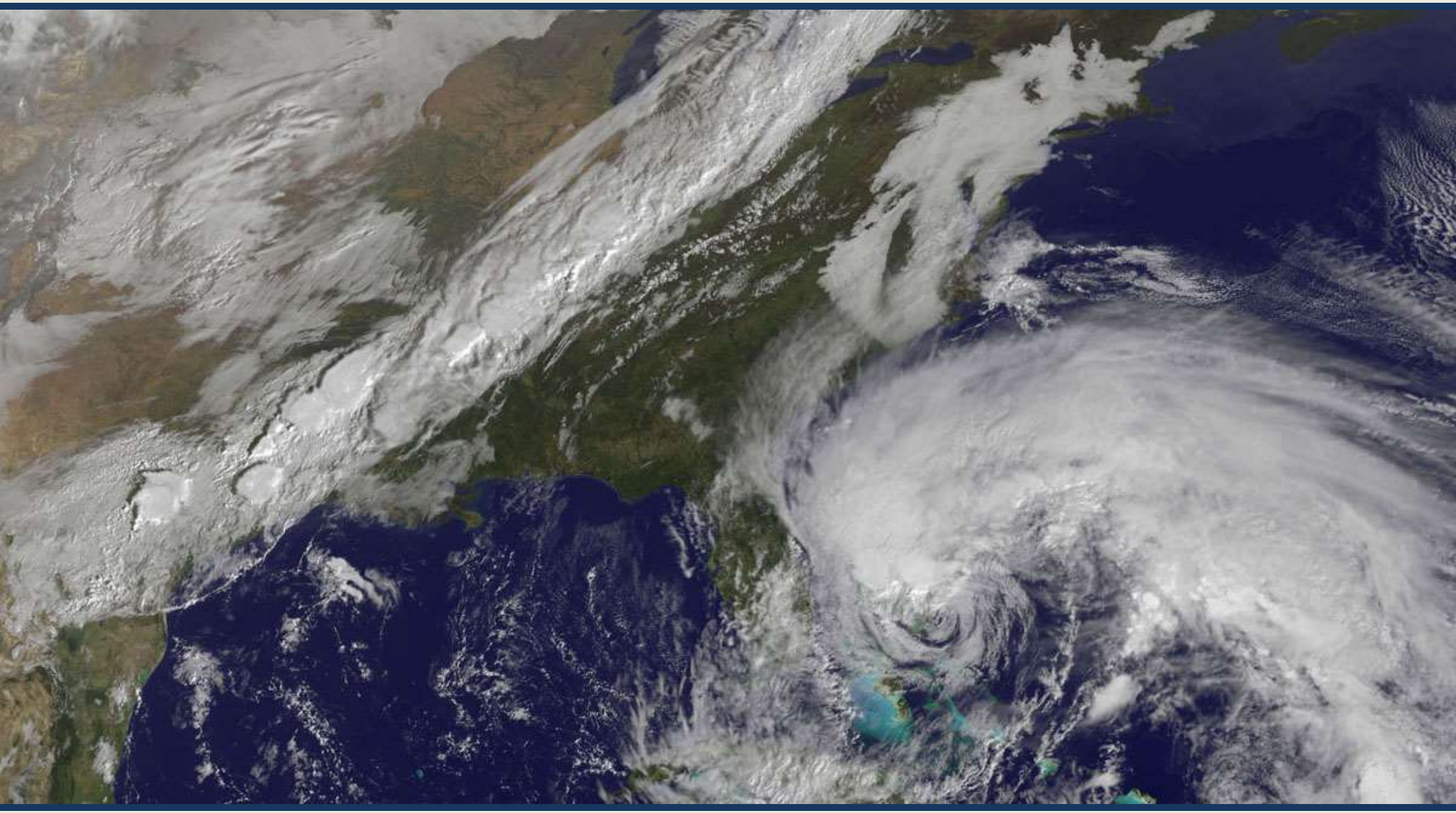
The Township of Lacey



Strategic Recovery Planning Report

Township of Lacey
Strategic Recovery Planning Report

June 2014

Prepared by:

T&M Associates
11 Tindall Road
Middletown, NJ 07748

Martin P. Truscott, PP, AICP, LEED-GA
NJ Professional Planner No.: 02443

Richard S. Cramer, PP, AICP
NJ Professional Planner No.: 02207

The original of this document was signed and sealed in accordance with New Jersey Law.

Executive Summary

When Hurricane Sandy struck the coast of New Jersey on October 29, 2012, it brought extensive damage to Lacey Township from both storm surge and wind damage. Lacey reported that 652 residential properties and more than 1,095 businesses suffered damage. Additionally, the township reported that approximately 175 roadways were flooded, and that electricity and sewer service were disrupted. The township also experienced damage to Bayfront Park, and trees and power lines fell throughout the township.

In response to the impacts faced by Hurricane Sandy, Lacey's recovery efforts have been extensive. The township: evacuated residents; barricaded roads; removed debris from affected areas; stabilized the shoreline and made temporary repairs at Bayfront Park; fast-tracked variance application procedures for rebuilding on pre-existing, non-confirming lots; and, among other important actions, adopted a reconstruction policy for residential structures.

Though much has been done since Hurricane Sandy, there is still significant work to be done to further promote recovery and resiliency to future storms. This report identifies the vulnerabilities that were exacerbated and the opportunities created by Hurricane Sandy, and outlines a recommended set of actions to guide the township in promoting further recovery and resiliency. Among the actions it recommends are: provision of elevated generators and electric cabinets at pump stations; securing critical sewer and water infrastructure; provision of generators at public schools; partnering with key institutions to develop an emergency shelter for township residents; developing an emergency communications plan; improving communications infrastructure; automating and expediting the processing of building and zoning permits; adopting a master plan element for floodplain management; participating in FEMA's Community Rating System; and, incorporating the principles of the 2013 Multi-Jurisdictional All Hazard Mitigation Plan into the township's master plan. The report also recommends the: development of a municipal emergency operations management plan; raising certain buildings above the baseline flood elevation; preserving sensitive lands to maximize stormwater infiltration; developing a municipal GIS system to support future planning efforts; and, implementing permanent shoreline stabilization measures in Forked River Beach.

Acknowledgements

Lacey Township

Gary Quinn, Mayor

Mark Dykoff, Deputy Mayor

David E. Most, Committeeman

Peter Curatolo, Committeeman

Steven Kennis, Committeeman

Veronica Laureigh, CMC/AAE, Township Administrator/Municipal Clerk

Casey Parker, Department of Public Works

John Curtin, Department of Community Development

Robert Resetar, Office of Emergency Management

Ed Woolf, Lacey Municipal Utilities Authority

T&M Associates

Martin P. Truscott, PP, AICP, LEED-GA

Richard S. Cramer, PP, AICP

Robert Dare, PP, AICP, MCIP

Table of Contents

List of Tables

List of Figures

List of Appendices

Introduction

This Strategic Recovery Planning Report serves as a blueprint to guide the recovery of the Township of Lacey from the effects of Hurricane Sandy, and to reduce vulnerabilities to future storms. Accordingly, it:

- Evaluates Hurricane Sandy's impacts on community features;
- Addresses conditions that Hurricane Sandy created or exacerbated;
- Articulates planning goals, strategies, and actions to improve public safety, develop resistance to future storms, and stimulate economic recovery; and,
- Describes each proposed project at a level of detail that:
  - Demonstrates how it relates to the storm's impacts;
  - Explains why it is important to the township's economic and environmental health;
  - Lists the major tasks with which it may be associated;
  - Includes an estimation of the cost of implementation;
  - Identifies potential or actual funding sources; and,
  - Provides a timeline for implementation.

