

City of Somers Point *“Getting to Resilience”* Recommendations Report

Prepared by the Jacques Cousteau National Estuarine Research Reserve

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Recommendations based on the “Getting to Resilience” community evaluation process.



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Introduction

The Getting to Resilience (GTR) questionnaire was originally developed and piloted by the New Jersey Department of Environmental Protection's Office of Coastal Management in an effort to foster municipal resiliency in the face of flooding, coastal storms, and sea level rise. The questionnaire was designed to be used by municipalities to assist in reducing vulnerability and increase preparedness by linking planning, mitigation, and adaptation. Originally developed by the State of New Jersey's Coastal Management Program, the Getting to Resilience process was later adapted by the Coastal Training Program of the Jacques Cousteau National Estuarine Research Reserve (JC NERR), converted into a digital format, and placed on an interactive website. Further improving the questionnaire, the JC NERR added linkages to evaluation questions including the National Flood Insurance Program's (NFIP) Community Rating System (CRS), Hazard Mitigation Planning, and Sustainable Jersey. While this website is publicly available, through the facilitated Getting to Resilience process, JC NERR Coastal Community Resilience Specialists can enhance the outcomes of the evaluation by providing community-specific recommendations, guided discussions with municipal representatives, a vulnerability analysis, and municipal plan reviews.

Somers Point is the oldest settlement in Atlantic County, dating back to 1693 and originally known as Somerset Plantation. Somers Mansion, built in 1725, is the oldest intact building in Atlantic County. The Atlantic County Historical Society museum is located next to the Somers Mansion .

Surrounded by water on three sides, Somers Point has always had a strong maritime connection. The original connection between Somers Point and Beesley's Point was a ferry established in 1693, not too far from where the current Garden State Parkway bridge is today. There has been a strong connection to the U.S. Navy since the Second Battle of Tripoli Harbor in 1804 when Master Commandant Richard Somers, great grandson of the founders of Somers Point, attempted to explode a vessel and create enough havoc to end the hostilities. Somers has a monument in his honor in Annapolis at the Naval Academy and his birthplace is marked in Somers Point.

Somers Point has a long and rich history that predates the birth of the United States of America. Its location on the water continues to influence the culture and economy of the city. Somers Point is known for its marinas, boating, and fine restaurants. The city celebrates the bay with numerous events throughout the year such as Bayfest, Somers Point Crabbing tournament, the Jersey Gumbo Cookoff, and the Somers Point Beach Concert Series.

The city's location on the bay has not come without a price. There have been many natural disasters such as hurricanes and nor'easters that have significantly affected New Jersey's coasts. Of the many natural hazard events to receive federal declaration, eight of the most recent events that Somers Point experienced have been identified in the Somers Point "Strategic Recovery Planning Report Building a Stronger, More Resilient City." Those events range over five years, from 2007 to 2012.

Superstorm Sandy was one of the eight identified events. In the five months following the storm the city lost over \$1.7 million in ratables. This qualified the city for a \$30,000 Post-Sandy Planning Grant that the city used to hire a professional city planner who completed the “Strategic Recovery Planning Report Building a Stronger, More Resilient City.” A few months after the report was presented to Somers Point City Council the city received a Phase 2 Post-Sandy Planning Assistance Grant of \$330,000. This grant is being used to re-examine the city’s Master Plan, revise zoning ordinances, create design standards for redevelopment of the Bay Avenue waterfront district and the historic district, make infrastructure improvements, and fund a design and market study. In addition, JC NERR was brought on to go through the “Getting to Resilience” questionnaire, look at Sea Level Rise and Storm Surge Maps, and help provide contacts for additional maps at the city’s request.

The city has also been notified that they will be awarded \$125,000 from the United States Department of the Interior (USDOI) for living shoreline implementation. Somers Point will also receive \$600,000 of the National Fish and Wildlife Foundation (NFWF) grant as part of a \$2.4 million grant with Ocean City. The city has also received an additional \$125,000 from NFWF. All of these awards and projects will help to contribute to the city’s future resiliency by promoting the restoration of wetlands in the surrounding water bodies, including Great Egg Harbor Bay.

While participating in the Getting to Resilience process municipal officials from the city identified the ability to identify flooding and mitigation solutions among the city’s strengths. Somers Point received a grant in 2013 to work with Buena, Port Republic, and Egg Harbor City on a Hazard Mitigation Plan (HMP) which is still in process. This HMP is called the Atlantic 4 Hazard Mitigation Plan and updates for this plan can be found at <http://www.atlantic4hmp.com/index.php?lang=en>. This was the first step toward eligibility for pre and post disaster mitigation grant funding through FEMA’s Disaster Mitigation Assistance program. The city also completed its Strategic Recovery Planning Report Building a Stronger, More Resilient City in January of 2014. The city has applied for the Community Rating System (CRS) and should be certified in March 2015. The city is interested in increasing their CRS rating to benefit the city and its residents by lowering their flood insurance costs.

Understanding the challenges that are indicative to being a bayshore community, as well as the strengths that the City of Somers Point has shown in the post Sandy recovery effort was important to take into consideration when planning this recommendations report. Where applicable, the recommendations of this report reference and complement the Strategic Recovery Planning Report - Building a Stronger, More Resilient City for Somers Point.

Methodology

The GTR questionnaire is broken into five sections: Risk and Vulnerability Assessments, Public Engagement, Planning Integration, Disaster Preparedness and Recovery, and Hazard Mitigation Implementation. In order to efficiently answer all of the questions within the questionnaire,

participation from a wide array of municipal officials and staff is encouraged. These can include administrators, floodplain managers, emergency managers, stormwater managers, public works officials, town engineers, and appointed and elected officials. For Somers Point, this team included Jim McBrien (Construction Office), Jason Frost (Assistant Business Administrator), Wes Swain (City Administrator), Jim Rutala (City Planner), and Greg Schneider (City Engineer). The questions in the GTR questionnaire were answered by the municipality with JC NERR staff recording answers and taking notes on the discussions connected to each question.

The City of Somers Point began the GTR process on May 13th, 2014. JC NERR met with five representatives of Somers Point and the meeting began with a discussion of the city's resilience strengths and weaknesses. This conversation led into a presentation and discussion of sea level rise and storm surge maps overlaid with the communities critical facilities. The meeting ended after three sections of the questionnaire were completed. The remaining sections of the questionnaire were completed after the initial meeting by the municipality on their own.

Upon completion of the GTR questionnaire, JC NERR staff analyzed the answers provided by the City of Somers Point, linkages provided by the GTR website, notes taken during the discussion of questions, various municipal plans and ordinances, and mapping of risks, hazards, and vulnerabilities provided by Rutgers University and the NJ Floodmapper website. After reviewing all of this information, this recommendations report was drafted to help assist Somers Point's decision makers as the city works to recover from Superstorm Sandy and become more resilient.

Recommendations

The Community Rating System (CRS) is a FEMA program, designed to reward communities for taking steps to reduce flooding risk. These activities and elements include public information, mapping, regulation, flood damage reduction, and warning and response initiatives. Actions under these categories are eligible for points that are added up to designate where the community is "rated" according to class rankings of 10 through 1. For each class the community moves up, they receive a reduction in flood insurance premiums of 5%. This can result in serious deductions for flood insurance costs for the community and its residents. Many recommendations in this report are connected to the CRS program as it helps communities save money and become better prepared.

Short-term Resiliency Planning

1. Make sure all outreach programs are quantified and catalogued according to CRS standards.

Somers Point should examine the current number of outreach programs it runs and determine what it would take to gain additional points by adding more or expanding current efforts. Outreach should include information about the natural and beneficial functions of floodplains. Particularly after Sandy, residents throughout the impacted area have been looking for as much information as possible. A well organized and efficient outreach program can provide validated information from a

trusted source and better prepare residents for natural risks. Outreach is one of the easiest sections to gain points in the CRS and one Somers Point should consider focusing on.

It would be beneficial to develop a Program for Public Information (PPI) which would help to organize outreach, continue to include the current methods and avenues for outreach, and gain additional CRS credits. A PPI is a researched, organized, and implemented program for public outreach that is seen as having a seven step process. These steps are Establish a PPI Committee, Assess the Community's Public Information Needs, Formulate Messages, Identify Outreach Projects to Convey the Messages, Examine Other Public Information Initiatives, Prepare a PPI Document, and Implement, Monitor and Evaluate the Program. If done correctly, a PPI will make outreach initiatives more effective and can gain CRS credits in numerous categories besides outreach. For guidance on Developing a Program for Public Information, visit http://crsresources.org/files/300/developing_a_ppi_march_13.pdf. For more information on Outreach Projects credit requirements, visit page 330-2 of the CRS Coordinator's Manual. http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

2. Investigate the potential for creating a multi-jurisdictional Program for Public Information that can work with the Coastal Coalition to organize public meetings and disseminate information.

Somers Point expressed an interest in joining FEMA's Community Rating System (CRS). The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. A Program for Public Information is described in the first recommendation of this report. The steps to create a Multi-jurisdictional PPI are very similar to what an individual community would do to create a PPI. The largest difference is the creation and necessary representatives on the PPI Committee. The details on creating a Multi-jurisdictional committee can be found on page 5 of the Developing a Program for Public Information document, http://crsresources.org/files/300/developing_a_ppi_march_13.pdf.

