SOMERSET COUNTY

HAZARD MITIGATION PLAN

SOMERSET COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

FINAL PLAN UPDATE
JULY 2019

www.co.somerset.nj.us/hmp

APPENDIX K

Prepared by the Somerset County Mitigation Planning Committee

This appendix includes a copy of the Draft Flood Resiliency Framework.

DRAFT
SOMERSET COUNTY
FLOOD RESILIENCY FRAMEWORK

OCTOBER 2018

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ACKNOWLEDGEMENTS

Preparation of this document was accomplished through a joint effort of the Somerset County Planning Division and AECOM. Input was provided by some members of the Somerset County HMP Mitigation Planning Committee. The primary authors are Laurette Kratina, PP, AICP, Chief of Strategic Planning, Somerset County Planning Division and Anna Foley, Project Manager, AECOM. Assistance with final editing was provided by Walter Lane, PP, AICP, Director, Somerset County Planning Board and Adam Slutsky, Assistant Somerset County Engineer.

PREFACE

This draft document will serve as the basis of a new resiliency element to be added to the Somerset County Master Plan. The central component of the County Master Plan is the 1987 Master Plan document (available at the following link: https://www.co.somerset.nj.us/government/public-works/planning/master-plan. This document is comprised of the following plan elements: 1) Land Use, 2) Housing, 3) Circulation, 4) Environment and Open Space, 5) Capital and Public Facilities and 6) Utility Services. Several of these elements have been updated in whole, or in part, since 1987. Most recently, an update of the Housing Element was adopted in November 2017. The 1987 Land Use Management Map was substituted with a new County Investment Framework Map, which was adopted in October 2014. The most recent update of the Circulation Element was completed in 2012. An update of the County Parks, Recreation and Open Space Plan was accomplished in 2000, and is undergoing another update at this time as part of the County's Preservation Plan initiative. The new Preservation Plan will also include an update of the County's Farmland Preservation Plan and the addition of a new Historic Plan Element. A Comprehensive Economic Development Strategy (CEDS) and Trends and Indicators Report were adopted as elements of the County Master Plan in 2014 as well.

Hazard mitigation and resiliency themes have begun to be integrated into each of the County Master Plan elements that have been updated or prepared post-Superstorm Sandy, but it has become apparent that more needs to be done at both the County and local levels in light of the increasing frequency and severity of severe storms and other climate change impacts affecting the region. When the 5-year update of the Hazard Mitigation Plan (HMP) commenced in 2017, it was seen as an opportunity to strengthen the integration of hazard mitigation and resiliency strategies into land use and infrastructure plans, policies and investment decisions. The County Planning Board built into the HMP update process the development of a Flood Resiliency Framework that could serve as a resource and "tool kit" that could be used to update the HMP mitigation strategies at both the county and local levels; and show how flood resiliency can be integrated into local and regional land use and infrastructure plans, policies and programs.

Upon completion of the HMP update process, it is the County Planning Board's intention to refine the information that comprises the draft Flood Resiliency Framework Document contained in the HMP Appendix into a Flood Resiliency Element of the County Master Plan that includes information, resources and mitigation strategies specific to Somerset County that address its unique geographic, climate, hydrologic and environmental and development characteristics.

I. Purpose

Somerset County recognizes that there is a tremendous amount of information and data from countless sources regarding flood hazards and flood hazard mitigation measures, and has therefore developed this Draft Flood Resiliency Framework (FRF) to serve as a centralized planning resource for County and municipal Mitigation Planning Committee (MPC) members who are engaged in the Hazard Mitigation Plan (HMP) update process and ongoing HMP monitoring, evaluation and implementation activities related to riverine flood hazard mitigation and flood resiliency. This document also has broader applicability as a resource for informing land use and infrastructure planning, policy and investment decisions.

The purpose of this Draft Flood Resiliency Framework is to:

- Provide data and information about changing flood vulnerabilities and risk factors due to population, land use and climate trends;
- Identify potential site-specific and area-wide strategies for reducing short-, mid-, and long-term flood risks and exposure; and
- Serve as a resource for updating mitigation strategies in the Multi-Jurisdictional Hazard Mitigation Plan for Somerset County and for integrating flood resiliency considerations into regional and local land use and infrastructure plans, policies and investment decisions.

> **Flood Resilience: The capability to mitigate, prepare for, respond to, and recover from nuisance as well as significant flood hazard events resulting in minimum damage to social well-being, the economy and the environment.**

This Draft Flood Resiliency Framework (FRF) begins by providing background information on the flood hazard and flood risks in Somerset County derived from the information provided in updated Section 5 of the HMP. Next, it presents the County's flood resiliency goals and objectives. Thereafter, the FRF presents information regarding how existing plans, policies, programs, regulations and investments can be leveraged for flood resiliency. Information is distributed across five major topic areas: (1) FEMA NFIP, FMA, and CRS Participation; (2) NJ State Stormwater Management Requirements; (3) Land use and Development Plans, Policies and Regulations; (4) Academic and Non-profit Initiatives; and (5) Maximizing Infrastructure and Utility investments. Within each topic area, background information and an overview of existing resources, along with links to more detailed information is provided.

The Draft FRF includes a convenient matrix or FRF Strategies "Toolkit" that summarizes strategies that can be pursued to improve flood resilience and links them to each of the FRF's goals and objectives. It identifies potential solutions to various flood-related problems aimed at

mitigating flood damage and strengthening community resiliency. The Draft FRF and associated Toolkit was provided to municipal hazard mitigation officers (MHMOs) and other members of the MPC for use as a resource during the most recent update of the Multi-Jurisdictional Hazard Mitigation Plan, and have been promoted as a resource for general land use and infrastructure planning purposes by the County Planning Board.

II. Background Information

1. Overview of Flood Risks in Somerset County

Somerset County, NJ lies within the Northeast region of the United States, which has seen a greater recent increase in extreme precipitation than any other region in the United States. "The region experienced more than a 70% increase in the amount of precipitation falling in 'very heavy events' (defined as the heaviest one percent of all daily events) between 1958 and 2010. The frequency of these heavy downpours is projected to continue to increase over the remainder of the century. (U.S. Climate Resilience Toolkit) Furthermore, the Northeast is located within "Hurricane Alley", an area of warm water stretching across the Atlantic Ocean within which many Hurricanes form. As a result, Somerset County has a history of year-round flooding, with the most extensive flooding occurring in late summer and fall, and to a lesser extent during winter months. Riverine floods are the most common type of flooding in Somerset County. They occur along stream channels, and include overbank and flash flooding. According to the NOAA Storm Events Database, average, Somerset County has experienced between six and seven flood events each year since the early 1990's.

Dam flooding and ice jam flooding are also of concern for Somerset County. Going back as far as the early 1900's, Somerset County has experienced less than one ice jam flood and/or dam flood event per year.

An overview of each flood type is presented in the remainder of this section. Additional details can be found in Section 5.4.3 of the Hazard Mitigation Plan.

Riverine Flooding

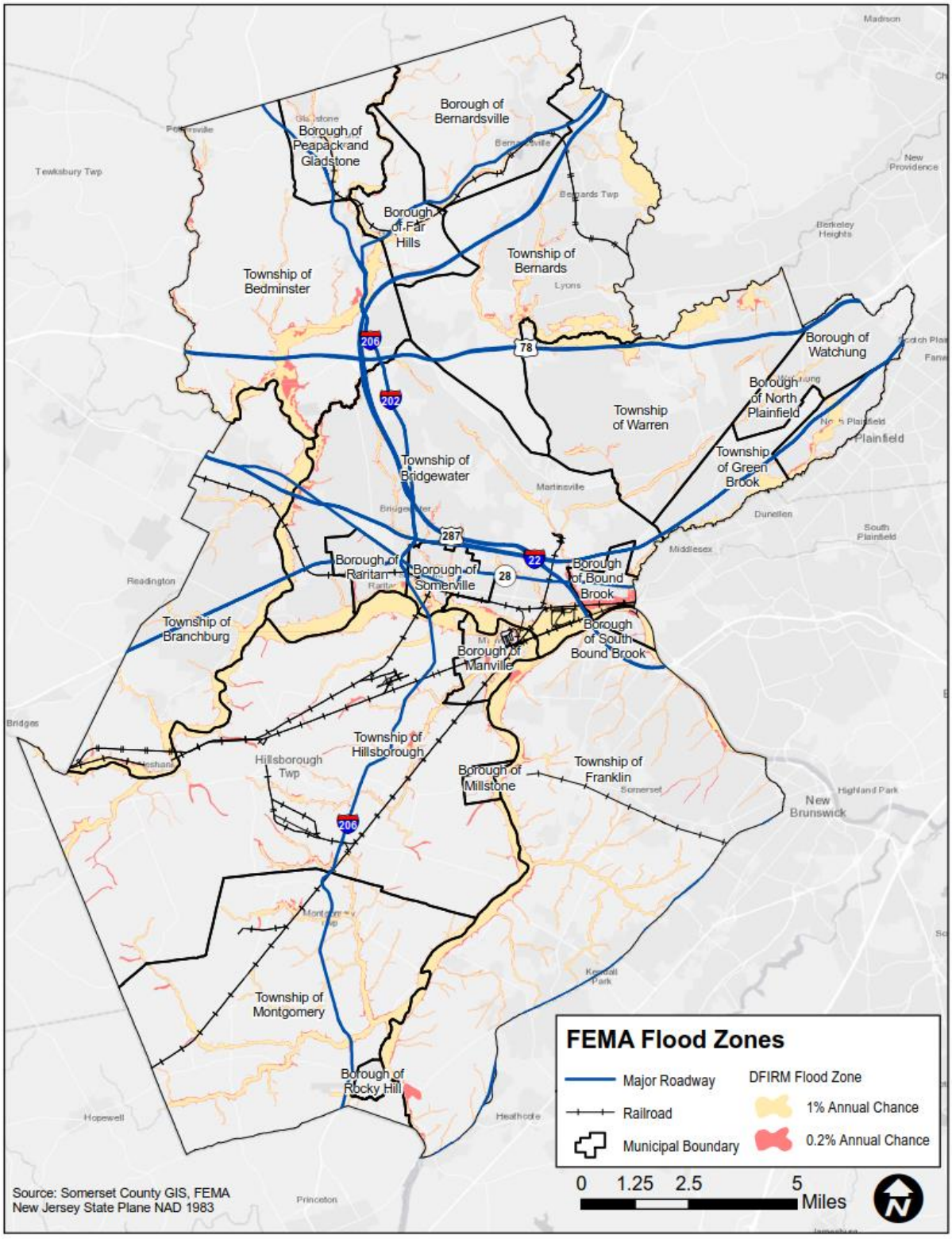
FEMA defines flood hazard areas as areas that are shown to be inundated by a flood of a given magnitude on a map. Flood hazard areas are delineated on FEMA's Flood Insurance Rate Maps (FIRM), which are official maps of a community on which the Federal Insurance and Mitigation Administration has indicated both the Special Flood Hazard Areas (SFHA) and the risk premium zones applicable to the community. These maps identify the SFHAs; the location of a specific property in relation to the SFHA; the base flood elevation (BFE) which is defined as the 1% annual chance or 100-year flood designation at a specific site; the magnitude of a flood hazard in a specific area; and locate regulatory floodways and floodplain boundaries (1% and 0.2% annual chance (500-year floodplain boundaries)). It is important to recognize that flood risk is not limited to the NFIP delineated flood hazard areas and flooding can and does occur outside of mapped floodplains.

The land area inundated by the floodwaters of the base flood is the SFHA on a FIRM. It is the area where the National Flood Insurance Program's (NFIP) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance (for federally-backed mortgages) applies. This regulatory boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities since all communities in Somerset County have maps showing the extent of the base flood and likely depths that will be experienced. The BFE describes the exact elevation of the water that will result from a given discharge level, which is an important factor used to estimate the potential damage that could occur in a given

area. A structure located within a 1% (100-year) floodplain has a 26-percent chance of suffering flood damage during the term of a 30-year mortgage. The 100-year flood is a regulatory standard used by Federal agencies and most states for administering floodplain management programs. The 1% (100-year) annual chance flood is used by the NFIP as the basis for insurance requirements nationwide. FIRMs also depict 500-year flood designations, which is a boundary of the flood that has a 0.2-percent chance of being equaled or exceeded in any given year.

In addition to FIRMs and DFIRMs (Digital FIRMs), FEMA also provides Flood Insurance Studies (FISs) for entire counties and individual jurisdictions. These studies aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. A FIS is a compilation and presentation of flood risk data, information and maps for specific watercourses, lakes, and coastal flood hazard areas within a community. The FIS report contains detailed flood elevation data in flood profiles and data tables, providing the basis for rating flood insurance policies and regulating development. Figure 1 illustrates the FEMA FIRM boundaries in Somerset County. Countywide, just over 30 square miles of land is located within the mapped FEMA SFHA (100-year floodplain).

Figure 1. Somerset County FEMA 1-Percent and 0.2-Percent Flood Zones

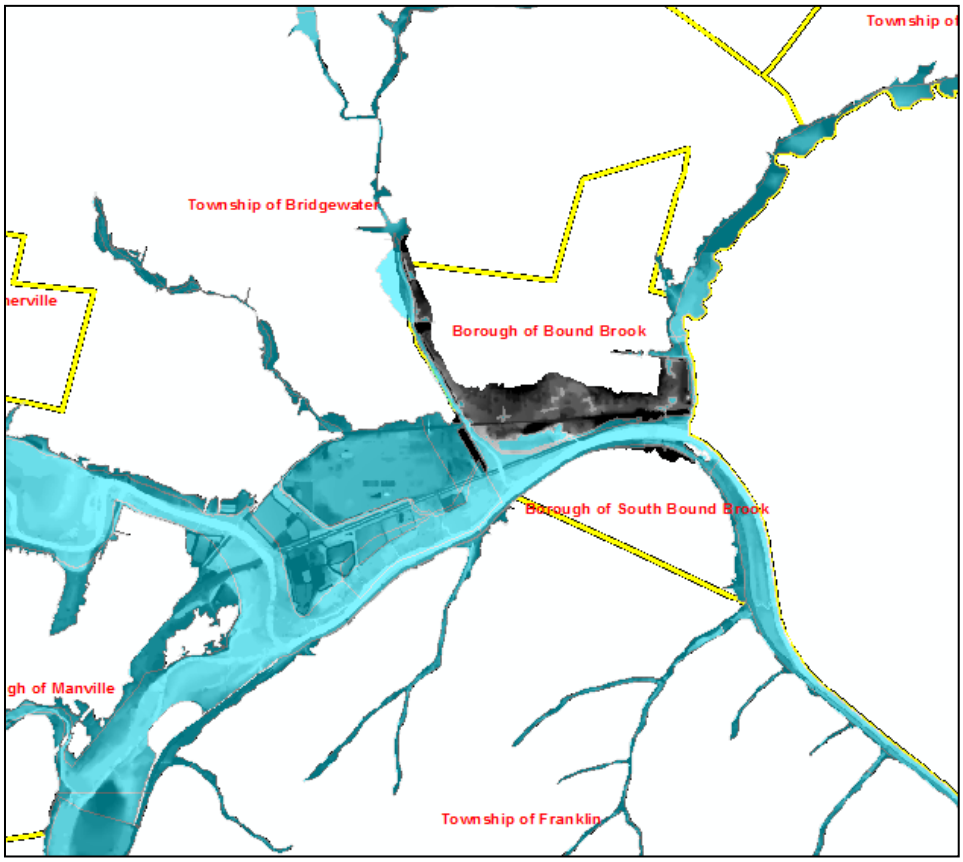


Source: Somerset County GIS; FEMA, 2016

The countywide FIS for Somerset County has been updated and is dated November 4, 2016.

The FIS states that no Letters of Map Revision (LOMRs) were incorporated for the November 4, 2016 FIS revision. Revised FIRM panels have been released as part of the National Flood Hazard Layer (NFHL) available through FEMA's Map Service Center which reflects the completion of the Green Brook Flood Control Project that resulted in the removal of large areas of the 100-year floodplain in the protected areas located mainly within the Borough of Bound Brook (see Figure 2).

Figure 2 – Changes in Flood Mapping due to Green Brook Flood Control Project



Source: FEMA DFIRM Maps, 2007 & 2016

Dam Breach Flooding

Dams are classified in terms of potential for downstream damage if the dam were to fail. The NJDEP assigns one of four hazard classifications to state-regulated dams in New Jersey. The classifications relate to the potential for property damage and/or loss of life in the event of a dam failure. They are:

- Class I (High-Hazard Potential) - Failure of the dam may result in probable loss of life and/or extensive property damage.
- Class II (Significant-Hazard Potential) - Failure of the dam may result in significant property damage; however, loss of life is not envisioned.
- Class III (Low-Hazard Potential) - Failure of the dam is not expected to result in loss of life and/or significant property damage.
- Class IV (Small-Dam Low-Hazard Potential) - Failure of the dam is not expected to result in loss of life or significant property damage.

There are a total of 17 dams located within Somerset County, and four have been designated as Class I dams with high hazard potential (see Table 1). Two of the four Class I dams have records of past breach flooding incidents. No new events have occurred since the plan's last update in 2014.

Table 1. High Hazard Dams in Somerset County

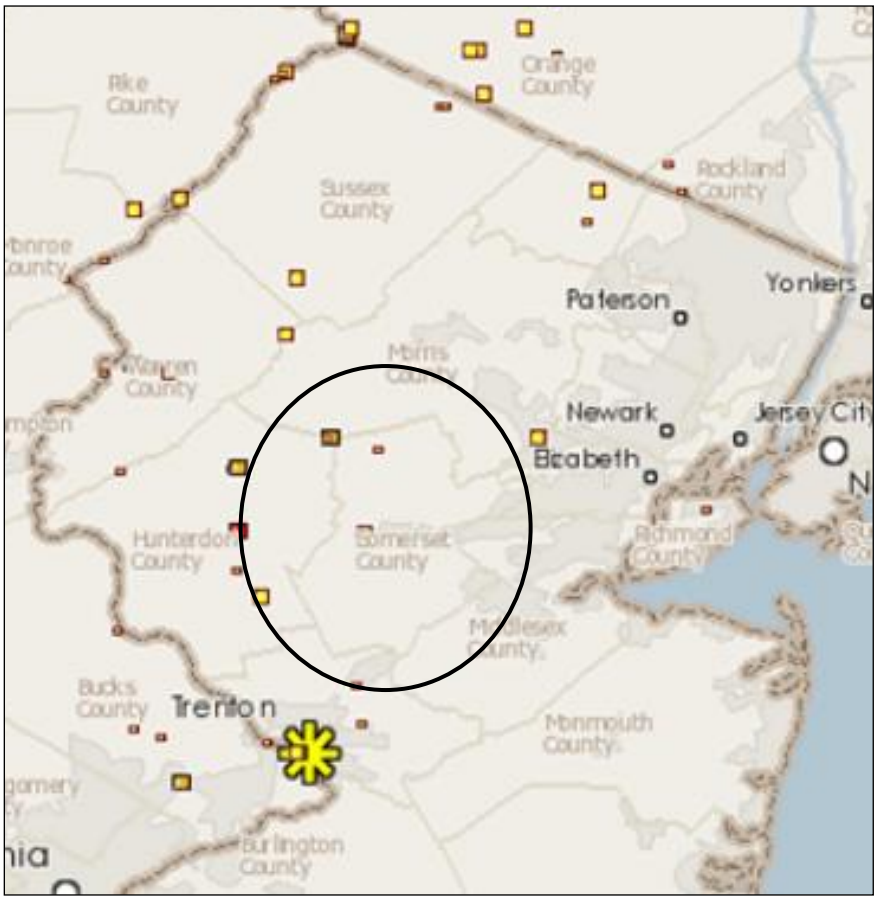
NID ID	Dam Name	Dam Type	Location	Main Purpose	Dam Height (ft.)	Dam Storage (acre-feet)	Dam Hazard Classification	Incident Date	Incident Description
NJ00372	West Branch Reservoir Dam	Earth Gravity	Bridgewater Township	Recreation	39	465	High	8/1/71	The dam was overtopped by flooding waters in the storm of August, 1971, resulting in considerable erosion of the downstream embankment.
NJ00373	East Branch Reservoir Dam	Concrete	Bridgewater Township	Recreation	32	77	High	No reported incidents	No reported incidents in the NPDP database.
NJ00767	Watchung Lake Dam	Earth Gravity	Watchung Borough	Recreation	19	175	High	9/16/99	The DIN indicates that the incident occurred during 9/16-17/99. Investigation on 9/20/99 revealed that the dam performed as designed and safely passed the flood. The peak of the floodwater came within two inches of flowing over the gabion protection on the right side of the dam. No flow was noted on the right abutment. Water did flow over the left abutment and down Stirling Road. Water flow from the concrete overflow spillway and that flowing in the groin of the dam resulted in a significant washout (6 to 8 feet deep along the toe of the dam at the left groin, exposing the entire concrete cutoff. Only minor undercutting (4 to 6 inches) of the concrete cutoff occurred. The remains in the bottom of this erosion consist of large boulders and stone. It was determined that the erosion does not pose a serious threat to the integrity of the dam and no emergency work would be necessary. The Township will need to obtain an engineer to design a proper repair to the toe of the dam.
NJ00362	Ravine Lake Dam	Rockfill Masonry	Peapack-Gladstone Borough	Recreation	45	320	High	No reported incidents	No reported incidents in the NPDP database.

Sources: USACE National Inventory of Dams Query Summary, 2018; NJDEP Bureau of Dam Safety, 2018.

Ice Jam Flooding

The Ice Jam Database, maintained by the Ice Engineering Group at the United States Army Corps of Engineers (USACE) Cold Regions Research and Engineering Laboratory (CRREL), currently consists of over 18,000 records from across the country. According to the USACE-CRREL, Somerset County experienced 14 historic ice jam events between 1780 and 2018 (Ice Engineering Research Group, 2018). No new events have occurred since the last version of the plan in 2014 (the most recent event of record occurred in February 2004 along the Raritan River). Ice jams have historically formed at various points along the North Branch Raritan, Lamington (Black), and Raritan Rivers (Ice Engineering Research Group, 2018). Locations of known historical ice jam events are indicated in Figure 3 below.

Figure 3 - Historic Ice Jams in Somerset County



Source: CRREL, 2018
Note: The black circle indicates the approximate location of Somerset County.

Previous Occurrences and Losses

According to NOAA's NCDC Storm Events Database, Somerset County experienced 171 flood events between January 1996 and December 31, 2017. According to NOAA, flood events include urban riverine and small stream flooding that commonly occurs in poorly drained or low lying areas, and are defined as any significant high flow, overflow or inundation by water which causes damage. They include flash floods, which are characterized by a rapid rise of water into

a normally dry area when intense rainfall results in a rapid surge of rising flood waters that adversely impact lives and property. Total property damages as a result of these flood events were estimated at over $655 million. Two deaths and 100 injuries were also reported.

Between 1954 and December 2017, the State of New Jersey experienced 28 flood-related FEMA disaster or emergency declarations. Seven of these 28 FEMA flood events resulted in Somerset County being declared a disaster area. No new flood disaster declarations have occurred since the last update of this plan in 2014.

Flood Damage Exposure

The Somerset County IT-GIS Division prepared a Tax Parcel Viewer Map APP that includes FEMA's Flood Insurance Rate Map (FIRM) data streamed directly from a web service provided by FEMA. This on-line map tool provides the general public with local government property tax and assessment information, which is supplemented with zoning and FEMA regulatory flood information. It can be used to determine whether a property part of a floodprone area. Floodprone areas include Floodways and Special Flood Hazard Areas (SFHAs and other floodplain categories shown on FIRM maps. It is intended to be used for general informational purposes only and is not suitable for site-specific decision-making. It can be found at the following link: http://arcg.is/0eLeuX :

Floodways: Regulated floodways are defined by FEMA as the channel of a river or other watercourse and adjacent land areas that must remain open to permit passage of the base flood. Floodwaters generally are deepest and swiftest in the floodway, and anything in this area is in the greatest danger during a flood. Communities must regulate development in floodways to ensure that there are no increases in upstream flood elevations. FEMA began incorporating Floodway Map information into FIRM Maps in 1986. The map included in Appendix FRF-5 shows which floodway areas countywide are urban versus non-urban. Urban land within the floodway is believed to be comprised of historical development that took place prior to the completion of the analyses through which regulatory floodways were defined. Development within the urban portions of the floodways in Somerset County may be at risk for experiencing flood damage. Lands are designated as urban or non-urban based on the New Jersey Department of Environmental Protection (NJDEP) 2012 Land Use / Land Cover GIS dataset. As of 2012, 961 acres or 5.9% of the Floodway countywide are shown as being "Urban", and 10,751 acres or 91.8% are shown as being "Non-Urban". New development within Floodways is prohibited by the NJDEP.

The County and its municipalities, through local and regional master plans, zoning ordinances and land use policies continue to discourage development and urbanization within the Floodway. Floodways areas identified by FEMA must be managed for the 1% annual chance flood event. These areas must be kept free of encroachments so that the 1% annual chance flood will not result in substantial increases in flood heights or cause increased flooding downstream. Communities officially adopt "regulatory floodways" in floodplain management ordinances and must complete encroachment reviews for all projects in these areas. Optimum floodplain management prohibits development of the floodway areas so that they can be reserved to carry floodwater.

100-Year Flood Hazard Areas: There is approximately $18.4 billion of building/contents within Somerset County that are exposed to the Base Flood (defined as the 1% annual chance flood or 100-year flood hazard area). This represents approximately 23% of the County's total general building stock replacement value inventory ($77.6 billion; see Section 4). The potential damage estimated to the general building stock inventory associated with the 1 % annual chance flood is greater than $775 million. The base flood is called the Special Flood Hazard Area (SFHA) on FIRM Maps. Development within SFHAs is regulated by all of Somerset County's municipalities as a condition of participation the NFIP.

> *According to 44 CRF 60.3(a)(4), the community must review subdivision proposals and other proposed new development including manufactured home parks or subdivisions, to determine whether such proposals will he reasonably safe from flooding. If a subdivision proposal or other proposed new development is in a floodprone area, any such proposals shall be reviewed to assure that (i) all such proposals are consistent with the need to minimize flood damage within the floodprone area, (ii) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage, and (iii) adequate drainage is provided to reduce exposure to flood hazards;*

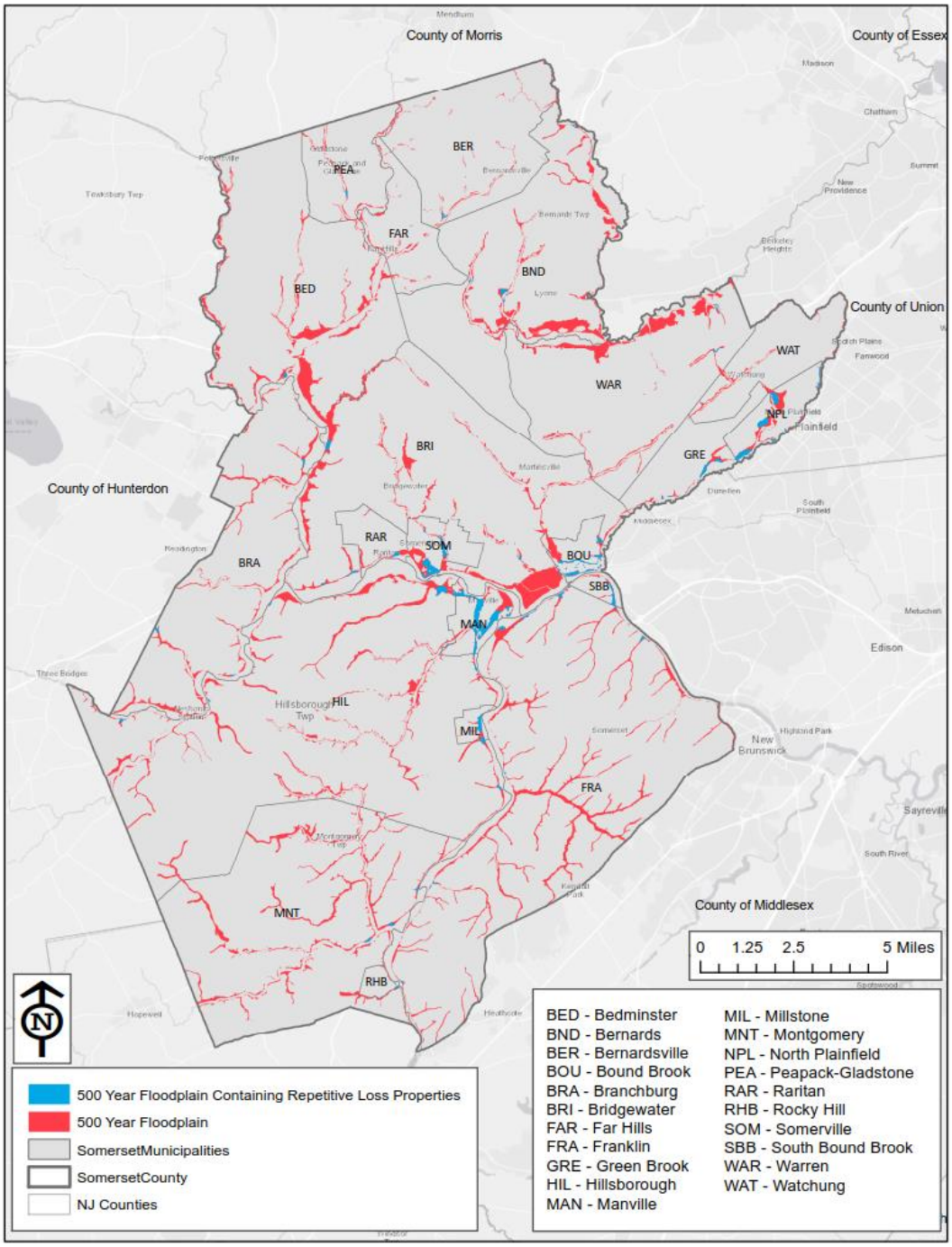
500-Year Flood Hazard Areas: For the 0.2 % annual chance flood area (500-year flood), it is estimated there is nearly $19.7 billion of buildings/contents exposed in Somerset County. This is approximately 25% of the County's total general building stock replacement value inventory. This exposure was calculated at the dasymetric Census block level. For the 0.2-percent annual chance flood event, the potential damage estimate is nearly $1.4 billion (structure and contents).

NFIP Policies and Repetitive Flood Losses

County-wide, there are 2,655 flood insurance policies under the FEMA NFIP. Of these, almost half (1,035 policies) are FEMA Repetitive Loss Properties (RLPs). A property is considered to be a RLP when there are two or more losses reported which were paid more than $1,000 for each loss. The two losses must be within 10 years of each other and be at least 10 days apart. Only losses that occurred since January 1, 1978 that have been closed are considered. The County also contains 72 policies that are deemed by FEMA to be Severe Repetitive Loss (SRL) properties. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
- for which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building; and
- for both of the above, at least two of the referenced claims must have occurred within any 10- year period, and must be greater than 10 days apart.

Figure 4 – 500-year Floodplain Areas with Repetitive Flood Loss Properties



Source: Somerset County GIS, FEMA Region 2, 2017

Note: This map shows the portions of the 500-year flood area that contain one or more repetitive loss properties. To generate this figure, the following methodology was applied using GIS: (1) first, a 500-foot buffer area was drawn around a centralized point located within each FEMA RL and SRL property; (2) next, buffer areas were dissolved together and then clipped to the 500-year flood area. Information regarding the locations of the NFIP policies and claims was used for planning purposes and is cataloged at the County, but this information is protected under the Privacy Act of 1974 and therefore, is not publicly available. For this reason, the exact points are not displayed. Please note that areas displayed are approximate and do not indicate the inclusion or exclusion of the full extent of particular flood loss properties.

In Somerset County, flood damage is due, in part, to historical development that took place within floodprone areas, which is particularly evident in the older, urbanized areas of the Green Brook, Raritan River, and Millstone River basins. Establishment of the Somerset County Municipal Flood Mitigation Funding Program underscores the County's commitment to supporting local flood hazard mitigation efforts. The program recognizes that a key mitigation strategy involves the purchase and removal of frequently flooded homes, which are replaced with natural open space areas thereby increasing floodwater storage, decreasing risks to lives and property, and lowering costs to both the public and private entities in terms of damage repair, debris removal, rescue and relief assistance.

All 21 of the County's municipalities are eligible to participate in this program. Since the program's inception, three projects have been awarded for acquisition of a total of ten properties, at a cost of $329,078:

- 2015 – Manville - four properties - $103,288
- 2016 – Green Brook - two properties - $106,900
- 2018 – Manville - four properties - $118,890

The Figure included in Appendix FRF-6 illustrates Floodway Areas which have been permanently preserved. Lands designated as open space on this map include state or federal parks, preserved farmland and preserved open space. Preserved lands are restricted with an encumbrance recorded on the deed and may be acquired through programs such as NJ DEP Green Acres program, a NJ SADC program or a USDA program. Preservation mechanisms include easements, leases, donations or fee purchases. As of this time, there are 6,256 acres of designated open space within the Floodway. As such, 53.4% of the floodway is permanently preserved. Preservation of lands within the Floodway remains a high County and local land use and open space priority. It is important to note that not all preserved land within the Floodway is in a natural, ecologically functioning state. Some are being used for active recreation and agriculture, while other areas have been set aside for future water resource purposes via the State Water Supply Master Plan.

2. Changing Flood Risk Factors

For many years, the identification of flood risks and the delineation of flood hazard areas by FEMA have been based on historical data and past flood and storm events. Recently, capacity is growing with regard to the ability to integrate projected changes in flooding as a result of climate change. Changes in New Jersey's climate include more high temperature days, heavy rainstorms and sea level rise. Future conditions in New Jersey are likely to include increases in both winter and spring precipitation and the number of extreme precipitation events. There is still a tremendous amount of uncertainty, however, regarding the projected future nature and magnitude of these extremes. Overall, altered precipitation locations and patterns; increased precipitation in terms of duration and intensity; an increased frequency and intensity of coastal storms (in part, due to warmer ocean waters); and sea level rise all have the potential to affect the nature and duration of flooding. Scientific research and data suggests that by the year 2100, there could be a significant increase in both coastal and riverine flooding throughout the U.S. Observed trends in increased precipitation are expected to continue and this will increase risks associated with flooding. Important climate change adaptation and preparedness efforts are

currently underway in New Jersey. The Climate Memorandum included in Appendix FRF-8, as well as the FRF Toolkit in Section III above identify initiatives and actions that can be taken in Somerset County that can improve flood resiliency in response to climate change.

Climate change has the potential to affect public health and the environment in riverine areas in several ways, particularly with regard to increasing frequency and intensity of storms and associated increasing severity of flooding. Climate indicator data that illustrates recent trends specific to New Jersey has been collected, compiled, and analyzed by Rutgers University - Rutgers New Jersey Climate Adaptation Alliance along with other research institutions throughout the state. However, additional research and analysis is needed to be able to predict short-term and long-term impacts of climate change related effects of flooding on riverine systems in non-tidal/inland areas. Although models capable of predicting coastal flooding due to storm surge and sea level rise linked to short and long term climate change have become more advanced; the ability to predict riverine flooding has proven to be more difficult due to their complex and dynamic nature. Riverine systems are affected by ecological variability associated with changing plant and animal communities; alterations to the landscape caused by human activity, including the addition of impervious cover due to development, hydrological and geomorphological changes due to development patterns and associated stormwater management systems and transportation and utility networks; agricultural activities; and the removal/addition of dams, embankments and other improvements along rivers and streams. These forces affect the connectivity between rivers and floodplains and the variability of flows and sediment delivery patterns in river systems.

FEMA funded a study in November 2008 on the effects of climate change and population growth on the National Flood Insurance Program (NFIP). The purpose of the study was to evaluate the potential impact of climate change and population growth on the financial strength of the NFIP and recommend options to increase the NFIP's variability. The study looked at both riverine and coastal flooding throughout the U.S. with estimates at 20-year intervals through the year 2100. The study findings were released in June 2013 and are entitled, "*The Impact of Climate Change and Population Growth on the National Flood Insurance Program (NFIP) through 2100.*" The report provides projected conditions on a national level. Study findings are based on nationwide median analysis outputs with high degrees of uncertainty. Owing to inherent variability, projections are not to be construed as a projection of conditions at any particular location. The estimates included in the analysis were intended to assist the NFIP and NFIP stakeholders to consider in their strategic planning, determination of long-term goals, and reform efforts. The study found that:

- By the year 2100, for the riverine environment, the relative increase in the median estimates of the 1% annual chance floodplain depth and area (Special Flood Hazard Area) is projected to average about 40 to 45% across the nation, with very wide regional variability. This should not be construed as a definitive value, as the percentage is extremely variable from place to place and there is significant variability in the 1-% annual chance discharge about the median estimate. Significant decreases in the median estimates of floodplain depth and SFHA are, however, not anticipated in any region of the nation.
- Nationwide, the population is expected to grow by approximately 70% through 2100. Combined with the projected growth in the SFHA, populations in riverine SFHAs are

projected to grow by 160%. Population growth directly affects riverine flood hydraulics through modification of the terrain and land cover, such that the runoff rate in a watershed tends to increase with increasing population density, with an increase in flood risk area caused by the secondary effects of population growth.

- Based on using median nationwide increases in the SFHA, the NFIP is expected to grow and by 2100, could insure almost double the number of policyholders that it does today. (AECOM)

Some climate change researchers in New Jersey have begun to suggest using the 0.2% annual chance floodplain area to represent the potential future BFE when the impacts that climate change on riverine systems are taken into consideration. They suggest that it may be appropriate to expand the SFHA accordingly, and/or begin to treat this area, (often referred to as the 500-year flood hazard area) similarly in terms of land use and flood mitigation strategies in order to better protect lives and properties from worsening flood conditions due to climate change in the future.

III. Draft Flood Resiliency Goals, Objectives and Strategies

1. Draft Flood Resiliency Goals

The following draft flood resiliency goals were developed by the Project Management Team (PMT) with input from the Mitigation Planning Committee (MPC) during 2018 as part of the Somerset County Multi-jurisdictional Hazard Mitigation Plan update process. These goals are coordinated with, and nested in the 2019 updated Somerset County Multi-jurisdictional Hazard Mitigation Plan's "Mitigation Strategy Goals and Objectives".

Goal 1	***Protect lives and property from flooding:*** *Harden critical/essential facilities, utilities and transportation systems and increase professional capabilities in order to reduce flood risks, damages, disruptions and recovery times.*
Goal 2	***Make the County and its communities more flood resilient:*** *Enhance land use plans, zoning, building codes and standards and capital investment strategies to reduce flood impacts.*
Goal 3	***Increase awareness of and respond to changing flood risks****: Compile and analyze flood-related data and mapped information, strengthen forecasting models and share this information for flood mitigation planning, implementation, protection, response and recovery purposes.*
Goal 4	***Prevent economic and lifestyle disruptions caused by flooding****: Promote the development and implementation of plans and strategies aimed at preventing economic losses and health and safety risks due to service and utility disruptions, access constraints, and operational inefficiencies.*
Goal 5	***Maximize the flood-buffering capacity of natural and ecological systems:*** *Utilize nature-based solutions to strengthen flood resilience and work toward improving/restoring the quality and function of ecological systems.*
Goal 6	***Expedite the flood recovery process:*** *Advocate for projects and activities that can be undertaken during the pre-disaster phase that will ultimately reduce flood hazard impacts and expedite the flood recovery process.*

2. Draft Flood Resiliency Toolkit

A Draft Flood Resiliency Toolkit was also prepared by the PMT in collaboration with the MPC during 2018 as part of this initiative. The Toolkit comprises an inventory of potential strategies that are organized according to the FRF's goals and objectives. They are provided as a resource for updating the HMP's mitigation strategies, from which local jurisdictions can choose based on their unique characteristics, resources and past initiatives. All strategies can be refined and adapted in accordance with the unique circumstances of individual municipalities. It is not intended that every strategy contained in the Toolkit will be implemented by every community. Rather, the Toolkit is provided as a general guide, source of information and ideas. Only those strategies that are deemed to be locally-applicable by Municipal Hazard Mitigation Committees should be considered for inclusion in the updated municipal HMP Annexes. The

Toolkit recommendations can also be used to identify ways flood mitigation can be integrated into local and regional land use and functional plans and policies, regulations, programs and capital investment decisions.

The Draft Flood Resiliency Toolkit is included on the following pages. A larger 11" x 17" stand-alone version of this table is available by e-mailing the County Planning Division at planningbd@co.somerset.nj.us.

DRAFT GOALS & OBJECTIVES		DRAFT IMPLEMENTATION STRATEGIES	TIMEFRAME	LEAD ENTITY	PARTNERS
1. Protect lives and property from flooding					
1A. Ensure essential facilities such as hospitals, fire and EMS stations, schools, emergency shelters and evacuation routes are flood-protected and/or located in flood-safe areas. (a) *1B. Identify, monitor & protect at-risk people, places, built and natural assets. (b, c, i, j)* *1C. Keep people and property out of harms way. (f, h, e, g)* *1D. Identify and protect critical facilities that are vital to flood response activities and essential for protecting health and safety before, during and after floods. (a, d, e)* *1E. Harden transportation systems and services to prevent access constraints and mobility disruptions due to flooding. (b)* *1F. Ensure public and private sector mitigation, response and recovery professional have the information they need to make informed decisions. (k, l)*	1a	Implement flood protection measures at all critical/essential facilities located within flood hazard areas, and where possible, relocate them to appropriate sites that are outside of the floodplain.	short-to-mid-term	facility owners, operators, managers	FEMA, Federal and State regulatory agencies
	1b	Analyze and address flood-prone roadways and bridges, resolve roadway drainage deficiencies to minimize closures	mid-term	Roadway-specific controlling jurisdictions	NJDOT, NJTPA and other regulatory and funding agencies
	1c	Prioritize and fast-track the clean-up of contaminated sites where hazardous materials are unsecured and have the potential to migrate offsite during flooding events.	mid-term	NJDEP & responsible parties	affected municipal jurisdictions'
	1d	Ensure all industrial and commercial producers, consumers and suppliers of hazardous materials follow handling and proper storage protocols that will prevent spills or materials from migrating off site during flooding events.	mid-term	USEPA, NJDEP, Business/Industry Owners/Operators/ Managers	affected municipal jurisdictions'
	1e	Ensure contaminated sites involving hazardous substances are secure and will not result in exposure risks during flood events	short-to-mid-term	USEPA, NJDEP, Business/Industry Owners/Operators/ Managers	affected municipal jurisdictions'
	1f	Define repetitive loss areas (RLAs)and verify repetitive loss sites therein. Identify and prioritize RLA-specific mitigation strategies bases on long-term RLA-specific goals; including but not limited to buy-outs, relocation, elevation and flood proofing of buildings, riparian restoration and green infrastructure improvements following CRS guidelines.	short-to-mid-term	Municipalities	FEMA, NJOEM, Somerset County OEM
	1g	Pursue single and/or multi-jurisdictional Flood Mitigation Assistance and other blue-acres grant funding for mitigating repetitive loss properties	short-, mid- and long-term	Municipalities	FEMA, NJOEM, Somerset County
	1h	Ensure redevelopment and substantially renovated buildings located within previously developed 100-year and 500-year flood hazard areas are constructed to avoid/minimize future flood damage risks	short-to-mid-term	Municipalities	USHUD, NJDCA, NJDEP
	1i	Promote participation in and implementation of the "NJ Register Ready Program" which allows residents with disabilities, access and functional needs to provide information needed by emergency responders needed to better plan to serve them in a disaster or emergency.	short-term	Municipalities, Organizations providing special needs and senior support services	NJDHS, NJDDD, County Dept. of Social Services, County Office on Aging
	1j	Adopt ordinances requiring hazard protection plans and emergency response programs for multi-family development (i.e. Somerville Borough)	short-term	municipalities	FEMA, NJOEM, Somerset County OEM
	1k	Expand utilization of real-time GIS-based data gathering and record-keeping technologies such as the FEMA Comprehensive Data Management System for informing both disaster response activities and flood mitigation planning i.e. roadway flooding incidents, bridge closures, etc. Design data systems to allow for tracking trends including but not limited to changes in depth of flooding, local drainage problems, roadway inundation, frequency of power outages and other utility impacts.	short-term	municipalities, County	FEMA, NJOEM
	1l	Develop and update GIS data on buildings, infrastructure, critical/essential facilities countywide and make this data available for hazard mitigation and emergency operations/response and recovery planning.	short-term	municipalities, County	FEMA, NJOEM

NOTES:
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The Implementation Strategies that align with the Objectives associated with each Goal are shown in parentheses in order to assist the reader.

DRAFT GOALS & OBJECTIVES		DRAFT IMPLEMENTATION STRATEGIES	TIMEFRAME	LEAD ENTITY	PARTNERS
2. Make the County and its communities more flood resilient					
2A. Discourage future development from occurring within in flood hazard areas. (e, m) *2B. Integrate flood mitigation and resiliency; floodplain management best practices; and climate change impacts into land use/master plans and zoning ordinances, building/construction standards, infrastructure and capital improvement programs, and other plans, policies, programs, operations and investment decisions. (a, c, g, i, k, l)* *2C. Create public/private/non-profit partnerships for leveraging expertize and investments to implement flood risk reduction strategies. (d, k)* *2D. S trengthen building and construction codes and standards and integrate resilient design principles to reduce flood risks and impacts. (a, k)* *2E. Update and integrate land use, stormwater, floodplain and water supply management plans, regulations, standards and operations/maintenance practices to address the affects of land use, climate and other changing factors. (b, f, h, j)*	2a	Promote implementation of higher regulatory standards and flood-proofing measures that exceed FEMA minimum standards in flood hazard areas, including but not limited to raising base flood elevations (for example, BFE+3 instead of BFE+1), using flood-resistant, energy efficient appliances/equipment and/or wet-proofing building with construction materials that are non-toxic and will not contribute to pollution in the event of flooding, etc.	mid-term	municipalities	FEMA, NJOEM, Somerset County
	2b	Utilize enhanced flood mapping criteria for depicting current and projected flood hazard areas and apply this information in updated flood hazard mitigation plans.	mid-term	municipalities	FEMA, NJOEM, Research Universities
	2c	Update and strengthen flood protection ordinances, adopt riparian overlay zones and integrate development restrictions in existing and projected flood hazard areas into master plans and zoning.	short-to-mid-term	municipalities	FEMA, NJDEP, NJOEM
	2d	Expand local participation in FEMA's NFIP Flood Mitigation and Community Rating System Programs	short-to-mid-term	municipalities	FEMA, NJOEM, Somerset County
	2e	Utilize non-contiguous clustering, lot averaging, transfer of development rights (TDR) strategies and other MLUL provisions to redirect growth from sensitive floodplain areas to areas more suitable for development.	mid-to-long-term	municipalities	FEMA, NJOEM, NJDCA, Somerset County
	2f	Ensure structural flood control and stormwater management systems as well as green infrastructure are properly monitored, maintained and operated. Provide training, guidelines and standards for maintaining conventional and specialized green infrastructure stormwater management systems.	short-to-mid-term	facility-specific controlling jurisdictions, property owners and managers	NJDEP, watershed associations and other environmental non-profits , academic institutions
	2g	Develop and adopt municipal-specific floodplain management plans that are integrated with other county and municipal plans and ensure that they are updated on a 5-year basis.	mid-to-long-term	municipalities	FEMA, NJDEP, NJOEM, Somerset County
	2h	Prioritize the preservation of open space and agricultural lands that perform natural flood-buffering functions and help achieve floodplain management, flood hazard mitigation, and area wide green infrastructure goals.	short-to-mid-term	municipalities, Somerset County, property owners	NJDEP, watershed associations and preservation organizations
	2i	Prohibit fill and other ground-altering measures within the floodplain and encourage the establishment stormwater mitigation/storage areas	short-term	NJDEP, municipalities	property owners/managers
	2j	Enhance programs for monitoring and enforcing implementation of flood protection and stormwater management ordinances	short-term	municipalities	NJDEP, Somerset County
	2k	Support municipal participation in Sustainable Jersey's certification program and implementation of SJs new impervious coverage reduction and green infrastructure planning and implementation actions.	short-term	municipalities	Sustainable Jersey, Local Green Teams, County Green Leadership Hub, academic institutions, non-profit and community organizations
	2l	Identify opportunities to retrofit conventional and outdated stormwater facilities in order to maximize their flood control potential	mid-to-long-term	controlling jurisdictions, property owners and managers	NJDEP, non-profit organizations, academic institutions
	2m	Adopt set-aside requirements for development to protect special flood hazard areas, wetlands and naturally functioning shoreline areas for flood mitigation and green infrastructure purposes. Utilize strategies such as stream set-back requirements, caps on impervious surface coverage, and the stabilization & restoration of degraded environmental features.	short- to mid-term	municipalities	FEMA, NJDEP, non-profit organizations, academic institutions

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DRAFT GOALS & OBJECTIVES		DRAFT IMPLEMENTATION STRATEGIES	TIMEFRAME	LEAD ENTITY	PARTNERS
3. Increase awareness of and respond to changing flood risks					
3A. Educate residents, property owners and community leaders about how to avoid danger and damage caused by flooding. (a, d, e, f) *3B. Identify and monitor factors that contribute to flooding such as impervious coverage, rainfall and land use changes and their impacts. (c, g)* *Integrate science-based standards into plans, policies, programs, regulations and investment decisions. (a, b, c, g, k)* *3C. Document and share information about the cumulative effectiveness of areawide and site-specific green infrastructure solutions and promote their utilization. (b)* *3D. Encourage enrollment in flood insurance programs and implement public and private initiatives aimed at lowering flood insurance rates and flood risks. (f, h, i, j)* *3E. Enhance the capacity to forecast impending flooding events and effectively disseminate timely warnings, preparation and evacuation instructions. (g)* *3F. Increase public outreach and opportunities for civic engagement in flood protection, mitigation, preparedness and recovery initiatives. (d, e, f)*	3a	Provide climate trend data and educate the public about climate impacts on flooding and other natural hazards through the use of Climate Impact Assessments and other venues	short-to-mid-term	municipalities	Academic institutions, NJDEP, NJOEM, Somerset County, Community Organizations
	3b	Create a GIS-based inventory and map of green infrastructure and conventional flood mitigation and stormwater management projects and improvements to inform regional and local floodplain management initiatives and assist in monitoring implementation of stormwater management requirements.	short-to-mid-term	municipalities	Academic institutions, NJDEP, Non-profit planning and environmental organizations
	3c	Use GIS data and mapping tools to document and analyze land use characteristics and changes within the floodplain over time	mid-to-long-term	municipalities, County Planning Division	NJDEP, Academic institutions, Non-profit planning organizations
	3d	Implement education and outreach initiatives including but not limited to the distribution of flood risk and preparedness brochures, direct mailing of flood risk and protection information to flood prone property owners, flood protection webinars, displays and signage showing base flood elevation and historical flood heights in public areas, presentations to neighborhood, civic and business groups and post information and flood hazard mapping on county and municipal websites.	short-to-mid-term	municipalities, County OEM	FEMA, NJOEM, non-profit organizations
	3e	Provide guidelines and training for developing emergency management plans for household and business use, and ensure all State- licensed essential facilities such as hospitals, group homes, assisted living facilities, etc. have updated disaster plans that meet established standards.	short- to mid-term	FEMA, NJOEM	Professional Associations, Academic institutions, municipalities, County OEM
	3f	Increase education & training for hazard management, emergency management volunteers and professional staff and others through FEMA, state and professional association programs including but not limited to the Certified Floodplain Manager (CM) Program, attending courses, workshops and conferences.	short-to-mid-term	FEMA, NJOEM, Floodplain Managers Assoc.	Academic institutions, non-profit organizations
	3g	Strengthen and update flood forecasting models	short-to-mid-term	FEMA, NJOEM, NJDEP	Academic and Research Institutions
	3h	inforce the disclosure of flood hazard information and flood insurance programs by real estate and development professionals to potential purchasers.	short-to-mid-term	Real Estate and Insurance Oversight Agencies	NJOEM, FEMA, Real Estate Association, Real Estate Companies, Licensed Real Estate Agents and Brokers
	3i	Develop and adopt a "Floodplain Administrator/Manager Checklist" tool and recommended reporting procedures that will ensure routine Floodplain Manager responsibilities are being carried out at the local level.	short-to-mid-term	NJ Floodplain Management Bureau, FEMA	NJ Floodplain Mgrs. Association, municipalities, Somerset County, Academic Institutions
	3j	Disseminate information about flood insurance and mitigation funding opportunities to flood prone property owners	short-to-mid-term	Municipalities	FEMA, NJOEM, Somerset County OEM