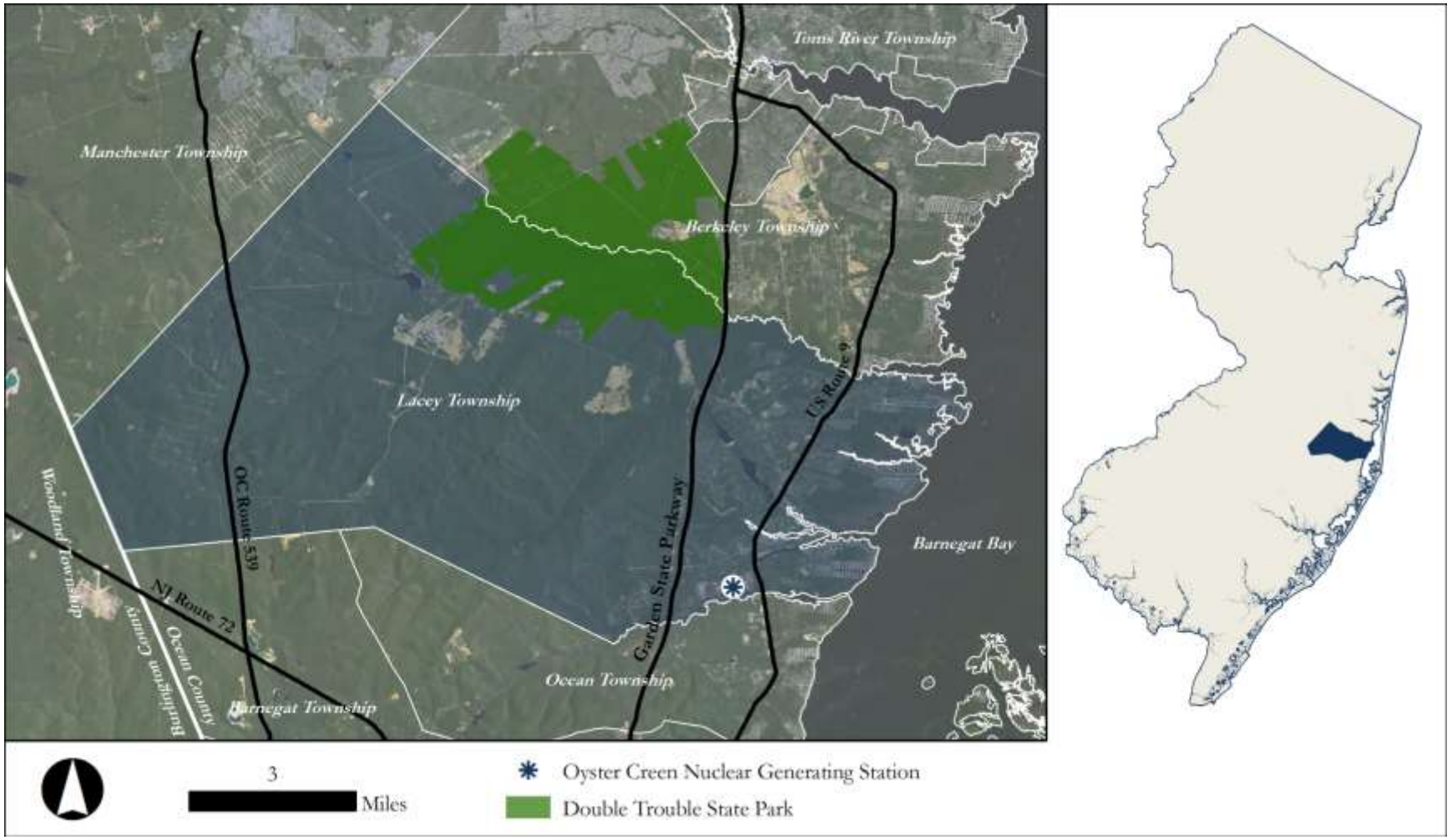
Description of the Township

Lacey Township is located in central Ocean County, and is surrounded by: Berkeley Township to the north and east; Ocean and Barnegat townships to the south; Manchester Township to the northwest; and, Woodland Township in Burlington County to the southwest. The Garden State Parkway, US Route 9, and Cedar Bridge-Whiting Road (Ocean County Route No. 539) provide connections to points north and south.

The township encompasses an area of 99.4 square miles, 83.7 percent of which is land surface. The remaining 16.3 percent is comprised of non-linear (i.e., lakes, ponds, and other large bodies of water, but not streams and creeks) water surfaces, including Barnegat Bay. Other important features of Lacey Township include Double Trouble State Park, which is located in the north-central part of the township, and Oyster Creek Nuclear Generating Station, which is located between the Garden State Parkway and US Route 9 in the southern portion of the township. The regional location and key features of Lacey Township are depicted in Figure 1 (located on the next page).

With regard to Lacey's population, it is noted that the township had a population of 27,644 residents at the time of the 2010 US Census. This represents an increase of slightly more than 9 percent over the 2000 population of 25,346 residents, and nearly 25 percent over the 1990 population of 22,141 residents. By comparison, the 2010 Ocean County population of 576,567 residents grew by nearly 13 percent since 2000, and approximately 33 percent since 1990. Thus, Lacey Township's population has grown at a slower rate than at the county level in the period since 1990.

Figure 1: Regional Location



In addition to the above, it is noted that the township is located entirely within the Pinelands Management Area. Areas to the west of the Garden State Parkway are located in the New Jersey Pinelands Commission-designated preservation area, and contain little development in comparison to areas to the east of the Garden State Parkway, which are predominantly located in a designated regional growth area. Remaining vacant land to the east of the Garden State Parkway is generally situated within planned infrastructure service area and accessible by public roadways. It is, therefore, anticipated that these areas will be the location of future development in Lacey Township. Future development capacity is, however, limited. This is demonstrated in North Jersey Transportation Planning Authority population projections, which foresee an overall increase (i.e., for the entire township) of 9,540 residents in the thirty-year period between 2010 and 2040, or a total of 37,180 residents in 2040 (n.b., the township neither endorses nor opposes the North Jersey Transportation Planning Authority's 2040 projection of 37,180 residents; it is provided here for informational purposes only). By comparison, the township's population grew by nearly 13,500 residents during the previous thirty-year period, from 1980 to 2010.

Finally, it is noted that Lacey is partially located within the area that is regulated by the state's Coastal Area Facility Review Act (CAFRA). This area, called the CAFRA Zone, covers the portion of Lacey Township that is generally located to the east of the Garden State Parkway. Certain types of development within the CAFRA Zone are subject to the enhanced review and permitting requirements, which are administered by the Division of Land Use Regulation of the New Jersey Department of Environmental Protection.

Assessment of Existing Planning Documents

This section of the Strategic Recovery Planning Report examines the adequacy of existing municipal and county planning documents to support recovery from the impacts of Hurricane Sandy, and to mitigate negative impacts from future storms.

Lacey Township

The following municipal planning documents have been reviewed as part of this assessment: 1991 Master Plan; 2012 Master Plan Reexamination Report; 2007 Municipal Stormwater Management Plan; and, the 2008 Housing Element and Fair Share Plan. Each is discussed in the following subsections.

1991 Master Plan

Lacey's current master plan was adopted in 1991. The master plan defines a number of township-wide objectives, which are relevant to Lacey's recovery from the effects of Hurricane Sandy, and the promotion of resiliency to future storms. These are outlined below:

- Manage development so that traffic will not exceed the capacity of the existing roadway network.
  - *Ensuring that development does not generate more traffic than the existing roadway network can handle will result in a fluid*

roadway network that is free of traffic jams and gridlock. This is important when areas may need to be evacuated, such as during hurricanes and storms.

