Borough of Cape May Point
Municipal Coastal Vulnerability Assessment
May, 2016
Final Report

Prepared for the Borough of Cape May Point
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Cape May Point, New Jersey 08212

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Cape May Point Municipal Coastal Vulnerability Assessment Report

I. Introduction

Municipal Coastal Vulnerability Assessment
The Municipal Coastal Vulnerability Assessment (CVA) is both a process and tool to help communities make incisive and sound decisions on near and long-term coastal management, reconstruction, and resiliency measures. The CVA categorizes the degree to which a community’s assets (e.g. built, natural, social, etc.) will be impacted by projected sea level rise and storm events, and analyzes the consequences those vulnerabilities pose to the community. By accounting for vulnerability and consequence factors associated with future flood events, local officials will be better informed to make long-term decisions about land use planning, mitigation, adaption measures, and public investments.

The CVA was developed by the New Jersey Resilient Coastal Communities Initiative (RCCI), a post-Sandy project funded by the National Oceanic and Atmospheric Administration (NOAA), and managed by the NJ Department of Environmental Protection’s Office of Coastal and Land Use Planning. The tool was created in response to the need for municipalities to be better prepared for the increasing rate of sea level rise and extreme storm events.

II. Municipal Background

Location and Demographics
Cape May Point is located at the southern-most point of New Jersey within Cape May County and on the Cape May peninsula where the Delaware Bay meets the Atlantic Ocean. The borough encompasses 202 acres of land with over 2 miles of coastline along the Atlantic Ocean and Delaware Bay. Elevation ranges from 0 to 15 feet in this very flat topography. Expansive wetlands, ponds, beaches, dunes, and forest surround Cape May Point with Cape May State Park and Cape May Meadows Nature Preserve to the east and Higbee Wildlife Management Area (WMA) to the north. In addition, Lake Lily, a 16 acre freshwater lake, covers much of the northeastern section of town. The separation of Cape May Peninsula from the rest of New Jersey by the Cape May Canal has created an isolated rural character in Cape May Point and the surrounding area.

Cape May Point has a year-round population of 291 residents according to the 2010 census, and swells to a peak of approximately 2,500 in the summer season. Cape May Point has a significantly older population, where 83% of the population is over age 55 and the median age is 68 years. The borough is almost entirely residential, of which the majority are single-family homes. As of 2010, there were 691 homes in Cape May Point, of which 164 were occupied year-round, 272 were seasonal or recreational homes, and the remaining were vacant or for sale.

Past and Future Flooding
Cape May Point has a long history of recovering, mitigating, and preparing for storms. Over 50 hurricanes and nor’easters have been recorded in Cape May Point since 1930, ranging in impacts from minor flooding to the destruction of dunes and severe beach erosion and flooding of properties. Through the years, the borough has installed both hard and soft infrastructure to minimize future flood damage and educate property owners about preparedness. Installed mitigation measures have included structurally reinforced man-made dunes, beach nourishment, a series of “BeachSaver” artificial reefs, native vegetation, and improvements to the stormwater management system.
As a result of these mitigation measures, particularly the dunes, the impacts of coastal flooding has been limited to landscaping and structures not elevated above the base flood level. Cape May Point is faced with a new set of challenges as sea level continues to rise and the intensity and frequency of storms and precipitation persist. Figure 1 shows past and future trends in monthly mean sea level rise using data from Cape May tide gauge station in Cape May, NJ. Additional data and maps regarding future flood projections, precipitation and climate change are available at Climate Central (http://www.climatecentral.org); NJAdapt (http://www.njadapt.org); and the NJ Climate Adaptation Alliance (http://njadapt.rutgers.edu).

III. Municipal Coastal Vulnerability Assessment – Methodology

The CVA process is a methodical, step-by-step approach for conducting a comprehensive vulnerability assessment of coastal flooding hazards. It identifies the vulnerability of community assets (identified by the municipality) to a series of future flood hazard scenarios, and the associated consequences to the community. The CVA goes beyond a simple analysis of flooding extent and duration by also examining how flooding will affect the functional capacity of buildings, services, infrastructure, businesses, ecological systems, and residents. The three key steps of the CVA are described below:

- **Identify and map community assets and selected coastal flood hazard scenario(s)**
  Geographical information systems (GIS) maps are the most effective way of locating and analyzing community assets and flood hazards. Community assets are identified among four categories - Critical Facilities & Infrastructure Systems, Community Resources & Amenities, Districts, Neighborhoods, & Population Clusters, and Natural Resources & Ecosystems – and plotted using GIS. Flood hazard scenarios are selected and are also mapped. Communities are encouraged to use both future sea level rise (daily high tide) and storm surge levels for at least 2050, and, preferably, 2030 and 2100, if available.

- **Evaluate the vulnerability of community assets.**
  Vulnerability is the predisposition of a community asset to be adversely affected by a hazard—in this case, coastal flooding. Vulnerability is measured by the anticipated degree of exposure and sensitivity.

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1 Cape May Point Floodplain News and Resource Guide 2012-2013
Exposure is the extent to which community assets may be flooded, measured by magnitude and depth. The magnitude of exposure incorporates the frequency of occurrence (e.g. for high tide, the occurrence would be daily), and the depth of floodwater during the occurrence.