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DRAFT GOALS & OBJECTIVES		DRAFT IMPLEMENTATION STRATEGIES	TIMEFRAME	LEAD ENTITY	PARTNERS
4. Prevent economic and lifestyle disruptions caused by flooding					
4A. Promote the use of disaster, emergency response and recovery plans by all public and private sector entities. (b) *4B. Minimize damage and disruption to transportation and other infrastructure, utilities and essential facilities in flood prone areas to ensure service reliability and access. (a, e, l)* *4C. Establish community-based back-up power and communications systems to prevent economic losses and expedite recovery. (b)* *4D. Ensure continuity of government operations, emergency services and recovery programs during and immediately after hazard events. (e, g)* *4E. Identify suitable funding opportunities for enhancing flood preparedness and mitigation. (g)* *4F. Encourage essential service, infrastructure and utility providers to develop and implement emergency operations plans and protocols aimed at reducing disruptions caused by flooding. (g, i)* *4G. Reduce flood hazard risks to properties by implementing flood mitigation measures. (h)*	4a	Identify areas suitable for new mixed-use development and redevelopment through which affordable business space and housing can be provided for households and businesses that are relocating away from high flood risk areas; and update master plans and zoning ordinances to facilitate implementation.	short-term	municipalities	State Planning Commission, NJ OPA, NJDCA, County Planning Division
	4b	Identify and implement strategies for protecting equipment, supplies, systems and processes affected by changes in moisture levels, power disruptions, temperature fluctuations and other flood impacts	mid-term	businesses, property owners, facility managers, essential service providers	Utility Providers, FEMA, NJOEM
	4c	Identify and address potential transportation facility and freight access constraints and supply chain disruption issues due to flooding	mid-term	businesses, utilities, essential service providers	FEMA, NJOEM, NJDOT, NJ TRANSIT, NJTPA
	4d	Enhance early warning/notification systems that are backed by real-time hydrological and meteorological data for alerting residents and employees in case of a flood event	mid-term	municipalities	FEMA, NJOEM, NOAA, NJDEP
	4e	Identify and promote the establishment of fair and equitable access and distribution systems for use by public and private sector providers of critical services such as food, shelter, transportation and banking services during flood events.	mid-term	businesses, utilities, essential service providers	FEMA, NJOEM, Somerset County OEM, municipalities
	4f	Promote preparation of disaster preparedness/emergency response plans, operation continuity and recovery plans by public, private and non-profit entities aimed at protecting economic, historic, cultural and residential assets.	short-term	municipalities	FEMA, NJOEM, Somerset County OEM Non-profit organizations
	4g	Promote proper monitoring, maintenance and operation of structural flood control and stormwater management systems.	short-term	facility-specific controlling jurisdictions, property owners and managers	FEMA, NJDEP, NJDOT, Somerset County, municipalities
	4h	Ensure substantially renovated buildings including but not limited to historic assets that are located within 100-year and 500-year flood hazard areas meet strict flood damage prevention standards.	short-term	municipalities, property owners	FEMA, NJDCA
	4i	Enforce regulations aimed at ensuring all industrial and commercial producers, consumers and suppliers of hazardous materials follow handling and proper storage protocols that will prevent spills or materials from migrating off site during flooding events.	short-term	NJDEP, municipalities	FEMA, NJOEM
	4j	Promote acquisition of flood insurance by all property owners within FEMA Flood Hazard Areas; emphasizing the need for flood insurance within municipally- identified repetitive loss areas and by owners that have experienced previous flood damage.	short-to-mid-term	municipalities	FEMA, NJOEM, Somerset County OEM, Flood Insurance Providers, Property Owners
	4k	Implement flood mitigation measures across watersheds by addressing drainage problems and stormwater management requirements; properly locating, designing and constructing new buildings and minimizing/reducing impervious coverage and implementing area wide and site-specific green infrastructure strategies.	mid-term	facility-specific controlling jurisdictions, property owners and managers	FEMA, NJOEM, NJDEP, Municipalities

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DRAFT GOALS & OBJECTIVES		DRAFT IMPLEMENTATION STRATEGIES	TIMEFRAME	LEAD ENTITY	PARTNERS
5. Maximize the flood-buffering capacity of natural and ecological systems (Nature-Based Solutions)					
5A. Protect and restore riparian areas, stream corridors and wetlands in order to maximize ecosystem functionality and promote climate adaptation. (a, h, j) *5B. Develop and implement forestry plans and BMPs tailored to urban, suburban and rural areas. (b, c, d, f)* *5C. Develop and implement green infrastructure plans and projects to reduce stormwater impacts from impervious coverage. (b, c, d, f, i, j)* *5D. Coordinate public open space investments by prioritizing dual-purpose agricultural/recreation/floodplain protection initiatives . (d, e, g, i)* *5E. promote agriculture, community gardens and other low-impact land uses that are compatible with ecological floodplain functions and can withstand nuisance flooding in flood risk areas. (a, b, e, d, e, f, j)*	5a	Prepare, adopt and systematically update impervious cover analyses; and develop and implement impervious coverage reduction plans and programs.	short-to-mid-term	municipalities	Municipalities, Rutgers Cooperative Extension Service, watershed associations, property owners
	5b	Restore degraded riparian systems, wetlands and stream corridors to increase flood resilience.	short-to-mid-term	municipalities, property owners, managers	NJDEP, Somerset County, Academic Institutions, non-profit organizations
	5c	Develop and implement regional and local green infrastructure and forestry management plan elements as master plan components to increase groundwater recharge, infiltration and evapo-transpiration and reduce the velocity and volume of stormwater runoff.	mid-to-long-term	municipalities, land owners	NJDEP, Academic Institutions, non-profit organizations
	5d	Provide vegetated buffer zones along streams and lakefronts to dissipate and absorb runoff, protect banks from erosion, filter stormwater and provide shade/cooling to support ecological functions.	short-to-mid-term	municipalities, land owners	NJDEP, Academic Institutions, non-profit organizations
	5e	Plan and implement linear parks and greenways along stream corridors thereby protecting flood hazard areas and wetlands using various methods including fee-simple public open space acquisition, conservation easements, farmland preservation, deed restrictions and other mechanisms	mid- to long-term	municipalities, County, property owners	NJDEP, Non-Profit Organizations
	5f	Educate private sector property owners including businesses, homeowners, farmers and others regarding floodplain management best practices and promote voluntary implementation of land stewardship BMPs such as the "River Friendly Program" aimed at reducing stormwater runoff and mitigating impervious surface coverage.	short-to-mid-term	municipalities, County	NJDEP, SADC, Non-profit organizations, Academic Institutions
	5g	Prepare and publish regional and local Natural Floodplain Function Maps showing areas that should be protected because of their natural floodplain functions such as wetlands, critical habitat, forests, natural riparian areas, preserved lands, etc.	short-to-mid-term	municipalities, County	FEMA, NJOEM, NJDEP
	5h	Support the adoption of riparian/stream corridor protection overlay ordinances.	mid-term	municipalities	FEMA, NJOEM, NJDEP, County
	5i	Protect and restore infiltration in high groundwater recharge areas through land use and floodplain management planning and implementation.	mid-to-long-term	municipalities	FEMA, NJOEM, NJDEP, County
	5j	Promote the use of green building design and environmentally sensitive site design standards, including LEED green building certification and the integration of green infrastructure in all development and redevelopment projects.	short-to-mid-term	municipalities, County	FEMA, NJOEM, NJDEP, NJDCA, NJGBC, Somerset County Energy Council, Academic Institutions and other non-profit organizations
	5j	Ensure green building design and green infrastructure features are properly functioning and maintained. Support the development of maintenance manuals/standards and training programs for this purpose.	short-to-mid-term	municipalities, County	FEMA, NJOEM, NJDEP, NJDCA, NJGBC, Somerset County Energy Council, Academic Institutions and other non-profit organizations

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DRAFT GOALS & OBJECTIVES		DRAFT IMPLEMENTATION STRATEGIES	TIMEFRAME	LEAD ENTITY	PARTNERS
6. Expedite the flood recovery process					
6A. Assess recovery needs and take actions that will reduce flood impacts and expedite the recovery process ahead of an actual flood event. (f, h, k, l) *6B. Prepare recovery plans that address the inherent complexity of post-disaster recovery. (a, b, g, f, k, l)* *6C. Define a rapid, adaptable post-disaster recovery process (f, c, l, m)* *6D. Understand available assistance resources, including but not limited to federal funding and how it can be accessed. (a, b, c, h)* *6E. Build jurisdictional capacity to manage and implement recovery actions. (a, b, c, d, f, g, h)* *6F. Identify and implement recover programs and initiatives that will help communities emerge from the disaster more resilient and sustainable. (e, f, i, j, k, l, m)* *6G. Focus and prioritize recovery resources. (d, g, h)* *6H. Measure the recovery process (d, f)*	6a	Strengthen understanding of the relationships among federal, state and local entities and their roles, responsibilities and resources during the recovery process.	short-term	NJOEM, FEMA	Counties, municipalities, community groups
	6b	Build awareness of key federal and state agencies (FEMA, Small Business Administration, U.S. Dept. of Transportation, U.S. Dept. of Housing and Urban Development, etc.) and associated disaster management recovery laws, regulations and programs (National Flood Insurance Act, Stafford Act., etc.)	short-term	municipalities, County	NJOEM, FEMA
	6c	Coordinate regional and local recovery management organizations, each with clearly defined lines of responsibility among partnering jurisdictional entities and other participants in the recovery process.	short-to-mid-term	municipalities, County	NJOEM, FEMA
	6d	Establish methods and processes for characterizing a disaster event, including its severity, extent of damage, and general levels of effort, sources of financing, and likely duration of recovery, etc.	short-to-mid-term	NJOEM, FEMA	Counties, municipalities, community groups
	6e	Address post-disaster pollution, contamination, waste management and debris removal.	short-to-mid-term	municipalities, County	NJDEP, NJOEM, FEMA
	6f	Adopt necessary land use and rebuilding policies, procedures and reconstruction standards.	mid-to-long-term	municipalities	NJDCA, NJOEM, FEMA
	6g	Tailor public health and social service programs during recovery to meet the needs of vulnerable/impacted populations.	short-to-mid-term	municipalities, County	NJDHS, NJOEM, FEMA
	6h	Balance short-term utility, infrastructure and transportation repairs with opportunities to make long-term resiliency improvements.	short-to-mid-term	Utility and Transportation providers	NJDOT, NJBPU, County , Municipalities
	6i	Provide emergency sheltering and safe temporary housing; and return citizens to permanent housing.	short-to-mid-term	municipalities, Red Cross	NJDHS, NJOEM, FEMA, Non-profit special needs and senior support service providers
	6j	Support the resumption of business activity and retention of the local workforce.	short-to-mid-term	municipalities, County	NJ Business Action Center, Somerset County Business Partnership, NJOEM, FEMA
	6k	Establish neighborhood communication and assistance networks to help elderly residents and families with small children who may need assistance during and after flooding events	short-term	municipalities	NJDHS, NJOEM, FEMA, Non-profit special needs and senior support service providers, community groups
	6l	Prepare coordinated flood evacuation routes and alternate transit services for use during flood emergencies that are readily available to those affected, including individuals with special needs. Ensure evacuation routes and services are carefully monitored when in use to ensure healthy & safety.	short-to-mid-term	municipalities, County, NJDOT, NJ TRANSIT	Private Bus Companies, NJOEM, FEMA
	6m	Ensure emergency access to safe drinking water in areas where public water systems and potable wells are impacted by flooding.	short-to-mid-term	Municipalities	Water purveyors, NJDEP, NJ Water Supply Authority, NJOEM

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IV. Leveraging Plans, Programs, Regulations and Investments

The following program information extrapolates upon and complements several of the strategies summarized in the FRF Toolkit. It is intended to serve as an additional resource for identifying initiatives that can potentially make communities more flood resilient, for inclusion in updated HMP mitigation strategies and integration into land use plans, zoning ordinances and infrastructure planning and investment strategies.

1. FEMA NFIP, FMA and CRS Participation

All municipalities have the option of participating in the FEMA programs that are described below, which are aimed at helping municipalities identify strategies for reducing flood risks and vulnerabilities, and increasing flood resiliency over the long-term.

A. NFIP Program

The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. FEMA administers the National Flood Insurance Program (NFIP). The NFIP is a voluntary program offering flood insurance in communities that comply with minimum standards for floodplain management In exchange for adopting and enforcing a Flood Damage Prevention Ordinance, Federally-backed flood insurance is made available to property owners throughout the community. All 21 of Somerset County's municipalities participate in the NFIP.

FEMA's National Flood Hazard Layer (NFHL) is a digital database that contains flood hazard mapping data from the NFIP. The NFHL provides users a dynamic view of current effective flood hazard by incorporating Letters of Map Revision (LOMR) with Flood Insurance Rate Map (FIRM) data as they are published and providing links to current and historic Letters of Map Amendment (LOMA) in the vicinity. FEMA provides an NFHL Viewer and users can access the data online through a web map service or download the NFHL for use in their own systems and geospatial tools. NFHL data is available for download from the MSC and can be added to most GIS applications normally used to perform spatial analyses and for integration into custom maps and reports.

Municipal floodplain management programs in Somerset County include the following general components:

- General. All 21 of Somerset County's municipalities have opted to participate in FEMA's NFIP and all have adopted flood damage prevention ordinances (FDPOs). Communities entered the program in its early years, between 1977 and 1983. While municipal FDPOs have been updated since their original adoption dates – the vast majority of which occurred in the 2000's – some are in need of modification to reflect the latest effective map products and maintain compliance and good standing with the NFIP. A few municipalities updated their FDPOs in 2018 during the HMP update process.
- NFIP Administration Services. NFIP administration services undertaken by municipalities in Somerset County include activities such as: permit review, plan review, construction oversight and inspections, GIS mapping services, maintenance of structure elevation

certificates, public education and outreach; and advice regarding permitting processes, LOMAs, and flood zone determinations. As part of the HMP update process, the identity of all municipal floodplain administrators was confirmed and municipal FHPOs were updated accordingly.

- Local Floodplain Permitting Processes. Permit processes described by Somerset County's municipalities generally include the floodplain administrator's review of development plans, construction permits, and permits for movement of soil to evaluate the proposed action's degree of compliance with the local flood protection ordinance.
- Noted Barriers to Effective Program Management. As part of the hazard mitigation plan update, municipalities have shared a range of barriers that they encounter in their daily efforts to implement an effective floodplain management program. Feedback has generally centered on the following themes: lack of adequate staff resources to dedicate to floodplain management, enforcement, and mitigation; insufficient funding to implement hazard mitigation projects; staff and funding constraints relative to public education and outreach needs. Others noted that high land values can affect the cost-effectiveness of property acquisition projects. One community indicated that, while elevation certificates can be used to support preparation of LOMAs for certain structures that would in turn decrease the homeowners cost of purchasing flood insurance, the cost of the certificates themselves is cost-prohibitive for many affected residents.

i. Flood Protection Ordinances in Somerset County

As noted previously, all of Somerset County's municipalities have adopted Flood Damage Protection Ordinances (FDPOs). The minimum requirements for these ordinances are included in Unit 5 of FEMA-480 National Flood Insurance Program Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials, available online at https://www.fema.gov/media-library-data/1481032638839-48ec3cc10cf62a791ab44ecc0d49006e/FEMA_480_Complete_reduced_v7.pdf. In general, FDPOs include the purpose and limits of the regulatory authority, minimum regulatory standards, prerequisites for enacting or amending the ordinance, requirements for issuing variances or allowing special uses, and prerequisites for the administering official.

Municipalities are required to update their flood damage prevention ordinances when their jurisdiction is impacted by changes to FEMA's FIRM maps. The compliance and map adoption period begins at the date of FEMA's Letter of Final Determination, and ends at the map effective date. Community officials review and revise the community's flood damage prevention ordinance to ensure compliance with NFIP regulations. To avoid suspension from the NFIP, the community must adopt a compliant Flood Damage Prevention Ordinance and submit its ordinance to the NJDEP for approval prior to the end of this period. Amendments to FDPOs typically involve the provision of updated FIS and FIRM panel numbers, changes to the designation of the local floodplain administrator, updated map effective date, appeal board designation, and penalties for noncompliance.

The compliance and map adoption period is a six month window of time marked by the following key milestones:

- 6 month: FEMA Letter of Final Determination
- 5 month: NJDEP Assistance Letter
- 3.5 month: Draft Ordinance
- 3 month: NJDEP review of Draft Ordinance
- 3 month: FEMA 90-day Reminder Letter
- 1 month: FEMA 30-day Reminder Letter

NJDEP supports local communities in this process by: 1) recommending an appropriate ordinance type and providing a model ordinance, 2) reviewing and commenting on the community's draft ordinance, 3) tracking and reporting progress to FEMA, and 3) entering the final adopted ordinance into the FEMA Community Information System (CIS). NJDEP has prepared 11 types of model flood damage prevention ordinances, as shown in Table 2:

Table 2 – NJDEP Model Flood Damage Prevention Ordinances

Model Type	1% Annual ss Chance Flooding	BFEs	Floodways	V zones	LiMWA
A	no	no	no	no	no
B	yes	no	no	no	no
C	yes	yes	no	no	no
D D (LiMWA)	yes yes	yes yes	yes yes	no no	no yes
E E (LiMWA)	yes yes	yes yes	no no	yes yes	no yes
D & E D & E (LiMWA)	yes yes	yes yes	yes yes	yes yes	no yes

Each of these model ordinances can be downloaded from the NJDEP website at http://www.nj.gov/dep/floodcontrol/modelord.htm . Model Ordinance D is applicable for Somerset County. These sample FDPOs are intended to assist communities with developing an ordinance that meets the FEMA Map Modernization Program minimum requirements. Please note that these are only examples and an actual FDPO should be tailored to meet the needs of each individual community. For assistance, local floodplain administrators can reach the NJDEP NFIP Coordinator's Office by telephone at (609) 292-2296.

Most of the FIRM panels in Somerset County became effective in September 2007. However, certain panels, and the County FIS, were updated and became effective in November 2016. The 2016 updates reflect a revised flood hazard analysis and mapping for 14 miles of the Millstone River, from Weston Causeway to approximately 200 feet downstream of Lincoln Highway / State Route 27, in the Townships of Franklin, Hillsborough, and Montgomery; and in the Boroughs of Manville, Millstone, and Rocky Hill. Additional modifications include: updating the base map to 2012 orthophotography, updating the topology to 2012 USGS topographic map, and incorporation of validated Letters of Map Change (LOMCs) and the New Jersey Flood Hazard Area Design Flood (NJFHADF[1]). Other changes to map products since 2007 reflect the completion of the U.S. Army Corps of Engineers Green Brook Flood Risk Management Project, where LOMRs approved in Bound Brook, South Bound Brook, and Bridgewater allowed FEMA

[1] NJFHADF is equal to the 1-percent-annual chance flood plus an additional 25% in flow.

to revise flood hazard information on the FIRMs via letter without physically revising and reprinting the affected map panels. While individual map panels are not revised with each LOMR that is approved, LOMRs are incorporated into FEMA's digital NFHL as they are published. The LOMRs in Bound Brook, South Bound Brook, and Bridgewater reflect updated hydrology and changes in the hydraulics as a result of the completion of the project elements along Green Brook and the Raritan River designed to provide flood relief to the Borough of Bound Brook. Project elements provide protection from the 1 percent annual chance flood and are therefore mapped as "Other Areas of Flood Hazard", areas with reduced flood risk due to levee, though overtopping or failure of any levee system is possible.

Map changes do not always trigger ordinance amendments. Effective floodplain management requires communities to identify and understand which areas in their community are at risk from flooding, the adoption of planning and zoning schemes that keep people, buildings and infrastructure out of harm's way; and establish regulations that promote flood-safe decision making. Most communities rely on the NFIP's FIRMs to determine where there is risk of flooding in their community. While FIRMs serve as a good baseline for determining where flooding may occur, they have limitations that can impact their effectiveness at identifying the real flood risk in a particular location. Instead of relying solely on FIRMs, communities can engage in enhanced floodplain mapping to get a better picture of their relative flood risk as part of a "No Adverse Impact" approach which is described under paragraph 3.M. below.

ii. Ordinance Enhancement Opportunities

In their updated model ordinances, the State of New Jersey has provided potential language concerning higher standards, such as freeboard, a lower threshold for substantial damage, and cumulative substantial damage. FEMA Region VIII published a Loss Avoidance study in 2017 which found a Return on Investment of 3.91, or a savings of $3.91 dollars in flood losses for every dollar invested in higher standards. Communities should consider incorporating higher standards for floodplain development into their long-term resilience strategy.

B. FMA Program

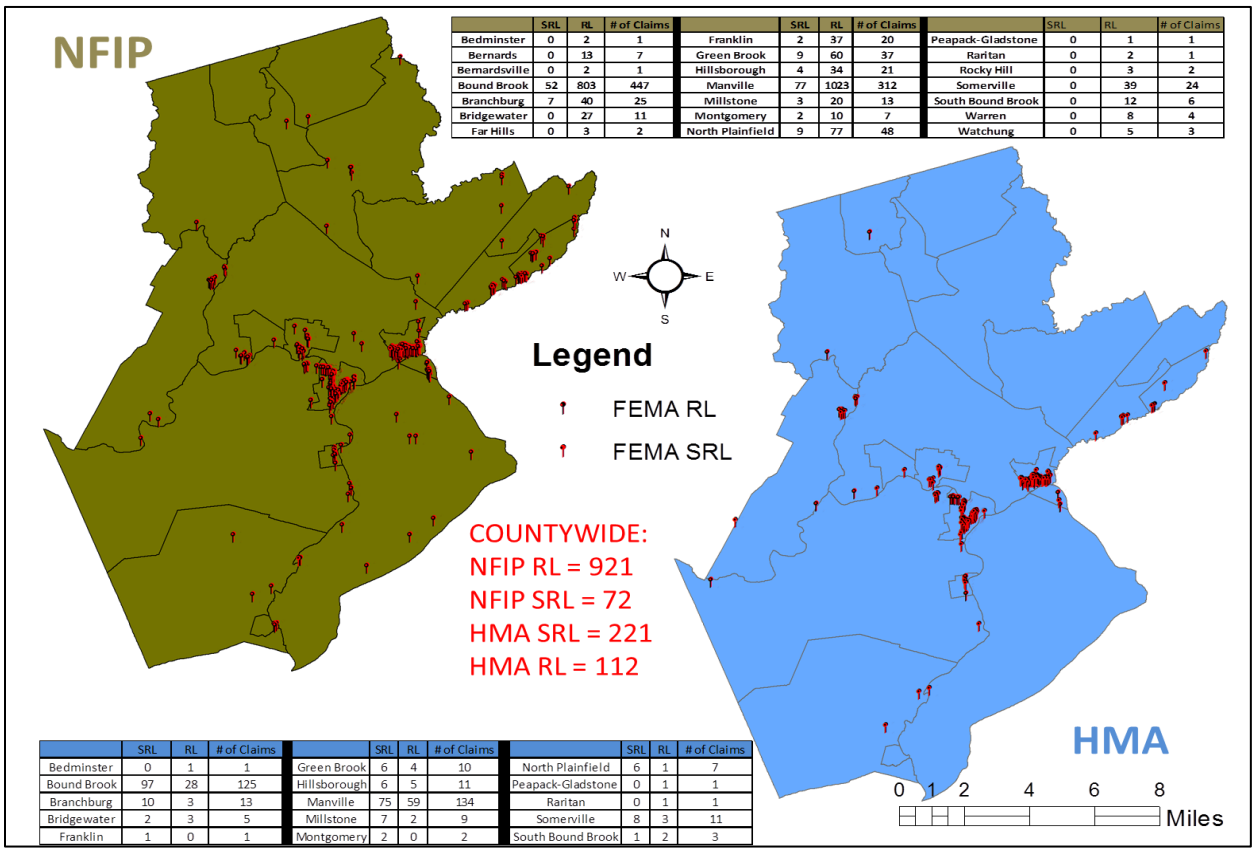
FEMA's Department of Homeland Security administers a Flood Mitigation Assistance (FMA) Program through the NJ Hazard Mitigation Office which is aimed at assisting state and local government entities (and certain non-profit organizations) with planning and performing projects to reduce flood losses. Projects may include buying and demolishing, relocating, and/or elevating structures to reduce future flood losses. Only structures that are insured through the National Flood Insurance Program are eligible. The FMA Program provides funds yearly to reduce or remove risk of flood damage. Individual homeowners and business owners cannot apply directly. Local government entities may apply on their behalf. Dry-proofing of non-residential structures, small local flood reduction projects and plans to prevent flood damage may also be funded through this program, provided they result in reducing the risk of flooding to NFIP-insured property, buildings and structures. Cost-sharing of up to 25% may be required by local entities; however, the program will cover up to 100 percent of the cost of mitigating severe repetitive loss properties. More information about this program is available by contacting the Somerset County OEM Office, phone: (908) 725-5070, e-mail:

EmergencyManagement@co.somerset.nj.us; the NJ Office of Emergency Management e-mail: crnjoem@gw.njsp.org; and/or visiting the FEMA Flood Mitigation Assistance webpage: http://www.fema.gov/flood-mitigation-assistance-program.

FEMA's Hazard Mitigation Assistance Program recognizes a higher threshold in terms of defining RL and SRL properties. An RL property is defined as a structure covered by a contract for flood insurance made available under the NFIP that: a. Has incurred flood-related damage on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and a) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

The generalized locations of NFIP and HMA RL and SRL properties are shown in Figure 5.

Figure 5 – NFIP and HMA RL and SRL Properties in Somerset County



	SRL	RL	# of Claims		SRL	RL	# of Claims		SRL	RL	# of Claims
Bedminster	0	2	1	Franklin	2	37	20	Peapack-Gladstone	0	1	1
Bernards	0	13	7	Green Brook	9	60	37	Raritan	0	2	1
Bernardsville	0	2	1	Hillsborough	4	34	21	Rocky Hill	0	3	2
Bound Brook	52	803	447	Manville	77	1023	312	Somerville	0	39	24
Branchburg	7	40	25	Millstone	3	20	13	South Bound Brook	0	12	6
Bridgewater	0	27	11	Montgomery	2	10	7	Warren	0	8	4
Far Hills	0	3	2	North Plainfield	9	77	48	Watchung	0	5	3

	SRL	RL	# of Claims		SRL	RL	# of Claims		SRL	RL	# of Claims
Bedminster	0	1	1	Green Brook	6	4	10	North Plainfield	6	1	7
Bound Brook	97	28	125	Hillsborough	6	5	11	Peapack-Gladstone	0	1	1
Branchburg	10	3	13	Manville	75	59	134	Raritan	0	1	1
Bridgewater	2	3	5	Millstone	7	2	9	Somerville	8	3	11
Franklin	1	0	1	Montgomery	2	0	2	South Bound Brook	1	2	3

In Somerset County, a high proportion of existing development located within flood prone areas is comprised of one- to two- story single-family residences and small-scale businesses and agricultural structures. Mitigation of SRL and RL properties in low-density areas may be most effectively accomplished through buy-out & tear-down and replacement with restored riparian areas and other land use strategies that turn floodprone areas into flood-buffering open space amenities. However, when historic sites, essential facilities and infrastructure and high density development in town center areas are involved, alternate mitigation solutions such as relocation,

elevation and/or flood-proofing may be more appropriate. Municipal planners in collaboration with floodplain administrators/managers can identify repetitive loss areas and define specific mitigation goals and strategies for each area that are aligned with their unique characteristics and the community's long-term land use goals. In addition to cost savings to tax-payer and private property owners by eliminating the cycle of damage and repair that can be achieved through buy-outs, other savings to the public can eventually be achieved. For example, the abandonment of underutilized transportation and utility infrastructure and associated savings from no longer having to maintain them may be a long-term goal, once all of the flood-impacted properties in low-density repetitive loss area have been bought-out. Likewise, the need for costly emergency response and other services in these areas can also eventually be eliminated.

Municipalities can leverage preservation and mitigation funds to expand or add area-wide and site-specific green infrastructure to achieve the flood-buffering benefits open space provides, meet a municipality's passive and active open space and recreation needs and create space for community gardens while also achieving the benefits described above. The map included in Appendix FRF-6-1 shows the portions of the Floodway countywide that are already preserved, and portions of the floodway where opportunities to create greenway linkages and enhance flood-buffering through green infrastructure may exist, as compared to areas with repetitive flood losses.

Table and 4 summarize the NFIP policies, claims and repetitive loss statistics for Somerset County provided by FEMA. Table 3 summarizes the occupancy classes of the repetitive loss and severe repetitive loss properties in Somerset County. The majority of the repetitive loss occupancy class is single family residences (57.5%). The majority of severe repetitive loss occupancy class is also single family residences (53.8%) Figure 6 shows the approximate location of areas with repetitive flood losses within Somerset County, as compared to the 500-year mapped floodplain. Table 4 provides a summary of NFIP policies, claims, and repetitive loss statistics by municipality.

Table 3. Occupancy Class of Repetitive Loss Structures in Somerset County

Occupancy Class	Repetitive Loss Properties	Severe Repetitive Loss Properties	Total
2-4 Family	235	18	253
Condominium	19	0	19
Non-Residential	147	1	148
Other Residential	21	3	24
Single Family	613	50	663
Grand Total	1,035	72	1,107

Source: FEMA Region 2, 2017
Note: RL and SRL statistics provided by FEMA Region 2 via NJDEP, and are current as of March 31, 2017

Table 4. NFIP Policies, Claims and Repetitive Loss Statistics - 2017

Municipality	# Policies (1)	# Claims (Losses) (2)	Total Loss Payments (2)	# Rep. Loss Prop. (3)	# Severe Rep. Loss Prop. (3)	# Policies in the 1% Flood Boundary (1)	# Policies in the 0.2% Flood Boundary (1)	# Policies Outside the Combined 1% and 0.2% Flood Boundaries (1)
Bedminster (T)	60	27	$361,246	1	-	24	-	36
Bernards (T)	103	61	$828,488	7	-	34	5	64
Bernardsville (B)	52	23	$119,884	1	-	26	4	22
Bound Brook (B)	323	1,904	$62,901,604	465	28	193	75	55
Branchburg (T)	69	170	$6,094,793	28	5	28	7	34
Bridgewater (T)	249	198	$3,541,488	13	-	123	14	112
Far Hills (B)	12	16	$135,591	2	-	3	1	8
Franklin (T)	212	153	$3,521,536	21	1	55	11	146
Green Brook (T)	105	214	$3,440,648	41	4	77	9	19
Hillsborough (T)	185	159	$6,473,024	21	3	53	48	84
Manville (B)	436	1,504	$48,971,590	323	23	241	52	143
Millstone (B)	14	88	$3,350,616	13	1	9	1	4
Montgomery (T)	135	100	$2,040,712	7	2	22	7	106
North Plainfield (B)	371	416	$2,749,721	48	5	303	19	49
Peapack Gladstone (B)	31	11	$242,058	1	-	21	1	9
Raritan (B)	13	14	$3,003,720	1	-	1	4	8
Rocky Hill (B)	9	11	$398,098	2	-	3	3	3
Somerville (B)	97	164	$8,816,968	25	-	63	5	29
S. Bound Brook (B)	51	66	$2,252,319	7	-	20	3	28
Warren (T)	84	48	$276,211	5	-	29	7	48
Watchung (B)	44	26	$218,788	3	-	11	3	30
Somerset County (Total)	2,655	5,373	$159,739,102	1,035	72	1,339	279	1,037

Source: FEMA Region 2, 2017

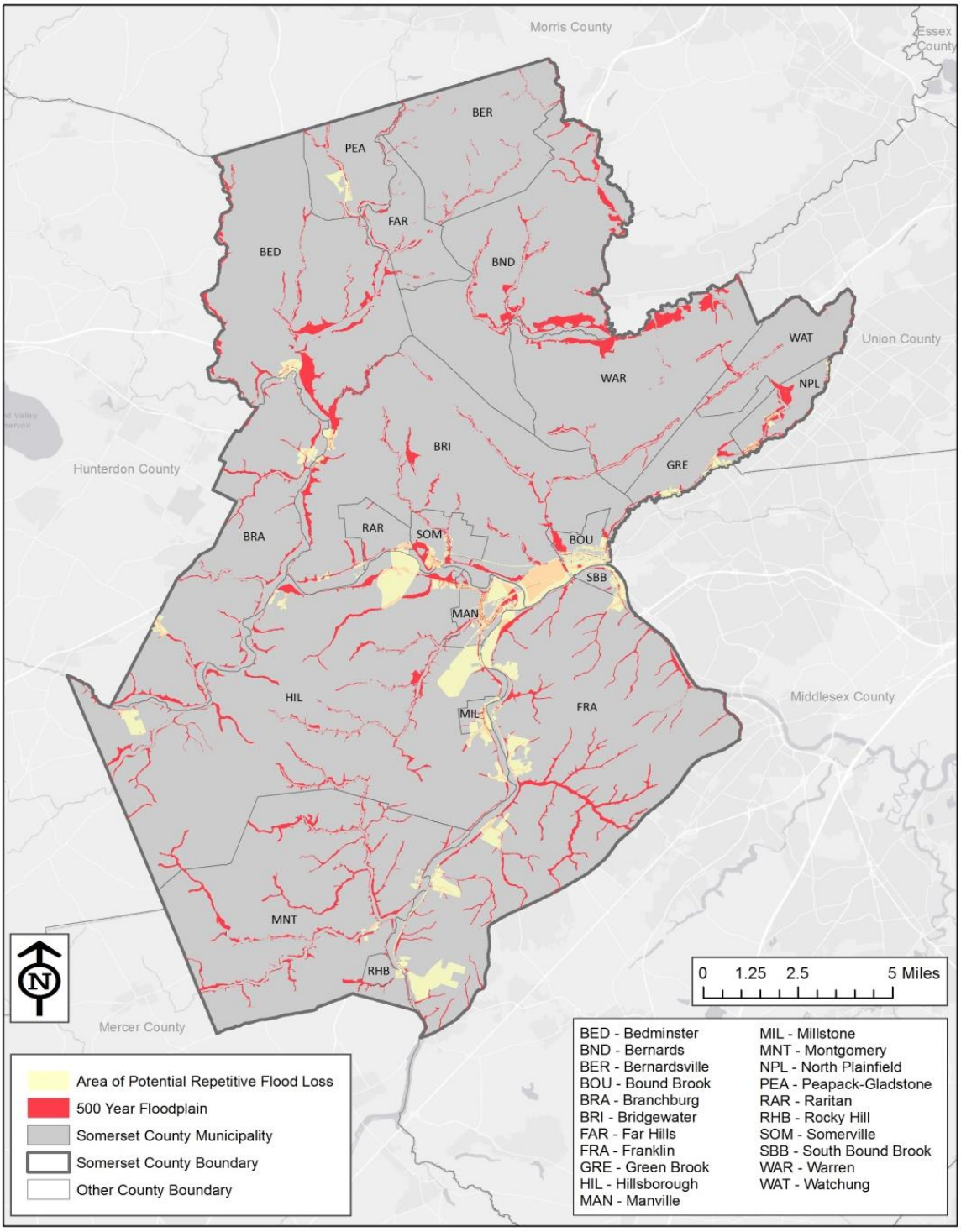
Notes:

(1) Total number of policies, and the policies inside and outside of the flood zones was provided by FEMA Region 2 and is current as of February 3, 2017.

(2) Total building and content losses from the claims file obtained from FEMA loss statistics, current as of 12/31/17 (https://bsa.nfipstat.fema.gov/reports/1040.htm#34).

(3) Number of NFIP RL and SRL properties was provided by FEMA via NJDEP; data is current as of March 31, 2017.

Figure 6. Areas of Potential Repetitive Flood Loss *



Source: Somerset County Planning Division; FEMA Region 2, 2017

Notes:

1) This map is for illustration purposes only, and is not suitable for site-specific, legal, regulatory and/or financial decision-making or commitments. Somerset County does not guarantee this information to be accurate, correct or complete and assumes no responsibility for errors, omissions, or misinterpretations, even if Somerset County is advised of the possibility of errors or omissions or the damages resulting there from. Contact Somerset County Planning Division for data or information about Areas of Potential Repetitive Flood Loss.

2) Repetitive Loss information shown on this map is based on FEMA flood claim data as of May 2017. To generate this figure, the following methodology was applied using GIS:

- Properties (property tax map parcels identified by block and lot) within 1,000 feet of a FEMA designated Hazard Mitigation Assistance (HMA) property, and with maximum elevation less than 50 feet or within a FEMA Flood Hazard Zone A, AE, AO, Floodway or 0.2% Chance Flood Area were identified using GIS to delineate Areas of Potential Repetitive Flood Loss. These areas represent properties that have similar characteristics as FEMA Repetitive Loss Properties and are prone to flooding or have experienced flooding. Delineation of these areas was performed at the parcel scale and was based on proximity to a FEMA HMA property, elevation statistics of FEMA Severe Repetitive Loss (SRL) properties, and intersection with a FEMA Flood Hazard Area.
- The County Planning Division has accomplished the first step in the process of identifying repetitive loss areas through a GIS analysis for the convenience of its municipalities using the methodology summarized in the bullet above. The results of the analysis are not intended to be used "as is". Rather, they are intended to serve as a starting point for municipal floodplain management and mitigation and must be refined based on local information and a parcel-by-parcel analysis such that the end result would more closely represent the repetitive loss areas within which the use of FMA and NFIP mitigation funding should be prioritized. It should also be noted that the repetitive loss property data upon which the analysis is based represents a point in time, and is subject to change, especially proceeding future flood events. Depending on when this GIS data is needed by the municipality, an update of the analysis may be appropriate. FEMA CRS program requirements regarding the mapping of repetitive loss areas can be found online at: https://www.fema.gov/media-library/assets/documents/8768 . In addition, municipalities interested in obtaining this GIS data for this purpose should contact the County Planning Division.

3) The location of the properties with policies, claims and repetitive and severe repetitive flooding were geocoded by FEMA with the understanding that there are varying tolerances between how closely the longitude and latitude coordinates correspond to the location of the property address, or that the indication of some locations are more accurate than others.

4) Information regarding the locations of the NFIP policies and claims was used for planning purposes and is cataloged at the County, but is protected by the Privacy Act and is not publicly available. For this reason, the exact points are not displayed. Please note that areas displayed are approximate and do not indicate the inclusion or exclusion of particular properties.

C. CRS Program

The NFIP's Community Rating System (CRS) is a voluntary incentive program available to NFIP participating municipalities that choose to engage in more flood protective activities than the minimum actions required by the NFIP. The CRS Program has three stated goals: (1) to reduce flood damage to insurable property, (2) to strengthen and support the insurance aspects of the NFIP, and (3) to encourage a comprehensive approach to floodplain management.

The CRS program rewards communities who go beyond minimum floodplain management requirements. As communities undertake more and more activities, their CRS Ranking will incrementally increase. With each improvement in ranking, the community is rewarded with eligibility for increased discounts on policy premiums for its residents and businesses. Discounts range from 5% up to 45%, providing an incentive for flood mitigation and outreach activities that will help reduce risk during future flood events. Credit points are assigned to various activities, and based on the total number of credit points earned; a community is assigned to one of ten CRS Rate Classes (1 through 10, where Rate Class 1 communities receive the greatest premium discount of up to 45%; see Figure 7).

Figure 7 – Premium Discount by CRS Rate Class

How much discount property owners in your community can get

Rate Class	Discount SFHA*	Discount Non-SFHA**	Credit Points Required
1	45%	10%	4,500 +
2	40%	10%	4,000 – 4,499
3	35%	10%	3,500 – 3,999
4	30%	10%	3,000 – 3,499
5	25%	10%	2,500 – 2,999
6	20%	10%	2,000 – 2,499
7	15%	5%	1,500 – 1,999
8	10%	5%	1,000 – 1,499
9	5%	5%	500 – 999
10	0%	0%	0 – 499

* Special Flood Hazard Area
** Preferred Risk Policies are available only in B,C, and X Zones for properties that are shown to have a minimal risk of flood damage. The Preferred Risk Policy does not receive premium rate credits under the CRS because it already has a lower premium than other policies. Although they are in SFHAs, Zones AR and A99 are limited to a 5% discount. Premium reductions are subject to change.

Credits are granted for 19 different activities across four activity series, as summarized in the NFIP's CRS Coordinator's Manual (FIA-15/2017)[2]:

- **Series 300 – Public Information.** This series credits programs that advise people about the flood hazard, flood insurance, and ways to reduce flood damage. The activities also provide data that insurance agents need for accurate flood insurance rating. Activities include: maintaining FEMA elevation certificates for new construction in the floodplain; providing Flood Insurance Rate Map (FIRM) information to interested parties; sending information about the flood hazard, flood insurance, flood protection measures, and/or the natural and beneficial functions of floodplains to flood-prone residents or all residents of a community; disclosing information about flood hazards to potential purchasers of flood-prone properties; providing flood protection and flood insurance information at the local public library and/or on the community's website; giving property owners technical advice on how to protect their buildings from flooding; and promoting the flood insurance program.

  Series 300 Maximum Points: 981 (Average Points: 344)

- **Series 400 – Mapping and Regulations.** This series credits programs that provide increased protection to new development. Activities include: floodplain mapping, open space preservation, higher regulatory standards (i.e., freeboard requirements, etc.), flood data maintenance (i.e., better base maps, maintaining elevation reference marks, etc.), and stormwater management (i.e., regulating new development throughout a watershed to ensure that post-development runoff is no worse than pre-development runoff, or regulating new construction to minimize soil erosion and protect or improve water quality).

  Series 400 Maximum Points: 5,841 (Average Points: 1,086)

- **Series 500 – Flood Damage Reduction.** This series credits programs that reduce the flood risk to existing development. Activities include: floodplain management planning (i.e., adopting a flood hazard mitigation plan); acquisition and relocation of flood prone buildings; flood protection of existing development by flood-proofing, elevation, or minor structural projects; and drainage system maintenance to conduct periodic inspections of all channels and retention basins and remove debris as needed.

  Series 500 Maximum Points: 5,042 (Average Points: 661)

[2] Maximum and average points are subject to change. See the current CRS Coordinator's Manual for the latest information. The 2017 CRS Coordinator's Manual OMB No. 1660-0022 is set to expire on March 31, 2020.

- **Series 600 – Flood Preparedness.** This series credits flood warning, levee safety, and dam safety projects. Activities include: flood warning and response (providing early flood warnings to the public and having a detailed response plan linked to predicted flood levels); levee safety; and dam safety.

Series 600 Maximum Points: 790 (Average Points: 446)

i. How to Become a CRS Community

Participation in the CRS is voluntary. Communities in good standing with the NFIP are eligible to apply. The CRS Application and the CRS Coordinator's Manual are available at FEMA's CRS Resource Center Website (www.training.fema.gov/emiweb/crs). Email nfipcrs@iso.com for more information (or phone 317-848-2898; fax 201-748-1936). The application includes worksheets to assist communities with requesting credit points for applicable activities, and information regarding documentation that must be submitted to support the credits being requested.

ii. CRS Communities in New Jersey

New Jersey has 552 communities participating in FEMA's NFIP[3]. Of these, 89 were participating in the CRS Program in good status as of October 2017. An additional 16 communities have had their CRS status rescinded[4].

iii. CRS Communities in Somerset County

Six of the County's municipalities are participating in the CRS Program[5]. All six have earned Class 6, 7, or 8 in the program and received 10 to 20 percent discounts on flood insurance premiums for their policyholders within SFHAs, and 5 to 10 percent discounts on premiums for policyholders outside of mapped SFHAs. CRS communities in Somerset County as of October 2017 are presented in the following table.

Table 5 – Somerset County CRS Communities and Their Classes

Community Name	Community Number	CRS Entry Date	Current Effective Date	Current Class	%Discount SFHA	%Discount Non-SFHA	Status*
Bedminster Township	340427	10/1/1996	5/1/2007	6	20	10	C
Bernards Township	340428	10/1/2010	5/1/2017	7	15	5	C
Franklin Township	340434	5/1/2010	5/1/2015	6	20	10	C
Manville Borough	340437	10/1/2014	10/1/2014	7	15	5	C
North Plainfield Borough	345307	10/1/1992	10/1/2009	8	10	5	C
Warren Township	340446	5/1/2010	5/1/2015	8	10	5	C

* Status: C=Current, R=Rescinded. No Somerset County communities are rescinded.

[3] https://www.fema.gov/cis/NJ.html , March 2018

[4] https://www.fema.gov/media-library-data/1503240360683-30b35cc754f462fe2c15d857519a71ec/20_crs_508_oct2017.pdf

[5] https://www.fema.gov/media-library-data/1503240360683-30b35cc754f462fe2c15d857519a71ec/20_crs_508_oct2017.pdf

iv. Municipal CRS Activities

The following is a summary of municipal CRS activities for which credit points have been earned, based on the best information available to the County at this time. A list of CRS documents on tile at the County is provided in Appendix FRF-2.

Bedminster: According to the Township's September 2014 CRS Verification Report, Bedminster is a CRS Class 6 community and has earned 2,199 credit points for the following activities:

Activity 310 – Elevation Certificates
Activity 320 – Map Information Service
Activity 330 - Outreach Projects
Activity 340 – Hazard Disclosure
Activity 350 – Flood Protection Information
Activity 360 – Flood Protection Assistance
Activity 410 – Floodplain Mapping
Activity 420 – Open Space Preservation
Activity 430 – Higher Regulatory Standards
Activity 440 – Flood Data Maintenance
Activity 450 – Stormwater Management
Section 502 – Repetitive Loss Category
Activity 510 – Floodplain Management Planning
Activity 540 – Drainage System Maintenance
Activity 630 – Dams
Activity 710 – County Growth Adjustment

Bedminster's CRS Verification Report references the Somerset County HMP as the basis for floodplain management planning in the Township. A progress report must be submitted on an annual basis. An update to the credited plan is due by October 1, 2019.

Bernards: According to the Township's August 2016 CRS Verification Report, Bernards is a CRS Class 7 community and has earned 1,539 credit points for the following activities:

Activity 310 – Elevation Certificates
Activity 330 – Outreach Projects
Activity 340 – Hazard Disclosure
Activity 350 – Flood Protection Information
Activity 410 – Floodplain Mapping
Activity 420 – Open Space Preservation
Activity 430 – Higher Regulatory Standards
Activity 440 – Flood Data Maintenance
Activity 450 – Stormwater Management
Section 502 – Repetitive Loss Category
Activity 710 – County Growth Adjustment

Franklin: According to the Township's October 2014 CRS Verification Report, Franklin is a CRS Class 6 community and has earned 2,025 credit points for the following activities:

Activity 310 – Elevation Certifications
Activity 320 – Map Information Service
Activity 330 – Outreach Projects
Activity 340 – Hazard Disclosure
Activity 350 – Flood Protection Information
Activity 360 – Flood Protection Assistance
Activity 410 – Floodplain Mapping
Activity 420 – Open Space Preservation
Activity 430 – Higher Regulatory Standards
Activity 440 – Flood Data Maintenance
Activity 450 – Stormwater Management
Section 502 – Repetitive Loss Category
Activity 510 – Floodplain Management Planning
Activity 630 – Dams
Activity 710 - County Growth Adjustment

Franklin's CRS Verification Report references the Somerset County HMP as the basis for floodplain management planning in the Township. A progress report must be submitted on an annual basis. An update to the credited plan is due by October 1, 2019.

Manville: According the Borough's March 2014 CRS Verification Report, Manville is a Class 7 community and has earned 1,511 credit points for the following activities:

Activity 310 – Elevation Certificates
Activity 320 – Map Information Service
Activity 330 – Outreach Projects
Activity 350 – Flood Protection Information
Activity 410 – Floodplain Mapping
Activity 420 – Open Space Preservation
Activity 430 – Higher Regulatory Standards
Activity 440 – Flood Data Maintenance
Activity 450 – Stormwater Management
Section 502 – Repetitive Loss Category
Activity 510 – Floodplain Management Planning
Activity 520 – Acquisition and Relocation
Activity 630 – Dams
Activity 710 – County Growth Adjustment

Manville's CRS Verification Report references the Somerset County HMP as the basis for floodplain management planning in the Township. A progress report must be submitted on an annual basis. An update to the credited plan is due by October 1, 2019.

North Plainfield: According to the Borough's CRS Verification Report of December 2013, North Plainfield is a Class 8 community and 1,207 credit points have been earned for the following activities:

Activity 310 – Elevation Certificates
Activity 330 – Outreach Projects
Activity 350 – Flood Protection Information
Activity 410 – Additional Flood Data
Activity 420 – Open Space Preservation
Activity 430 – Higher Regulatory Standards
Activity 450 – Stormwater Management
Activity 510 – Floodplain Management Planning
Activity 630 – Dam Safety

North Plainfield's CRS Verification Report also indicates that credit has been provided for the adoption and implementation of a Floodplain Management Plan.

Warren: According to the Borough's CRS Verification Report of October 2009, Warren is a Class 8 community and 916 credit points have been earned for the following activities:

Activity 310 – Elevation Certificates
Activity 330 – Outreach Projects
Activity 350 – Flood Protection Information
Activity 410 – Additional Flood Data
Activity 420 – Open Space Preservation
Activity 430 – Higher Regulatory Standards
Activity 440 – Flood Data Maintenance
Activity 450 – Stormwater Management
Section 502 – Repetitive Loss Category
Activity 510 – Floodplain Management Planning
Activity 630 – Dam Safety

Warren's CRS Annual Recertification of October 15, 2017 states that the Township participates in the Somerset County All Hazards Mitigation Plan and has maintained compliance with the NFIP while meeting the CRS requirements

v. CRS Enhancement Opportunities

Municipal Recommendations: Based on available information about the CRS activities underway in the County's six CRS municipalities, there are a number of additional CRS activities that they may wish to consider, which builds upon their previous work and leverages their participation in other regulatory and voluntary programs, which are summarized below:

- With regard to CRS credit, the FDPO review described above focused on credits that could be obtained under CRS Activity 430 for Higher Regulatory Standards, and those that would typically be included in the Flood Damage Prevention ordinance, such as development limitations, freeboard, cumulative substantial damage, etc. Other credit opportunities may be available, but are likely contained in other ordinances or program documents for each jurisdiction.

- In general, CRS Coordinators should review the current CRS Coordinators Manual (2017 version) online at: https://www.fema.gov/media-library-data/1493905477815-d794671adeed5beab6a6304d8ba0b207/633300_2017_CRS_Coordinators_Manual_508.pdf . The manual details all CRS creditable activities. Coordinators should review creditable activities and immediately begin moving forward with: (a) documenting any activities they may already be doing that are eligible for credit, (b) undertaking near-term activities that are not currently being undertaken but that are relatively easy for the municipality to achieve given the particulars of individual local resource availability/constraints, and (c) planning ahead for activities that may be achievable in the longer term, which may require additional resources beyond which the municipality can dedicate at this time. Activities falling under (a), (b), and (c) will be different for each CRS community depending on their respective resources and overall CRS goals.
- Communities should consider incorporating higher standards for floodplain development into their long-term resilience strategy. The State of New Jersey has provided potential language in their model ordinances for higher standards, such as freeboard, a lower threshold for substantial damage and cumulative substantial damage.
- CRS Coordinators should review planning Activity 510 to determine which, if any, activity points may be of interest to their particular community with regard to the HMP update and ongoing HMP implementation. Decisions can be made during the plan update process to maximize CRS points in areas related to HMP committee membership, meetings, and outreach activities. Note that 50 percent of the maximum credit points for CRS Activity 510 Step 2 are required for communities to move up to CRS Class 4 or higher, so choices regarding this step are particularly important at this juncture.
- FEMA Region 2 has indicated[6] that, as of 2017, Category A communities have no Repetitive Loss properties (RLPs); Category B have between 1 and 49 RLPs; and Category C have 50 or more RLPs. Every CRS community with one or more unmitigated RLPs on FEMA's current list must keep their list updated and submit a Repetitive Loss List Community Certification (CC-RL) when applying to CRS. Category B and C communities must also: (1) Prepare a map of the repetitive loss area(s); (2) Review and describe its repetitive loss problem; (3) Prepare a list of the addresses of all properties with insurable buildings in those areas; and (4) Undertake an annual outreach project to those addresses. A copy of the outreach project is submitted with each year's recertification. Category C communities, in addition to the above, must also prepare and adopt a Repetitive Loss Area Analysis (RLAA) for all repetitive loss areas, or prepare and adopt a qualifying Floodplain Management Plan (FMP). The following table represents the number of RLPs by community along with their associated Category and RLAA/FMP requirement.
- Municipalities are encouraged to expand their CRS capabilities. A week-long CRS training course is available at no charge, located at FEMA's Emergency Management Institute (EMI) on the National Emergency Training Center campus in Emmitsburg, Maryland, and is sometimes also field deployed in interested states. CRS training webinars are also offered regularly. More information can be found online on the CRS program website: www.fema.gov/national-flood-insurance-program-communityrating-system. For more information about the CRS or to obtain the CRS application, contact the Insurance Services Office by phone at (317) 848-2898 or by e-mail at nfipcrs@iso.com. Copies of the CRS Application, CRS Coordinator's Manual, and other resources are available at FEMA's CRS Resource Center Website at: www.training.fema.gov/emiweb/crs .

[6] Email, Maryann Luhrs, 11/02/17

Table 6 – Somerset County CRS Community Categories

CRS Community	Number of RLPs	Category	RLAA/FMP required?
Bedminster	1	B	No
Bernards	7	B	No
Franklin	21	B	No
Manville	323	C	Yes
North Plainfield	48	B	No
Warren	5	B	No

Somerset County possesses GIS datasets that can be used as the starting point for municipal RLAA maps. The map in Figure 6 above incorporates FEMA Region 2 2017 data on RL and SRL Properties and is based on a GIS analysis that could be further refined at the local level and used to create municipal-specific RLAA maps. Municipal CRS coordinators can contact the County Planning Division to obtain a copy of the most current version of data. Please note, however, that the data is confidential and can only be released to authorized individuals.