Somers Point identified that there had been a regional presentation in Wildwood to present floodplain information to real estate agents through the Coastal Coalition. As CRS does give credit for regional PPIs the Coastal Coalition may be a great place to investigate this potential. Regional PPIs have the benefit of being able to share relevant information and outreach to multiple municipalities. If done correctly, a PPI will make outreach initiatives more effective and can gain CRS credits in numerous categories besides outreach.

3. Develop a pre-flood plan for public information projects that will be implemented during and after a flood.

Somers Point should consider developing a collection of outreach projects in anticipation of future flooding events. The outreach should cover all necessary information such as evacuation routes, safety procedures, and recovery operations. This action could be undertaken through a PPI for additional CRS credits, helping Somers Point save time and energy leading up to, during, and after a

flooding event as outreach will already have been prepackaged and prepared for dispersal. Pre-flood planning should take place with careful coordination with the community's emergency manager. Examples of messages include evacuation routes, shelter locations, "Turn Around Don't Drown," when it is safe to go back, don't enter a flooded building until it has been cleared by an inspector, get a permit for repairs, substantial damage rules, mitigation opportunities during repairs, and information on mitigation grants. Pre-flood planning is eligible for CRS credits under Flood Response Preparations. For more information on Flood Response Preparations credit requirements, visit page 330-9 of the CRS Coordinator's Manual .

http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

4. Develop public presentations about flood zones, flooding risk, building recommendations, etc to be given annually at public meetings.

After Sandy many communities led talks on various flood related topics to help their residents recover from the storm. The Somers Point Office of Emergency Management has done outreach to the city's senior citizens. Many of these presentations can be worth significant CRS credits if they become annual outreach meetings and they meet CRS guidelines. As Somers Point is a coastal community, creating an annual itinerary that covers these topics will be beneficial to elevating resident's knowledge of different risks associated to living in a floodplain. By consistently discussing the importance of planning for flooding the city can set an example to its residents that readiness for disaster events should be maintained even in relatively "quiet" times. Section 320 of the CRS discusses a wide variety of outreach projects and initiatives that can be covered.

A PPI can ensure these talks are well placed and effective. Well publicized and attended talks can reduce the workload on city staff that would otherwise need to give numerous one on one meetings. However, continuing to have staff available for one on one meetings is highly recommended as it is highly beneficial and earns CRS credits in the Regulations Administration section. For more information on Outreach Projects credit requirements, visit page 330-2 of the CRS Coordinator's Manual. For more information on the Regulations Administration credit requirements, visit page 430-40 of the CRS Coordinator's Manual.

http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

5. Continue to maintain StormReady Community status as designated by the National Weather Service.

The National Weather Service has created a community preparedness program to assist towns as they develop plans for a wide variety of severe weather events. This program provides guidance on hazardous weather identification, warning systems, and creating public readiness. For more information, visit <http://www.stormready.noaa.gov/howto.htm>. The City of Somers Point is listed as a StormReady Community and should continue to preserve that standing. Being listed as a StormReady Community results in CRS credits. For more information on the StormReady Community credit requirements, visit page 610-17 of the CRS Coordinator's Manual.

http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

6. Make sure all flood maps are available on the town website, at City Hall, and at the public library.

Somers Point has made Flood Insurance Rate Maps (FIRMs) available on their website and in an office at City Hall, and should consider making them available at the public library. This would help to ensure that the maps are easily accessible to residents. Having the most up to date FEMA issued floodplain maps available at numerous locations in different forms of dispersal is critical to ensuring your citizens are informed and has the added benefit of allowing for CRS credits in the Outreach section specifically for the city website and public library. Maintaining a link to FEMA's website on the city website is highly recommended and should highlight a section that deals specifically with flooding and other coastal hazards. For more information on Outreach Projects credit requirements, visit page 330-2 of the CRS Coordinator's Manual.

http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

7. Transfer personal knowledge, documents, and other records of coastal storm and flooding event damages to digital format and place on a shared municipal computer drive to allow for access by multiple municipal departments.

Memories of historical storm events, specifically ones that were not documented by state and federal agencies, are useful tools that can be used to plan for impending storms. However, it is vital that the information from these memories be available for all municipal staff.

The Draft 2014 Atlantic 4 Hazards Mitigation Plan's Section 5.4.1 Coastal Erosion contains information on historical coastal storms and flooding event damages that is specific to Atlantic County and Somers Point. Having this information in the Mitigation Plan is an excellent start to making storm damage information available to municipal staff. It is important that when the plan is finalized municipal leaders are made aware and that the document be made available to leaders and planners both in and out of the Office of Emergency Management.

The public outreach meetings that took place during the planning process for the Draft 2014 Atlantic 4 Hazards Mitigation Plan may also earn CRS credits in the Outreach section. Hard copies of documents and other records should also be digitized for preservation and access. Somers Point has identified that previous coastal hazards and disasters have been identified and mapped through historical information, existing plans and reports, scientific knowledge, and local knowledge. Sharing all storm and flooding related information on a shared drive will help educate the staff and allow for access without having to coordinate an exchange of information. For more information on Outreach Projects credit requirements, visit page 330-2 of the CRS Coordinator's Manual.

http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

8. Adopt the latest version of FEMA's flood maps as they are released, consider strengthening elevation requirements in the Flood Damage Prevention Ordinance as based upon the most stringent version of FEMA's flood maps, and consider increasing freeboard requirements.

Best Available Flood Hazard Data is defined by NJ DEP as the most recent available flood risk guidance FEMA has provided. The Best Available Flood Hazard Data may be depicted on but not limited to Advisory Flood Hazard Area Maps, Work Maps or Preliminary FIS and FIRM. For more information on NJ DEP recommended Flood Damage Prevention Ordinances, visit <http://www.nj.gov/dep/floodcontrol/modelords/modelde-bestavail.doc>.

By adding “or the most stringent version of FEMA’s flood maps” to this ordinance, higher standards may be instituted that may result in the town becoming more resilient. For example, the Advisory Base Flood Elevation maps may have a more expansive V-zone than the Flood Insurance Rate Maps. By requiring building to adhere to the stricter requirements of the Advisory Base Flood Elevation maps, more homes will be built to higher standards. An amended ordinance may also include some of the newer information coming out on FEMA’s maps including the Limit of Moderate Wave Action (LiMWA). That information can also be used to enhance the building standards in the form of higher freeboard requirements (higher freeboard requirements in areas that are within the LiMWA areas). Both actions can result in a large amount of CRS points in the Higher Regulatory Standards section. It is also recommended that Somers Point consider exceeding the state’s 1 foot freeboard requirement to provide better protection during storm events and to provide a buffer for expected sea level rise. While municipal staff are informally urging homeowners to exceed the 1 foot freeboard requirement, an official requirement would allow for credit in the Freeboard section of Higher Regulatory Standards. For more information on the Higher Regulatory credit requirements, visit 430-2 of the CRS Coordinator’s Manual.

http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

9. Assure the public is aware of any changes to FEMA’s flood maps as they are updated and if those updates result in changes to the city’s building requirements.

The City of Somers Point has posted changes in the FEMA maps and a link to “How Recent Legislative Changes Affect Flood Insurance” on the city website. Continuing to assure that the information on the maps is understood by all municipal leaders and staff prior to discussions with the public is critical to ensure the correct information disseminated by the city. For every release of a map update, the city should continue making public announcements to its citizens and detail if any changes were made to the prior map, including if additional information such as the Limit of Moderate Wave Action has been added. The city has made the public aware of the new flood maps and has displayed them at their June 2014 Master Plan public hearing. The city also plans to provide notices to property owners who are affected by the new flood maps. Notifying the public of a new map product is an example of outreach that can be done by the city’s PPI, raising the potential for CRS points. Including information on what changes occur when new maps are released on a city Flood Information webpage may help to alleviate questions the public may have as each map is updated, thereby reducing the workload on city staff.

The new RISK map products from FEMA include a GIS layer depicting the “changes since last FIRM” which will help the city in describing the changes in flood zones on individual properties and for the city as a whole. In addition, FEMA is also developing a RISK map product called “Flood Depth Grids and Water Surface Elevation Change Grids” which shows the depth of the 1% annual chance flood for any given location within the study area. A description of these data sets can be found at: <http://www.region2coastal.com/flood-risk-tools/tool-descriptions> and the new data layers are being developed as part of the preliminary FIRM process. This data is in draft form now but will be released at the www.region2coastal.com website soon. The draft data for Atlantic County can be downloaded from http://content.femadata.com/Public/Draft_Non_Regulatory_Flood_Risk_Products/Atlantic/. The more familiar the citizens are with the maps, the more likely they will take appropriate actions.

10. Somers Point should identify sea level rise as a hazard in city plans and consider disclosing hazard risks to potential buyers and real estate agents.