Sensitivity is measured by the extent in which the flooding will impact the following features of the asset:

- Durability of the structure or asset (materials, elevated structure, flood mitigation measures, etc.)
- The ability of an asset to continue to provide its key benefits and operations in the aftermath of a storm event
- The ability to move quickly from harm’s way.

Each asset is assigned a single vulnerability rating based on the adverse impacts due to exposure and sensitivity to each hazard. A Vulnerability Rating Key provides guidance in the assignment of these ratings. (See Appendix C).

✓ Evaluate the overall consequences to the community

Consequence is the degree of impact on the entire community if an asset will be lost or damaged, or if the assets function is impaired. The degree of impact is measured over eight topic areas that can potentially impact the community. The topic areas include: property damage, population displacement, delivery of services, typical operations / daily life, environment, emergency response, hazardous materials, and municipal budget. The Consequences Rating Key in Appendix D provides guidelines for identifying and rating consequences.

IV. Findings: Vulnerability and Consequences of Community Assets

Cape May Point identified 26 assets to be included in the vulnerability and consequences assessment, those assets shown to be impacted by sea level rise and/or a Category 1 Hurricane in 2030 and 2050 were included in the assessment. The assets were identified under four broad categories of potential community assets: Critical Facilities & Infrastructure Systems, Community Resources & Amenities, Natural Resources & Ecosystems, and Districts, Neighborhoods, & Population Clusters. While the majority of assets were assessed individually, some were assessed as part of “systems” to ensure the functionality and consequence if one component or asset failed. For example, Cape May Point’s historic structures were assessed as a whole incorporating the historic churches which are of spiritual value to the whole community.

The flood hazards scenarios used for this assessment were projected sea level rise and hurricane category 1 storm surge for 2050. The sea level rise projections are based upon a 2013 study by New Jersey climate scientists, and used the 2050 mid-range projections in that study, or 1.3 feet of sea level rise. The sea level rise projections were then layered on top of the mean higher high water (MHHW). The storm surge maps were developed using the NOAA SLOSH (Sea, Lake, and Overland Surge from Hurricanes) model, combined with then

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2 Sensitivity also includes the natural coping capacity of individuals to move out of harm’s way. However, contrary to some definitions, it does not include adaptive capacity since by its inherent definition adaptive capacity is a likely future condition that requires action, e.g. elevating structures. The CVA evaluates sensitivity based on the assets’ current conditions.


sea level rise projections. The approximate depth of water is based on LiDAR data. Both the 2050 sea level rise and 2050 storm surge maps were obtained from the NJ Department of Environmental Protection (NJDEP).

The community assets were assessed for their vulnerability (exposure and sensitivity) to the above four hazard scenarios, and then for the consequences to the community if the asset was damaged or destroyed. The complete set of data on vulnerability and consequences are included in the CVA Matrix (Appendix A), and summarized in Table 1 below. Since sea level rise is more likely to occur than a Category 1 hurricane, the borough should particularly focus its attention on the assets with high consequences in the sea level rise column. There are also other considerations for interpreting the data in the Matrix and Table 1. The flood hazard maps are based upon the latest technology and most readily available data, both of which will continue to be updated as new data is generated and technology advances. Additionally, there may be existing topographical features or mitigation measures in place that the assessment did not pick up, which could lower the vulnerability rating of an asset. For these reasons, the matrix should be used for general planning purposes and not for specific site planning or design, unless site conditions are field verified. More considerations on the use of the data and “next steps” are offered in Section V.

<table>
<thead>
<tr>
<th>Asset Name</th>
<th>Asset Category</th>
<th>Asset Function</th>
<th>Vulnerability Rating</th>
<th>Consequences Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Cape May Meadows Wetland Complex</td>
<td>Natural Assets &amp; Ecosystems &amp; Critical Infrastructure Systems</td>
<td>The fresh water wetlands complex was created to provide wildlife habitat. The complex provides protection to the borough from storm surge and flooding events.</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Higbee Beach Wildlife Management Area</td>
<td>Natural Assets and Ecosystems</td>
<td>Higbees wildlife area protects the borough from flood and storm events that travel up the Delaware Bay.</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Light House Pond</td>
<td>Natural Assets and Ecosystems</td>
<td>Light House Pond protects the town from storm surge and precipitation induced flooding. It was restored as wildlife habitat.</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Dunes &amp; Beaches</td>
<td>Natural Assets and Ecosystems</td>
<td>The US Army Corps completes beach replenishment every year as part of a 50 year maintenance plan. The dunes were redesigned by the Corp over the years. The core of the dunes are constructed of gabion baskets along certain sections of the dunes.</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Lake Lily</td>
<td>Natural Assets and Ecosystems</td>
<td>Focal point of the community. It is a place for recreational bird watching, functions as mammal, fish and bird habitat. It is used as a mitigation strategy and the outflow pump is run once a month to make sure it is working.</td>
<td>Low</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Table 1. Summary of Cape May Point Coastal Vulnerability Assessment Matrix