- Five of Somerset County's six CRS communities are presently receiving credits for Activity 510 (Bedminster, Franklin, Manville, North Plainfield, and Warren); they could achieve additional credits under this activity by preparing and adopting discrete floodplain management plans for their community that would be tailored to maximizing creditable activities under CRS Activity 510 (these exceed FEMA's overall HMP requirements that the countywide plan is being updated to comply with). A floodplain management plan or RLAA is required for Category C communities and as such, the Borough of Manville has developed a RLAA and included it as part of its *"Borough of Manville Supporting Documentation, CRS Annual Recertification 2017"* ; but optional for Category B communities. Category B communities could earn additional credits by preparing a FMP or RLAA. Category C communities could expand upon their existing FMP and/or RLAA to earn additional credits, using the CRS Coordinator's Manual (2017) as a guide for maximizing points.
- Bernards does not presently receive credits for Activity 510 and therefore could, at a minimum, earn additional CRS credits by submitting for approval of its participation under the countywide multi-jurisdictional HMP. Even more credits could be earned if Bernards was to prepare a FMP or RLAA.

County-level Recommendations:

County CRS Assistance Initiative

Somerset County may wish to consider providing direct technical and other assistance and resources to current and potential future CRS municipalities in order to help them achieve a higher certification level; to engage more municipalities in the CRS program and; help increase the successful deployment of flood mitigation measures to the extent funding and staffing levels allow. Through a potential future County-level municipal CRS support initiative, Somerset County resources could be used to facilitate some of the more technical activities that communities may need assistance with in order to achieve a higher CRS ranking, but where communities lack the appropriate resources to do so. An initiative of this nature could also provide certain economies of scale, depending on the technical or professional assistance ultimately provided. For example, Somerset County could consider leveraging their existing capabilities to facilitate program credits for individual communities, such as a *Program for Public Information* for regionalized outreach (bonus

points for all participating communities), manpower for elevation certificate audits, and advancing the online mapping systems already in place.

Through the Somerset County Planning Division's involvement as a member of the NJ County Planners Association and the TNJ 2.0 Resiliency Task Force, County staff became aware of county-based initiatives underway in different parts of the State (Monmouth, Hudson, Passaic, and Morris Counties) that are aimed at helping municipalities earn CRS credit points for activities that help protect lives and properties in the event of a flood. During the development of this FRF and associated Toolkit, County Planning Division staff reached out to the other New Jersey counties who are implementing programs of this nature to learn about their respective initiatives. Key components of the programs underway in other NJ counties range from the provision of regional outreach and public information activities to GIS mapping, regulatory assistance, ordinance and master plan preparation assistance and the integration of flood protection into site specific development projects and areawide land use plans and policies.

The County will be evaluating the feasibility and potential benefits of providing direct CRS assistance, including measuring municipal interest and potential participation levels through a joint County OEM/County Planning Division initiative that, if implemented, could provide professional and technical expertise and assistance in hazard mitigation, community planning, public outreach, and GIS mapping and other CRS activities to its participating municipalities.

Potential Policyholder Savings

The greater the number of flood insurance policies held by property owners in effect within a municipality, the more financially beneficial/cost-effective it is for the municipality to enroll in the CRS program. It is only cost-effective when enough of a savings is realized for flood insurance policy holders. Distribution of effectiveness throughout the County is also a consideration, as significant savings might be incurred through the program, but only for clustered or select communities rather than for the County as a whole.

FEMA's "What If" tool can be used effectively for estimating the annual value of potential insurance discounts that could be provided to locally insured property owners based on the different municipal CRS rating levels. These estimates are valuable for informing community leaders and building their support for participating in the CRS program. These scenarios provide the starting point for quantifying the potential "payback" for participation in the CRS program. FEMA Region 2 prepared a "What-if" analysis for each of Somerset County's municipalities, copies of which are included in Appendix FRF-12. This information is summarized in Table 7, which shows that with a goal of attaining a Class 6 rank in each of its 21 communities, the County could facilitate total savings of more than a half million dollars for approximately 1,000 to 2,000 policy holders, depending on participation levels and success rates. Table 7 includes a rough estimate of the potential impact of County assistance for each municipality, assuming a Class 6 CRS. Implementation of a County CRS Assistance Program and Municipal Support Network is one way that Somerset County could support municipalities in attaining this goal.

Table 7 – FEMA What-If Report, Somerset County, Level 6 Goal[7]

LEVEL 6 GOAL									
	Current Class	Number of SFHA Policy Holders	Individual Savings if only target SFHA	Number of total policy holders	Individual Savings if target all policy holders	Individual Savings in Zone X etc (applies to relatively few policy holders)	County Assistance Potential Impact	Municipal Flood Program or Mitigation in Place	Interpretation
Bedminster Township	6	24	$ 421.00	60	$ 168.00	n	LOW	x	Already at level 6
Bernards Township	8	34	$ 417.00	103	$ 152.00	$ 293.00	MOD	x	Already at level 8
Bernardsville Borough	10	26	$ 507.00	52	$ 283.00	$ 382.00	MOD		Moderate number of policy holders
Bound Brook Borough	10	193	$ 503.00	323	$ 339.00	$ 164.00	undetermined	x	Mitigation Project may have reduced number of policy holders
Branchburg Township	10	28	$ 440.00	69	$ 192.00	$ 132.00	MOD		Moderate number of policy holders
Bridgewater Township	10	123	$ 614.00	249	$ 316.00	$ 226.00	HIGH		High number of policy holders
Far Hills Borough	10	3	$ 516.00	12	$ 149.00	$ 239.00	LOW		Low number of policy holders
Franklin Township	7	55	$ 521.00	212	$ 141.00	$ 120.00	MOD	x	Already at level 7
Green Brook Township	10	77	$ 451.00	105	$ 343.00	$ 141.00	MOD		Moderate number of policy holders
Hillsborough Township	10	53	$ 379.00	185	$ 127.00	$ 70.00	MOD		Moderate number of policy holders
Manville Borough	10	241	$ 441.00	436	$ 263.00	$ 160.00	HIGH	x	High number of policy holders
Millstone Borough	10	9	$ 488.00	14	$ 323.00	$ 129.00	LOW		Low number of policy holders
Montgomery Township	10	22	$ 469.00	135	$ 87.00	$ 200.00	MOD		Low number of policy holders in SFHA
North Plainfield Borough	8	303	$ 485.00	371	$ 405.00	$ 182.00	HIGH	x	Already at level 8, but have high number of policy holders
Peapack-Gladstone Borough	10	21	$ 558.00	31	$ 379.00	$ 14.00	MOD		Low number of policy holders, but high savings per policy holder
Raritan Borough	10	1	$ 1,521.00	13	$ 169.00	$ 168.00	LOW		Low number of policy holders
Rocky Hill Borough	10	3	$ 273.00	9	$ 118.00	$ 82.00	LOW		Low number of policy holders
Somerville Borough	10	63	$ 676.00	97	$ 456.00	$ 328.00	HIGH		Moderate number of policy holders, but very high savings per policy holder
South Bound Brook Borough	10	20	$ 747.00	51	$ 299.00	$ 112.00	MOD		Low number of policy holders, but high savings per policy holder
Warren Township	9	29	$ 338.00	84	$ 134.00	$ 207.00	MOD	x	Already at level 9, low number of policy holders
Watchung Borough	10	11	$ 457.00	44	$ 134.00	$ 297.00	LOW		Low number of policy holders
TOTAL COUNTY IMPACT		**1339**	**$ 661,763.00**	**2655**	**$ 705,902.00**				

[7] When viewing Table 7, please note: (1) The CRS program considers non-participating communities to be Class 10. (2) The CRS "What If" summary in Table 7 was prepared by FEMA Region 2, who prepared provided their "What If" reports to Somerset County on February 3, 2017. FEMA "What If" reports are generated from FEMA's Community Information System (CIS). They provide an estimate of the potential flood insurance savings per policy and per community for an assumed future community CRS Class attained – information which is very useful to local officials deciding upon their individual CRS participation goals. FEMA's latest CRS communities and their Classes can be found on their web site at: https://www.fema.gov/community-rating-system . (3) Somerset County's municipalities are active participants in the CRS program. Since FEMA provided this report to the County, the following information has changed: (a) Manville is now the sixth Somerset County community to enter the CRS program. They are now a Class 7 community (up from Class 10 when Table 7 was prepared), and (b) three communities have attained higher CRS Class rankings since Table 7 was provided to the County: Bernards has gone from a Class 8 to a Class 7, Franklin has gone from a Class 7 to a Class 6, and Warren has gone from a Class 9 to a Class 8.

Additional County CRS Assistance Considerations

Municipal participation in the CRS Program is resource-intensive, both in terms of the initial application and ongoing implementation and reporting. Municipalities must allocate qualified staff resources for a CRS Coordinator position, which may be a deterrent for communities with staff and resource constraints. County CRS support cannot substitute for this. In order for the County to justify the provision of support services to its CRS municipalities, municipalities would have to demonstrate that they have the administrative capacity required to participate on an ongoing basis. Municipalities are fully responsible for the outcome of their CRS efforts; and must understand that CRS involvement is their decision and they control implementation.

To be successful, a potential future County CRS Assistance Initiative could involve the following potential partners:

- Somerset County Office of Emergency Management
- Somerset County Planning Division
- Somerset County Engineering Department
- Somerset County Information Technology Division

Some examples of the types of potential assistance that could be provided by the County are listed below, and would depend on the in-house capabilities and resources to be made available through the partnering county agencies and level of municipal participation commitment:

1) Collaborate with NJDEP and other entities to provide municipalities with general guidance and support for enrolling in the CRS Program.
2) Make information and resources available that will enable municipalities to make informed decisions regarding the path forward.
3) Demonstrate riparian restoration, green infrastructure, green streets and other flood mitigation measures and floodplain management best practices at County facilities and properties.
4) Serve as a resource for municipalities pursuing CRS credits by offering a standardized set of technical assistance and man-power support in the following potential areas:
    a. Provide GIS-based mapping & analysis
        i. Provide linkages through the public library system
    b. Prepare standardized public outreach fact-sheets and information
    c. Provide flood-prone property owner address lists
    d. Provide model ordinances
    e. Create guidelines for performing elevation certificate maintenance, compliance audits and enforcement
    f. Provide municipalities with a “Baseline Assessment Template” (prepared for Hudson County by Tetra Tech) for determining municipal readiness to enroll in the CRS Program

2. Stormwater Management Requirements

Municipalities play a vital role in implementing New Jersey's Stormwater Management Rules (N.J.A.C. 7:8) through Municipal Land Use Law (MLUL) and the Residential Site Improvement Standards (RSIS). In accordance with the New Jersey Department of Community Affairs, the RSIS are applicable to any residential development application that goes before a local review board. Through RSIS, the Stormwater Rules are activated whenever a municipality requires the control of runoff from a site that is subject of a major site plan or subdivision application. Stormwater management plans focus on the watersheds of which communities are a part. Their focus is broader than just minimizing flood losses, and includes water quality and water supply issues. Municipal ordinances define development thresholds at which Stormwater rules will apply.

A. Municipal Stormwater Management Plans and Ordinances

The Stormwater Management Rules (N.J.A.C. 7:8-5 and 6) establish design and performance standards for stormwater management measures for major development that are intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. Stormwater management measures specified in *The New Jersey Stormwater Management Best Practices Manual, April 2004 and revised through September 2017* (available at the following link: http://www.njstormwater.org/bmp_manual2.htm). Alternative stormwater management measures may be utilized provided the design engineer demonstrates that the alternative measure and its design will accomplish the required water quantity, groundwater recharge and water quality design and performance standards established in the above rules.

The Stormwater Management Rules also require Municipalities to adopt stormwater management plans (MSWMPs). MSWMPs define the strategies municipalities will use to address the stormwater-related impacts of development, which are required by the federal Environmental Protection Agency's (USEPA) Phase II Stormwater Permitting Rules, the mandatory elements of which are specified in NJDEP's Stormwater Management Rules (N.J.A.C. 7:8-2). MSWMPs must be coordinated and consistent with other regulations concerning stormwater management, including those of the Soil Conservation Districts and the Residential Site Improvement Standards (RSIS), and must include design criteria, protective and corrective maintenance strategies and safety standards. MSWMPs must identify the impacts of existing zoning and identify the environmentally constrained areas. They must include maps showing streams, groundwater recharge and wellhead protection areas, build-out conditions based on zoning and an evaluation of the existing master plan and land use ordinances in terms of implementing the nonstructural stormwater management methods specified in the Rules. Variances or exemptions from stormwater requirements can only be granted if a mitigation strategy is included in the plan. Properly developed and implemented MSWMPs will minimize the impact of development on flooding. All 21 of Somerset County's municipalities have adopted stormwater management plans in accordance with these rules.

In addition, municipalities are required to adopt stormwater control ordinances that meet state minimum requirements applicable to major new development that implement their MSWMPs. All

21 of Somerset County's municipalities have adopted stormwater control ordinances in accordance with the requirements of the State Stormwater Management Rules and Best Practices manual, the majority of which have been approved by NJDEP.

It is important to note that municipalities can voluntarily opt to adopt ordinances that meet higher standards for that go beyond the state's minimum requirements in order to improve water quality and reduce local flood risks. Sustainable Jersey (SJ) now offers an "Enhanced Stormwater Management Control Ordinance" that incorporates new retention requirements, a lower threshold for applicability to development and redevelopment, and additional requirements for green infrastructure. Three (3) model ordinance versions are available that provide successively higher stormwater standards and requirements. Increased utilization of green infrastructure stormwater practices that restore or mimic natural conditions can reduce erosion, flooding and pollution risks by capturing stormwater at its source, filtering water through soils and capturing runoff for reuse. In contrast, traditional stormwater infrastructure can exacerbate local flooding, stream erosion and water quality degradation because stormwater flows quickly and at high volumes off of parking lots, roadways, roofs and other impervious surfaces carrying with pollution and debris. SJ's sample "Enhanced Stormwater Management Control Ordinance" is available at the following link: http://www.sustainablejersey.com/actions-certification/actions/#open/action/572. Municipalities involved in SJ's certification program can earn up to 30 points for taking this action.

Municipalities also have stormwater Management responsibilities under Subchapter 25 of New Jersey's Pollutant Discharge Elimination System (NJPDES) Rules (N.J.A.C. 7:14A). Three of the County's boroughs are "Tier B": Far Hills, Millstone and Rocky Hill. The balance of the County's Municipalities are "Tier A". All Tier A municipalities are subject to MS4 permit requirements and as such, must develop, implement and enforce a stormwater program designed to reduce the discharge of pollutants to the maximum extent practicable, to protect water quality in accordance with state and federal water quality requirements. This includes the development and implementation of a stormwater pollution prevention plan (SPPP) that identifies structural and non-structural best management practice (BMP) measures for addressing post-construction runoff from new development and redevelopment and the individuals responsible for carrying them out; ensures adequate long-term operation and maintenance of BMPs; educates the public on stormwater impacts; maps all MS4 outfall pipes; addresses prevent improper disposal of waste through the MS4 system and other requirements.

During the public comment period concerning the NJDEP's renewal of the Tier A New Jersey Pollution and Discharge Elimination System (NJPDES) General Permit (NJ0141852) and the Tier B NJPDES General Permit (NJ0141861) in accordance with N.J.A.C. 7:14A, development of a comprehensive GIS-based inventory of conventional stormwater management facilities such as detention and retention basins, as well as green infrastructure facilities such as rain gardens, bio-retention basins and porous pavement was considered. Although this provision was not included in the final updated permit, voluntary development of this inventory could support municipal efforts to monitor and maintain these facilities as well as develop and implement stormwater asset management plans. More information about asset management is provided below in Section 5. E. The regulation of stormwater runoff through the MS4 Permit

program is intended to provide water quality benefits and prevent increased flooding and erosion. For more information, see http://www.state.nj.us/dep/dwq/714a.htm.

B. Stream Corridor Protection Plans and Ordinances

NJDEP's Stormwater Management Rules (N.J.A.C. 7:8-4.2(c) 13) specify that a stream corridor protection plan may be developed by a municipality through an adopted municipal stormwater management plan. Stream corridor protection plans are intended to maintain or enhance the current functional value and overall condition of a special water resource protection area, and are another tool municipalities can use to improve flood resilience. The Township of Montgomery in Somerset County has adopted a Critical Areas Ordinance (Ord. No. 16-1534) aimed at protecting Flood Hazard Areas based on FEMA FIRM dated November 4, 2016 and other features including steep slope areas (15% or greater), wetlands, and stream corridors derived from the Township's Hydrography Map and other GIS data which serves as a good example. A portion of the stated purpose found in this ordinance is as follows:: "1) to protect special flood hazard areas and stream corridors so that floodwater may have a natural course to follow and so that the watercourse is not constricted or altered in a manner that will increase water velocities or create a dam, 2) to allow water levels to rise without danger to persons, animals or property and cover larger land surfaces for the purposes of greater water percolation and recharge of the underground water supply, 3) to promote the development of a parklike network throughout Montgomery Township along water courses, 4) to permit only that development of flood prone areas and stream corridors within Montgomery Township. To review the entire ordinance, please see: http://clerkshq.com/default.ashx?clientsite=Montgomery-nj.

C. Riparian Zone Ordinances

Riparian zones are regulated through the State's Flood Hazard Area regulations. Municipalities can also adopt Riparian Zone ordinances as overlays to existing zoning districts, following the model provided by the NJDEP for addressing New Jersey's Stormwater Management rules (N.J.A.C. 7:8) and the Flood Hazard Area Control Act rules, N.J.A.C. 7:13. The ordinance must be accompanied by a map delineating the riparian zones. One of the stated purposes of this ordinance is to control downstream flooding. This type of ordinance is primarily focused on preventing the encroachment of development and land disturbance activities within the riparian zone through the acquisition of conservation easements and deed restrictions; restrictions on development and activities, and the restoration of degraded riparian areas that are affected by development. The model ordinance includes provisions concerning the development and implementation of Riparian Zone Management Plans by landowners and developers when disturbances to riparian zones are involved. Riparian zones encompass 300 feet along both sides of any Category one waterbody, including Special Water Resource Protection Areas (SWRPAs) (measured from the top of bank), 150 feet along both sides of trout production, trout maintenance waters and waters flowing through threatened or endangered species habitat or areas containing acid producing soils that are not designated as C1. The riparian zone for all other water bodies shall be 50 feet along both sides. Riparian Zones can also be defined to include undeveloped areas adjacent to streams that are within the flood hazard area. Because these areas are important for water resource protection, they are usually not suited for active recreation facilities.

D. Regional Stormwater Management Plans (RSWMP)

N.J.A.C. 7:8-3 authorizes optional RSWMPs which are developed and implemented through a broad-based participatory process and that require substantial technical and administrative resources to accomplish. In addition to addressing water quality, regional stormwater management plans can be developed that identify and rank issues concerning water quantity and groundwater recharge. The broad goal of a RSWMP is to eliminate, reduce or minimize stormwater-related impacts associated with current and future land use, which can contribute to flooding. The minimum standard of protection is the level that would be achieved by conforming to New Jersey's Design and Performance Standards for Stormwater Management Measures when implemented throughout the regional stormwater management planning area. RSWMPs may include the following guidelines for new or existing land uses or other measures: design and performance standards for stormwater quality, stormwater quantity, or groundwater recharge for new development; modifications to existing stormwater management structural controls; elimination of illegal or illicit discharges; prevention or minimization of the exposure of pollutants to stormwater; or control of floatables. The plan may also include measures to enhance, protect or preserve land or water areas for purposes of flood control, water quality protection or conservation of natural resources. The steps for creating, implementing and adopting a RSWMP can be found in Chapter 3 of the New Jersey Stormwater Best Management Practices Manual (see http://www.njstormwater.org/bmp_manual/NJ_SWBMP_3%20print.pdf). Somerset County has not developed a regional stormwater management plan to-date. Stormwater management is currently addressed primarily at the municipal level.

Through the County land development review process, the County's Subdivision and Site Plan Review Resolution provides standards to guide land development that affects or involves County facilities pursuant to the County Planning Act (N.J.S.A. 40:27-1 et. Seq.). This includes the impacts of stormwater runoff associated with proposed major development upstream of a bridge, culvert or stormwater facility whose maintenance responsibility falls within the County's jurisdiction. All proposed subdivisions and site plans for land within the County must be submitted to the Somerset County Planning Board for review, and where required, approved by the County before it can be approved at the municipal level. Stormwater management plans for new development projects that drain directly or indirectly to a County facility must be prepared in accordance with County standards, N.J.A.C. 7:8 and the NJ Stormwater Best Management Practice Manual found at http://www.nj.gov/dep/stormwater/sw_rule_faqs.htm .

3. Land Use and Development Plans, Policies and Regulations

Land use planning at the regional and local levels can prevent many future flood problems when done correctly. Good planning prevents development and redevelopment from occurring in the wrong places, and leads to wise use of floodplains and other lands. Master plans and associated zoning ordinances help to balance public and private concerns, and works to ensure that one person's activities do not adversely affect others or the general public. Master Plans and zoning address many concerns, in addition to helping to prevent flood losses, and therefore are critical for creating sustainable, resilient communities. All of Somerset County's Municipalities have adopted Master Plans in accordance with NJ Municipal Land Use Law. Municipal Master Plans define the types of development that should occur and where. They

reflect each community's unique "vision" for the future, and guide zoning ordinances, capital improvement programs and subdivision and site plan (development) requirements. Master plans typically identify lands subject to natural hazards including flooding, and reserve these areas for parks, greenways, golf courses, wildlife refuges, farming and similar open space-compatible uses. As the County and its municipalities move closer toward build-out conditions and undeveloped land becomes increasingly scarce, plans, policies and regulations that protect floodprone areas from encroaching development and redevelopment are increasingly important.

A. Master Plans

Master plans adopted at the County level in accordance with NJ County Planning Act (N.J.S.A. 40:27-1 et seq.) and the local level in accordance with NJ Municipal Land Use Law (MLUL, N.J.S.A. 40:55-D-1 et seq.) are used to ensure development does not occur in flood hazard areas, and to allow land uses that are compatible with natural floodplain systems. Municipal Land Use Law directs municipalities to preserve open space to "Provide light, air and open space"; "Provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial and industrial uses and open space, both public and private, according to their respective environmental requirements in order to meet the needs of all New Jersey citizens"; and "Promote the conservation of historic sites and districts, open space, energy resources and valuable natural resources…and to prevent urban sprawl and degradation of the environment through improper use of the land". The NJ County Planning Act provides for the development and adoption of a master plan for the physical development of the county, which may include "the general location, character, and extent of streets, roads, viaducts, bridges, waterway and waterfront developments, parkways, playgrounds, forests. Reservations, parks, airports and other public ways, grounds, places and spaces; the general location and extent of forests, agricultural areas, and open-development areas for the purposes of conservation, food and water supply, sanitary and drainage facilities, or the protection of urban development, and such other features as may be important to the county".

Zoning ordinances, site design standards and construction codes are the implementation arm of master plans, and can be used to prevent damage-prone development from occurring within flood hazard areas and sensitive floodplain areas; avoid adverse environmental impacts associated with development; and permit only those uses or activities that are compatible with environmentally-sensitive, risk-prone floodplain and flood hazard areas.

Floodplain management, when imbedded into land use master plans, can increase opportunities for public involvement and allows for a broader range of flood impacts to be considered such as public health and safety, environmental and economic impacts of flooding on wells, septic systems and sewer and water infrastructure; and roadways, transit and goods-movement networks. Master plans and appropriately aligned floodplain management plans can also address flood impacts on the housing stock; the provision of affordable housing opportunities for households being relocated from flood hazard areas; and support economic growth in flood-safe areas suitable for higher density development that are served by transit, utilities and other community assets.

> "Sustainable Development is the process of change, development and economic progress that meets the needs of the present generation without comprising the ability of future generations to meet their own needs".

Successful, effective master planning, zoning and floodplain management follow the following basic sustainability principles:

- Protect public health and safety
- Maintain and enhance residents' quality of life
- Enhance local economic vitality
- Ensure social and intergenerational equity
- Maintain and enhance environmental quality
- Incorporate disaster mitigation and resilience improvements into daily local and regional land use decision-making
- Balance ecological, cultural, historic and aesthetic values with economic development.

B. Natural Resource Inventories

Also referred to as Environmental Resource Inventories (ERIs), Natural (and Cultural) Resource Inventories are generally comprised of a compilation of maps, text and information about the natural resource characteristics and environmental features that exist at the local or regional level. They serve as an important tool for environmental commissions, planning boards and zoning boards; as well as for floodplain managers. They provide a factual basis and information resource for land use and floodplain management planning and provide insights into the characteristics of the site and surrounding areas when reviewing land development proposals. ERIs can be adopted as part of a municipal master plan (see N.J.S.A. 40:55D-45.2.f). They are a first step in assessing and prioritizing the protection of natural resources, and can provide a foundation for floodplain management plans, riparian corridor protection ordinances, etc. They should be revised as new and updated information and data become available. Municipalities involved in the Sustainable Jersey certification program can earn points for preparing ERIs. For more information, see: http://www.sustainablejersey.com/actions-certification/actions/?type=1336777436&tx_sjcert_action%5BactionObject%5D=60&tx_sjcert_action%5Baction%5D=getPDF&tx_sjcert_action%5Bcontroller%5D=Action&cHash=59c21b7c2e09718013d5861c4b73c790.

Many of Somerset County's municipalities have developed Natural Resource Inventories, most notably those that comprise the Highlands Planning Area portion of Somerset County in accordance with the Highlands Regional Master Plan. CRS municipalities can earn CRS additional credits by expanding their Natural Resource Inventories to include Floodplain Function Maps that define areas that should be protected because of their natural floodplain functions such as wetlands, critical habitat, forests, natural riparian areas, preserved lands, etc.

C. Open Space Preservation

The multiple benefits of open space preservation along stream corridors include reducing damage caused by flooding to buildings, infrastructure and utilities; ecological and habitat protection, passive and active recreation and water supply and water resource protection. Green infrastructure stormwater management solutions can also be accommodated within floodprone areas. By developing a comprehensive and integrated open space/conservation element of their master plans, municipalities can focus limited acquisition resources on the

lands that offer the most benefits to the community. Municipal Land Use Law (N.J.S.A. 40:55D-45.2c) describes open space plans as "showing the proposed land area and general location of parks and any other land area to be set aside for conservation and recreational purposes and a general description of improvements proposed to be made thereon, including a plan for the operation and maintenance of parks and recreational lands". Strategically preserving lands at the watershed and floodplain levels, and integrating preservation with flood mitigation, stormwater management and water quality protection can achieve green infrastructure goals at the landscape-wide level and allow the community and region to benefit from the flood mitigation natural systems provide. 6,256 Acres or 53.4 percent of Floodway Areas countywide have been permanently preserved for open space, farmland and water resource purposes. (Somerset County Planning Division) This information is illustrated on the map included in Appendix FRF-6. However, it is clear from this map that many opportunities for permanently preserving riparian corridors still exist, particularly in headwater areas and along various tributaries.

CRS Municipalities can earn credits for their open space planning and acquisition efforts. For example, Bedminster Township's water-resource protective land use ordinances and open space acquisition efforts were instrumental in enabling it to earn its Class 6 CRS designation. Several of Somerset County's municipalities have active tax-payer supported open space trust fund programs in place to help implement their preservation goals. These include Bedminster, Bernards, Branchburg, Franklin, Green Brook, Hillsborough, Montgomery, Peapack – Gladstone, Rocky Hill, Warren and Watchung.

Currently, the Somerset County Planning Division is engaged in the process of preparing a Somerset County Preservation Plan. This plan involves the update of the County's 2000 Parks, Recreation & Open Space Master Plan Update, 2007 Comprehensive Farmland Preservation Plan and the addition of a new Historic Preservation Plan. The new County Preservation Plan will identify recommended land use, funding and partnership strategies for meeting countywide preservation goals. The Plan will identify linkages between these three areas and build upon the other elements of the County Master Plan including the County Investment Framework and Comprehensive Economic Development Strategy, as well as the County Hazard Mitigation Plan and Wastewater Management Plan. Several of the flood resiliency strategies and concepts described in this document are being integrated into the County's new Preservation Plan, which is currently being developed. Emerging goals of the draft Park, Recreation and Open Space portion of the County Preservation Plan include concepts such as protecting environmental resources; filling in the gaps in the Countywide Open Space System, including greenways (along stream corridors); acquiring natural buffers along waterways to enhance community resilience to flooding; and protecting streams and rivers with vegetative buffers to minimize flooding and return cleaner, healthier water to groundwater aquifers and recharge lands. For more information, see https://www.co.somerset.nj.us/government/public-works/planning/current-projects. HMP "*Section 4 – County Profile"* provides information about the County's open space preservation accomplishments, which have been achieved in part through a voter-approved, taxpayer supported County Open Space, Recreation and Farmland Trust Fund.

A Somerset County Municipal Flood Mitigation Funding Program was also established by the Board of Chosen Freeholders to assist municipalities with the buyouts of flood-prone residential properties. The program was created in response to increased, repetitive flooding caused, in part, by development within floodprone areas. By working closely with affected municipalities,

as well as funding partners at the federal and state levels, Somerset County can assist municipalities with the acquisition of flood damaged properties, requiring the demolition of on-site structures and permanently preserving the land as open space.

The Somerset County Municipal Flood Mitigation Program will consider grant applications from municipalities for the acquisition of residential properties that have experienced severe, repetitive flooding, or sustained substantial damage greater than 50% of the value of the property. There are two components to the program. The Match Funding Program will provide matching funds to municipalities in partnership with FEMA and Blue Acres up to 25% of the project cost. The Primary Funding Program provides assistance where funding is not being derived from other federal or state sources with Somerset County in the lead funding role. Any match requirement through the Primary Funding Program is the responsibility of the municipality. Funding is available to all Somerset County municipalities on a rolling basis. For more information about Somerset County's Open Space Preservation Programs, see: https://www.co.somerset.nj.us/government/public-works/planning/agriculture-development-board/open-space-and-preservation-programs

The Borough of Manville is a recipient of funding made available through the NJDEP's Blue Acres Program, through which 108 homes that experienced repetitive loss damage from flooding were bought out and removed during the past decade in the "Lost Valley" neighborhood. The floodplain buy-out area is identified as a potential component of a regional greenway system along the Raritan and Millstone Rivers and Royce Brook that connects the D & R Canal State Park and Duke Farms in the Somerset County Planning Board's *"Supporting* Priority Investment in Somerset County Phase III Study". The study recommends re-use of the buy-out area for open space functions, including a combination of green infrastructure, flood mitigation, habitat restoration, water quality protection and recreational elements. For more information, see: https://www.co.somerset.nj.us/home/showdocument?id=26326.

The NJ Green Acres program is another funding resource for preserving lands for recreational and conservation purposes that can be leveraged with county and municipal funds, as well as funding available through various nonprofit land trusts and conservation organizations. The Green Acres program was created in 1961 to meet the State's growing recreation and conservation needs. In addition, the State has established a "Blue Acres" program that supports the acquisition of land in the floodways of the Delaware, Passaic and Raritan Rivers and their respective tributaries, and other areas of the State that are prone to flooding. The Green Acres, Farmland, Blue Acres, and Historic Preservation Bond Act of 2007 authorized $12 million for acquisition of lands in the floodways of the Delaware River, Passaic River or Raritan River, and their respective tributaries, for recreation and conservation purposes. An additional $24 million was approved by the voters in the Green Acres, Water Supply and Floodplain Protection, and Farmland and Historic Preservation Bond Act of 2009. For more information, see http://www.nj.gov/dep/greenacres/index.html.

D. Farmland Preservation

The continuation of agricultural activities on existing farmland within floodprone areas is a compatible land use, since farmland can accommodate over-bank flows without incurring the comparatively costly flood damages that effect urbanized areas. Farmland allows a higher

degree of groundwater recharge as compared to impervious cover found in urbanized areas, which also mitigates flooding. When regenerative agriculture, biodynamic farming and no-till agricultural methods are used that increase the amount of organic material in soil, its water-absorbing capacity can be dramatically increased. (Tickell) The use of "River Friendly" agricultural best management practices are strongly encouraged on farms, particularly those that involve floodprone areas in order to avoid erosion, pollution, soil compaction and other potentially detrimental impacts. The conversion of natural riparian areas into farmland for agricultural purposes is discouraged in order to protect the water supply and maximize their flood-buffering and ecological services. The River-Friendly Farm Certification Program promotes sound soil health management, stream corridor protection, nutrient and pest management and irrigation water management. For more information about the River Friendly Farm Certification Program in New Jersey visit https://www.riverfriendlyfarm.org/

In July, 2007, the NJ Agriculture Development Committee adopted Farmland Preservation Program Rules, which included the establishment of the Planning Incentive Grant Program, which requires participating municipalities to develop comprehensive farmland preservation plans in order to be eligible for farmland preservation funding. Accordingly, Somerset County adopted the November 2007 Comprehensive Farmland Preservation Plan Update, which identifies agricultural development areas, strategies for conserving and protecting agricultural and natural resources and for strengthening and sustaining the agricultural industry within the County. Municipalities participating in the municipal Planning Incentive Grant Program must also adopt a Farmland Preservation Plan. Agriculture, when best practices are implemented, can be a compatible floodplain land use. However, farmers are encouraged to define and implement commodity-specific disaster preparedness plans in the event severe flooding should impact agricultural operations located within the floodplain. Agricultural disaster preparedness information specific to Somerset County is available at the following link: https://www.co.somerset.nj.us/home/showdocument?id=15763

Farms or development easements that are acquired through the farmland preservation program will forever be protected for agricultural use. They are encumbered by deed restrictions that run with the land. Farmland preservation helps to create a regional and local balance between developed areas and rural/natural landscapes, contributing to quality of life; protecting water resources and productive soils; and ensuring scenic landscapes, farming heritage and agricultural production remain intact.

E. Sustainability Plans

In August 2008, NJ Municipal Land Use Law was amended to include the Green Building and Environmental Sustainability Plan Element (Sustainability Plan) in the list of allowable Master Plan elements. The MLUL describes this new element as follows: "A green buildings and environmental sustainability plan element, which shall provide for, encourage, and promote the efficient use of natural resources and the installation and usage of renewable energy systems; consider the impact of buildings on the local, regional and global environment; allow ecosystems to function naturally; conserve and reuse water; treat stormwater on-site; and optimize climatic conditions through site orientation and design". This element, like all Master Plan Elements, is intended to guide land-use decisions and provide the basis for ordinances that support the creation of sustainable communities by enabling them to infuse sustainability

concepts into their existing master plan elements. Part of sustainable development includes the use of green infrastructure to prevent stormwater runoff. Green roofs, pervious pavement, and stream corridor restoration and "daylighting" are a few of the green building strategies that are encouraged. Guidance is available for municipalities that wish to develop a stand-alone sustainability plan through Sustainable Jersey. The NJ Chapter of the American Planning Association produced, "Planning for Sustainable Communities, Master Plan Guidance for New Jersey Officials" in 2013.

Sustainable Jersey provides technical guidance and assistance to municipalities in developing Community Sustainability Plans, which is a three-part action through which SJ certification credits can be earned for 1) development of a vision statement and goals; 2) preparation of indicators and targets and 3) creation of an action plan. More information is available at http://www.sustainablejersey.com/actions-certification/actions/. Sustainability Plan Elements provide a platform for adopting stream corridor protection ordinances and other environmental-, health- and safety-based ordinances.

F. Special Area Standards Ordinance

The New Jersey Residential Site Improvement Standards (RSIS) (N.J.A.C.5:21-3.5) allow municipalities to designate, by ordinance areas exhibiting, or planned to exhibit a distinctive character or environmental feature that municipalities have identified and expressed a desire to preserve and enhance, including areas where environmental systems such as watersheds may require special environmental controls. Municipalities may define special area standards, which must be submitted to the NJ Department of Community Affairs then undergo the public review and adoption process. Special areas must be delineated on the municipal zoning map or defined/delineated in the municipal SAS Ordinance, and incorporated into the municipal master plan. Through this mechanism, municipalities may be able to identify and apply more restrictive floodplain and/or stormwater management provisions than are required in Subchapter 7in order to help reduce local flooding and protect natural flood buffering features. The special area standards must include an identification and narrative of the rationale for the deviations from the State standards (see NJDEP's Stormwater Management Rules (N.J.A.C. 7:8-5 and 6) and include any maps, exhibits or supporting documentation.

G. Net versus Gross Density Zoning

A Supreme Court decision involving Fairhaven (Monmouth County) New Jersey upheld the ability of municipalities to deduct environmentally constrained lands and right-of-way areas from the total tract area before applying the density standards associated with the zoning district the tract is located in. This decision builds upon an earlier Court decision involving the community of Atlantic Highlands. This is commonly referred to as net-density zoning. Five of the County's less-developed townships employ net-density zoning. This allows for a greater degree of protection for regulated environmental features such as wetlands, riparian and flood hazard areas as compared to gross-density zoning wherein zoning density is applied to the entire tract area, including environmentally sensitive features.

H. Transfer of Development Rights

Transfer of Development Rights (TDR) is a municipal planning and preservation tool offering communities a way to protect environmental, agricultural and historic resources while accommodating growth, established by the State Transfer of Development Rights Act (N.J.A.C. 40:55D-1 et seq.). It is a realty transfer mechanism permitting owners of properties within designated "sending" areas to separate the development rights of their property from the property itself and sell them for use on other properties located within "receiving areas". Developers who purchase these "development credits" may then apply them to properties within receiving areas, which have been deemed appropriate for growth at densities higher than otherwise permitted. Once the development rights of a property are sold, the property will become permanently restricted from further development. NJ Municipal Land Use Law includes provisions for establishing a TDR Program. Establishment of a TDR program is fairly complex and requires a considerable amount of resources for performing the required analyses, pre-planning and ongoing administrative and record-keeping functions. As a result, application of TDR has been limited to a few areas of the State thus far, none being within Somerset County. The Burlington County Transfer of Development Rights pilot program remains one of the most successful examples. Participating governing bodies prepare and adopt a transfer plan element as part of their municipal master plans; capital improvement plans and cost-sharing mechanisms that address infrastructure needs within receiving zones; a real estate market analysis that includes information on the capacity of receiving zones to accommodate development; receive State Planning Commission Endorsement of their master plans and enact the necessary ordinances establishing sending and receiving zones. For more information about TDR in New Jersey is available at: https://njaes.rutgers.edu/highlands/transfer-development-rights.php

I. Conservation Subdivision Design

Conservation subdivisions have been described as "golf course communities…without the golf course". Conservation subdivisions involve the more compact arrangement of homes (clustering small lots) in order to provide shared access to an environmental/recreational amenity; where the shared amenity is protected open space instead of a golf course. This type of development is suitable for areas that have both economic and environmental value. Conservation subdivision strategies, when applied to floodplain areas, can result in the set-aside of significant contiguous natural features such as riparian stream corridors and associated wetlands. Conservation subdivisions cluster together and orient the homes/lots in a few areas of the tract to maximize each residence's access to and views of the open space. The combined effect of the protected open space and the clustered homes could result in an average overall density no greater than the density achieved using a conventional subdivision design. An easement, deed restriction or other mechanism for preserving the open space ensures that it will not be developed. Conservation design standards can be added to ordinances and promoted by offering bonus lots and/or allowing pedestrian paths within the open space to substitute for sidewalk requirements. For more information see http://conservationtools.org/library_items/349-Conservation-Subdivision-Design-Handbook

In order to promote application of conservation design principles in New Jersey, in 2008 NJ MLUL was amended to include two new provisions: Contiguous and Non-contiguous Clustering and Lot-size averaging, which are described in the following paragraphs.

Low Impact Development (LID) is a complementary strategy that can be used in tandem with Conservation Subdivision Design as well as other forms of development and redevelopment. The reduction in impervious surfaces gained through compact lot layouts and the clustering of buildings and the protection of riparian buffers meet the LID goal of reducing stormwater impacts. LID strategies such as streets without curbs, grassed drainage swales, permeable pavement and other green infrastructure techniques can become part of a municipality's development standards. More information about LID is available at: https://www.lid-stormwater.net/

J. Contiguous and Non-contiguous Clustering

New Jersey Municipal Land Use law N.J.S.A. 40:55D-39.1 (2014) enables municipalities to adopt an ordinance allowing for the application of contiguous cluster or noncontiguous cluster provisions to planned developments, subdivisions or site plans. This involves the assignment of a density bonus or increase in land use intensity such as increased units per acre, floor area ratio, height or impervious cover in a specific area deemed suitable for development, in exchange for the permanent preservation of agricultural land, public open space and historic sites in another area. Municipalities that utilize this option are not authorized to use the development transfer provisions set forth in the "State Transfer of Development Rights Act", P.L. 2004, c.2 (C.40:55D-137 et seq.) Owner/developer participation in a municipal noncontiguous cluster program is optional.

K. Lot-size Averaging

New Jersey Municipal Land Use law N.J.S.A. 40:55D-40 (2014) allows municipalities at their discretion, to adopt standards permitting lot-size averaging and encouraging and promoting flexibility, economy and environmental soundness in layout and design, provided the authorized density on a parcel or set of contiguous parcels is not exceeded. This is another mechanism through which the encroachment of development into the floodplain can be avoided.

L. Green Design Checklist

Sustainable Jersey has developed a "Model Green Development Checklist" aimed at assisting local government entities in understanding a proposed development's sustainable aspects and its impacts on the community; as well as to serve as a tool for identifying and implementing applicable green design initiatives. Municipal utilization of a green development checklist that is customized to prevent the adverse impacts of development within the flood can enhance the sustainability and resiliency of both new development and redevelopment. Information about creating a Green Development Checklist and associated enabling ordinance as part of the local subdivision and site plan review process can be found at http://www.sustainablejersey.com/actions-certification/actions/#open/action/483.

M. No Adverse Impact Floodplain Management

The National Association of Floodplain Managers recommends use of a "No Adverse Impact Floodplain Management" approach which builds upon the principle that the actions of one property owner should not adversely affect the rights of other property owners. The Association of State Floodplain Managers has developed extensive guidance on improved floodplain mapping, which can serve as the basis for municipal adoption of standards that are more stringent than those established by FEMA. (ASFPM 2003) The adverse effects or impacts can be measured in terms of increased flood peaks, increased flood stages, higher flood velocities, increased erosion and sedimentation, or other impacts the community considers important. No impact criteria can apply to a specific municipality or to entire watersheds as a means to mitigate regional stormwater impacts. The municipality develops and adopts a plan that identifies acceptable levels of impact, specifies appropriate measures to mitigate those adverse impacts, and establishes a plan for implementation including modifications to existing zoning ordinances. For more information, see http://www.floods.org/index.asp?menuid=349

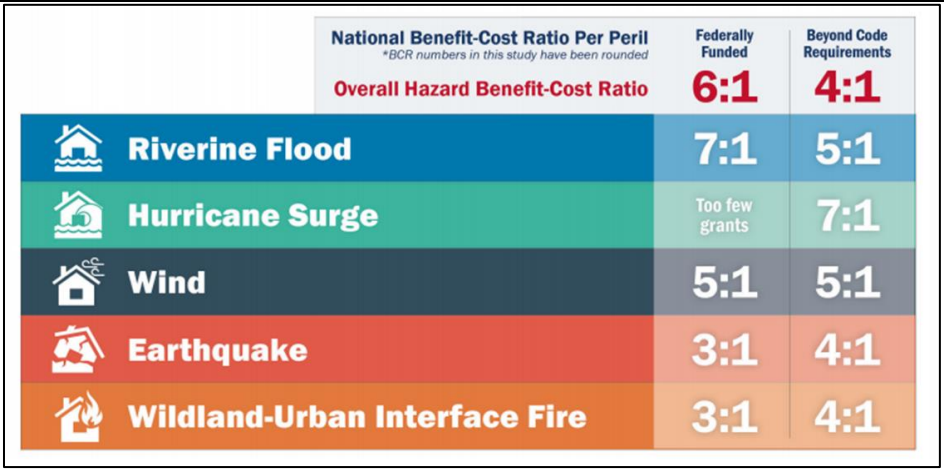
N. Construction Codes and Standards

New Jersey's current commercial building code is comprised of the Uniform Construction Code (NJAC 5:23-3.18), which is based on ASHRAE 90.1-2013 that became effective 3/21/16; and current residential code which is comprised of the Uniform Construction Code (NJAC 5:23-3.18 in combination with the 2015 International Energy Conservation Code (IECC) that became effective 3/21/16). According to the Building Codes Assistance Project (https://bcapcodes.org/code-status/) New Jersey's commercial and residential codes meet or exceed the 2015 International Building Code and IECC or equivalent.

As part of "The Natural Hazard Mitigation Saves: 2017 Interim Report", the study team examined design objectives for new buildings from the perspective of an owner or developer choosing between meeting versus exceeding the 2015 International Codes. The team used the 2015 editions as the baseline to examine the costs and benefits of exceeding code requirements for new design. It found, "Implementing mitigation measures in new construction to exceed select provisions in the 2015 International Building Code (IBC) and 2015 International Residential Code (IRC) and implementation of the 2015 Wildland-Urban Interface Code (IWUIC) saves society $4 for every $1 spent, resulting in a national benefit cost ratio (BCR) of 4:1. Federal mitigation grants provided by FEMA, EDA, and HUD result in $6 of benefit for every $1 spent, producing a national BCR of 6:1". With regard to Riverine Flooding, the Report suggests that designing buildings with increased elevation above the 2015 International Code (I-Code) requirement (BFE+1 foot) is generally cost effective at least up to +5 feet (4 feet more than the 2015 I-Code requires), and will yield a BCR of approximately 5:1, e.g., $5 saved for every $1 spent to build new homes higher out of the floodplain.

By including higher standards for construction within the floodplain, communities can ensure a stronger built environment going forward, recover more quickly after a flood, reduce flood losses and associated costs, better protect lives and property and provide safer, more resilient places to live, work and play.

Figure 8 - Benefit Cost Ratio by Hazard Mitigation Measure



Source: National Hazard Mitigation Saves: 2017 Interim Report https://www.nibs.org/page/mitigationsaves

O. Green Building Design & LEED Building Certification

The Leadership in Energy and Environmental Design (LEED) is the most widely used green building rating system in the world. LEED provides a framework to create healthy, highly efficient and cost-saving green buildings. The LEED rating system was devised by the United States Green Building Council to evaluate the environmental performance of buildings to encourage market transformation toward sustainable design. The rating system is credit-based, allowing projects to earn points for environmentally friendly actions taken during construction and use of a building. LEED was launched in an effort to develop a "consensus-based, market-driven rating system to accelerate the development and implementation of green building practices. LEED certification programs have been developed for several categories including New Construction and Major Renovations, Homes, Core and Shell, Existing Buildings, Commercial Interiors, Retail, Healthcare and Neighborhood Development. In addition, LEED for Cities is in the development Stage. There are four levels of certification: Certified, Silver, Gold and Platinum. Points are awarded in many areas, including the following that are relevant to improving flood resilience:

- Sensitive land protection
- Reduced impervious surface coverage
- Protect or restore habitat
- Open space
- Rainwater management
- Water use reduction
- Water Restoration

The impact categories developed for LEED v4 underscore how a project can benefit its community and the planet. There are 11 impact categories, of which "Sustainable Sites" (SS) appears to have the most relevance from a flood resilience perspective. SS strategies address impacts by rewarding decisions about the environment surrounding the building, and emphasizing the vital relationships among buildings, ecosystems and ecosystem services including flood buffering. They focus on restoring project site elements, integrating the site with

local and regional ecosystems. For example, LEED is changing the way runoff from precipitation is viewed. Rainwater is now seen as a resource that provides many environmental and economic benefits. Managing rainwater on site restores natural hydrologic conditions, reduces the possibility of flooding, and creates opportunities for onsite water reuse in applications like irrigation and landscape features. For more information, see https://new.usgbc.org/leed.

P. Storm Ready Program

The National Weather Service – National Oceanic and Atmospheric Administration (NOAA) administers a program aimed at helping communities reduce their vulnerability to extreme weather and water events. Municipalities can become a member of this program, which provides emergency managers with clear-cut guidelines on how to improve their hazardous weather operations. Steps include the establishing a 24-hour warning point and emergency operations center; providing more than one way to receive severe weather warnings and forecasts and to alert the public; creating a system that monitors weather conditions locally; promoting the importance of public readiness through community seminars; and developing a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises. Participation in this program can help communities become more flood resilient. For more information, see http://www.weather.gov/stormready/.

Q. Green Streets

Green streets use green infrastructure practices within the public right-of-way to manage stormwater, while preserving the primary function of a street as a conduit for vehicles, pedestrians, bicyclists and transit riders. According to the Green Streets Policy Paper prepared by Jersey Water Works' Green Infrastructure Committee, creating green streets can improve stormwater management, improve water quality, minimize localized flooding, and create attractive streetscapes. This paper notes that "As of 2012, the state had the highest percent of impervious cover in the country at 12.1 percent of its total area. A substantial portion of the impervious cover is in the form of streets, which also collect stormwater from nearby impervious surfaces. The expansion of impervious cover through development, coupled with the recent increase in the frequency and intensity of storm events due to climate change, contribute to a rise in the volume of stormwater generated. The result is increased localized and severe flooding, polluted downstream waters…" The paper further notes that in existing urbanized areas, stormwater runoff from impervious surfaces has been managed primarily using traditional methods (also referred to as "grey infrastructure"), including catchment basins, underground metal and concrete pipes, holding tanks, pumps, etc.; and that opportunities to retrofit green streets concepts should be examined when roadway re-design and reconstruction initiatives are being planned. The integration of green infrastructure techniques into roadway design and improvement projects can complement or replace traditional methods, and offer substantial environmental, public health, social and economic benefits. The paper identifies the major role municipalities, counties and the state can play in implementing green street concepts and provides a list of steps that can be taken to advance implementation of green streets principles across New Jersey. For more information, see http://www.jerseywaterworks.org/wp-content/uploads/2018/01/JWW-GI-Committee-Green-Streets-Policy-Paper-FINAL.pdf.

4. Academic and Non-Profit Initiatives

A. Sustainable Jersey Certification Program

Somerset County supports municipal participation in Sustainable Jersey's certification program. This program is a voluntary way for municipalities to receive guidance and assistance in becoming more sustainable. Municipalities can benefit directly from participating in the program. These benefits include cost savings in terms of municipal energy, water and garbage bills; improved efficiency, reduced waste, access to training, tools and guidance from SJ and its partners; promotion of certified municipalities through multiple venues; access to and priority for certain State grants and funding; and protection of environmental and community assets. Statewide, 441 municipalities are currently participating in the SJ Certification Program. Of the County's 21 municipalities, 19 are participating, of which 4 are certified at the Silver Level (Bernards, Franklin, Hillsborough and Warren) and 7 are certified at the Bronze Level (Bedminster, Bernardsville, Bridgewater, Green Brook, Montgomery, Somerville, and Watchung).

A number of initiatives for which Sustainable Jersey Credits can be earned are available to help municipalities become more flood resilient. Several of these are noted in the above sections. In addition, the following new initiatives were rolled out in February 2018 pertaining to increasing flood resiliency:

i. **Climate Action Plan**: These plans can be adopted at the local level as an element of municipal master plans. They focus on the reduction of greenhouse gas emissions (GHG), and can also include strategies for adapting to climate change. As part of this action, a baseline inventory of current GHG emissions for both government operations and the community at large or "carbon footprint" is determined; A target is established for reducing GHG emissions that align with or exceed state and global targets (such as the New Jersey Global Warming Response Act of 2007); and a series of detailed policies and strategies designed to achieve the target. For more information, see: http://www.sustainablejersey.com/actions-certification/actions/#open/action/26

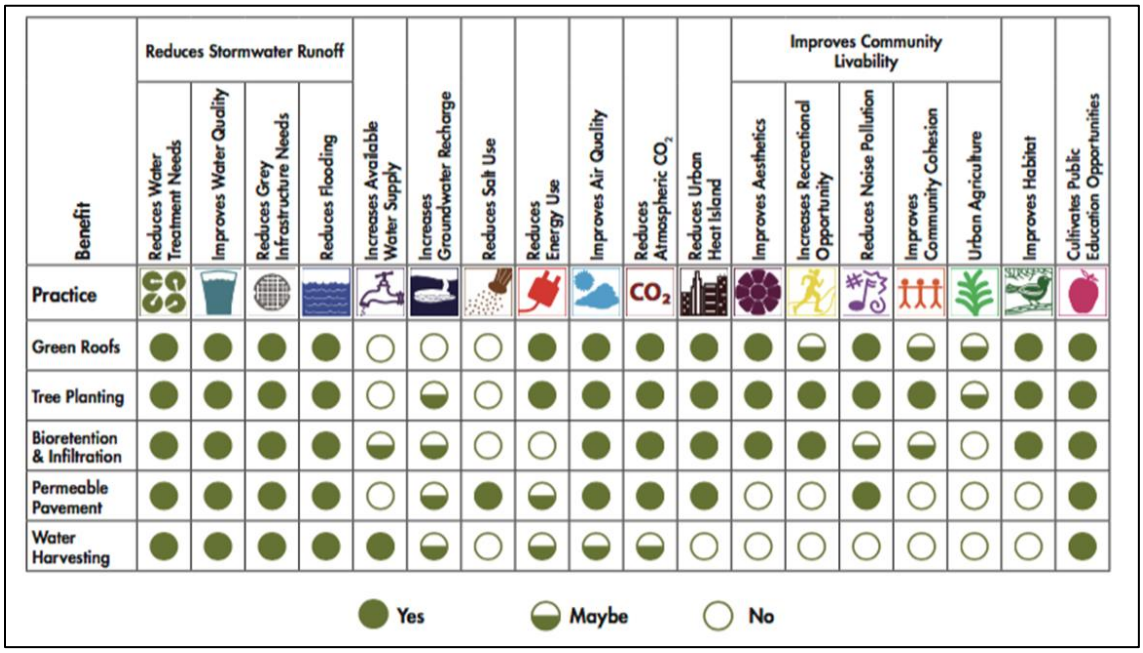
ii. **Community Asset Mapping**: These maps represent an inventory of positive and valued places, institutions, programs and populations within a community. By identifying community assets, communities can better understand how to protect and enhance important community resources. These maps can include important structures or places, including but not limited to parks, municipal buildings, schools, hospitals, health clinics, places of worship, recreational resources, libraries, historical and cultural sites, neighborhoods within the municipality; businesses, etc. For more information, see: http://www.sustainablejersey.com/actions-certification/actions/#open/action/90

iii. **Green Infrastructure Planning**: This new action described at http://www.sustainablejersey.com/actions-certification/actions/#open/action/568 is particularly relevant to improving flood resiliency, since it is aimed at promoting stormwater management methods that reduce wet weather/stormwater volume, and/or changes the characteristics of runoff flow by allowing stormwater to infiltrate, be treated by vegetation and/or soils, or be stored for reuse. Green Infrastructure provides the following benefits:

- Reduces stormwater runoff
- Improves water quality
- Reduces combined sanitary and storm sewer overflows
- Reduces flooding
- Increases groundwater recharge
- Reduces urban heat island effects
- Improves air quality
- Improves habitat

Green infrastructure strategies include man-made systems that mimic nature, which can be applied at a site-specific level. Well designed and constructed small-scale projects, like rain gardens and green roofs can help reduce the impacts of local/nuisance flooding events. Figure 8 lists five common green infrastructure best practices that can be applied to existing development, new development and redevelopment; and identifies the multiple benefits that each can provide:

Figure 8 – Green Infrastructure Best Practices and Benefits



Source: Sustainable Jersey, 2017

Green infrastructure can also involve area-wide nature-based solutions that can be applied at the landscape level. The green infrastructure services provided by natural systems yield multiple benefits, giving communities high returns on open space and preservation investments that incorporate flood risk reduction strategies. For instance, multipurpose greenways can accommodate hunting, fishing, hiking and other recreational activities while also protecting riparian habitat; act as a buffer against flooding by allowing floodwaters to disperse, slow-down and infiltrate into the soil and. by filtering pollutants and sediment before runoff enters streams. The economic benefits of natural flood mitigation solutions range from reduced flood damage costs to and lower water treatment costs to increased recreation and tourism opportunities.