- Identify, protect and preserve natural resources.
  - *Protecting and preserving natural resources, such as open spaces, beaches, shorelines, and stands of trees will help to increase resiliency by supporting natural defense mechanisms against the impacts of hurricanes and storms (e.g., natural infiltration of stormwater and mitigating storm surge events).*
- Encourage housing densities based on the carrying capacities of existing infrastructure and natural resources.
  - *Developing in accordance with the carrying capacities of existing infrastructure and natural resources will help to protect the built environment from future hurricanes and storms. Indeed, it not only protects natural defense mechanisms, but also ensures that technical infrastructure (e.g., sewers) can accommodate the maximum demand that may be placed upon it during times of crisis (e.g., severe floods).*
- Establish and maintain a vigorous code enforcement program
  - *Vigorous code enforcement will help to ensure that the township's housing stock, non-residential buildings, and other elements of the built environment are safe, and, thereby, minimize danger during extreme weather events.*
- Ensure areas are sufficiently linked with major highway and public transportation corridors.
  - *A high level of mobility will help to ensure that the township is easily evacuated during times of emergency. It also helps to ensure that emergency services are able to efficiently access all areas of the township when called to do so.*

In addition to the township-wide objectives that have been outlined above, the 1991 Master Plan identifies some recommended land management techniques for the areas to the east of the Garden State Parkway, which are predominantly located in the New Jersey Pinelands Commission-designated regional growth area. As outlined below, these techniques promote resiliency to future hurricanes and storms:

- Clustering properties together on upland sites.
  - *Clustering properties together on upland sites helps to maintain open space and maximize pervious cover, and, thereby, promotes the natural infiltration of stormwater.*
- Preserve existing stands of trees.
  - *Preserving existing stands of trees helps to aerate the soil, and, thereby, promotes the natural infiltration of stormwater.*

2012 Master Plan Reexamination Report

The last reexamination of the township master plan was prepared in 2012. The 2012 Master Plan Reexamination Report is comprehensive in scope, and reexamines the township's land use, housing, circulation, utility service, community facilities, recreation, conservation, economic, historic preservation, recycling, farmland preservation, and stormwater management master plan elements. It also reexamines the township's development regulations.

The 2012 Master Plan Reexamination Report was prepared before Hurricane Sandy formed and struck the township. As a result, it does not include recommendations that result from the experience and impacts of the hurricane. It does, however, make several recommendations that are relevant to the township's recovery from Hurricane Sandy, and reducing vulnerabilities to future storms. These are outlined below:

- Wireless communication equipment should be a permitted use on municipal lands.
  - *Expansion of wireless communication equipment within the township will increase safety by helping to improve communication during extreme weather events.*
- Evaluate and improve the intersection of US Route 9 and Taylor Lane.
  - *Increasing the level of service provided at this intersection will improve access from key residential areas of Lacey Township to US Route 9. US Route 9 provides access to several highways in Ocean County (e.g., NJ Route 72 and NJ Route 37) that may be used to evacuate the region during extreme weather events.*
- Obtain maps of current public water and sewer facilities from the Lacey Township Municipal Utilities Authority and include them in an updated master plan.
  - *Such mapping will help to increase the efficiency of planning efforts relative to public water and sewer facilities. This can result in increased system resilience after hurricanes and storms.*
- Provide an urgent care facility to reduce demand on regional hospital emergency rooms.
  - *Expanding medical care within the township and county can help to increase the resilience of the local and regional population after extreme weather events. Should such a facility be developed, it is, however, important that it be in a storm-resistant building with appropriate auxiliary power generation and communication facilities.*
- Consider the requirement of "tree-save plans" for proposed development in an effort to save significant trees through creative site design techniques.
  - *Preservation of significant trees promotes resiliency to future storms. Indeed, significant trees have extensive root systems, which help to aerate the soil and facilitate the natural infiltration of stormwater.*
- Update the township's design standards for shade trees, and prepare new landscape design standards for the Lacey Road and US Route 9 corridors.
  - *As has been previously noted, shade trees and vegetation help to facilitate natural infiltration of stormwater, and thereby promote resiliency to future hurricanes and storms. They also help to prevent and minimize erosion of soil caused by wind and water.*

The 2012 Master Plan Reexamination Report includes revised land use, circulation, recreation, and recycling master plan elements, as well as development regulations for shade trees, signs, and landscaping in the Lacey Road and US Route 9 corridors. These revised elements and development regulations will help to effectuate many of the recommendations that have been previously outlined.

2008 Housing Element and Fair Share Plan

The 2008 Housing Element and Fair Share Plan outlines the means by which Lacey intends to meet its fair share affordable housing obligation. Since the adoption of this plan, numerous legal challenges have been made to the COAH process. As a result, the validity of its approach to meeting the fair share obligation is indeterminate until such time as new substantive rules for affordable housing planning are developed.

Nonetheless, and with regard to the nexus between affordable housing planning, the recovery from Hurricane Sandy, and the promotion of resiliency to future storms, it is noted that the fair share obligation includes a requirement to rehabilitate a number of housing units. This part of the fair share obligation and COAH process has not been challenged, and, as provided in the 2008 plan, the township's rehabilitation share is 25 units. As of 2008, a total of 15 units had already been rehabilitated, and the township was obligated to rehabilitate an additional ten units. Rehabilitation of housing units helps to increase the structural integrity and safety of the township's existing housing stock. This increases resiliency to future storms. Additionally, if affected units are rehabilitated, it can promote recovery from the effects of Hurricane Sandy.

Ocean County

The following county planning documents have been reviewed as part of this assessment: 2011 Comprehensive Master Plan; 2013 Multi-Jurisdictional All-Hazard Mitigation Plan; and, the 2008 Comprehensive Farmland Management Plan. Each is discussed in the following subsections.

2011 Comprehensive Master Plan

The Ocean County Planning Board adopted the Comprehensive Master Plan on December 21, 2011. It serves as a policy statement about the future development of Ocean County, and examines a wide range of topics, including: the county's demographics; economic planning and workforce development; transportation and mobility; housing; design; land use; agriculture; open space and recreation planning; regional environmental conditions; water resources; waste, wastewater, and stormwater management; and, regional air quality.

The Comprehensive Master Plan makes a number of recommendations that are relevant to Lacey's recovery from the effects of Hurricane Sandy, and reducing vulnerabilities to future storms. These are outlined below:

- Encourage the New Jersey Department of Transportation to modernize and upgrade state highways throughout Ocean County, including US Route 9, NJ Route 35, NJ Route 37, NJ Route 70, NJ Route 72, NJ Route 88 and NJ Route 166.
  - *Modernizing and upgrading Ocean County's highways will improve mobility and facilitate the evacuation of Lacey Township in times of crisis, including during future storms. This is particularly true for US Route 9, which provides a north-south connection through eastern Lacey Township, and intersects with numerous state highways (incl., NJ Route 72*

and NJ Route 37) and other roadways that provide connections to the west.

- Encourage the retention of established residential neighborhoods and the rehabilitation of the county's older housing stock. Facilitate participation in home rehabilitation and historical preservation grant programs, where applicable.
  - *Home rehabilitation may help to improve the structural integrity of existing housing stock. This, in turn, provides extra protection and resiliency during extreme weather events, such as hurricanes and storms.*
- Encourage low-impact design techniques to minimize the disturbance of natural areas and maximize the recharge of stormwater on-site.
  - *Maximizing the recharge of stormwater on-site may help to decrease the incidence of flooding.*
- Support the tourism amenities and needs of shore towns and continue to facilitate the protection and replenishment of county's beaches and shoreline areas.
  - *Protection and replenishment of the county's beaches and shoreline areas, including those along the Barnegat Bay in the eastern part of Lacey Township, will help the county to cope with future hurricanes and storms and mitigate their impacts.*
- Continue to support the Ocean County Agriculture Development Board (OCADB) in its mission to protect and enhance the county's agricultural resources.
  - *Preservation of farmland helps to reduce vulnerabilities to storms by protecting and promoting agricultural land uses, and eliminating the potential that they will be converted to non-agricultural (e.g., residential) uses. Agricultural land uses typically have a very low amount of impervious cover, and consequently support the infiltration of stormwater.*
- Maintain an ongoing evaluation of the recreational needs of Ocean County residents, and assist in identifying new park and open space areas, as necessary.
  - *Expansion of park and open space areas, particularly in the eastern part of Lacey Township, will help to preserve and protect natural and other areas with low impervious surface cover. This supports the infiltration of stormwater. Additionally, it eliminates the potential that such areas will be converted to residential uses. This helps to restrict population development in areas that may be vulnerable to hurricanes and other storms. It also protects the local and regional economy by guiding non-residential development (e.g., commercial and industrial uses) away from areas that may be susceptible to disturbance and interruptions caused by extreme weather events.*
- Continue to work with all federal, state, local and non-profit partners to acquire open space and maximize financial resources available for preservation.
  - *As has been previously noted, expansion of open space areas promotes resiliency to future hurricanes and storms.*
- Continue to assist the State of New Jersey in the implementation of the Governor's Ten-Point Plan for Barnegat Bay.
  - *Key parts of the Governor's Ten-Point Plan are to: close Oyster Creek Nuclear Generating Station; fund stormwater runoff*