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4 Note that the projected flood events used in this assessment were generated by several models prepared by state and national agencies and professionals, and are suitable for planning purposes. However, due to the uncertainty of projections and accuracy of certain types of data, the maps should not be the sole resource for conducting site specific analyses.
### Table 1. Summary of Cape May Point Coastal Vulnerability Assessment Matrix Continued

<table>
<thead>
<tr>
<th>Asset Name</th>
<th>Asset Category</th>
<th>Asset Function</th>
<th>Vulnerability Rating SLR</th>
<th>CAT1</th>
<th>Consequences Rating SLR</th>
<th>CAT1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunset Boulevard (County 606)</td>
<td>Critical Infrastructure</td>
<td>Evacuation route (describe in the adjacent cell) functions as the only route into and out of town during an emergency and on a day to day basis.</td>
<td>Insignificant</td>
<td>Low</td>
<td>Insignificant</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Renters</td>
<td>Districts, Neighborhoods, &amp; Population Clusters</td>
<td>The rental properties and seasonal population contribute to the regional economy of Cape May County.</td>
<td>Insignificant</td>
<td>Low</td>
<td>Insignificant</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Borough Hall</td>
<td>Community Resources &amp; Amenities</td>
<td>The borough hall serves as the center of CMP municipal government. The building serves as the Emergency Operations Center during emergency events.</td>
<td>Insignificant</td>
<td>Moderate</td>
<td>Insignificant</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Public Records</td>
<td>Critical Facilities &amp; Infrastructure Systems</td>
<td>Public records include all tax records, building and construction plans, permits, elevation certificates, property ownership, and numerous other municipal records.</td>
<td>Insignificant</td>
<td>High</td>
<td>Insignificant</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Public Works Building</td>
<td>Critical Facilities &amp; Infrastructure Systems</td>
<td>The offices of CMP Public Works contain the employees and equipment necessary to keep the public works infrastructure maintained and operational year-round.</td>
<td>Insignificant</td>
<td>Insignificant</td>
<td>Insignificant</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Pole Barn</td>
<td>Critical Facilities &amp; Infrastructure Systems</td>
<td>The Pole Barn functions as a storage location for municipal equipment.</td>
<td>Insignificant</td>
<td>Insignificant</td>
<td>Insignificant</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Fire Station</td>
<td>Critical Facilities &amp; Infrastructure Systems</td>
<td>The fire station contains 2 fire engines (owned by borough) that serve the community during times of emergency. The fire station serves as a heat and cold shelter during extreme temperature events.</td>
<td>Insignificant</td>
<td>Moderate</td>
<td>Insignificant</td>
<td>High</td>
</tr>
<tr>
<td>Post Office</td>
<td>Community Resources &amp; Amenities</td>
<td>The post office is the main location for daily social interaction with residents getting mail, and checking in on neighbors to ensure both public and social health.</td>
<td>Insignificant</td>
<td>High</td>
<td>Insignificant</td>
<td>High</td>
</tr>
<tr>
<td>The Red Store</td>
<td>Community Resources &amp; Amenities</td>
<td>A high-end restaurant and store, contains minimal everyday items and food.</td>
<td>Insignificant</td>
<td>Moderate</td>
<td>Insignificant</td>
<td>Insignificant</td>
</tr>
<tr>
<td>Pavilion Park &amp; Pump Station</td>
<td>Community Resources &amp; Amenities</td>
<td>Passive recreation park. Maintained by taxpayers. Sewer pumping stations located in the park.</td>
<td>Insignificant</td>
<td>Low</td>
<td>Insignificant</td>
<td>Moderate</td>
</tr>
<tr>
<td>Churches &amp; Other Historic Buildings</td>
<td>Community Resources &amp; Amenities</td>
<td>The churches and other historic buildings are loved throughout Cape May Point for their spiritual, social, and aesthetic value.</td>
<td>Insignificant</td>
<td>Low</td>
<td>Insignificant</td>
<td>Low</td>
</tr>
</tbody>
</table>
Table 1. Summary of Cape May Point Coastal Vulnerability Assessment Matrix Continued

<table>
<thead>
<tr>
<th>Asset Name</th>
<th>Asset Category</th>
<th>Asset Function</th>
<th>Vulnerability Rating SLR CAT1</th>
<th>Consequences Rating SLR CAT1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer Station</td>
<td>Critical Facilities &amp; Infrastructure Systems</td>
<td>The transfer station is a county-owned, self-contained, water-tight station that serves as the town’s only sewage station transferring sewage out of Cape May Point to Cape May County’s waste treatment facility located just north of CMP.</td>
<td>Insignificant</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>

Citizens | Districts, Neighborhoods, & Population Clusters | Approximately 1/3 of Cape May Point’s population lives there year round. The year round residents are comprised of a significantly older population with the median age of the community being 68.1. The citizens of Cape May Point donate a lot of their time and money to the preservation of the community through various social and non-profit organizations. | Insignificant | Insignificant |

V. Recommendations

Short-Term Considerations

1. Share the results of the Coastal Vulnerability Assessment with owners and managers of vulnerable and at-risk properties and work together to develop mitigation and adaptation strategies.