An important first step toward utilizing nature-based green infrastructure solutions is to map existing natural flood protection features. Intact natural habitats including wetlands and forested

areas within riparian corridors and floodplain areas are particularly valuable in terms of providing flood protection benefits. Even natural upland and headwater areas are vital for improving flood resilience. Understanding where these systems currently exist, and where they have been degraded or lost will enable the identification of potential floodplain restoration and green infrastructure projects and initiatives (Boudreau).

iv. ***Green Infrastructure Implementation***: Green infrastructure is a cost-effective and sustainable approach to stormwater management that can reduce nuisance flooding and offer other important environmental, social and economic benefits. Green infrastructure mimics natural hydrological systems and treat runoff as a resource. This action involves completion of a minimum of two green infrastructure demonstration projects. Additional points can be earned by completing as many infrastructure projects as are necessary to achieve 50% of the short-term and long-term impervious cover management goals identified in the community's Green Infrastructure Action Plan. This action helps municipalities to define policy actions, potential partners and resources. The Green Infrastructure Guidance for Reducing the Impacts of Impervious Cover on Water Quality and the Green Infrastructure Guidance Manual for New Jersey show how impervious surfaces can be converted to pervious surfaces, how impervious surfaces can be disconnected from flowing directly into waterways and more. For more information, see: http://www.sustainablejersey.com/actions-certification/actions/#open/action/569. The Rutgers Cooperative Extension Service – Water Resource Program is available to assist communities in green infrastructure design and implementation. Federal green infrastructure funding opportunities can be found at https://www.epa.gov/green-infrastructure/green-infrastructure-funding-opportunities. Funding may also be available through the New Jersey Environmental Infrastructure Trust (NJEIT) and NJDEP (see http://www.state.nj.us/dep/grantandloanprograms/).

v. **Green Grounds and Maintenance Program**: This action is beneficial from a flood resiliency perspective, because it implements strategies that capture and filter stormwater runoff, enhance groundwater recharge and reduce the volume of stormwater runoff. http://www.sustainablejersey.com/actions-certification/actions/#open/action/79 . The first step involves adoption of a municipal Green Grounds and Maintenance Policy. More points can then be earned for implementation.

B. Rutgers New Jersey Agricultural Experiment Station – Water Resource Program (WRP)

Through a grant from the National Fish and Wildlife Foundation, the WRP has undertaken an initiative to provide impervious cover assessments and reduction action plans for over 54 municipalities within the Raritan River Basin. Through this initiative, a guidance document was produced for municipalities on "How To" implement green infrastructure strategies to reduce the impact of stormwater runoff from impervious surfaces on water quality. The project promotes the installation of "climate resilient" green infrastructure practices within the Basin to reduce the water quality and flooding impacts of impervious surfaces, helping to move these municipalities toward climate resiliency. The quantity of impervious surfaces draining directly to local waterways has been identified as the primary cause of pollution, flooding and erosion problems. Stormwater runoff volume can be reduced by connecting impervious surfaces with green infrastructure systems. Green infrastructure systems mimic natural systems and help capture,

filter, absorb and reuse stormwater. When used as components of a stormwater management system, green infrastructure practices such as bio-retention, green roofs, porous pavement, rain gardens, and vegetated swales can produce a variety of environmental benefits in addition to better managing stormwater runoff. Sixteen (16) of the municipalities that benefitted from this work are within Somerset County. These communities received Impervious Cover Assessments (ICAs) and Impervious Cover Reduction Action Plans (RAPs) which are available at the following link: http://water.rutgers.edu/Projects/NFWF/NFWF.html. Work on ICSs and RAPs are underway for two other municipalities in Somerset County by the Stony Brook Millstone Watershed Association. This work may be undertaken for Somerset County's Highlands Municipalities by WRP in the coming year. A list of municipalities in Somerset County for which ICAs and RAPs have been prepared or are currently underway is included in Appendix FRF-7.

According the ICAs prepared for Somerset County's municipalities stream ecosystem impairment has been documented when impervious cover reaches 10%. The amount of impervious cover can be used to project current and future stream quality. Impacted streams have a watershed impervious cover ranging from 11 – 25 % and typically show clear signs of degradation from urbanization. Streams associated with watersheds with impervious cover of greater than 25% no longer support a diverse ecological community. The ICAs involve the use of NJDEP's 2007 Land Use/Land Cover GIS Data and GIS Watershed Data to estimate the level of impervious cover by sub-watershed for each municipality. The RAPs involve the identification of site-specific green infrastructure projects that can be undertaken within each sub-watershed, including cost estimates.

At the request of the County Planning Division, faculty and staff with Rutgers' New Jersey Agricultural Experiment Station – Water Resource Program (WRP) prepared an updated Countywide Impervious Cover Analysis using NJDEP's 2012 Land Use/Land Cover GIS Data, for inclusion in this this report, which provides impervious coverage estimates specific to each municipality at the sub-watershed level. This updated data is provided in Appendix FRF-13 as a resource for municipalities interested in tracking change in impervious cover over time and to support green infrastructure planning and implementation at the local level.

C. The Sustainable Raritan Collaborative

In 2009, The Raritan River Collaborative, formed and supported by the E.J. Bloustein School of Planning and Public Policy and School of Environmental and Biological Sciences undertook a planning initiative funded by the Mushett Family Foundation which resulted in the preparation of "The Sustainable Raritan River Action Plan, Reclaiming the Raritan: a Restoration and Sustainable Reuse Plan" completed in December 2009. *"Commitment Eight: Significantly Reduce Stormwater Runoff*" identified in the plan includes the following:

"Educate local, county and State stakeholders on the need for Stormwater Utilities. Assemble a team of experts to deliver education and outreach programming on stormwater utilities to stakeholders and the public in the pilot area. This will require assistance from individuals in local government, Rutgers University, and watershed groups who support the program and are knowledgeable about the pilot area, stormwater utilities, or both. Tasks include 1) developing a pilot program for the implementation of stormwater utilities, 2) engaging in the stakeholder support process and 3) developing a public awareness and acceptance plan. The full report is

available at http://raritan.rutgers.edu/resources/action-plan/, along with a series of working group white papers including one on Improvements to Water Quality, Stormwater and Infrastructure, which recommends exploring the use of stormwater utilities in New Jersey as a way of addressing the backlog of stormwater management system maintenance and repair, addressing upgrades and retrofits that will maximize stormwater assets and promote green infrastructure best practices (see http://raritan.rutgers.edu/wp-content/uploads/2015/02/Raritan_Water-Quality-2013-04-10.pdf)

The efforts of this organization are supported by the "Rutgers Raritan River Consortium" (R3C), which is comprised of multiple schools, departments and programs within Rutgers University, which updated a set of strategic goals in 2017 (see http://raritan.rutgers.edu/wp-content/uploads/2017/09/R3C-Goals-objectives-strategies-FY18_2017-09-25-Draft.pdf). It also involves a collaborative of over 130 member organizations including environmental groups, business partners, foundation partners, regional organizations and county and municipal jurisdictions including Somerset County and 13 of its 21 municipalities who adopted resolutions in support of the Sustainable Raritan Action Plan. Together, the members of the collaboration are contributing to the overall restoration and preservation of the river and are changing the conversation about the future of the Raritan River and its value to the economy, quality of life and the environment. For the past 5 years, the Somerset County Planning Division has benefited from undergraduate intern assistance through Rutgers' Raritan Scholars Program, and the County and its municipalities have gained access to Graduate Studio Program and benefitted from several graduate student research, design and planning initiatives. Currently, a Graduate Studio is underway addressing green infrastructure reuse of the portions of the flood hazard area that have been mitigated through the acquisition of repetitive loss properties within the Borough of Manville.

D. Watershed Associations

Watershed associations play an important role in protecting and rehabilitating water resources. Some of the greatest challenges facing water resources today include controlling stormwater and non-point source pollution, growing demands for water supplies and balancing complicated human and ecological conflicts over limited water resources. Recognizing solutions will not come solely from regulatory action, the importance of public education and awareness, engaging citizen scientists, and advocating for land and water stewardship best management practices at a watershed level has become an important role of watershed associations. There are four (4) Watershed Associations that address portions of Somerset County that can provide resources and assistance to municipalities that can advance flood resiliency as follows:

i. **Raritan Headwaters Association (RHA)**: This organization is comprised of two (2) 52-year old organizations that merged in 2011: The South Branch Watershed Association and the Upper Raritan Watershed Association. It offers water quality, education, stewardship and land preservation programs, and is a leading voice for clean water in New Jersey. The organization recently developed a plan entitled "Climate Change Adaptation: Strategies in the Raritan Headwaters" , May 2015 that promotes wetlands restoration, riparian buffer zone remediation and green infrastructure stormwater management strategies, along with an implementation toolkit (see https://www.raritanheadwaters.org/wp-content/uploads/2015/06/Final_Product_ESP_RHA_Spring_2015_6-22-15.pdf).

The Raritan Headwaters Association is also working in partnership with the New Jersey Water Supply Authority to implement the River Friendly Business and Resident certification programs in the watershed.

ii. **Stony Brook Millstone Watershed Association (SBMWA**): The SBMWA plays an important role collecting data on stream health, distributing information to residents and public officials. The SBMWA's GIS Center combines scientific data with mapping systems to promote a better understanding of environmental issues. It also implements a "River Friendly" certification program aimed at helping residents, schools, businesses and golf course become better environmental stewards. The SBMWA also engages local and state officials, urging them to strengthen environmental protections and improve planning and zoning through its "Project for Municipal Excellence". For more information, see https://thewatershed.org/about/.

iii. **Lower Raritan Watershed Partnership (LRWP):** The LRWP was formed in 2014 to address industrial pollutants that left a legacy of contamination in the Raritan River and the Lower Raritan Watershed. It grew out of a group of concerned "civic scientists" seeking data on the health and safety of the river, and is comprised of a partnership of citizens, non-profits, government representatives, university researchers, business representatives and others. The information gathered is used to prioritize the association's stewardship and advocacy work. Its mission focuses on the protection, preservation and restoration of habitat and biodiversity within the Lower Raritan Watershed. This organization initiated a natural resource asset mapping project to identify opportunities for advancing green infrastructure initiatives. For more information, see: http://lowerraritanwatershed.org/green-infrastructure/

vi. **Great Swamp Watershed Association (GSWA):** The GSWA has been working on the protection of waters and lands within the Great Swamp and Passaic River since 1981. In 2016, the GSWA became the official Waterkeeper Alliance Affiliate for the Passaic River. It is a non-profit member-supported environmental organization that monitors and protects water quality, and investigates and participates in addressing land use issues in the Great Swamp Watershed and Passaic River region. It also provides environmental education. For more information, see: https://www.greatswamp.org/history-of-gswa/#

5. Maximizing Infrastructure and Utility Investments

A. Green Brook Flood Control Project

The New Jersey Department of Environmental Protection partnered with the New York District of the Corps of Engineers to build the Green Brook Flood Control Project in Central New Jersey. This partnership also includes Somerset and Middlesex Counties. The project is supported by the 13 impacted communities and the Green Brook Flood Control Commission.

The Bound Brook portion of the flood protection project is located at the lower end of the Green Brook basin, and has been the focus of significant design and construction efforts. The Bound Brook improvements were completed in approximately 2014. The structural elements of the Bound Brook Flood Works have been certified by FEMA and provide a 150-year level of protection. The approximate cost of the Bound Brook Flood Works was approximately 110

million dollars. The partners are committed to completing the basin-wide protection initiatives at a total cost that will exceed 400 million dollars.

The Bound Brook Flood Works consists of an array of the following Structural and Non-Structural Flood Control options: earthen levees, concrete flood walls, closable flood barriers, removal of a five-span railroad bridge and embankment, multiple bridge raisings, large pumping stations, upgrading of multiple major elements of the Bound Brook stormwater collection system, buy-outs and flood proofing of an apartment complex. This is an environmental friendly project with mitigation of wetlands impacts being addressed at the Finderne Farms site in nearby Bridgewater.

Operation and Maintenance of the Bound Brook Flood Works (totals over two miles in length) is provided by Somerset County which is under contract with NJDEP. For more information, see http://www.nj.gov/dep/floodcontrol/greenbrookfc.htm .

B. Maintenance of Stormwater Management Measures

New Jersey, Somerset County and its municipalities have jurisdiction over numerous stormwater management and drainage system improvements and the lands upon which they are located. Government entity control includes both fee-simple ownership and or easements pertaining to lands that contain stormwater and drainage facilities. Stormwater management systems are also managed and maintained by private sector entities and property owners throughout the state. How these systems are regulated by the State is summarized in Section 2. Their role in making communities more flood resilient is directly linked to how they are managed and maintained.

Chapter 8 of the New Jersey Stormwater Best Management Practices Manual addresses maintenance and retrofit of stormwater management facilities. Regular and through maintenance is necessary for these facilities to perform effectively and reliably. Failure to maintain them can lead to diminished performance, deterioration and failure, as well as a host of public health and safety concerns. The NJ Stormwater Management Rules require that a maintenance plan be developed for all stormwater management improvements that are part of major development projects. However, facilities that predate the Stormwater Management Regulations typically do not have maintenance plans. Additional guidance is provided in the NJDEP Stormwater Management Facility Maintenance Manual. Stormwater management systems that include a dam as defined in the NJ Dam Safety Standards at N.J.A.C. 7:20 must also have an operations and maintenance manual.

C. Retrofit of Stormwater Measures

Optimization of existing stormwater management facilities can contribute to flood resiliency. Stormwater management facilities can be expanded, modified or otherwise upgraded to enhance groundwater recharge and reduce the amount of stormwater entering downstream water bodies. Effective retrofit measures can improve the effectiveness of stormwater facilities, and reduce maintenance costs; while enabling communities to keep pace with new stormwater management regulations or objectives. Rutgers Cooperative Extension, Water Resources

Program provides technical assistance to municipalities regarding detention basin retrofits and maintenance. Hillsborough Township is a local example of successful detention basin retrofits implemented with help from this organization. For more information, see http://www.water.rutgers.edu/Sustainable/Hillsborough.pdf.

Effectively managing stormwater management facilities and potentially upgrading them to become more effective is an increasingly costly endeavor. One new solution being applied by communities in adjoining states including Pennsylvania is the formation of municipal stormwater management authorities for managing stormwater and addressing MS4 permit requirements. A proposed bill (S1073) that would allow municipalities, counties and certain authorities to establish stormwater utilities was proposed in 2018 and is currently under review by the NJ Assembly Telecommunications and Utilities Committee. Stormwater management authorities can potentially take responsibility for stormwater facility construction, enhancement, inspection and maintenance, as well as hire staff to perform these functions. Stormwater authorities are typically funded through the collection of fees on property owners. The role of authorities can also potentially include stormwater planning, management and compliance. The adoption of new State legislation is needed for this strategy to be employed by New Jersey Municipalities. As a first step, feasibility studies are needed to determine how and if this solution can be successfully applied in New Jersey. Philadelphia's stormwater management program implemented by the city's Water Department is a success story example. For more information, see: http://www.phila.gov/water/wu/stormwater/Pages/default.aspx.

D. Roads and Bridges

The NJDOT, the Somerset County Road Department, Municipal Public Works and other officials maintain records of roadway flooding incidences, which can be used for identifying potential projects that can be included in the mitigation strategy section of the updated HMP. Flooding impacts vary depending on local conditions, roadway characteristics and the severity of flooding events. Roadway flooding leads to unusable and dangerous roads, degradation and erosion of pavement and embankment, danger to vehicles and pedestrians, constrained access to services and complicates emergency evacuations and response activities. Skilled hydrologic and roadway engineering personnel should be called upon by the controlling government entity to evaluate roadways subject to flooding and identify mitigation measures. Mitigation projects may be applicable to some roadways near rivers and in low-lying areas that have been by impacted by nuisance flooding during wet weather as well as during severe flooding events may be candidates for mitigation.

E. Asset Management

Various government jurisdictions and semi-public utility and authorities are responsible for managing, maintaining and upgrading key infrastructure system components including roads, bridges, stormwater management facilities and conveyance systems, water and wastewater treatment facilities and conveyance systems, and other infrastructure upon which communities, residents and businesses depend in order to reduce their vulnerability to flood damage and provide for continuance of operation throughout flood events. Careful planning and coordination is needed to manage these assets, which are fundamental to quality of life and economic and

environmental well-being. Critical information gaps must be addressed in order to put in place effective asset management processes. Once infrastructure assets are defined, an inventory and assessment of the flood vulnerability of these infrastructure assets by their controlling entities is recommended. These assessments should be followed with the development and implementation of comprehensive asset management plans, including associated long-term financing/capital investment strategies that address resiliency as well as the changing service and delivery needs of our communities. One of the first steps involves the development of an asset management policy framework, which can take place at the state, county and local levels. Next, an asset management strategy that includes an inventory of assets and the preparation of asset-specific management plans linked to levels of service and financial plans and associated government and management arrangements, data and system requirements, programs and processes. Criticality of the asset and life-cycle costs are some of the important factors that are considered when prioritizing implementation. Please see the U.S. EPA's Reference Guide for Asset Management Tools: Asset Management Plan Components and Implementation Tools for Small and Medium Sized Drinking Water and Wastewater Systems, May 2014 available at the following link: https://www.epa.gov/sites/production/files/2016-04/documents/am_tools_guide_may_2014.pdf

The Benefits of Asset Management include Improved protection of public health and the environment; Improved service reliability, resiliency and sustainability; Response to existing and future conditions/long-term system integrity; significant cost savings; and improved system security and safety.

An example of a key asset management initiative completed by NJ American Water Co. in 2018 involves a long-term, $37 million flood protection project at its Raritan-Millstone Water Treatment Plant located in Somerset County comprised of the raising of berms and the current floodwall from 44 feet to 48 feet to provide flood protection from flooding up to the 500-year flood hazard level. This is the largest water production facility in the state and is a source of potable water for 1 million people in seven counties, including Somerset, Hunterdon, Middlesex, Union and Mercer Counties, as well as parts of Morris and Essex. Water from this facility is also provided to five bulk water sales connections, and two Critical Regional Emergency Interconnections: the cities of Newark and Trenton. The plant produces an average of 132 million gallons of water per day. The facility is now protected from being impacted during major floods. Another $28 million project is currently underway that includes the installation of new raw water intake pumps and emergency generators. (Muscavage)

F. Mitigation Banks

The NJDEP has established a mitigation banking program under the State's Freshwater Wetlands Protection Act that applies to freshwater wetlands and riparian zones. It allows developers to purchase mitigation bank credits as a way to mitigate impacts to freshwater wetlands and riparian zones resulting from development activities. The bank consists of successfully established wetlands and/or riparian zones of the same type as those that were impacted. Bank credits are usually purchased from a primary bank at a 1:1 ratio, such that one credit must be purchased for each acre impacted. Mitigation banks are established by private companies or public entities such as counties and municipalities. They help to address regulatory requirements that wetlands and/or riparian zones that are damaged or destroyed

must be replaced/mitigated to compensate for unavoidable impacts. For example, counties and municipalities can create a mitigation bank to offset impacts from future road improvement projects or other infrastructure projects. Entities that create mitigation banks receive a number of credits that are specified by NJDEP (and in some cases federal regulatory agencies). The NJDEP also determines how many of the credits may be sold. Credits can only be sold within a specified service area that must be approved by NJDEP. Mitigation Banks can be used as a land use strategy within floodplain areas which can help improve flood resiliency. For more information, see https://www.nj.gov/dep/opi/mitigation-banks.html. Somerset County has created a mitigation site for its own use. This site, located on Black Point Road in Branchburg Township along the South Branch of the Raritan River, is not available for public use.

G. State and Federal Capabilities and Resources

i. State

Emergency Management: Emergency management in the State of New Jersey is under the direct control of the Governor, who is conferred specific emergency powers under the New Jersey Constitution and statues. The Superintendent of the State Police, a Division within the New Jersey Department of Law and Public Safety, is the State Director of Emergency Management.

The Emergency Management Section facilitates the flow of information to and from the various Bureaus supervised and serves as a conduit for communication with other Divisions. The Section is also responsible for planning, directing and coordinating emergency operations within the State which are beyond local control.

The Recovery Bureau supervises the Public Assistance, Mitigation and Finance Units.

- The Preparedness Unit disseminates preparedness information in advance of a disaster or potential disaster.

- The Mitigation Unit has the mission of enhancing State, county and municipal risk reduction through the development and implementation of mitigation strategies. The Unit undertakes hazard mitigation planning and the review of mitigation projects in advance of potential disasters, and is also activated during and immediately after disasters to evaluate existing and proposed mitigation measures in the affected areas. They make applicants aware of Federal Emergency Management Agency (FEMA) mitigation grant programs, and conduct training sessions and workshops and participate in public meetings to facilitate grant processes.

- The Finance Unit supports the fiscal functions of both the Public Assistance and Mitigation Units. It ensures timely reimbursements and fiduciary responsibility.

The State has an Emergency Operations Center which is activated and staffed whenever a disaster occurs, or is predicted to occur. The State's Emergency Operations Plan addresses the State's response to any disaster or emergency and provides the basis for coordinated emergency operations involving disaster planning, response, recovery and mitigation.

Hazard Mitigation: The New Jersey Office of Emergency Management (NJOEM) office has evolved from a small agency with limited planning, training, and response capabilities to its present status as an integral part of State government. The State Hazard Mitigation Officer (SHMO) is the representative of State government acting as the primary point of contact with FEMA, other federal agencies, and county and local units of government in the planning and implementation of pre- and post-disaster mitigation programs and activities required under the Stafford Act. The New Jersey SHMO (as of the writing of this text) is Acting Sergeant First Class Michael Gallagher of NJOEM.

NJOEM has prioritized support for the Mitigation Unit. A Mitigation Unit manager, Civil Engineer and Regional Manager were hired to manage the increased workload and responsibilities of the NJOEM Mitigation Unit. Additional planning assets are also scheduled to be hired in the very near future. The projected additions to the Mitigation Unit will bring a total workforce to 15 staff members. The Mitigation Unit also has seven to nine Contract staff members on staff to assist with Hurricane Sandy (Federal disaster declaration DR4086) including specialists in Environmental and Historic Preservation (EHP), Benefit Cost Analysis (BCA), and Planning.

NJOEM oversees development and implementation of the New Jersey State Hazard Mitigation Plan (HMPs) as well as HMPs prepared by county and local jurisdictions and updated on a 5-year cycle in accordance with FEMA standards. The current version of the State HMP is 2014 and can be found at the following web address: http://ready.nj.gov/mitigation/2014-mitigation-plan.shtml

NJOEM also oversees implementation of FEMA's Hazard Mitigation Grant Program and Hazard Mitigation Assistance Grants that are passed-through to county and local jurisdictions. In addition, New Jersey has several funding sources for conducting hazard mitigation projects. For example, grants for flood mitigation projects may be obtained through the NJOEM for planning and projects. Capital needs of the state are primarily funded through three methods, which may be used singularly or in combination. They are:

- Pay-as-you-go capital outlays used primarily for renovations and preservation of state properties, highway, and mass transit improvements and environmental projects.
- General obligation bond funds used to finance more expensive capital construction projects such as new facilities and must yield substantial benefits for the present and future generations (these funds must be authorized by the state's voters).
- Lease or lease-purchase is an alternate method of financing capital construction by allowing the state to occupy a facility and, over a defined period of time, secure ownership.

Table FRF-9-1 in Appendix FRF-9 (as provided in the 2014 New Jersey State Hazard Mitigation Plan) summarizes New Jersey's pre- and post-disaster hazard management policies, programs, and capabilities. Table FRF-9-2 (also as provided in the 2014 New Jersey State Hazard Mitigation Plan) summarizes Funding Sources Available for Mitigation Activities.

State Plan: The State Development and Redevelopment Plan (SDRP), adopted in 2001 by the State Planning Commission pursuant to the State Planning Act (N.J.A.C. 52:18A-196) supports

"design with nature" principles and calls for the provision of Green Infrastructure to reduce the need for more costly conventional flood control infrastructure. Goal #2 calls for maximizing the ability of natural systems to control runoff and flooding. The plan promotes the coordination of land use, flood control, water supply, water quality and stormwater plans at all jurisdictional levels. The plan acknowledges the issue of climate change and recommends that all jurisdictions assess their vulnerability to the impacts of climate change including changes in flooding patterns. The plan discourages the replacement of natural riparian areas with development and other land uses. Goal 5 calls for the protection of floodplains from development and the preservation of floodplain areas for multi-purpose open space and recreation purposes. The Plan includes Policies 28 through 34 on page 151 specific to Flood Control. It also includes a Disaster Planning and Mitigation Policy as follows, "Coordinate growth management plans and policies with response planning and mitigation for disasters, including major storm events and events that can result in loss of life, extensive flooding and shorefront erosion". The NJ SDRP is available at the following web link: https://www.nj.gov/state/planning/docs/stateplan030101.pdf.

Highlands Regional Master Plan: The Highlands Regional Master Plan (RMP) was developed by the Highlands Water Protection and Planning Council and adopted in 2008 pursuant to the requirements of the Highlands Water Protection and Planning Act. The Natural Resource Element of the Plan addresses floodprone areas and other significant natural resources and identifies protection strategies. The protection, enhancement and restoration of riparian areas and open waters are high priorities within the "Open Water Buffer Areas" established by this Plan, and have regulatory implications within the designated Highlands Preservation Area, including a "zero net fill requirement" within any flood hazard area located in the Preservation Area. Five (5) of Somerset County's municipalities are located within the designated Highlands "Planning Area". In addition, a small portion (1,000 acres) of Bedminster Township is located within the Preservation Area. A copy of the Plan can be found at the following link: https://www.highlands.state.nj.us/njhighlands/master/rmp/final/highlands_rmp_112008.pdf.

Together North Jersey: The Together North Jersey Plan was developed by a coalition of partnering organizations and agencies for North Jersey. Completed in 2015, the plan acknowledges the flooding and other forms of damage caused by Tropical Storm Irene in 2011 and Superstorm Sandy in 2012 and calls for planning actions that will reduce vulnerabilities make the region more resilient. The Plan includes Focus Area 10: "Enhance the resiliency of the region's communities and infrastructure" and calls for expansion of floodplain buyout programs and the return of floodprone areas to their natural function. It also calls for the use of green infrastructure to mitigate the impacts of extreme weather and climate change. Somerset is part of the North Jersey Region covered by this plan. Voluntary implementation is being advanced by The North Jersey Planning Association, Rutgers University and other stakeholders. A copy of the planning is available at the following web link: https://togethernorthjersey.com/wp-content/uploads/2016/05/TNJ-Plan-v5-5-16-for-website-small.pdf

ii. Federal

The Federal government offers a wide range of funding and technical assistance programs that communities can access to assist in their long-term recovery, mitigation, and resiliency goals. Some of these programs are geared to disaster preparedness and mitigation planning, while the focus of others is the long-term vitality of the communities. Appendix FRF-10 presents a summary of Federal funding sources available for mitigation activities. Further information on these and other Federal programs can be found in the Catalog of Federal Domestic Assistance (CFDA) available on online at www.cfda.gov .

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VI. Appendices

Focus Group Meeting Excerpts

Background

The County last updated its Hazard Mitigation Plan in 2014, just before Hurricane Sandy hit. Much has been learned since that time as a result of the impacts from that storm. These lessons learned are helping to shape the direction of the updated Hazard Mitigation Plan for Somerset County, and the municipal-specific chapters or annexes that are part of this countywide plan.

Sandy highlighted the vulnerability of Somerset County's transportation network, telecommunications system, and electric grid and the disruptions that can occur when these systems fail for a prolonged period of time.

The purpose of the Focus Group Meetings was to gain the unique perspective and insights of different groups of experts participating in the HMP update regarding what can be done to minimize disruption and losses in the future.

Four Focus Groups

Four Focus Groups were formed, each comprised of local experts in each of the following topic areas: (1) Infrastructure & Utilities, (2) Environmental and Historic Resources, (3) Business and Industry, and (4) Public Health.

Focus Group Meetings

Meetings were held with each Focus Group, as follows:

- Public Health – November 28, 2017 (4:30-6:00 pm)
- Infrastructure Assets – November 30, 2017 (2:30 – 4:00 pm)
- Environmental and Historic Resources – November 30, 2017 (4:30-6:00 pm)
- Disability Services – January 10, 2018 (2:30-4:00 pm)

Discussion topics were identified in order to gather the information needed to shape and complete the updated plan, including the Flood and Energy Resiliency Framework components. Each question was preceded by brief background statement to provide context for the discussion. A total of six questions were involved. Ten minutes were allocated for group discussion of each question.

Themes discussed with each of the four Focus Groups included:

- Major resiliency projects implemented post-Sandy

- Unique needs of vulnerable population groups
- Flood and energy resiliency opportunities
- Protection of community/environmental assets and historic/cultural resources
- Climate change adaptation strategies to improve community resiliency

Focus Group Meeting Outcomes

Somerset County is grateful for the participation and contributions of its Focus Group members. The following table summarizes principal feedback provided by Focus Group members. Team member contributions will be used by the County in its development of hazard mitigation actions and projects to implement in the next five year plan maintenance cycle.

• Backup power needs of critical facilities – first responders, group care, fuel supply stations • Opportunities for improved outreach/education/communication • Sheltering of special needs populations • Need for resiliency of group care facilities • Opportunities for strategic fuel deliveries to supply stations serving most critical areas (high populations, first responders, hospitals, etc.)	• Special needs individuals living on their own – unique vulnerabilities post-disaster • Microgrids for energy resiliency • Open space preservation in the flood zone • Maximizing pervious surfaces • Historic preservation of flood prone properties and their contents • Flood buyouts – how to mitigate against loss of ratables

Appendix FRF – 2: List of Municipal CRS Monitoring Documents

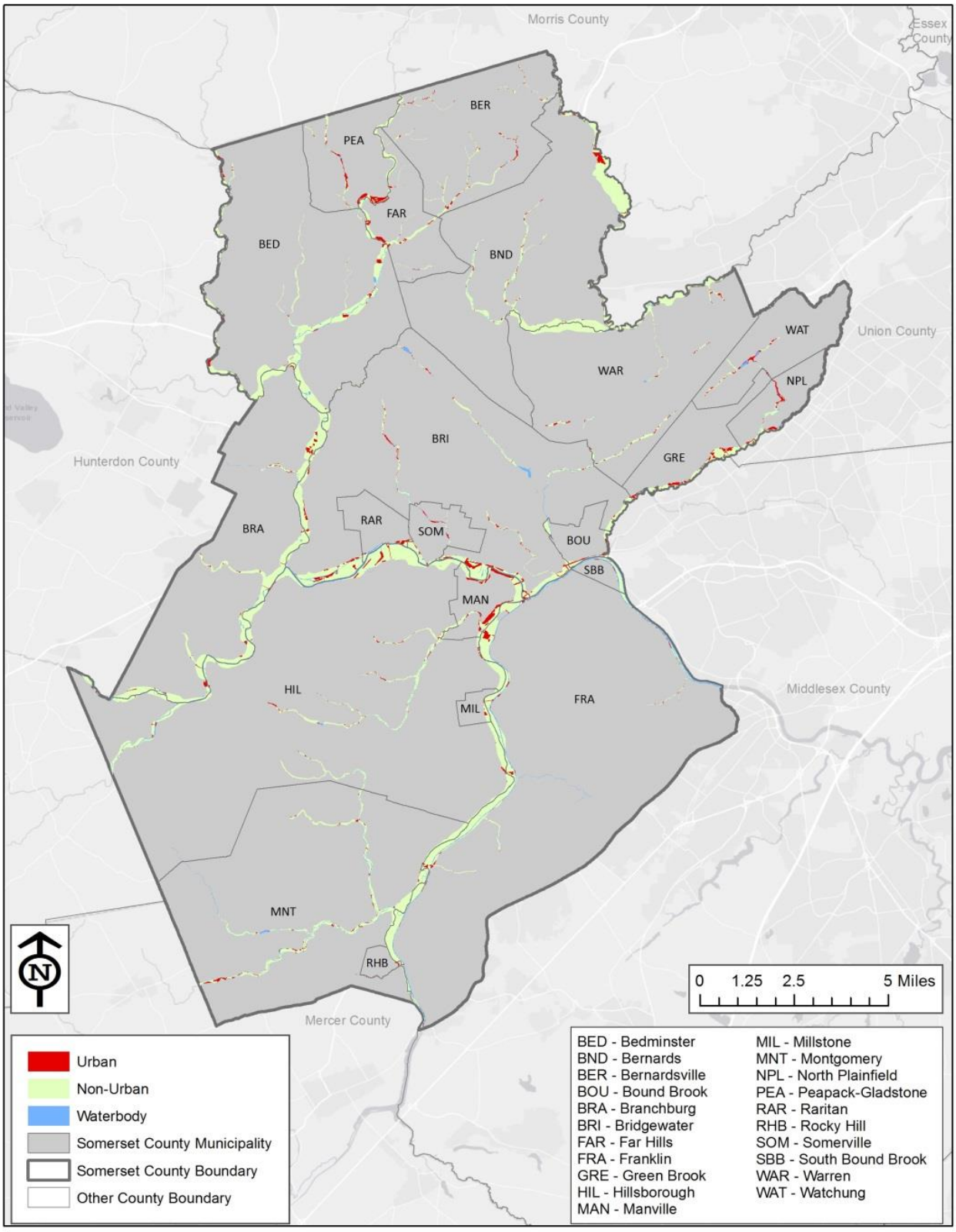
LIST OF MUNICIPAL CRS MONITORING DOCUMENTS

NAME & NFIP NUMBER OF MUNICIPALITY	CRS DOCUMENTS ON FILE AT SOMERSET COUNTY
Bedminster, 340427	1) CRS Verification Report, 9-22-14
Bernards, 340428	1) 4-1-17 FEMA Letter; 2) CRS Verification Report, 8-23-16
Franklin, 340434	1) CRS Verification Report, 10-23-14
Manville, 340437	1) CRS Verification Report, 3-25-2014; 2) ISO, Inc. Letter, 3-27-14; 3) Borough of Manville Supporting Documentation, CRS Annual Re-Certification 2017
North Plainfield, 345307	1) CRS Verification Report, 12-23-2013
Warren, 340446	1) CRS Annual Recertification & Progress Report for 2016; 2) Warren Twp. E-mail Blast: Flood Awareness, 10-12-17; 3) ISO, Inc. Letter, 10-2-09; 4) CRS Verification Report, 9-17-09

NAME & NFIP NUMBER OF MUNICIPALITY	NFIP FLOOD PROTECTION ORDINANCES ON FILE AT SOMERSET COUNTY
Bedminster, 340427	Ordinance No. 07-16: *13-605.2 The Flood Damage Prevention Ordinance*, Adopted 9-4-2007
Bernards, 340428	Ordinance # 1966: *Flood Damage Prevention, Section 25 – 10*, Adopted 8-14-2007
Bernardsville	Ordinance No. 2007-1466: *An Ordinance Amending the Borough Flood Damage Prevention Ordinance and Amending Article 14 of the Borough Land Development Regulations Entitled, "Environmental Requirements"*, Adopted 7-9-2007.
Bound Brook	Ordinance 07-17: *The Flood Damage Prevention Ordinance*, Adopted 9-10-2007
Branchburg	Ordinance No. 2007-1070: *An Ordinance Amending the Land Development Ordinance of the Township of Branchburg by Replacing Existing Article 8, which is entitled "Floodplain Management" with a new Article 8, entitled "Flood Damage Prevention",* Adopted 9-24-2007
Bridgewater	Ordinance No. 07-09: *An Ordinance Amending Chapter 102 of the Bridgewater Township Code (Flood Damage Prevention),* Adopted 8-20-2007
Far Hills	Ordinance No. 2007-09: *Adopting Flood Damage Prevention Ordinance*, Adopted 9-10-2007
Franklin, 340434	Ordinance No. 4167-16: *An Ordinance Repealing Municipal Code Chapter 192, Flood Damage Prevention of the Township of Franklin, County of Somerset, State of New Jersey and Replacing it with a New Chapter 192, Flood Damage Prevention as per New Jersey Department of Environmental Protection Requirements*, Adopted 10-25-2016
Green Brook	Ordinance 2007-725: *An Ordinance to Repeal and Replace in its Entirety Chapter XIV, "Flood Damage Prevention" of The Revised General Ordinances of the Township of Green Brook*, Adopted 8-20-2007
Hillsborough	Ordinance 2016-20: *Ordinance Repealing and Replacing Chapter 172 "Flood Damage Prevention" of the Code of the Township of Hillsborough*, Adopted 11-9-2016
Manville, 340437	Ordinance # 2016-1175: *An Ordinance Repealing and Replacing Ordinance #2007-1058 Entitled The Flood Damage Prevention Ordinance (60.3) D*, Adopted 9-26-2016
Millstone	Ordinance 2016-004: *The Flood Damage Prevention Ordinance of the Borough of Millstone, County of Somerset, State of New Jersey*, Adopted 11-4-2016
Montgomery	Ordinance No. 16-1534: *An Ordinance of the Township of Montgomery in Somerset County, New Jersey Amending Subsections 16-3.3 and 16.6.4 of the Code of the Township of Montgomery (1984) Regarding Critical Areas*, Adopted 11-3-2016

North Plainfield, 345307	Ordinance No. 07-10: *An Ordinance to Amend, Revise and Supplement the Code of the Borough of North Plainfield, Chapter XX, Entitled "Flood Prevention"*, Adopted 7-23-2007
Peapack & Gladstone	Ordinance No. 899: *The Flood Damage Prevention Ordinance*, Adopted 7-24-2007
Raritan	Ordinance #07-15: *An Ordinance of the Borough of Raritan, County of Somerset, State of New Jersey, Amending, Revising and Supplementing the Code of the Borough of Raritan, Chapter 31, entitled "Flood Damage Prevention",* Adopted 9-11-2007
Rocky Hill	Ordinance # 2016-04: *An Ordinance Repealing Chapter 100, Titled "Flood Damage Prevention", and Repealing Article XII, Titled "Flood Damage Prevention", Sections 80-128 to 80-132, of the Code of the Borough of Rocky Hill and Replacing with a New Article XII, Titled "Flood Damage Prevention",* Adopted 12-8-2016
Somerville	Ordinance Number 2239: *Amending Chapter 82, Floodplains and Flood Hazard Areas, Article I & II,* Adopted 8-20-2007
South Bound Brook	Ordinance 009-2007: *An Ordinance Amending the Revised General Ordinance of the Borough of South Bound Brook, Chapter XXI Entitled Flood Hazard Prevention,* Adopted 10-9-2007
Warren, 340446	Ordinance 07-65: *An Ordinance of the Township of Warren, County of Somerset, State of New Jersey, Amending, Revising and Supplementing the Code of the Township of Warren, Chapter XV, Entitled "Flood Damage Prevention",* Adopted 10-18-2007
Watchung	Ordinance OR:07/15: *"An Ordinance Amending and Supplementing Chapter XXII Entitled, "Flood Damage Prevention, Specifically Section 22-3.2 Entitled "Basis for Establishing the Areas of Special Flood Hazard of the Code of the Borough of Watchung Adopted 2004, as Heretofore Supplemented and Amended"*, Adopted 7-19-2007

Figure FRF-5-1. Floodways as Urban or Non-Urban*



Source: FEMA Region 2, 2017; NJDEP land cover 2012.

Notes: * Figure FRF-5-1 illustrates Floodways identified by FEMA and included on its D-FIRM Maps for Somerset County, distinguishing between Floodway areas that are urban versus non-urban. Urban or developed Floodways may be at risk for experiencing flood damage. Floodways comprise the channel of a river or other watercourse and adjacent land areas that must remain open to permit passage of the Base Flood. Development within Floodways must be restricted to ensure that there are no increases in upstream flood elevations. NFIP Communities officially adopt "regulatory floodways" as part of their FDPOs and must complete encroachment reviews for all proposed development that may impact these areas. Lands are designated as urban or non-urban based on the New Jersey Department of Environmental Protection Agency 2012 Land Use / Land Cover GIS dataset. Urban/developed Floodway areas within the County took place prior to the completion of the analyses through which regulatory Floodways were defined.

This map is for illustration purposes only, and is not suitable for site-specific, legal, regulatory and/or financial decision-making or commitments. Somerset County does not guarantee this information to be accurate, correct or complete and assumes no responsibility for errors, omissions, or misinterpretations, even if Somerset County is advised of the possibility of errors or omissions or the damages resulting there from. Contact Somerset County Planning Division for data or information about Areas of Potential Repetitive Flood Loss.

Appendix FRF – 4: Sample Municipal Riparian/Stream Corridor Protection Overlay Ordinances

This appendix includes:

A model riparian ordinance developed by NJDEP.

A sample riparian ordinance adopted by Warren Township.

(Please note, the text includes a link to a Montgomery Twp. ordinance)

EXPLANATION: This Ordinance adopts regulations promulgated by the New Jersey Department of Environmental Protection regarding stream corridor buffers. It implements buffer zones of varying dimensions based on the stream classification.

[INSERT MUNICIPALITY NAME]

ORDINANCE NO. [Insert Ordinance #]

AN ORDINANCE AMENDING *THE REVISED GENERAL ORDINANCES OF THE [INSERT MUNICIPALITY NAME],* CHAPTER XX ENTITLED "LAND USE PROCEDURES AND DEVELOPMENT", TO ADD NEW SECTION _____ ENTITLED "RIPARIAN BUFFER CONSERVATION ZONES"

BE IT **ORDAINED** by the [Municipality Name] Township Committee of the [insert Municipality name], in the County of Somerset and State of New Jersey, as follows:

Section 1 Chapter 15 entitled "Land Use Procedures and Development", of

The Revised General Ordinances of the [insert Municipality name], is amended to add new

Section _____, entitled "Riparian Buffer Conservation Zones", as follows:

XX-XX. RIPARIAN BUFFER CONSERVATION ZONES.

XX-XX.1 Intent and Purpose.

[Municipality Name] Committee of the [insert Municipality name] ("Township") finds that riparian lands adjacent to streams, lakes, or other surface water bodies that are appropriately vegetated provide important environmental protection and resource management benefits. It is necessary to protect and maintain the beneficial character of riparian areas by implementing specifications for the establishment, protection, and maintenance of vegetation along the surface water bodies within the jurisdiction of [Municipality Name], consistent with the interest of landowners in making reasonable economic use of parcels of land that include such designated areas. The purpose of this Ordinance is to designate Riparian Buffer Conservation Zones ("RBCZ"), and to provide for land use regulation therein in order to protect the streams, lakes, and other surface water bodies of [Municipality Name]; to protect the water quality of watercourses, reservoirs, lakes, and other significant water resources within [Municipality Name]; to protect the riparian and aquatic ecosystems of [Municipality Name]; and to provide for the environmentally sound use of the land resources of [Municipality Name]. The specific purposes and intent of this

Ordinance are to:

a. Restore and maintain the chemical, physical, and biological integrity of the water resources of [Municipality Name];

b. Prevent excessive nutrients, sediment, and organic matter, as well as biocides and other pollutants, from reaching surface waters by optimizing opportunities for filtration, deposition, absorption, adsorption, plant uptake, biodegradation, and denitrification, which occur when stormwater runoff is conveyed through vegetated buffers as stable, distributed sheet flow prior to reaching receiving waters;

c. Provide for shading of the aquatic environment so as to moderate temperatures, retain more dissolved oxygen, and support a healthy assemblage of aquatic flora and fauna

d. Provide for natural organic matter (fallen leaves and twigs) and large woody debris (fallen trees and limbs) that provide food and habitat for small bottom dwelling organisms (insects, amphibians, crustaceans, and small fish), which are essential to maintain the food chain;

e. Increase stream bank stability and maintain natural fluvial geomorphology of the stream system, thereby reducing stream bank erosion and sedimentation and protecting habitat for aquatic organisms;

f. Maintain base flows in streams and moisture in wetlands;

g. Control downstream flooding; and

h. Conserve the natural features important to land and water resources, e.g., headwater areas, groundwater recharge zones, floodways, floodplains, springs, streams, wetlands, woodlands, and prime wildlife habitats.

XX-XX.2. Statutory Authority.

[Municipality Name] is empowered to regulate land uses under the provisions of the New Jersey Municipal Land Use Law, N.J.S.A 40:55D-1 *et seq.,* which authorizes each municipality to plan and regulate land use in order to protect public health, safety and welfare by protecting and maintaining native vegetation in riparian areas. [Municipality Name] is also empowered to adopt and implement this Ordinance under provisions provided by the following legislative authorities of the State of New Jersey:

a. Water Pollution Control Act, N.J.S.A. 58:1 OA *et seq.;*
b. Water Quality Planning Act, N.J.S.A. 58:11A-1 *et seq.;*
b. Spill Compensation and Control Act, N.J.S.A. 58:10-23 *et seq.;*
c. Soil Erosion and Sediment Control Act,. N.J.S.A. 4:24-39 *et seq.;* and
d. Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 *et seq.*

XX-XX.3. Definitions.

Administrative Authority means the Planning Board or Board of Adjustment or Construction Office with all of the powers delegated, assigned, or assumed by them according to statute or ordinance.

Applicant means a person applying to the Planning Board, Board of Adjustment or the Construction Office proposing to engage in an activity that is regulated by the provisions of this ordinance, and that would be located within a regulated Riparian Buffer Conservation Zone.

Category One (CI) Waters are those waters, designated in the Surface Water Quality Standards at N.J.A.C. 7:9B-1.15, which have been identified for protection from degradation in water quality characteristics because of their clarity, color, scenic setting, and other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources.

Category Two Waters means those waters not designated as Outstanding National Resource Waters or Category One in the Surface Water Quality Standards at N.J.A.C. 7:9B-1.15 for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d).

Floodway shall have the meaning ascribed to this term by the Flood Hazard Area Control Act (N.J.S.A. 58:16A-50 *et seq.)* and regulations promulgated thereunder published at N.J.A.C. 7.13 *et seq.,* and any supplementary or successor legislation and regulations from time to time enacted or promulgated.

Intermittent Stream means surface water drainage channels with definite bed and banks in which there is not a permanent flow of water. Streams shown as a dashed line on either the USGS topographic quadrangle maps or the USDA County Soil Survey Maps of the most recent edition that includes hydrography are included as intermittent streams.

Lake, pond, or reservoir means any impoundment, whether naturally occurring or created in whole or in part by the building of structures for the retention of surface water, excluding sedimentation control and stormwater retention/detention basins and ponds designed for treatment of wastewater.

Perennial stream means a stream that flows continuously throughout the year in most years. These streams appear as a blue line on USGS topographic quadrangle maps or on USDA County Soil Survey Maps.

Riparian Buffer Conservation Zone (RBCZ) means an area of land or water within or adjacent to a Surface Water Body within the municipality and designated on the Riparian Buffer Conservation Zone Map promulgated by Warren Township in accordance with Section 4 of this Ordinance.

Riparian Buffer Conservation Zone Management Plan means a plan approved by

[Municipality Name] Engineer and Township Planner. The plan shall be prepared by a landscape architect, professional engineer or other qualified professional, and shall fully evaluate the effects of any proposed activities and uses on any RBCZ. The plan shall identify existing conditions, all proposed activities, and all proposed management techniques, including any measures necessary to offset disturbances to any affected RBCZ.

Surface Water. Body means any perennial stream, intermittent stream, lake, pond, or reservoir, as defined herein. In addition, any state open waters identified in a letter of interpretation issued by the New Jersey Department of Environmental Protection Land Use Regulation Program shall also be considered surface water bodies.

XX-XX.4 Establishment Of Riparian Buffer Conservation Zones.

a. Riparian Buffer Conservation Zones (RBCZs) shall be delineated as follows:

1. In the case of Category One *(CI)* waters, the RBCZ shall equal the Special Water Resource Protection Area, and shall be measured as defined at N.J.A.C. 7:8-5.5(h). Special Water Resource Protection Areas are established along all waters designated as CI at N.J.A.C. 7:9B and perennial or intermittent streams that drain into or upstream of the CI waters as shown on the USGS quadrangle map or in the County Soil Surveys within the associated HUC 14 drainage.

2. For areas adjacent to surface water bodies designated Category Two Waters for Trout Production (FW2-TP) the RBCZ shall be measured from the defined edge of the intermittent or perennial stream, or centerline if the bank is not defined, or lake, pond or reservoir at bank-full flow or level, and shall extend 150 feet horizontally outward from the perpendicular. Where steep slopes (in excess of 10 percent) are located within the designated widths, the RBCZ shall be extended to include the entire distance of this sloped area.

3. For areas adjacent to other surface water bodies, the RBCZ shall be measured from the top of bank of an intermittent or perennial stream, or centerline if bank is not defined, or lake, pond or reservoir at bank-full flow or level, and shall extend 75 feet horizontally outward from the perpendicular. Where steep slopes (in excess of 10 percent) are located within the designated widths, the RBCZ shall be extended to include the entire distance of this sloped area.

4. For areas adjacent to surface water bodies for which the Floodway has been delineated, the RBCZ shall cover the entire Floodway area, or the area described in Section 4.a.1. or 4.a.2., whichever area has the greatest extent. Floodway delineations shall be based upon the State's adopted floodway delineations. However, requests for alterations to the adopted delineations can be provided to the New Jersey Department of Environmental Protection ("NJDEP") for consideration if site specific information is available.

5. An RBCZ is an overlay to the existing zoning districts. The provisions of the

underlying district shall remain in full force, except where the provisions of the RBCZ differ from the provisions of the underlying district, in which case the provision which is more restrictive, and less permissive, to a landowner or applicant shall apply. These provisions are intended to modify the type of land use, siting of structures, and engineering of all proposed development on parcels located within the RBCZ. These provisions apply to land disturbances resulting from or related to any activity or use requiring application for any of the following permits or approvals:

Building permit
Zoning variance
Special exception
Conditional use
Subdivision/land development approval

6. A map of the RBCZs of the entire Township, including all land and water areas within its boundaries, which designates Surface Water Bodies, is authorized by this Ordinance, and, when prepared by [Municipality Name] Engineer and Township Planner, will be found at the end of this Chapter as Appendix ___. Maps of [Municipality Name] on which these designations have been overlain shall be on file and maintained by the offices of [Municipality Name] Clerk. This map conforms to all applicable laws, rules and regulations applicable to the creation, modification and promulgation of zoning maps.

7. It shall be the duty of [Municipality Name] Engineer and [Municipality Name] Planner, every second year after the adoption of this Ordinance, to propose modifications to the map delineating Riparian Buffer Conservation Zones required by any naturally occurring or permitted change in the location of a defining feature of a surface water body occurring after the initial adoption of the RBCZ map, to record all modifications to the RBCZ map required by decisions or appeals under Section ___, and by changes made by DEP in surface water classifications or Floodway delineations. Floodway delineations shall be based upon the State's adopted floodway delineations. However requests for alterations to the adopted delineations can be provided to the NJDEP for consideration if site specific information is available.