Sea level rise is already identified as a hazard in Somers Point’s Strategic Recovery Planning Report and should be added/incorporated in other municipal planning documents. Even with the lowest level of predicted sea level rise Somers Point will experience impacts in the near future. In addition, the public must be made aware so that they are not caught off guard by the hazard and make proper decisions as a result of their knowledge. Historical rates of sea level rise should be defined as part of this action and future predicted sea levels should be taken into account when making land use decisions, construction standards, etc. The historical rate of sea level rise along the New Jersey coast over the past half century was 3-4 mm/yr (or 0.12 -0.16 in/yr), while projected future rates are expected to increase. In the recent paper entitled “A geological perspective on sea-level rise and its impacts along the U.S. mid-Atlantic coast” Miller and Kopp state that for 2050, the “best” estimate for sea level rise is 1.3 feet along the Jersey Shore. By 2100 sea level rise the “best” estimate is 3.1 feet along the Jersey coast. “Best” refers to a 50% likelihood of that level of sea level rise occurring, meaning that actual sea levels may be lower or higher than the “best” estimates.

While sea level rise is a monumental challenge to coastal areas, the challenge cannot be tackled until it is properly identified. Disclosing these risks to the public using various techniques also may result in CRS credits in the Outreach Projects and Hazard Disclosure sections. For more information on Outreach Projects credit requirements, visit page 330-2 of the CRS Coordinator’s Manual. For more information on Hazard Disclosure credit requirements, visit page 340-2 of the CRS Coordinator’s Manual.

http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

While going through the Somers Point Recommendation Report Meeting the city identified difficulty in planning for hazard mitigation for historic properties. As Somers Point is the oldest settlement in Atlantic County it is important to preserve the city’s historic and cultural resources. FEMA has guidance for planning for these resources online, “Integrating Historic Property & Cultural Resource Considerations into Hazard Mitigation Planning” at

<http://www.fema.gov/environmental-planning-and-historic-preservation-program/integrating-historic-property-cultural>. This publication shows communities, step by step, how to develop and then implement a pre-disaster planning strategy for their historic properties and cultural resources. The document is also available from the FEMA Publications Warehouse at no charge by calling 1-800-480-2520. Request FEMA 386-6 (hard copy) or FEMA 386-6 CD (CD-ROM).

11. Utilize the Community Vulnerability Assessment Tool, Risk and Vulnerability Assessment Tool, Hazard Assessment Tool, and HAZUS-MH to identify potential hazards, risks, and vulnerabilities and keep mapping information on file.

There are numerous hazard, risk, and vulnerability assessment tools available to municipalities. It is recommended that the members of the city municipal staff are familiar with the use of these tools. The importance of identifying hazard, risk, and vulnerability cannot be overstressed. Use of these tools can be beneficial in the CRS, hazard mitigation planning, creating municipal plans, zoning, and writing construction codes.

- The Community Vulnerability Assessment Tool is used to conduct a community vulnerability assessment to a wide range of hazards. It is often used in conjunction with the Risk and Vulnerability Assessment.
<http://csc.noaa.gov/digitalcoast/training/roadmap>
- The Risk and Vulnerability Assessment Tool is used to identify people, property, and resources that area at risk of injury, damage, or loss from hazardous incidents or natural hazards. <http://csc.noaa.gov/digitalcoast/training/roadmap>
- The Hazard Assessment Tool is a risk assessment process which will help identify hazards, profile hazard events, inventory assets, and estimate losses.
<http://www.fema.gov/hazard-mitigation-planning-risk-assessment>
- HAZUS-MH is a software package that uses models and Geographic Information Systems (GIS) technology for estimating physical, economic, and social impacts from various hazards such as floods and hurricanes. <http://www.fema.gov/hazus>
- Additional non-regulatory tools are being developed by FEMA and can be accessed on www.region2coastal.com. Included in these tools is a Coastal Flood Risk Assessment which provides estimates of potential flood damage based on the new coastal flood study results using FEMA's [Hazus loss estimation software](#). Draft versions of these tools are currently available by county at <http://www.region2coastal.com/flood-risk-tools>. While the Atlantic County Annual_Loss_Hazus tool is not yet available, it will be included on the site in the near future at http://content.femadata.com/Public/Draft_Non_Regulatory_Flood_Risk_Products/Atlantic/. For more information about this and other non-regulatory tools please visit <http://www.region2coastal.com/flood-risk-tools/tool-descriptions>.

12. Have city municipal officials participate in FEMA training courses.

FEMA offers in person training and independent study programs. To find more information about in person training topics and dates please visit <http://training.fema.gov/> and <http://www.fema.gov/training-1> and for independent study programs please visit <http://training.fema.gov/is/>. Through the Coastal Training Program, the JC NERR offers free courses for municipal staff and elected/appointed officials. JC NERR is willing to work with the city to understand training needs and provide relevant courses when possible. Having municipal officials trained on various topics and techniques can result in CRS credits in the Regulations Administration (RA) section though it may require SID codes. For more information on Regulations Administration credit requirements, visit page 430-40 of the CRS Coordinator's Manual. http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

While going through the Somers Point Recommendation Report Meeting the city requested information about Benefit-Cost Analysis training. FEMA has information about Benefit-Cost Analysis, training materials, and the Benefit-Cost Analysis Tool available at <http://www.fema.gov/benefit-cost-analysis>.

13. Explore the possibility of creating a Community Emergency Response Team (CERT).

CERT programs can provide volunteer support to first responders, provide assistance to victims, help to organize volunteers at disaster sites, and collect disaster information to support first responder efforts. While Atlantic County already has a CERT program, creating a team for Somers Point, could result in a more resilient community.

14. Amend the Continuity of Operations Plan to include FEMA documentation of disaster related work activities.

While Somers Point has identified that they have a Continuity of Operations Plan (CoOP) the city should consider amending the CoOP to guarantee that staff time and expenses incurred during and immediately after an emergency are recorded in accordance with FEMA's standards. Having plans and protocols in place could potentially save the city a massive amount of money as disputes over reimbursement funds from FEMA have become a major issue for municipalities throughout NJ post-Sandy.

Long-term Resiliency Planning

1. Consider returning properties acquired through Blue Acres or other buyout or acquisition programs to natural floodplain functions.

Natural floodplains can absorb runoff and mitigate flooding issues. The City of Somers Point has identified three properties on Jordon Road for land acquisition. While taking advantage of any buyout or acquisition programs to move people away from high hazard areas, it would be prudent to consider returning the sites to their natural floodplain functions. This can be done utilizing a variety of techniques including wetlands restoration, planting natural vegetation, reducing

sediment compaction, and creating a natural profile. Returning land to natural floodplain functions can achieve significant CRS credits in the Natural Functions Open Space (NFOS) section. Somers Point has already submitted a FEMA Hazard Mitigation Grant Program application for these properties, but has not received a decision on these applications at this time. However, there are additional grant programs that should be considered if the initial application does not get funded. Funding could be available by applying for a portion of the \$112 million in funding available through the Federal Emergency Management Agency (FEMA) in two recently announced Hazard Mitigation Assistance (HMA) grant programs: Flood Mitigation Assistance (FMA) and Pre-Disaster Mitigation (PDM). For more information on Natural Functions Open Space credit requirements, visit page 420-13 of the CRS Coordinator's Manual.

http://crsresources.org/files/2013-manual/crs_manual_508_ok_5_10_13_bookmarked.pdf

The City of Somers Point could also investigate the potential of working with the New Jersey Conservation Foundation (<http://www.njconservation.org/conservation.htm>) or the Nature Conservancy (<http://www.nature.org/about-us/private-lands-conservation/>) about partnering to acquire and preserve lands that have not yet been funded successfully. The National Park Service also has the Land & Water Conservation Fund (<http://www.nps.gov/lwcf/>), which “provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities (as well as funding for shared federal land acquisition and conservation strategies).”

2. Examine municipal plans, strategies, and ordinances and consider rewriting sections to include the previous recommendations or reflect the risks, hazards, and vulnerabilities explored in the Getting to Resilience process.

In order to fully embrace resiliency, municipal plans, strategies, or ordinances should incorporate resiliency recommendations and findings. These should include the Municipal Master Plan, All Hazards Mitigation Plan, Floodplain Management Plan, Evacuation Plan, Emergency Response Plan, Continuity of Operations Plan, Disaster Recovery Plan, Post Disaster Redevelopment Plan, Capital Improvements Plan, Economic Development Plan/Strategy, Coastal Plan, Shoreline Restoration Plan, Open Space Plan, Stormwater Management Plan, Historic Preservation Plan, Zoning Ordinance, Flood Damage Prevention Ordinance, and Building Code. If these plans, strategies, or ordinances do not currently exist, it is highly recommended the city move to create them. Further content regarding this recommendation can be found in the section titled, “Coastal Hazard Incorporation in Planning”.

3. Begin the long term planning process to prepare for sea level rise.

Somers Point, like most other coastal municipalities, will experience future impacts from sea level rise in the form of regular tidal flooding and heightened storm impacts. With the city being surrounded on three sides by water, the Great Egg Harbor Bay and Patcong Creek, a large number of properties, facilities, and infrastructure will eventually need to have a plan in place to mitigate or respond to these heightened flooding threats. The need for careful planning and informed decisions

cannot be understated. The range of options are bountiful, ranging from buyouts to elevating properties to hardening techniques but the use of these options must be weighed, discussed, and decided upon.