mitigation projects; and, acquire land within the watershed. All of these actions will help to protect Lacey Township and promote resiliency to extreme weather events.

- Encourage land use planning strategies such as low-impact design to preserve open space and maximize the natural infiltration of stormwater.
  - *Preservation of open space and maximization of stormwater infiltration helps to minimize flooding and promotes resiliency to future hurricanes and storms.*
- Explore and assess best management practices used by other areas in the country to address stormwater management.
  - *Effectively addressing stormwater management helps to minimize flooding and promotes resiliency to future hurricanes and storms.*
- Continue to assess structural and nonstructural options for stormwater management to increase infiltration, remove debris and reduce nutrient and pollution loads.
  - *Increasing infiltration will help to reduce flooding. Additionally, removing debris will help to increase the efficiency of existing stormwater management facilities.*
- Encourage compliance with new legislation that requires the New Jersey Department of Transportation to address stormwater management issues on state highways, including US Route 9, NJ Route 35, NJ Route 37, NJ Route 70, NJ Route 72, NJ Route 88 and NJ Route 166.
  - *Addressing stormwater management issues along highways will help to minimize their impacts, and increase their safety. This is particularly important as highways generate stormwater runoff, and may serve as evacuation routes during emergencies.*

2013 Multi-Jurisdictional All-Hazard Mitigation Plan

Ocean County has prepared a Multi-Jurisdictional All-Hazard Mitigation Plan. At the time of the preparation of this Strategic Recovery Planning Report, the plan has not been formally adopted. The assessment of the 2013 Multi-Jurisdictional All-Hazard Mitigation Plan has, therefore, been completed with the draft plan, which was submitted by the county's consultant on December 5, 2013. It is anticipated that Ocean County and each of the 33 municipalities within it will adopt the plan. Representatives from Lacey Township (incl., its clerk, director of community development, emergency management coordinator and municipal engineer) were involved throughout the plan development process.

The key purposes of the Multi-Jurisdictional All Hazard Mitigation Plan are: to provide a blueprint for saving lives and reducing property damage from the effects of future natural and man-made disasters in Ocean County; and, to improve community resiliency following disastrous events. In addition, the Multi-Jurisdictional All Hazard Mitigation Plan also fulfills state and federal legislative requirements related to local hazard mitigation planning, and opens door to pre- and post-disaster grant funding.

The Multi-Jurisdictional All Hazard Mitigation Plan is comprehensive in scope and, in addition to examining the

county's geography and natural environment, economic assets, and population, land use, and built environment characteristics, includes a detailed risk assessment. Among the risks contemplated by the Multi-Jurisdictional All Hazard Mitigation Plan are: natural hazards, such as coastal erosion, drought, earthquakes, extreme temperature, flooding, storms (i.e., hurricanes, tropical storms, and nor'easters), tornadoes and windstorms, wildfires, and winter storms (i.e., heavy snowstorms and blizzards, and sleet and ice storms); human-made hazards, such as hazardous materials, nuclear incidents, transportation accidents, urban fire and explosion, and utility interruption; and, climate change hazards associated with sea level rise.

Based on the results of the Multi-Jurisdictional All Hazard Mitigation Plan's risk assessment, Lacey Township has an elevated risk of floods, storms, utility interruptions, wildfires, sea level rise, transportation accidents, urban fires and explosions, nuclear incidents, tornadoes and windstorms, and earthquakes, as compared to the rest of Ocean County. The level of risk posed by winter storms, extreme temperatures, coastal erosion, and drought in Lacey Township is equivalent to that of Ocean County as a whole.

The Multi-Jurisdictional All Hazard Mitigation Plan outlines a mitigation strategy that is centered on the following goals and objectives:

- Encourage sustainable development to protect people, property, community resource and the environment from natural and human-made disasters.
  - Meet and exceed minimum standards of the National Flood Insurance Program.
  - Manage building code, land use code, ordinance and other planning mechanisms to prevent and mitigate the impact of disasters on people and property.
  - Improve information available for mitigation planning.
  - Coordinate and increase applications for federal and state grant programs.
  - Integrate and leverage other planning mechanisms from: neighboring jurisdictions; local, county and regional organizations; and, state partnerships to implement the plan.
  - Improve shelter management.
- Build and rebuild structures and infrastructure to protect people, and to reduce impacts of future disasters.
  - Increase the number of residential properties protected from hazards.
  - Increase the number of community resources and amount of infrastructure protected from hazards.
  - Improve the ability of critical facilities and infrastructure to safely operate during storms and utility interruptions.
  - Improve evacuation capability.
- Protect and restore the natural environment to support disaster resiliency.
  - Improve the health of natural systems to safely and naturally accommodate flooding and wildfire.

  - Improve the health of natural systems used to protect residential properties and other community resources.
  - Plan for increased open space in the most vulnerable areas.
  - Promote appropriate urban-wild land interface for wildfire mitigation.
- Promote education, awareness and outreach before, during and after disaster.
  - Improve and expand information and opportunities for input available by television, radio, websites, social media, newsletters, and meetings.
  - Increase participation in mitigation programs, including the Community Rating System, StormReady, and FireWise programs.
  - Tailor timely messages for audiences, including children, parents, community groups, universities, seniors and other groups.
  - Improve alert and warning systems.

In addition to the preceding mitigation strategy, the Multi-Jurisdictional All Hazard Mitigation Plan outlines the following actions for Lacey Township:

- Continue to enforce building codes.
- Continue to participate in the National Flood Insurance Program.
- Develop an AM radio station.
- Elevate residential properties.
- Implement erosion control-related projects.
- Implement flood control-related projects.
- Implement generator-related actions.
- Participate in the FireWise program.
- Participate in the Community Rating System program.
- Maintain and improve drainage facilities.
- Maintain and improve information on the Internet (e.g., on the township website and social media outlets).
- Obtain new and improve existing warning systems (e.g., Nixle and Reverse 911).

The mitigation strategy and municipal actions that have been outlined in the Multi-Jurisdictional All Hazard Mitigation Plan are generally supportive of and promote Lacey's recovery from the effects of Hurricane Sandy, and the reduction of vulnerabilities to future storms.

2008 Comprehensive Farmland Management Plan

The overall goal of the 2008 Comprehensive Farmland Management Plan is to support the promotion and retention of Ocean County's agricultural industry through farmland preservation. This is primarily done through a variety of techniques, including: purchase of development easements; donation of development easements; fee-simple acquisition of farmland; and, other techniques.

According to the 2008 Comprehensive Farmland Management Plan, Lacey Township has approximately 213 acres of farmland-assessed property. However, no portion of Lacey Township is

located within an Agricultural Development Area. Agricultural Development Areas are outlined in the 2008 Comprehensive Farmland Management Plan, and are areas where agricultural uses are preferred. The 2008 Comprehensive Farmland Management Plan specifies that the county's future farmland preservation efforts will focus on its designated Agricultural Development Areas.

