclists on both sides of the road or if they are riding in the wrong direction, this can create confusion amongst automobile drivers. In addition to separate lanes or designated shared lanes, appropriate bicycle signage and education can reduce confusion and the potential for injurious accidents.



Figure 80: Children bicycling on Route 35 North without bike lanes or sharrows and cyclists on both sides of road (Google Streetview, July 2014)

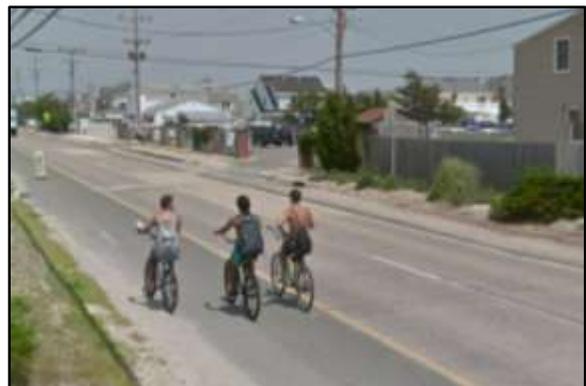


Figure 81: Groups of cyclists extending into the road on Route 35 North (Google Streetview, July 2014)



Prior to 2016, there were no existing “Bicycle Friendly” routes located within the Brick Barrier Island. A traffic diagram shown below (Figure 82) by the New Jersey Department of Transportation (NJDOT), shows the general widths of Route 35 Northbound and Southbound between Brick Township through Lavallette Borough, displaying that there is plenty of space for sidewalks and bicycling. According to the diagram, there did not seem to be any appreciable difference in lanes or shoulder widths of southbound or northbound Route 35 in Brick Township that would prevent it from also being designated and designed by NJDOT as Bicycle Friendly. Portions of Route 35 North and South have an exceptionally wide cartway and shoulder area on both sides of the road, but not all areas had sidewalks and none of them had shared or dedicated bicycle lanes.

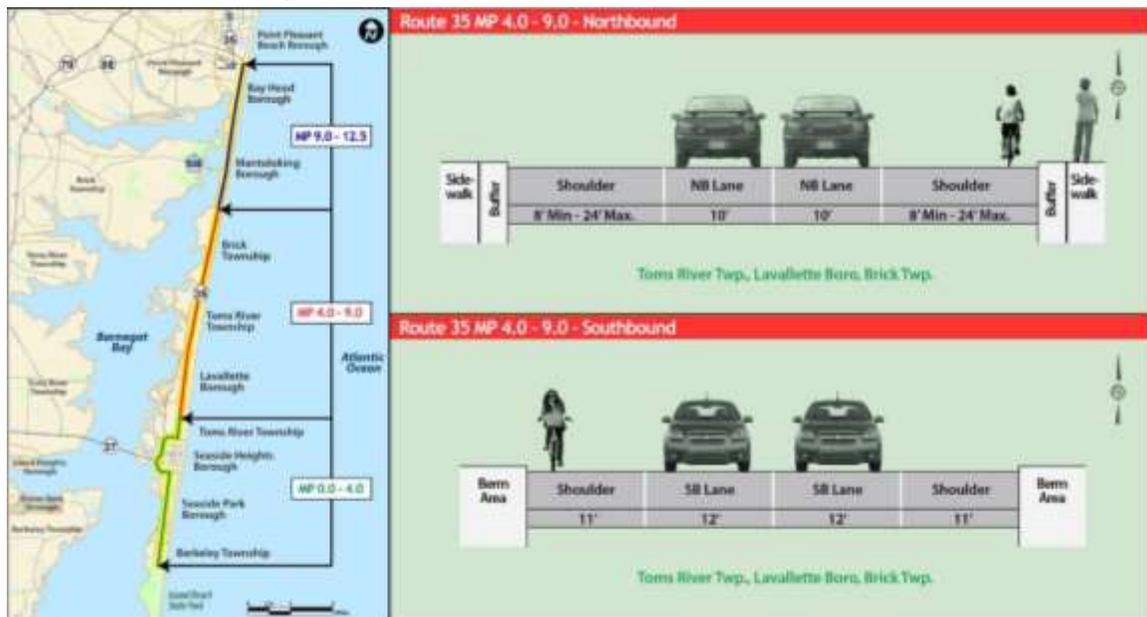


Figure 82: Traffic Diagram of Route 35 Northbound and Southbound, Brick Township to Lavallette (Source: NJDOT website)

In 2015, the NJDOT began a project working to make road improvements and to install new bicycle lanes along certain sections of N.J. Route 35 North and South, but leaving out other sections, such as Brick Township. The photo in Figure 83 shows the first round of protected bicycle lanes on Route 35 South in the Borough of Mantoloking where it ends at the northern border of Brick Township.



Figure 83: Bike lane ending at Mantoloking border into Brick (Source: Joseph Cutrufo, TSTC, September 10, 2015. <http://blog.tstc.org/2015/09/10/route-35-on-the-jersey-shore-is-getting-better-for-bikes-but-there-is-more-work-to-be-done/>)

However, by the end of 2015 and into 2016, the New Jersey Department of Transportation started sidewalk and bicycle lane improvements along Route 35 North and South in Brick Township. A separated bicycle lane with a four-foot buffer now exists on the right-hand side of both roads extending the full length of the neighborhood. The bicycle lanes generally follow the same design as in the Borough of Mantoloking.

No Bike Score® was given to the specified address on Buccaneer Way using www.walkscore.com, but a travel time map was provided with a travel time of twenty minutes from the address. A bicycle can generally reach the border of the Borough of Bay Head with the Borough of Mantoloking to the north, West Mantoloking, Brick Township to the west across Herbert Street Bridge, or Brightwater Cottages on the Toms River Barrier Island to the south.¹⁵

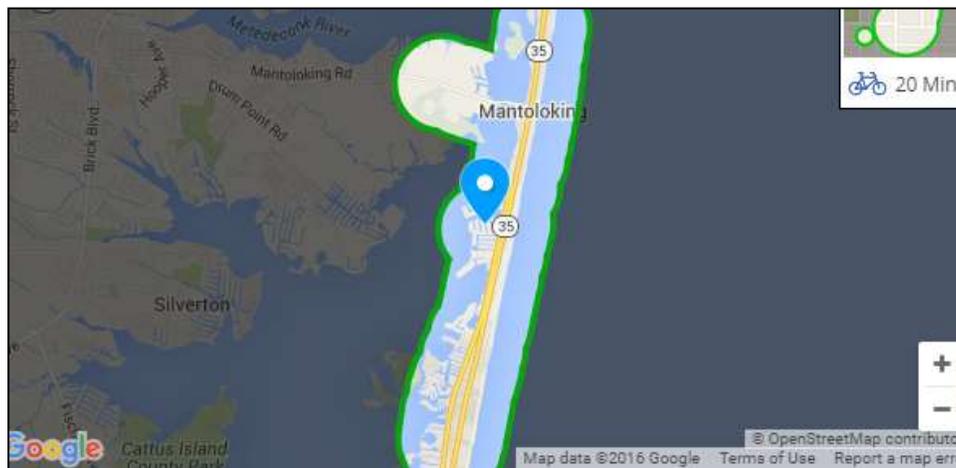


Figure 84: Map of address location and bikeable area within 20 minutes of address (www.walkscore.com)

¹⁵ <https://www.walkscore.com/score/216-buccaneer-way-mantoloking-nj-08738>. Accessed May 2016.



At minimum, the use of signage to direct cyclists to safer routes could be implemented on Township and County Roads and both signage and shoulder markings added to the shoulders of Route 35 by NJDOT.

SIGNAGE

Throughout the neighborhood signage is inconsistent and tends to be for private neighborhoods or the state roads. There are also a number of signs for the small businesses on the island and for the public beaches and parks. For the most part, these signs are well-designed, at an appropriate scale for pedestrians and vehicles, and oriented toward oncoming traffic. Signage is important in community-building because it helps to create a brand and to distinguish the community from others. Route 35 is arguably the most important area for signage due to its role as the main corridor through the neighborhood, the high volume of traffic, and high visibility. There are a number of ways to make these signs more consistent across the island, however, to create a perception of neighborhood cohesion.

Beginning from the border with the Borough of Mantoloking in the north and heading south along Route 35 South to the border with the Township of Toms River, there is signage at the following locations:

1. Green highway sign on west side of Route 35 South “Entering Twp of Brick” at the border of the Borough of Mantoloking and Township of Brick;



2. Blue sign on east side of Route 35 South slightly south of the border of the Borough of Mantoloking entering Township of Brick on traffic island that reads: “Welcome to the Township of Brick – Pedestrian Safe Zone – Drivers Must Stop for Pedestrians Ahead – It Is The Law”;



3. On the reverse side, on Route 35 North, the sign reads: “Thank You For Visiting the Township Of Brick – Remember to Click It Or Ticket – It Is The Law”;
4. Sign at west side of Route 35 South between Bay Avenue and South Bay Avenue on the west side of the island that reads “Bambe Cross Cove – Green Acres Program”;
5. Blue “Mantoloking Shores” sign on west side of Route 35 South at Bay Lane;



6. Four white “Mantoloking Shores – SLOW – 20 MPH – We Love Our Children – Violators Will Be Reported ” signs on west side of Route 35 South at Cutter Lane, Barkentine Lane, Brigantine Lane, and Tide Pond Road;
7. White sign that reads: “Brick Police Substation – 500 FT AHEAD” on east side of Route 35 South across from Tide Pond Road;
8. White sign that reads: “PRIVATE – Mantoloking Shores – Residents Only” at west side of Route 35 South and Tide Pond Road;
9. White sign that reads: “Neighborhood Watch – Warning” at west side of Route 35 South and Tide Pond Road;



10. Blue sign with painted image that reads: “Bayview Shores” on west side of Route 35 South and Bay Boulevard;



11. White sign on the east side of Route 35 South mid-block between Bay Boulevard and Cuttyhunk Road that reads: “Brick Beach”, as well as a “Brick Police Substation” sign;
12. Two billboard signs on the west side of Route 35 South before Bayside Park;
13. White sign for “Brick Beach III” on east side of Route 35 South before the parking lot exit across from Bayside Park;
14. White sign on east side of Route 35 South before Sanderling Lane that reads: “U-TURN TO RT 35N”;
15. Green sign on west side of Route 35 South and 7th Avenue that reads: “Normandy Beach”;





16. Green highway sign on west side of Route 35 South before 7th Avenue that reads “Entering Twp of Toms River” and brown sign that reads “Welcome to Toms River”;

Beginning from the border with the Township of Toms River in the south and heading north along Route 35 North to the border with the Borough of Mantoloking, there is signage at the following locations:

1. Green highway sign on east side of Route 35 North “Entering Twp of Brick” mid-block between 5th Avenue and 6th Avenue;



2. “The Ocean Club at Mantoloking – Private Condominiums” on the east side of Route 35 North across from Sanderling Lane;
3. Brick Beach I has a blue sign with white lettering on two white posts located on the interior of the lot near the concession building – east side of Route 35 North along Seneca Dunes Road;



4. Blue sign “Osprey Dunes Beach Association – Private” on east side of Route 35 North at Osprey Lane;
5. Green “Bel Air Village – Private” sign on east side of Route 35 North at Bel Air Road;
6. Blue “SandCastle Condominiums – A Private Residence” on the east side of Route 35 North at Easy Street;
7. Two white “Brick Police Substation” signs on west side of Route 35 North at Sea Breeze Way;
8. Green “Fisherman Dunes – Members Only – Private” sign on east side of Route 35 North at Cuttyhunk Road;
9. White “Seneca Dunes” sign on east side of Route 35 North at Falls Road;
10. Blue sign with painted image at Route 35 North at Caspian Sea Drive: “Bayview Shores – Private – Members Only”;



11. Green “Mantoloking Dunes” sign on east side of Route 35 North at Dune Avenue;
12. White sign “Crime Watch Zone” on east side of Route 35 North at Bay Avenue;
13. “South Mantoloking Beach Association – Private” white sign on east side of Route 35 North at Bay Avenue;
14. “U and Left Turns” white sign on west side of Route 35 North before Curtis Point Drive;
15. Green highway sign “Entering Boro of Mantoloking” at north border of Brick Township and Borough of Mantoloking on east side of Route 35 North.

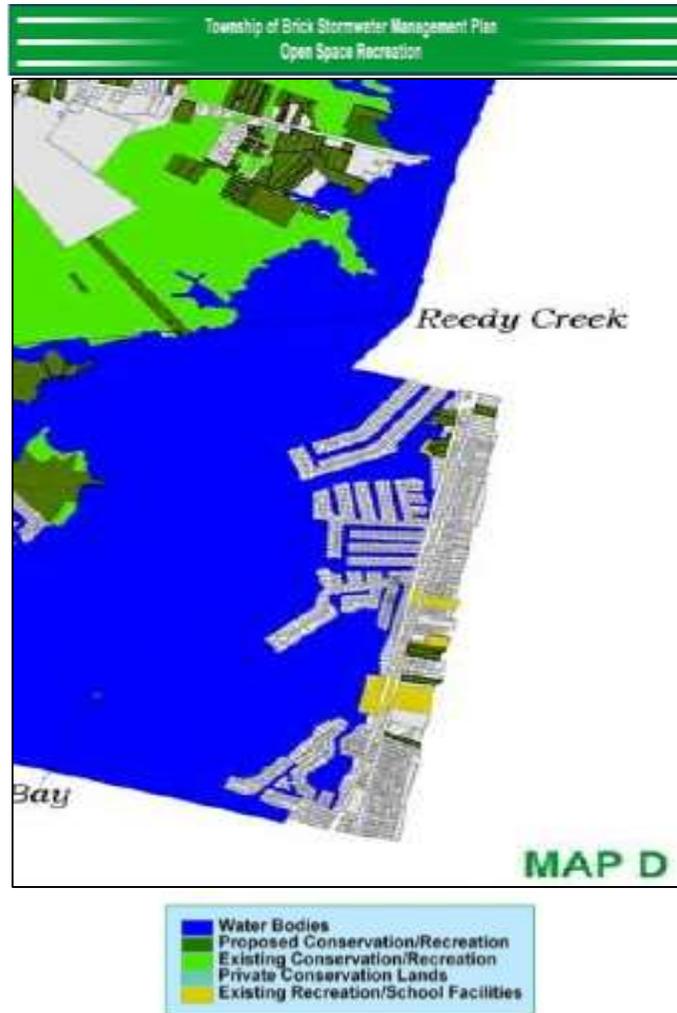
NEIGHBORHOOD DESTINATIONS

Neighborhood destinations include a variety of public spaces, parks, and beaches, as well as commercial businesses and marinas. These places contribute to the identity, growth, and activity of the community.