The Blue Acres program is currently being administered by the NJDEP throughout the state and other buyout programs are also available. It would be prudent to look into repetitive loss properties that will also be threatened by sea level rise in the future to determine if buyouts of these properties would be an effective way to plan for sea level rise. It is important to note that as sea level rises, the competition for buyout programs will be higher and funding may become more limited. If the city feels that buyouts are not a good option, mitigation strategies will need to be looked into. However, not only will the individual mitigation options need to be examined, but the time frame of their effectiveness will need to be determined as well. Cost-benefit analysis should accompany all mitigation projects to ensure that the lifespan of the mitigation and effectiveness when compared to rate of sea level rise is weighed against anticipated protection. In some instances, it may be determined that the cost of protecting already flood prone areas against sea level rise will be less effective than property acquisition. This may lead the city to consider buyout programs. Again, these decisions will not be easy ones to make but it is critical that the decisions do take place.

JC NERR recommends Somers Point consider learning from the resiliency planning process undertaken by Guilford, CT and described in “Town of Guilford Community Coastal Resilience Plan Report of Options to Increase Coastal Resilience”:
(<http://www.ci.guilford.ct.us/pdf/Coastal%20Resilience%20Plan,%20Report%20&%20Options.pdf>).

The goal of their Coastal Resilience Plan was to address the current and future social, economic and ecological resilience of the Town of Guilford to the impacts to sea level rise and anticipated increases in the frequency and severity of storm surge, coastal flooding, and erosion. The Town has drafted the report of options for increased coastal resilience as a step toward developing a Community Coastal Resilience Plan.

The four basic steps of the Coastal Resilience Plan are:

1. Generate awareness of coastal risk;
2. Assess coastal risks and opportunities;
3. Identify options or choices for addressing priority risks and vulnerabilities (short term); and
4. Develop and implement an action plan to put selected options or choices into place (long term).

Guilford’s coastal neighborhoods are diverse and it is likely that each will be faced with a combination of vulnerabilities to sea level rise and the increased incidence and severity of coastal storms. A combination of adaptation measures will therefore be necessary in each neighborhood in order to reduce risks and increase resilience. Likewise, neighborhood-scale resilience planning will likely be important. Steps should be taken to evaluate individual adaptation measures and determine how comprehensive solutions can be developed and implemented for building coastal resilience.

A comprehensive risk and vulnerability assessment for Somers Point should include the following municipal sectors:

- Social – Residents, business community, and visitors.
- Economic – Residential Properties, commercial/industrial businesses, municipal resources, tourism, and future development.
- Infrastructure – Roads, bridges, railroads, stormwater, seawalls, tide gates, marinas, and municipal facilities.
- Utilities – Public and private water supplies, septic systems, telecommunications, and electricity.
- Emergency Services – Fire, police, medical, sheltering, evacuation/egress.
- Natural Systems – Tidal wetlands and other coastal landforms.

When considering options for coastal resilience, the following three types of adaptation responses are typically considered:

- **Retreat** involves no effort to protect the land from the sea. The coastal zone is abandoned and ecosystems shift landward. This choice can be motivated by excessive economic or environmental impacts of protection. In the extreme case, an entire area may be abandoned.
- **Accommodation** implies that people continue to use the land at risk but do not attempt to prevent the land from being flooded. This option includes erecting emergency flood shelters, elevating buildings on piles and elevating roadways.
- **Protection** involves hard structures such as sea walls and dikes, as well as soft solutions such as dunes and vegetation, to protect the land from the sea so that existing land uses can continue.

Included in a 2010 NOAA's Office of Ocean and Coastal Resource Management manual titled, "Adapting to Climate Change: A Planning Guide for State Coastal Managers" is a thorough discussion of adaptation strategies and methods.

(<http://coastalmanagement.noaa.gov/climate/docs/adaptationguide.pdf>). Somers Point could consider some of the options presented in this document for long and short-term resiliency planning. Many of these suggestions complement the suggestions provided earlier in this GTR Recommendations report:

Impact Identification and Assessment

- Research and Data Collection – Predict possible social and economic effects of climate change on communities. Calculate cost-to-benefit ratios of possible adaptation measures. Encourage adaptation plans that are tailored to specific industries.
- Monitoring – A comprehensive monitoring program that incorporates multiple tools and considers a variety of systems and processes can provide input to the vulnerability assessment and adaptation strategy.
- Modeling and Mapping – Map which areas are more or less susceptible to sea level rise in order to prioritize management efforts.

Awareness and Assistance

- Outreach and Education – Create scientific fact sheets about climate change addressing community members, visitors, elected officials, businesses and industries. Use multiple forms of communication such as news media, radio, brochures, community meetings, social networks, blogs and websites.
- Real Estate Disclosure – The disclosure of a property’s vulnerability to coastal hazards enables potential buyers to make informed decisions reflecting the level of impacts they are willing and able to accept.
- Financial and Technical Assistance – Provide flood insurance discounts for properties that exceed floodproofing standards by one or two feet. Encourage hazard mitigation by providing grants to areas that implement adaptation measures.

Growth and Development Management

- Zoning – Zoning can be used to regulate parcel use, density of development, building dimensions, setbacks, type of construction, shore protection structures, landscaping, etc. It can also be used to regulate where development can and cannot take place, making it an invaluable tool in efforts to protect natural resources and environmentally sensitive areas and guide development away from hazard-prone areas.
- Redevelopment Restrictions – Combining restrictions with acquisition/demolition/relocation programs provides safer options to property owners in the wake of the loss of or damage to their homes or businesses.
- Conservation Easements – A conservation easement is a legal agreement between a landowner and a land trust or government agency that can be used to restrict development in sensitive and hazard-prone areas.
- Compact Community Design – The high density development suggested by compact community design can allow for more opportunities to guide development away from sensitive and hazard-prone areas.

Loss Reduction

- Acquisition, Demolition, and Relocation – The most effective way to reduce losses is to acquire hazard-prone properties, both land and structures, demolish or relocate structures, and restrict all future development on the land.
- Setbacks – Setbacks can protect structures from hazards by keeping the structures away from a property’s most vulnerable areas.
- Building Codes – Building codes that regulate design, construction, and landscaping of new structures can improve the ability of structures in hazard-prone areas to withstand hazard events.
- Retrofitting – Existing structures can be protected from hazards through retrofitting.
- Infrastructure Protection – Infrastructure protection entails fortification against the impacts of climate change.
- Shore Protection Structures – Shore protection structures protect existing development allowing it to stay in place. They often damage or destroy other valuable coastal resources

and create a false sense of security; nevertheless in some cases, for the purposes of protecting existing development, there may be no other acceptable or practical options.

Shoreline Management

- Regulation and Removal of Shore Protection Structures – To protect the natural shoreline and the benefits it provides, regulations can be used to limit shoreline hardening as well as promote alternative forms of protection.
- Rolling Easements – Rolling easements are shoreline easements designed to promote the natural migration of shorelines. Typically, rolling easements prohibit shore protection structures which interfere with natural shoreline processes and movement, but allow other types of development and activities. As the sea rises, the easement moves or “rolls” landward, wetland migration occurs, and public access to the shore is preserved.
- Living Shorelines – Living shorelines can be effective alternatives to shore protection structures in efforts to restore, protect, and enhance the natural shoreline and its environment. Living shorelines use stabilization techniques that rely on vegetative plantings, organic materials, and sand fill or a hybrid approach combining vegetative plantings with low rock sills or living breakwaters to keep sediment in place or reduce wave energy.
- Beach Nourishment – Beach nourishment is the process of placing sand on an eroding beach, typically making it higher and wider, to provide a buffer against wave action and flooding.
- Dune Management – Dunes may be restored or created in conjunction with a beach nourishment project or may be managed as part of a separate effort.
- Sediment Management – Dredging and placing sediment, building shore protection structures and other structures that trap or divert sediment.

Coastal Ecosystem Management

- Ecological Buffer Zones – Ecological buffers are similar to setbacks (and may be included within setbacks) but are typically designed to protect the natural environment by providing a transition zone between a resource and human activities.
- Open Space Preservation and Conservation – Open space preservation and conservation can be accomplished through the management of lands dedicated as open space through a number of the measures previously discussed, such as zoning, redevelopment restrictions, acquisition, easements, setbacks, and buffers.
- Ecosystem Protection and Maintenance – In the context of coastal adaptation, ecosystem protection largely involves the protection of tidal wetlands and other ecosystems. The facilitation of wetland migration is an important aspect of this.
- Ecosystem Restoration, Creation, and Enhancement – Similar to the above, ecosystem restoration and creation can replace tidal wetlands that are lost to sea level rise.

Water Resource Management and Protection

- Stormwater Management – Drainage systems may be ill-equipped to handle the amount of stormwater runoff that will accompany the more intense rainfall events expected in the

future, and those in low-lying areas will be further challenged by losses in elevation attributed to rising sea levels.

- Water Supply Management – Climate change will negatively affect both water quantity and quality, and coastal populations will continue to grow, so water supply managers must be prepared to respond to associated challenges to water supply.

Examples of adaptation measures considered in Guilford’s plan include management of coastal real estate and structures, shoreline protection and management of coastal and nearshore lands, roadway alterations, and protection or replacement of water supply wells and septic systems. All these adaptation measures are presented with a variety of options for consideration.