As a result of the above, Lacey Township will not be a focus of the future farmland preservation program that is envisioned by the 2008 Comprehensive Farmland Management Plan. However, much of Lacey's existing farmland is located within the New Jersey Pinelands Commission-designated preservation area, and its already-limited development potential makes it less attractive than other areas for conversion to a non-agricultural use. Nonetheless, it is important to note that retention and expansion of agriculture in Lacey Township, and Ocean County as a whole, is generally supportive of reducing vulnerabilities to storms. Indeed, agricultural lands typically have a very low amount of impervious cover, and, consequently, support the infiltration of stormwater.

Sandy's Impacts on the Township

The areas of Lacey Township that are situated to the east of US Route 9 were most impacted by Hurricane Sandy. Indeed, among the most impacted areas were Bayside Beach, Lanoka Harbor, Riviera Beach, Sunrise Beach, Forked River Beach, and Parker's Point. These areas received up to six feet of floodwater. They were also impacted by: storm-generated debris, which impeded the proper functioning of drainage structures and created roadway obstacles; and, wave action, which caused damage to a waterfront park in Forked River Beach.

Flooding and wave action were generally not a problem in the areas of the township that lie to the west of US Route 9. Damage from wind, however, did occur. There were incidents of trees falling on homes and roadways.

The following subsections further describe the full range of Hurricane Sandy's impacts on the Township. Specifically, they examine the hurricane's specific impacts on: residential structures; local businesses; parks; the Oyster Creek Nuclear Generating Station; electrical service; sewer and water service; and, roadways.

Impacts on Residential Structures

Hurricane Sandy impacted a total of 652 homes in Lacey Township. Of the impacted homes, 545 sustained major damage (i.e., units sustained between $8,000 and $28,000 in damage). A total of 107 units sustained severe damage (i.e., units sustained more than $28,000 in damage).

The damaged homes were located in the following census tracts:

- Census Tract No. 34029732103, where 22 percent of households were affected with major or severe damage
- Census Tract No. 34029732104, where 18 percent of households were affected with major or severe damage

- Census Tract No. 34029732101, where 13 percent of households were affected with major or severe damage

Census tracts with major or severe damage are shown in Figure 4 (located on the next page).

Critical infrastructure in Lacey Township is mapped in Figure 5 relative to the flood hazard area and shows most of the key facilities (such as town hall, police station, fire stations, schools, etc.) are located west of Route 9, away from the flood hazard areas.

Figure 2: Damage to Residential Property (1 of 2)

Figure 3: Damage to Residential Property (2 of 2)

Impacts on Local Businesses

Hurricane Sandy caused damage to a total of approximately 1,095 businesses in Lacey Township. It is important to note that in addition to the significant value of building and property damage, disruption of operations resulted in additional financial losses.

Figure 4: Census Tracts with Major or Severe Damage to Residential Properties

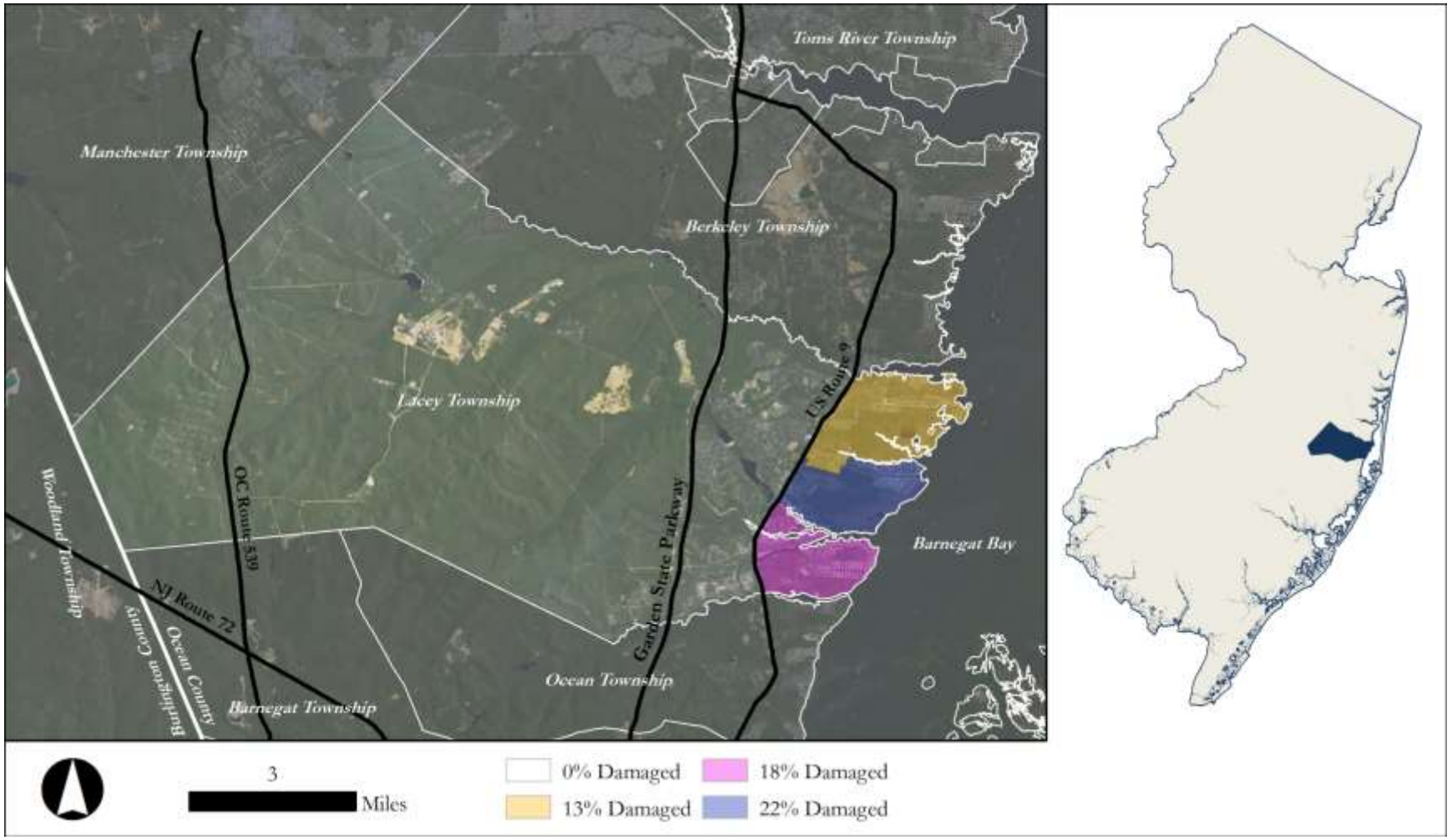
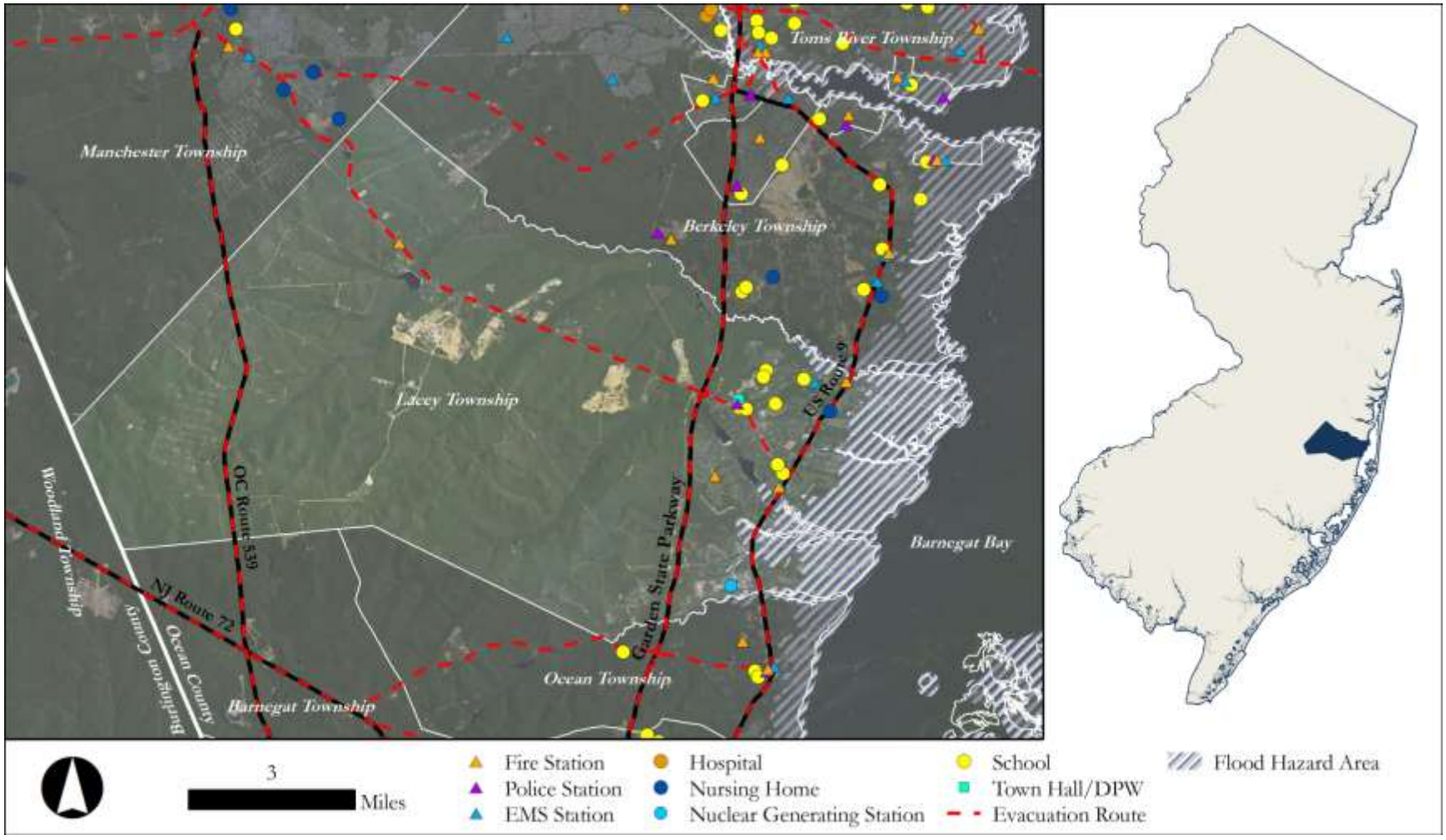