Many of Cape May Point’s identified community assets are owned and managed by other municipalities, state agencies, non-profits, and private industry including natural assets that serve the community as flood hazard mitigation. Furthermore, portions of the evacuation route; utilities; hospitals; food stores; and other critical infrastructure are housed in surrounding communities. Management of these assets is outside of the borough’s control and could be subject to changes that would impact the resiliency of Cape May Point. The municipality should work closely with these property owners to share information on flood risks and mitigation measures, and to develop long-term adaptation strategies that will minimize impacts from future sea level rise and storm events.

- **Suggestions**
  - Create a regional partnership or workgroup to open a dialog with surrounding communities about flood risks, regional priorities and a regional resiliency plan.
  - When working with state, local, non-profit, and federal agencies, share the results of the CVA for consideration in future capital improvement projects and planning processes.

2. Coordinate outreach and education efforts to the general public, sharing the results of the Coastal Vulnerability Assessment.

In order for Cape May Point to better prepare for the future impacts of sea level rise and hurricane events, it is important to have an engaged and informed public. The public should be informed of the vulnerabilities that face Cape May Point, especially populations located in the most vulnerable areas of the borough. The borough should work with the general populace to educate them of the risks and work together to find solutions that will protect Cape May Point at large and keep the fabric of the community intact.

3. Incorporate the results of the Coastal Vulnerability Assessment into the municipal master plan with short-term and long-term strategies for protecting and adapting the community assets and vulnerable areas.

As the primary planning policy document for the community, the master plan should identify areas in the community that
will likely be impacted by future flood hazards, and offer mitigation measures and adaptation strategies to protect the community’s assets and properties.

**Suggestions**
- Include maps of projected sea level rise inundation and future storm events in the land use plan and conservation plan elements of the municipal master plan.
- Identify natural resources that serve as protective flood mitigation measures (e.g. wetlands) and provide recommendations for maintenance and management in the conservation plan element.
- Identify planning policies for mitigation and adaptation strategies to protect properties from future flooding, including sea level rise and extreme storm events, in the land use plan element.

4. **Cross-reference the Coastal Vulnerability Assessment in relevant sections of the municipal master plan, floodplain management plan, emergency operations plan, and all hazards mitigation plan.**

Community flood risks are influenced largely by land use and development patterns that are grounded in local master plan policies. Hazard mitigation plans provide strategies to reduce these risks, in the past the plans have typically been stand-alone documents that rely upon structural mitigation measures, with little regard to land use and policy measures. The current trend in hazard mitigation planning is the integration with community plans, a trend which is strongly encouraged for all municipalities. Integrating flood risks and hazard mitigation into all local policy documents, especially master plans and hazard mitigation plans, ensures a coordinated, complementary approach to mitigation, and avoids potential conflicts from competing goals and interests.

**Resources**
- *Integrating Hazard Mitigation Into Local Planning, Case Studies and Tools for Community Officials, FEMA, 2013*

5. **Consider the impacts to community emergency management and resiliency with a changing demographic.**

Cape May Point’s civic participation in emergency preparedness and management is crucial to community resilience. Residents provide donations and conduct fundraising for mitigation and preparedness activities and projects. As volunteers, they also install and maintain many of the plantings on plant and maintain Pavilion Park, Lake Lily and the dunes. However, May Point has a small population base, limited municipal staff and an increasingly aging population with a current median age of 68 years old. This has caused concern among some local officials as to whether there will be sufficient volunteers in the near and distant future to contribute to these important activities. The borough may want to explore incentive programs for residents, social groups and/or organizations to fulfill this need if and when it arises.

6. **Consider alternative and innovative strategies to sustain beaches for the future.**

The littoral drift that supplies sands to Cape May Point’s beaches has been interrupted by the Cape May Canal jetty, starving Cape May Point beaches of sand. Regular beach nourishment through dredging and dumping is costly and time intensive. This system is precarious in that storms are unpredictable and can occur immediately following nourishment, washing away all the sand. Other man-made structure such as reefs, installed to recapture and maintain sands on the beaches, have negative environmental impacts and have created hazards limiting swimming on these beaches. As the sea level rises and storms intensify, the natural beach erosion may become exacerbated. Alternative solutions are needed to reconnect the natural sediment supply. As this is a regional issue, a dialog with the Department of Environmental Protection Coastal Engineering could open up the possibility for alternative solutions including a sand transfer plant or innovative projects similar to the Sand Motor in Delflands Netherlands.

**Resources**
- Sand transfer pump and plants, [http://www.co.palm-beach.fl.us/erm/coastal/shoreline/inletsandtransfer.htm](http://www.co.palm-beach.fl.us/erm/coastal/shoreline/inletsandtransfer.htm)
Adaptation: A Long-Term Planning Process

Planning for the predicted increase in the frequency and severity of flood hazards is a complex and challenging task. Adaptation to these flood hazards requires a longer planning timeframe for which most municipalities are not accustomed. Incremental steps are key to ensuring progress and minimizing public investments on projects that may be compromised by flooding in the near to distant future. This vulnerability assessment is an important first step in planning for these future hazards. The above recommendations provide key steps immediately following the vulnerability assessment to further identify and confirm vulnerabilities and consequences, and to begin thinking about adaptation. This section frames a strategic approach to identifying, assessing, and implementing long-term solutions to reducing flood risks. The process will need to be repeated periodically to respond to new data, changes in the physical environment and the long-term horizon.