Although there are a number of private recreational amenities on the island, such as beach access, marinas, swimming pools, and tennis courts, there are very few public recreational spaces within the neighborhood and they tend to be clustered together, but either in the center or toward the north of the island, as shown on Map 25 below. These include two public beaches, which have entrance fees during the summer months, and two public parks or natural areas. The Open Space Recreation map also shows several proposed conservation/recreations lots for future planning.



Map 25: Open Space and Recreation Map of Brick Barrier Island¹⁶



PUBLIC SPACE, PARKS, & RECREATION

Public parks and recreation facilities within the Barrier Island neighborhood include:

BRICK BEACH ONE:

Brick Beach I (One) is located on the ocean side of the barrier island with access from Route 35 North at 310 Route 35 North on Block 42.05, Lot 1. It is found between Falls Road (Seneca Dunes) to the north and Cuttyhunk Road (Fisherman Dunes) to the south. There is a large parking lot directly off of Route 35 North, for which there is a fee. Between the parking lot and beach entrance is a two-story pavilion with

¹⁶ Township of Brick, Division of Land Use and Planning. "Township of Brick Master Plan". June 6, 2007.

dining, first aid, and restroom facilities. The public beach also has a fee for entry during the summer season.



Figure 85: Tax Map of Brick Beach I (outlined in red)



Figure 86: Brick Beach I Pavilion (date: 6-8-15)



Figure 87: Brick Beach I (date: 6-8-15)

BRICK BEACH TWO:

Brick Beach II (Two) is located at 354 Route 35 North, to the south of Brick Beach I on Block 42.01, Lot 1 and consists of 1.88 acres. The public beach is adjacent to the New Jersey Water Company property on Block 42.01, which has a one-story wooden building and a water tower. Brick Beach II is utilized much less than Brick Beaches I and III due to limited parking, less space on the beach, lack of public facilities, and a discreet entrance. There is no signage indicating the public beach from Route 35 North. The beach is most used for fishing and swimming, but does not have restrooms, water fountains, concession, or a picnic area like the other beaches. There is a sidewalk and bike lane along Route 35 North, accessible from the property.



Figure 88: Entrance to Brick Beach II from Route 35 North (Google Streetview, October 2014)

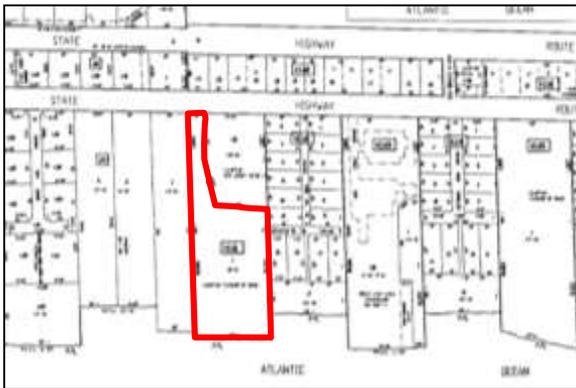


Figure 89: Tax Map of Brick Beach II (outlined in red)



Figure 90: Aerial view of Brick Beach II (Google Maps)

BRICK BEACH THREE:

Brick Beach III (Three) is located at 440 Route 35 North on Block 37, Lot 1, to the south of Brick Beach II at the narrowest part of the island neighborhood. The beach property is 6.91 acres, with additional parking on another lot. The public beach is found between the Ocean Club to the south and Faber Lane, Osprey Dunes to the north and is directly east of Bayside Park/Swamp Cove. Brick Beach III is much wider than Brick Beach I by nearly twice the size. There is a very large parking lot accessible to the east of Route 35 North, as well as large parking lot between Route 35 North and Route 35 South. Similar to Brick Beach I, there is a pavilion between the beach and parking lot, which offers shelter and restroom facilities. The beach offers swimming, fishing, basketball, and picnicking. At the southern end of Brick Beach III is where the beach revetment begins and the beach drops off several feet.



Figure 91: Parking area and pavilion at Brick Beach III
(Google Streetview, August 2014)



Figure 92: Brick Beach III (date: 6-8-15)

BAYSIDE PARK/SWAMP COVE:

Bayside Park is located at 427 Route 35 South directly west from Brick Beach III along Barnegat Bay. It is the only public park in the island neighborhood with playground facilities designed for children, which was recently updated. There is a parking lot on the property with additional public parking located across the street. There is also a boardwalk along the waterfront around the park that can be used for walking or fishing.



Figure 93: Aerial Map of Bayside Park/Swamp Cove
(outlined in red) (Google Maps)



Figure 94: Bayside Park/Swamp Cove entrance on Route 35
South (Google Streetview, August 2014)

SWAMP COVE/BAMBE CROSS (GREEN ACRES PROGRAM):

Swamp Cove/Bambe Cross is located on Route 35 South on the bayside between Curtis Point to the north, Mantoloking Shores to the south, and west of South Mantoloking. Swamp Cove is the only natural, unbuilt, and preserved area remaining on the island, with the exception of some of the beaches, and is part of the New Jersey Green Acres program. In addition to public recreation space, the cove serves as a natural protective feature for the area from flooding by allowing water to absorb into the



pervious, vegetated surface. There are a couple of small trails from the road leading through the dense vegetation to Barnegat Bay where there is a small sandy beach. The area is open to the public, but there are no public facilities, nor are there sidewalks leading to the park.



Figure 95: Aerial Map of Swamp Cove/Bambe Cove (Google Maps)



Figure 96: Swamp Cove/Bambe Cross entrance on Route 35 South (Google Streetview, August 2014)

Table 3: Brick Township Recreational Facilities (Barrier Island facilities highlighted)

 BRICK TOWNSHIP RECREATIONAL FACILITIES FACILITY NAME - STREET LOCATION	Concession	Soccer Fields	Swimming	Basketball	Baseball/Softball	Drinking Water	Tennis Courts	Playground	Fishing	Crabbing	Picnic Tables	Rest Rooms	Volleyball	Bocce	Horseshoe Pit	Walking Trail
	Airport Trail - Drum Point Road / Cherry Quay Road															
Bay Harbor Beach - Bay Harbor Blvd.																
Bernard J. Cooke Memorial Park - 44 Burnt Tavern Road																
Joe Boland Field - 2000 Lanes Mill Road																
Brick Beach I - 310 Route 35 North																
Brick Beach II - 354 Route 35 North																
Brick Beach III - 440 Route 35 North																
Brick Township Municipal Building - 401 Chambers Bridge Rd																
Cedar Bridge Manor Park - 73 & 77 Cedar Bridge Manor Drive																
Colorado Avenue Park - 501 Colorado Avenue																
Drum Point Sports Complex - 41 & 43 Drum Point Road																
Angela Hibbard Park - 600 Drum Point Road																
Edmund Hibbard Park - 56 Tiller Lane																
Frede Drive Park - 119 Frede Drive																
Lake Riviera Park - 371 North Lakeshore Drive																
Mallard Point Park - 41 Tunesbook Drive																
Arrowhead Park - 161 Village Way																
Pinewood Acres Complex - 1351 Route 88 West																
Sawmill Trail - Burnt Tavern Road																
Veterans Memorial Complex - Hendrickson Avenue																
Hank Waltonowski Park - Ashwood Road																
VFW Park - 154 Duchess Lane																
Windward Beach Park - 265 Princeton Avenue																
Midstreams Elementary School Playground - Midstreams Rd.																
Emma Havens Young School Playground - Drum Point Rd.																
Traders Cove Marina and Park - 40 Mantoloking Road																
Bayside Park - 427 Route 35 South																

INSTITUTIONAL, COMMUNITY & COMMERCIAL DESTINATIONS

The following associations, businesses, public services, and other destinations in Brick Beach/Barrier Island are listed by their location within a sub-neighborhood. These do not include the parks and beaches listed above. With the exception of associations, these destinations are not necessarily specific to residents of the sub-neighborhood.

- Normandy Beach:
 - Normandy Beach Improvement Association Bay Beach House and tennis courts
 - Retail businesses on Route 35 North between the border with Toms River Township and 6th Avenue, including several shops and a restaurant (east and west sides)
 - Three realty businesses on Route 35 North (east and west sides) between 5th Avenue and 6th Avenue
 - U.S. Post Office at 551 NJ-35 (North), Normandy Beach between 5th Avenue and 6th Avenue
 - Our Lady of Peace Church at 209 7th Avenue, Normandy Beach between Route 35 North and South. The church is currently unutilized and still damaged from Superstorm Sandy. The site served as staging grounds for reconstruction projects.



Figure 97: Neighborhood destinations and amenities near Normandy Beach

- Deauville:
 - Harbour Yacht Club & Marina at 501 NJ-35 (South) at Deauville Drive
 - Charlie's Café at 491 NJ-35 (South) located at Harbour Yacht Club & Marina
 - Charlie's Bait 'n' Tackle at 485 NJ-35 (North), Normandy Beach at Georgian Drive between Route 35 North and South



Figure 98: Neighborhood destinations and amenities in Deauville

- Bayview Shores/Fisherman Dunes/Seneca Dunes/Ocean Heights:
 - Used To Be's Restaurant and Bar located at Bay Boulevard (north side) between Route 35 North and South. The Restaurant includes a large parking lot front Bay Boulevard and ATM service
 - Ocean County Utilities Authority at Sea Breeze Way between Route 35 North and South
 - Police Substation at Bay Boulevard (south side) between Route 35 North and South



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Figure 99: Neighborhood destinations and amenities near Bayview Shores, Fisherman Dunes, and Seneca Dunes

- Toms River Township/Normandy Beach:
 - Dover Brick Beach First Aid at 12 2nd Avenue, Normandy Beach in Toms River Township



ZONING ANALYSIS

Map 26: Land Use Plan for Brick Barrier Island

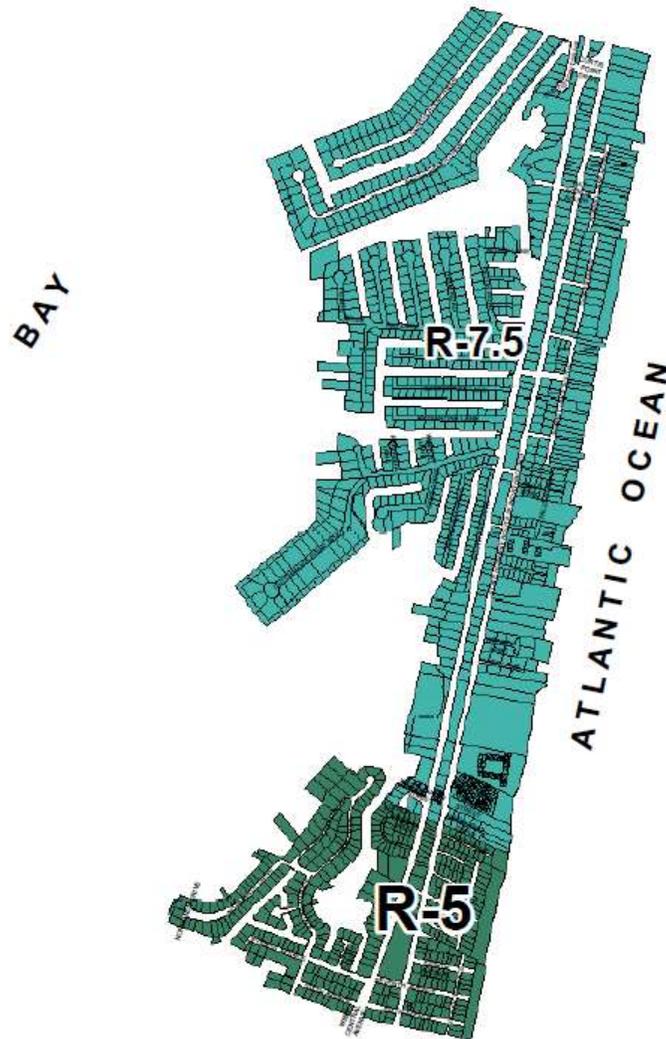


The majority of the neighborhood falls within a high density residential area, with the exception of some public/proposed conservation/recreation areas, semi-public land, and a waterfront commercial property, as shown in Map 26 above.



There are only two zones on the island, however, and both are residential zones corresponding to the high density residential land use (see Map 27). The R-7.5 Residential Zone covers most of the island neighborhood from the border of Mantoloking Borough south to where Deauville begins. The R-5 Residential Zone includes all of Deauville and Normandy Beach to the border of Toms River Township to the south. Therefore, this Neighborhood Plan focuses on design standards for the R-5 and R-7.5 Zones, although the uses are the same for both.

Map 27: Barrier Island Zoning Map



Permitted uses in the R-5 and R-7.5 zones are the same as those zoned for the R-20 Residential zone (§245-112). The permitted uses are as follows:

- A. One-family dwellings



- B. Municipal parks, playgrounds, and other municipal buildings and uses as are deemed appropriate and established by the Township Council. The minimum land area shall not be less than 1/2 acre.
- C. Other public buildings of a governmental or cultural nature.
- D. Volunteer first aid buildings and firehouses.
- E. Public libraries.

Conditional uses are permitted subject to the requirements set forth in the Township ordinance and include:

- A. Scattered-site single-family detached affordable housing units
- B. Public schools and private schools which are not conducted as a business
- C. Places of assembly, parish houses, convents and cemeteries
- D. Creation of beach cottage community conditional use for structural alteration or rebuilding of these residential buildings only on the following properties; Block 25, Lot 4, Block 26, Lot 4, and Block 36, Lots 12, 13, 24, and 28.