8. The applicant or designated representative shall be responsible for the initial determination of the presence of an RBCZ on a site, and for identifying the area on any plan submitted to [Municipality Name] in conjunction with an application for a construction permit, subdivision, land development, or other improvement that requires plan submissions or permits. This initial determination shall be subject to review and approval by [Municipality Name] Engineer and Township Planner, and, where required, by NJDEP.

9. [Municipality Name]'s Master Plan provides the legal basis for zoning and land use regulation at the local level. The technical foundation for local RBCZs in [Municipality Name] may be incorporated into the Master Plan. A technical report on the need for Riparian Buffer Conservation Zones in [Municipality Name] may be adopted as part of the Master Plan (N.J.S.A. 40:55D-28b(11). The technical report should include the following information:

(a) a statement setting forth the rationale and need to protect RBCZs; and

(b) reference to the methods used to designate and delineate RBCZs.

XX-XX.5 Uses Permitted In Riparian Buffer Conservation Zones.

a. For Category One (CI) RBCZs, permitted uses are governed by N.J.A.C. 7:8-5.5(h), unless otherwise exempt.

b. Any other RBCZ area shall remain in a natural condition or, if in a disturbed condition, including agricultural activities, at the time of adoption of this ordinance, may be restored to a natural condition. There shall be no clearing or cutting of trees and brush, except for removal of dead vegetation and pruning for reasons of public safety or for the replacement of invasive species with indigenous species, altering of watercourses, dumping of trash, soil, dirt, fill, vegetative or other debris, regrading or construction. The following uses are permitted either by right or after review and approval by the municipality in RBCZs.

c. No new construction, development, use, activity, encroachment, or structure shall take place in an RBCZ, except as specifically authorized in this Section. The following uses shall be permitted within an RBCZ:

1. Open space uses that are primarily passive in character shall be permitted by right to extend into an RBCZ, provided near stream vegetation is preserved.

2. Uses that do not require approval by the Zoning Officer or compliance with an approved RBCZ Management Plan, include but are not limited to: wildlife sanctuaries, nature preserves, forest preserves, fishing areas, game farms, fish hatcheries and fishing reserves, operated for the protection and propagation of wildlife, but excluding structures, and passive recreation areas of public and private parklands, including unpaved hiking, bicycle and bridle trails, provided that said trail have been stabilized with pervious materials. Fences, for which a permit has been issued by the Construction Code Office, to the extent required by applicable law, rule or regulation, are permitted.

3. Crossings by farm vehicles and livestock, recreational trails, roads, railroads, storm water lines, sanitary sewer lines, water lines and public utility transmission lines, provided that the land disturbance is the minimum required to accomplish the permitted use, shall be permitted, subject to approval by the Zoning Officer, provided that any applicable State permits are acquired, and provided that any disturbance is offset by buffer improvements in compliance with an approved RBCZ Management Plan.

4. Stream bank stabilization or riparian reforestation, which conform to the guidelines of an approved RBCZ Management Plan, or wetlands mitigation projects that have been approved by the NJDEP, are permitted to extend into an RBCZ, subject to approval by the Zoning Officer and subject to compliance with an approved RBCZ Management Plan.

XX-XX.6 Performance Standards For Riparian Buffer Conservation Zones

a. All encroachments proposed into Category One (Cl) RBCZs shall comply with the requirements at N.J.A.C. 7:8-5.5(h) and shall be subject to review and approval by the NJDEP. For all other RBCZs, the following conditions shall apply:

1. All new major and minor subdivisions and site plans shall be designed to provide sufficient areas outside of the RBCZ to accommodate primary structures, any normal accessory uses appurtenant thereto, as well as all planned lawn areas.

2. Portions of lots within the RBCZ must be permanently restricted by deed or conservation easement, which restrictive document is to be prepared and approved by the Warren Township Attorney, held by [Municipality Name] to prevent clearing of vegetation within the RBCZ. A complete copy of the recorded conservation restriction that clearly identifies the deed book and pages where it has been recorded in the county clerk's office must be submitted to [Municipality Name]. The applicant shall not commence with the project or activity prior to making this submittal and receiving actual approval of the plan modification and receipt of any applicable permits from the NJDEP. The recorded conservation restriction shall run with the land and be binding upon the property owner and the successors in interest in the property or in any part thereof. The conservation restriction may include language reserving the right to make *de minimus* changes to accommodate necessary regulatory approvals upon the written consent of [Municipality Name], provided such changes are otherwise consistent with this chapter. The recorded conservation restriction shall, at a minimum, include:

(a) a written narrative of the authorized regulated activity, date of issuance, and date of expiration, and the conservation restriction that, in addition, includes all of the prohibitions set forth at N.J.S.A. 13:8B-2b(l)through (7);

(b) survey plans for the property as a whole and, where applicable, for any additional properties subject to the conservation restrictions. Such survey plans shall be submitted on the surveyor's letterhead, signed and sealed by the surveyor, and shall include metes and bounds descriptions of the property, the site, and the areas subject to the conservation restriction in New Jersey State Plane Coordinates, North American Datum 1983, and shall depict the boundaries of the site and all areas subject to the conservation restriction as marked with flags or stakes onsite. All such survey plans shall be submitted on paper and in digital CAD or GIS file on a media and format required by [Municipality Name] Engineer. The flags or stakes shall be numbered and identified on the survey plan; and

(c) a copy or copies of deeds for the property as a whole that indicate the deed book and pages where it has been recorded in the county clerk's

office.

3. Any lands proposed for development which include all or a portion of an RBCZ shall, as a condition of any major subdivision or major site plan approval, provide for the vegetation or revegetation of any portions of the RBCZ which are not vegetated at the time of the application or which were disturbed by prior land uses, including for agricultural use. Said vegetation plan shall utilize native tree and plant species in accordance with an approved Riparian Buffer Conservation Zone Management Plan, described in Section _____.

4. Minimum front, side, and rear setbacks required for building lots which exist as of the date of adoption of this ordinance, but have not obtained a building permit, may extend into the RBCZ, provided that a deed restriction or conservation easement is applied which prohibits clearing or construction in the RBCZ.

5. All stormwater shall be discharged outside of but may flow through an RBCZ and shall comply with the Standard For Off-Site Stability in the "Standards for Soil Erosion and Sediment Control in New Jersey", established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 *et seq.* (see N.J.A.C. 2:90-1.3.).

6. If stormwater discharged outside of and flowing through an RBCZ cannot comply with the Standard For Off-Site Stability cited in Section 6.e., then the stabilization measures in accordance with the requirements of the above standards may be placed within the RBCZ, provided that:

(a) stabilization measures shall not be placed closer than 50 feet from the top of the bank at bank full flow or level of other surface water bodies;

(b) the encroachment shall only be allowed where the applicant demonstrates that the functional value and overall conditions of the RBCZ will be maintained to the maximum extent practicable;

(c) a conceptual project design meeting shall be held with the appropriate municipal staff and Soil Conservation District staff to identify necessary stabilization measures; and

(d) all encroachments proposed under this section shall be subject to review and approval by the Administrative Authority.

XX-XX.7 NONCONFORMING STRUCTURES AND USES IN RIPARIAN BUFFER CONSERVATION ZONES.

Nonconforming structures and uses of land within the RBCZ are subject to the following requirements:

a. Legally existing but nonconforming structures or uses may be continued.

b. Any proposed enlargement or expansion, of the building footprint within a Category One (Cl) RBCZ shall comply with the standards in N.J.A.C. 7:8-5.5(h).

c. For all other RBCZs:

1. The existing building footprint or uses shall not be expanded or enlarged.

2. Discontinued nonconforming uses may be resumed any time within one year from such discontinuance but not thereafter when showing clear indications of abandonment.

3. No change or resumption shall be permitted that is more detrimental to the RBCZ, as measured against the intent and purpose under Section 1, than the existing or former nonconforming use. This one-year time frame shall not apply to agricultural uses that are following prescribed Best Management Practices for crop rotation; however, resumption of agricultural uses must be strictly confined to the extent of disturbance existing at the time of adoption of this ordinance.

XX-XX.8 Uses Prohibited In Riparian Buffer Conservation Zones.

a. Any use within a Category One (Cl) RBCZ shall comply with the standards in N.J.A.C. 7:8-5.5(h).

b. For other RBCZs, any use or activity not specifically authorized in Section 5 or Section 7 shall be prohibited within the RBCZ. By way of example, the following activities and facilities are prohibited:

1. Removal or clear-cutting of trees and other vegetation or soil disturbance such as grading.

2. Storage of any hazardous or noxious materials.

3. Use of fertilizers, pesticides, herbicides, and/or other chemicals in excess of prescribed industry standards or the recommendations of the Soil Conservation District.

4. Roads or driveways, except where permitted in compliance with Section 5.

5. Motor or wheeled vehicle traffic in any area, except as permitted by this Ordinance.

6. Parking lots.

7. Any type of permanent structure, except structures needed for a use permitted by Section _____.

8. New subsurface sewage disposal areas.

9. Residential grounds or lawns, except as otherwise permitted pursuant to this Ordinance.

XX-XX.9 Activities Permitted in Stream Buffer Conservation Zones in the Case of No Reasonable or Prudent Alternative or Extreme Hardship.

a. For Category One (Cl) RBCZs, requests for exemptions must be authorized by the DEP.

b. For other RBCZs, hardship variances may be granted by the Zoning Board of Adjustment in cases of a preexisting lot (existing at the time of adoption of this ordinance), when there is insufficient room outside the RBCZ for uses permitted by the underlying zoning and there is no other reasonable or prudent alternative to placement in the RBCZ, including obtaining variances from setback or other requirements that would allow conformance with the RBCZ requirements, and provided the following demonstrations are made:

1. An applicant shall be deemed to have established the existence of an extreme economic hardship, as distinguished from mere inconvenience, if the subject property is not capable of yielding a reasonable economic return if its present use is continued or if it is developed in accordance with provisions of this ordinance and that this inability to yield a reasonable economic return results from unique circumstances peculiar to the subject property which:

(a) do not apply to or affect other property in the immediate vicinity;

(b) relate to or arise out of the characteristics of the subject property because of the particular physical surroundings, shape or topographical conditions of the property involved, rather than the personal situations of the applicant; and

(c) are not the result of any action or inaction by the applicant or the owner or his predecessors in title. The necessity of acquiring additional land to locate development outside the RBCZ shall not be considered an economic hardship unless the applicant can demonstrate that there is no adjacent land that is reasonably available.

2. An applicant shall be deemed to have established compelling public need if the applicant demonstrates, based on specific facts, that:

(a) the proposed project will serve an essential public health or safety need;

(b) the proposed use is required to serve an existing public health or safety need; or

(c) there is no alternative available to meet the established public health or safety need.

3. A variance can only be granted if it is shown that the activity will not be materially detrimental or injurious to other property or improvements in the area in which the subject property is located and will not endanger public safety; and the exception granted is the minimum relief necessary to relieve the hardship.

4. If the above demonstrations are made, then the encroachment of impervious surfaces (structures or pavement) otherwise permitted by the underlying zoning is permitted to the extent of 750 square feet total. Said encroachment is not permitted closer than 100 feet from the top of the bank at bank-full flow or level of Category Two Waters for Trout Production (FW2-TP), or closer than 50 feet from the top of the bank at bank-full flow or level of other

surface water bodies.

5. If such an exception is granted, the applicant shall rehabilitate an environmentally degraded RBCZ area within or adjacent to the same site, and at least equivalent in size to the RBCZ reduction permitted, or, if not possible, rehabilitate or expand an RBCZ area at least equivalent in size within a nearby site and, if available, within the same watershed. Rehabilitation shall include reforestation, stream bank stabilization and removal of debris, in accordance with an RBCZ Management Plan.

XX-XX.10 RIPARIAN BUFFER CONSERVATION ZONE MANAGEMENT PLAN.

a. Within any RBCZ, no construction, development, use, activity, or encroachment shall be permitted unless the effects of such development are accompanied by preparation, approval, and implementation of a Riparian Buffer Conservation Zone Management Plan.

b. The landowner, applicant, or developer shall submit to [Municipality Name] Engineer and Township Planner as a completeness item a Riparian Buffer Conservation Zone Management Plan prepared by an environmental professional, professional engineer or other qualified professional which fully evaluates the effects of any proposed uses on the RBCZ. The Riparian Buffer Conservation Zone Management Plan shall identify the existing conditions including:

1. existing vegetation;
2. field delineated surface water bodies;
3. field delineated wetlands;
4. the 100-year floodplain;
5. Flood Hazard Areas, including Floodway and Flood Fringe areas, as delineated by the DEP;
6. soil classifications as found on Soil Surveys;
7. existing sub-drainage areas of site with HUC-14 (Hydrologic Unit Code) designations; and
8. slopes in each sub-drainage area segmented into sections of slopes less than or equal to ten (10) percent; above ten percent but less that 20 percent; and greater than twenty (20) percent.

The proposed plan shall describe all proposed uses and activities, and fully evaluate the effects of all proposed uses/activities in an RBCZ, and all proposed management techniques, including proposed vegetation and any other measures necessary to offset disturbances to the RBCZ. A discussion of activities proposed as well as management techniques proposed to offset disturbances and enhance the site to improve the RBCZ's ability to function effectively as an RBCZ shall also be included with the RBCZ Management Plan submittal to [Municipality Name].

c. The Plan shall be reviewed and must be approved by [Municipality Name] Engineer and Township Planner, in consultation with the Warren Township Environmental Commission, as part of the subdivision and land development process.

d. The Riparian Buffer Conservation Zone Management Plan should include management provisions in narrative and graphic form specifying:

1. the manner in which the area within the RBCZ will be owned and by whom it will be managed and maintained.

2. the conservation and land management techniques and practices that will be used to conserve and protect the RBCZ, as applicable.

3. the professional and personnel resources that are expected to be necessary, in order to maintain and manage the RBCZ.

4. a revegetation plan, if applicable, that includes: three layers of vegetation, including herbaceous plants that serve as ground cover, understory shrubs, and trees that form an overhead canopy. Vegetation selected must be native and consistent with the soil, slope and moisture conditions of the site. The revegetation plan shall be prepared by a qualified professional such as a landscape architect or engineer, and shall be subject to the approval of [Municipality Name] Engineer and Township Planner, in consultation with the Warren Township Environmental Commission. Dominant vegetation in the Riparian Buffer Conservation Zone Management Plan shall consist of plant species that are suited to the stream buffer environment. [Municipality Name] Engineer and Township Planner may require species suitability to be verified by qualified experts from the Soil Conservation District, Natural Resources Conservation Service, NJDEP, US Fish and Wildlife Service and/or State or Federal forest agencies.

e. A Riparian Buffer Conservation Zone Management Plan is not required where the RBCZ is not being disturbed and conservation easements or deed restrictions are applied to ensure there will be no future clearing or disturbance of the RBCZ.

f.Performance of the Riparian Buffer Conservation Zone Management Plan shall be guaranteed for two years by a surety, such as a bond, cash or letter of credit, which shall be provided to [Municipality Name] prior to [Municipality Name] issuing any permits or approving any uses relating to the applicable use or activity.

XX-XX.1 I Boundary Interpretation, Appeals Procedures, Inspections, Conflicts, Severability.

a. When a landowner or applicant disputes the boundaries of an RBCZ, or the defined bank-full flow or level, the landowner or applicant shall submit evidence to [Municipality Name] Engineer and Township Planner that describes the RBCZ, presents the landowner or applicant's proposed RBCZ delineation, and presents all justification for the proposed boundary change. For Category One (Cl) RBCZs, the landowner or applicant must first obtain approval from the NJDEP. The applicant shall

submit evidence to [Municipality Name] Engineer and Township Planner that describes the RBCZ, presents the landowner or applicant's proposed RBCZ. delineation, and presents all justification for the proposed boundary change. A decision from the NJDEP must be included with the evidence submitted for Township review. -

b. Within 45 days of a complete submission of Section _____ above, [Municipality Name] Engineer and Township Planner, shall evaluate all material submitted and shall make a written determination, a copy of which shall be submitted to [Municipality Name] Engineer, Township Planner and the landowner or applicant. Failure to act within the 45-day period shall not be interpreted to be an approval of the proposed boundary change.

c. Any party aggrieved by any such determination or other decision or determination under Section ____. may appeal to [Municipality Name] Engineer and Township Planner under the provisions of this ordinance. The party contesting the location of the RBCZ boundary shall have the burden of proof in case of any such appeal.

d. Any party aggrieved by any determination or decision of [Municipality Name] Engineer and Township Planner under this Ordinance may appeal to [Municipality Name] Committee. The party contesting the determination or decision shall have the burden of proof in case of any such appeal.

e. Inspections:

1. Lands within or adjacent to an identified RBCZ shall, be inspected by [Municipality Name] Engineer when:

(a) a subdivision or land development plan is submitted;

(b) a building permit is requested;

(c) a change or resumption of a nonconforming use is proposed;

(d) a discontinued nonconforming use is resumed more than a year later, as described in Section _____. The party contesting the discontinued use shall have the burden of proof to demonstrate when the use was discontinued.

2. The RBCZ may also be inspected periodically by Township representatives if excessive or potentially problematic erosion is present, other problems are discovered, or at any time when the presence of an unauthorized activity or structure is brought to the attention of municipal officials or when the downstream surface waters are indicating reduction in quality.

15-10C.12 Enforcement.

a. A prompt investigation shall be made by the appropriate Township personnel, of any person or entity believed to be in violation hereof. If, upon

inspection, a condition which is in violation of this Ordinance is discovered, a civil action in the Special Part of the Superior Court, or in the Superior Court, if the primary relief sought is injunctive or if penalties may exceed the jurisdictional limit of the Special Civil Part, by the filing and serving of appropriate process. The violator must reimburse

[Municipality Name] for all fees and costs incurred by [Municipality Name] for [Municipality Name] Attorney to pursue such action.

b. Nothing in this Ordinance shall be construed to preclude the right of [Municipality Name], pursuant to N.J.S.A. 26:3A2-25, to initiate legal proceedings hereunder in Municipal Court. The violation of any section or subsection of this Ordinance shall constitute a separate and distinct offense independent of the violation of any other section or subsection, or of any order issued pursuant to this Ordinance. Each day a violation continues shall be considered a separate offense.

Section 2. Conflicts: All other ordinances, parts of ordinances, or other local requirements that are inconsistent or in conflict with this ordinance are hereby repealed to the extent of any inconsistency or conflict, and the provisions of this ordinance apply.

Section 3. Severability: Notwithstanding that any provision of this Ordinance is held to be invalid or unconstitutional by a court of competent jurisdiction, all remaining provisions of the Ordinance shall continue to be of full force and effect.

Section 4. Interpretation: This Ordinance shall be so construed as not to conflict with any provision of New Jersey or Federal law. The provisions of this Ordinance shall be cumulative with, and not in substitution for, all other applicable zoning, planning and land use regulations.

Section 5. [Municipality Name] Clerk is directed to give notice at least ten days Prior to a hearing on the adoption of this ordinance to the Somerset County Planning Board and to all other persons entitled thereto pursuant to N.J.S.A. 40:55D-15, and N.J.S.A. 40:55D-63 (if required).

Section 6. After introduction, [Municipality Name] Clerk is hereby directed to submit a copy of the within Ordinance to the Planning Board of the [insert Municipality name] for its review in accordance with N.J.S.A. 40:55D-26 and N.J.S.A. 40:55D-64. The Planning Board is directed to make and transmit to [Municipality Name] Committee, within 35 days after referral, a report including identification of any provisions in the proposed ordinance which are inconsistent with the master plan and recommendations concerning any inconsistencies and any other matter as the Board deems appropriate.

Section 7. . This ordinance shall take effect immediately upon (1) adoption; (2) publication in accordance with the laws of the State of New Jersey; and (3) filing of the final form of adopted ordinance by the Clerk with the Somerset County Planning

Board pursuant to N.J. S.A. 40:55D-16.

ATTEST: [Insert Municipality Name]

_____ By:

Clerk

INTRODUCED August 10, 2006
ADOPTED September 14, 2006
EFFECTIVE September 21, 2006

Department of Environmental Protection regarding stream corridor buffers. It implements buffer zones of varying dimensions based on the stream classification.

TOWNSHIP OF WARREN
ORDINANCE NO. 06-28

AN ORDINANCE AMENDING *THE REVISED GENERAL ORDINANCES OF THE TOWNSHIP OF WARREN,* CHAPTER 15 ENTITLED "LAND USE PROCEDURES AND DEVELOPMENT", TO ADD NEW SECTION 15-10C ENTITLED "RIPARIAN BUFFER CONSERVATION ZONES"

BE IT **ORDAINED** by the Township Committee of the Township of Warren, in the County of Somerset and State of New Jersey, as follows:

Section 1. Chapter 15 entitled "Land Use Procedures and Development", of *The Revised General Ordinances of the Township of Warren, is* amended to add new Section 15-10C, entitled "Riparian Buffer Conservation Zones", as follows:

15-IOC. RIPARIAN BUFFER CONSERVATION ZONES.

15-10C.1 Intent and Purpose.

The Township Committee of the Township of Warren ("Township") finds that riparian lands adjacent to streams, lakes, or other surface water bodies that are appropriately vegetated provide important environmental protection and resource management benefits. It is necessary to protect and maintain the beneficial character of riparian areas by implementing specifications for the establishment, protection, and maintenance of vegetation along the surface water bodies within the jurisdiction of the Township, consistent with the interest of landowners in making reasonable economic use of parcels of land that include such designated areas. The purpose of this Ordinance is to designate Riparian Buffer Conservation Zones ("RBCZ"), and to provide for land use regulation therein in order to protect the streams, lakes, and other surface water bodies of the Township; to protect the water quality of watercourses, reservoirs, lakes, and other significant water resources within the Township; to protect the riparian and aquatic ecosystems of the Township; and to provide for the environmentally sound use of the land resources of the Township. The specific purposes and intent of this Ordinance are to:

a. Restore and maintain the chemical, physical, and biological integrity of the water resources of the Township;

b. Prevent excessive nutrients, sediment, and organic matter, as well as biocides and other pollutants, from reaching surface waters by optimizing opportunities for filtration, deposition, absorption, adsorption, plant uptake, biodegradation, and denitrification, which occur when stormwater runoff is conveyed through vegetated buffers as stable, distributed sheet flow prior to reaching receiving waters;

c. Provide for shading of the aquatic environment so as to moderate temperatures, retain more dissolved oxygen, and support a healthy assemblage of aquatic flora and fauna

d. Provide for natural organic matter (fallen leaves and twigs) and large woody debris (fallen trees and limbs) that provide food and habitat for small bottom dwelling organisms (insects, amphibians, crustaceans, and small fish), which are essential to maintain the food chain;

e. Increase stream bank stability and maintain natural fluvial geomorphology of the stream system, thereby reducing stream bank erosion and sedimentation and protecting habitat for aquatic organisms;

f. Maintain base flows in streams and moisture in wetlands;

g. Control downstream flooding; and

h. Conserve the natural features important to land and water resources, e.g., headwater areas, groundwater recharge zones, floodways, floodplains, springs, streams, wetlands, woodlands, and prime wildlife habitats.

15-10C.2. Statutory Authority.

The Township is empowered to regulate land uses under the provisions of the New Jersey Municipal Land Use Law, N.J.S.A 40:55D-1 *et seq.,* which authorizes each municipality to plan and regulate land use in order to protect public health, safety and welfare by protecting and maintaining native vegetation in riparian areas. The Township is also empowered to adopt and implement this Ordinance under provisions provided by the following legislative authorities of the State of New Jersey:

a. Water Pollution Control Act, N.J.S.A. 58:1 OA *et seq.;*

b. Water Quality Planning Act, N.J.S.A. 58:11A-1 *et seq.;*

c. Spill Compensation and Control Act, N.J.S.A. 58:10-23 *et seq.;*

d. Soil Erosion and Sediment Control Act,. N.J.S.A. 4:24-39 *et seq.;* and

e. Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 *et seq.*

15-10C.3. Definitions.

Administrative Authority means the Planning Board or Board of Adjustment or Construction Office with all of the powers delegated, assigned, or assumed by them according to statute or ordinance.

Applicant means a person applying to the Planning Board, Board of Adjustment or the Construction Office proposing to engage in an activity that is regulated by the provisions of this ordinance, and that would be located within a regulated Riparian Buffer Conservation Zone..

Category One (Cl) Waters are those waters, designated in the Surface Water Quality Standards at N.J.A.C. 7:9B-1.15, which have been identified for protection from degradation in water quality characteristics because of their clarity, color, scenic setting, and other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources.

Category Two Waters means those waters not designated as Outstanding National Resource Waters or Category One in the Surface Water Quality Standards at N.J.A.C. 7:9B-1.15 for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d).

Floodway shall have the meaning ascribed to this term by the Flood Hazard Area Control Act (N.J.S.A. 58:16A-50 *et seq.)* and regulations promulgated thereunder published at N.J.A.C. 7.13 *et seq.,* and any supplementary or successor legislation and regulations from time to time enacted or promulgated.

Intermittent Stream means surface water drainage channels with definite bed and banks in which there is not a permanent flow of water. Streams shown as a dashed line on either the USGS topographic quadrangle maps or the USDA County Soil Survey Maps of the most recent edition that includes hydrography are included as intermittent streams.

Lake, pond, or reservoir means any impoundment, whether naturally occurring or created in whole or in part by the building of structures for the retention of surface water, excluding sedimentation control and stormwater retention/detention basins and ponds designed for treatment of wastewater.

Perennial stream means a stream that flows continuously throughout the year in most years. These streams appear as a blue line on USGS topographic quadrangle maps or on USDA County Soil Survey Maps.

Riparian Buffer Conservation Zone (RBCZ) means an area of land or water within or adjacent to a Surface Water Body within the municipality and designated on the Riparian Buffer Conservation Zone Map promulgated by Warren Township in accordance with Section 4 of this Ordinance.

Riparian Buffer Conservation Zone Management Plan means a plan approved by the Township Engineer and Township Planner. The plan shall be prepared by a landscape architect, professional engineer or other qualified professional, and shall fully evaluate the effects of any proposed activities and uses on any RBCZ. The plan shall identify existing conditions, all proposed activities, and all proposed management techniques, including any measures necessary to offset disturbances to any affected RBCZ.

Surface Water. Body means any perennial stream, intermittent stream, lake, pond, or reservoir, as defined herein. In addition, any state open waters identified in a letter of interpretation issued by the New Jersey Department of Environmental Protection Land Use Regulation Program shall also be considered surface water bodies.

15-10C.4 Establishment Of Riparian Buffer Conservation Zones.

a. Riparian Buffer Conservation Zones (RBCZs) shall be delineated as follows:

1. In the case of Category One *(Cl)* waters, the RBCZ shall equal the Special Water Resource Protection Area, and shall be measured as defined at N.J.A.C. 7:8-5.5(h). Special Water Resource Protection Areas are established along all waters designated as Cl at N.J.A.C. 7:9B and perennial or intermittent streams that drain into or upstream of the Cl waters as shown on the USGS quadrangle map or in the County Soil Surveys within the associated HUC 14 drainage.

2. For areas adjacent to surface water bodies designated Category Two Waters for Trout Production (FW2-TP) the RBCZ shall be measured from the defined edge of the intermittent or perennial stream, or centerline if the bank is not defined, or lake, pond or reservoir at bank-full flow or level, and shall extend 150 feet horizontally outward from the perpendicular. Where steep slopes (in excess of 10 percent) are located within the designated widths, the RBCZ shall be extended to include the entire distance of this sloped area.

3. For areas adjacent to other surface water bodies, the RBCZ shall be measured from the top of bank of an intermittent or perennial stream, or centerline if bank is not defined, or lake, pond or reservoir at bank-full flow or level, and shall extend 75 feet horizontally outward from the perpendicular. Where steep slopes (in excess of 10 percent) are located within the designated widths, the RBCZ shall be extended to include the entire distance of this sloped area.

4. For areas adjacent to surface water bodies for which the Floodway has been delineated, the RBCZ shall cover the entire Floodway area, or the area described in Section 4.a.1. or 4.a.2., whichever area has the greatest extent. Floodway delineations shall be based upon the State's adopted floodway delineations. However, requests for alterations to the adopted delineations can be provided to the New Jersey Department of Environmental Protection ("NJDEP") for consideration if site specific information is available.

5. An RBCZ is an overlay to the existing zoning districts. The provisions of the underlying district shall remain in full force, except where the provisions of the RBCZ differ from the provisions of the underlying district, in which case the provision which is more restrictive, and less permissive, to a landowner or applicant shall apply. These provisions are intended to modify the type of land use, siting of structures, and engineering of all proposed development on parcels located within the RBCZ. These provisions apply to land disturbances resulting from or related to any activity or use requiring application for any of the following permits or approvals:

Building permit
Zoning variance
Special exception
Conditional use
Subdivision/land development approval

6. A map of the RBCZs of the entire Township, including all land and water areas within its boundaries, which designates Surface Water Bodies, is authorized by this Ordinance, and, when prepared by the Township Engineer and Township Planner, will be found at the end of this Chapter as Appendix I. Maps of the Township on which these designations have been overlain shall be on file and maintained by the offices of the Township Clerk. This map conforms to all applicable laws, rules and regulations applicable to the creation, modification and promulgation of zoning maps.

7. It shall be the duty of the Township Engineer and the Township Planner, every second year after the adoption of this Ordinance, to propose modifications to the map delineating Riparian Buffer Conservation Zones required by any naturally occurring or permitted change in the location of a defining feature of a surface water body occurring after the initial adoption of the RBCZ map, to record all modifications to the RBCZ map required by decisions or appeals under Section 11, and by changes made by DEP in surface water classifications or Floodway delineations. Floodway delineations shall be based upon the State's adopted floodway delineations. However requests for alterations to the adopted delineations can be provided to the NJDEP for consideration if site specific information is available.

8. The applicant or designated representative shall be responsible for the initial determination of the presence of an RBCZ on a site, and for identifying the area on any plan submitted to the Township in conjunction with an application for a construction permit, subdivision, land development, or other improvement that requires plan submissions or permits. This initial determination shall be subject to review and approval by the Township Engineer and Township Planner, and, where required, by NJDEP.

9. The Township's Master Plan provides the legal basis for zoning and land use regulation at the local level. The technical foundation for local RBCZs in the Township may be incorporated into the Master Plan. A technical report on the need for Riparian Buffer Conservation Zones in the Township may be adopted as part of the Master Plan (N.J.S.A. 40:55D-28b(11). The technical report should include the following information:

(a) a statement setting forth the rationale and need to protect RBCZs; and

(b) reference to the methods used to designate and delineate RBCZs.

15-10C.5 Uses Permitted In Riparian Buffer Conservation Zones.

a. For Category One (Cl) RBCZs, permitted uses are governed by N.J.A.C. 7:8-5.5(h), unless otherwise exempt.

b. Any other RBCZ area shall remain in a natural condition or, if in a disturbed condition, including agricultural activities, at the time of adoption of this ordinance, may be restored to a natural condition. There shall be no clearing or cutting of trees and brush, except for removal of dead vegetation and pruning for reasons of public safety or for the replacement of invasive species with indigenous species, altering of watercourses, dumping of trash, soil, dirt, fill, vegetative or other debris, regrading or construction. The following uses are permitted either by right or after review and approval by the municipality in RBCZs.

c. No new construction, development, use, activity, encroachment, or structure shall take place in an RBCZ, except as specifically authorized in this Section. The following uses shall be permitted within an RBCZ:

1. Open space uses that are primarily passive in character shall be permitted by right to extend into an RBCZ, provided near stream vegetation is preserved.

2. Uses that do not require approval by the Zoning Officer or compliance with an approved RBCZ Management Plan, include but are not limited to: wildlife sanctuaries, nature preserves, forest preserves, fishing areas, game farms, fish hatcheries and fishing reserves, operated for the protection and propagation of wildlife, but excluding structures, and passive recreation areas of public and private parklands, including unpaved hiking, bicycle and bridle trails, provided that said trail have been stabilized with pervious materials. Fences, for which a permit has been issued by the Construction Code Office, to the extent required by applicable law, rule or regulation, are permitted.

3. Crossings by farm vehicles and livestock, recreational trails, roads, railroads, storm water lines, sanitary sewer lines, water lines and public utility transmission lines, provided that the land disturbance is the minimum required to accomplish the permitted use, shall be permitted, subject to approval by the Zoning Officer, provided that any applicable State permits are acquired, and provided that any

disturbance is offset by buffer improvements in compliance with an approved RBCZ Management Plan.

4. Stream bank stabilization or riparian reforestation, which conform to the guidelines of an approved RBCZ Management Plan, or wetlands mitigation projects that have been approved by the NJDEP, are permitted to extend into an RBCZ, subject to approval by the Zoning Officer and subject to compliance with an approved RBCZ Management Plan.

15-10C.6 Performance Standards For Riparian Buffer Conservation Zones

a. All encroachments proposed into Category One (Cl) RBCZs shall comply with the requirements at N.J.A.C. 7:8-5.5(h) and shall be subject to review and approval by the NJDEP. For all other RBCZs, the following conditions shall apply:

1. All new major and minor subdivisions and site plans shall be designed to provide sufficient areas outside of the RBCZ to accommodate primary structures, any normal accessory uses appurtenant thereto, as well as all planned lawn areas.

2. Portions of lots within the RBCZ must be permanently restricted by deed or conservation easement, which restrictive document is to be prepared and approved by the Warren Township Attorney, held by the Township to prevent clearing of vegetation within the RBCZ. A complete copy of the recorded conservation restriction that clearly identifies the deed book and pages where it has been recorded in the county clerk's office must be submitted to the Township. The applicant shall not commence with the project or activity prior to making this submittal and receiving actual approval of the plan modification and receipt of any applicable permits from the NJDEP. The recorded conservation restriction shall run with the land and be binding upon the property owner and the successors in interest in the property or in any part thereof. The conservation restriction may include language reserving the right to make *de minimus* changes to accommodate necessary regulatory approvals upon the written consent of the Township, provided such changes are otherwise consistent with this chapter. The recorded conservation restriction shall, at a minimum, include:

(a) a written narrative of the authorized regulated activity, date of issuance, and date of expiration, and the conservation restriction that, in addition, includes all of the prohibitions set forth at N.J.S.A. 13:8B-2b(l)through (7);

(b) survey plans for the property as a whole and, where applicable, for any additional properties subject to the conservation restrictions. Such survey plans shall be submitted on the surveyor's letterhead, signed and sealed by the surveyor, and shall include metes and bounds descriptions of the property, the site, and the areas subject to the conservation restriction in New Jersey State Plane Coordinates, North American Datum 1983, and shall depict the boundaries of the site and all areas subject to the conservation restriction as marked with flags or stakes onsite. All such survey plans shall be submitted on paper and in digital CAD or GIS file on a media and format required by the Township Engineer. The flags or stakes shall be numbered and identified on the survey plan; and

(c) a copy or copies of deeds for the property as a whole that indicate the deed book and pages where it has been recorded in the county clerk's office.

3. Any lands proposed for development which include all or a portion of an RBCZ shall, as a condition of any major subdivision or major site plan approval, provide for the vegetation or revegetation of any portions of the RBCZ which are not vegetated at the time of the application or which were disturbed by prior land uses, including for agricultural use. Said vegetation plan shall utilize native tree and plant species in accordance with an approved Riparian Buffer Conservation Zone Management Plan, described in Section 10.

4. Minimum front, side, and rear setbacks required for building lots which exist as of the date of adoption of this ordinance, but have not obtained a building permit, may extend into the RBCZ, provided that a deed restriction or conservation easement is applied which prohibits clearing or construction in the RBCZ.

5. All stormwater shall be discharged outside of but may flow through an RBCZ and shall comply with the Standard For Off-Site Stability in the "Standards for Soil Erosion and Sediment Control in New Jersey", established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 *et seq.* (see N.J.A.C. 2:90-1.3.).

6. If stormwater discharged outside of and flowing through an RBCZ cannot comply with the Standard For Off-Site Stability cited in Section 6.e., then the stabilization measures in accordance with the requirements of the above standards may be placed within the RBCZ, provided that:

(a) stabilization measures shall not be placed closer than 50 feet from the top of the bank at bank full flow or level of other surface water bodies;

(b) the encroachment shall only be allowed where the applicant demonstrates that the functional value and overall conditions of the RBCZ will be maintained to the maximum extent practicable;

(c) a conceptual project design meeting shall be held with the appropriate municipal staff and Soil Conservation District staff to identify necessary stabilization measures; and

(d) all encroachments proposed under this section shall be subject to review and approval by the Administrative Authority.

15-10C.7 NONCONFORMING STRUCTURES AND USES IN RIPARIAN BUFFER CONSERVATION ZONES.

Nonconforming structures and uses of land within the RBCZ are subject to the following requirements:

a. Legally existing but nonconforming structures or uses may be continued.

b. Any proposed enlargement or expansion, of the building footprint within a Category One (CI) RBCZ shall comply with the standards in N.J.A.C. 7:8-5.5(h).

c. For all other RBCZs:

1. The existing building footprint or uses shall not be expanded or enlarged.

2. Discontinued nonconforming uses may be resumed any time within one year from such discontinuance but not thereafter when showing clear indications of abandonment.

3. No change or resumption shall be permitted that is more detrimental to the RBCZ, as measured against the intent and purpose under Section 1, than the existing or former nonconforming use. This one-year time frame shall not apply to agricultural uses that are following prescribed Best Management Practices for crop rotation; however, resumption of agricultural uses must be strictly confined to

the extent of disturbance existing at the time of adoption of this ordinance.

15-10C.8 Uses Prohibited In Riparian Buffer Conservation Zones.

a. Any use within a Category One (CI) RBCZ shall comply with the standards in N.J.A.C. 7:8-5.5(h).

b. For other RBCZs, any use or activity not specifically authorized in Section 5 or Section 7 shall be prohibited within the RBCZ. By way of example, the following activities and facilities are prohibited:

1. Removal or clear-cutting of trees and other vegetation or soil disturbance such as grading.

2. Storage of any hazardous or noxious materials.

3. Use of fertilizers, pesticides, herbicides, and/or other chemicals in excess of prescribed industry standards or the recommendations of the Soil Conservation District.

4. Roads or driveways, except where permitted in compliance with Section 5.

5. Motor or wheeled vehicle traffic in any area, except as permitted by this Ordinance.

6. Parking lots.

7. Any type of permanent structure, except structures needed for a use permitted by Section 5.

8. New subsurface sewage disposal areas.

9. Residential grounds or lawns, except as otherwise permitted pursuant to this Ordinance.

15-10C.9 Activities Permitted in Stream Buffer Conservation Zones in the Case of No Reasonable or Prudent Alternative or Extreme Hardship.

a. For Category One (CI) RBCZs, requests for exemptions must be authorized by the DEP.

b. For other RBCZs, hardship variances may be granted by the Zoning Board of Adjustment in cases of a preexisting lot (existing at the

time of adoption of this ordinance), when there is insufficient room outside the RBCZ for uses permitted by the underlying zoning and there is no other reasonable or prudent alternative to placement in the RBCZ, including obtaining variances from setback or other requirements that would allow conformance with the RBCZ requirements, and provided the following demonstrations are made:

1. An applicant shall be deemed to have established the existence of an extreme economic hardship, as distinguished from mere inconvenience, if the subject property is not capable of yielding a reasonable economic return if its present use is continued or if it is developed in accordance with provisions of this ordinance and that this inability to yield a reasonable economic return results from unique circumstances peculiar to the subject property which:

(a) do not apply to or affect other property in the immediate vicinity;

(b) relate to or arise out of the characteristics of the subject property because of the particular physical surroundings, shape or topographical conditions of the property involved, rather than the personal situations of the applicant; and

(c) are not the result of any action or inaction by the applicant or the owner or his predecessors in title. The necessity of acquiring additional land to locate development outside the RBCZ shall not be considered an economic hardship unless the applicant can demonstrate that there is no adjacent land that is reasonably available.

2. An applicant shall be deemed to have established compelling public need if the applicant demonstrates, based on specific facts, that:

(a) the proposed project will serve an essential public health or safety need;

(b) the proposed use is required to serve an existing public health or safety need; or

(c) there is no alternative available to meet the established public health or safety need.

3. A variance can only be granted if it is shown that the activity will not be materially detrimental or injurious to other property or improvements in the area in which the subject property is located and

will not endanger public safety; and the exception granted is the minimum relief necessary to relieve the hardship.

4. If the above demonstrations are made, then the encroachment of impervious surfaces (structures or pavement) otherwise permitted by the underlying zoning is permitted to the extent of 750 square feet total. Said encroachment is not permitted closer than 100 feet from the top of the bank at bank-full flow or level of Category Two Waters for Trout Production (FW2-TP), or closer than 50 feet from the top of the bank at bank-full flow or level of other surface water bodies.

5. If such an exception is granted, the applicant shall rehabilitate an environmentally degraded RBCZ area within or adjacent to the same site, and at least equivalent in size to the RBCZ reduction permitted, or, if not possible, rehabilitate or expand an RBCZ area at least equivalent in size within a nearby site and, if available, within the same watershed. Rehabilitation shall include reforestation, stream bank stabilization and removal of debris, in accordance with an RBCZ Management Plan.

15-10C.10 RIPARIAN BUFFER CONSERVATION ZONE MANAGEMENT PLAN.

a. Within any RBCZ, no construction, development, use, activity, or encroachment shall be permitted unless the effects of such development are accompanied by preparation, approval, and implementation of a Riparian Buffer Conservation Zone Management Plan.

b. The landowner, applicant, or developer shall submit to the Township Engineer and Township Planner as a completeness item a Riparian Buffer Conservation Zone Management Plan prepared by an environmental professional, professional engineer or other qualified professional which fully evaluates the effects of any proposed uses on the RBCZ. The Riparian Buffer Conservation Zone Management Plan shall identify the existing conditions including:

existing vegetation;

2. field delineated surface water bodies;

3. field delineated wetlands;

4. the 100-year floodplain;

5. Flood Hazard Areas, including Floodway and Flood Fringe areas, as delineated by the DEP;

6. soil classifications as found on Soil Surveys;

7. existing sub-drainage areas of site with HUC-14 (Hydrologic Unit Code) designations; and

8. slopes in each sub-drainage area segmented into sections of slopes less than or equal to ten (10) percent; above ten percent but less that 20 percent; and greater than twenty (20) percent.

The proposed plan shall describe all proposed uses and activities, and fully evaluate the effects of all proposed uses/activities in an RBCZ, and all proposed management techniques, including proposed vegetation and any other measures necessary to offset disturbances to the RBCZ. A discussion of activities proposed as well as management techniques proposed to offset disturbances and enhance the site to improve the RBCZ's ability to function effectively as an RBCZ shall also be included with the RBCZ Management Plan submittal to the Township.

c. The Plan shall be reviewed and must be approved by the Township Engineer and Township Planner, in consultation with the Warren Township Environmental Commission, as part of the subdivision and land development process.

d. The Riparian Buffer Conservation Zone Management Plan should include management provisions in narrative and graphic form specifying:

1. the manner in which the area within the RBCZ will be owned and by whom it will be managed and maintained.

2. the conservation and land management techniques and practices that will be used to conserve and protect the RBCZ, as applicable.

3. the professional and personnel resources that are expected to be necessary, in order to maintain and manage the RBCZ.

4. a revegetation plan, if applicable, that includes: three layers of vegetation, including herbaceous plants that serve as ground cover, understory shrubs, and trees that form an overhead canopy. Vegetation selected must be native and consistent with the soil, slope and moisture conditions of the site. The revegetation plan shall be prepared by a qualified professional such as a landscape architect or

engineer, and shall be subject to the approval of the Township Engineer and Township Planner, in consultation with the Warren Township Environmental Commission. Dominant vegetation in the Riparian Buffer Conservation Zone Management Plan shall consist of plant species that are suited to the stream buffer environment. The Township Engineer and Township Planner may require species suitability to be verified by qualified experts from the Soil Conservation District, Natural Resources Conservation Service, NJDEP, US Fish and Wildlife Service and/or State or Federal forest agencies.

e. A Riparian Buffer Conservation Zone Management Plan is not required where the RBCZ is not being disturbed and conservation easements or deed restrictions are applied to ensure there will be no future clearing or disturbance of the RBCZ.

f.Performance of the Riparian Buffer Conservation Zone Management Plan shall be guaranteed for two years by a surety, such as a bond, cash or letter of credit, which shall be provided to the Township prior to the Township issuing any permits or approving any uses relating to the applicable use or activity.

15-1 OC.1 I Boundary Interpretation, Appeals Procedures, Inspections, Conflicts, Severability.

a. When a landowner or applicant disputes the boundaries of an RBCZ, or the defined bank-full flow or level, the landowner or applicant shall submit evidence to the Township Engineer and Township Planner that describes the RBCZ, presents the landowner or applicant's proposed RBCZ delineation, and presents all justification for the proposed boundary change. For Category One (Cl) RBCZs, the landowner or applicant must first obtain approval from the NJDEP. The applicant shall submit evidence to the Township Engineer and Township Planner that describes the RBCZ, presents the landowner or applicant's proposed RBCZ. delineation, and presents all justification for the proposed boundary change. A decision from the NJDEP must be included with the evidence submitted for Township review. -

b. Within 45 days of a complete submission of Section 11.a above, the Township Engineer and Township Planner, shall evaluate all material submitted and shall make a written determination, a copy of which shall be submitted to the Township Engineer, Township Planner and the landowner or applicant. Failure to act within the 45-day period shall not be interpreted to be an approval of the proposed boundary change.

c. Any party aggrieved by any such determination or other decision or determination under Section 11.b. may appeal to the Township Engineer and Township Planner under the provisions of this ordinance. The party contesting the location of the RBCZ boundary shall have the burden of proof in case of any such appeal.

d. Any party aggrieved by any determination or decision of the Township Engineer and Township Planner under this Ordinance may appeal to the Township Committee. The party contesting the determination or decision shall have the burden of proof in case of any such appeal.

e. Inspections:

1. Lands within or adjacent to an identified RBCZ shall, be inspected by the Township Engineer when:

(a) a subdivision or land development plan is submitted;

(b) a building permit is requested;

(c) a change or resumption of a nonconforming use is proposed;

(d) a discontinued nonconforming use is resumed more than a year later, as described in Section 7. The party contesting the discontinued use shall have the burden of proof to demonstrate when the use was discontinued.

2. The RBCZ may also be inspected periodically by Township representatives if excessive or potentially problematic erosion is present, other problems are discovered, or at any time when the presence of an unauthorized activity or structure is brought to the attention of municipal officials or when the downstream surface waters are indicating reduction in quality.

15-10C.12 Enforcement.

a. A prompt investigation shall be made by the appropriate Township personnel, of any person or entity believed to be in violation hereof. If, upon inspection, a condition which is in violation of this Ordinance is discovered, a civil action in the Special Part of the Superior Court, or in the Superior Court, if the primary relief sought is injunctive or if penalties may exceed the jurisdictional limit of the Special Civil Part, by the filing and serving of appropriate process. The violator must reimburse

the Township for all fees and costs incurred by the Township for the Township Attorney to pursue such action.

b. Nothing in this Ordinance shall be construed to preclude the right of the Township, pursuant to N.J.S.A. 26:3A2-25, to initiate legal proceedings hereunder in Municipal Court. The violation of any section or subsection of this Ordinance shall constitute a separate and distinct offense independent of the violation of any other section or subsection, or of any order issued pursuant to this Ordinance. Each day a violation continues shall be considered a separate offense.

Section 2.Conflicts:All other ordinances, parts of ordinances, or other local requirements that are inconsistent or in conflict with this ordinance are hereby repealed to the extent of any inconsistency or conflict, and the provisions of this ordinance apply.

Section 3. Severability: Notwithstanding that any provision of this Ordinance is held to be invalid or unconstitutional by a court of competent jurisdiction, all remaining provisions of the Ordinance shall continue to be of full force and effect.

Section 4. Interpretation: This Ordinance shall be so construed as not to conflict with any provision of New Jersey or Federal law. The provisions of this Ordinance shall be cumulative with, and not in substitution for, all other applicable zoning, planning and land use regulations.

Section 5.The Township Clerk is directed to give notice at least ten days prior to a hearing on the adoption of this ordinance to the Somerset County Planning Board and to all other persons entitled thereto pursuant to N.J.S.A. 40:55D-15, and N.J.S.A. 40:55D-63 (if required).

Section 6. After introduction, the Township Clerk is hereby directed to submit a copy of the within Ordinance to the Planning Board of the Township of Warren for its review in accordance with N.J.S.A. 40:55D-26 and N.J.S.A. 40:55D-64. The Planning Board is directed to make and transmit to the Township Committee, within 35 days after referral, a report including identification of any provisions in the proposed ordinance which are inconsistent with the master plan and recommendations concerning any inconsistencies and any other matter as the Board deems appropriate.

Section 7. This ordinance shall take effect immediately upon (1) adoption; (2) publication in accordance with the laws of the State of New Jersey; and (3) filing of the

final form of adopted ordinance by the Clerk with the Somerset County Planning Board pursuant to N.J. S.A. 40:55D-16.

ATTEST:

Patricia A. DiRocco, RMC, Clerk

TOWNSH IP OF WARREN

By:
araf a, ayor

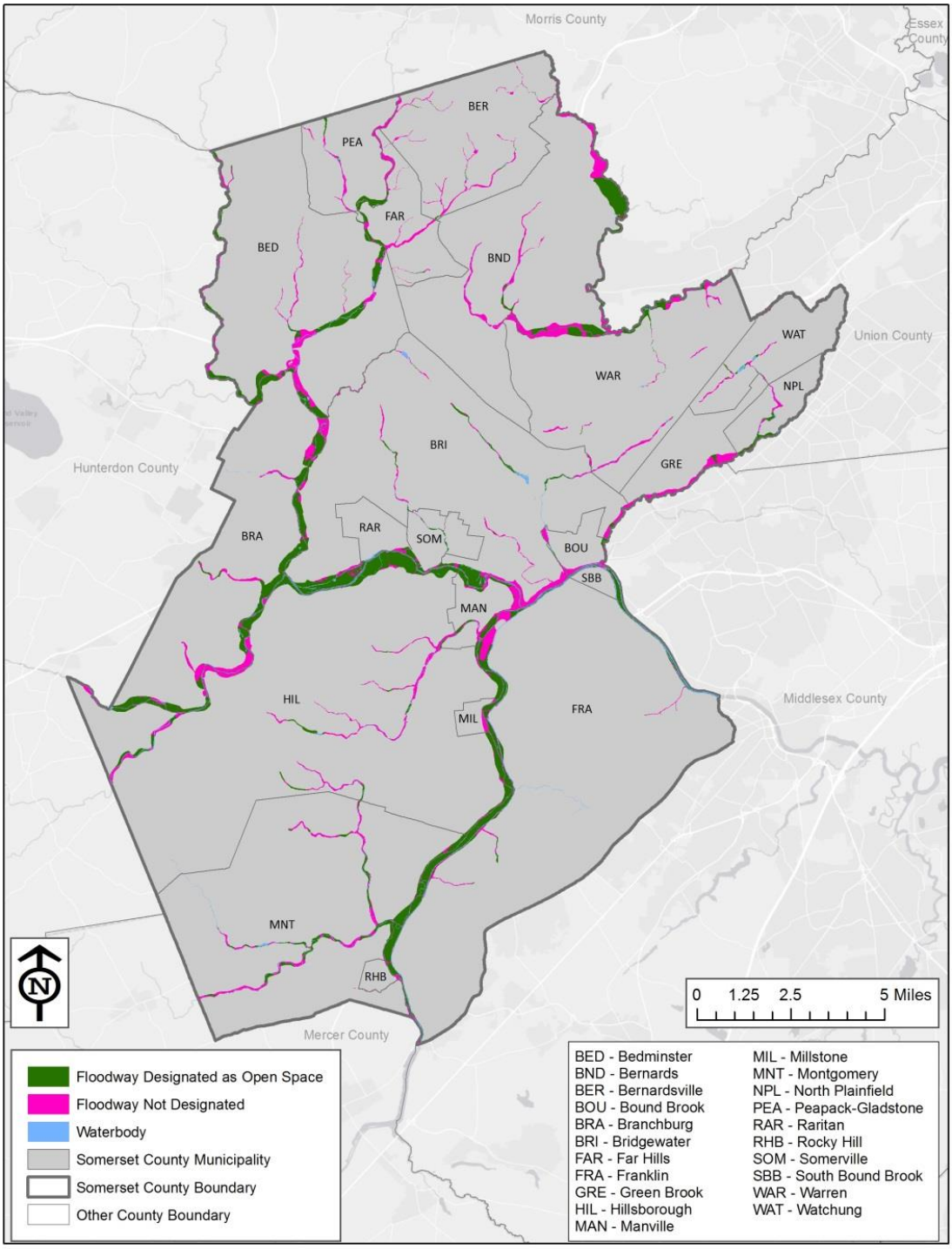
INTRODUCED August 10, 2006

ADOPTED September 14, 2006

EFFECTIVE September 21, 2006

Appendix FRF – 6: Preserved Floodway Areas Map – Somerset County

Figure FRF-6-1. Designated Open Space in Floodways*



Source: Somerset County Planning Division; FEMA Region 2, 2017.