Figure 5: Critical Infrastructure



Impacts on Roadways

Approximately 175 roadways in Bayside Beach, Lanoka Harbor, Riviera Beach, Sunrise Beach, Forked River Beach, and Parker's Point were flooded to depths of up to six feet. Flooded roadways were impassable and barricaded.

In addition to flooding, storm-generated debris (e.g., from damaged piers, buildings, power lines, and trees) littered and blocked roadways and roadway drainage structures. This was a problem in flooded and unflooded areas of the township, and severely impacted emergency response and cleanup efforts.

Impacts on Communications

Municipal utility workers use cell phones to communicate with one another while in the field. Hurricane Sandy disrupted cellular networks during the storm, thereby causing communication problems. This issue was corrected shortly after the hurricane.

Impacts on Oyster Creek Nuclear Generating Station

Oyster Creek Nuclear Generating Station flooded during Hurricane Sandy. Waters rose to 7.4 feet inside of the station, but the reactor was offline for regularly scheduled maintenance when Hurricane Sandy struck. The facility sustained no damage, and is scheduled for closure at the end of 2019.

Impacts on Parks

Hurricane Sandy caused significant damage to Bayfront Park, which is located off of Beach Boulevard in the area of the township that is known as Forked River Beach. The damage to the park is summarized below:

- Shoreline Protection Devices
  - The park's shoreline protection devices (viz., shoreline stone and riprap) were displaced or washed away.
- Asphalt Walkway
  - The park's 575-foot long asphalt walkway was washed away.
- Playground Equipment
  - The park's playground equipment was also continuously submerged with floodwaters during the hurricane. This resulted in excessive corrosion and compromised structural integrity. They playground equipment was also damaged by storm-generated debris, and floodwaters washed away mulch from the playground area.
- Wooden Walkway
  - Flooding resulted in the washing away of a 320-foot long wooden walkway from the playground area.
- Gazebo
  - A wooden gazebo with a diameter of 15 feet was washed away.

- Parking Lot
  - The crushed stone surface of a parking lot was washed away.
- Site Amenities
  - The park's tables, benches, and trash receptacles were washed away.
- Osprey Nest
  - The park's osprey nest was washed away.
- Site Amenities
  - The park's tables, benches, and trash receptacles were washed away.

Disruption of Electric Service

Hurricane Sandy caused disruption to electric service in all parts of Lacey Township. This impacted residential properties, local businesses, the township's communication networks, and pump stations.

The disruption of electrical service resulted in the needed use of generators at such locations as: the municipal building to provide power to phone lines; the police department to operate the emergency operations center and related emergency equipment; and, at the public works department to power its fuel pumps, maintenance shop, and office. Generators were not available at the public schools.

Generator use at the aforementioned locations was discontinued on November 2, 2012, after a combined total of 244 hours of usage had been logged. Other areas of the township, however, remained without power for up to approximately two weeks. Flooding and storm-generated debris limited the means to provided temporary power.

Disruption of Water and Sewer Service

Pump stations throughout the township were offline for approximately 12 hours due to lack of power. There was no backflow of sewerage into the system. There was, however, seepage of seawater into the system due to flooding.

Flooded roadways and debris restricted access to pump stations, as well as the means to provide temporary power by generators or other means. In addition, floodwaters caused damage to more than 3,000 water meters and outdoor electric cabinets at pump stations.

There was no interruption or contamination of the potable water system. All wellheads of Lacey Township Municipal Utilities Authority are located to the west of US Route 9.

Vulnerabilities and Opportunities

Discussed below are the vulnerabilities that have been exacerbated by Hurricane Sandy, and the opportunities it created.

Vulnerabilities Exacerbated

Hurricane Sandy exacerbated the vulnerabilities posed by the low elevation of residences, businesses and certain equipment located

in areas of Lacey Township that were flooded by up to six feet of water. Vulnerabilities exacerbated by the storm were:

- The loss of power throughout the township exposed residents to dangerously cold nighttime temperatures;
- The loss of communication impacted emergency and municipal personnel, including impacting the effectiveness of immediate response and recovery efforts;
- Flooding of roads hindered the ability of emergency vehicles to respond to emergency calls;
- The bayfront park's defense against storm surge; and
- Resiliency of water and sewer infrastructure.

Opportunities Created

Hurricane Sandy has provided Lacey Township with an important learning opportunity, and its impacts demonstrate that the township may become more resilient to future hurricanes and storms doing the following:

- Promoting public awareness of the importance of hazard mitigation and the need to develop resiliency;
- Focusing the attention of public entities on issues, such as flooding, high winds, and vulnerabilities;
- Encouraging regional solutions to flood- and storm-related impacts;
- Ensuring that future capital projects are designed and constructed to incorporate features that are resilient to storm- and hurricane-related impacts; and
- Encouraging/supporting the use of sustainable development techniques and green building design in future development and redevelopment.