The bulk standards for both zones are very similar because they are high density, although the minimums for the R-5 zone are slightly less than those in the R-7.5 zone. The biggest difference is seen in the lot size, where it is 5,000 square feet in R-5, whereas it is 7,500 square feet in the R-7.5 zone. Additionally, the minimum width is 50 feet for R-5 and 75 feet for R-7.5 and the minimum depth is 75 feet for R-5 and 90 feet for R-7.5. The percent lot coverage is slightly more for the R-5 zone than the R-7.5 zone, but the maximum building heights are the same for both zones.

The present bulk standards for the R-5 and R-7.5 Zones are outlined in Table 5 below:

Table 4: Schedule of Area, Yard and Building Requirements for Zones R-5 & R-7.5 (from Township of Brick §245 Attachment 5)

Zone		R-5	R-7.5
Minimum Lot Size	Interior Lots	Area (sf)	5,000
		Width (ft)	50
		Depth (ft)	75
	Corner Lots	Area (sf)	6,000
		Width (ft)	50
		Depth (ft)	75
Minimum Required Yard Depth	Principal Building	Front Yard (ft)	20
		Side Yard, Each (ft)	5
		Aggregate Side (ft)	12
		Rear Yard (ft)	15
	Accessory	Side Yard (ft)	5
		Rear Yard (ft)	5



Maximum Lot Coverage by Building		35%	30%
Maximum Building Height	Stories	-	-
	Eaves (ft)	26	26
	Feet	35	35
	Ridge (ft)	38.5	38.5

Despite the above standards, lots vary in size, particularly in the older neighborhoods, which may have been established before the current zoning. Undersized lots (either in width or depth) cannot meet the setback requirements of the ordinance. These issues will only be exacerbated when a homeowner tries to raise their home to avoid the Post-Sandy flood insurance premiums.



Figure 100: Typical neighborhood residential on 7th Street, Normandy Beach in the R-5 Zone (Google Streetview)

When dealing with raising a home to meet the established Base Flood Elevations (“BFEs”), residents typically run into issues with building height, coverage and setbacks. Most towns affected by Sandy amended their zoning standards for height to allow homes to be elevated without height variances. However, on undersized lots the tendency was for applications for relief from yard requirements, mainly because the new construction was a larger home than what was on the lot pre-Sandy. In Toms River Township, the governing body responded to the trend of over-building by adopting an ordinance that established a maximum “Floor Area Ratio” for single family homes, which linked the maximum size of the home to the size of the lot and elevated any variance relief to that under NJSA 40:55D-70-d, thereby requiring five affirmative votes of the Board rather than a simple majority. Since that ordinance amendment the trend has reportedly subsided. While the lots in the Brick beach sub-neighborhoods are generally larger than those in comparable neighborhoods in Ortley Beach and the North Beaches in Toms River, there were isolated examples of overbuilding which suggest that a similar approach to regulating FAR might be appropriate on the Brick Barrier Island.

While some residents do not perceive the size of new homes as a Township issue, many residents and Township officials have criticized that overbuilding is changing the character of the neighborhoods and is

out of scale with existing homes. In many locations, newly constructed homes are twice the height of older homes and are often much larger in area.



Figure 101: Examples of large-scale and raised new construction homes on Barrier Island

Another issue that confronts property owners when elevating or reconstructing their homes is the conventional regulations regarding “yards” when the entrances to the homes are a story or more above grade, requiring additional stairs in mostly confined yard areas. Most zoning ordinances define a “yard” as a required open space on a lot between a lot line and building or structure, which is unoccupied and unobstructed from grade to sky. There are a variety of stairway designs to transition from the finished grade of an elevated or reconstructed house to the entrance doors, which are often more than 10 feet above the ground. It would require about 17 steps to cover a rise of 10 feet based on the diagram in Figure 102 below, which would require about 14 feet of run. Straight run of steps to the front door would then frequently require front yard variance relief.

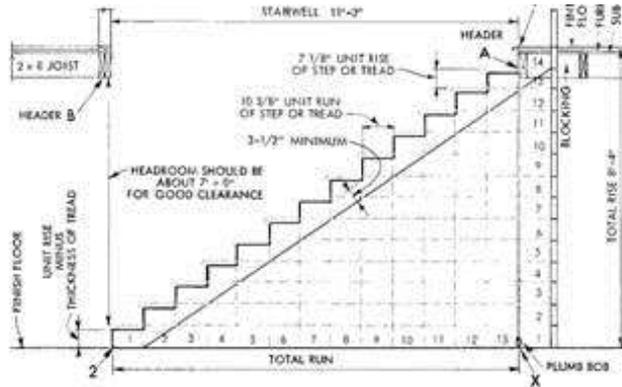


Figure 102: Typical riser and tread dimensions to cover a height of 8.33 feet.

Breaking up the run of entry stairways to elevated homes with one or more landings provides for a more attractive transition, but also requires more space, which often forces stairways into required yards and generates applications for variance relief to the Zoning Board of Adjustment.

To facilitate such landings, the Township amended its zoning regulations in §245-Part 2: Article XXXVIII A “Supplemental Land Use and Zoning Regulations in Special Flood Hazard Areas”. The purpose of which is to recognize limitations associated with federal and state construction and reconstruction requirements in special flood hazard areas, and encourage the restoration and reconstruction of existing neighborhoods within the Township of Brick in compliance with Chapter 196, special flood hazard areas, and the Uniform Construction Code. §245-330.4 “Permitted Yard Encroachments” permits:

- A. An access staircase and entry stoop, not to exceed 100 square feet in area, may project no further than 10 feet into a required front yard setback area. The previously referenced entry stoop may be covered or uncovered.
- B. An access staircase and entry stoop, not to exceed 50 square feet in area, may project no further than five feet into a required rear yard setback area. The previously referenced entry stoop may be covered or uncovered.
- C. An access staircase and entry stoop shall maintain a one-foot minimum side yard setback, provided that unobstructed access to the rear of the building is provided on a minimum of one side of the building.
- D. Elevated platforms for mechanical devices serving a building shall maintain a one-foot minimum side yard setback, provided that unobstructed access to the rear of the building is provided on a minimum of one side of the building.
- E. The permitted yard encroachments noted in this section are applicable to all existing and proposed buildings on any parcel of land that is designated to be in a special flood hazard area.



Additional consideration for dealing with transitioning to elevated entrances similar to the provisions made in the current ordinance for handicapped ramps could help to simplify the recovery process for property owners.

The ordinance also provides requirements for “Façade Treatments for Enclosed Spaces” (§245-330.5), as follows:

- A. A building façade with an enclosed ground level must be treated to conceal the block face.
- B. Ground level areas that are below the base flood elevation, enclosed or exposed, are uninhabitable spaces.
- C. An exposed façade area shall be screened from public view. A minimum of 30% of an exposed façade area shall be screened with landscaping, siding, venire, faux window treatments, doors, etc., to visually break up the solid wall.

These changes in the ordinance could work to help homeowners who are trying to raise their home. However, the Design Standards section of this Plan offers additional bulk standard recommendations for consideration by the Township as well as design guidelines.

RECOMMENDATIONS

The assessment for the Barrier Island Neighborhood Plan involved site visits of the area with local representatives, recommendations by Township officials, Planning Board members, and residents, as well as an analysis of the information gathered by Township Planners, investigations, and historic documents. From this baseline information, the following ideas emerged:

BEACHES AND DUNES

The Barrier Island is the first line of defense against storms, waves, and flooding for the rest of the Township of Brick and other mainland municipalities. The sand dunes along the beaches, which are responsible for the formation of the island, are what create such a powerful defense. The island is still naturally sloping with the tops of the historic dunes located along the oceanfront; however, these have been degraded or removed over time by development and exacerbated erosion.

The Township of Brick, in collaboration with neighboring municipalities and governmental agencies, should do everything in its power to restore, protect, and sustain the natural dune ecology of the island for the protection of the population on the island and on the mainland.

Although it has been a controversial issue for some municipalities, the Township and other barrier island communities have been awaiting the Dune Reconstruction and Beach Nourishment project by the U.S. Army Corps of Engineers. The project will feature a 22-foot high vegetated dune with a 135-foot wide cross section and a 150-foot beach, which will cover the existing revetment wall along the beach.

The beaches in Brick post-reconstruction will resemble those

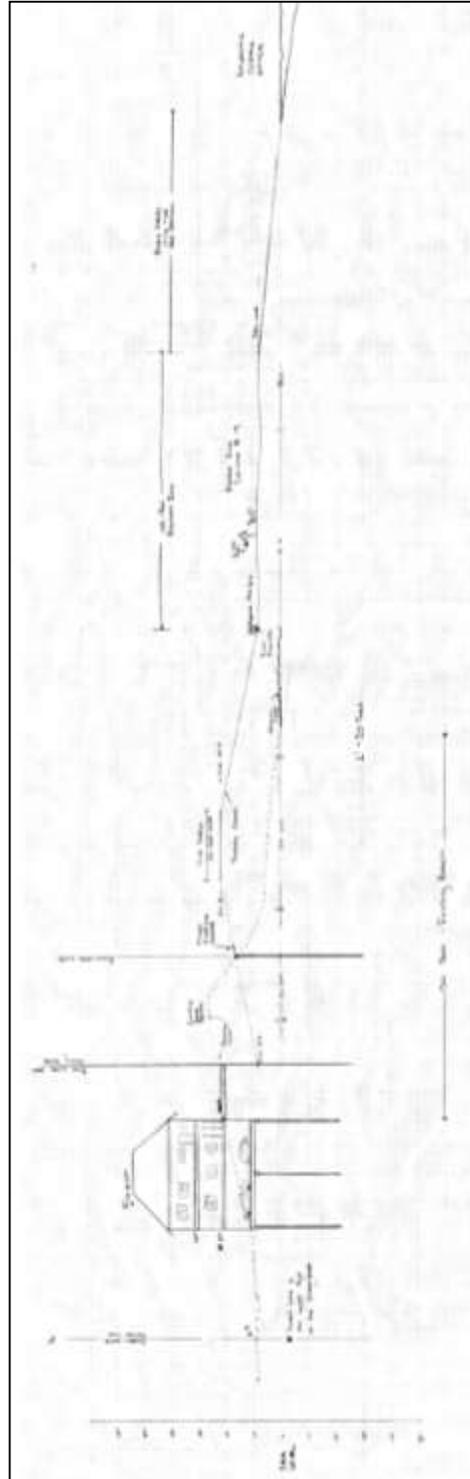


Figure 103: Beach in Harvey Cedars, New Jersey post-reconstruction

recently completed in Harvey Cedars, New Jersey. The image in Figure 103 shows the width of the reconstructed beach in Harvey Cedars in comparison with adjacent communities that have not yet been replenished. Below is a sketch diagram by the Brick Township Engineer of a beach on the Brick Barrier Island post-dune reconstruction. The diagram shows the difference in the transect of the beach and dunes from the current to the proposed, in relation to the sea level, existing road, and homes.



Figure 104: Diagram of Brick beaches post-Army Corps dune reconstruction (to-scale)¹⁷



¹⁷ Commins, Elissa, Township of Brick Engineer. Shared on May 13, 2016.



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Figure 105: Approximate addition of beach width post-reconstruction





According to the Army Corps of Engineers, the replenished, wide beaches will provide a buffer during storm conditions and prevent the type of flooding and destruction that the island saw during Sandy and as shown in the diagrams below.

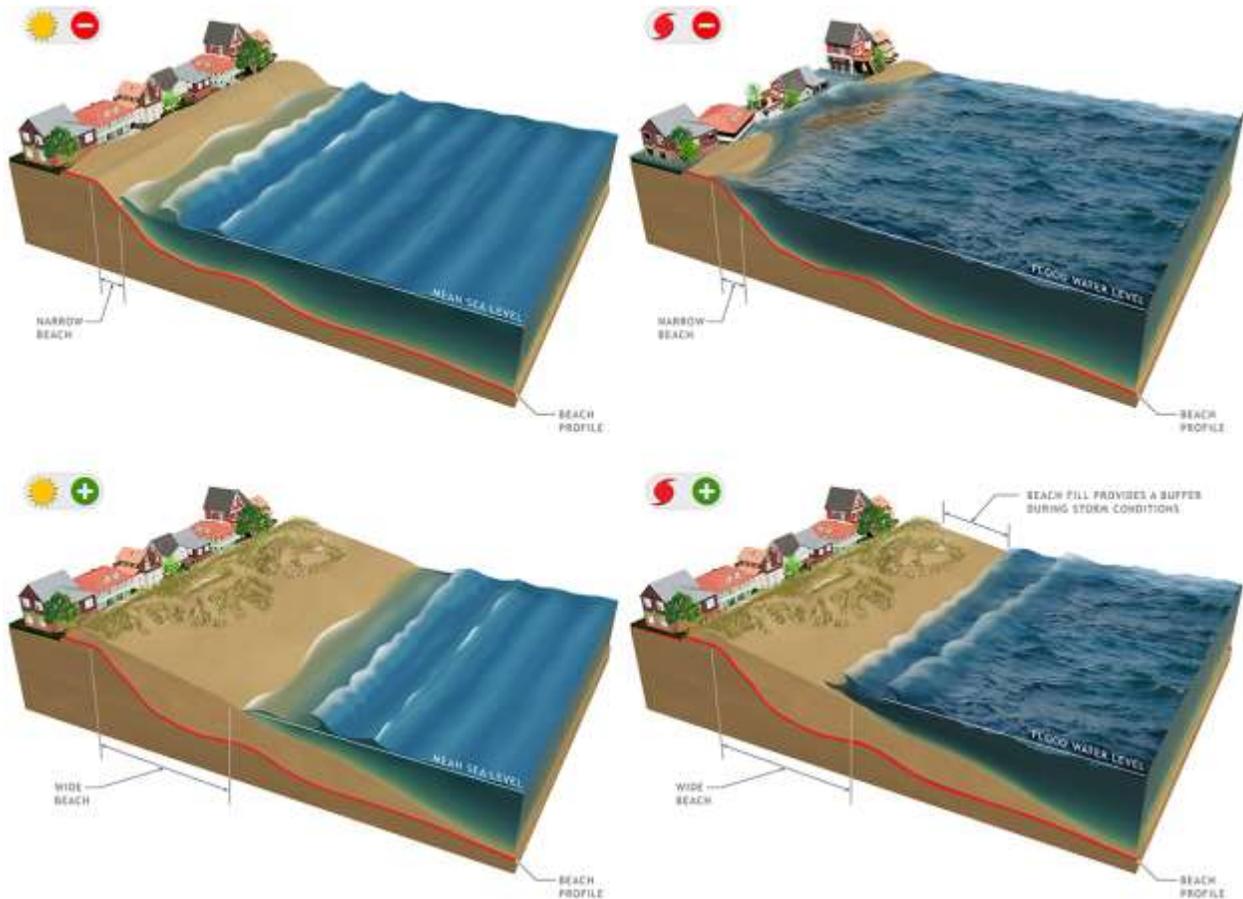


Figure 106: Beach fill protection diagram (U.S. Army Corps of Engineers, <http://www.nad.usace.army.mil/CompStudy>)

While the beach replenishment and dune systems should help to protect the rear communities from severe storm damage and erosion, at least temporarily, there are several other issues that should be taken into consideration and addressed once the dunes are completed:

DUNE MAINTENANCE AND PRESERVATION

Public knowledge of the importance of dunes and vegetation is critical. The public should be made aware of the sensitive nature of the dunes. Vegetation is needed to stabilize the dunes and any disturbance can damage the fragile anchoring root system, loosen the sand, and make it more vulnerable to erosion. Additionally, vegetated dunes are often habitats and nesting grounds for local coastal fauna that may be threatened species. Public participation in planting dune grass and other service projects with local community or environmental groups is one way to increase awareness and visibility of the projects.