* Figure FRF-6-1 illustrates Floodways identified by FEMA and included on its D-FIRM Maps for Somerset County. Floodways comprise the channel of a river or other watercourse and adjacent land areas that must remain open to permit passage of the Base Flood. Development within Floodways must

be restricted to ensure that there are no increases in upstream flood elevations. NFIP Communities officially adopt “regulatory floodways” as part of their FDPOs and must complete encroachment reviews for all proposed development that may impact these areas. Lands designated as open space on this map include state or federal parks, preserved farmland and preserved open space. Preserved lands are restricted with an encumbrance recorded on the deed and may be acquired through programs such as NJ DEP Green Acres program, a NJ SADC program or a USDA program. Preservation mechanisms include easements, leases, donations or fee purchases.

This map is for illustration purposes only, and is not suitable for site-specific, legal, regulatory and/or financial decision-making or commitments. Somerset County does not guarantee this information to be accurate, correct or complete and assumes no responsibility for errors, omissions, or misinterpretations, even if Somerset County is advised of the possibility of errors or omissions or the damages resulting there from. Contact Somerset County Planning Division for data or information about Areas of Potential Repetitive Flood Loss.

The below listed documents prepared by the Rutgers Cooperative Extension-Water Resources Program are available at the following link:

http://water.rutgers.edu/Projects/NFWF/NFWF.html

MUNICIPALITY	REPORTS	PREPARED BY	DATE
Bound Brook	Draft Impervious Cover Assessment for Bound Brook Borough, Somerset County, NJ	Rutgers Cooperative Extension Water Resources Program (RCEWRP)	February 4, 2015
Bound Brook	Draft Impervious Cover Reduction Action Plan for Bound Brook Borough, Somerset County, NJ	RCWRP	September 23, 2015
Branchburg	Draft Impervious Cover Assessment for Branchburg Township, Somerset County, NJ	RCWRP	February 4, 2015
Branchburg	Draft Impervious Cover Reduction Action Plan for Branchburg Township, Somerset County, NJ	RCWRP	October 12, 2015
Bridgewater	Draft Impervious Cover Assessment for Bridgewater Township, Somerset County, NJ	RCWRP	January 30, 2015
Bridgewater	Draft Impervious Cover Reduction Action Plan for Bridgewater Township, Somerset County, NJ	RCWRP	November 10, 2015
Franklin	Draft Impervious Cover Reduction Action Plan for Franklin Township,	RCWRP	February 3, 2015

	Somerset County, NJ		
Franklin	Draft Impervious Cover Reduction Action Plan for Franklin Township, Somerset County, NJ	RCWRP	November 16, 2015
Green Brook	Draft Impervious Cover Reduction Action Plan for Green Brook Township, Somerset County, NJ	RCWRP	February 4, 2015
Green Brook	Draft Impervious Cover Reduction Action Plan for Green Brook Township, Somerset County, NJ	RCWRP	October 6, 2015
Hillsborough	Draft Impervious Cover Reduction Action Plan for Hillsborough Township, Somerset County, NJ	RCWRP	February 24, 2015
Hillsborough	Draft Impervious Cover Reduction Action Plan for Hillsborough Township, Somerset County, NJ	RCWRP	September 5, 2015
Manville	Draft Impervious Cover Reduction Action Plan for Manville Borough, Somerset County, NJ	RCWRP	February 6, 2015
Manville	Draft Impervious Cover Reduction Action Plan for Manville Borough, Somerset County, NJ	RCWRP	September 5, 2015
Montgomery	Draft analysis under review, contact municipal green	Stony Brook Millstone Watershed	For final document, contact stuorto@thewatershed.org

	team for more information.	Association (SBMWA)	
Montgomery	Draft plan under review. contact municipal green team for more information.	SBMWA	For final document, contact stuorto@thewatershed.org
North Plainfield	Draft Impervious Cover Reduction Action Plan for North Plainfield Borough, Somerset County, NJ	RCWRP	February 4, 2015
North Plainfield	Draft Impervious Cover Reduction Action Plan for North Plainfield Borough, Somerset County, NJ	RCWRP	October 9, 2015
Raritan	Draft Impervious Cover Reduction Action Plan for Raritan Borough, Somerset County, NJ	RCWRP	February 4, 2015
Raritan	Draft Impervious Cover Reduction Action Plan for Raritan Borough, Somerset County, NJ	RCWRP	September 11, 2015
Rocky Hill	Draft analysis under review. Contact municipal green team for more information.	SBMWA	For final document, contact stuorto@thewatershed.org
Rocky Hill	Draft plan under review. Contact municipal green team for more information.	SBMWA	For final document, contact stuorto@thewatershed.org
Somerville	Draft Impervious Cover Reduction Action Plan for Somerville Borough, Somerset County, NJ	RCWRP	February 4, 2015
Somerville	Draft Impervious Cover Reduction Action Plan for Somerville	RCWRP	September 30, 2015

	Borough, Somerset County, NJ		
South Bound Brook	Draft Impervious Cover Reduction Action Plan for South Bound Brook Borough, Somerset County, NJ	RCWRP	February 4, 2015
South Bound Brook	Draft Impervious Cover Reduction Action Plan for South Bound Brook Borough, Somerset County, NJ	RCWRP	October 12, 2015
Warren	Draft Impervious Cover Reduction Action Plan for Warren Township, Somerset County, NJ	RCWRP	February 5, 2015
Warren	Draft Impervious Cover Reduction Action Plan for Warren Township, Somerset County, NJ	RCWRP	November 16, 2015
Watchung	Draft Impervious Cover Reduction Action Plan for Watchung Borough, Somerset County, NJ	RCWRP	February 5, 2015
Watchung	Draft Impervious Cover Reduction Action Plan for Watchung Borough, Somerset County, NJ	RCWRP	September 30, 2015

Appendix FRF – 8: Climate Change Memorandum – Climate Adaptation & Mitigation Strategies

GUIDANCE MEMORANDUM

Climate Change

To: Somerset County Mitigation Planning Committee (MPC)
For County distribution to representatives from all participating jurisdictions
From: Anna Foley, Project Manager, AECOM & Somerset County Planning Division
Date: July 2018
Re: Somerset County Multi-Jurisdictional Hazard Mitigation Plan Update

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Memo Purpose

This memorandum has been prepared as part of the second update of the countywide, multi-jurisdictional hazard mitigation plan to provide Somerset County and its participating jurisdictions with information regarding climate change, its potential impacts in Somerset County, and potential ways communities can begin to take action now to mitigate inevitable future economic, environmental, and social impacts, thus enhancing their resiliency and sustainability.

Weather, Climate, and Climate Change

The National Oceanic and Atmospheric Administration (NOAA) defines **weather** as "the state of the atmosphere with respect to wind, temperature, cloudiness, moisture, pressure, etc. at a given point in time (i.e., a day or short series of days)"; whereas the term, "**climate"** refers to the average weather conditions for an area over an extended period of time (i.e., on the order of several decades). The Earth's climate is impacted by changes to the land surface, atmosphere, oceans, and ice. The climate at any particular location is influenced by global temperature and precipitation patterns.

The climate at any particular location is not typically a steady state. Natural variation in the Earth's climate over the course of the planet's history have occurred, which are represented by gradual fluctuations around a global average temperature as the Earth moves in and out of extended warm and cold periods. These fluctuations occur over very long timeframes. For example, the Earth is currently experiencing a warm interglacial period. The last glaciation, or cold period, was about 10,000 years ago. However, the relatively abrupt and extreme change in global temperature and precipitation patterns measured during the past few centuries and recent decades is unusual and not part of the earth's normal climate fluctuations. The recent dramatic increase in the Earth's temperature is referred to as **climate change**.

Global warming is driving climate change. The change in composition of the Earth's atmosphere has enabled it to absorb more outgoing thermal radiation, resulting in an increase in global temperature.
Scientists attribute global warming to the release of greenhouse gasses (including but not limited to carbon dioxide, methane and ozone) into the atmosphere. Greenhouse gasses were previously trapped below the Earth's surface in the form of fossil fuels, as

well as in the form of organic material in soils, forests and other components of the Earth's crust. The burning of fossil fuels for energy, and depletion of organic matter in soils due to contemporary agricultural practices are two (2) examples human activities that are causing greenhouse gasses to be released into the atmosphere at an accelerated rate that exceeds the ability of natural ecological processes to re-capture capture and store carbon and other greenhouse gases in Earth's crust. The warming effects of increased urbanization (urban heat islands) and the loss of forested lands are also influencing regional and local climate.

Data Sources

Several information and data sources were evaluated in the preparation of this memorandum, including information published by the US Global Change Research Program and associated Climate Change Science Program (CCSAP) reports, and by the Intergovernmental Panel on Climate Change (IPCC), including their supporting papers and Fourth Assessment Report. Additional information published at the Federal and State agency level also informed this memorandum, including: US Environmental Protection Agency's report entitled, "Climate Change Indicators in the United States, Fourth Edition", the National Snow and Ice Data Center, NASA's Global Climate Change program, NOAA's National Centers for Environmental Information – New Jersey State Summary, NOAA's Pacific Marine Environmental Laboratory's Carbon Program, the NOAA National Centers for Environmental Information Global Climate Report, the Office of the New Jersey State Climatologist, the New Jersey Department of Environmental Protection, and the NJ Climate Adaptation Alliance at Rutgers University.

Climate Change Indicators

The USEPA uses a key set of indicators related to measuring the observed causes and effects of climate change. These indicators were developed with input from contributors across government agencies, academic institutions, and other organizations. They are based on observations over time and are considered the best available peer-reviewed and publicly available data. The indicators represent categories of data points that have been collected and evaluated across long and short time scales to evaluate Earth's climate conditions and how these conditions have changed over time. Scientists across the United States and around the world study these key indicators to determine the magnitude and severity of changes, and what impacts may be associated with them with regard to Earth's known climate history and its potential future condition. The key indicators are:

USEPA Climate Change Indicators	
Greenhouse Gasses	emissions, and atmospheric concentrations
Weather and Climate	average temperatures, extreme temperature highs and lows, annual precipitation and periods of extreme precipitation, tropical cyclone intensity and frequency, changes in the frequency and magnitude of river flooding, changes in the frequency and intensity of drought conditions
Oceans	temperature, sea level, frequency of coastal flooding, and ocean acidity
Snow and Ice	Arctic and Antarctic sea ice extent during warmest periods, glaciers, lake ice in the Great Lakes, total snowfall and snow cover/snowpack
Health and Society	heat-related deaths and illnesses, heating and cooling degree days, Lyme disease, West Nile Virus, length of growing season, ragweed

	pollen season
Ecosystems	wildfires, streamflow, stream temperature, Great Lakes water levels, bird wintering ranges, marine species distribution, leaf and bloom dates

Global and National Level Climate Observations

The Earth's climate is changing. Consistent and widespread evidence documents observed increases in global temperature and temperature extremes; shifts in snow and rainfall patterns; and increases in both the frequency and intensity of extreme storms, and precipitation events. Global observations of key climate indicators could be summarized across multiple volumes of text. For the purpose of this memorandum, the global and national observations summarized below offer a subset of observations for the purpose of providing readers with a brief snapshot of significant trends that have been recorded on a large scale.

Key Global and National Climate Observations		
Greenhouse Gasses	Current global atmospheric concentrations of carbon dioxide are unprecedented compared with the past 800,000 years, even after accounting for natural fluctuations.	In the US, carbon dioxide, methane, and nitrous oxide account for 97% of all US greenhouse gases, with carbon dioxide being the largest contributor (82%). The US electricity, transportation, and industry sectors introduce 78% of all US greenhouse gases.
	In 2010, estimated worldwide emissions from human activities totaled nearly 46 billion metric tons of greenhouse gases - a 35 percent increase from 1990. These numbers represent net emissions, which include the effects of land use and forestry.	Since the beginning of the industrial era, concentrations of carbon dioxide have increased from an annual average of 280 ppm in the late 1700s to 401 ppm as measured at Mauna Loa in 2015—a 43-percent increase.
Weather and Climate	Average temperatures have risen across the contiguous 48 states since 1901. Global temperatures show a similar trend, and all of the top 10 warmest years on record worldwide have occurred since 1998.	The planet's average surface temperature has increased about 2.0 ºF since the late 19th century. Most of the warming occurred in the past 35 years, with 16 of the 17 warmest years on record occurring since 2001.
	The number of record high temperature events in the United States has been increasing, while the number of record low temperature events has been decreasing, since 1950. The U.S. has also witnessed increasing numbers of intense rainfall events.	Earth's warming trend is proceeding at a rate that is unprecedented over decades to millennia.
Oceans	The temperature of the top 2,300 feet of Earth's ocean water has increased by 0.302 ºF since 1969.	Global sea level rose about 8 inches in the last century. The rate in the last two decades, however, is nearly double that of the last century.
	Since the beginning of the Industrial Revolution, the acidity of surface ocean waters has increased by about 30 percent. The amount of carbon dioxide absorbed by the upper layer of the oceans is increasing by about 2 billion tons per year.	Coastal flooding along the U.S. coastline is becoming more frequent. Nearly every site measured has experienced an increase in coastal flooding since the 1950s. The rate is accelerating in many locations along the East and Gulf coasts.
Snow and Ice	Satellite observations reveal that the amount of spring snow cover in the Northern Hemisphere has decreased over the past five decades and that the snow is melting earlier.	Both the extent and thickness of Arctic sea ice has declined rapidly over the last several decades. The Greenland and Antarctic ice sheets have both decreased in mass.
	Glaciers are retreating at locations across the globe.	Snowpack in early spring has decreased at more than 90 percent of measurement sites in the western United States between 1955 and 2016.
Health and Society	Since 1979, more than 9,000 Americans were reported to have died as a direct result of heat-related illnesses such as heat stroke. However, considerable year-to-year variability and certain limitations of the underlying data make it difficult to determine whether the United States has experienced long-term trends in the number of deaths classified as "heat-related."	Heating degree days have decreased overall, while cooling degree days have increased overall, suggesting an increasing energy demand for heating and air conditioning.
	Lyme disease is an illness spread by ticks. Tick habitat is influenced by climate change. The rate of Lyme disease cases reported nationwide in the US has roughly doubled since 1991. For West Nile Virus (which is spread by mosquitoes whose habitat and populations are influenced by temperature and water), incidence is affected by climate but no obvious long-term trends have been detected since tracking began in 2002.	The growing season for US crops has increased in most US states with earlier spring warming and later arrival of fall frosts. Similarly, the length of the ragweed pollen season has also lengthened, prolonging the allergy season.
Ecosystems	Since 1983, the United States has had an average of 72,000 recorded wildfires per year. Of the 10 years with the largest acreage burned since 1983, nine have occurred since 2000.	Leaf and bloom events are generally happening earlier throughout the North and West but later in much of the South.
	Changes in temperature, precipitation, and snowpack have resulted in changes in average streamflow maximum, minimum and average flows over the last 75 years; as well as the timing of peak flow (with peak winter-spring runoff happening at least five days earlier than it did in the mid-20th century for many locations).	Many terrestrial, freshwater, and marine species have shifted their geographic ranges, seasonal activities, migration patterns, abundances, and species interactions in response to ongoing climate change.
		Stream temperatures are increasing in some locations, affecting aquatic ecosystems.

Statewide Climate Observations

New Jersey's climate is characterized by moderately cold and occasionally snowy winters, and warm, humid summers. New Jersey's climate is relatively moist, with an average statewide precipitation of 46 inches per year. The average minimum winter temperature is between 15 and 30 degrees Fahrenheit (ºF); and the average maximum summer temperatures range between 80 and 90 ºF. Thunderstorms, flooding rains, heat and cold waves, and snowstorms are common in the state; coastal storms such as nor'easters, tropical storms, and hurricanes occur as well but are less common. The State is impacted by at least one coastal storm per year; and has been affected by many as many as 5 to 10 coastal storms annually in recent years. Strong winds and heavy precipitation accompany these types of events.

Annual temperatures in New Jersey have increased by 3 ºF over the last century. Nine out of ten of the hottest calendar years on record in New Jersey have occurred since 1990. Days above 95 ºF have been above average since the early 2000's; nighttime lows above 70 ºF have consistently been above the mean, with the period between 2010 and 2014 being the highest five-year average. The numbers of days with temperatures below 0 ºF have decreased since the early 1990's. And, in the last 25 years, there have been more unusually warm months than unusually cold months recorded. In fact, from 2000 to 2015, there were no top five coldest months but 32 top five warmest months.

Precipitation records indicate that New Jersey has been wetter than average over the last decade with annual precipitation about 8 percent above average. Between 1895 and 2011, precipitation increased by more than 10 percent (5 inches) in the Northeast. The largest number of extreme precipitation events (days with more than two inches) occurred in the five-year window between 2010 and 2014 – and were about 50 percent higher than the long-term average. Summer precipitation in the 21st century has also been above long term (1900-2014) mean. The highest five-year average rainfall amount also occurred between 2010 and 2014. In the northeast overall, heavy precipitation events have been recorded more than twice as often in recent years than during the past century.

Sea level has increased at a rate of about 1.6 inches per decade at Atlantic City since 1911 – double the global average. In turn, the annual number of tidal flood days has also increased with the greatest number occurring in 2010 and 2012. NJDEP will be releasing a new guidance document containing updated information on sea level rise and its implications for coastal regions of the State in the near future.

In the 21st century alone, New Jersey has experienced one emergency water supply drought (2001-2002) and six drought watches (2005, 2006, 2010, 2015, 2016 and 2017).

NJDEP's "*Climate Change in New Jersey: Temperature, Precipitation, Extreme Events and Sea Level*" (updated August 2017) highlights the following notable line of recent weather and climate extremes in New Jersey:

- Eight of the top ten warmest summers have occurred since 1999 based on the period of 1895 to the present, with 2016 being the fourth hottest summer on record.
- During the 12-month period from October 2015 to September 2016, New Jersey experienced the 9th driest March and its 8th driest August in the last twenty-nine years.
- Four of the top ten snowiest Januarys since 1905 have occurred since 1996.

- Major floods (those that have caused extensive inundation of structures and roads; those that cause significant evacuations of people and/or transfer of property to higher elevations) that have occurred in New Jersey in recent years have occurred in 2004, 2005, 2006, 2007, 2010, 2011, and 2016.

The New Jersey Climate Adaptation Alliance has estimated that power interruptions due to extreme weather are ten times worse state-wide than they were 20 years ago.

Projections for New Jersey

Regional assessments predict that the Northeastern United States, including New Jersey, will experience changes consistent with those anticipated on larger spatial scales. Changes include sea level rise and the resultant impacts of coastal flooding and erosion; increased frequency and intensity of precipitation events and localized flooding events; higher average temperatures; and longer periods without rainfall resulting in longer, drier growing seasons. Recent historical climate change trends that have been observed in New Jersey are projected to continue into the future (for more information, see http://www.nj.gov/dep/dsr/trends/pdfs/climate-change.pdf). The NOAA National Centers for Environmental Information provides State Climate Summaries. The Summary for New Jersey is available at the following link: https://statesummaries.ncics.org/sites/default/files/downloads/NJ-print.pdf. Projected future conditions for New Jersey's changing climate are also expected to result in ecosystem disruptions, loss of habit, growing numbers of threatened and endangered species, increased fires, disruptions to fishing and farming, and increases in some risks to human health (for more information, see https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-nj.pdf).

Average annual temperatures have increased in New Jersey by 3 ºF over the past century. Temperatures are projected to continue to increase over the course of the next century, with projected exceedance of historical record levels occurring as early as the middle of the 21st century. There is a large range of possibilities regarding the magnitude of this increase, ranging from the coldest years being about as warm as the warmest years in the historical record; to a potential condition whereby the hottest years are projected to be about 10 ºF warmer than the hottest year in the historical record. Heat waves are projected to occur more frequently, while cold waves are projected to occur less frequently. A recent state-level analysis has estimated that by the middle of the 21st century, 70 percent of New Jersey's summers may be warmer than what has so far been the warmest summer on record. Winters and summers in New Jersey have become warmer in New Jersey over the course of the last century, with fewer heating degree days and more cooling degree days observed during this period.

Future conditions in New Jersey are likely to reflect increases in both winter and spring precipitation, and the number of extreme precipitation events. There is still a tremendous amount of uncertainty, however, regarding the projected nature and magnitude of these extremes. Overall, more locations will experience increased precipitation, rainfall duration, and intensity patterns. Increased frequency and intensity of coastal storms (in part, due to warmer ocean waters); and sea level rise also have the potential to affect the nature and duration of flooding. By the year 2100, it is likely that there will be a significant increase in both coastal and riverine flooding in the US. Observed trends in increased precipitation are expected to continue; thus, increasing flood risks.

Despite a trend in greater overall precipitation, droughts lasting up to six months may increase in frequency because the Northeast is experiencing and trending toward longer periods without rainfall. More rain is falling on an annual basis, but instead of occurring gradually, with small amounts over a series of low-intensity storms, it is tending to occur in short bursts where significant rainfall amounts are recorded during severe events, causing significant stormwater runoff from impervious surfaces in developed areas. As the County's population and associated urban and suburban development continue to expand, runoff from impervious coverage will increase; along with localized flooding events. Rapid soil saturation coupled with relatively low soil porosity and groundwater infiltration rates that characterize many areas of the County also contributes to increased runoff and localized flooding during high rainfall events, even in the lower density rural and agricultural areas of the County. Inadequate opportunities for groundwater recharge associated with less frequent, more intense rainfall events as compared to frequent low-intensity storms can affect potable groundwater supplies during prolonged drought periods.

Sea level is projected to be one to four feet higher than current levels along the New Jersey coastline by the year 2100. This is expected to cause a significant increase in the associated annual number of tidal flood days, with some models projecting tidal flooding will occur most days of the year by the end of this century. Salt water intrusion associated with sea level rise is anticipated, affecting potable water resources in coastal communities.

Key Statewide Impacts

Impacts of climate change and sea level rise can affect all parts of a community, including: transportation infrastructure (ports, marinas, airports, roads, bridges, railways); public infrastructure (stormwater and wastewater management systems, drinking water supply and distribution systems, power utility systems, communications systems); public facilities (i.e., police, fire, ambulance, hospitals, schools, daycare centers, adult living facilities, historic landmarks, government buildings, libraries, parks, etc.); economic viability of a community – particularly for communities where tourism tends to drive local economies.

Changes in climate indicators and projected future conditions for things like temperature and precipitation are more than mere data points – a changing climate brings with it a host of altered environmental conditions that have the potential to result in an extensive range of impacts on the human/built environment as well as natural systems. These impacts are likely to be varied and widespread. The table below is intended to highlight just a few of the more key types of primary, secondary, and tertiary impacts that can be anticipated in Somerset County's future as a result of climate change.

Projected Future Temperature Condition in New Jersey	Key Primary Impacts	Key Secondary Impacts	Key Tertiary Impacts
Higher temperatures overall	• More areas will experience hotter and more frequent extreme heat waves	• Increased instance of heat stress / heat stroke for those partaking in outdoor activities on very hot days, or those who live and/or work in areas that are not cooled. Impacts are higher for vulnerable populations such as the very young, very old, and those who are ill.	• By the 2020s, climate change could result in a 55% increase in summer heat-related mortality and more than a doubling in mortality by the 2050s
	• Overall increase in the frequency of extreme precipitation events	• Increased risk of flooding (potential magnitude and/or duration)	• More severe damage during future flood events • Increased economic and social impacts during and after flood events • Currently exposed buildings and infrastructure could be subject to potentially greater losses as water levels increase • Increased power losses, repair and replacement costs for damaged buildings and infrastructure, potential fatalities and injuries, job losses, transit system impacts
	• Increase in the intensity and frequency of extreme weather events	• Increased likelihood of flooding, high winds, heavy snow	• Increased damages to people and property • More severe damage during future storm events • Increased economic and social impacts during and after severe storm events • Increased power losses, repair and replacement costs for damaged buildings and infrastructure, potential fatalities and injuries, job losses, transit system impacts
	• Rises in sea level	• More frequent coastal nuisance flooding • More extreme impacts during coastal storm events	• Increased damages to people and property in coastal flood zones • Damaged infrastructure, road closures, and strain on storm drain systems where back flow preventers are lacking and/or inoperable
	• Changes to natural ecosystems due to warmer	• Potential loss of critical habitat	• Northern spread of insects

	temperatures and associated changes in global precipitation patterns	• Stress on plant and animal species as they try to adapt to changing conditions.	• Changes in species abundance and species composition • Plant and animal migration to higher elevations and locations further away from the equator
	• Increased risk of drought in some areas	• Agriculture losses • Water shortages/rationing • Increased water purification costs • Business/industry impacts	• Water supply redistribution including intra-basin transfers • Ecological impacts
	• Increased evaporation	• Increased moisture in the atmosphere contributes to more overall precipitation	• Increased vulnerability to flooding (see above) • Impacts on gravity flow stormwater systems
	• Longer periods without rainfall during longer growing seasons	• Drier growing seasons • Lower moisture content, soils and plant life	• Crop losses • Increased risk of wildfires
	• More heating and cooling degree days	• Increased energy expenditures for heating and cooling	• Strain on electrical grid during periods of increased demand • Potential power outages

Furthermore, as our susceptibility to more frequent and severe hazard event occurrences increases over time, all of the above situations have the potential to impact the day-to-day operations of local emergency management officials with an increased demand for their services in preparing for, responding to, and recovering from natural hazard events. Projected future climate conditions will require resilient critical infrastructure and emergency assets in order to maintain continuity of operations in the face of more frequent and/or severe storms, and hazard events occurring across broader geographic areas with associated increases in the number of people and property in harm's way.

Climate Change Adaptation Strategies

While Earth's changing climatic conditions are represented by data-driven, scientific observations of various indicator parameters, uncertainty exists regarding the pace of future climate change and the severity of the effects that will one day be observed at any given geographic location in the future. This uncertainty can be attributed in part to the degree greenhouse gas reduction policies and strategies are successfully implemented at the regional and global levels; and the complex system interactions being caused by global warming. Despite uncertainties concerning when certain impacts will begin to affect a particular geographic location and their rate of increase over time; the magnitude and extent of hazards faced are expected to be substantially higher in the future than they are today. The challenges posed by climate change, such as more intense storms, frequent heavy precipitation, heat waves, drought, extreme flooding, and higher sea levels could significantly alter the types and magnitudes of hazards faced by communities and the emergency management professionals serving them. Integrating climate change adaptation measures into local government programs and operations will, over time, and help improve adaptive capacity and increase overall community resiliency.

In January 2016, the NJDEP Science Advisory Board's (SAB) Climate and Atmospheric Sciences Standing Committee indicated that sea level rise and the resultant impacts on coastal

flooding and coastal erosion were considered among the most significant outcomes of climate change that will require adaptation in the State of New Jersey.

Being well inland, Somerset County is not directly impacted by this most pressing matter. However, in the years to come, Somerset County could possibly experience drastic changes in storm character, intensity, frequency, and storm tracking. Despite this inevitable reality, there are ways that jurisdictions can plan ahead and take action to mitigate the impacts of severe storms. These actions can be grouped into the following four (4) basic categories:

- Protection - structurally defensive measures that provide protection by preventing flooding/inundation (i.e., shoreline armoring, beach re-nourishment, streambank stabilization, dunes, dikes, levees)
- Accommodation - strategies that provide protection via altered design measures to accommodate water (i.e., building elevation, bridge elevation, stormwater improvements, flood proofing)
- Adaptation – modifying design standards and building codes; reducing impervious coverage; restoring ecological function in riparian areas; restricting new development from occurring in flood risk areas
- Retreat - strategies that provide protection via the removal of existing, at-risk development and possible relocation to other areas that are not flood-prone (i.e., acquisition of repetitive loss properties and vulnerable land for public ownership, transfer of development rights, purchase of development rights, rolling easements, conservation easements, zoning laws, disincentives to building in hazard areas, incentives to building in low risk areas, designating at-risk land as open space, and/or requiring critical facilities to be located outside of hazard areas.

Some actions that municipalities in Somerset County can consider as a means to improve their resiliency to changing climate include a wide range of physical adaptation measures and nature-based solutions, some of which include:

- Take steps now to increase the public's understanding and awareness of climate change impacts and associated increased hazard risks.
- Identify mitigation actions that can be taken to reduce these risks, and protect life and property.
- Prepare for more severe storms to be the new norm. Take this into account when implementing local ordinances and zoning changes, as well as when planning for emergency management.
- Encourage development away from areas that are at the greatest risk for being impacted by flooding.
- Identify strategies for managing the spread of vector-borne diseases and reducing exposure to harmful mold that are linked to wet weather and flood conditions.
- Encourage the use of permeable ground cover and sustainable stormwater management solutions in planning designs.
- Promote the use of clean energy alternatives to improve air quality, which can reduce health risks particularly for people who must spend time outdoors during extremely hot weather.
- Require buildings in floodplains to be on higher foundations (freeboard)
- Recognize increased potential future flooding by adopting a 'floodplain planning zone.'
- Modify on-site septic requirements to anticipate impaired performance in areas where a rise in the water table is occurring or is anticipated in the future.
- Require stream/tributary development buffers and/or conservation easements.
- Require planning for alternative/evacuation routes for flood-prone roadways that are expected to be impacted by more frequent flooding.
- Anticipate that some buildings will need to be relocated, elevated on higher foundations, or abandoned.

- Build enhanced capacity into existing programs and delivery systems related to natural hazards, emergency response and recovery, and hazard mitigation.
- Create permitting rules that require implementation of site-specific hazard mitigation and emergency response plans for existing landfills, hazardous waste dumps, mine tailings, and toxic chemical facilities; and require all new facilities of this type to be located in low-risk areas.
- Develop adaptive stormwater management practices.
- Identify and protect ecologically significant areas and areas of high species diversity.
- Incorporate consideration of climate change impacts into planning for new infrastructure.
- Incorporate wetlands protection into infrastructure planning.
- Increase shoreline setbacks.
- Implement land acquisition/exchange programs.
- Replace shoreline armoring with living shorelines
- Incorporate climate change scenarios into water supply systems.
- Manage water demand.
- Prevent or limit groundwater extraction from shallow acquirers.

Hazard mitigation strategies regarding development and redevelopment (particularly in the post-disaster scenario) present an opportunity to rebuild in a stronger, more sustainable, and more resilient manner. Community climate change adaptation strategies should be re-evaluated on a regular basis over the course of the plan maintenance phase - particularly when a community is devastated by a disaster, as strategies which may not have been economically, politically, or socially feasible in the pre-disaster scenario may have markedly different levels of community support for implementation.

Additional resources are available on many federal and state agency websites. The U.S. Climate Resilience Toolkit (https://toolkit.climate.gov/), for example, can be one useful resource for local officials interested in learning more. The Toolkit was developed by the National Oceanic and Atmospheric Administration (NOAA) and other Federal agencies to enable decision-makers to take action to boost their climate resilience using data-driven tools, information, and subject-matter expertise to make smarter decisions. The Toolkit was released in November 2014, and offers information from across the federal government regarding climate-related risks and opportunities as well as steps to improve resilience. A diverse series of reports that contain climate change response recommendations specific to New Jersey have been developed by the New Jersey Climate Change Adaptation Alliance, and are available at the following website: http://njadapt.rutgers.edu/resources/njcaa-reports. In addition, related publications by affiliates of the Climate Change Institute at Rutgers University are available at http://climatechange.rutgers.edu/.

Climate Change Mitigation Strategies

There are many strategies that can be implemented that can reduce the amount of CO2 and other greenhouse gasses that are being released into the Earth's atmosphere. Many other strategies can also be implemented to sequester CO2 and other greenhouse gasses by removing them from the atmosphere. "*Drawdown, The Most Comprehensive Plan Ever Proposed to Reverse Global Warming*" Edited by Paul Hawken (see http://www.drawdown.org/)

builds upon the work of a qualified and diverse group of researchers from around the world to identify and model the 100 most substantive, existing solutions that can mitigate climate change. If implemented, these changes have the potential to roll-back global warming, such that the concentration of greenhouse gases in the atmosphere begins to decline on a year-to-year basis. Each solution is measured and modeled to determine its carbon impact through the year 2050, the total net cost to society, and the total lifetime savings. Some of the greatest opportunities to reduce carbon emissions are in the electricity generation and transport sectors. Many of the strategies for improving energy resilience included in the Somerset County Multi-jurisdictional Hazard Mitigation Plan's "Energy Resiliency Framework" also can significantly reduce carbon emissions and mitigate climate change. These include smart grid technologies, microgrids, fuel cells, combined heat and power, waste-to-energy and renewable distributed energy generation, energy efficiency and conservation and demand-side management. Below is a snapshot of just a few of the potential solutions in the Food, Land Use, Materials, and Buildings and Cities Sectors that are currently underway, can be expanded upon, and potentially applied in the future in Somerset County:

- Conservation Agriculture: Avoids tilling and employs cover crops and crop rotation. By protecting the soil, it becomes more resilient to natural hazards and sequesters carbon.
- Composting: From backyard bins to industrial-scale operations, composting food and yard waste converts organic material into stable soil carbon and valuable fertilizer, averting methane emissions.
- Bioplastics: Ninety percent of plastics could be derived from plants instead of fossil fuels. Bioplastics can be biodegradable and have lower associated emissions.
- Building Automation: Building automation systems can be integrated into large commercial buildings to control temperature, lighting and more. They can improve energy efficiency and occupants' comfort.
- Building with Wood: High-performance wood materials are transforming construction. They can reduce emissions by sequestering and storing carbon and avoiding emissions associated with cement and steel.
- Alternative Cement: Cement, which is a vital material for community infrastructure systems, generates 5 to 6 percent of annual emissions. Emissions can be reduced by changing its composition.
- Afforestation: Creating forests where there were none before creates a carbon sink, drawing in and holding on to carbon, distributing it into the soil, and storing it deep in the ground.
- Electric Bikes: Electric bikes get a boost from a small battery-powered motor. They are the most environmentally sound means of motorized transportation in the world today.
- Green Roofs: Green roofs use soil and vegetation as living insulation. Cool roofs reflect solar energy. Both reduce building energy use for heating and cooling and sustainably manage stormwater.
- Managed Grazing: Managed grazing imitates the activity of migratory herds to improve soil health, carbon sequestration, water retention, and forage productivity.
- Net Zero Buildings: These have net zero energy consumption, and produce as much energy through onsite renewables as they use in a year.
- Plant-Rich Diet: Meat-centric diets come with a steep emissions price tag: one fifth of global emissions. Plant-rich diets dramatically reduce emissions and rates of chronic disease.
- Refrigerant Management: The primary chemical refrigerant, HFCs, is a potent greenhouse gas. Emissions are avoided by managing leaks and disposal and by phasing out HFCs.

The information in this memo will be updated and expanded upon on an as needed basis so that it remains a useful tool during the ongoing process of monitoring, evaluating and updating the Somerset County Multi-Jurisdictional Hazard Mitigation Plan. It will also be made available as an information tool for informing County and local master plans, land use policies, local and regional sustainable communities and resiliency program initiatives and infrastructure investment decisions.

State Resources

Emergency management in the State of New Jersey is under the direct control of the **Governor**, who is conferred specific emergency powers under the New Jersey Constitution and statues. The Superintendent of the State Police, a Division within the New Jersey Department of Law and Public Safety, is the **State Director of Emergency Management**.

The **Emergency Management Section** facilitates the flow of information to and from the various Bureaus supervised and serves as a conduit for communication with other Divisions. The Section is also responsible for planning, directing and coordinating emergency operations within the State which are beyond local control.

The **Recovery Bureau** supervises the Public Assistance, Mitigation and Finance Units.

- The Preparedness Unit disseminates preparedness information in advance of a disaster or potential disaster.
- The Mitigation Unit has the mission of enhancing State, county, and municipal risk reduction through the development and implementation of mitigation strategies. The Unit undertakes hazard mitigation planning and the review of mitigation projects in advance of potential disasters, and is also activated during and immediately after disasters to evaluate existing and proposed mitigation measures in the affected areas. They make applicants aware of Federal Emergency Management Agency (FEMA) mitigation grant programs, and conduct training sessions and workshops and participate in public meetings to facilitate grant processes.
- The Finance Unit supports the fiscal functions of both the Public Assistance and Mitigation Units. It ensures timely reimbursements and fiduciary responsibility.

The State has an **Emergency Operations Center** which is activated and staffed whenever a disaster occurs, or is predicted to occur. The State's Emergency Operations Plan addresses the State's response to any disaster or emergency and provides the basis for coordinated emergency operations involving disaster planning, response, recovery and mitigation.

The New Jersey Office of Emergency Management (NJOEM) office has evolved from a small agency with limited planning, training, and response capabilities to its present status as an integral part of State government. The State Hazard Mitigation Officer (SHMO) is the representative of State government acting as the primary point of contact with FEMA, other federal agencies, and county and local units of government in the planning and implementation of pre- and post-disaster mitigation programs and activities required under the Stafford Act. The New Jersey SHMO is Acting Sergeant First Class Michael Gallagher of NJOEM.

NJOEM has prioritized support for the Mitigation Unit. A Mitigation Unit manager, Civil Engineer and Regional Manager were hired to manage the increased workload and responsibilities of the NJOEM Mitigation Unit. Additional planning assets are also scheduled to be hired in the very near future. The projected additions to the Mitigation Unit will bring a total workforce to 15 staff

members. The Mitigation Unit also has seven to nine Contract staff members on staff to assist with Hurricane Sandy (Federal disaster declaration DR4086) including specialists in Environmental and Historic Preservation (EHP), Benefit Cost Analysis (BCA), and Planning.

The State of New Jersey has several funding sources for conducting hazard mitigation projects. For example, grants for flood mitigation projects may be obtained through the NJOEM for planning and projects.

Capital needs of the state are primarily funded through three methods, which may be used singularly or in combination. They are:

- Pay-as-you-go capital outlays used primarily for renovations and preservation of state properties, highway, and mass transit improvements and environmental projects.
- General obligation bond funds, used to finance more expensive capital construction projects such as new facilities and must yield substantial benefits for the present and future generations (these funds must be authorized by the state's voters)
- Lease or lease-purchase is an alternate method of financing capital construction by allowing the state to occupy a facility and, over a defined period of time, secure ownership.

Table FRF-9-1 (as provided in the 2014 New Jersey State Hazard Mitigation Plan) summarizes New Jersey's pre- and post-disaster hazard management policies, programs, and capabilities. **Table FRF-9-2** (also as provided in the 2014 New Jersey State Hazard Mitigation Plan) summarizes Funding Sources Available for Mitigation Activities.

Table FRF-9-1 Summary of Pre- and Post-Disaster Hazard Management Policies, Programs, and Capabilities								
Agency	**Hazard**	**Program**	**Capability**		**Effect on Loss Reduction**		**Provides Funding for Mitigation**	**Description of Policies, Programs, Funding**
			Pre-Disaster	**Post-Disaster**	**Support**	**Facilitate**		
New Jersey Department of Community Affairs (DCA)	All		√	√	√	√	√	DCA provides administrative guidance, financial support, and technical assistance to local governments, community development organizations, businesses, and individuals to improve the quality of life. DCA offers a wide range of programs and services that respond to issues of public concern including fire and building safety, housing production, community planning and development, and local government management and finance. DCA's programs and services are provided through, among others, the following Divisions: • Division of Codes and Standards • Division of Community Resources • Division of Fire Safety • Division of Local Government Services • Office for Planning Advocacy
New Jersey Department of Education (DOE)	All		√	√	√			New Jersey DOE has oversight and review authority over all public schools in New Jersey. The DOE does not own any property or facilities. All public schools are owned by their respective school districts.
New Jersey Department of Environmental Protection (NJDEP)	All		√	√	√	√		NJDEP coordinates with FEMA, United States Environmental Protection Agency (USEPA), NJOEM, New Jersey Department of Health and Senior Services (NJDHSS), the New Jersey Department of Military and Veterans Affairs (NJDMVA), and the New Jersey State Police (NJSP) to participate in state, county, and local planning initiatives. NJDEP participates, as a member, in the Regional Catastrophic Planning Team.

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Department of Environmental Protection (NJDEP)	All	Water Pollution Management Element (WPME)	√	√	√	√	√	WPME is responsible for protecting New Jersey's ground and surface waters from pollution caused by improperly treated wastewater and its residuals primarily through the implementation of the New Jersey Pollutant Discharge Elimination System (NJPDES) permit program. For funding, see New Jersey Environmental Infrastructure Financing Program.
New Jersey Department of Environmental Protection (NJDEP)	All	Division of Water Supply and Geoscience (DW&GS)	√	√	√	√	√	DW&GS works to ensure that adequate, reliable, and safe water supply is available for the future. This goal is accomplished through the regulation of ground and surface water diversions, permitting of wells, permitting of drinking water infrastructure, monitoring of drinking water quality, and technical support for water systems to achieve compliance with all federal and State standards. In addition, Water Supply staff act in a support role during an emergency situation to provide technical assistance, as needed to re-establish safe and adequate public water supplies. Additionally, DW&GS provides operator licensing and training support as well as financial assistance through the DW State Revolving Fund program. For further funding information, see New Jersey Environmental Infrastructure Financing Program.

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New Jersey Department of Environmental Protection (NJDEP)	All	WRM, Municipal Finance and Construction Element New Jersey Environmental Infrastructure Financing Program (NJEIFP)	√	√	√	√	√	NJEIFP is a revolving loan program for the construction of drinking water facilities, wastewater treatment facilities, sludge management systems, combined sewer overflow abatement, stormwater, and other non-point source management projects. The program also offers funding to publicly and privately-owned drinking water systems for the construction or upgrade of drinking water facilities, transmission and distribution systems, storage facilities, and source development. NJEIFP also offers a disaster relief fund that will be able to provide short-term or bridge loans to entities that are in need of an upfront cash flow.
New Jersey Department of Environmental Protection (NJDEP)	Flood, Severe Storm, Nor'easter, Hurricane/ Tropical Storm	New Jersey Delaware River Flood Mitigation Task Force and Delaware River Basin Commission Interstate Flood	√	√	√	The Task Force reviewed and provided comments on the new Flood Control Act regulations and supports pre- and post-hazard mitigation. The Task Force is as an advisory body for flooding issues.	New Jersey Department of Environmental Protection	Flood, Severe Storm, Nor'easter, Hurricane/Tropical Storm

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New Jersey Department of Environmental Protection (NJDEP)	Flood, Severe Storm, Nor'easter, Hurricane/ Tropical Storm	Bureau of Dam Safety and Flood Control	√	√	√	√	√	The Bureau leads the State's efforts as the State National Flood Insurance Program (NFIP) Coordinator and Community Rating System (CRS) support. In addition, the Bureau's responsibilities include the funding of construction and operation of federal/State/local flood control mitigation projects throughout the State, including the 24-hour operation of the Pompton Lakes Dam Flood Gates. The Bureau has also taken a role on the development and adoption of New Jersey Flood Hazard Area mapping, as well as an active partnership with FEMA on their Map Modernization Program efforts. The Bureau also provides Community Assistance Program/State Support Services Element funding to meet negotiated objectives for reducing flood hazards in NFIP communities. The program requires participating communities to identify, prevent and resolve floodplain management issues before the issues require FEMA compliance action.
New Jersey Department of Environmental Protection (NJDEP)	Flood, Severe Storm, Nor'easter, Hurricane/ Tropical Storm	Open Space and Land Acquisition Programs	√	√	√	√	√	Green Acres/Blue Acres Program - Green Acres and Blue Acres Program acquisition funds are used for the acquisition of repetitive loss and severe repetitive loss structures.

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New Jersey Department of Environmental Protection (NJDEP)	Flood, Severe Storm, Nor'easter, Hurricane/ Tropical Storm	Passaic River Basin Flood Advisory Commission	√	√	√	√	√	Created by Executive Order 23 on April 23, 2010, the Advisory Commission's charge is to provide recommendations to the Governor including (but not limited to): expanding and expediting Passaic River floodway property buyouts, prioritizing land acquisition and acquiring natural flood storage areas, operating the Pompton Lake Dam floodgates, clearing river of debris, evaluation of regulatory programs, enhancing public involvement, information and outreach for flood response, and identifying methods to phase out or prevent future development in flood-prone hazard areas.
New Jersey Department of Environmental Protection (NJDEP)	Coastal Erosion, Hurricane/ Tropical Storm, Severe Storm, Nor'easter	Bureau of Coastal Engineering	√	√	√	√		The Bureau maintains a close relationship with the U.S. Army Corps of Engineers (USACE) regarding all phases of coastal protection. The State has continued funding the non-lapsing Shore Protection Fund for shore protection projects associated with the protection, stabilization, restoration or maintenance of the shore including monitoring studies and land acquisition. Through continued State funding for federal flood control projects through annual State appropriations under the HR-6 Flood Control project budget the Bureau maintains an active series of coastal flood and shore protection projects. The Bureau's proactive responsibilities include beach nourishment, construction of shore protection structures, coastal dredging and aids to navigation. The Bureau has reactive responsibilities resulting from coastal storms. Many coastal engineering projects involve coordination with both the Philadelphia and New York Districts.

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Department of Environmental Protection (NJDEP)	Geologic Hazards, Earthquake, Drought	New Jersey Geological and Water Survey	√	√	√	√		Evaluates geologic, hydrogeological, and water quality data to manage and protect water resources, identify natural hazards and contaminants, and provide mineral resources including offshore sands for beach nourishment. Information provided by the survey includes GIS data and maps of geology, topography, groundwater, and aquifer recharge. In addition the data track wellhead protection areas, aquifer thicknesses, properties and depths, groundwater quality, drought, geologic resources, and hazards (such as earthquakes, abandoned mines, karst-influenced sinkholes, and landslides).
New Jersey Department of Environmental Protection (NJDEP)	Flood, Severe Storm, Nor'easter, Hurricane/ Tropical Storm	Division of Land Use Regulation (DLUR)	√		√			DLUR has developed rules and regulations to ensure a safer community by reducing flood losses and insurance claims in vulnerable coastal areas. The Division coordinates with the Bureau of Dam Safety and Flood Control and NFIP-participating communities on adopting and maintaining their Flood Damage Prevention Ordinance. The Division enforces compliance with State land use regulations through notices, administrative actions, and penalties.
New Jersey Department of Environmental Protection (NJDEP)	Fishing Failure	Division of Fish and Wildlife Service	√	√	√	√		NJDEP coordinates with the U.S. Department of Commerce, NOAA/National Marine Fisheries Service (NMFS) and the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) in fishery mitigation programs. The Governor may apply to the NMFS for financial assistance to address fishery failures.

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New Jersey Department of Environmental Protection (NJDEP)	Wildfire	Division of Parks and Forests / Forest Fire Service	√	√	√	√		The Fire Service Section provides a full-time and a part-time staff of wildland firefighters, Staff provides continuing mechanical thinning and prescribed fire used to reduce hazardous wildland fuel accumulations Statewide, particularly in high-risk areas. The Forest Fire Service encourages community acceptance and inclusion of Firewise concepts in municipal and regional planning; develops and implements effective strategies that improve the health of forests and reduce the amount of fuels available for wildland fires from dead and dying trees. The Fire Service Section also strives to educate the public through NJOEM and the New Jersey Forest Fire Service outreach programs and hazard mitigation workshops.
New Jersey Department of Transportation (NJDOT)	All	511 Traffic Monitoring	√	√	√	√		The 511NJ traffic monitoring system is a free service for the public that supplies traffic information about the New Jersey Interstates, State Highways, New Jersey Turnpike, Garden State Parkway, Atlantic City Expressway, and all bridge and tunnel crossings to motorists. The system combines traffic data into up to date condition reports that are always available and accessible to commuters via text, voice or internet.
New Jersey Department of Transportation (NJDOT)	All	Geographic Information Systems (GIS)	√	√	√			The department uses Geographic Information Systems (GIS) to create maps that are used in several areas including planning and highway construction. The maps that are created using this information aid other agencies, including law enforcement, in finding solutions to reduce traffic incidents. The GIS data can also be used to identify geographical changes after a natural disaster, so that any anomalies or problems can be addressed.

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New Jersey Department of Transportation (NJDOT)	All	Capital Program	√	√	√	√	√	NJDOT uses GIS to create maps that are used in several areas including planning and highway construction. The maps that are created using this information aid other agencies, including law enforcement, in finding solutions to reduce traffic incidents. The GIS data can also be used to identify geographical changes after a natural disaster, so that any anomalies or problems can be addressed.
New Jersey Department of Transportation (NJDOT)	All	Reverse Lane Strategies (or contraflow operations)	√	√	√	√		NJDOT has three contraflow plans in place. The New Jersey Turnpike Authority and the South Jersey Transportation Authority also have one plan each (Garden State Parkway and Atlantic City Expressway). When activated, for a temporary period of time, NJDOT and its partners expand the lanes available for all travel in an outbound direction (away from the anticipated area of danger) and facilitate its usage for outbound vehicular travel.
New Jersey Department of Transportation (NJDOT)	All	County Diversionary Route Plans	√	√	√	√		Diversion plans are a compilation of predetermined diversion routes developed to improve coordination between State and local agencies when incidents occur. These Diversion Plans offer the Incident Commanders viable alternate routes to utilize during incidents.

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New Jersey Department of Transportation (NJDOT)	All	Local Aid and Economic Development	√	√	√	√	√	NJDOT is committed to advancing transportation projects that enhance safety, renew aging infrastructure, and support new transportation opportunities at the county and municipal level. The Transportation Trust Fund and the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFE-TEA) legislation provide the opportunity for funding assistance to local government s for road, bridge, and other transportation projects. NJDOT has established a number of local aid programs that provide financial support to counties and municipalities for capital improvements to transportation infrastructure.
New Jersey Department of Transportation (NJDOT)	All	Office of Maritime Resources - Dredged Material Management	√	√	√	√		NJDOT provides interagency support, program planning, and policy recommendations on maritime issues to the Governor. NJDOT serves as the primary advisory body for the support of New Jersey's $50 billion maritime industry, which includes ports and terminals, cargo movement, boat manufacturing and sales, ferry operations, marine trades, recreational and commercial boating and maritime environmental resources. Management of dredging activities in New Jersey is generally divided into three main geographic areas – New Jersey/New York Harbor, Delaware River/Delaware River Ports and the State's Navigation Channels. This program also promotes coordination and cooperation among federal, state, regional, and non-governmental agencies.
New Jersey Department of Transportation (NJDOT)	Hazardous Substance Release	Division of Multimodal Grants and Programs	√	√	√	√		NJDOT, through the Division of Multimodal Services, is responsible for the oversight and / or support of several modes of transportation including general aviation, maritime, light rail, and freight rail; making it a multi-modal focused organization.

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New Jersey Department of Transportation (NJDOT)	All	Planning and Metropolitan Planning Organizations	√	√	√	√	√	The long-range planning process identifies goals, policies, strategies, and actions to improve the movement of people and freight and support economic growth during these difficult times. There are three Metropolitan Planning Organizations (MPOs) in New Jersey composed of locally elected officials and representatives from each geographic urban area. Each of them is a forum for continuing, coordinated transportation planning with its portion of federal funds in the Transportation Improvement Program (TIP). NJDOT is a voting member of each of the three regional MPOs – the North Jersey Transportation Planning Authority, the South Jersey Transportation Planning Organization, and the Delaware Valley Regional Planning Commission.
New Jersey Department of Transportation (NJDOT)	All	Right of Way (ROW) and Property Acquisitions	√	√				The Division of Right of Way and Access Management is not specifically tasked with hazard mitigation activities. However, the eminent domain/property acquisition process and the sale of surplus government property should be of interest to post-disaster impacted communities seeking redistribution of land assets for transportation infrastructure protection.
New Jersey Department of Transportation (NJDOT)	Severe Winter Weather, Nor'easter	Winter Readiness	√	√	√	√		NJDOT works to make winter travel as safe as possible. NJDOT has 13,295 lane miles of interstate, U.S., and State routes under its jurisdiction that it strives to keep open and passable at all time during winter weather. The goal during a winter storm is to maintain the roads for safe travel, at safe speeds, by using anti-icing materials, and, when appropriate, removal of snow with plows.

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Agency	**Hazard**	**Program**	**Capability**		**Effect on Loss Reduction**		**Provides Funding for Mitigation**	**Description of Policies, Programs, Funding**
			Pre-Disaster	**Post-Disaster**	**Support**	**Facilitate**		
New Jersey Department of the Treasury	All	Division of Administration and the Emergency Response Unit (ERU)	√	√	√	√	√	The ERU is the State Treasurer's representative and coordinating agency for all of the Department of Treasury's roles and responsibilities in and to Emergency Management. The ERU acts as the lead for the Department of the Treasury and deployment coordinator for the Department in Planning, Mitigation, Response, and Recovery. The Division Coordinates and delegates mitigation and corrective action policies, programs and projects within the Division of Administration and to other Divisions of the Department.
New Jersey Department of State, Office for Planning Advocacy	Natural hazards		√	√	√	√		Supports and coordinates planning throughout New Jersey to protect the environment; mitigate development hazards; and guide future growth into compact, mixed-use development and redevelopment projects while fostering a robust long-term economy. The Office implements the goals of the State Development and Redevelopment Plan to achieve comprehensive, long-term planning; and integrates that planning with programmatic and regulatory land-use decisions at all levels of government and the private sector.
New Jersey Economic Development Authority (NJEDA)	All		√	√	√		√	The NJEDA supports business growth in New Jersey and has been active in post-Superstorm Sandy recovery and rebuilding efforts. The NJEDA provides businesses with low-interest financing.
New Jersey Department of Law & Public Safety, Office of Emergency Management (NJOEM)	All	ESF 14, Long-term Recovery Planning	√	√	√	√		Through ESF 14, Long-Term Recovery Planning, NJOEM will work with the Office of Homeland Security and Preparedness to have a plan for long-term planning and recovery prior to a disaster or emergency. One of the areas of planning includes mitigation. This coordination will allow for another Statewide plan to incorporate mitigation principles and planning.