Opportunities have been created for the municipality to elevate equipment, structures and facilities above the flood hazard levels and construct more resilient capital facilities and thereby promote a more sustainable infrastructure. Opportunities have also been created for homeowners to elevate their homes above flood levels and reduce the potential for private property damage and increase safety. These future actions will increase long term community resiliency.

Status of Recovery Efforts

Lacey Township responded to the impacts of Hurricane Sandy by doing the following:

- Evacuated stranded residents;
- Barricaded flooded roads and hazardous areas;
- Patrolled affected neighborhoods;
- Removed storm-generated debris from affected areas;
- Felled trees that had not were at risk of falling (e.g., certain trees that were at an angle of 30° or greater after Hurricane Sandy were felled in order to minimize risk of falling and disturbing power lines);
- Connected portable generators at the municipal building, police department, public works department, and at pump stations

- Inspected flooded and damaged buildings for structural integrity, the status and safety of electrical and plumbing systems, and health and safety compliance;
- Stabilized the shoreline and made temporary repairs at Bay front Park. Permanent repairs have not commenced.
- Allowed the curbside disposal of household items, including furniture and clothing, but excluding construction debris;
- Fast-tract variance application procedures for rebuilding on pre-existing, non-confirming lots;
- Permitted the use of recreational trailers as temporary residences for displaced storm victims. Additionally, the township provided no-fee zoning permits to authorize such use;
- Applied for FEMA grants to: install dedicated and elevated generators at all pump stations; elevate pump station electric cabinets; and, install 3,000 waterproof water meters; and,
- Held a public information session for township residents at the Lacey Township Middle School on March 11, 2013. A host of municipal, state and federal officials were present and available to assist residents with recovery questions, issues and concerns. Among those present were representatives of the township building department, assessor's office, FEMA grants personnel, FEMA flood plain personnel, hope and healing experts, a liaison of the Governor's office, and representatives of Congressman Runyan's office.
- In addition Lacey Township has provided on its municipal website, recovery information to inform and advise residents
- Adopted the Super Storm Sandy Reconstruction Policy for Residential Structures. This policy helps to streamline the reconstruction process and avoid conflicts with zoning regulations. Specifically, it:
  - Permits structures on nonconforming lots that were damaged by Hurricane Sandy below the base flood elevation to be restored, rebuilt, raised, or demolished and rebuilt in a conforming location, without the need for a variance if:
    - The restored, rebuilt, raised, or relocated structure does not exceed requirements for maximum lot coverage, building height, or required setbacks;
    - New structures are built in accordance with the construction standards of FEMA, notwithstanding any state or local rules and regulations to the contrary;
    - Legal notice is given to property owners within 200 feet;
    - The use conforms with the zone district regulations;
    - Preexisting, nonconforming accessory buildings or structures are brought into compliance (if not, a variance shall be required); and,
    - All other applicable procedural requirements are met.

Going forward, the township will continue its recovery efforts by doing the following:

- Improving drainage facilities on:
  - Laurelwood Drive;
  - Falkenburgh Avenue;
  - Lane Place;
  - Davis Avenue;
  - Richard Place;
  - William Street; and,
  - John Street;
- Strengthening riprap shoreline protection in Bayfront Park; and,
- Assist property owners to elevate residences that have suffered severe flooding and damage as a result of Hurricane Sandy and are included on the "Repetitive Loss" and "Severe Repetitive Loss" lists of the Federal Emergency Management Agency (FEMA).

In addition to the above and with regard to future development, it is important to note that there are no unconstructed approvals in the flood hazard areas of the township.

Rebuilding Approaches That Will be More Resistant to Damage from Future Storms

The recovery efforts previously mentioned all serve as rebuilding approaches that Lacey Township is taking to be more resilient in the future. They serve to protect residents from the dangers of potential storm events by providing a solution to damaged services. The Township may also consider the following rebuilding approaches in their recovery efforts:

- Rebuilding and renovating homes and structures in accordance with flood hazard and construction codes;
- Elevating at-risk key community facilities above the base flood elevation;
- Educating residents and builders about flood hazards and flood-resistant provisions in codes; and
- Protecting natural areas that currently buffer developed areas from storm damage and storm surge.

Recommended Actions

To prevent damage from future hurricanes and storms, the Strategic Recovery Planning Report recommends that Lacey employ storm-resistant building strategies in all future municipal construction in areas to the east of the Garden State Parkway. Examples of storm-resistant building strategies include: the use of steel, concrete, or wooden pilings to elevate buildings and protect them from storm surge; reinforcing construction so as to provide increased strength and wind load resistance; designing buildings to be aerodynamic; using wind-resistance doors and windows; and, using flexible (e.g., wood) or high-strength (e.g., reinforced concrete) building materials. Other examples of storm-resistant building strategies abound.

Storm-resistant infrastructure is recommended and would include retrofitting municipal facilities to meet flood hazard protection standards, elevation of electrical and mechanical equipment

above flood hazard levels and protection or upgrading of all below grade equipment.

Green infrastructure to mitigate future storm events is recommended. Where feasible, this would include a decentralized storm water management practices such as green roofs, trees, rain gardens, and permeable pavement

In addition to the use of storm-resistant building strategies, the Strategic Recover Planning Report recommends that Lacey take the actions that are detailed in Table 1. These actions have been developed in consultation with the officials from a variety of township offices, and are intended to promote recovery from Hurricane Sandy and long term resiliency to future hurricanes and storms. Meetings were conducted with public officials on December 9 and 18, 2013. In addition this document was prepared for and adopted at a Township Committee meeting on March 13, 2014, which included a public portion that was open to public input. The recommended actions are classified in order of priority, with: short-term priority meaning that the particular action should be implemented within 12 months; and, long-term priority meaning that the particular action should be implemented within 36 months. Please note, however, that the prioritization could change or shift depending on available funding or other circumstances.

The information that is provided in Table 1 is supplemented by Appendix A, which provides a listing and description of potential funding sources for implementation of the recommended actions.

Based on the priorities in Table 1, the Township will be seeking additional funding from the NJ Department of Community Affairs as part of the Post Sandy Planning Assistance Grant Program (PSPAGP) for the following activities eligible for funding under the program:

- Develop an Emergency Management Plan;
- Automating and updating its system for processing zoning and construction permits.
- Creating a GIS database and low elevation aerial mapping to support future planning efforts; and
- Create and adopt a Floodplain Management Plan as an element of the Master Plan.