Somers Point may also gain some planning insight from the public participation process associated with Guilford’s resiliency planning. Guilford found their public believes that physical changes are needed to address sea level rise and increase coastal resilience, but that there are societal and institutional obstacles. Common themes noted from the public comments included:

- Coastal resilience planning – and many of the solutions that are implemented – may be best accomplished at the neighborhood scale; and neighborhood planning groups may need to be organized to begin looking at appropriate solutions;
- The tax base associated with coastal properties would need to be preserved in the short term and then some of the tax base may need to be shifted in the long term;
- Education and technical assistance are needed and desired by homeowners, and education could also be accomplished in the schools;
- Comprehensive solutions will be needed such as: addressing water and wastewater at the same time in neighborhoods where these systems will struggle or fail; ensuring that roadway improvements in one location are effective because improvements are also made elsewhere in the transportation network; and working on coordinated roadway and railroad improvements.

In thinking of their own public participation in resilience planning, Somers Point could likely expect similar themes to emerge and could be prepared to offer the long-term planning options that may be under consideration by the municipality.

Coastal Hazard Incorporation in Planning

Incorporation of coastal hazards into municipal planning is highly recommended to accurately reflect the risks of coastal living. Life in coastal towns largely revolves around weather and water conditions and planning should include consideration for current and future coastal hazards. While including information on coastal hazards in Emergency Response Plans and Evacuation plans is an easy connection to make, the path to incorporation of coastal hazards into documents such as a Master Plan may be more challenging to realize. However, to foster a community of resiliency, it is important to keep hazards in mind throughout all planning documents. The Master Plan should be used to catalogue and document the goals of all other planning documents. The following is an

example of how identification of coastal hazards can be introduced to a Municipal Master Plan through the Floodplain Management section. This sort of language and related content can be utilized in various other planning documents and then rediscussed in the Master Plan under the corresponding sections.

Municipal Master Plan Example

The following excerpts are adapted from a comprehensive plan for Worcester County in Maryland, the equivalent to a municipal master plan. This comprehensive plan incorporates coastal hazards throughout the entire document to form an integrated approach to resiliency. Coastal hazards are often identified in the document as “current and anticipated challenges”. Individual sections (such as the Floodplain Management section given in this example) identify objectives and recommendations that should be mirrored in individual plans (a Floodplain Management Plan in this example). In doing so, all municipal plans are organized under the master plan and share the same language and goals. Many of the recommendations in this municipal master plan example are closely tied to goals already addressed in the current Master Plan. If choosing to update the Floodplain Management Plan, it is highly recommended to do so by following the guidelines set in Section 510 of the CRS which can result in large CRS credits. Refer to the following link for the Worcester County Comprehensive Plan for more ideas and examples of a planning document drafted with resiliency in mind. <http://www.co.worcester.md.us/cp/finalcomp31406.pdf>

Sample Introduction

Realizing that air, water, and land could be overused and despoiled, the plans organized within this document increasingly moved toward resource protection. If such damage occurred, local residents’ quality of life and tourism, the economic linchpin, would suffer. Preserving the city’s natural resources and character will therefore, continue to be this plan’s main purpose.

The plan’s purpose is to provide the following:

- 1. An official statement of goals, objectives, policies and aspirations for future growth, development and the quality of life;*
- 2. A set of guidelines for the government and private sectors to maximize the county’s quality of life;*
- 3. A strategy addressing current and anticipated challenges ; and*
- 4. Sufficient policy guidance to effectively manage natural, human and financial resources.*

Sample Floodplain Management Section

Floodplains, lands along waterways subject to flooding, locally have low relief and sedimentary soils. Floodplains are defined by how often they flood. A 100-year floodplain has a 1% probability of flooding in a given year and is not tidally influenced. Local flooding can occur in major storm events. Many areas along the edge of the city are in the 100-year floodplain. Both residential and commercial uses exist within this floodplain. Most of the

time a floodplain is available for use. However, during floods they can be dangerous. Superstorm Sandy reinforced this fact. Floods injure people physically and emotionally and cause economic damage. Beyond this, emergency personnel are put at risk when called upon to rescue flood victims. In Somers Point, flooding must be taken very seriously. To protect public safety and property, limiting future building in floodplains and stringent construction standards will help reduce injuries and property damage. Federal, state and local policies should be consistent to implement this approach.

Objectives

The city's objectives for floodplain protection are:

- *Limit development in floodplains*
- *Reduce imperviousness of existing and future floodplain development where possible*
- *Preserve and protect the biological values and environmental quality of tidal and non-tidal floodplains, where reasonable and possible to do so.*

Developed floodplains have a reduced capacity to absorb stormwater, resulting in increased flooding. For example, development results in new impervious surfaces (roads, sidewalks, roofs, etc.), which limit the effectiveness of the floodplain by reducing the land's absorption capacity. This increases the potential for flooding. It is therefore important that the natural floodplain character be maintained, wherever reasonable, to promote public safety, to reduce economic losses, and to protect water quality and wildlife habitat.

Somers Point, with its low relief, faces additional flooding issues. Areas of the city commonly flood during storms. Sea level rise will increase flooding hazards. New Jersey is particularly vulnerable to sea level rise. During this century, as sea level rises, shorelines could retreat significantly in parts of the city. Narrow bay beaches and wetlands at low elevations, both important habitats, would be lost to even a modest rise in sea level and erosion of the bayfront would increase. Currently, the state recognizes a right to protect shores with hard structures (e.g. riprap). As sea level rises, these hard structures will prevent "migration" of beaches and wetlands, and these natural features will be lost.

Programs and Policies

Flooding from coastal storms is a serious threat to life and property with the potential for extensive damage and disruptions. To reduce potential damage, the county is developing a hazard mitigation plan. This first step will provide guidance for pre-disaster activities. The second phase of addressing disasters is to develop a post disaster plan. Confusion and rapid decision-making follow a disaster. Advance planning can position the city to reduce its exposure to future disasters and reduce the need for ad hoc decision-making. Superstorm Sandy has taught us that effective post-disaster planning is necessary for an effective recovery process.

Recommendations

- 1. Work with federal and state federal agencies to regularly update the city floodplain maps, with first priority being areas that are mapped as 100-year floodplain without base flood elevation established.*
- 2. Limit new development and subdivisions in the floodplain.*
- 3. Promote uses, such as open space easements, natural areas, and recreational open space to reduce impervious surfaces in floodplains.*
- 4. Work to acquire properties in the lowest lying portions of the 100-year floodplain, and return them to a natural state.*
- 5. Reevaluate the effectiveness of the current floodplain protection regulations.*
- 6. Discourage the location of new homes and roadways in the “V” or wave velocity zone and the 100-year floodplain.*
- 7. Work with the county to complete a hazard mitigation plan for flooding, wildfire, and other natural hazards.*
- 8. Develop and implement a post-disaster recovery and reconstruction plan to facilitate recovery and to reduce exposure to future disasters.*
- 9. Participate in the Community Rating System to receive flood insurance premium credits.*
- 10. Consider code changes that will limit impervious surfaces.*
- 11. Develop a sea level rise response strategy (including a two foot freeboard requirement for properties exposed to flooding and discourage further shoreline hardening).*

Mapping

The following maps can be found in the appendices of this document and were either requested by city staff or recommended by JC NERR staff during GTR meetings. In the near future, the Getting to Resilience website, www.prepareyourcommunitynj.org, will host community profiles that include municipal mapping profile packets that will be available for future download. These maps can and should be used to help write and update the Municipal Master Plan, All Hazards Mitigation Plan, Floodplain Management Plan, Evacuation Plan, Emergency Response Plan, Continuity of Operations Plan, Disaster Recovery Plan, Post Disaster Redevelopment Plan, Capital Improvements Plan, Economic Development Plan/Strategy, Coastal Plan, Shoreline Restoration Plan, Open Space Plan, Stormwater Management Plan, Historic Preservation Plan, Zoning Ordinance, Flood Damage Prevention Ordinance, and Building Code.

Storm Surge (SLOSH Category 1, SLOSH Category 2, & SLOSH Category 3) (provided in the appendix)

SLOSH or Sea, Lake, and Overland Surge from Hurricanes is a computerized model from the National Hurricane Program. SLOSH takes into account various factors to compute surge inundation above ground level or simple inundation. These factors include storm size, storm pressure, storm speed, storm path, wind speed, bathymetry, and topography. With this set of factors, SLOSH determines the worst surge impacts that can be expected from hurricanes according to category. SLOSH maps are vital tools for Emergency Operations Center

managers for making decisions about evacuation orders, timing of evacuation, and staging of emergency equipment prior to tropical weather systems.

Sea Level Rise 1-3 feet with Critical Facilities (Supplied in Appendix)

Over the past hundred years, sea level has risen slightly higher than one foot in New Jersey. Due to a variety of factors including melting land ice and thermal expansion, it is anticipated that the rate of sea level rise will increase substantially in the future. While sea level rise poses its own threat to coastal communities, it also will increase the severity of storm surge and erosion. By examining sea level rise maps, the city can better understand future flooding risk and plan accordingly. As a large percentage of the city is near current sea level, Sea Level Rise maps should be utilized heavily for municipal planning documents.

Overlays of Hazards and Populations, Infrastructure, and Building Footprints (coming at future time in municipal profile)

Though it is the goal of this report to guide the City of Somers Point towards resiliency, risk will always exist. By overlaying hazards such as sea level rise and surge with population information, infrastructure, and building footprints, the city will be able to identify areas of highest risk and plan accordingly.