Table FRF-9-1 Summary of Pre- and Post-Disaster Hazard Management Policies, Programs, and Capabilities								
Agency	**Hazard**	**Program**	**Capability**		**Effect on Loss Reduction**		**Provides Funding for Mitigation**	**Description of Policies, Programs, Funding**
			Pre-Disaster	**Post-Disaster**	**Support**	**Facilitate**		
New Jersey Department of Law & Public Safety, Office of Emergency Management (NJOEM)	All	Mitigation Unit	√	√	√	√		The Mitigation Unit, within the Emergency Management Section, has the mission of enhancing State, county, and municipal risk reduction through the development and implementation of mitigation strategies. Hazard mitigation, by definition, is any sustained action that prevents or reduces the loss of property or human life from recurring hazards. The Mitigation Unit accomplishes this task by implementing and administering several grant-based programs in conjunction with FEMA.
New Jersey Department of Law & Public Safety, Office of Emergency Management (NJOEM)	All	Preparedness Unit	√		√	√		The Preparedness Unit is responsible for disseminating preparedness information in advance of a disaster or potential disaster.
New Jersey Department of Law & Public Safety, Office of Emergency Management (NJOEM)	All	Public Assistance	√	√	√	√		The Public Assistance Unit accepts and reviews applications for funds for emergency work submitted by local individuals, households and businesses as well as from local governments during and immediately after a disaster.

Table FRF-9-1 Summary of Pre- and Post-Disaster Hazard Management Policies, Programs, and Capabilities								
Agency	**Hazard**	**Program**	**Capability**		**Effect on Loss Reduction**		**Provides Funding for Mitigation**	**Description of Policies, Programs, Funding**
			Pre-Disaster	**Post-Disaster**	**Support**	**Facilitate**		
New Jersey Office of Homeland Security and Preparedness (OHSP)	All		√	√	√	√		In March 2006, Executive Order No. 5 created OHSP as a cabinet-level agency within state government. The executive order defined the office's mission as the agency responsible "to administer, coordinate, lead, and supervise New Jersey's counterterrorism and preparedness efforts." Further, the executive order charged OHSP with coordinating "the emergency response efforts across all levels of government, law enforcement, emergency management, nonprofit organizations, other jurisdictions, and the private sector, to protect the people of New Jersey. OHSP is the lead agency in preparing the State's Threat and Hazard Identification and Risk Assessment (THIRA).
New Jersey Department of Agriculture (NJDA)	Animal Disease and Crop Failure		√	√	√	√		NJDA coordinates with the United States Department of Agriculture (USDA), the National Association of State Departments of Agriculture, the Northeastern Association of State Departments of Agriculture, and the Communications Officers of State Department of Agriculture to participate in national and regional planning and crisis communications initiatives regarding agriculture and agricultural livestock. Agricultural groups such as the New Jersey Agricultural Society and New Jersey Farm Bureau, as well as individual agricultural commodity groups, participate in routine communications with NJDA on issues of response to manmade agricultural emergencies. NJDA coordinates with both governmental agencies and industry groups and maintains emergency response procedures for agricultural emergencies, including serving as a central communications points for those agencies and groups.

Table FRF-9-1 Summary of Pre- and Post-Disaster Hazard Management Policies, Programs, and Capabilities								
Agency	**Hazard**	**Program**	**Capability**		**Effect on Loss Reduction**		**Provides Funding for Mitigation**	**Description of Policies, Programs, Funding**
			Pre-Disaster	**Post-Disaster**	**Support**	**Facilitate**		
Rutgers	Flood, Severe Storm, Nor'easter, Hurricane / Tropical Storm, Coastal Erosion	Jacques Cousteau National Estuarine Research Reserve's Coastal Training Program	√	√	√	√		The Coastal Training Program provides up-to-date scientific information, access to technologies and skill-building opportunities to professionals responsible for making decisions about coastal resources.
Rutgers	Natural hazards	Office of the New Jersey State Climatologist (ONJSC)	√	√	√	√		The Office of the New Jersey State Climatologist (ONJSC) is situated within the New Jersey Agricultural Experiment Station at Rutgers, The State University of New Jersey. The ONJSC mission is three-fold: (1) gather and archive New Jersey weather and climate observations, (2) conduct and foster research associated with New Jersey's weather and climate, and (3) provide critical climate services to all seeking assistance.
Rutgers	Flood, Severe Storm, Nor'easter, Hurricane / Tropical Storm	Edward J. Bloustein School of Planning and Public Policy	√	√	√	√		The Bloustein School conducts mitigation planning, data gathering, and technical studies in support of Statewide hazard mitigation. It develops geospatial and analytical tools to support community engagement, policy reform, and State and regional planning efforts.
Stevens Institute of Technology	Flood, Severe Storm, Nor'easter, Hurricane / Tropical Storm	Coastal Engineering Research Laboratory	√	√	√	√		The university conducts fundamental and applied research on the design, implementation, and monitoring of shore protection structures, systems, and beach fill projects.

Table FRF-9-1 Summary of Pre- and Post-Disaster Hazard Management Policies, Programs, and Capabilities								
Agency	**Hazard**	**Program**	**Capability**		**Effect on Loss Reduction**		**Provides Funding for Mitigation**	**Description of Policies, Programs, Funding**
			Pre-Disaster	**Post-Disaster**	**Support**	**Facilitate**		
U.S. Geological Survey (USGS)	Flood, Severe Storm, Nor'easter, Hurricane/Tropical Storm		√		√	√		USGS maintains a network of gauges across New Jersey that continuously measure tidal levels. USGS provides data to the NJDEP for drought determinations
U.S. Army Corps of Engineers (USACE)	Coastal Erosion, Flood, Severe Storm, Nor'easter, Hurricane/Tropical Storm		√	√	√	√		Silver Jackets, developed by USACE, is the State-level implementation program for the National Flood Risk Management Program. The program's goals are to leverage information and resources from federal, state, and local agencies; improve public risk communication through a united effort; and create a mechanism to collaboratively solve issues and implement initiatives beneficial to local communities.
New Jersey County Offices of Emergency Management	All		√	√	√	√		County offices of emergency management assist the State with distributing dedicated local infrastructure funding for selected local infrastructure projects.
Interagency: Office of the Attorney General (OAG), NJOEM; Office of Homeland Security and Preparedness (OHSP), NJDEP and Board of Public Utilities (BPU)		Energy Resiliency Program		√	√	√		A portion of Superstorm Sandy FEMA Hazard Mitigation Grant Program (HMGP) funds will be used to support statewide energy resilience. The energy allocations result from an ongoing collaboration between New Jersey, the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), and FEMA.

Notes:
As defined in FEMA 386-3:

Support: Programs, plans, policies, regulations, funding, or practices that help the implementation of mitigation actions.
Facilitate: Programs, plans, policies, etc., that make implementing mitigation actions easier.

BPU Board of Public Utilities
CDBG Community Development Block Grant Program
CRS Community Rating System
DCA Department of Community Affairs
DOE Department of Education
DWSRF Drinking Water State Revolving Fund
DW&GS Division of Water Supply and Geoscience
ERU Emergency Response Unit
FEMA Federal Emergency Management Agency
GIS Geographic Information System
HMGP Hazard Mitigation Grant Program
MPO Metropolitan Planning Organization
NJDA New Jersey Department of Agriculture
NJDEP New Jersey Department of Environmental Protection
NFIP National Flood Insurance Program
NJDHSS New Jersey Department of Health and Senior Services
NJDMVA New Jersey Department of Military and Veterans Affairs
NJEDA New Jersey Economic Development Authority
NJEIFP New Jersey Environmental Infrastructure Financing Program
NJOEM New Jersey Office of Emergency Management
NJSP New Jersey State Police
NJPDES New Jersey Pollutant Discharge Elimination Systems
NREL National Renewable Energy Laboratory
OAG Office of the Attorney General
OHSP Office of Homelands Security and Preparedness
ONJSC Office of the New Jersey State Climatologist
RMP Regional Master Plan
ROW Right of Way
SAFE-TEA Safe, Accountable, Flexible, Efficient Transportation Equity Act
SHMT State Hazard Mitigation Team
THIRA Threat and Hazard Identification and Risk Assessment
TIP Transportation Improvement Program
USACE United States Army Corps of Engineers
USDA United States Department of Agriculture
USGS United States Geological Survey

Table FRF-9-2 Funding Sources Available for Mitigation Activities	
Funding Source	**Description of the Funding Opportunity**
FEMA Federal Disaster Mitigation Funding that require an approved Hazard Mitigation Plan	
Flood Mitigation Assistance (FMA)	Availability: Pre-Disaster Description: To implement cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP). Funding: In fiscal year (FY) 2013, there is $120 million available in a nationwide competition. The FMA combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program.
Hazard Mitigation Grant Program (HMGP)	Availability: Post-Disaster Description: To provide funds to states, territories, Indian tribal governments, and communities to significantly reduce or permanently eliminate future risk to lives and property from natural hazards. HMGP funds projects in accordance with priorities identified in state, tribal, or local hazard mitigation plans, and enables mitigation measures to be implemented during the recovery from a disaster. Funding: For states with a FEMA-approved Standard State Mitigation Plan, HMGP funds are available based on up to 15% for amounts not more than $2 billion. An update to HMGP is that FEMA allows increasing the 5% Initiative amount up to 10%for a Presidential major disaster declaration for tornadoes and high winds at the discretion of the grantee. The increased initiative funding can be used for activities that address the unique hazards posed by tornadoes. To qualify for this funding, the grantee must, in its State or Indian Tribal (standard or enhanced) Mitigation Plan or other comprehensive plan, address warning of citizens (ensuring 90% coverage), further the safe room concept in construction or rehabilitation of residences or commercial structures, and address sheltering in mobile home parks. The plan, also, must explain how the grantee will implement an ongoing public education program so that citizens are aware of warning systems and their meaning and the availability of in-home shelter designs. Similar information should be included in the sub grantee's Local or Indian Tribal Mitigation Plan.
Pre-Disaster Mitigation (PDM)	Availability: Pre-Disaster Description: To provide funds to states, territories, tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. Funding: Nationwide competition, total funding available – FY 2013 is $23,700,000; FY 2012 was $36 million, FY 2010 was $24 million, FY 2007 was $100 million.

Table FRF-9-2 Funding Sources Available for Mitigation Activities	
Funding Source	**Description of the Funding Opportunity**
Other Federal Grant Programs	
Fire Management Assistance Grant Program	Availability: Post-Disaster Description: Assistance for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands that threaten such destruction as would constitute a major disaster. Funding: Provides a 75% Federal cost share and the State pay the remaining 25% for actual cost.
Reimbursement for Firefighting on Federal Property	Availability: Post-Disaster Description: Provides reimbursement only for direct costs and losses over and above normal operating costs.
National Dam Safety Program	Availability: Pre-Disaster Description: National Dam Safety Program (NDSP). The NDSP, which is led by FEMA, is a partnership of the states, federal agencies, and other stakeholders to encourage individual and community responsibility for dam safety. The NDSP, which was formally established by the Water Resources and Development Act of 1996, includes: Funding: Grant assistance to the States: Provides vital support for the improvement of the State dam safety programs that regulate most of the 79,500 dams in the United States. Funding available in FY 2011 was $11 Million.
Land and Water Conservation Fund	Availability: To state, local, and conservation organizations Description: Funding to states for outdoor recreational development, renovation, land acquisition, and planning. Funding: The fund is authorized at $900 million annually, a level that has been met only twice during the program's 40-year history. The program is divided into two distinct funding pots: state grants and federal acquisition funds. In fiscal year2005, the federal acquisition pot received $166 million and the state grants program received $92.5 million for a total of $258.5 million. In fiscal year2006, the federal pot received $114.5 and the state grants received $30 million. FY 2007 was similar to the year before receiving $113 million for federal acquisition and $30 million for state grants.
The Forest Legacy Program	Availability: Participation in Forest Legacy is limited to private forest landowners. Description: Federal program in partnership with states supports efforts to protect environmentally sensitive forest lands. Designed to encourage the protection of privately owned forest lands, Forest Legacy is an entirely voluntary program. To maximize the public benefits it achieves, the program focuses on the acquisition of partial interests in privately owned forest lands. Forest Legacy helps states develop and carry out their forest conservation plans. It encourages and supports acquisition of conservation easements, legally binding agreements transferring a negotiated set of property rights from one party to another, without removing the property from private ownership. Most Forest Legacy Program conservation easements restrict development, require sustainable forestry practices, and protect other values. Funding: To qualify, landowners are required to prepare a multiple resource management plan as part of the conservation easement acquisition. The federal government may fund up to 75% of project costs, with at least 25% coming from private, state, or local sources. In addition to gains associated with the sale or donation of property rights, many landowners also benefit from reduced taxes associated with limits placed on land use.

Table FRF-9-2 Funding Sources Available for Mitigation Activities	
Funding Source	**Description of the Funding Opportunity**
Transportation Trust Fund	Availability: Pre and Post-Disaster Description: Transportation Trust Fund funds grants through a competitive application-based process administered by the Local Aid District Offices. Funding: $78.75 million in funding was available in fiscal year 2008 by the Municipal Aid Program. Description: County Aid Program- Administer the County Aid Program for road and bridge infrastructure improvements under county jurisdiction. Each County receives an annual formula based allotment that takes into consideration county road lane mileage and population. The County Aid Program is funded through the Transportation Trust Fund and provides funding for eligible costs of projects included in the county's approved Annual Transportation Program. Funding: $78.75 million in funding was available in the fiscal year 2008 through the County Aid Program.
Hurricane Sandy Coastal Resiliency Competitive Grant Program	Availability: Post Disaster Description: The program will use competitive grants to award funding for science-based solutions by States, local communities, non-profit organizations and other partners to help restore key habitats and bolster natural systems, enabling these areas to withstand the impact and better protect local communities from future storms. Funding: $100 million in competitive grants.
Department of Homeland Security Grant Program (HSGP)	Availability: Pre Disaster Description: The Homeland Security Grant Program (HSGP) plays an important role in the implementation of the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation. The FY 2013 HSGP supports core capabilities across the five mission area of Prevention, Protection, Mitigation, Response, and Recovery based on allowable cost. HSGP is composed of three interconnected grant programs including the State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI), and the Operation Stonegarden (OPSG). Together, these grant programs fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration. Funding: SHSP – total funding available for FY 2013 - $354,644,123; UASI – total funding available for FY 2013 - $558,745,566; and OPSG – total funding available in FY 2013 - $55,000,000.
Emergency Management Performance Grand Program (EMPG)	Availability: Pre Disaster Description: Grants are available to State, local, territorial, and tribal governments in preparing for all hazards. The Federal Government, through the EMPG Program, provides necessary direction, coordination and guidance, and provides necessary assistance, as authorized so that a comprehensive emergency preparedness system exists at all levels for all hazards. Funding: Total funding available in FY 2013: $332,456,012

Table FRF-9-2 Funding Sources Available for Mitigation Activities	
Funding Source	**Description of the Funding Opportunity**
U.S. Small Business Administration Loan Programs	Availability: Post Disaster Description: Small Business Administration (SBA) provides low-interest disaster loans to homeowners, renters, business of all sizes, and most private nonprofit organizations. SBA 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. Funding: Homeowners may apply for up to $200,000 to replace or repair their primary residence. Renters and homeowners may borrow up to $40,000 to replace or repair personal property-such as clothing, furniture, cars, and appliances – damaged or destroyed in a disaster. Physical disaster loans of up to $2 million are available to qualified businesses or most private nonprofit organizations. As of October 7, 2013, SBA has approved $828.5 million in loans to homes and businesses in New Jersey.
Community Development Block Grant – Disaster Recovery (CDBG-DR)	Availability: Post Disaster Description: Disaster Recovery funds are made available to States, units of general local governments, Indian tribes, and Insular areas designated by the President of the United States as a disaster area. These communities must have significant unmet recovery needs and the capacity to carry out a disaster recovery program. Grants are available to rebuild the affected areas and provide crucial seed money to start the recovery process. The State has developed various programs using CDBG-DR funds to help homeowners, renters, businesses, and communities impacted by Superstorm Sandy. For more information on these funding programs, refer to the following table or visit reNewJerseyStronger.org • CDBG-DR Homeowner Assistance Programs • CDBG-DR Rental Housing and Renter Programs • CDBG-DR Economic Revitalization • CDBG-DR Support for Governmental Entities • CDBG-DR Supportive Services Programs • CDBG-DR Planning, Oversight, and Monitoring Funding: FY 2013 - $16 billion to assist recovery from Superstorm Sandy.
U.S. Army Corp of Engineers Flood Plain Management Services Program	Availability: Pre or Post Disaster Description: The Flood Plain Management Services Program provides a full range of technical services and planning guidance that is needed to support effective floodplain management. Funding: None

Table FRF-9-2
Funding Sources Available for Mitigation Activities

Funding Source	Description of the Funding Opportunity
U.S. Environmental Protection Agency	Availability: Post Disaster Description: The EPA has allocated funding to the State of New Jersey for improvements to wastewater and drinking water treatment facilities impacted by Superstorm Sandy. The State has created programs to maximize this investment by leveraging available funds to offer low interest loans with opportunities for principal forgiveness. These loans will help fund the repair of Sandy-damaged infrastructure and improve resiliency of the State's environmental infrastructure. The State has also created the Short-term Statewide Assistance Infrastructure Loan Program (SAIL), which is designed to provide facilities with short-term cash flow assistance for Sandy recovery project expenses that will ultimately be financed through other federal grant programs, including FEMA's Public Assistance reimbursement program. Funding: $229 Million to the State of New Jersey for improvements to wastewater and drinking water treatment facilities impacted by Superstorm Sandy.
U.S. Department of Health and Human Services – Social Services Block Grant	Availability: Post Disaster Description: Post-Sandy funding will be applied to support services with a focus on physical and mental health, as well as the recovery needs of children and families. Funding: The U.S. Department of Health and Human Services (HHS) allocated $226 million to New Jersey as part of the Sandy Supplemental Social Services Block Grant (SSBG).

Sources: FEMA 2013b,c, d, e
Notes:

CDBG-DR Community Development Block Grant – Disaster Recover
EMPG Emergency Management Performance Grant Program
FEMA Federal Emergency Management Agency
FMA Flood Mitigation Assistance
FY Fiscal Year
HHS U.S. Department of Health and Human Services
HMGP Hazard Mitigation Grant Program
HSGP Homeland Security Grant Program
NDSP National Dam Safety Program
NFIP National Flood Insurance Program
OPSG Operation Stonegarden
PDM Pre-Disaster Mitigation
SBA Small Business Administration
SHSP State Homeland Security Program
UASI Urban Area Security Initiative

Federal Resources

FEMA has developed a large number of documents that address implementing hazard mitigation at the local level. Key resource documents are briefly described.

Local Mitigation Planning Handbook. This handbook is the official guide for local governments to develop, update and implement local mitigation plans. While federal requirements have not changed, the Handbook provides revised and expanded guidance, offering practical approaches, tools, worksheets and local mitigation planning examples for how communities can engage in effective planning to reduce long-term risk from natural hazards and disasters. The Handbook can be found on the FEMA web site at: http://www.fema.gov/library/viewRecord.do?id=7209

Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, January 2013. The purpose of this document is to provide a resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters. The focus of this document is mitigation, which is action taken to reduce or eliminate long-term risk to hazards. Ideas for mitigation actions are presented for the following natural hazards: drought, earthquake, erosion, extreme temperatures, flood, hail, landslide, lightning, sea level rise, severe wind, severe winter weather, storm surge, subsidence, tornado, tsunami, and wildfire. This resource can be found on the FEMA web site at: http://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf

*Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials***.** The purpose of this document is to provide succinct and practical information to local government officials on how to best integrate hazard mitigation into the full range of community planning activities. It is intended for those who are engaged in any type of local planning, but primarily community planners and emergency managers that bear responsibility for hazard mitigation planning. This resource can be found on the FEMA web site at: http://www.fema.gov/media-library-data/20130726-1908-25045-0016/integrating_hazmit.pdf

How-to Guides. FEMA has developed a series of nine "how-to guides" to assist States, communities, and tribes in enhancing their hazard mitigation planning capabilities. The first four guides mirror the four major phases of hazard mitigation planning used in the development of the Somerset County Multi-Jurisdictional Hazard Mitigation Plan. The last five how-to guides address special topics that arise in hazard mitigation planning such as using benefit-cost analysis and integrating man-made hazards. The use of worksheets, checklists, and tables make these guides a practical source of guidance to address all stages of the hazard mitigation planning process. They also include special tips on meeting DMA 2000 requirements.

Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments. FEMA, DAP-12, September 1990. This handbook explains the basic concepts of hazard mitigation, and shows State and local governments how they can develop and achieve mitigation goals within

the context of FEMA's post-disaster hazard mitigation planning requirements. The handbook focuses on approaches to mitigation, with an emphasis on multi-objective planning.

Planning for Post-Disaster Recovery and Reconstruction. Developed in partnership with the American Planning Association (APA), "Planning for Post-Disaster Recovery and Reconstruction" (FEMA 421) introduces community planners to policies for rebuilding and recovery after disasters and provides guidance on how to plan for post-disaster reconstruction. It also provides guidance in developing a natural hazards element as part of a local, general, or comprehensive plan, equipping planners and others involved in post-disaster reconstruction at all levels of government with the tools needed to create (or re-create) communities that will withstand natural disasters.

Mitigation Resources for Success CD. FEMA 372, September 2001. This CD contains a wealth of information about mitigation and is useful for State and local government planners and other stakeholders in the mitigation process. It provides mitigation case studies, success stories, information about Federal mitigation programs, suggestions for mitigation measures to homes and businesses, appropriate relevant mitigation publications, and contact information.

A Guide to Federal Aid in Disasters. FEMA 262, April 1995. When disasters exceed the capabilities of State and local governments, the President's disaster assistance program (administrated by FEMA) is the primary source of Federal assistance. This handbook discusses the procedures and process for obtaining this assistance, and provides a brief overview of each program.

The Emergency Management Guide for Business and Industry. FEMA 141, October 1993. This guide provides a step-by-step approach to emergency management planning, response, and recovery. It also details a planning process that companies can follow to better prepare for a wide range of hazards and emergency events. This effort can enhance a company's ability to recover from financial losses, loss of market share, damages to equipment, and product or business interruptions. This guide could be of great assistance to Monmouth County industries and businesses located in hazard prone areas.

Important Websites

The following are important websites that provide focused access to valuable planning resources for communities interested in sustainable development initiatives.

- **http://www.fema.gov** - Web site of the Federal Emergency Management Agency includes links to information, resources, and grants that communities can use in planning and implementation of sustainable measures. Most notably:
  - **http://www.fema.gov/what-mitigation** - To learn more about mitigation and how to make it work for you.
  - **http://www.fema.gov/multi-hazard-mitigation-planning** - For information about multi-hazard mitigation planning.
  - **http://www.region2coastal.com/** - For the latest information about flood risk in coastal New York and New Jersey.

- **https://www.floodsmart.gov/floodsmart/** - The official site of FEMA's National Flood Insurance Program.

- **http://mitigationguide.org/** - "Beyond the Basics: Best Practices in Local Mitigation Planning", a website developed as part of a multi-year research study funded by the U.S. Department of Homeland Security, and led by the Center for Sustainable Community Design within the Institute for the Environment at the University of North Carolina at Chapel Hill.

- **http://www.planning.org** – Web site of the American Planning Association, a non-profit professional association that serves as a resource for planners, elected officials, and citizens concerned with planning and growth initiatives.
    - **https://www.planning.org/nationalcenters/hazards/mitigationplanning.htm** - Includes information about hazard mitigation planning prepared by the association's Hazards Planning Research Center.

- **http://www.ibhs.org** – Web site of the Institute for Business and Home Safety, an initiative of the insurance industry to reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters. Online resources provide information on natural hazards, community land use, and ways you can protect your property from damage.

Federal Technical Assistance and Funding

The Federal government offers a wide range of funding and technical assistance programs that communities can access to assist in their long-term recovery. Some of these programs are geared to disaster preparedness and mitigation planning, while the focus of others is the long-term vitality of the communities. **Table FRF-10-1** presents a summary of Federal funding sources available for mitigation activities. Further information on these and other Federal programs can be found in the Catalog of Federal Domestic Assistance (CFDA) available on online at **www.cfda.gov**.

Table FRF-10-1
Federal Funds Available for Mitigation Activities

Funding Source	Description
Funding that Requires an Approved Hazard Mitigation Plan:	
Flood Mitigation Assistance Program (FMA)	*Availability*: Pre-disaster *Description*: To implement cost-effective measures that reduce or eliminate the long-term risk of flood damage to building, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP)/ *Funding*: In FY 2007, there was $31 million available in a nationwide competition.

Hazard Mitigation Grant Program (HMGP)	*Availability*: Post-disaster *Description*: To provide funds to States, territories, Indian Tribal governments, and communities to significantly reduce or permanently eliminate future risk to lives and property from natural hazards. HMGP funds projects in accordance with priorities identified in State, Tribal or local hazard mitigation plans, and enables mitigation measures to be implemented during the recovery from a disaster. *Funding*: A State has a FEMA-approved Standard State Mitigation Plan, HMGP funds are available based on up to 15 percent for amounts not more than $2 billion.
Pre-Disaster Mitigation Program (PDM)	*Availability*: Pre-disaster *Description*: To provide funds to states, territories, Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. *Funding*: Nationwide competition, total funding available - FY 2007 was $100 million
Other Available Federal Funds:	
Fire Management Assistance Grant Program	*Availability*: Post-disaster *Description*: Assistance for the mitigation, management, and control of fires on publically or privately owned forests or grasslands, which threaten such destruction as would constitute a major disaster. *Funding*:
Community Development Block Grant	*Availability*: Pre-or post-disaster *Description*: Federal grant provided to CDBG “entitlement communities” (typically, municipalities with populations over 50,000 and urban counties with populations over 200,000) and to all states. *Funding*: Varies
Reimbursement for Firefighting on Federal Property	*Availability*: Post-disaster *Description*: Provides reimbursement only for direct costs and losses over and above normal operating costs
National Dam Safety Program	*Availability*: Pre-disaster *Description*: The NDSP was formally established by the Water Resources and Development Act of 1996. Led by FEMA, the NDSP is a partnership of the states, federal agencies, and other stakeholders to encourage individual and community responsibility for dam safety. *Funding*: Provides vital support for the improvement of the state dam safety programs that regulate most of the 79,500 dams in the United States.

Land and Water Conservation Fund (LWCF)	*Availability*: To States, local and conservation organizations *Description*: Funding for outdoor recreational development, renovation, land acquisition, and planning. *Funding*: LWCF is authorized at $900 million annually, a level that has been met only twice during the program's 40 year history. The program is divided into two distinct funding pots: State grants, and Federal acquisition funds. In FY 2005, the federal acquisition pot received $166 million and the state grants program received $92.5 million for a total of $258.5 million. In FY 2006 the federal pot received $114.5 million and the state grants received $30 million. FY 2007 was similar to the year before, receiving $113 million for federal acquisition and $30 million for state grants.
The Forest Legacy Program (FLP)	*Availability*: Participation in Forest Legacy is limited to private forest landowners. *Description*: Federal program in partnership with States, supports State efforts to protect environmentally sensitive forest lands. Designed to encourage the protection of privately owned forest lands, FLP is an entirely voluntary program. To maximize the public benefits it achieves, the program focuses on the acquisition of partial interests in privately owned forest lands. FLP helps the States develop and carry out their forest conservation plans. It encourages and supports acquisition of conservation easements, legally binding agreements transferring a negotiated set of property rights from one party to another, without removing the property from private ownership. Most FLP conservation easements restrict development, require sustainable forestry practices, and protect other values. *Funding*: To qualify, landowners are required to prepare a multiple resource management plan as part of the conservation easement acquisition. The federal government may fund up to 75 percent of project costs, with at least 25 percent coming from private, State or local sources. In addition to gains associated with the sale or donation of property rights, many landowners also benefit from reduced taxes associated with limits placed on land use. In 2008, NJ has one project funded: Sparta Mountain South at $2,474,000.
Transportation Trust Fund (TTF)	*Availability*: Pre- and post-disaster *Description*: Grants are funded by the TTF through a competitive application based process administered by the Local Aid District Offices. *Funding*: $78.75 million in TTF funding was available in the FY 2008 Municipal Aid Program. *Description:* The County Aid Program is funded through the TTF and provides funding for eligible costs of projects included in the County's approved Annual Transportation Program. The program is intended for road and bridge infrastructure improvements under county jurisdiction. Each County receives an annual formula based allotment that takes into consideration county road lane mileage and population. *Funding:* $78.75 million in TTF funding was available in the FY 2008 County Aid Program.

Name: Township Engineer Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Bedminster Township Email and Phone: OEM@Bedminster.us

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
2007	1/5/84	Paul Ferriero / Township Engineer	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Permit review, construction oversight/inspections, GIS, maintain file of building elevation certificates, assist/advise the public on NFIP program.
Describe barriers to running an effective NFIP program in the community (if applicable):
None

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
2013	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ] Yes [X] No	[X] Yes [ ] No
*Describe any outstanding compliance issues (i.e., current violations):							
None							

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Township Engineer Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: Bedminster Township Email and Phone: OEM@bedminster.us

SOMERSET COUNTY HAZARD MITIGATION PLAN

Provide an explanation of your local floodplain permitting process:
Development permit applications are granted or denied by the floodplain administrator in accordance with the provisions of the floodplain management ordinance (Bedminster Ordinance No. 07-16).

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	**Does your community intend to initiate/continue the buyouts of repetitive loss properties?**	**Does your community intend to commit staff or resources to improve local mapping or code administration in the future?**	**Does your community intend to provide local outreach to promote the sale of flood insurance?**	**Does your community intend to participate in RiskMAP meetings and planning initiatives?**	**Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?**	**Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?**	**Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?**	**Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?**
[X] Yes [ ] No	**[ ] Yes [X] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	**As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?**	**As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?**	**Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?**
[X] Yes [ ] No	**[ ] Yes [X] No**	**[X] Yes [ ] No**	**[ ] Yes * [X] No**

*** If you answered "yes", that there have been changes to your local program since 2009, please describe:**
N/A

Provide a description of your community assistance and monitoring activities:
Provide guidance in response to resident inquiries regarding floodplains and flooding. Periodic monitoring to check for any unpermitted activities.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	**NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?**
[X] Yes [ ] No	**[X] Yes [ ] No**

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name:_Thomas Timko_____Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Community:_Bernards township_____ Email and Phone:_ttimko@bernards.org, 908 204-3020_____

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
8/14/2007	9/1/1978	Municipal Engineer	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Permit review, construction oversight/inspections, GIS, maintain file of building elevation certificates, assist/advise the public on NFIP program
Describe barriers to running an effective NFIP program in the community (if applicable):
High land value precludes the removal of buildings from the floodplain

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
2016	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes* [ ] No * Class__7__	[X] Yes [ ] No	[ ] Yes [ ] No

*Describe any outstanding compliance issues (i.e., current violations):

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name:_____ Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing:_____ Email and Phone:_____

Provide an explanation of your local floodplain permitting process:
All construction permit applications are reviewed for compliance to the flood plain ordinance

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes * [X] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:
All construction is monitored. Engineering Dept. assists and advises property owners with questions about NFIP, compliance, construction, etc.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name:___Paul W. Ferriero, PE, CFM_____Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Community:____Bernardsville Borough_____ Email and Phone:_paul.ferriero@ferrieroengineering.com 908-879-6209__

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
2003	3/1/78	Borough Engineer	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):

Projects are reviewed for potential floodplain impacts and applicants are advised of the proper permit process. The Borough has also worked with residents on Letters of Map Amendment (LOMAs)

Describe barriers to running an effective NFIP program in the community (if applicable):

As with any municipality, Bernardsville has significant funding constraints and it is difficult to prioritize additional flood plain management activities over other essential services.

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
Unknown	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ] Yes [X] No	[ ] Yes [X] No

***Describe any outstanding compliance issues (i.e., current violations):**

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name:_____ Paul W. Ferriero, PE, CFM _____Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Representing:__Bernardsville Borough_____ Email and Phone:_ paul.ferriero@ferrieroengineering.com 908-879-6209_

SOMERSET COUNTY HAZARD MITIGATION PLAN

Provide an explanation of your local floodplain permitting process:
Plan review at subdivision/site plan stage and individual lot development plan submittal. Ensure compliance with Flood Damage Prevention Ordinance

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	**Does your community intend to initiate/continue the buyouts of repetitive loss properties?**	**Does your community intend to commit staff or resources to improve local mapping or code administration in the future?**	**Does your community intend to provide local outreach to promote the sale of flood insurance?**	**Does your community intend to participate in RiskMAP meetings and planning initiatives?**	**Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?**	**Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?**	**Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?**	**Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?**
[X] Yes [ ] No	**[ ] Yes [X] No**	**[ ] Yes [X] No**	**[ ] Yes [X] No**	**[ ] Yes [X] No**	**[X] Yes [ ] No**	**[ ] Yes [X] No**	**[X] Yes [ ] No**	**[ ] Yes [X] No**

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	**As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?**	**As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?**	**Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?**
[ ] Yes [X] No	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[ ] Yes * [X] No**

***** **If you answered "yes", that there have been changes to your local program since 2009, please describe:**

Provide a description of your community assistance and monitoring activities:
We provide guidance in response to resident inquiries regarding flood plains and flooding.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	**NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?**
[X] Yes [ ] No	**[X] Yes [ ] No**

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: JAMES AYOTTE Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: BOROOUGH OF BOUND BROOK Email and Phone:JAYOTTE@BOUNDBROOK-NJ.ORG

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
-	-	JAMES AYOTTE	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
WE ARE CURRENTLY REMOVED FROM THE AE FLOOD ZONE, AO FLOOD ZONE
Describe barriers to running an effective NFIP program in the community (if applicable):

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
2016	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ] Yes [X] No	[ ] Yes [X] No

*Describe any outstanding compliance issues (i.e., current violations):
BOUND BROOK WAS REMOVED FROM FLOOD ZONE IN JULY 2017

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name:_JAMES AYOTTE_____Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Representing: BOUND BROOK_____ Email and Phone:_JAYOTTE@BOUNDBROOK-NJ.ORG 732-356-0833_____

SOMERSET COUNTY HAZARD MITIGATION PLAN

Provide an explanation of your local floodplain permitting process:

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	**Does your community intend to initiate/continue the buyouts of repetitive loss properties?**	**Does your community intend to commit staff or resources to improve local mapping or code administration in the future?**	**Does your community intend to provide local outreach to promote the sale of flood insurance?**	**Does your community intend to participate in RiskMAP meetings and planning initiatives?**	**Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?**	**Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?**	**Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?**	**Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?**
[X] Yes [ ] No	**[ ] Yes [X] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	**As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?**	**As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?**	**Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?**
[X] Yes [ ] No	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[ ] Yes * [X] No**

***** **If you answered "yes", that there have been changes to your local program since 2009, please describe:**
-

Provide a description of your community assistance and monitoring activities:
WE CURRENTLY USE NIXLE

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	**NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?**
[X] Yes [ ] No	**[X] Yes [ ] No**

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: Douglas Ball Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Branchburg Township Email and Phone: tom.leach@branchburg.nj.us 908.526.1300

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
2007	06/01/1978	Township Zoning Officer	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
The services the NFIP administrator include plan review and inspections.
Describe barriers to running an effective NFIP program in the community (if applicable):
NA

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
Unknown	[ ] Yes[X] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ] Yes [X] No	[ ] Yes [X] No

*Describe any outstanding compliance issues (i.e., current violations):
None.

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Douglas Ball_____Title: Floodplain Manager/Floodplain Administrator/NFIP Coor

Representing: Branchburg Township Email and Phone: Douglas.Ball@Branchburg.nj.us (908)526-1300 Ext. 136

SOMERSET COUNTY HAZARD MITIGATION PLAN

Provide an explanation of your local floodplain permitting process:

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	**Does your community intend to initiate/continue the buyouts of repetitive loss properties?**	**Does your community intend to commit staff or resources to improve local mapping or code administration in the future?**	**Does your community intend to provide local outreach to promote the sale of flood insurance?**	**Does your community intend to participate in RiskMAP meetings and planning initiatives?**	**Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?**	**Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?**	**Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?**	**Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?**
[x] Yes [ ] No	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[ ] Yes [X] No**	**[X] Yes[ ]No**	**[X] Yes [ ] No**

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	**As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?**	**As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?**	**Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?**
[X] Yes [ ] No	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[ ] Yes * [X] No**

* **If you answered "yes", that there have been changes to your local program since 2009, please describe:**
N/A.

Provide a description of your community assistance and monitoring activities:
We regularly contact flood prone property owners to gauge interest in flood mitigation programs.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	**NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?**
[X] Yes [ ] No	**[X] Yes [ ] No**

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name:___David Battaglia_____Title:_Township Engineer/ Floodplain Manager
_

Representing:_Bridgewater Township_____Email and Phone:_dbattaglia@bridgewaternj.gov_____(908) 725-6300____

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
74-	6/28/1974	Floodplain Manager	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):

During the construction permit process the submittals are compared to the existing flood hazard mapping within the Township and revisions are requested based on that review.

Describe barriers to running an effective NFIP program in the community (if applicable):

The Township does not have sufficient staff to for any staff member to concentrate solely on Flood Plain Management and Enforcement.

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
1/23/2016	[ ] Yes [X] No	[ ] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ] Yes [ ] No	[ ] Yes [X] No

***Describe any outstanding compliance issues (i.e., current violations):**

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name:___David Battaglia_____Title:_Floodplain Manager_____

Representing:_Bridgewater Township_____Email and Phone:_dbattaglia@bridgewaternj.gov_____(908) 725-6300_____

Provide an explanation of your local floodplain permitting process:
During the construction permit process the submittals are compared to the existing flood hazard mapping within the Township and revisions are requested based on that review.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	**Does your community intend to initiate/continue the buyouts of repetitive loss properties?**	**Does your community intend to commit staff or resources to improve local mapping or code administration in the future?**	**Does your community intend to provide local outreach to promote the sale of flood insurance?**	**Does your community intend to participate in RiskMAP meetings and planning initiatives?**	**Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?**	**Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?**	**Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?**	**Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?**
[X] Yes [ ] No	**[X] Yes [ ] No**	**[ ] Yes [X] No**	**[ ] Yes [X] No**	**[ ] Yes [X] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	**As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?**	**As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?**	**Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?**
[X] Yes [ ] No	**[ ] Yes [X] No**	**[X] Yes [ ] No**	**[ ] Yes * [X] No**

***** If you answered "yes", that there have been changes to your local program since 2009, please describe:**

Provide a description of your community assistance and monitoring activities:
The only monitoring is part of the construction permit review process.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	**NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?**
[X] Yes [ ] No	**[X] Yes [ ] No**

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34

Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: Paul Ferriero Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Far Hills Email and Phone: Paul.Ferriero@FerrieroEngineering.com

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
2007	7/3/78	Borough Engineer	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Permit Review
Describe barriers to running an effective NFIP program in the community (if applicable):
Budget Constraints

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
Unknown	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ]Yes [X] No	[ ] Yes [X] No

*Describe any outstanding compliance issues (i.e., current violations):
None

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Paul Ferriero Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: Far Hills Email and Phone: Paul.Ferriero@FerrieroEngineering.com 908-879-6209

Provide an explanation of your local floodplain permitting process:
Applicants in the floodplain are referred by the Zoning Officer to the Borough Engineer for review.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ]No	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes * [X] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:
Permit and plan review

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name:__Scott M. Thomas_____Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Community:__Franklin Township_____ Email and Phone:_scott.thomas@twp.franklin.nj.us (732)873-2500

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
10/25/2016	5/15/1980	Senior Engineer/CRS Coordinator	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Review of all Planning and Zoning Board applications and all zoning and building permits to ensure compliance with NFIP regulations. Utilize Township GIS to identify properties impacted by flooding. Provide education and outreach through articles published in the Township newsletter. Perform engineering inspection of all new residential and commercial construction. Assist public with flooding and flood zone determination questions.
Describe barriers to running an effective NFIP program in the community (if applicable):

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
5/06/2014	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [ ] No	[X] Yes* [ ] No * Class__6__	[X] Yes [ ] No	[ ] Yes [ ] No

*Describe any outstanding compliance issues (i.e., current violations):

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name:____ Scott M. Thomas _____Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Representing:__ Franklin Township _____ Email and Phone:_ scott.thomas@twp.franklin.nj.us (732)873-2500

Provide an explanation of your local floodplain permitting process:
The Engineering Department reviews all permits for construction that involve an increase in surface area (new dwellings, additions, garages, sheds, etc.) and all soil movement activities in order to confirm that they would not impact the floodplain. If any potential impact is discovered, the Department denies all applications until proper approval is obtained from the NJDEP.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	**Does your community intend to initiate/continue the buyouts of repetitive loss properties?**	**Does your community intend to commit staff or resources to improve local mapping or code administration in the future?**	**Does your community intend to provide local outreach to promote the sale of flood insurance?**	**Does your community intend to participate in RiskMAP meetings and planning initiatives?**	**Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?**	**Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?**	**Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?**	**Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?**
[X]Yes [ ]No	**[ ] Yes [X] No**	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X]Yes [ ] No**	**[X] Yes [ ] No**	**[ ]Yes [X] No**	**[X]Yes [ ]No**	**[X] Yes [ ] No**

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	**As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?**	**As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?**	**Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?**
[ ] Yes [X] No	**[X] Yes [ ] No**	**[X] Yes [ ] No**	**[X] Yes * [ ] No**

*** If you answered "yes", that there have been changes to your local program since 2009, please describe:**
Chapter 192 of the Franklin Township Municipal Code, Flood Damage Protection, was repealed and replaced on October 25, 2016 (effective date November 14, 2016) to incorporate changes mandated by the NJDEP and to adopt the Flood Insurance Study and the revised Flood Insurance Rate Maps with an effective date of November 4, 2016.
Provide a description of your community assistance and monitoring activities:
The Township Engineering Department provides assistance in the form of site visits and recommendations to residents and businesses to help minimize flooding. After large flooding events the Engineering Department documents damage and flood levels throughout the Township in order to plan for future events.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	**NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?**
[X] Yes [ ] No	**[X] Yes [ ] No**

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: C. Richard Roseberry Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Green Brook Township Email and Phone: rroseberry@maserconsulting.com 908-581-8658

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
8/2007	3/15/77	Township Engineer	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Permit Review, Mapping, Inspections
Describe barriers to running an effective NFIP program in the community (if applicable):
None

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
None	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ] Yes [X] No	[X] Yes [ ] No

*Describe any outstanding compliance issues (i.e., current violations):
None

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: C. Richard Roseberry Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: Green Brook Township Email and Phone: rroseberry@maserconsulting.com 908-581-8658

Provide an explanation of your local floodplain permitting process:
Permit applications are reviewed locally for compliance with local ordinance. DEP flood hazard permits are required prior to starting work for projects within regulated areas. As built plans are required prior to occupancy. Enforcement is performed by both Construction Code and Zoning Enforcement Officers.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes * [X] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:
Community assistance is provided via public education of permitting and ordinance requirements, and FEMA options of elevation certificates, LOMA, LOMR.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: Thomas Belanger Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Hillsborough Email and Phone: tbelanger@hillsborough-nj.org 908-369-4460

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
		Assistant Township Engineer	[ ] Yes [x] No	[x] Yes [ ] No	[x] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Permit Review, inspections, emergency capability
Describe barriers to running an effective NFIP program in the community (if applicable):
None

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
	[ ] Yes [x] No	[ ] Yes [x] No	[x] Yes [ ] No	[x] Yes [ ] No	[ ] Yes* [n] No * Class____	[x] Yes [ ] No	[x] Yes [ ] No

*Describe any outstanding compliance issues (i.e., current violations):
None

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Thomas Belanger Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: Hillsborough Email and Phone: tbelanger@hillsborough-nj.org 908-369-4460

Provide an explanation of your local floodplain permitting process:

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[ ] Yes * [n] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:
None at this time.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[x] Yes [ ] No	[x] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

1. Provide an explanation of NFIP administration services:

FEMA COMMUNITY STATUS BOOK REPORT - COMMUNITIES PARTICIPATING IN NATIONAL FLOOD PROGRAM						
CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Current Eff Map Date	Reg-Emer Date
340437B	MANVILLE, BOROUGH OF	SOMERSET COUNTY	4/13/1973	2/15/1978	11/4/2016	2/15/1978

The Borough of Manville's website includes a hyperlink to "flood information" for its residents. In addition, annually, a Borough Calendar is mailed to all residents. The center foldout of the calendar contains two pages of flood protection information which includes flood insurance details. Finally, the Borough Administrator, Andrea Bierwirth, earned her Certified Floodplain Manager designation in April of 2017 to better serve the residents of Manville with flood insurance and flood mapping questions and issues.

2. Describe barriers to running an effective NFIP program in the community (if applicable):

The Borough of Manville is a municipality that has been decimated by flooding throughout the years, but most recently between the years of 1999 (Hurricane Floyd) and 2011 (Hurricane Irene) there have been four major flood events resulting in over 150 buyouts. Despite trying to encourage flood mitigation efforts such as elevations, most homeowners find elevating a home cost prohibitive. The volume of homeowners requiring flood insurance in Manville is extensive which creates a challenge when trying to manage all of the calls for assistance with questions. In addition, there are challenges with potential development due to the large number of properties currently within the floodplain and floodway.

The NFIP program barriers realized in Manville have to do with elevation certificates (ECs) not being available for older homes and the cost of having a surveyor provide an EC for residents. ECs can run anywhere from $600 - $1,000 which many of Manville's residents find cost prohibitive. Without ECs, it is difficult to assist residents with a Letter of Map Amendment (LOMA) to help lower their flood insurance premiums.

3. There are no known compliance issues or violations resulting from the FEMA Community Assistance Visit.
4. The Borough's floodplain permitting process is provided within Section 4.0 of the Borough's Flood Damage Prevention Ordinance:

4.1 ESTABLISHMENT OF DEVELOPMENT PERMIT A Development Permit shall be obtained before construction or development begins within any area of special flood hazard established in Section 3.2. Application for a Development Permit shall be made on forms furnished by the Construction Code Official and may include, but not be limited to; plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities; and the location of the foregoing. Specifically, the following information is required: a) Elevation in relation to mean sea level, of the lowest floor (including basement) of all structures; b) Elevation in relation to mean sea level to which any structure has been floodproofed. c) Certification by a registered professional engineer or architect that the floodproofing methods for any nonresidential structure meet the floodproofing criteria in Section 5.2-2; and, d) Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.

5. Provide a description of your community assistance and monitoring activities:

The Borough of Manville annually recertifies its CRS program. For 2016 and 2017, Agnoli Engineering LLC assisted Borough leadership with the recertification process. The Borough is continuing to work with Agnoli Engineering to attempt to lower its CRS rating from class 7 to at least a class 6 to help homeowners achieve a much needed discount in NFIP premiums. Agnoli Engineering believes Manville should be able to achieve a class 5 rating within a year or two which would be a significant reduction in the flood insurance premiums paid by property owners in town.

The Borough continues its community outreach programs such as the annual calendar mailing to all residents which contains up-to-date flood protection information. In addition, the Borough's website contains a homepage button for easy linking to all flood related information including the Borough's Flood Damage Prevention Ordinance 2016-1175, flood insurance information for residents, links to County and FEMA websites and much more.

The Borough has successfully implemented an emergency sheltering agreement with the local VFW Post and the American Red Cross. Sheltering Fundamentals training was conducted by the American Red Cross for many of the Borough's officials including police, fire, administrative and emergency management employees.

The Borough Administrator / CFM continues to attend educational workshops and maintains membership in the NJAFM in order to provide residents with the most up-to-date information available regarding the NFIP, flood mitigation and other related topics.

Name: Dan Devoti Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Millstone Borough Email and Phone: ddevoti@millstoneboro.org (908) 209-2978

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
2007	04/03/1978	Dan Devoti, Zoning Officer	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):

Coordinating grants, review permits, education and public outreach.

Describe barriers to running an effective NFIP program in the community (if applicable):

Coordination with County on a land swap to relocate houses out of the floodplain - new lot and block number, but it is not on the tax map yet. May have to change the lot itself for relocation.

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
2015	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ]Yes [X] No	[ ] Yes [X] No

***Describe any outstanding compliance issues (i.e., current violations):**

There are houses in the floodplain that are not currently in compliance.

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Dan Devoti Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Millstone Borough Email and Phone: ddevoti@millstoneboro.org (908) 209-2978

Provide an explanation of your local floodplain permitting process:
Review development permits to determine: a) permit requirements of the ordinance have been satisfied, b) federal/state/local permits have been obtained as needed, and c) determine whether proposed development is in the floodway and if so, to assure encroachment provisions are met.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes * [ ] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:
Updated to meet FEMA's new floodplain map.
Provide a description of your community assistance and monitoring activities:
Assisted in raising of buildings per FEMA regulations and codes.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: Jack Ferrara Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Montgomery Email and Phone: jferrara@police.montgomery.nj.us 609-947-2442

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
11-3-16	4-1-81	Township Engineer	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Permit review, GIS mapping, floodplain determinations
Describe barriers to running an effective NFIP program in the community (if applicable):
Education

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
Unknown	[ ] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ]No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ] Yes [ ] No	[ ] Yes [X] No

*Describe any outstanding compliance issues (i.e., current violations):
None

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Jack Ferrara Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: Montgomery Email and Phone: jferrara@police.montgomery.nj.us 609-947-2442

Provide an explanation of your local floodplain permitting process:
With limited exceptions, development is prohibited in the flood zone and all development applications are heard through zoning board or planning board. The limited exceptions must obtain a zoning permit.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[x] Yes [ ] No	[ ] Yes [x] No	[x] Yes [ ] No	[ ] Yes [x] No	[ ] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes * [ ] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:
Added a requirement for elevation certificates July 11, 2013

Provide a description of your community assistance and monitoring activities:
Flood plain determinations are provided for a small fee, all maps are available through the Township GIS interactive map application

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: DAVID TESTA Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: NORTH PLAINFIELD Email and Phone: dtesta@grottoengineering.com 908-769-2917

SOMERSET COUNTY HAZARD MITIGATION PLAN

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
	2008	FLOODPLAIN ADMINISTRATOR	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):

PERMIT REVIEW, INSPECTIONS, ENGINEERING CAPABILITY.