Appropriate signage is also important to notify visitors to the beach that certain areas are either sensitive or off-limits. A sign with a narrative, pictures, or description of the importance of the improvements often makes people more likely to heed the warnings.



Figure 107: Public participation in dune grass planting with local groups can help to increase awareness



Figure 108: Signs for sensitive areas (Lake Huron Centre for Coastal Conservation)



Figure 109: Diagram showing some dune preservation techniques (The Lake Huron Centre For Coastal Conservation. <http://lakehuron.ca/index.php?page=learning-about-beach-and-dune->

MATS AND NETTING

Mats and coarse netting can be used for protecting bare sand surfaces while transplanted grasses are establishing in the dunes. This technique is best used to protect the sand surface with new seedlings, but does not collect much sand (Woodhouse, 1978).

SAND FENCING

Sand fences are an interim measure to help build up dunes. Properly installed, the fences slow sand movement by reducing the velocity of wind in the immediate vicinity. Sand fences can be installed during any season and are effective immediately. Typically, commercial snow fencing has a 50% porosity (Carter, 1988). Once the windblown sand is trapped, sand fences have little effect on sand movement. When dune vegetation has been established, the need for fencing is significantly reduced.

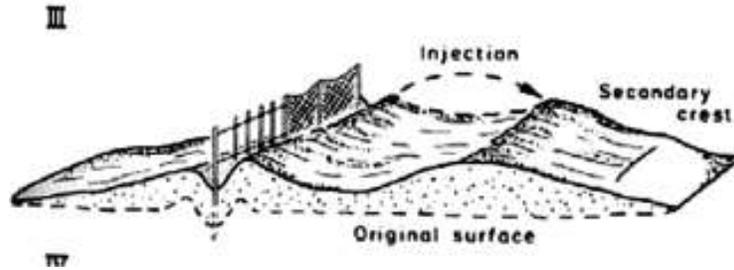


Figure 110: Diagram showing sand movement behind sand fences (image: Lake Huron Centre for Coastal Conservation)



Figure 111: Sand dune fencing helps direct sand
(<https://americanthebeautiful.wordpress.com/tag/sand-dune/>)

There are various designs of sand fence placement that produce different shaped dunes by the way that the sand is captured. A shore-parallel design produces a narrow width of sand, while zig-zag and parallel with side spurs create a wider dune. In most cases, sand fencing that is parallel to the shoreline is usually the best design to restore or expand existing dunes by placing it approximately 10 to 15 feet seaward of the existing dune. Posts to hold the sand fencing should be about 10 feet apart and driven at least 3 feet into the sand.¹⁸

This can also be done with a zig-zag configuration at the same distance to enhance existing dunes. Zig-zag configurations and shore-parallel lines with side spurs work equally well at capturing sand, but the cost of the project increases with zig-zags since more sand fencing is utilized. A zig-zag or parallel with side spurs configuration is recommended when the objective is to create a new dune on the backbeach area. Such designs produce a wider dune initially and also offer the advantages of walkthrough and foot traffic control.

As sand fencing is added and the sand dunes grow, the growth of the dune is dictated both by the placement of the fencing and the location of vegetation.

VEGETATION

Vegetation is one of the most important aspects of supporting a healthy sand dune ecosystem and ensuring the structure stays intact as long as possible. Certain plants that are tolerant of the seaside environment grow healthily in the sand and have deep roots that anchor the sand into a dune formation. Many of these plants work together, including some non-native and typically nuisance plants, such as poison ivy, but can be beneficial for stabilization.

¹⁸ New Jersey Department of Environmental Protection, Division of Coastal Resources, Bureau of Planning and Project Review. "Guidelines and Recommendations for Coastal Dune Restoration and Creation Projects." November 1985.

'Sea Isle' Japanese Sedge, 'American' Beachgrass, and 'Atlantic' Coastal Panicgrass are tolerant to the salty and sandy conditions, and are appropriate for stabilizing or building dunes. These grasses should be planted in rows no less than twenty feet wide and ideally up to fifty feet, parallel to the coastline at least 100 feet from the mean high water line, as room permits. Late winter and early spring are the best times to plant. Using mats or fences in conjunction with the grass plantings provides the best dune building scenario. After your dune has been stabilized, secondary plants can be planted to further stabilize the dune without the fences or mats.¹⁹



Figure 112: Japanese Sedge (top) & American Beachgrass (bottom)

Bayberry, Beach Plum, Rugosa Rose, Shore Juniper, Seaoats, and Japanese Black Pine are suitable for beach habitats. Some larger shade trees that are also tolerant of both salt spray and salty soils include White oak (*Quercus alba*), Post oak (*Quercus stellate*), and Sassafras (*Sassafras albidum*). More common are the native trees that are tolerant of salt spray but are intolerant of salty soils, these include Pagoda dogwood (*Cornus alternifolia*), Cockspur hawthorn (*Crataegus crusigalli*), Eastern red cedar (*Juniperus virginiana*), Pitch pine (*Pinus rigida*) and Sycamore (*Platanus occidentalis*).

Some non-native trees that are tolerant of salt spray and found commonly on seaside properties include Crab apple, Little leaf linden, Stone pine, Black pine, Mugo pine, Blue spruce, Paperbark maple and Honey locust. Some of the best native grasses that can be used for seaside plantings are American Beach Grass (*Amnophila breviligulata*), Big bluestem (*Andropogon gerardii*), and Switchgrass (*Panicum virgatum*). Some of the top non-native grasses that are tolerant of seaside conditions and that are found commonly in seaside plantings include Fescue grass and Fountain grass. For a further list of tolerant species appropriate for New Jersey shore areas, see Appendix IV.

PUBLIC ACCESS

The construction of the large dunes and wide beaches will likely create challenges for public accessibility. However, the Township is proposing public access points at every half-mile (1/2) along the waterfront. There are currently three public beaches, two of which have public facilities similar to that in Figure 113. Any new additional public access points will likely only consist of a path with matting from the road to the beach, such as that seen in Figure 114. The matting and walkways help to show visitors a path that will not disturb the growing dunes. Placing fences along the walkways will confine pedestrians to the paths and protect the dune grasses and nesting birds.

¹⁹ Monmouth County Planning Board. <http://www.visitmonmouth.com/documents%5C24%5CEco-Tips%20Dune%20Protection.pdf>



Figure 113: Public concession and restroom facilities at Brick Beaches I and III



Figure 114: Matting on pathway for public beach access (Google Maps)

Access points can range from these simple cleared paths to paved walkways or boardwalks. A dune walkover or ramp with boardwalk is an appropriate way to protect vegetation, create a scenic vista, and to potentially provide handicap access. Below are a couple of examples from neighboring communities.



Figure 115: Dune crossover in Borough of Bay Head, NJ



Figure 116: Dune crossover in Borough of Mantoloking, NJ

BAYSIDE

In certain strategic areas of the Barrier Island along the Barnegat Bay, such as parks, public space, or street ends, the Township may want to consider studying the replacement of bulkheads and other hard structures with “living shorelines”. This is not practical on the Atlantic side due to heavy wave action and sediment erosion; however, the Bay provides an easier and calmer transition zone.



Figure 117: Living shoreline example (NOAA)

Living shorelines have a breakwater of rocks, a strand of coastal wetlands and beach, then a bankface, and an upland buffer. Wetlands and natural structures are better at absorbing the impact of floodwater, particularly long-term.



Figure 118: Coastal Shoreline Profile & Living Shorelines Treatments / © [Burke Environmental Associates](#)



Figure 119: Various shoreline-stabilization methods are shown, ranging from “green” living shorelines to hardened structures, shown in gray. Image: NOAA



MOBILITY

WALKABILITY

There is no existing internal circulation for bicycles and there is a lack of connectivity for pedestrian circulation within the Brick Beaches/Barrier Island neighborhood. Based upon the analysis of existing conditions the following could be further investigated:

1. NJDOT is currently constructing sidewalks and dedicated bicycle lanes along Route 35 through Brick Township. The Township could coordinate pedestrian and bicycle mobility enhancements with the New Jersey State Department of Transportation (NJDOT) on Route 35 improvements, both northbound and southbound. Opportunities include:
 - a. Enhancing berms along the road with street trees where space permits
 - b. Extending or connecting existing sidewalks to serve all high traffic areas
 - c. Coordinating bicycle routes with the Route 35 bicycle lanes along streets that improve safety and connectivity for bicyclists
 - d. Adding additional crosswalks to facilitate east to west pedestrian crossing, with priority for pedestrians, and particularly in areas not currently served by crosswalks or traffic lights, that have heavy seasonal traffic, and that have desirable amenities (i.e. public beaches, restaurants, marina, etc.)
2. Observe pedestrian and cyclist treatments in neighboring towns where mobility is a focus in order to get a better idea of the potential to implement such treatments in this neighborhood. Explore the potential for traffic calming methods to improve roadway safety and increase pedestrian and cyclist mobility options. As a largely residential and recreational neighborhood, it is important that the roadways serve these uses. A traffic and speed study should be conducted, with a focus on the Route 35 northbound and southbound corridors.
3. Sidewalk and curb treatments should be standardized with one pattern for the entire neighborhood, whether a Township standard or unique for the neighborhood, that can be modified to fit various applications. For example, slight variations could be used for smaller and broader crossing streets.
4. Crosswalks should be placed at minimum at all north to south crossings, major east to west connections between neighborhoods and beaches, and at least every half-mile (see Maps below).
5. Develop a comprehensive network of sidewalks and crosswalks throughout the neighborhood that connect and, particularly, that allow safe and efficient east-west and north-south pedestrian traffic along Route 35 northbound and southbound and to major points of interest.



6. Map **28** shows possible sidewalk connections in red that should be priority areas when new sidewalks are installed. When making sidewalk recommendations, consideration was given to the traffic level, existing sidewalks and crosswalks for potential extensions, difficult intersections, creating the shortest distance between points and fewest road crossings, and moving pedestrians to various points of interest, which are also indicated on the map. Maps 24 through 27 show the neighborhoods in detail. The following areas, in particular, should be considered:
- a. West side of West Central Avenue (Route 35 South) to Swamp Cove/Bambe Cross;
 - b. West side of West Central Avenue (Route 35 South) to Bay Lane;
 - c. West side of West Central Avenue (Route 35 south) from Cutter Lane to Brigantine Lane;
 - d. East side of West Central Avenue (Route 35 south) to Bay Boulevard;
 - e. West side of West Central Avenue (Route 35 south) from south side of Tide Pond Road to Deauville Drive (Harbour Yacht Club and Marina);
 - f. East side of West Central Avenue (Route 35 south) from 7th Avenue to border of Toms River Township;
 - g. North side of 7th Avenue West from West Central Avenue (Route 35 south) to Broad Avenue;
 - h. East side of Broad Avenue from north side of 7th Avenue West to Normandy Drive;
 - i. North side of Deauville Drive from Sunset Boulevard to West Central Avenue (Route 35 North);
 - j. West side of Ocean Avenue (Route 35 north) from Deauville Drive to Neptune Court;
 - k. South side of East Kupper Drive from Ocean Avenue (Route 35 North) to beach;
 - l. West side of Ocean Avenue (Route 35 north) from Kupper Drive to existing sidewalk south of Faber Lane;
 - m. West side of Ocean Avenue (Route 35 north) from southern end of Bel Air village to existing sidewalk at Used To Be's;
 - n. East side of Ocean Avenue (Route 35 north) from Brick Beach I to existing sidewalk at Ocean Heights;
 - o. Entire central block between West Central Avenue (Route 35 south) and Ocean Avenue (Route 35 north) and Bay Lane to Grandview;
 - p. North side of Bay Lane from Ocean Avenue (Route 35 north) to Ketch Road;
 - q. West side of Ocean Avenue (Route 35 north) from Bay Lane to existing sidewalk north of Dune Avenue;
 - r. West side of Ocean Avenue (Route 35 north) from Bay Avenue to Curtis Point Drive;
 - s. East side of Ocean Avenue (Route 35 north) from Curtis Point Drive to border of Mantoloking Borough



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Figure 120: Detail of pedestrian facility recommendations from border with Mantoloking Borough to Mantoloking Shores with existing (white) and recommended (red) sidewalks, existing (gray) and recommended (black) crosswalks, and points of interest



Figure 121: Detail of pedestrian facility recommendations from Mantoloking Shores to the Ocean Club with existing (white) and recommended (red) sidewalks, existing (gray) and recommended (black) crosswalks, and points of interest



Figure 122: Detail of Sub-neighborhood Map with pedestrian facility recommendations, from Toms River Township to the Osprey Dunes to the north, with existing (white) and priority (red) sidewalks, existing (gray) and suggested (black) crosswalks, and points of interest

BIKEABILITY

1. Designate “Bicycle Friendly” routes within the Brick Barrier Island and continue to build a network of bicycle lanes and shared lanes from the border of Mantoloking Borough in the north to Toms River Township in the south and from bay to ocean. Many of the primary and secondary roads in Brick Beach are wide enough to support sidewalks and shared bicycle lanes. In particular, separate bicycle lanes could be placed in the shoulders of both Route 35 North and South.
2. At minimum, a circulation plan with a wayfinding system should be developed for bicyclists and pedestrians and educational outreach targeted toward children to reduce the risk of accidents.