Identify plans, studies and activities that are needed prior to identifying adaptation strategies

The borough should re-convene the CVA committee or any other local flood management committee that includes a similar representation of multiple disciplines, e.g. municipal engineer, floodplain manager, planner, public works official, governing body representative, planning board representative, conservation planner, floodplain manager and emergency management official. This group should determine if there are data gaps or ambiguities in the CVA that need to be addressed to get a complete picture of vulnerability. For example, the community may want to field-verify certain sites or assets to determine if topography or adaptation measures may exacerbate or attenuate the projected flood impacts. If studies or plans are deemed necessary, the committee should identify who might take the lead. Also, the vulnerability and consequence ratings in this assessment should be compared with other current mitigation and planning documents to determine if there are any conflicts that should be addressed. Finally, the committee should determine which of the CVA recommendations will be implemented, if not all, and who should take the lead.

Identify adaptation strategies

Given that the CVA’s purpose is to identify vulnerabilities, not pose solutions, the critical next step is to identify and evaluate potential solutions. Using the vulnerability assessment of community assets and other pertinent data and reports (e.g. the hazard mitigation plan, beach nourishment program, flood management reports) identify the broadest range of possible solutions to reduce flood risks. Depending upon the magnitude of the vulnerabilities and consequences, the community may need to consult with coastal engineers outside of the community to fully realize the range of adaptation measures. DEP and other agencies and organizations may be available to provide workshops or host consultation meetings. This process of identifying adaptation strategies could take several months or more to fully understand the options available to the community.

The borough should also determine whether a regional approach to an adaptation project is appropriate, and, if so, arrange for multi-jurisdictional meetings. The county or NJDEP Office of Coastal and Land Use Planning may be able to assist in scheduling or facilitating these meetings.

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5 The term “adaptation” in this document refers to all measures to minimize flood risks, including “mitigation” projects and strategies, a term which is traditionally used by emergency managers and engineers.
Once the broad list of adaptation options is created, the committee should select the most desirable projects and strategies to pursue, along with associated timeframes, funding options and project/task leads. The community may also want to conduct a cost-benefit analysis to prioritize adaptation strategies. Most adaptation projects will need to be reviewed the NJ Department of Environmental Protection to ensure they meet permitting requirements. Projects that cannot be approved or funded at this time should be noted and discussed in future iterations of this process.

*Engage the Community*

Host community meetings to discuss and solicit feedback on the recommended adaptation strategies while also educating the participants about flood risk.

*Seek funding opportunities for adaptation planning and mitigation projects.* Below is a short list of potential grant programs:

- NJ Department of Community Affairs (DCA) planning assistance grants
- NJDEP Office of Coastal and Land Use Planning
- NJDEP Office of Flood Hazard Risk Reduction Measures
- FEMA Hazard Mitigation grants
- FEMA Pre-Disaster Mitigation grants
- FEMA Flood Mitigation Assistance grants
- US Army Corps of Engineers
- Other Federal grant programs – see the Appendix of the NOAA Adaptation Guide

*Develop an implementation strategy*

Adaptation strategies should be integrated into the local hazards mitigation plan, capital improvement plan, master plan and ordinances to coordinate all related land use and adaptation policies and projects in the community. Key individuals and municipal departments should be assigned to lead and/or implement each of the adaptation strategies, along with proposed timeframes and funding options.

*Schedule annual meetings*

Unfortunately, there may not currently be sufficient resources and assistance available to address all of the community’s identified vulnerabilities. Federal and State programs for coastal resiliency are still evolving, and grants, technical assistance, best practices and models, will inevitably become available. The committee should flag the issues for which solutions cannot be found and revisit them in the next adaptation planning process. Key staff should be charged with signing up for state and federal email lists that share grant and program information. And the committee should continue to meet at least once a year, even after all current options for making progress have been exhausted, to consider if new programs or solutions have become available.
### South Cape May Meadows Wetland Complex
- **Natural Assets and Ecosystems:** The complex is a critical wetland that provides substantial benefits to the community, including flood protection, water quality improvement, and habitat for wildlife.
- **Sensitivity:** High
- **Consequences:** High

### Cape May Harbor Wetland Complex
- **Natural Assets and Ecosystems:** This complex is a part of the larger South Jersey Shoreline, which includes wetlands, dunes, and coastal wetlands.
- **Sensitivity:** High
- **Consequences:** High

### Estuary & Beaches
- **Natural Assets and Ecosystems:** The estuary and beaches are critical ecosystems that provide habitat for wildlife and support human activities.
- **Sensitivity:** Low
- **Consequences:** Moderate

### Additional Information
- **Appendix:** The table below lists the vulnerabilities and ratings for each site.
- **Vulnerability Rating:** The vulnerability rating is based on the projected changes in sea level rise and the potential impact on the community.
- **Consequences:** The consequences are based on the potential impact on the community, economy, and infrastructure.