Natural Resources, Historical Resources, Cultural Resources, & Economic Resources (coming at future time in municipal profile)

Mapping of a community's resources is an extremely useful tool, not only for creating a catalogue of a community's strengths, but also for identifying areas that should be protected. Overlaying hazards such as sea level rise and surge may lead Somers Point to make decisions on protecting certain resources through retrofitting historical buildings or protecting natural resources by allowing for natural floodplain functions.

FEMA Repetitive Loss & Substantially Damaged Properties (coming at future time, supplied by Edward J. Bloustein School of Planning and Public Policy)

Repetitive Loss and Substantial Damage maps can be used to identify "problem" areas. Depending on the location and size of these areas, the city can make decisions about how to prevent repetitive loss from occurring. These options can range from utilizing Blue Acres funding and returning the properties to a natural state to creating protective infrastructure projects in order to help protect from risk.

Additional Maps being supplied by Edward J. Bloustein School of Planning and Public Policy

- Elevation Map - FEMA Preliminary Flood Maps
- Environmental Constraints - Wetlands with Sea Level Rise 1-3 feet and Category 1 and 2 Storm Surge
- Endangered Species - NJDEP
- Existing Land Use
- Community Facilities

- Existing Open Space & Recreation with Sea Level Rise 1-3 feet and Category 1 and 2 Storm Surge
- Existing Zoning

Sea Level Rise and Surge Vulnerability

Many of the coastal areas of the City of Somers Point are at or near current sea level, meaning fluctuations in sea level through surge events are of great significance. Although this report is not designed to be a true vulnerability analysis of sea level rise and surge events, mapping available to JC NERR staff has allowed for the composition of this introduction to sea level rise and surge vulnerability.

Analysis of SLOSH maps show that as hurricane strength increases, potential surge impacts will increase in scope and severity as one would expect. SLOSH models indicate we should expect flooding on a similar scale of Sandy for powerful Category 1 hurricanes. SLOSH models for Category 2 show a much more dire situation with flooding covering approximately 50 percent of the city. SLOSH models for Category 3 storms show approximately 70 percent of the city affected by flood waters, with increased depth and enough inundation to cause major damages. The Hospital and Votech High School are within the potential floodplain shown by the Category 2 and 3 SLOSH maps. All SLOSH scenarios flood the critical evacuation routes of the Garden State Parkway, Ocean Heights, and Route 152 within the city limits. While the evacuation route of Route 9 is not flooded within the city, it is flooded in all SLOSH scenarios just north of the city in Linwood.

Somers Point has done an extraordinary job of keeping their marshlands intact in the floodplain. While the relatively low end scenario of one foot of sea level rise could potentially cause tidal flooding complications along Ocean Heights, a designated evacuation route, near Patcong Creek. It is not until approximately two feet of sea level rise that the city will begin to experience tidal flooding complications in town along Somers Point-Mays Landing Road and areas east of Bay Avenue. Scientists anticipate the arrival of one foot of sea level rise before 2050. As sea level rise is expected to accelerate this century, three feet of sea level rise is very likely before 2100. In the table below, the “low”, “high”, and “best” estimates for sea level rise projections for New Jersey for the years 2050 and 2100 are displayed. “Best” refers to a 50% likelihood of that level of sea level rise occurring.

Total sea level rise projections for New Jersey.			
	Total	Total	Total
	cm	inches	feet
2050 best	40	16	1.3
2050 low	23	9	0.7
2050 high	60	24	2.0
2100 best	96	38	3.1
2100 low	50	20	1.6
2100 high	147	58	4.8
All values with respect to a year 2000 baseline.			

NJ sea level rise projection ranges and best estimates. Miller AK, Kopp RE, Horton BP, Browning JV and Kemp AC. 2013. A geological perspective on sea-level rise and its impacts along the U.S. mid-Atlantic coast. Earth's Future 1(1):3-18.

Three feet of sea level rise will exacerbate tidal flooding in the previously mentioned areas, extending the flooding further in land. It is at three feet of sea level rise that the tidal flooding extent begins to reach Shore Medical Center. Because of the low lying areas around the major evacuation route of the Garden State Parkway in Somers Point, three feet of sea level rise may also begin to affect the use of this major road during tidal flooding events.

Any level of inundation due to regular tidal flooding will have large scale impacts on emergency response. Sea level rise will also result in greater impact of storm events as a surge atop a higher sea level will be more dramatic than the same surge atop a lower sea level. Necessary adaptation to sea level rise and the heightening of other hazards such as surge must be taken into account when planning for the future.

CRS Sections That Likely Have Available Current Points

The following sections of the Community Rating System will likely contain credit points that are available for Somers Point based off of the answers given in our Getting to Resilience questionnaire, discussions with JCNERR staff, and reviews of the city’s Master Plan and other documents. These sections represent the current state of the city but also include planned projects or uncompleted projects we are aware of. However, these projects may need to be complete in order to be granted credit. These sections do not represent guaranteed points for the CRS but are likely achievable to a certain degree and should be investigated when submitting to the CRS. When working with your CRS coordinator, we recommend inquiring about the following sections.

Section 320: Map Information Service: To provide inquirers with information about the local flood hazard and about flood-prone areas that need special protection because of their natural functions.

- **Basic Firm Information (MI1):** 30 points for providing basic information found on a FIRM that is needed to accurately rate a flood insurance policy. (GTR - 2.5)

- **Additional Firm Information (MI2):** 20 points for providing information that is shown on most FIRMS, such as protected coastal barriers, floodways, or lines demarcating wave action. (GTR - 2.5)

Section 330: Public outreach: To provide the public with information needed to increase flood hazard awareness and to motivate actions to reduce flood damage, encourage flood insurance coverage, and protect the natural functions of floodplains.

- **Outreach projects (OP):** Up to 200 points for designing and carrying out public outreach projects. Credits for individual projects may be increased if the community has a Program for Public Information (PPI). (GTR - 2.4, 4.9)
- **Flood response preparations (FRP):** Up to 50 points for having a pre-flood plan for public information activities ready for the next flood. Credits for individual projects may be increased by the PPI multiplier. (GTR - 2.4, 2.9, 4.9)
- **Program for Public Information (PPI):** Up to 80 points added to OP credits and up to 20 points added to FRP credits, for projects that are designed and implemented as part of an overall public information program. (GTR - 2.4)

Section 350: Flood Protection Information: To provide the public with information about flood protection that is more detailed than that provided through outreach projects.

- **Flood protection website (WEB):** Up to 76 points for providing flood protection information via the community's website. An additional 29 points are provided if the website is part of a Program for Public Information (credited under Activity 330 (Outreach Projects)). (GTR - 2.9, 4.7)

Section 360: Flood Protection Assistance: To provide one-on-one help to people who are interested in protecting their property from flooding.

- **Property protection advice (PPA):** Up to 25 points for providing one-on-one advice about property protection (such as retrofitting techniques and drainage improvements). An additional 15 points are provided if the assistance program is part of a Program for Public Information (credited under Activity 330 (Outreach Projects)). (GTR - 5.7)
- **Advisor training (TNG):** 10 points if the person providing the advice has graduated from the EMI courses on retrofitting or grants programs. (GTR - 5.8)

Section 410: Floodplain Mapping: To improve the quality of the mapping that is used to identify and regulate floodplain development.

- **Floodplain mapping of special flood-related hazards (MAPSH):** Up to 50 points if the community maps and regulates areas of special flood related hazards. (GTR - 1.1, 1.3)

Section 420: Open Space Preservation: To prevent flood damage by keeping flood prone lands free of development, and protect and enhance the natural functions of flood plains.

- **Open space preservation (OSP):** Up to 1,450 points for keeping land vacant through ownership or regulations. (GTR - 3.3)
- **Natural shoreline protection (NSP):** Up to 120 points for programs that protect natural channels and shorelines. (GTR - 3.3)
- **Deed restrictions (DR):** Up to 50 points extra credit for legal restrictions that ensure that parcels credited for OPS will never be developed. (GTR - 3.3)
- **Natural functions open space (NFOS):** Up to 350 points extra credit for OPS-credited parcels that are preserved in or restored to their natural state. (GTR - 3.3)
- **Special flood-related hazards open space (SHOS):** Up to 50 points if the OSP credited parcels are subject to one of the special flood-related hazards or if areas of special flood related hazard are covered by low density zoning regulations. (GTR - 1.3)

Section 430: Higher Regulatory Standards: To credit regulations to protect existing and future development and natural floodplain functions that exceed the minimum criteria of the National Flood Insurance Program (NFIP).

- **Regulations administration (RA):** Up to 67 points for having trained staff and administrative procedures that meet specified standards. (GTR - 3.6.1, 5.6, 5.8)
- **Protection of critical facilities (PCF):** Up to 80 points for protecting facilities that are critical to the community. (GTR - 4.7)
- **Freeboard (FRB):** Up to 500 points for a freeboard requirement. (GTR - 5.4)

Section 440: Flood Data Maintenance: The community must maintain all copies of Flood Insurance Rate Maps issued for that community.

- **Additional Map Data (AMD):** Up to 160 points for implementing digital or paper systems that improve access, quality, and/or ease of updating flood data within the community. (GTR - 2.5)
- **FIRM Maintenance (FM):** Up to 15 points for maintaining copies of all FIRMs that have been issued for the community. (GTR - 2.5)

Section 510: Floodplain Management Planning: To credit the production of an overall strategy of programs, projects, and measures that will reduce the adverse impact of the hazard on the community and help meet other community needs.