SIGNAGE & IDENTIFICATION

In summary, there seems to be a lack of identity to the Brick Barrier Island as a separate community from neighboring Toms River or Mantoloking and as a distinct part of Brick Township, especially considering the lack of a recognizable name for the area as a whole. Additionally, despite some signage for the multiplicity of private sub-neighborhoods and the lack of connectivity, the sub-neighborhoods are still mostly indistinguishable from one another. This Neighborhood Plan recommends that there be some



consistency in the identification message. Below is one example of a sign with potential design that may be relevant neighborhood-wide for the various sub-neighborhoods:



Figure 123: Graphic example of unified branding message for new identification and gateway signage, blending typical colors found in Brick Township and within the Barrier Island.

In addition to common signage blending Township and neighborhood colors and a consistent font, a recognizable and uniform name should be given, such as “Brick Beaches”, which refers to the entire Brick Barrier Island neighborhood. This name identifies the neighborhood by one of its most important attributes and is consistent with other neighborhoods and boroughs along the barrier island. The NJDOT is also placing gateway signs at various locations as part of the Route 35 improvements and there may be an opportunity for the Township to coordinate the message and graphics.

Coordinated, but unique signage can also be an opportunity for the Township and neighborhoods to develop “branding” that is both attractive to visitors and that gives a sense of pride to residents. In some places, such as Nantucket, Massachusetts, the signs for different parts of the island are so popular and representative of places that people enjoy or have fond memories of that people wear them on shirts, as jewelry, or use replicas as wall hangings, pillows, et cetera. These signs have similar backgrounds, but with the name of part of the island and sometimes an emblem, and are used at key locations. Branded signage is used by land trusts to identify areas, as well. Using the Township seal and Township colors is another great way for branding at a larger scale and to incorporate into the neighborhoods.



Figure 124: Examples of Nantucket branded signage, jewelry, and wall hangings



Wayfinding signage was also brought up as a way to navigate to different sub-neighborhoods, businesses, parks, and other institutions, which currently proves to be challenging. One of the challenges is that Route 35 North and Route 35 South are separated to motorists and bicyclists by a block of homes. A system of pedestrian-scale wayfinding signage should be coordinated with the gateway signage referenced above to foster cohesiveness of the community, as well as to help residents, visitors, and customers find the existing and future services, especially during the summer tourism season. An example of such a system is shown below in Figure 125.



Figure 125: (Left) Wayfinding signage used in downtown Toms River to direct motorists to primary destinations. (Right) Nantucket, MA (June 2015) shows a system of wayfinding using plaques purchased by businesses mounted into slots on a standard that matches the antique style of the pedestrian lighting on Main Street and points in the direction of the business

BULK RECOMMENDATIONS

After reviewing the bulk standards for the R-5 and R-7.5 zones, this Neighborhood Plan recommends the following be considered by the Township for the Brick Beach Neighborhood:

FLEXIBLE FRONT YARD SETBACKS

Homes are presently required to have a 20 foot front yard and 15 foot rear yard in the R-5 zone, while the R-7.5 zone requires a 25 foot front yard and 15 foot rear yard. However, lot depth varies within the two neighborhood zones, with some well over 200 feet in depth and others as small as 50 feet. Therefore, a lot that is only 50 feet deep cannot meet the rear or front yard setback requirement. In fact, a lot that is 50 feet deep would only be able to construct a house that is 15 feet deep, which is impractical. Many properties do not meet the required yards, which is perhaps a pre-existing condition, allowing the homes to be larger. Additionally, there are many odd- or triangular-shaped lots which prevent the same kind of build-out. Coupled with the need to elevate homes and add exterior staircases for entrances, the required yard depths can pose significant limitations on density, although the Township has made some strides towards rectifying this issue.



To this end, the Township could amend the front yard setback reducing the minimum requirement for the front yard from 20 feet to the prevailing front setback to provide homeowners more flexibility.

FLEXIBLE SIDE YARD SETBACKS

Lot widths vary greatly within the sub-neighborhoods of the Brick Barrier Island. Presently, the code requires one yard to be 5 feet wide and with the combined yards not less than 12 feet in the R-5 zone. In the R-7.5 zone, one side yard is required to be at least 6 feet and have combined side yards of at least 15 feet. A lot that is 30 feet in width would be restricted to a home that is only 18 feet wide in the R-5 zone and 15 feet wide in the R-7.5 zone, which is not practical or desired in today's residential designs.

Two options are presented for the Township's consideration. The first is reducing the side yard setbacks for lots with a width less than 40 feet. A sliding scale could be provided to offer homeowners looking to rebuild with variance-free options. Lots between 31 and 39.9 feet (in width) could be permitted side yard setbacks of 4 feet each, for a total of 8 feet. Lots between 20 and 30.9 feet, if any, could be permitted a side yard setback of 0 and 3 feet, for a total of 3 feet.

The second option for the Township's consideration regarding undersized lots is a development concept called "zero-lot line". A zero-lot line home essentially places the home on one side yard line, allowing for a generous side yard on the other side that functions as the home's outdoor space in conjunction with the rear yard. On lots narrower than 40 feet, the zero-lot line concept provides one useable side yard instead of two unutilized side yards. As shown in Figure 126, the homes are located along one property line. This alternative would provide more flexibility to owners of undersized lots (less than 40 feet wide) and produce usable side yards instead of useless slivers.

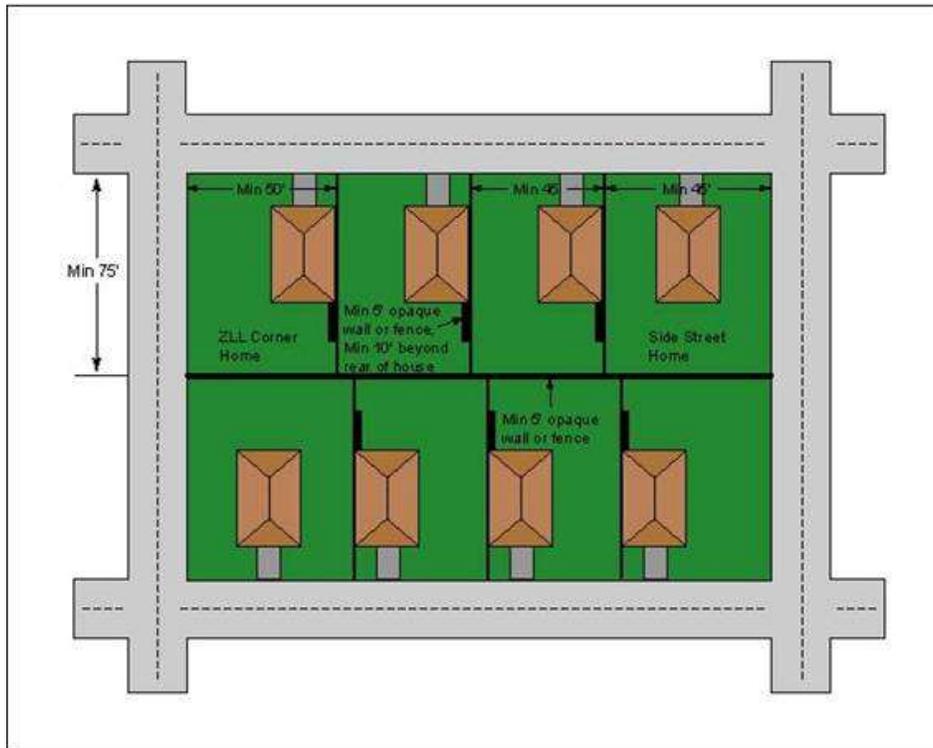


Figure 126: Illustration of Zero-Lot Line Homes

For both zones, the potential amendments to the side yard parameters could include:

Table 5: Amendments to Side Yard Setbacks

Lot Width (ft)	One Side Yard (ft)	Combined Side Yards (Both) (ft)
20 – 30.9 feet	0 and 5	5
31 – 39.9 feet	0 and 8	8
40 – 49.9 feet	0 and 12	12
50 – 50.9 feet	0 and 16	16

Lots that are 60 feet and greater in width could maintain the existing side yard setback requirements with two yards, so that larger homes do not overpower adjacent smaller lots.

FLEXIBLE PRINCIPAL BUILDING COVERAGE

There are lots within the neighborhood, which, when applying the 35% maximum principal building coverage to the lot, significantly restricts the footprint of the home. Furthermore, existing on-the-ground conditions reveal that undersized lots contain homes that cover much more than 35% of the lot area.



It is recommended that the Township consider allowing lots under a certain size (perhaps lots less than 3,000 square feet) a larger maximum principal building coverage, for example, 50% or 55%. This would allow a lot that is 30 feet by 50 feet to construct a home that has a first floor with 750 or 825 square feet.

The opposite condition to the challenges of rebuilding on undersized lots is the phenomenon of building new homes on conforming lots that are much larger than the homes they replace. This “tear down – rebuild” trend was already occurring prior to Sandy, but appears to have become an element of the recovery due to the high land values on the Barrier Island. The Township may want to consider using a limitation on Floor Area Ratio (FAR) to keep the size of new homes proportionate to their building lot size.

In addition to some of the strides that have already been taken to assist homeowners who are rebuilding, the Township has identified the need to update and amend its Land Use and Development Regulations to address many of these issues and is currently developing recommendations for zoning amendments as one of its Phase II Post Sandy Recovery Planning projects.

DESIGN GUIDELINES

The recovery of the Brick Beach/Barrier Island neighborhood in a way that provides for greater resiliency against flooding will largely depend on the elevation of existing residential buildings as a result of recovery grant programs, as well as the elevation of new construction based on compliance with Flood Damage Prevention. The following design guidelines are intended to integrate elevated buildings with existing non-elevated residences to soften the visual impact on the neighborhood. Additionally, there are possibilities to introduce new landscaping and street treatments in certain areas that permit more pervious surfaces and stormwater management.

PRIVATE DWELLINGS

ELEVATION OF BUILDINGS

The raising of residential homes is usually accomplished by either the use pilings or by increasing the height of foundations and crawl spaces by adding courses of masonry block. To the extent that property owners determine to increase the elevation of the lowest habitable floor to the “Design Base Flood Elevation” in the Flood Damage Prevention Ordinance (usually the “Advisory” or “Preliminary” Base Flood Elevation plus freeboard), the height difference between the grade and the first floor can be considerable, causing a design challenge to access the elevated building. Many residents are choosing to upgrade and raise their homes, although there is somewhat of a consensus that new homes are too large for the neighborhood and that the height makes getting inside difficult for emergency purposes and for elderly or disabled persons. However, residents were not as accepting of having the designs of their homes regulated.



Depending on the size of the lot and the density of the building pattern in the neighborhood, the solutions to the challenge of providing access varies from a straight run of stairs to a progression of porches or landings (see Figure 127).

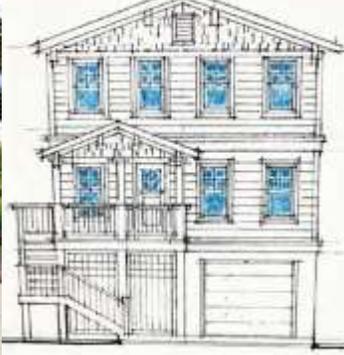


Figure 127: Illustrations of various ways to design access to elevated first living floors of residential buildings, some which frame the piles and others that partially or completely "skirt" or wrap the piles for garage/storage space or use raised foundations.

As stated in the 2015 Hazard Mitigation Plan Element:

"Identifying strategies to support additional home elevations is a key opportunity for improved safety and resilience. However new home elevations also come with additional potential risks that must be planned for and addressed. Ensuring that spaces below elevated homes are used only as storage or garages, and not livable space, is essential to protecting public safety. If illegally converted into bedrooms or living space,



these low areas become extremely dangerous during flood events. Newly elevated homes can also sometimes negatively impact the views and other aesthetic considerations for neighboring properties. Design and regulatory measures are currently in place and other controls are being explored that can help maximize the flood safety benefits of home elevations while finding creative solutions that reduce any negative impacts for neighboring properties.”²⁰

Additionally, elevated buildings can pose a hindrance and hazard for disabled and elderly persons, as well as emergency services attempting to access persons in the house. For most physically impaired persons, the design guidelines and height requirements limit access almost entirely. Elevators from the ground floor to the first elevated floor, in addition to stairs, are ideal, although restrictive for many due to the high cost. Ramps are also ideal, but generally impractical for most houses that are being lifted to the maximum height, due to the space that they require, where most lots are quite small. However, for outdoor stairways it is recommended that they are not a straight run, but, rather, provide landings and, preferably, with turns in the stairway to allow for resting spots.

The desirability of requiring such design standards as concealing exposed piles with framing or skirting, avoiding straight run stairs without a landing every so many steps will need to be balanced with the eligible costs of elevating homes covered under the various disaster relief programs so that they do not become a financial burden on property owners. If such aesthetic improvements are not covered by insurance or relief funding, the Township would need to seek other grant assistance to supplement the costs.

GENERAL APPEARANCE FROM STREET

Within the residential blocks, every effort should be made to provide designs for the newly elevated homes that will work within the context of the existing lot lines and setbacks to enhance the overall character of the neighborhood. A number of visual ideas are provided below to act as representative examples of what can be done. There have been some examples constructed within the neighborhood as part of the Sandy recovery which embody these ideas.

²⁰ Hazard Mitigation Plan Element (Draft). Page 27. Township of Brick. Prepared by TetraTech & Maser Consulting, P.A. November, 2015.