Table 1: Actions to Promote Recovery

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
Priority Actions					
Develop a municipal emergency operations management plan that includes provisions for: a community emergency response team; a township-wide evacuation system; emergency communication protocol; and, an emergency operations center. • **Gather stakeholders** • **Prepare draft plan** • **Review draft plan** • **Adopt the plan**	Hurricane Sandy required an immediate emergency response and underscored the need for efficient communication. The experience of this response demonstrates that there is room for improvement.	Developing an emergency operations management plan will help to improve efficiency of future emergency responses in the township.	Medium	✔	
Automate and expedite processing of building and zoning permits. • **Determine needs** • **Evaluate software options and other tools** • **Make necessary purchases**	Hurricane Sandy placed a significant burden on township resources and personnel.	Increasing the efficiency of permit review and issuance will increase the efficiency of recovery, and promote resiliency.	Low	✔	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
Develop a municipal Geographic Information System (GIS) to support future planning efforts. • **Map borough-owned property.** • **Map low elevation, flood-prone areas.** • **Map the sewer and water systems.** • **Train staff in use.** • **Integrate resulting GIS into municipal operations.**	Hurricane Sandy caused extensive damage in the township, and resulted in the need for a multi-faceted recovery.	GIS can increase the efficiency of planning and engineering, and, thereby, promote resiliency to future storms.	Medium		✔
Adopt a master plan element for floodplain management. • **Engage public and private stakeholders** • **Develop a plan** • **Adopt and implement**	Hurricane Sandy caused extensive flooding.	Enhanced floodplain management will promote sustainability and resiliency to future storms.	Low	✔	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
Additional Actions					
Enhance pump stations. • **Install elevated generators.** • **Elevate electric cabinets.**	Pump stations throughout the township were offline for approximately 12 hours due to lack of power.	Proper sanitation proper sanitation is vital to public health and safety. Operational sewer systems ensure continuance of business operations.	Medium	✔	
Secure critical infrastructure. • **Install waterproof water meters.** • **Install rainfall stoppers under manhole covers.**	Water meters were damaged during Hurricane Sandy. Entry of stormwater to the sewer system via manholes increased the burden on the sewer system.	Water meters promote system efficiency. Rainfall stoppers minimize entry to the sewer system, and promote groundwater infiltration.	Medium	✔	
Provide generators at public schools. • **Install elevated generators.**	Schools lost power and were nonoperational.	Securing the operation of school buildings minimizes disruption to the educational system. In addition, schools can serve as shelters in extreme emergencies.	Medium	✔	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
Partner with key institutions (e.g., Red Cross, churches) to develop an emergency shelter for township residents. • **Develop partnerships.** • **Examine potential locations.** • **Develop an emergency shelter operation plan.**	Hurricane Sandy displaced Lacey Township residents.	Adequate shelter will help to ensure safety of township residents during emergency situations.	Low		✔
Develop a plan to make communication facilities and infrastructure more robust and storm-resistant, including by providing generators at township antennas. • **Provide generators at antennas** • **Secure antennas** • **Invest in a radio system for use by police and utility workers**	Hurricane Sandy impaired communication equipment.	Pump stations throughout the township were offline for approximately 12 hours due to lack of power.	Medium	✔	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
Explore opportunities to participate in the Community Rating System. • **Identify funding sources.** • **Evaluate benefits.** • **File necessary applications.**	Hurricane Sandy caused extensive flooding. The Community Rating System promoted floodplain management.	Enhanced floodplain management will promote resiliency to future storms.	Low		✔
Incorporate the principles of the 2013 Multi-Jurisdictional All Hazard Mitigation Plan into the Lacey Township Master Plan. • **Identify needs and opportunities.** • **Engage public and private stakeholders.** • **Draft new language.** • **Revise and adopt plan.**	Hurricane Sandy mobilized police, emergency response, and utility personnel. In doing so, it exposed areas that need improvement.	Incorporating the principles of the 2013 Multi-Jurisdictional All Hazard Mitigation Plan into the Lacey Township Master Plan will help to ensure that the future development and operations of the township occurs in a consistent manner. This will increase safety and promote resiliency to future storms.	Medium	✔	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
Secure funds to raise buildings above baseline flood elevation. • **Investigate funding opportunities.** • **Identify desirous property owners.** • **Secure legal agreements.** • **Disperse funds.**	Hurricane Sandy caused extensive damage to buildings constructed below the baseline flood elevation.	Raising buildings above the baseline flood elevation will minimize damage during future storms, addresses sustainability and thereby promoting long term community resiliency.	High	✔	
Preserve environmentally sensitive lands to maximize stormwater infiltration and promote resiliency. • **Identify sites.** • **Secure funding and agreement.** • **Permanently preserve sites.**	Sandy caused extensive flooding and placed a significant demand on the township's sewer and water system.	Promoting stormwater infiltration will help existing sewer infrastructure to cope with increased burden during storms. This recommendation promotes green infrastructure.	High		✔

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
Implement permanent shoreline stabilization measures at the terminus of Laurel Boulevard in Forked River Beach. • **Investigate options.** • **Engineer solutions.** • **Obtain necessary approvals.** • **Implement plans.**	Hurricane Sandy damaged extensive shoreline areas in Forked River Beach.	Shoreline stabilization will help to minimize damage from future storms.	High	✔	

Appendix A: Potential Funding Sources

Appendix A: Potential Funding Sources

Homeowner Resettlement Program: A total of $180,000,000 in federal funds has been allocated to support the Homeowner Resettlement Program, which was designed to encourage homeowners to remain in the nine counties (Atlantic, Bergen, Cape May, Essex, Hudson, Middlesex, Monmouth, Ocean, and Union) that were most severely impacted by Hurricane Sandy. The funds may be used for any non-construction purpose that assists the homeowner to remain in, or return to, the county in which they lived prior to Hurricane Sandy. The grant amount is $10,000. This is a Community Development Block Grant Disaster Recovery Program.

Homeowner Reconstruction, Rehabilitation, Elevation, and Mitigation Program: A total of $600,000,000 in federal funds has been allocated to help eligible primary homeowners repair or rebuild their Hurricanes Sandy-impacted homes. The Homeowner Reconstruction, Rehabilitation, Elevation, and Mitigation program will assist homeowners in rehabilitation, reconstruction, elevation, and mitigation so that they can do the necessary work on their homes to make them livable and comply with requirements for structures located in flood plains. The program provides grants to eligible homeowners of up to $150,000. The Homeowner Reconstruction, Rehabilitation, Elevation, and Mitigation program is intended to "fill the gap" between the total cost of repairs and all other funds the owner has received to repair the structure. This is a Community Development Block Grant Disaster Recovery Program.

Landlord Rental Repair Program: This program provides up to $50,000 per unit in grant funding assistance to eligible owners of rental properties with up to 25 units. The Small Rental Properties/Landlord Rental Repair program will provide funds to help rental property owners restore their properties through rehabilitation, reconstruction, elevation, and mitigation. The program is intended to help existing owners restore their properties and receive reimbursement for eligible building expenses that have been incurred by owners prior to its implementation, but which have not paid for by other programs. This is a Community Development Block Grant Disaster Recovery Program.

Neighborhood Enhancement Program: This program provides funding to stabilize "threatened but viable" neighborhoods, through the creation of affordable housing. The program is intended to be a tool used by local plans to invest in and rebuild these communities. It funds the rehabilitation or reuse of abandoned, foreclosed, and vacant housing, structures, or lots, and addresses the shortage of affordable housing caused by the storm while returning blighted buildings to viability. The program provides zero percent loans to eligible entities that will create for sale or rental housing units through rehabilitation or redevelopment. Initial occupancy of the units developed under this program is restricted to households earning no more than 80 percent of the area's medium income, as defined by the United States Department of Housing and Urban Development. A total of $30,000,000 has been allocated to this program. This is a Community Development Block Grant Disaster Recovery Program.

Hazard Mitigation Grant Program — Elevation Program: This is a $100 million reimbursement grant program that has been established to assist homeowners to elevate their properties after Hurricane Sandy. The program provides up to $30,000 to eligible homeowners to elevate their primary, single-family residences. The New Jersey standard is to elevate residential structures one foot higher than the advisory base flood elevation. This reduces the risk of damage to the property and its contents in the event of major flooding. It may also provide a significant reduction in flood insurance premiums compared to a structure that is not elevated. This is a program of the Federal Emergency Management Agency (FEMA).

Post Sandy Assistance Grant: The Post Sandy Assistance Grant is intended to support long range planning for community redevelopment in the municipalities and counties that sustained damage from Hurricane Sandy. The program provides grants to hire licensed professional planners to address conditions that have been created or exacerbated by the storm, identify approaches to rebuilding that will be more resistant to damage form future storm events, and encourage sustainable economic growth. Complete details are available from the Office of Local Planning Services of the New Jersey Department of Community Affairs.

Small Business Administration Disaster Loan Program: The United States Small Business Administration provides low-interest disaster loans to homeowners, renters, businesses of all sizes, and most private nonprofit organizations. Disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate; personal property; machinery and equipment; and, inventory and business assets. As of February 2013, a total of $6,321,300 had been loaned to applicants in Lacey Township, including: 84 homeowners, which were loaned a total of $6,278,000; and, one business, which was loaned $43,300.