<table>
<thead>
<tr>
<th>Vulnerability Rating</th>
<th>Sea Level Rise</th>
<th>CAT's Hurricane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Level Rise</td>
<td>CAT's Hurricane</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>Moderate</td>
<td></td>
</tr>
</tbody>
</table>
Lake Lily

Natural, lakeshore, and ecotones

Natural lake shoreline is part with water-controlling works such as drainage systems and pump systems to lower high water levels. Considered a focal point in the community.

Low point of the community. Currently applied for a grant to build a viewing scope. It is a popular recreational bird-watching location. Fish are abundant, bird life is thriving. It is a hot topic of discussion and a meeting point for local residents.

May be impacted by lake water elevation changes, affecting lake levels. Lake water levels may change over time. The lake is used for various activities such as boating, fishing, and swimming.

Focal point is recreational and working. May be impacted by lake water elevation changes, affecting lake levels. Lake water levels may change over time. The lake is used for various activities such as boating, fishing, and swimming.

Moderate

Moderate

Interaction Route

Critical Infrastructure

Recreation route (designated in the adjacent cell) functions as the only route into and out of the park during emergency evacuation or a major event. Of the total number of residents of Cape May Point prior to known storm events, as of the time the evacuation operation begins (flow) down and goes out of the community, it may impact.

Evacuation route (designated in the adjacent cell) functions as the only route into and out of the community during emergency evacuation or a major event. Of the total number of residents of Cape May Point prior to known storm events, as of the time the evacuation operation begins (flow) down and goes out of the community, it may impact.

Insignificant Low

Evacuation operation begins (flow) down and goes out of the community, it may impact.

Peninsula

Critical Infrastructure

Evacuation route (designated in the adjacent cell) functions as the only route into and out of the community during emergency evacuation or a major event. Of the total number of residents of Cape May Point prior to known storm events, as of the time the evacuation operation begins (flow) down and goes out of the community, it may impact.

Evacuation route (designated in the adjacent cell) functions as the only route into and out of the community during emergency evacuation or a major event. Of the total number of residents of Cape May Point prior to known storm events, as of the time the evacuation operation begins (flow) down and goes out of the community, it may impact.

Insignificant Low

Evacuation operation begins (flow) down and goes out of the community, it may impact.

Bar

Critical Infrastructure

Point

Evacuation route (designated in the adjacent cell) functions as the only route into and out of the community during emergency evacuation or a major event. Of the total number of residents of Cape May Point prior to known storm events, as of the time the evacuation operation begins (flow) down and goes out of the community, it may impact.

Evacuation route (designated in the adjacent cell) functions as the only route into and out of the community during emergency evacuation or a major event. Of the total number of residents of Cape May Point prior to known storm events, as of the time the evacuation operation begins (flow) down and goes out of the community, it may impact.

Insignificant Low

Evacuation operation begins (flow) down and goes out of the community, it may impact.

Station

Critical Infrastructure

The fire station at Cape May Point is located near the evacuation route and is an important evacuation point. Of the total number of residents of Cape May Point prior to known storm events, as of the time the evacuation operation begins (flow) down and goes out of the community, it may impact.

The fire station at Cape May Point is located near the evacuation route and is an important evacuation point. Of the total number of residents of Cape May Point prior to known storm events, as of the time the evacuation operation begins (flow) down and goes out of the community, it may impact.

Insignificant Low

Evacuation operation begins (flow) down and goes out of the community, it may impact.
Floods & Pump Station

Community Resiliency & Amenities
In north position, located north of the center of town used for recreation and retail activities. The park is connected through walking paths from entering the park. The pump station is located in the park.

2000 PPC: 85% 2000 O/C: 72% - 65% 2000 O/C: 75% - 85%
Partially flooded in extreme events.

Pumping station and well head to be mitigated. Limited sensitivity to flooding. The main ben is in the pumping station is above floating locations. The other pumping stations might suffer sensitivity.

significant Low

The pump station is closed and the system is well maintained. The community has never experienced sewage back-up or stormwater intrusion.

significant Moderate

The pump station allow water saturation from a storm surge event. The storm surge would adversely impact the gardens and grass in the park. The park is maintained through a volunteer program, with some seasonal workers hired during the summer to cut grass. The park has a $12,000 budget for the maintenance garden and irrigation system, but if damaged by saltwater intrusion, it would cost approximately $33,000 to repair.

significant Low

Churches & Other Historic Buildings

Community Resiliency & Amenities

The churches and other historic buildings are located throughout Cape May Point for their spiritual, social, and aesthetic value. Some of the churches are open year-round, while others are open seasonally and used as religious retreats during the summer.