Figure 128: Upper set of illustrations shows potential streetscape treatment of narrow and deep lots using trees with vase shaped or columnar habit, while lower pair shows wider lots with street trees of spreading habit in larger spaces and narrower habit in more confined spaces between houses. Homes are shown as representative for the size of lots as elevated for flood resiliency.

Residents worry that properties on small lots will look overcrowded and unappealing. The Township should look at various models that work well in other municipalities and provide guidelines that are appropriate for each neighborhood. Allowing for some variations in the designs for proper entrances and yard space, but maintaining some setbacks and some of the current bulk standards should prevent overcrowding while providing the necessary space to adapt to new regulations.

ABANDONED BUILDINGS

Following Superstorm Sandy, many people who endured major damage to their homes and/or could not afford the pursuant repairs and insurance were forced to leave their properties behind. Several years later, there are many homes that have not been demolished and continue to decay, but rest in a state of limbo because the property owners will not take responsibility and the Township has not established the necessary conduits for acquiring or selling such properties nor holding the owners accountable. Below are some recommendations for properties and buildings that have remained abandoned or in disrepair for a long period of time, in response to concerns raised by residents.

1. Contact the Diocese of Trenton regarding Our Lady of Peace church to find out whether it will reopen and what should be done with the property.
2. Many homes sit abandoned, such as the property shown in Figure 129. The Township needs to be more aggressive in taking action and holding property owners accountable.

3. The Township should look into the possibility of acquiring properties when they cannot hold property owners accountable. Certain properties, particularly repetitive losses, should be strategically used as public open space and water retention areas, while others that are less strategic could be resold.



Figure 129: Abandoned property on Ellison Drive (Google Streetview, August 2013)

LANDSCAPING

Another approach to softening the visual impact of newly elevated buildings is to mask the exposed areas around the piles with landscaping. However, the present conditions caused by the elevation of housing and smaller setbacks will require that the landscaping installed needs to not only survive within the seashore environment, but may need to be compact and columnar in nature when used with narrow lot configurations. This may restrict the plant palette that can be used.

It is also recommended that local plant species and xeriscaping techniques (landscaping that reduces or eliminates the need for supplemental water) be used to reduce water and fertilizer needs. Plant beds should be tolerant to the wind, sea salt, and water conditions of the barrier island, while also being able to aid in absorption of additional rain or flood waters.

In addition to grasses and vegetation that can be used for the reconstructed dunes, there is a variety of native vegetation to the New Jersey shore area. These plantings should be considered for public areas, streetscapes, and recommended to private property owners, as well. These species have ornamental value and are tolerant of both salt spray and salty soils, generally requiring less maintenance and water.

The following are some selections that may work well, but any planting directly in line of prevailing winds will struggle.



Table 6: Plant Species for Brick Beach Neighborhood

Plant Type	Species
Small Trees	Red Maple (<i>Acer Rubrum</i>)
	Allegheny service-berry (<i>Amelanchier laevis</i>)
	Pawpaw (<i>Asimina triloba</i>)
	Black Cherry (<i>Prunus serotina</i>)
	American mountain ash (<i>Sorbus americana</i>)
Large Shrubs	Indigo bush (<i>Amorpha fruticosa</i>)
	Coastal sweet pepperbush (<i>Clethra alnifolia</i>)
	Bigleaf Hydrangea (<i>Hydrangea macrophylla</i>)
	Northern bayberry (<i>Morella pensylvanica</i>)
	Beach Plum (<i>Prunus maritima</i>)
Evergreens (for screening)	Atlantic White Cedar (<i>Chamaecyparis thyoides</i>)
	American Holly (<i>Ilex opaca</i>)
	Eastern Red Cedar (<i>Juniperus virginiana</i>)
Perennials (for decorative filler planting)	Yarrow (<i>Achillea</i>)
	Coreopsis
	Daylily (<i>Hemerocallis</i>)
	Lavender (<i>Lavandula</i>)
	Foxglove (<i>Digitalis</i>)
	Summer Phlox (<i>Phlox paniculata</i>)
	Stonecrop (<i>Sedum spurium</i>)
Ornamental Grasses (for filler and accent)	Fescue Grass (<i>Festuca</i>)
	Panicum (Switch Grass)
	Pennisetum (Fountain Grass)

PUBLIC SPACES

STREETSCAPE DESIGN

The plant materials recommended above can also be used in plantings within public spaces such as road medians, tree lawns (the space between the curb and sidewalk or between the sidewalk and a parking lot or front property line), passive park spaces, and similar spaces that are identified as often being overgrown with weeds and unsightly in appearance.

Bioswales are a good design option that can be used in public spaces, especially along streets to function similarly to a rain garden, which absorb water from heavy rains and flooding, while also removing pollution and silt from surface runoff water, providing a buffer from the street, and enhancing the streetscape visually. Bioswales are built with gently sloping sides that are concave toward an area of drainage and gravel and the slopes are vegetated with flood-tolerant plants.



Figure 130: Example of a streetside bioswale (www.kwalliance.org)

The use of the softer palette of plantings such as ornamental grasses and perennials, combined with the use of stone groundcover can help to enhance the beachfront theme for these spaces in the Brick Barrier Island sub-neighborhoods and could be relatively easily maintained by FOBA, individual sub-neighborhoods, or the Township. Private properties could also be encouraged to use similar groundcover, rather than traditional grass lawns. The images that follow are representations of various designs using these plant materials.



Figure 131: Grasses and perennials used with gravel to provide color and definition to public spaces.



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Figure 132: Grasses and groundcovers can be used to soften roadside spaces and add visual interest to the public spaces such as medians.



Figure 133: Where space permits, perennials and ornamental grasses can be combined with conventional shade trees and shrubs to enhance commercial streetscapes.



Figure 134: Sidewalks are missing in many areas of the neighborhood, particularly where lawns or parking take the place of the public right-of-way, such as this U.S. Post Office building, 6th Avenue & Route 35 North (Google Streetview)

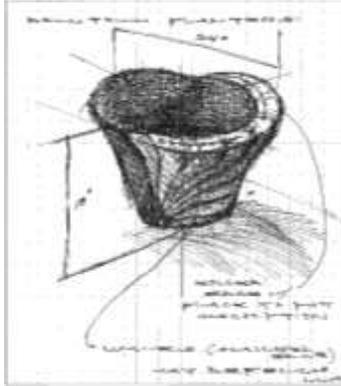


Figure 135: Example of a themed sidewalk planter

Sections of Route 35, particularly northbound in the small business district, such as is shown above, have no sidewalks due to the reliance on the public right-of-way for parking lots or due to private lawns. As development permits, these areas should be priorities for new sidewalks. In these areas near businesses, the use of a "signature" planter, such as that illustrated to the right, would enable the planting of annuals and perennials within customized planters that would be sponsored by the individual businesses. Street trees, as well as planters, add some character to

the streetscape, but also help to absorb some rainfall by storing water below-grade and provide much-needed shade that can help reduce urban heat island effect. The Township should look into placing salt-tolerant trees in certain areas of the island, particularly on larger, open streets, to provide shade. The Township could work with NJDOT to provide trees along Route 35 North and South.

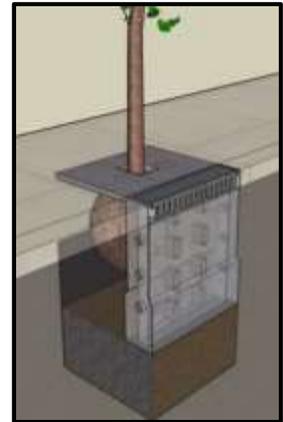


Figure 136: Street trees can help store water below the street, provide shade, and improve aesthetics

STREETS

The Township should determine the feasibility of raising street levels in areas that are most prone to flooding, without subjugating neighbors who have not elevated their homes to additional flooding from stormwater runoff. Streets should be prioritized based on the status as evacuation route, whether for the neighborhood as a whole or for a sub-neighborhood, and the number of affected persons. In particular, the following sub-neighborhoods should be studied:

1. Normandy Beach
2. Deauville
3. Mantoloking Shores

Upgrading the storm drains along streets may allow more efficient outflow of flood water, without "reverse flooding", or water entering through storm drains. Flooding was noted as being particularly an issue at West Kupper Drive, according to residents, and that there are not enough drains. The Township should pursue further investigation of storm drain management and engineering to prevent reverse flooding.

Additionally, residents felt that West Kupper Drive needs to be completely paved, while other roads, including North Bay Drive, Bay Boulevard, and South Bay Drive, need to be repaved.

STREET ENDS

Street ends at scenic points can provide potential opportunities for public access to the water, especially on the Bay side where streets are generally public. The Township should include these in its Municipal Public Access Plan to provide strategic points of access for the public to key bodies of water. Below are a couple of examples of street ends on the Barrier Island on the Bay that can either provide visual access, can provide non-motorized boat launches, or could possibly serve as an opportunity for living shorelines. Where it is private property, the Township may encourage owners to plant native species or, on the beach side, to reestablish natural dunes for storm protection.



PARKING LOTS AND PAVED AREAS

Paved areas, such as the parking lots across from the major public beaches and parks should be considered for permeable pavement to reduce runoff and to help store water during storms, similar to the parks. Below are some concepts that could be implemented, with further study, in such places.

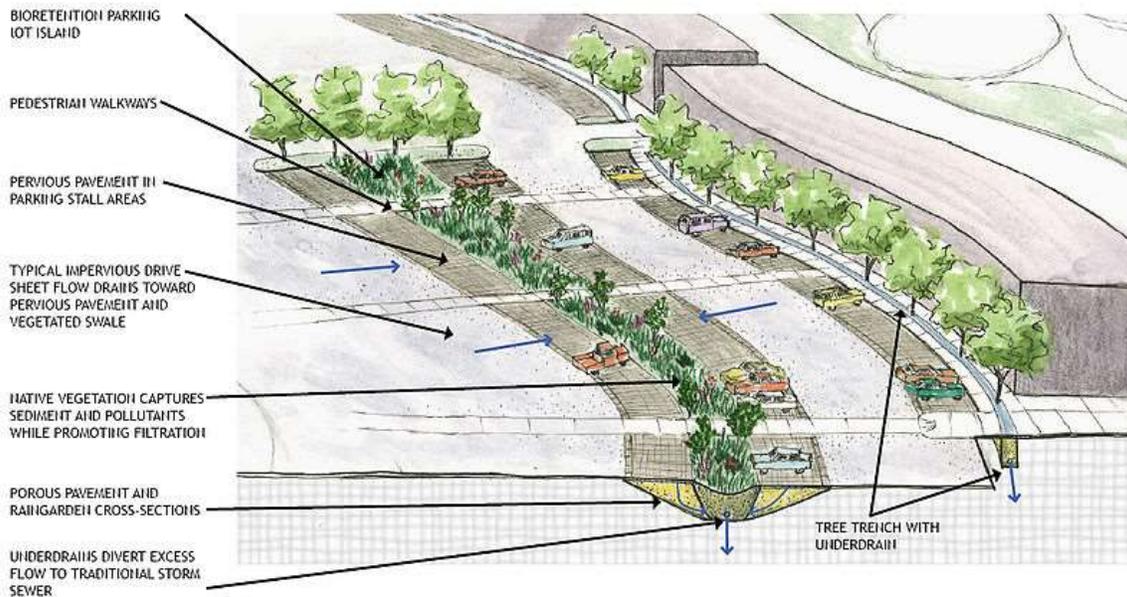


Figure 137: Bio-retention parking lot islands

(http://stormwater.pca.state.mn.us/index.php/File:Bioretention_parking_lot_island.jpg)

Permeable pavers allow stormwater to infiltrate into underlying soils, promoting pollutant treatment and groundwater recharge.

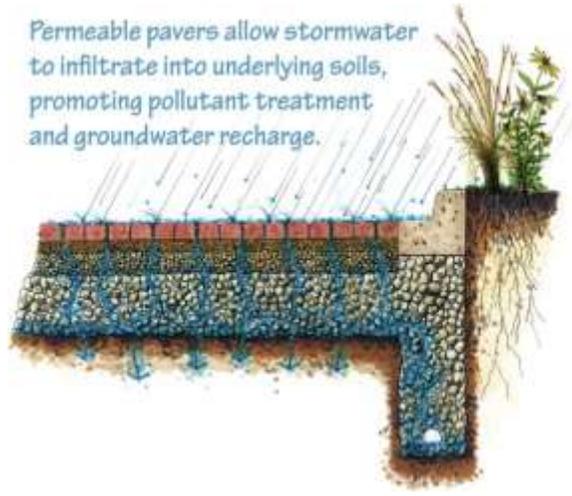


Figure 138: Permeable paver diagram (<http://www.watershedcouncil.org/permeable-pavers.html>)



Figure 139: Bio-retention parking islands
(<http://www.landscapeonline.com/products/listing.php?id=10327>)



Figure 140: Gravel or stone pavers
(<http://greenwaypavements.com/>)

RECREATION AND PUBLIC SPACES

Although there are limited public spaces on the Barrier Island other than the beaches, all parks, open spaces, and conservation lands within the neighborhood should be considered for their role as wetlands to manage stormwater. To the extent possible, pervious surfaces and vegetation or plant beds should be used to allow for the absorption of stormwater or flooding. The neighborhood was built on a former wetlands on the bay side and sand dunes on the ocean side, and without adequate height, the neighborhood is very prone to flooding. Asphalt and concrete should be avoided where pervious pavers, gravel, or grass could be used.

The Township should work with FOBA to act on opportunities to provide new open public spaces or areas for stormwater management within the neighborhood. If properties are abandoned or deeded to the



Township, such lots could be restored to a more natural state or active or passive recreation facilities could be installed for the public to use. If located on the bayside, the property should include new wetlands, whereas if it is on the ocean side, sand dunes should be placed along the beachfront. Such facilities should permit and encourage users from various sub-neighborhoods. Where open space is not practical, other public services could be placed.

It is recommended that the Township develop a comprehensive connectivity plan for sidewalks, crosswalks, and bicycle lanes in the neighborhood, while strategizing how to best move people to various destinations around the island, including public parks and opens spaces. A connectivity plan should serve the neighborhood at its time of peak population and use, which is during the summer.