- **Floodplain management planning (FMP):** 382 points for a community-wide floodplain management plan that follows a 10-step planning process: Step 7d - 5 points, if the plan reviews activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection. (GTR - 3.3.1, 3.3.2)

Section 540: Drainage System Maintenance: To ensure that the community keeps its channels and storage basins clear of debris so that their flood carrying and storage capacity are maintained.

- **Capital improvement program (CIP):** Up to 70 points for having a capital improvement program that corrects drainage problems. (GTR - 3.7)

Section 610: Flood Warning and Response: To encourage communities to ensure timely identification of impending flood threats, disseminate warnings to appropriate floodplain occupants, and coordinate flood response activities to reduce the threat to life and property.

- **Emergency warning dissemination (EWD):** Up to 75 points for disseminating flood warnings to the public. (GTR - 2.9, 4.7, 4.9)
- **Flood response operations (FRO):** Up to 115 points with 10 points awarded for maintaining a database of people with special needs who require evacuation assistance when a flood warning is issued and for having a plan to provide transportation to secure locations. (GTR - 2.9, 4.9, 4.9.6)
- **StormReady community (SRC):** 25 points for designation by the National Weather Service as a StormReady community. (GTR - 4.1, 4.6)
- **Critical facilities planning (CFP):** Up to 75 points for coordinating flood warning and response activities with operators of critical facilities. (GTR - 4.7)

Appendix

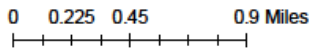
**Somers Point
1 Foot of Sea Level Rise**

Legend

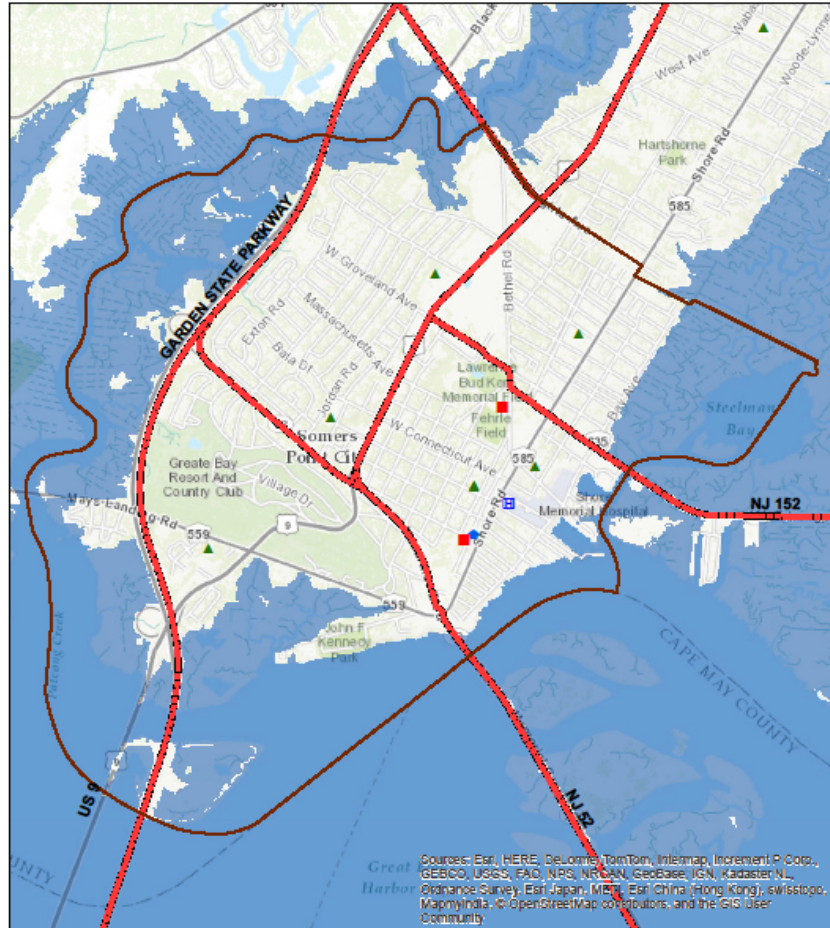
-  Municipality
-  Schools
-  Fire Stations
-  Law Enforcement
-  Assisted Living
-  Hospitals
-  Evacuation Routes
-  1ft SLR

Year 2010 Population: 10795

According to Kenneth G. Miller et al. in the 2013 study "A Geological Perspective on Sea-Level Rise and its Impacts Along the U.S. Mid-Atlantic Coast" a probable threat is the 1ft sea level rise condition that could be expected by 2050. This map depicts that sea level rise as well as the preceding projections thereafter and is centered on target municipalities.



Map Author: Bryan Serino
Rutgers, New Brunswick
Center for Remote Sensing
and Spatial Analysis



Sources: Esri, HERE, DeLorme, TomTom, Intermap, Increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCo, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

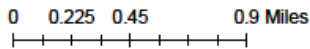
2 Feet of Sea Level Rise Somers Point

Legend

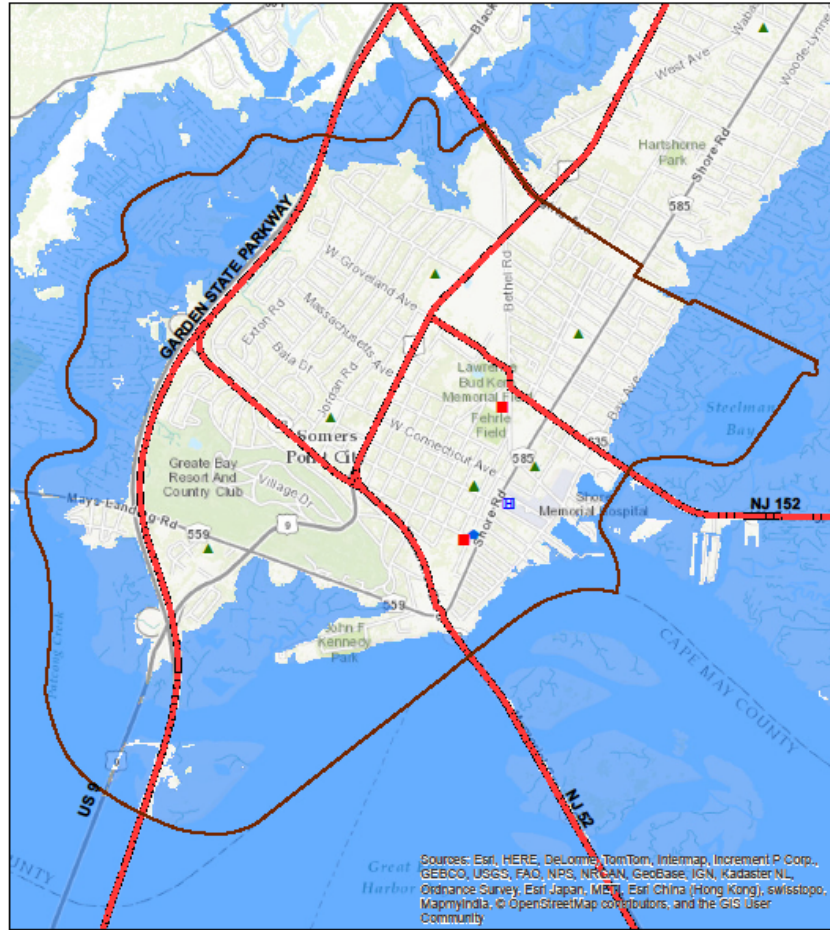
- Municipality
- ▲ Schools
- Fire Stations
- Law Enforcement
- Assisted Living
- Hospitals
- Evacuation Routes
- 2ft SLR

Year 2010 Population: 10795

According to Kenneth G. Miller et al. in the 2013 study "A Geological Perspective on Sea-Level Rise and its Impacts Along the U.S. Mid-Atlantic Coast" a probable threat is the 1ft sea level rise condition that could be expected by 2050. This map depicts that sea level rise as well as the proceeding projections thereafter and is centered on target municipalities.