2000 PPC: 85% 2000 O/C: 72% - 65% 2000 O/C: 75% - 85%
Most historic buildings would be impacted by storm surge events, sea level rise, and flooding. The lakefront, located in the surrounding area.

insignificant Low

All the historic buildings in the town are considered, although not necessarily above base flood elevation. None of the buildings are climate controlled and as such it limits the stress on the structure and wood floors of the structures. The buildings, in general, cannot withstand floods in other forms, and do not function during storm events. In the event of flooding structures generally dry out with little to no damage.

significant Low

The churches and historic structures found throughout Cape May Point have a very vulnerability to a S-2 event, as the community are insignificant. In the event that a historic structure were to be destroyed the loss would not be adverse to the community’s sense of place. It’s unclear if all of the historic structures would be hard to due to the value of the lots underlying the buildings.

significant Low

Historic Station

Critical Facilities 
& Infrastructure Systems

Image shows that pump station, sewage out of CMP to create waste treatment facility located just north of CMP.

2000 PPC: 75% 2000 O/C: 72% - 65% 2000 O/C: 75% - 85%
The transfer station is county owned, self-sustained, water-tight station that serves as the town’s only sewage station transferring sewage out of Cape May Point to Cape May County’s waste treatment facility located just north of CMP.

significant Insignificant

The transfer station would be completely inundated by flood events.

significant Insignificant

The transfer station is located above base flood elevation and the system itself is within a self-sustained and water-tight caring making the sensitivity minimal.

significant Insignificant

The transfer station is closed and the system is well maintained. The community has never experienced sewage back-up or stormwater intrusion.

significant Insignificant

Oceans

District, Neighborhoods, 
& Population Clusters

The permanent and seasonal population of Cape May Point is approximately 20% of Cape May Point’s population live there year-round. Another 20% live there off-season and during the year, and the last 60% are seasonal living there mainly through the summer months. The year-round residents are comprised of a significantly older population with the median age of the community being 65+.

2000 PPC: 85% 2000 O/C: 72% - 65% 2000 O/C: 75% - 85%
The citizens of Cape May Point are not particularly exposed to inundation from a direct coastal event.

significant Insignificant

The vulnerability of the citizens live in the slowly changing demographics of Cape May Point. Only a handful of individuals, municipal employees, and some volunteers, have all the operational and historical knowledge of the town. The public works department is comprised of only individuals who are responsible for not only the day to day operations of the borough but also responsible for emergency situations. Almost all the municipal staff are significantly older.

significant Insignificant

The borough relies heavily on volunteers and decisions to make and operate the parks, pools, and lake. Some traces are lines to be observed residents and stop or slow operations through a strong sense of community engagement that may be threatened by changing demographics.

significant Insignificant

The consequences to Cape May Point of a changing demographics is not necessarily linked to sea level rise or S-2 events in the future, but rather the ability of the community to operate and effectively deal with these issues in the future. Loss of even one of the municipal employees or certain volunteers could have direct impacts to the community’s current operational capacity and could set back the borough’s progress towards municipal resilience.

significant Insignificant

In advance volunteers and/or donations could result in the need for the borough to enforce municipal staff (led new management plan for the parks, pools, and lake. A lack of donations could result in the need for higher taxes or beach tag rates.
Appendix B – Vulnerability Rating Key

<table>
<thead>
<tr>
<th>Level</th>
<th>Vulnerability Rating Given Hazard Exposure and Sensitivity</th>
</tr>
</thead>
</table>
| Insignificant | *Exposure to Flooding:* This community asset is located out of harm’s way.  
*Physical/Structural Damage:* No physical/structural damages expected.  
*Disruption/Impairment:* No disruption in function, accessibility, or development and delivery of basic services and supplies. No apparent impacts to services provided by, typical operations, routine or daily life.  
*Accessibility:* Key staff able to access facilities or locations without interruption. |
| Low         | *Exposure to Flooding:* The majority of this community asset is located out of harm’s way.  
*Physical/Structural Damage:* Minor physical/structural damages expected.  
*Disruption/Impairment:* Limited disruption in function, accessibility, or development and delivery of basic services and supplies. Limited impacts to typical operations, routine or daily life, if any.  
*Accessibility:* Key staff able to access facilities or locations with minimal interruption. |
| Moderate    | *Exposure to Flooding:* A significant portion of this community asset is located in harm’s way.  
*Physical/Structural Damage:* Moderate physical/structural damages sustained.  
*Disruption/Impairment:* Moderate level of disruption to accessibility or mobility of asset, amenity or population. Moderate level of interruptions to development and delivery of basic services and supplies. Typical operations, routine or daily life moderately affected by flood hazard scenario.  
*Accessibility:* Secondary evacuation and access routes available for use if/when primary systems fail. |
| High        | *Exposure to Flooding:* The majority of this community asset is located in harm’s way.  
*Physical/Structural Damage:* Severe level of harm (destruction on property or degradation of function and/or injury) is expected, resulting in a high degree of loss. Asset, amenity or population is unable to withstand flood impacts.  
*Disruption/Impairment:* Severe, potentially irreparable challenges faced requiring significant changes to asset functioning, community’s daily life or "new normal." Production, provision of services or daily routine expected to sustain high degree of disruption. Significantly reduced operational capacity of community assets and amenities; long term or permanent relocation of asset, amenity or population.  
*Accessibility:* Severe disruptions to accessibility of asset, amenity or population or the disruption of this assets causes accessibility issues to other community assets. Key individuals, material supplies, core operating systems and functioning interrupted or unavailable. |
## Appendix C – Consequences Rating Key