FUTURE STORM AND DISASTER PREPAREDNESS

After speaking with several representatives and residents and from public feedback, there was a theme of there being a lack of proper communication channels throughout all stages of Superstorm Sandy's destruction – before, during, and in the wake of the storm. In addition to a well-designed built environment that can mitigate the effects of storms and provide physical connections for people, powered and effective communication services are critical to disaster preparedness and relief. Many times, a lack of or poor communication can lead to even more serious and costly consequences than the storm itself.

In addition to measures found in the Hazard Mitigation Plan Element, we recommend that the Township continue to take measures to inform all residents of potential storms and disasters that may affect them, as well to inform them of what steps to take beforehand, and what to do during emergencies. This will require some, if not all, of the following steps:

1. Maintain a database of resident and property owner contact information for reverse emergency warnings. Provide a means for all, including visitors to the extent possible, to give their contact information voluntarily in order to stay informed.
2. Coordinate with all neighborhood, beach, and condominium associations, as well as fire, police, and ambulatory services, to establish and inform residents of the best safety practices, evacuation routes, and emergency care and lodging centers.
3. Obtain funding for backup generators and improvements for all communication outlets in case of disaster to prevent power failures.
4. Ensure that neighborhoods are not cut off and that there are central emergency locations that are well-stocked with supplies for all residents, preferably within less than a half-mile.

The Township should also find ways in which to coordinate efforts with adjacent communities, including Toms River Township and Mantoloking Borough, in order to provide essential services and aid to those in need during disasters. Preparedness Plans and strategies for protecting properties and utilities could also be shared among municipalities.



SUSTAINABLE RECOVERY: LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN

Leadership in Energy and Environmental Design (“LEED”) is a recognized green building certification rating system. LEED provides third-party verification that a new or renovated building was designed and built using strategies and materials to lower a building’s carbon footprint. LEED was developed by the U.S. Green Building Council and is a “voluntary rating system that encourages buildings to do better, but does not add significant cost”.²¹ LEED has five rating systems for multiple project types that want to achieve LEED certification. The rating systems are:

- Building Design and Construction
- Interior Design and Construction
- Buildings Operations and Maintenance
- Neighborhood Development
- Homes

Within each rating systems there are eight main credit categories:

- Location and transportation
- Sustainable sites
- Water efficiency
- Energy and atmosphere
- Materials and resources
- Indoor environmental quality
- Innovation
- Regional priority

LEED “provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions”.²² Furthermore, LEED has been constantly improving its manuals and guidelines to keep up with technology and trends. Presently, there are four levels of LEED certification – certified, silver, gold and platinum.

This Neighborhood Plan focuses on two of the rating systems that could apply – LEED for Homes (LEED-Homes) and LEED for Neighborhood Development (LEED-ND).

LEED FOR HOMES

LEED for Homes is the certification program for single-family home design and construction. LEED-designed homes provide clean indoor air and use less energy and water, which translates to lower utility

²¹ <http://www.usgbc.org/articles/leed-facts>

²² <http://www.usgbc.org/articles/about-leed>



bills. Homeowners looking to rehabilitate or redevelop their damaged home can use the LEED for Homes credit system to make smart choices when it comes to water efficiency, energy usage, material selection, air quality and even rainwater management. LEED for Homes is an excellent resource for homeowners, even if they are not seeking LEED Certification.

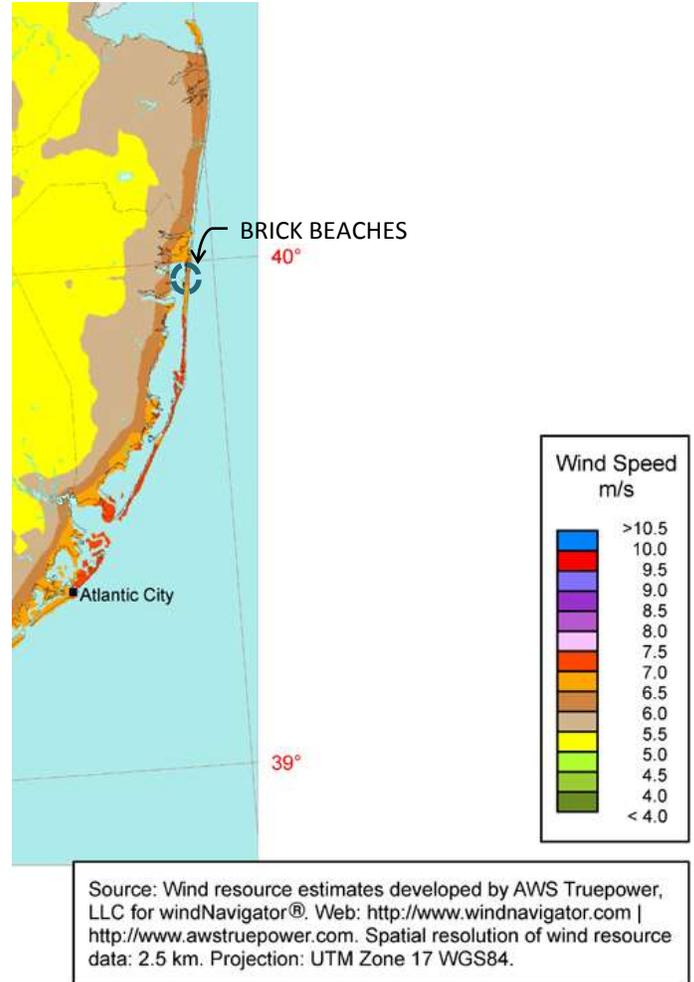
Credits that are worth noting, and that which could be utilized by the residents of the Brick Beach Neighborhood during rehabilitation and new home construction include:

- Rainwater management
 - Certain sections flood after a hard rain storm, let alone a hurricane. Reducing rainwater runoff is imperative.
 - LEED for Homes recommends the following actions to manage rainwater:
 - Planting areas with native or adapted plant material (e.g. trees shrubs)
 - Installing a vegetated roof
 - Using permeable paving
 - Installing permanent infiltration or collection features (e.g., vegetated swale, rain garden, rainwater cistern or rain barrels to capture roof runoff)
- Low-emitting materials
 - The intent of this LEED credit is to reduce concentrations of chemical contaminants that can impact air quality.
 - The requirement includes the use of low volatile organic compound (“VOC”) paints, floor materials and insulation.
- Quality views
 - Part of the appeal of the Brick Beach Neighborhood is that it is surrounded by waterfront views of both Barnegat Bay and the Atlantic Ocean. The purpose of this LEED credit is to give building occupants a connection to the natural outdoor environment providing quality views.
 - The requirement is to achieve a direct line of sight to the outdoors with glazing (e.g. windows and doors) for 75% of the regularly occupied floor area of the home.
- Green power and carbon offsets
 - LEED for Homes encourages homeowner to reduce their greenhouse gas emissions through the use of grid-source, renewable energy technologies.
 - In order to qualify for the credits, a homeowner must engage in a contract for a minimum of five years, which provides between 50% and 100% of the home’s energy from green power or renewable energy certificates.



- Renewable energy production

- In order to offset the rising costs of homeownership, this LEED credit relies on the sun to power homes. The Brick Barrier Island Neighborhood is ideally situated for both solar and wind systems, as the nature of the sea air and high wind levels limits large vegetation in what is largely a grassland (salt marsh and dune grass) ecosystem. The Brick Barrier Island is too narrow to have much of a street grid, but streets are generally oriented so that the long portions of the blocks face south (approximately between 10 and 20 degrees west of due south). Optimal solar orientation for temperate climate zones is 17.5 degrees east of due south.²³ LEED-ND Credit 10 under Green Infrastructure and Building (GIB C-10) provides for credit when the long side of the street block is 15 degrees or less east or west of due south, or if the long axis of 75% or more of the buildings are 15 degrees or less east or west of due south. The Brick Barrier Island street grid would provide opportunities to meet the LEED-ND standard.



- Areas with annual average wind speeds around 6.5 meters per second and greater at an 80-m height are generally considered to have a wind resource suitable for wind development. The Wind Speed Map indicates that the neighborhood is between 6.5 and 7.0 meters per second.
- This credit is offered to homeowners if they meet the parameters for solar energy.
- Indoor water use reduction
 - The intent of this LEED credit is to reduce indoor water consumption.
 - Homeowners can receive up to six points for this line item depending on how much they reduce their water usage.
- Daylight

²³ Design With Climate, by Victor Olgyay, Princeton University Press, 1973, page 61.



- Daylighting is important in connecting building occupants to the outdoors, reinforcing circadian rhythms and reducing the use of electrical lighting.
- The requirement is to achieve at least 55% daylighting for the regularly occupied floor area of the home.
- Outdoor water use reduction
 - The intent of this LEED credit is to reduce outdoor water consumption.
 - Homeowners receive credit if they reduce exterior irrigation between 50% and 100% by installing plants that require no irrigation (e.g. native species) or an efficient irrigation system with a water sense feature.

LEED FOR NEIGHBORHOOD DEVELOPMENT

LEED for Neighborhood Development or LEED-ND is a certification system for a neighborhood-scale project, such as the entire Brick Beach area. LEED-ND incorporates the principles of smart growth, urbanism and green building into a system for neighborhood design, which can be applied to entire neighborhoods, portions of neighborhoods or multiple neighborhoods.

There are five credit categories for LEED-ND:

1. Smart location and linkage
2. Neighborhood pattern and design
3. Green infrastructure and buildings
4. Innovation and design process
5. Regional priority credit



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- Reduce indoor water usage by 20% with water efficient toilets, faucets and showerheads.
- Reduce outdoor water use through the installation of native plants or smart irrigation systems.
- Reduce rainwater runoff.
- Design and orient new homes for maximum solar orientation.
- Utilize solar power, such as solar panels.

For more information on LEED-ND, go to <http://www.usgbc.org/articles/getting-started-nd>.



SEA LEVEL RISE AND THE FUTURE OF INFRASTRUCTURE

SEA LEVEL RISE

This Neighborhood Plan for the Brick Barrier Island has been developed to deal with the immediate recovery needs of the neighborhood, as well as to anticipate measures for improving the resiliency of existing and future development to future storm events. However, it is important to recognize that the evidence for the phenomenon of sea level rise is compelling and that Superstorm Sandy may have been a precursor of more frequent and possibly more severe storm events to come in the future, which coupled with a rising sea level could threaten a repeat of the flooding that occurred during Sandy.

The map below estimates the portion of the Brick Barrier Island that would be flooded by a 1% storm event based on seal level rise of from 0.3 ft to 2 ft.

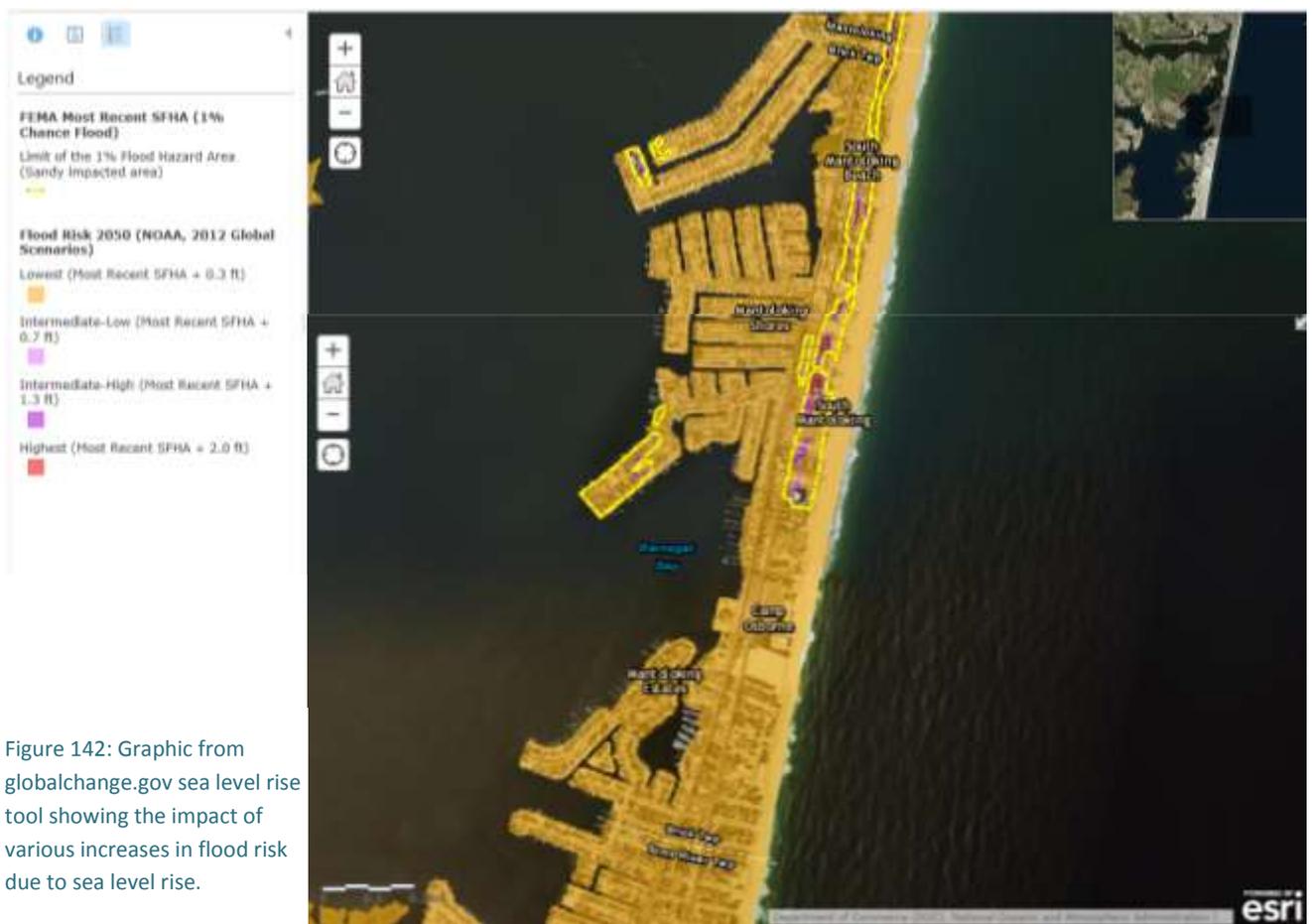


Figure 142: Graphic from globalchange.gov sea level rise tool showing the impact of various increases in flood risk due to sea level rise.