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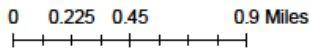
3 Feet of Sea Level Rise Somers Point

Legend

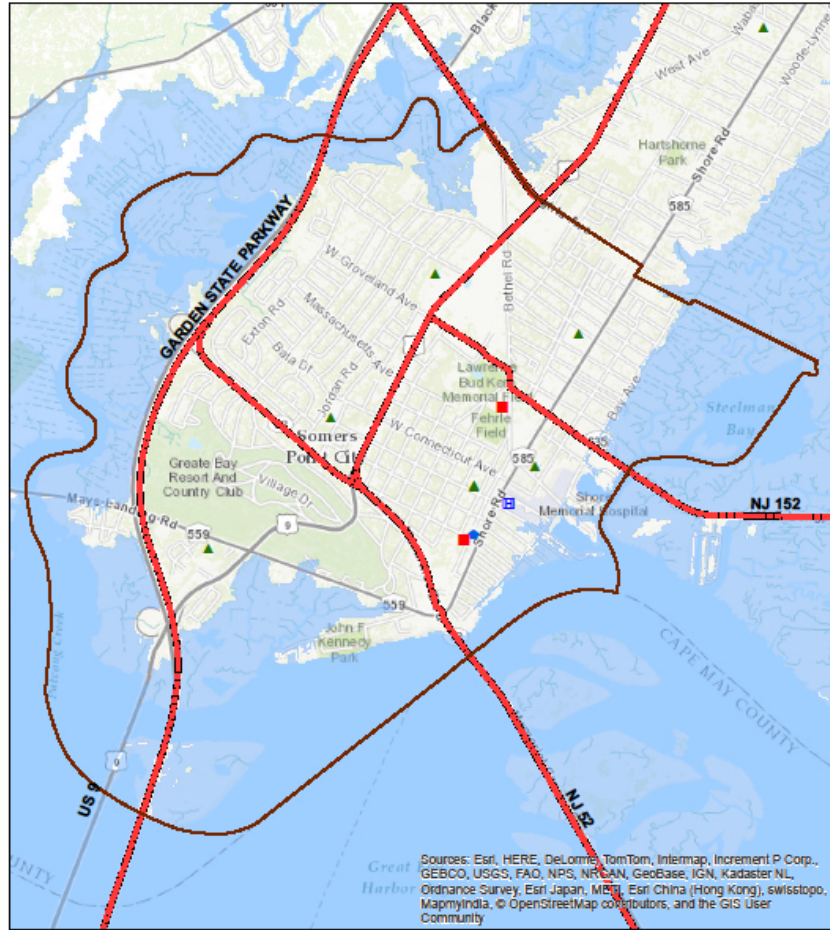
- Municipality
- ▲ Schools
- Fire Stations
- Law Enforcement
- Assisted Living
- Hospitals
- Evacuation Routes
- 3ft SLR

Year 2010 Population: 10795

According to Kenneth G. Miller et al. in the 2013 study "A Geological Perspective on Sea-Level Rise and its Impacts Along the U.S. Mid-Atlantic Coast" a probable threat is the 1ft sea level rise condition that could be expected by 2050. This map depicts that sea level rise as well as the proceeding projections thereafter and is centered on target municipalities.



Map Author: Bryan Serino
Rutgers, New Brunswick
Center for Remote Sensing
and Spatial Analysis



Sources: Esri, HERE, DeLorme, TomTom, Intermap, InCREMENT P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

**Category 1 SLOSH Model
Somers Point**

Legend

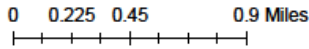
- Municipality
- ▲ Schools
- Fire Stations
- ◆ Law Enforcement
- Assisted Living
- Hospitals
- Evacuation Routes

Category 1 SLOSH

- 0 - 3 Feet Above Ground Level
- 3 - 6
- 6 - 9
- > 9

Year 2010 Population: 10795

This map depicts the SLOSH model extents provided by NOAA. The depths are ranged from 0-9 or greater feet of inundation above ground level and are categorized in the legend above.



Map Author: Bryan Serino
Rutgers, New Brunswick
Center for Remote Sensing
and Spatial Analysis



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

**Category 2 SLOSH Model
Somers Point**

Legend

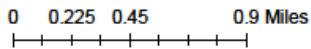
- Municipality
- ▲ Schools
- Fire Stations
- ◆ Law Enforcement
- Assisted Living
- Hospitals
- Evacuation Routes

Category 2 SLOSH

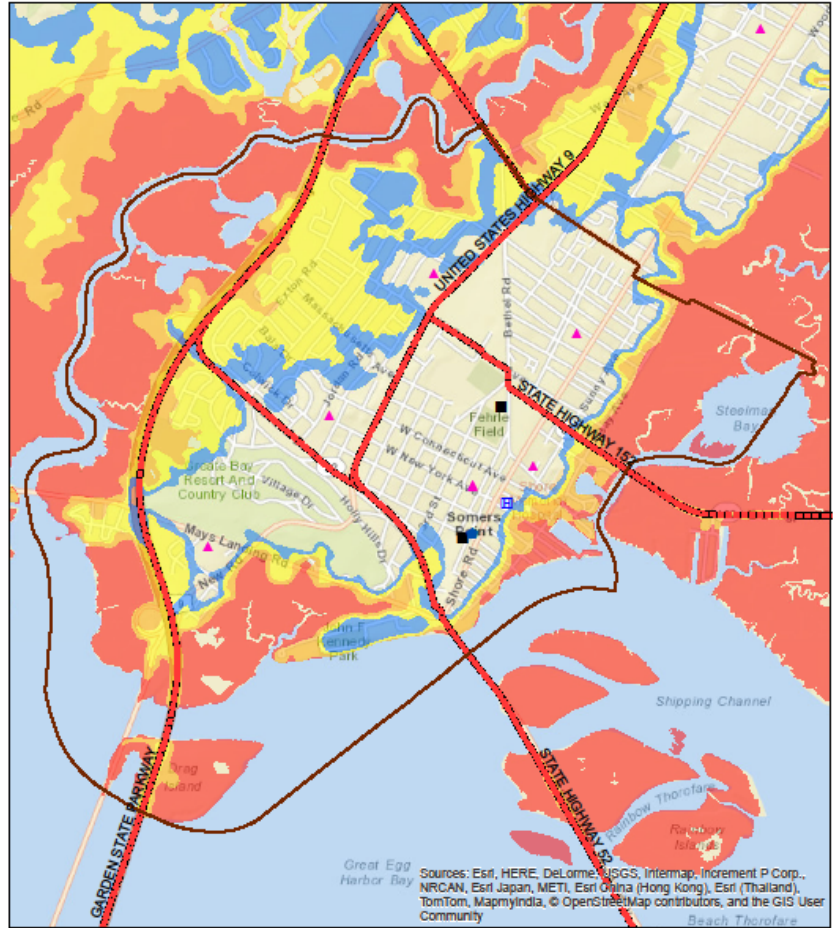
- 0 - 3 Feet Above Ground Level
- 3 - 6
- 6 - 9
- > 9

Year 2010 Population: 10795

This map depicts the SLOSH model extents provided by NOAA. The depths are ranged from 0-9 or greater feet of inundation above ground level and are categorized in the legend above.



Map Author: Bryan Serino
Rutgers, New Brunswick
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Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

**Category 3 SLOSH Model
Somers Point**

Legend

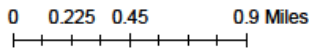
- Municipality
- ▲ Schools
- Fire Stations
- ◆ Law Enforcement
- Assisted Living
- Hospitals
- Evacuation Routes

Category 3 SLOSH

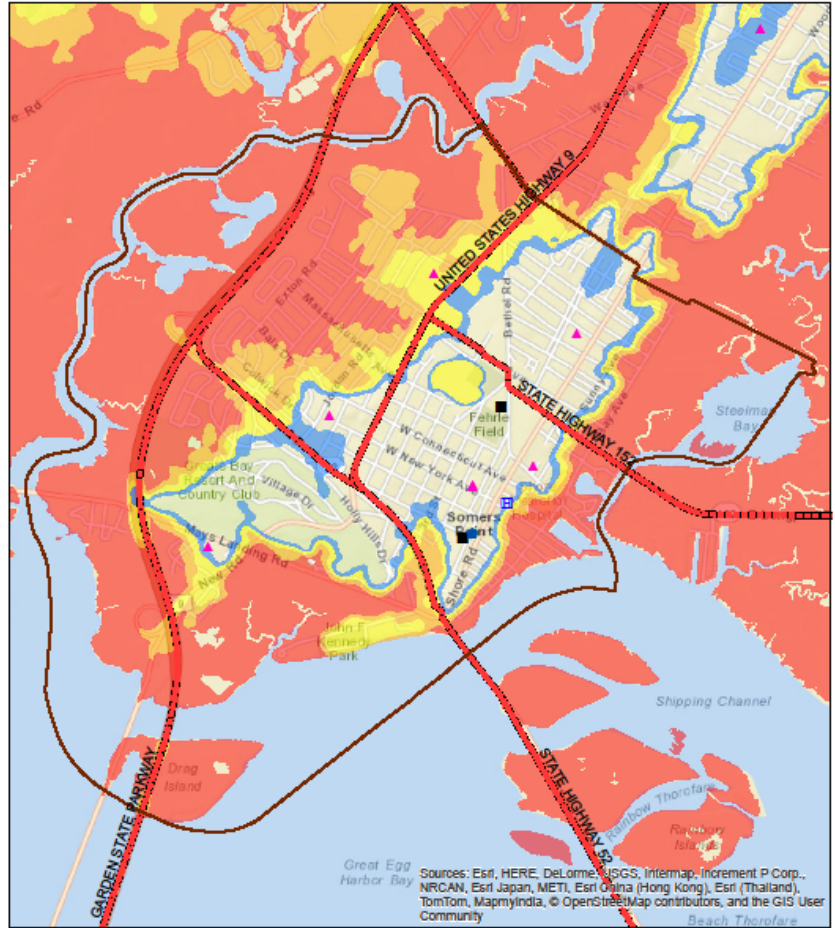
- 0 - 3 Feet Above Ground Level
- 3 - 6
- 6 - 9
- > 9

Year 2010 Population: 10795

This map depicts the SLOSH model extents provided by NOAA. The depths are ranged from 0-9 or greater feet of inundation above ground level and are categorized in the legend above.



Map Author: Bryan Serino
Rutgers, New Brunswick
Center for Remote Sensing
and Spatial Analysis



Sources: Esri, HERE, DeLorme, USGS, Intermap, Incentiv P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community