<table>
<thead>
<tr>
<th>Level</th>
<th>Given Vulnerability of Assets, Rate the Magnitude or Severity of Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Property Damages</strong>: Only minor property damage. <strong>Typical Operations/Daily Life</strong>: No impacts or disruptions to typical operations, routine or daily life. <strong>Environment</strong>: No lasting environmental degradation. <strong>Emergency Response</strong>: No adverse effects to emergency response. <strong>Hazardous Materials</strong>: No increase or change in community/ecosystem exposure to toxics or hazardous materials. <strong>Municipal Budget</strong>: Negligible operational costs.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Property Damages</strong>: Limited property in narrow affected area damaged or destroyed. <strong>Typical Operations/Daily Life</strong>: Limited disruption to typical operations, routine or daily life. <strong>Environment</strong>: Minor damage or loss to habitat and species or functioning of the systems as a component of &quot;coastal green infrastructure&quot; of the community. Small loss of natural resource base. Increased, but tolerable stress on ecosystem. <strong>Emergency Response</strong>: Slight decrease in emergency response times and effectiveness <strong>Hazardous Materials</strong>: Limited hazardous materials spill, manageable clean-up and remediation. <strong>Municipal Budget</strong>: Additional but tolerable operational costs.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Property Damages</strong>: Substantial property in affected area damaged or destroyed. <strong>Population Displacement</strong>: Long-term population displacement over a broader segment of the population. <strong>Typical Operations/Daily Life</strong>: Daily life is affected such that only redundant systems can be used for an extended duration. <strong>Environment</strong>: Major damage or loss of habitat or functioning of the systems as a component of &quot;coastal green infrastructure&quot; of the community that may be permanent with adverse impacts. <strong>Emergency Response</strong>: Emergency response is strained resulting in significant degradation of response effectiveness and times. <strong>Hazardous Materials</strong>: Large hazardous material spill with significant risk to humans and ecosystems. <strong>Municipal Budget</strong>: High operational costs straining local budgets</td>
</tr>
<tr>
<td>4</td>
<td><strong>Property Damages</strong>: Majority of property in affected area damaged or destroyed <strong>Population Displacement</strong>: Permanent and widespread population displacement. <strong>Delivery of Services</strong>: Long-term interruption of supply and services. <strong>Typical Operations/Daily Life</strong>: Majority of community operations, daily life patterns intensely impacted for an extended period. <strong>Environment</strong>: Permanent degradation of habitat or functioning of the systems as a component of &quot;coastal green infrastructure&quot; of the community. <strong>Emergency Response</strong>: Need for emergency services exceeds full capacity and/or services are degraded and not functioning. <strong>Hazardous Materials</strong>: Hazardous material spill that requires multi-year clean-up and poses significant health or ecosystem risk.</td>
</tr>
</tbody>
</table>
Appendix D – Municipal CVA Committee

Municipal CVA Committee
Cape May Point convened a group of municipal representatives and community leaders to participate in the CVA process facilitated by Sustainable Jersey. The meetings were held on August 12th, 2015 and October 28th, 2015 at the Cape May Point Borough Hall. The meeting attendees are shown in Table 1.

Table 1. Cape May Point CVA Committee

<table>
<thead>
<tr>
<th>Participant</th>
<th>Title</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anita Van Heewsyk</td>
<td>Deputy Mayor</td>
<td>Cape May Point</td>
</tr>
<tr>
<td>Irene Schreiner</td>
<td>Emergency Management Coordinator</td>
<td>Cape May Point</td>
</tr>
<tr>
<td>Bill Gibson</td>
<td>Public Works Director</td>
<td>Cape May Point</td>
</tr>
<tr>
<td>Ed Grant</td>
<td>Administrative Consultant</td>
<td>Cape May Point</td>
</tr>
<tr>
<td>Mike Keosky</td>
<td>Planning Board</td>
<td>Cape May Point</td>
</tr>
<tr>
<td>Rick Brown</td>
<td>Planner</td>
<td>NJ Department of Environmental Protection</td>
</tr>
<tr>
<td>Jack Heide</td>
<td>Resiliency Manager</td>
<td>Sustainable Jersey</td>
</tr>
<tr>
<td>Emma Melvin</td>
<td>Green Infrastructure Coordinator</td>
<td>Sustainable Jersey</td>
</tr>
</tbody>
</table>
Appendix E – Cape May Point Coastal Vulnerability Assessment Maps

Table of Maps

  Map 1. Borough of Cape May Point Community Assets
  Map 2. Borough of Cape May Point 2030 Sea Level Rise
  Map 3. Borough of Cape May Point 2050 Sea Level Rise
  Map 4. Borough of Cape May Point 2030 CAT1 Hurricane
  Map 5. Borough of Cape May Point 2050 CAT1 Hurricane
Borough of Cape May Point
Community Assets

Prepared by Sustainable Jersey, January 2016
Borough of Cape May Point
2030 Sea Level Rise

Prepared by Sustainable Jersey, January 2016
Borough of Cape May Point
2030 CAT1 Hurricane

Prepared by Sustainable Jersey, January 2016