Given the above, we believe the emphasis of this Neighborhood Plan on taking actions to elevate buildings, especially residential buildings, and to protect major community facilities (EMS, fire station, police substation, etc.) would be consistent with a shorter range strategy, while elevating roads and improving stormwater management facilities would be consistent with a mid-range strategy. The key to protecting not only the Brick Barrier Island sub-neighborhoods, but the mainland neighborhoods of Brick Township will be the coordination of beach dune construction and beach replenishment by the Army Corps of Engineers as soon as possible. This was a major concern of the members of FOBA and was echoed by property owners in the mainland lagoon neighborhoods during the neighborhood outreach in 2015.



ACTION PLAN

There are a number of relatively low cost actions that can be undertaken through a partnership between the neighborhood, beach, and condominium associations and Brick Township. They are summarized in the table below.

Table 7: Brick Barrier Island Neighborhood Plan – Action Plan

Project	Responsible Entity	Begin	Estimated Cost			Priority		
			Low	Mod	High	Low	Med	High
1. Gateway Signage and Landscape Treatments, including water retention areas	FOBA w/ cooperation from Township & NJDOT	Immediate to 1 year	X			X		
2. Wayfinding Signage	Township; NJDOT Grant	Within 2 years	X				X	
3. Update Zoning Regulations	Township	Within 1 year	X				X	
4. Extension of sidewalk network & pedestrian improvements, including crosswalks (beginning with areas along Route 35 where some currently exist and where NJDOT is constructing sidewalks and bike lanes)	Township; NJDOT Grant	Within 3 years			X		X	
5. Bike Path System (Lane markings and/or signage on Township roads) to link to bike lanes being constructed along Route 35 by NJDOT.	Township; NJDOT Grant	Within 3 years		X			X	
6. Elevate roads for emergency access and evacuation	Township and FEMA with cooperation from Ocean County & NJDOT	Within 2 years			X			X
7. Elevate residential buildings, utilities, and critical facilities impacted by predicted flooding	Property owners; Township; FEMA	Within 2 years			X			X
8. Develop a sub-regional emergency preparedness plan with neighboring barrier island municipalities	FOBA & Brick Township w/ cooperation from Mantoloking & Toms River Township	Within 2 years	X					X
9. Strategic Plan for acquisition or sale of abandoned properties	Township; State	Within 2 years					X	



10.	Conversion of identified strategic abandoned properties to natural & public space and water retention areas	Township; NJDEP; FEMA	Within 3 years			X		X	
11.	Capital Improvements to stormwater management infrastructure	Township; FEMA Grants	Within 5 years			X			X
12.	Expand/Enhance public space and public access opportunities through the development of a Municipal Public Access Plan	Township; NJDEP	Within 5 years		X			X	

*Costs are estimated as low, moderate (“mod”), or high, but actual costs may vary greatly.



APPENDIX I - NOTES FROM THE BRICK BARRIER ISLAND PUBLIC MEETING – JULY 18, 2015

The observations and ideas summarized above were discussed with the Township professional staff and members of FOBA in a public meeting at Dover-Brick Beaches First Aid Squad on the island in Toms River on July 18, 2015. The following synthesized comments were brought up during the meeting by the Township professionals and the public:

1. Communication with Barrier Island after the storm was difficult
 - a. The Township is working on adding cell phone numbers to “Reverse 9-1-1”, which would help reach seasonal residents. Currently, you have to go through the Beach or Neighborhood Association, but some of those are also only seasonal, impacting and hindering communications.
 - b. How can we create a mechanism to allow year-round, not just seasonal, contact with homeowners?
2. There are changing needs for emergency services, particularly with elevated houses
3. The community doesn’t want a boardwalk

Input for Hazard Mitigation Plan

1. Cleaning out stormwater basins of sediments and install flappers for stormwater drainage so the water can’t go back out.
2. Want roads raised because emergency vehicles and homeowners (estimate of over 200 homes) can’t enter neighborhoods for a substantial amount of time throughout the year due to seawater flooding.
 - a. The Postal Service can’t deliver mail, as well
 - b. It is expensive to homeowners and causes damage to cars
3. Need better communication and coordination between communities and need to complete a flooding analysis of steel wall.
 - a. A resident, who lives on border between Brick and Toms River, couldn’t talk to his brother in Toms River after Sandy.
 - b. He also noted that the communities didn’t talk – need more coordination between municipalities.
 - c. Steel wall doesn’t go past Brick border into Toms River.
 - i. Wants a study/ flooding analysis of wall done to see what will happen, especially since it doesn’t go into Toms River. How will homes be impacted by floodwaters going around where wall ends?



APPENDIX II - RESULTS FROM PUBLIC COMMENT SHEETS – JULY 18, 2015

The additional responses on the comment sheets provided during the Barrier Island public open house on July 18, 2015 at the Dover-Brick Beaches First Aid building are as follows:

1. Repetitive flooding in the Normandy Beach & Deauville areas because of the lower land elevations
2. Paving of side roads in Mantoloking (Deauville Beach) from 35 North to Sunset Blvd
3. Rebuilding efforts have been good, but I would not agree with any [argument] that all homes in the neighborhood be raised for a consistent neighborhood look. Let homeowners decide on an individual basis what their home's elevation should be.
4. Flood problems at W. Kupper Drive; Need sidewalks completed at intersection of W. Kupper & 35 South - slabs missing
5. Jeanette Drive: debris cleanup; sidewalk on Route 35 N between 9th Ave and Jeanette Drive
6. Repaving N. Bay Drive, Bay Blvd (dug-up), S. Bay
7. Completion of water lines; sidewalks in Mantoloking Shores
8. Not enough drains on W. Kupper Drive
9. Neutral
10. Quite a few homes are raising too high
11. Homes too high - why?

Respondents also had the opportunity to provide additional comments, which included the following:

1. Diocese of Trenton should be [contacted] because it is most likely the Catholic Church will not reopen & find out what will be done with property!
2. Properties on small lots will result in some locations looking like slums!
3. Many homes abandoned - Township needs to be more aggressive in taking action; Still no access to beaches.
4. Manhole covers at top of W. Kupper Drive are too high causing damage under cars
5. Completion of W. Kupper Drive paved road to Route 35 South
6. Need sidewalks in all areas of Route 35
7. Need sidewalks Rt 35 South, Mantoloking Shores



APPENDIX III - NOTES FROM THE BRICK BARRIER ISLAND PUBLIC MEETING – MAY 14, 2016

Abridged versions of the comments received from the public meeting of May 14, 2016 at the Dover-Brick Beach First Aid building at 123 2nd Avenue, Toms River, New Jersey are included below:

1. **Public Comment:** We have a need for sidewalks along 35 South to connect all of the streets in Mantoloking Shores.
2. **Public Comment:** Is there a way to streamline the construction process to reconstruct our neighborhoods more expeditiously? Some of us have been waiting for years to rebuild. Considering the number of substantially damaged properties, there should be a different line for applications for substantially damaged properties versus someone adding a deck.
 - a. **Township Response:** The volume of applications has been a problem, but the Township has been working very hard on it and come up with some solutions for now. Every permit is tracked. There is a Township telephone number and email address you can contact to get the status of your project. There are different lines, or approaches, for different applications and we do prioritize substantially damaged properties. Not every property requires a variance and not every substantially damaged property is a complete rebuild. We have put into place measures and changes in the bulk standards to reduce the number of variances coming in for height and setbacks.
3. **Public Comment:** How long will it take for the Township to deal with abandoned properties?
 - a. **Township Response:** The Township is doing the best it can, but it is a long process and a lot of hoops to jump through. The average time it takes for a property to be turned over to the Township is three years. If the taxes are paid on a property or there is any level of construction, it is not considered abandoned. The Township has fought to require all banks in possession of an abandoned property to list them.
4. **Public Comment:** What is happening with the church property and Camp Osborn?
 - a. **Township Response:** The church property (Our Lady of Peace) has begun demolition and was approved for a subdivision of twenty-one homes on compliant lots. Osborn is still working out their plan internally.
5. **Public Comment:** Who is responsible for fixing private streets where a public entity caused damage during Sandy recovery process?
 - a. **Township Response:** You should go through the regular Township complaint system.
6. **Public Comment:** When will the revetment wall on the beach be covered and the beaches ready?
 - a. **Township Response:** Work has begun covering the wall this week (May 9, 2016). We purchased one-half million dollars of sand to cover the wall temporarily. The State covers the cost of the sand, but not the labor.



APPENDIX IV – NEW JERSEY COASTAL PLANT SPECIES

Relative Salt Tolerance of Coastal Species

Plant Name	Salt Spray ¹	Salt Water ²	Flooding ³
<u>SHRUBS and VINES</u>			
<i>Amorpha fruticosa</i> -FACW (Indigobush)		X	*
<i>Arctostaphylos uva-ursi</i> – NI (Bearberry)	*	*	*
<i>Aronia arbutifolia</i> -FACW (Red chokeberry)		*	*
<i>Aronia melanocarpa</i> -FAC (Black chokeberry)		*	*
<i>Baccharis halimifolia</i> -FACW (Groundsel bush)	X	X	X
<i>Cephalanthus occidentalis</i> -OBL (Buttonbush)		*	*
<i>Clethra alnifolia</i> -FAC+ (Sweet pepperbush)	*	*	*
<i>Ilex glabra</i> -FACW- (Inkberry)	*	*	X
<i>Ilex decidua</i> -FACW (Possumhaw)		*	*
<i>Iva frutescens</i> -FACW+ (Marsh elder)	X	X	X
<i>Juniperus conferta</i> -NI (Seashore juniper)	X	*	X
<i>Lindera benzoin</i> -FACW- (Spicebush)		*	*
<i>Magnolia virginica</i> -FACW+ (Sweetbay)		*	*



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Plant Name	Salt Spray ¹	Salt Water ²	Flooding ³
<i>Morella pensylvanica</i> - FAC (Bayberry)	X	*	*
<i>Myrica cerifera</i> -FAC (Wax myrtle)	X	*	X
<i>Parthenocissus quinquefolia</i> - FACU (Virginia creeper)	*	*	*
<i>Prunus maritima</i> – NI (Beach plum)	X	*	X
<i>Rosa carolina</i> -NI (Pasture Rose)	*	*	X
<i>Rosa rugosa</i> – FACU- (Rugosa rose)	X	*	X
<i>Rosa virginiana</i> - FAC (Virginia rose)	*	*	*
<i>Rhus copallina</i> – NI (Winged/Dwarf sumac)	*	*	*
<i>Salix discolor</i> -FACW (Pussy willow)		*	*
<i>Sambucus canadensis</i> -FACW- (Elderberry)		*	*
<i>Vaccinium corymbosum</i> -FACW- (Highbush blueberry)	*		*
<i>Viburnum dentatum</i> -FAC (Southern arrowwood)	*		*
TREES			
<i>Alnus serrulata</i> -OBL (Smooth alder)			*



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Plant Name	Salt Spray ¹	Salt Water ²	Flooding ³
<i>Amelanchier canadensis</i> -FAC (Serviceberry/Shadbush)	*	*	*
<i>Celtis occidentalis</i> -FACU (Hackberry)	X		*
<i>Juniperus virginiana</i> -FACU (Eastern Red Cedar)	X	*	*
<i>Ilex opaca</i> - FACU+ (American Holly)	X	*	*
<i>Populus deltoides</i> – FAC (Eastern cottonwood)	*	*	*
GRASSES/GRASSLIKES			
<i>Ammophila breviflora</i> -FACU- (American beachgrass)	X	X	X
<i>Distichlis spicata</i> -FACW+ (Saltgrass)	X	X	X
<i>Juncus gerardi/roemerianus</i> (Blackgrass/Needlerush)	X	X	X
<i>Panicum virgatum</i> -FAC (Switchgrass)	*	*	X
<i>Panicum amarum</i> -FACU- (Bitter panicgrass)	X	X	X
<i>Panicum amarulum</i> -FAC (Coastal panicgrass)	X	*	X
<i>Schizachyrium scoparium</i> var. <i>littoralis</i> -NI (Seacoast bluestem)	X	X	X
<i>Scirpus tabernaemontani</i> -OBL (Hardstem bulrush)	*	*	*



THE TOWNSHIP OF
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Plant Name	Salt Spray ¹	Salt Water ²	Floodings ³
<i>Scirpus americanus</i> - OBL (Three square)	*	*	*
<i>Scirpus robustus</i> - OBL (Saltmeadow bulrush)	*	X	X
<i>Spartina alterniflora</i> -OBL (Smooth cordgrass)	X	X	X
<i>Spartina cynosuroides</i> -OBL (Giant Cordgrass)	*	*	*
<i>Spartina pectinata</i> -OBL (Prairie cordgrass)		*	*
<i>Spartina patens</i> -FACW+ (Saltmeadow cordgrass)	X	X	X
<i>Tripsacum dactyloides</i> -FACW (Eastern Gamagrass)	*	*	*
<i>Typha angustifolia</i> -OBL (Narrow-leaf cattail)	*	*	*
FORBS			
<i>Hibiscus moscheutos</i> - OBL (Marsh hibiscus)		*	*
<i>Kosteletzkya virginica</i> - OBL (Seashore mallow)		*	*
<i>Lathyrus maritimus</i> -FACU- (Beach pea)	X	*	*
<i>Solidago sempervirens</i> -FACW (Seaside goldenrod)	X	X	X



THE TOWNSHIP OF
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Notes:

1. Salt Spray

X = tolerance to direct salt spray

* = tolerance to indirect/infrequent salt spray

2. Salt Water (soil saturated)

X = strong tolerance (up to 25-35 ppt sodium chloride concentration)

* = low/medium tolerance (up to 10-15 ppt sodium chloride concentration)

3. Flooding tolerance = tolerance to infrequent flooding of brackish water.

X = strong tolerance (up to 25-35 ppt sodium chloride concentration)

* = low/medium tolerance (up to 10-15 ppt sodium chloride concentration)