Describe barriers to running an effective NFIP program in the community (if applicable):

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
	[ ] Yes [ ] No	[ ] Yes [X] No	[ ] Yes [ ] No	[X] Yes [ ] No	[X] Yes* [ ] No * Class 8	[X] Yes [ ] No	[ ] Yes [ ] No

***Describe any outstanding compliance issues (i.e., current violations):**

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: _____ Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: _____ Email and Phone: _____

SOMERSET COUNTY HAZARD MITIGATION PLAN

Provide an explanation of your local floodplain permitting process:
SEE ORD. 20-1.3

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes * [X] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name:_____ Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Borough of Peapack and Gladstone Email and Phone:_____

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
1999	12/15/77	Borough Administrator	[ ] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [X] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):

Describe barriers to running an effective NFIP program in the community (if applicable):

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
	[ ] Yes [ ] No	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes* [X] No * Class____	[X] Yes [ ] No	[ ] Yes [ ] No

*Describe any outstanding compliance issues (i.e., current violations):

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name:_____ Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: Borough of Peapack and Gladstone Email and Phone:_____

Provide an explanation of your local floodplain permitting process:

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[ ] Yes [X] No	[ ] Yes [ ] No	[ ] Yes [X] No	[ ] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[XS] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes * [X] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[ ] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: Stanley J. Schrek, PE Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Borough of Raritan Email and Phone: sschrek@vcea.org 908-454-3080

SOMERSET COUNTY HAZARD MITIGATION PLAN

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
6/1/92	12/15/81	Borough Engineer	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):

Land Use Review - Construction Observation & Administration MS4 Permit & Compliance; Capital Improvements

Describe barriers to running an effective NFIP program in the community (if applicable):

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class NP	[ ] Yes [X] No	[ ] Yes [X] No

***Describe any outstanding compliance issues (i.e., current violations):**

None

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: STANLEY J. SCHREK Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: BOROUGH OF FANWOOD Email and Phone: sschrek@vcea.org 908-454-3080

SOMERSET COUNTY HAZARD MITIGATION PLAN

Provide an explanation of your local floodplain permitting process:

CONSTRUCTION OFFICIAL WILL REFER ANY PERMIT APPLICATION, IN FHA, TO BOROUGH ENGINEER FOR REVIEW OF COMPLIANCE W/ORDINANCE OR REFERS APPLICANT TO DEP.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes * [ ] No

*** If you answered "yes", that there have been changes to your local program since 2009, please describe:**

UPDATED FLOOD DAMAGE PREVENTION ORDINANCE

Provide a description of your community assistance and monitoring activities:

REVIEW, APPRAISE, MONITOR ANY FLOODPLAIN RELATED PROJECTS.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: Rocky Hill OEM Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Rocky Hill Email and Phone: Rockyhilloem@gmail.com

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
2016	1971	Borough Engineer	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Local administrator implements ordinance by granting or denying development permit applications in accordance with its provisions.
Describe barriers to running an effective NFIP program in the community (if applicable):
No full time staff

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
None	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes* [X] No * Class____	[ ] Yes [X] No	[ ] Yes [X] No

*Describe any outstanding compliance issues (i.e., current violations):
None

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Rocky Hill OEM Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: Rocky Hill Email and Phone: Rockyhilloem@gmail.com

Provide an explanation of your local floodplain permitting process:
Review development permits for: compliance with ordinance; receipt of other applicable Federal/State/Local permits; determination of whether the proposed development is located in the floodway and assurance that encroachment provisions are met.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes * [X] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:
Committee oversight of ongoing conditions

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name:_____Donald Kazar_____Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Community:___South Bound Brook_____ Email and Phone:____Dkazar@southBoundBrook.com 732-356-0258_____

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
10/9/2007		Building Construction Officer	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Local administrator implements ordinance by granting or denying development permit applications in accordance with its provisions
Describe barriers to running an effective NFIP program in the community (if applicable):
None or Lack of Staffing

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
Not Known	[x] Yes [ ] No	[ ] Yes [X] No	[ ] Yes [x] No	[X] Yes [ ] No	[ ] Yes* x] No * Class____	[ ] Yes [X] No	[ ] Yes [X] No

*Describe any outstanding compliance issues (i.e., current violations):
None

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name:_____Donald E. Kazar_____Title:_Administator
Representing:___South Bound Brook_____ Email and Phone:_Dkazar@SouthBoundBrook.com 732-3256-0258

Provide an explanation of your local floodplain permitting process:
Review all development permits to determine that the permit requirements of the ordinance has been satisfied; receipt of other Federal/State/Local permits; determination of whether the proposed development is located in the floodway

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	**Does your community intend to initiate/continue the buyouts of repetitive loss properties?**	**Does your community intend to commit staff or resources to improve local mapping or code administration in the future?**	**Does your community intend to provide local outreach to promote the sale of flood insurance?**	**Does your community intend to participate in RiskMAP meetings and planning initiatives?**	**Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?**	**Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?**	**Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?**	**Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?**
[x] Yes [ ] No	**[x] Yes [ ] No**	**[ ] Yes [x] No**	**[ ] Yes [x] No**	**[ ] Yes [x] No**	**[x] Yes [ ] No**	**[x] Yes [ ] No**	**[x] Yes [ ] No**	**[s] Yes [ ] No**

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	**As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?**	**As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?**	**Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?**
[ ] Yes [X] No	**[X] Yes [ ] No Not Known**	**[X] Yes [ ] No**	**[ ] Yes * [X] No**

*** If you answered "yes", that there have been changes to your local program since 2009, please describe:**
N/A

Provide a description of your community assistance and monitoring activities:
Review, approve, monitor floodplain related projects

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	**NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?**
[X] Yes [ ] No	**[X] Yes [ ] No**

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: Frank Vuoso Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Community: Somerville Email and Phone: fvuoso@somervillenj.org / 908-725-2300 ext. 1962

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
8/20/2007	1/6/1983	Construction Official	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Permit review and inspection
Describe barriers to running an effective NFIP program in the community (if applicable):
Funding and staffing

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
N/A	[ ] Yes [x] No	[ ] Yes [x] No	[x] Yes [ ] No	[x] Yes [ ] No	[ ] Yes* [x] No * Class____	[ ] Yes [x] No	[ ] Yes [x] No

*Describe any outstanding compliance issues (i.e., current violations):
None

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Frank Vuoso Title: Floodplain Manager/Floodplain Administrator/NFIP Coordinator

Representing: Somerville Email and Phone: fvuoso@somervillenj.org / 908-725-2300 ext. 1962

Provide an explanation of your local floodplain permitting process:
Engineering review required, floodplain manager review required, construction official and subcode official review required to demonstrate compliance with applicable regulations and ordinances for constructing in a floodplain.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[ ] Yes [x] No	[ ] Yes [x] No	[ ] Yes [x] No	[ ] Yes [x] No	[ ] Yes [x] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[x] Yes [ ] No	[x] Yes [ ] No	[x] Yes [ ] No	[ ] Yes * [x] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:
Available upon request or complaint driven.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[x] Yes [ ] No	[x] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name:___Chris Kastrud for John T. Chadwick, IV P.P.____Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Community:__Warren Township_____ Email and Phone:_ckastrud@warrennj.org (908) 753-8000 x245_____

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
2007	1/5/1978	Township Zoning Officer	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):

Warren Township currently offers the public service of reading and explaining the flood maps. We have the flood lines in our GIS software. The FIRMs are reviewed for all applications to the planning board and board of adjustment. We participate in CRS and a list of all active activities is available upon request.

Describe barriers to running an effective NFIP program in the community (if applicable):

N/A

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
2012 during Hurricane Sandy	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes* [ ] No * Class_8___	[X] Yes [ ] No	[ ] Yes [ ] No N/A

***Describe any outstanding compliance issues (i.e., current violations):**

NONE

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name:__Chris Kastrud for John T. Chadwick, IV P.P.__Title:_Floodplain Manager/Floodplain Administrator/NFIP Coordinator_

Representing:_____Warren Twp_____Email and Phone:_ckastrud@warrennj.org (908) 753-8000 x245____

Provide an explanation of your local floodplain permitting process:
Every application submitted to engineering or planning is reviewed with respect to wetlands, streams, waterbodies, buffer areas, riparian zones, flood hazard areas.

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [ ] No N/A	[X] Yes [ ] No	[X] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes * [X] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:
Warren Township Engineering and Planning departments have staff that is familiar with the FEMA FIRMs and Riparian Buffers. We are available to assist the public with their questions. The engineer will sign LOMA when appropriate.

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34
Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.

All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Name: Thomas J Herits PE PP PLS Title: Floodplain Administrator

Community: Watchung Borough Email and Phone: therits@watchungnj.gov 908-756-0091

Worksheet 3 - NFIP

Note: This form should be filled out by your floodplain administrator. Submittals should be returned via email to Laurette Kratina at Kratina@co.somerset.nj.us. Feel free to contact Anna Foley of AECOM if you have questions, at anna.foley@aecom.com. All communities participating in the National Flood Insurance Program (NFIP) provided FEMA with a floodplain management ordinance and a designated floodplain administrator as a prerequisite to enter the program. All participating communities must provide the information below. Please provide a copy of your floodplain management plan and/or ordinance to us together with this submittal.

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP[1]	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)	Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
2002	12/04/79	Borough Engineer	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):
Permit Review; Use of Other Base Flood and Floodway Data in absence of FIRM Mapping; Obtain and Record Lowest Floor Elevation; Notify Adjacent Communities of Alteration of Watercourse and Require Maintenance; and, Interpretation of Firm Boundaries

Describe barriers to running an effective NFIP program in the community (if applicable):
N/A

When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
N/A	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes* [X] No * Class____	[ ] Yes [X] No	[ ] Yes [X] No

*Describe any outstanding compliance issues (i.e., current violations):
N/A

[1] Your date of entry into the NFIP can be found at: http://www.fema.gov/cis/NJ.html (column "Reg-Emer Date").

Name: Thomas J Herits PE PP PLS	Title: Floodplain Administrator
Representing:Watchung	Email and Phone: therits@watchungnj.gov 908-756-0091

Provide an explanation of your local floodplain permitting process:

Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[ ] Yes [X] No	[X] Yes [ ] No	[X] Yes [ ] No

Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the initial Hazard Mitigation Plan?	As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?	Have there been any changes to your community's local floodplain management program since the last version of the plan in 2009?
[X] Yes [ ] No	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes * [X] No

* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:
All residential and non-residential construction must obtain a Land Disturbance Permit which includes a review of plans for floodplain management./

NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
[X] Yes [ ] No	[X] Yes [ ] No

Note: NFIP policy statistics by community are maintained at: http://bsa.nfipstat.fema.gov/reports/1011.htm#NJT
NFIP claims data by community is maintained at: http://bsa.nfipstat.fema.gov/reports/1040.htm#34

Information about structures at risk of flooding can be found in the current Hazard Mitigation Plan.
All NFIP participating communities should encourage local residents to purchase and maintain flood insurance.

Community:	BEDMINSTER, TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340427

Current CRS Class = 6 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	60	24	0	36
	PREMIUM	$54,185	$40,374	$0	$13,811
	AVERAGE PREMIUM	$903	$1,682	$0	$384
09	Per Policy	$42	$105	$0	$0
	Per Community	$2,523	$2,523	$0	$0
08	Per Policy	$84	$210	$0	$0
	Per Community	$5,047	$5,047	$0	$0
07	Per Policy	$126	$315	$0	$0
	Per Community	$7,570	$7,570	$0	$0
06	Per Policy	$168	$421	$0	$0
	Per Community	$10,094	$10,094	$0	$0
05	Per Policy	$210	$526	$0	$0
	Per Community	$12,617	$12,617	$0	$0
04	Per Policy	$252	$631	$0	$0
	Per Community	$15,140	$15,140	$0	$0
03	Per Policy	$294	$736	$0	$0
	Per Community	$17,664	$17,664	$0	$0
02	Per Policy	$336	$841	$0	$0
	Per Community	$20,187	$20,187	$0	$0
01	Per Policy	$379	$946	$0	$0
	Per Community	$22,710	$22,710	$0	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	BERNARDS, TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340428

Current CRS Class = 8 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	103	34	5	64
	PREMIUM	$102,370	$63,860	$13,899	$24,611
	AVERAGE PREMIUM	$994	$1,878	$2,780	$385
09	Per Policy	$42	$104	$146	$0
	Per Community	$4,279	$3,548	$732	$0
08	Per Policy	$76	$209	$146	$0
	Per Community	$7,827	$7,096	$732	$0
07	Per Policy	$110	$313	$146	$0
	Per Community	$11,375	$10,643	$732	$0
06	Per Policy	$152	$417	$293	$0
	Per Community	$15,654	$14,191	$1,463	$0
05	Per Policy	$186	$522	$293	$0
	Per Community	$19,202	$17,739	$1,463	$0
04	Per Policy	$221	$626	$293	$0
	Per Community	$22,750	$21,287	$1,463	$0
03	Per Policy	$255	$730	$293	$0
	Per Community	$26,298	$24,835	$1,463	$0
02	Per Policy	$290	$835	$293	$0
	Per Community	$29,845	$28,382	$1,463	$0
01	Per Policy	$324	$939	$293	$0
	Per Community	$33,393	$31,930	$1,463	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

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Community Information System

Release 4.08.01.02, 08/19/2016 -- Build 009, Skip Navigation Logged in as: mluhrs [Session expires in 20 mins]

CRS What-If

Application CRS Coord. 2ndPOC Activity Points Chronology Comments What If GTA

Community: BERNARDSVILLE, BOROUGH OF
County: SOMERSET COUNTY
State: NEW JERSEY
CID: 340429

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	52	26	4	22
	PREMIUM	$89,935	$65,947	$15,283	$8,705
	AVERAGE PREMIUM	$1,730	$2,536	$3,821	$396
09	Per Policy	$78	$127	$191	$0
	Per Community	$4,061	$3,297	$764	$0
08	Per Policy	$142	$254	$191	$0
	Per Community	$7,359	$6,595	$764	$0
07	Per Policy	$205	$380	$191	$0
	Per Community	$10,656	$9,892	$764	$0
06	Per Policy	$283	$507	$382	$0
	Per Community	$14,718	$13,189	$1,528	$0
05	Per Policy	$346	$634	$382	$0
	Per Community	$18,015	$16,487	$1,528	$0
04	Per Policy	$410	$761	$382	$0
	Per Community	$21,312	$19,784	$1,528	$0
03	Per Policy	$473	$888	$382	$0
	Per Community	$24,610	$23,081	$1,528	$0
02	Per Policy	$537	$1,015	$382	$0
	Per Community	$27,907	$26,379	$1,528	$0
01	Per Policy	$600	$1,141	$382	$0
	Per Community	$31,204	$29,676	$1,528	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	BOUND BROOK, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340430

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	323	193	75	55
	PREMIUM	$640,040	$485,625	$123,181	$31,234
	AVERAGE PREMIUM	$1,982	$2,516	$1,642	$568
09	Per Policy	$94	$126	$82	$0
	Per Community	$30,440	$24,281	$6,159	$0
08	Per Policy	$169	$252	$82	$0
	Per Community	$54,722	$48,562	$6,159	$0
07	Per Policy	$245	$377	$82	$0
	Per Community	$79,003	$72,844	$6,159	$0
06	Per Policy	$339	$503	$164	$0
	Per Community	$109,443	$97,125	$12,318	$0
05	Per Policy	$414	$629	$164	$0
	Per Community	$133,724	$121,406	$12,318	$0
04	Per Policy	$489	$755	$164	$0
	Per Community	$158,005	$145,687	$12,318	$0
03	Per Policy	$564	$881	$164	$0
	Per Community	$182,287	$169,969	$12,318	$0
02	Per Policy	$640	$1,006	$164	$0
	Per Community	$206,568	$194,250	$12,318	$0
01	Per Policy	$715	$1,132	$164	$0
	Per Community	$230,849	$218,531	$12,318	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	BRANCHBURG, TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340431

Current CRS Class = 10 *[Printable Version]*

		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	69	28	7	34
	PREMIUM	$83,396	$61,530	$9,261	$12,605
	AVERAGE PREMIUM	$1,209	$2,198	$1,323	$371
CRS Class					
09	Per Policy	$51	$110	$66	$0
	Per Community	$3,540	$3,076	$463	$0
08	Per Policy	$96	$220	$66	$0
	Per Community	$6,616	$6,153	$463	$0
07	Per Policy	$140	$330	$66	$0
	Per Community	$9,693	$9,230	$463	$0
06	Per Policy	$192	$440	$132	$0
	Per Community	$13,232	$12,306	$926	$0
05	Per Policy	$236	$549	$132	$0
	Per Community	$16,309	$15,382	$926	$0
04	Per Policy	$281	$659	$132	$0
	Per Community	$19,385	$18,459	$926	$0
03	Per Policy	$326	$769	$132	$0
	Per Community	$22,462	$21,536	$926	$0
02	Per Policy	$370	$879	$132	$0
	Per Community	$25,538	$24,612	$926	$0
01	Per Policy	$415	$989	$132	$0
	Per Community	$28,615	$27,688	$926	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	BRIDGEWATER, TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340432

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	249	123	14	112
	PREMIUM	$457,468	$377,363	$31,683	$48,422
	AVERAGE PREMIUM	$1,837	$3,068	$2,263	$432
09	Per Policy	$82	$153	$113	$0
	Per Community	$20,452	$18,868	$1,584	$0
08	Per Policy	$158	$307	$113	$0
	Per Community	$39,320	$37,736	$1,584	$0
07	Per Policy	$234	$460	$113	$0
	Per Community	$58,189	$56,604	$1,584	$0
06	Per Policy	$316	$614	$226	$0
	Per Community	$78,641	$75,473	$3,168	$0
05	Per Policy	$392	$767	$226	$0
	Per Community	$97,509	$94,341	$3,168	$0
04	Per Policy	$467	$920	$226	$0
	Per Community	$116,377	$113,209	$3,168	$0
03	Per Policy	$543	$1,074	$226	$0
	Per Community	$135,245	$132,077	$3,168	$0
02	Per Policy	$619	$1,227	$226	$0
	Per Community	$154,113	$150,945	$3,168	$0
01	Per Policy	$695	$1,381	$226	$0
	Per Community	$172,982	$169,813	$3,168	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	FAR HILLS, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340433

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	12	3	1	8
	PREMIUM	$14,816	$7,739	$2,389	$4,688
	AVERAGE PREMIUM	$1,235	$2,580	$2,389	$586
09	Per Policy	$42	$129	$119	$0
	Per Community	$506	$387	$119	$0
08	Per Policy	$74	$258	$119	$0
	Per Community	$893	$774	$119	$0
07	Per Policy	$107	$387	$119	$0
	Per Community	$1,280	$1,161	$119	$0
06	Per Policy	$149	$516	$239	$0
	Per Community	$1,787	$1,548	$239	$0
05	Per Policy	$181	$645	$239	$0
	Per Community	$2,174	$1,935	$239	$0
04	Per Policy	$213	$774	$239	$0
	Per Community	$2,561	$2,322	$239	$0
03	Per Policy	$246	$903	$239	$0
	Per Community	$2,948	$2,709	$239	$0
02	Per Policy	$278	$1,032	$239	$0
	Per Community	$3,335	$3,096	$239	$0
01	Per Policy	$310	$1,161	$239	$0
	Per Community	$3,721	$3,483	$239	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	FRANKLIN, TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340434

Current CRS Class = 7 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	212	55	11	146
	PREMIUM	$194,302	$121,726	$12,549	$60,027
	AVERAGE PREMIUM	$917	$2,213	$1,141	$411
09	Per Policy	$37	$130	$60	$0
	Per Community	$7,821	$7,160	$660	$0
08	Per Policy	$71	$260	$60	$0
	Per Community	$14,981	$14,321	$660	$0
07	Per Policy	$104	$391	$60	$0
	Per Community	$22,142	$21,481	$660	$0
06	Per Policy	$141	$521	$120	$0
	Per Community	$29,962	$28,641	$1,321	$0
05	Per Policy	$175	$651	$120	$0
	Per Community	$37,123	$35,802	$1,321	$0
04	Per Policy	$209	$781	$120	$0
	Per Community	$44,283	$42,962	$1,321	$0
03	Per Policy	$243	$911	$120	$0
	Per Community	$51,443	$50,122	$1,321	$0
02	Per Policy	$276	$1,042	$120	$0
	Per Community	$58,604	$57,283	$1,321	$0
01	Per Policy	$310	$1,172	$120	$0
	Per Community	$65,764	$64,443	$1,321	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	GREENBROOK,TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340435

Current CRS Class = 10 *[Printable Version]*

		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	105	77	9	19
	PREMIUM	$194,210	$173,640	$12,660	$7,910
	AVERAGE PREMIUM	$1,850	$2,255	$1,407	$416
CRS Class					
09	Per Policy	$89	$113	$70	$0
	Per Community	$9,315	$8,682	$633	$0
08	Per Policy	$171	$226	$70	$0
	Per Community	$17,997	$17,364	$633	$0
07	Per Policy	$254	$338	$70	$0
	Per Community	$26,679	$26,046	$633	$0
06	Per Policy	$343	$451	$141	$0
	Per Community	$35,994	$34,728	$1,266	$0
05	Per Policy	$425	$564	$141	$0
	Per Community	$44,676	$43,410	$1,266	$0
04	Per Policy	$508	$677	$141	$0
	Per Community	$53,358	$52,092	$1,266	$0
03	Per Policy	$591	$789	$141	$0
	Per Community	$62,040	$60,774	$1,266	$0
02	Per Policy	$674	$902	$141	$0
	Per Community	$70,722	$69,456	$1,266	$0
01	Per Policy	$756	$1,015	$141	$0
	Per Community	$79,404	$78,138	$1,266	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	HILLSBOROUGH, TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340436

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	185	53	48	84
	PREMIUM	$164,925	$100,375	$33,772	$30,778
	AVERAGE PREMIUM	$891	$1,894	$704	$366
09	Per Policy	$36	$95	$35	$0
	Per Community	$6,707	$5,019	$1,689	$0
08	Per Policy	$63	$189	$35	$0
	Per Community	$11,726	$10,038	$1,689	$0
07	Per Policy	$91	$284	$35	$0
	Per Community	$16,745	$15,056	$1,689	$0
06	Per Policy	$127	$379	$70	$0
	Per Community	$23,452	$20,075	$3,377	$0
05	Per Policy	$154	$473	$70	$0
	Per Community	$28,471	$25,094	$3,377	$0
04	Per Policy	$181	$568	$70	$0
	Per Community	$33,490	$30,113	$3,377	$0
03	Per Policy	$208	$663	$70	$0
	Per Community	$38,508	$35,131	$3,377	$0
02	Per Policy	$235	$758	$70	$0
	Per Community	$43,527	$40,150	$3,377	$0
01	Per Policy	$262	$852	$70	$0
	Per Community	$48,546	$45,169	$3,377	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	MANVILLE, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340437

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	436	241	52	143
	PREMIUM	$677,817	$531,870	$83,449	$62,498
	AVERAGE PREMIUM	$1,555	$2,207	$1,605	$437
09	Per Policy	$71	$110	$80	$0
	Per Community	$30,766	$26,594	$4,172	$0
08	Per Policy	$132	$221	$80	$0
	Per Community	$57,359	$53,187	$4,172	$0
07	Per Policy	$193	$331	$80	$0
	Per Community	$83,953	$79,781	$4,172	$0
06	Per Policy	$263	$441	$160	$0
	Per Community	$114,719	$106,374	$8,345	$0
05	Per Policy	$324	$552	$160	$0
	Per Community	$141,313	$132,968	$8,345	$0
04	Per Policy	$385	$662	$160	$0
	Per Community	$167,906	$159,561	$8,345	$0
03	Per Policy	$446	$772	$160	$0
	Per Community	$194,500	$186,155	$8,345	$0
02	Per Policy	$507	$883	$160	$0
	Per Community	$221,093	$212,748	$8,345	$0
01	Per Policy	$568	$993	$160	$0
	Per Community	$247,687	$239,342	$8,345	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	MILLSTONE, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340438

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	14	9	1	4
	PREMIUM	$25,752	$21,982	$1,292	$2,478
	AVERAGE PREMIUM	$1,839	$2,442	$1,292	$620
09	Per Policy	$83	$122	$65	$0
	Per Community	$1,164	$1,099	$65	$0
08	Per Policy	$162	$244	$65	$0
	Per Community	$2,263	$2,198	$65	$0
07	Per Policy	$240	$366	$65	$0
	Per Community	$3,362	$3,297	$65	$0
06	Per Policy	$323	$488	$129	$0
	Per Community	$4,526	$4,396	$129	$0
05	Per Policy	$402	$611	$129	$0
	Per Community	$5,625	$5,495	$129	$0
04	Per Policy	$480	$733	$129	$0
	Per Community	$6,724	$6,595	$129	$0
03	Per Policy	$559	$855	$129	$0
	Per Community	$7,823	$7,694	$129	$0
02	Per Policy	$637	$977	$129	$0
	Per Community	$8,922	$8,793	$129	$0
01	Per Policy	$716	$1,099	$129	$0
	Per Community	$10,021	$9,892	$129	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	MONTGOMERY, TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340439

Current CRS Class = 10 *[Printable Version]*

		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	135	22	7	106
	PREMIUM	$105,476	$51,605	$14,019	$39,852
	AVERAGE PREMIUM	$781	$2,346	$2,003	$376
CRS Class					
09	Per Policy	$24	$117	$100	$0
	Per Community	$3,281	$2,580	$701	$0
08	Per Policy	$43	$235	$100	$0
	Per Community	$5,861	$5,160	$701	$0
07	Per Policy	$63	$352	$100	$0
	Per Community	$8,442	$7,741	$701	$0
06	Per Policy	$87	$469	$200	$0
	Per Community	$11,723	$10,321	$1,402	$0
05	Per Policy	$106	$586	$200	$0
	Per Community	$14,303	$12,901	$1,402	$0
04	Per Policy	$125	$704	$200	$0
	Per Community	$16,883	$15,481	$1,402	$0
03	Per Policy	$144	$821	$200	$0
	Per Community	$19,464	$18,062	$1,402	$0
02	Per Policy	$163	$938	$200	$0
	Per Community	$22,044	$20,642	$1,402	$0
01	Per Policy	$182	$1,056	$200	$0
	Per Community	$24,624	$23,222	$1,402	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	NORTH PLAINFIELD, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	345307

Current CRS Class = 8 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	371	303	19	49
	PREMIUM	$716,530	$660,771	$32,765	$22,994
	AVERAGE PREMIUM	$1,931	$2,181	$1,724	$469
09	Per Policy	$104	$121	$91	$0
	Per Community	$38,434	$36,709	$1,724	$0
08	Per Policy	$203	$242	$91	$0
	Per Community	$75,143	$73,419	$1,724	$0
07	Per Policy	$301	$363	$91	$0
	Per Community	$111,853	$110,128	$1,724	$0
06	Per Policy	$405	$485	$182	$0
	Per Community	$150,287	$146,838	$3,449	$0
05	Per Policy	$504	$606	$182	$0
	Per Community	$186,996	$183,547	$3,449	$0
04	Per Policy	$603	$727	$182	$0
	Per Community	$223,706	$220,257	$3,449	$0
03	Per Policy	$702	$848	$182	$0
	Per Community	$260,415	$256,966	$3,449	$0
02	Per Policy	$801	$969	$182	$0
	Per Community	$297,125	$293,676	$3,449	$0
01	Per Policy	$900	$1,090	$182	$0
	Per Community	$333,834	$330,385	$3,449	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	PEAPACK AND GLADSTONE, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340441

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	31	21	1	9
	PREMIUM	$62,223	$58,614	$144	$3,465
	AVERAGE PREMIUM	$2,007	$2,791	$144	$385
09	Per Policy	$95	$140	$7	$0
	Per Community	$2,938	$2,931	$7	$0
08	Per Policy	$189	$279	$7	$0
	Per Community	$5,869	$5,861	$7	$0
07	Per Policy	$284	$419	$7	$0
	Per Community	$8,799	$8,792	$7	$0
06	Per Policy	$379	$558	$14	$0
	Per Community	$11,737	$11,723	$14	$0
05	Per Policy	$473	$698	$14	$0
	Per Community	$14,668	$14,653	$14	$0
04	Per Policy	$568	$837	$14	$0
	Per Community	$17,599	$17,584	$14	$0
03	Per Policy	$662	$977	$14	$0
	Per Community	$20,529	$20,515	$14	$0
02	Per Policy	$757	$1,116	$14	$0
	Per Community	$23,460	$23,446	$14	$0
01	Per Policy	$851	$1,256	$14	$0
	Per Community	$26,391	$26,376	$14	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	RARITAN, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340442

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	13	1	4	8
	PREMIUM	$17,661	$7,606	$6,738	$3,317
	AVERAGE PREMIUM	$1,359	$7,606	$1,684	$415
09	Per Policy	$55	$380	$84	$0
	Per Community	$717	$380	$337	$0
08	Per Policy	$84	$761	$84	$0
	Per Community	$1,098	$761	$337	$0
07	Per Policy	$114	$1,141	$84	$0
	Per Community	$1,478	$1,141	$337	$0
06	Per Policy	$169	$1,521	$168	$0
	Per Community	$2,195	$1,521	$674	$0
05	Per Policy	$198	$1,902	$168	$0
	Per Community	$2,575	$1,902	$674	$0
04	Per Policy	$227	$2,282	$168	$0
	Per Community	$2,956	$2,282	$674	$0
03	Per Policy	$257	$2,662	$168	$0
	Per Community	$3,336	$2,662	$674	$0
02	Per Policy	$286	$3,042	$168	$0
	Per Community	$3,716	$3,042	$674	$0
01	Per Policy	$315	$3,423	$168	$0
	Per Community	$4,096	$3,423	$674	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	ROCKY HILL, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340443

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	9	3	3	3
	PREMIUM	$7,813	$4,094	$2,474	$1,245
	AVERAGE PREMIUM	$868	$1,365	$825	$415
09	Per Policy	$36	$68	$41	$0
	Per Community	$328	$205	$124	$0
08	Per Policy	$59	$136	$41	$0
	Per Community	$533	$409	$124	$0
07	Per Policy	$82	$205	$41	$0
	Per Community	$738	$614	$124	$0
06	Per Policy	$118	$273	$82	$0
	Per Community	$1,066	$819	$247	$0
05	Per Policy	$141	$341	$82	$0
	Per Community	$1,271	$1,024	$247	$0
04	Per Policy	$164	$409	$82	$0
	Per Community	$1,476	$1,228	$247	$0
03	Per Policy	$187	$478	$82	$0
	Per Community	$1,680	$1,433	$247	$0
02	Per Policy	$209	$546	$82	$0
	Per Community	$1,885	$1,638	$247	$0
01	Per Policy	$232	$614	$82	$0
	Per Community	$2,090	$1,842	$247	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	SOMERVILLE, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340444

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	97	63	5	29
	PREMIUM	$245,090	$212,786	$16,419	$15,885
	AVERAGE PREMIUM	$2,527	$3,378	$3,284	$548
09	Per Policy	$118	$169	$164	$0
	Per Community	$11,460	$10,639	$821	$0
08	Per Policy	$228	$338	$164	$0
	Per Community	$22,100	$21,279	$821	$0
07	Per Policy	$338	$507	$164	$0
	Per Community	$32,739	$31,918	$821	$0
06	Per Policy	$456	$676	$328	$0
	Per Community	$44,199	$42,557	$1,642	$0
05	Per Policy	$565	$844	$328	$0
	Per Community	$54,838	$53,197	$1,642	$0
04	Per Policy	$675	$1,013	$328	$0
	Per Community	$65,478	$63,836	$1,642	$0
03	Per Policy	$785	$1,182	$328	$0
	Per Community	$76,117	$74,475	$1,642	$0
02	Per Policy	$894	$1,351	$328	$0
	Per Community	$86,756	$85,115	$1,642	$0
01	Per Policy	$1,004	$1,520	$328	$0
	Per Community	$97,396	$95,754	$1,642	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	SOUTH BOUND BROOK, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340445

Current CRS Class = 10 *[Printable Version]*

		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	51	20	3	28
	PREMIUM	$89,064	$74,658	$3,371	$11,035
	AVERAGE PREMIUM	$1,746	$3,733	$1,124	$394
CRS Class					
09	Per Policy	$76	$187	$56	$0
	Per Community	$3,901	$3,733	$169	$0
08	Per Policy	$150	$373	$56	$0
	Per Community	$7,634	$7,466	$169	$0
07	Per Policy	$223	$560	$56	$0
	Per Community	$11,367	$11,199	$169	$0
06	Per Policy	$299	$747	$112	$0
	Per Community	$15,269	$14,932	$337	$0
05	Per Policy	$373	$933	$112	$0
	Per Community	$19,002	$18,664	$337	$0
04	Per Policy	$446	$1,120	$112	$0
	Per Community	$22,735	$22,397	$337	$0
03	Per Policy	$519	$1,307	$112	$0
	Per Community	$26,467	$26,130	$337	$0
02	Per Policy	$592	$1,493	$112	$0
	Per Community	$30,200	$29,863	$337	$0
01	Per Policy	$665	$1,680	$112	$0
	Per Community	$33,933	$33,596	$337	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	WARREN, TOWNSHIP OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340446

Current CRS Class = 9 *[Printable Version]*

		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	84	29	7	48
	PREMIUM	$78,877	$46,595	$13,761	$18,521
	AVERAGE PREMIUM	$939	$1,607	$1,966	$386
CRS Class					
09	Per Policy	$38	$85	$103	$0
	Per Community	$3,177	$2,452	$724	$0
08	Per Policy	$67	$169	$103	$0
	Per Community	$5,629	$4,905	$724	$0
07	Per Policy	$96	$254	$103	$0
	Per Community	$8,081	$7,357	$724	$0
06	Per Policy	$134	$338	$207	$0
	Per Community	$11,258	$9,809	$1,449	$0
05	Per Policy	$163	$423	$207	$0
	Per Community	$13,710	$12,262	$1,449	$0
04	Per Policy	$192	$507	$207	$0
	Per Community	$16,163	$14,714	$1,449	$0
03	Per Policy	$222	$592	$207	$0
	Per Community	$18,615	$17,167	$1,449	$0
02	Per Policy	$251	$677	$207	$0
	Per Community	$21,067	$19,619	$1,449	$0
01	Per Policy	$280	$761	$207	$0
	Per Community	$23,520	$22,071	$1,449	$0

* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Community:	WATCHUNG, BOROUGH OF	**State:**	NEW JERSEY
County:	SOMERSET COUNTY	**CID:**	340447

Current CRS Class = 10 *[Printable Version]*

CRS Class		TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
	PIF	44	11	3	30
	PREMIUM	$45,527	$25,121	$8,923	$11,483
	AVERAGE PREMIUM	$1,035	$2,284	$2,974	$383
09	Per Policy	$39	$114	$149	$0
	Per Community	$1,702	$1,256	$446	$0
08	Per Policy	$67	$228	$149	$0
	Per Community	$2,958	$2,512	$446	$0
07	Per Policy	$96	$343	$149	$0
	Per Community	$4,214	$3,768	$446	$0
06	Per Policy	$134	$457	$297	$0
	Per Community	$5,917	$5,024	$892	$0
05	Per Policy	$163	$571	$297	$0
	Per Community	$7,173	$6,280	$892	$0
04	Per Policy	$192	$685	$297	$0
	Per Community	$8,429	$7,536	$892	$0
03	Per Policy	$220	$799	$297	$0
	Per Community	$9,685	$8,792	$892	$0
02	Per Policy	$249	$913	$297	$0
	Per Community	$10,941	$10,048	$892	$0
01	Per Policy	$277	$1,028	$297	$0
	Per Community	$12,197	$11,304	$892	$0

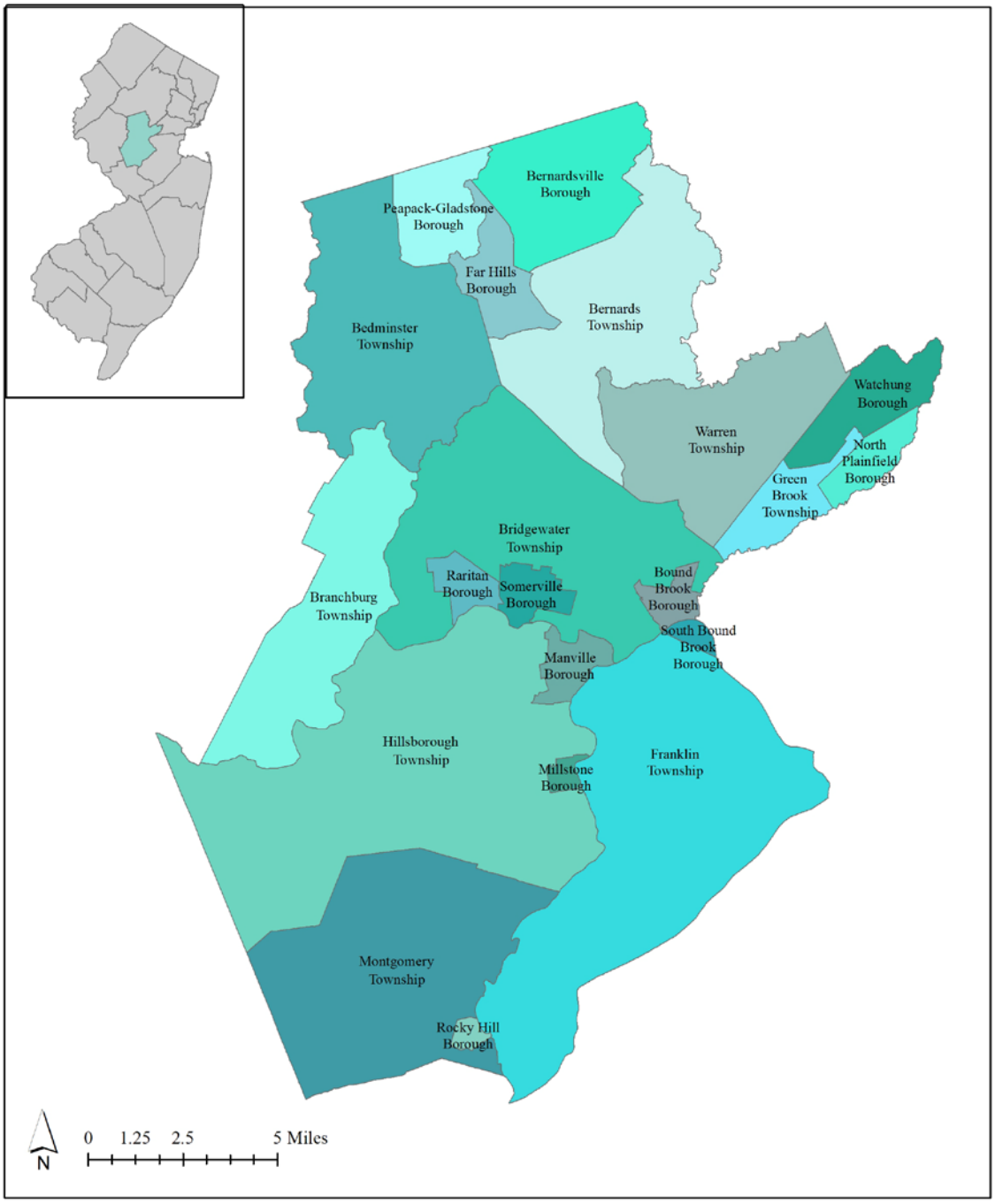
* SHFA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class.

** SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.

*** Preferred Risk Policies are not eligible for CRS Premium Discounts.

Appendix FRF – 13: Updated Impervious Cover Analysis- Somerset County Municipalities

Somerset County Municipalities
Impervious Cover Analysis



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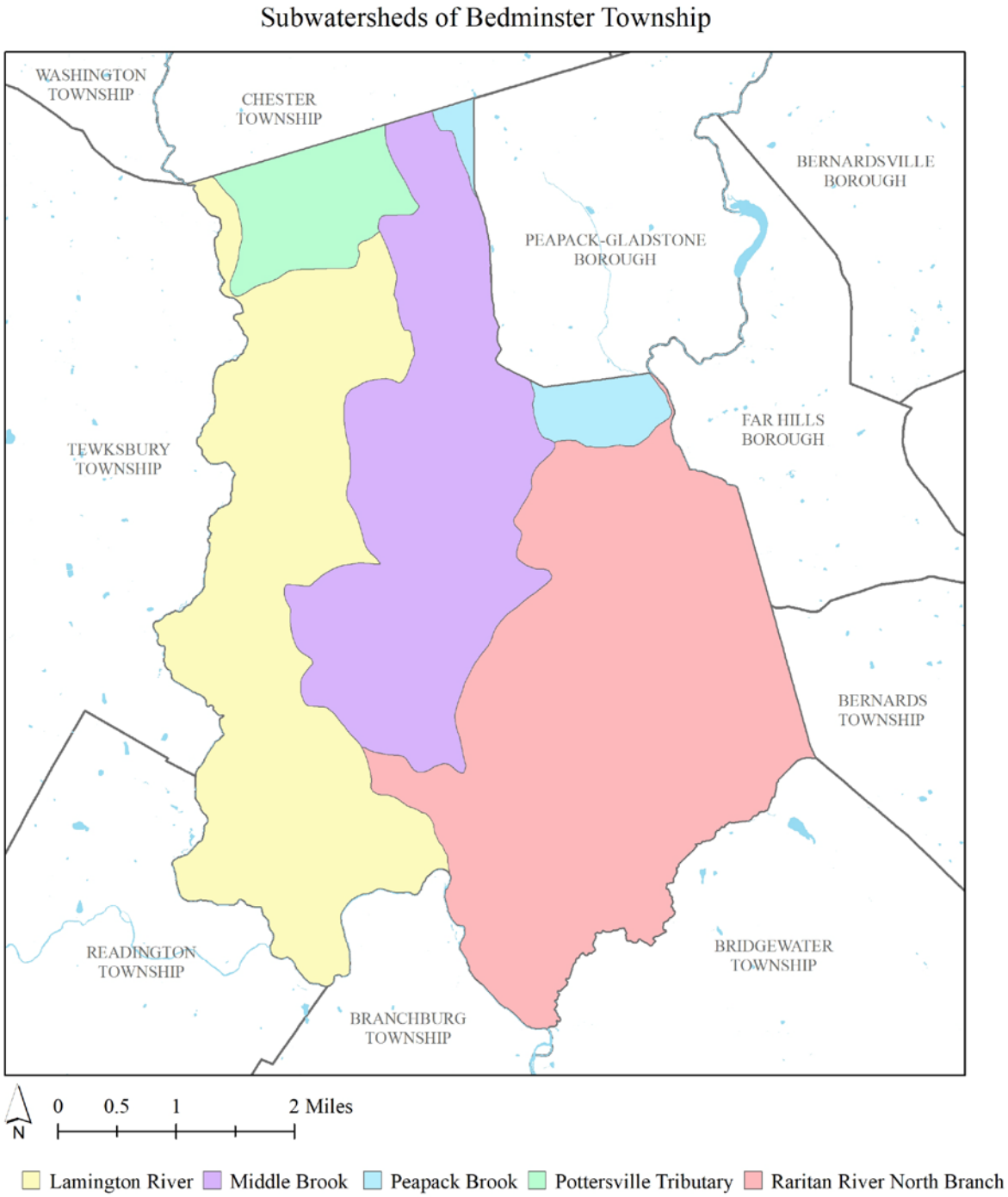
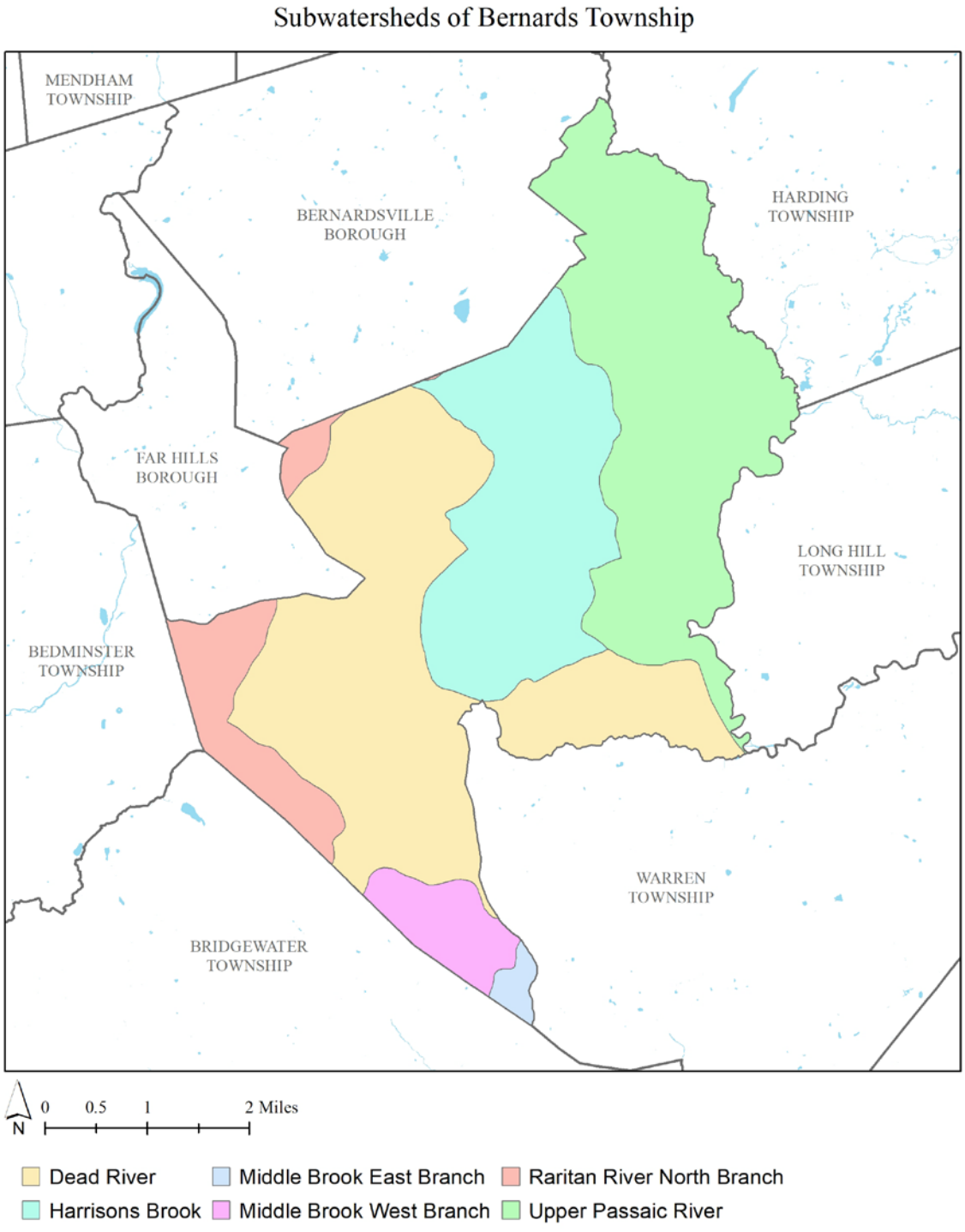


Map of the subwatersheds in Bedminster Township

Impervious cover analysis by subwatershed for Bedminister Township

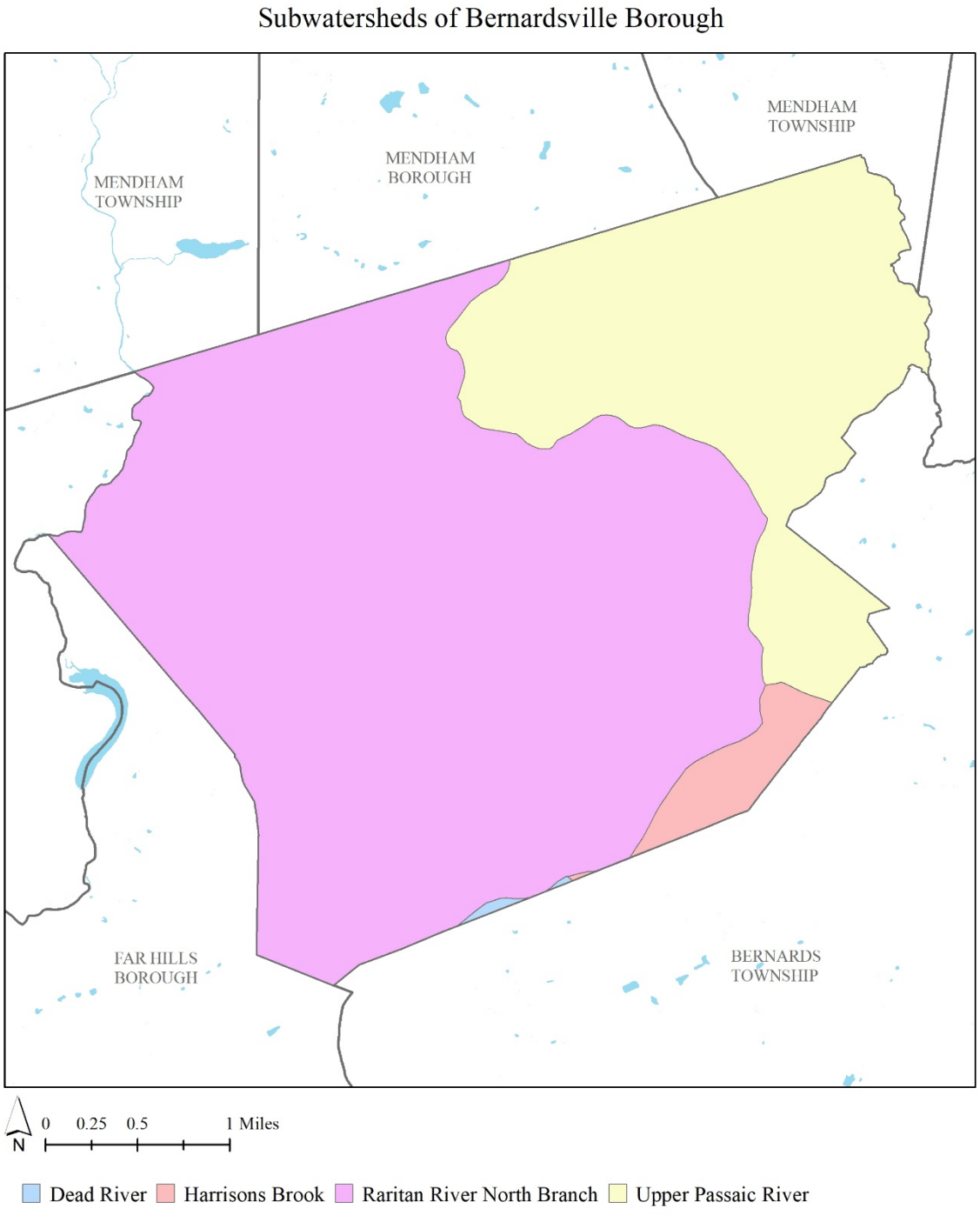
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Lamington River	4,934.9	7.71	4,860.4	7.59	74.44	0.12	103.9	0.16	2.1%
Middle Brook / Raritan River North Branch	4,094.1	6.40	4,063.3	6.35	30.8	0.05	94.9	0.15	2.3%
Peapack Brook	441.4	0.69	438.0	0.68	3.5	0.01	21.8	0.03	5.0%
Potterville Tributary / Lamington River	900.0	1.41	895.7	1.40	4.4	0.01	18.2	0.03	2.0%
Raritan River North Branch	6,505.0	10.16	6,395.0	9.99	110.0	0.17	10.2	0.02	0.2%
Total	16,875.5	26.37	16,652.4	26.02	223.0	0.35	646.8	0.39	3.9%



Map of the subwatersheds in Bernards Township

Impervious cover analysis by subwatershed for Bernards Township

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Dead River	5,711.2	8.92	5,666.54	8.85	44.7	0.07	680.9	1.06	12.0%
Harrisons Brook	3,268.4	5.11	3,252.9	5.08	15.5	0.02	548.1	0.86	16.9%
Middle Brook East Branch	128.9	0.20	128.1	0.20	0.8	0.00	14.0	0.02	11.0%
Middle Brook West Branch	618.1	0.97	616.5	0.96	1.7	0.00	22.5	0.04	3.6%
Upper Passaic River	4,763.3	7.44	4,680.9	7.31	82.4	0.13	603.2	0.94	12.9%
Raritan River North Branch	1,077.6	1.68	1,073.4	1.68	4.2	0.01	187.5	0.29	17.5%
Total	15,567.7	24.32	15,418.3	24.09	149.4	0.23	2,056.3	3.21	13.3%

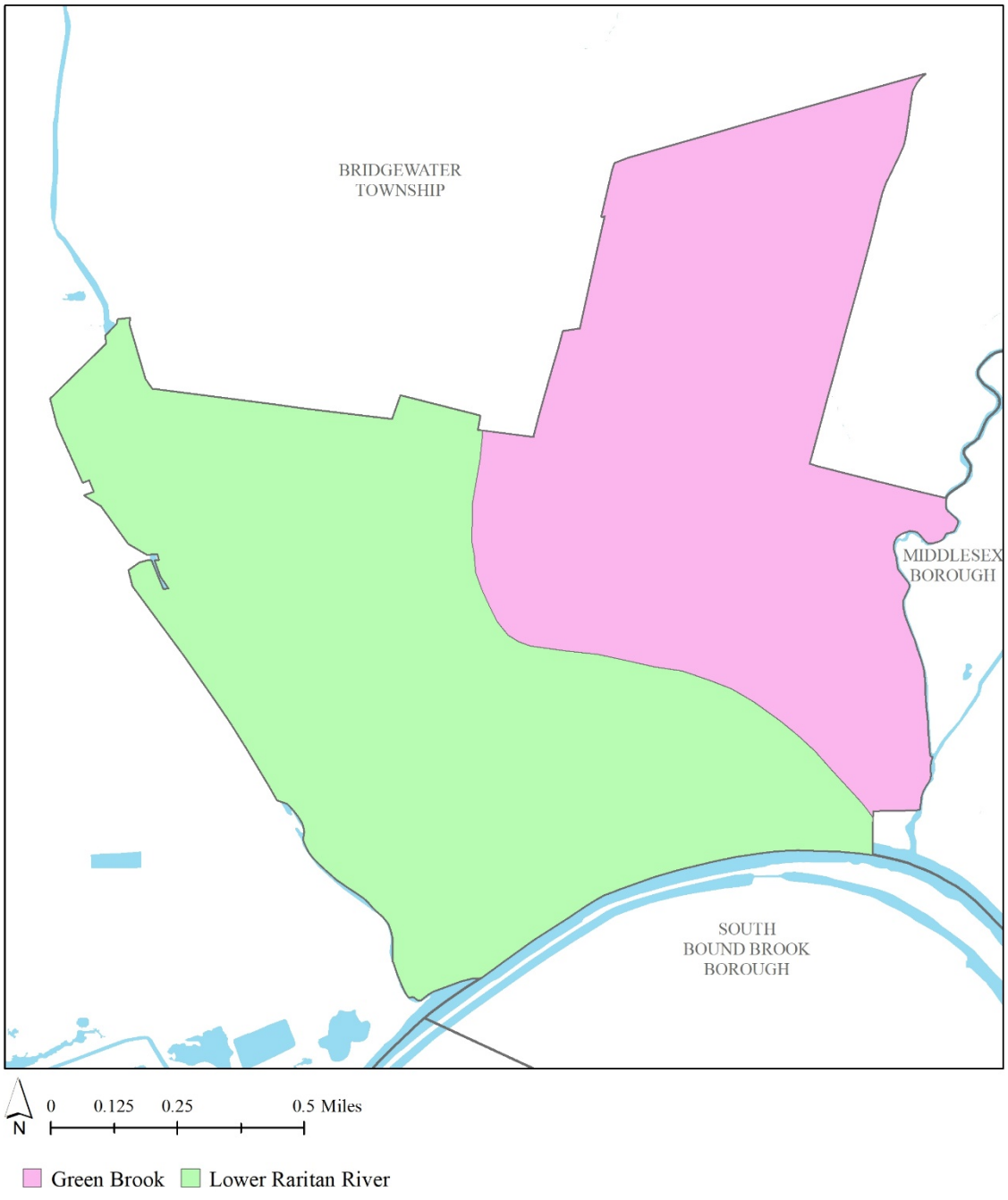


Map of the subwatersheds in Bernardsville Borough

Impervious cover analysis by subwatershed for Bernardsville Borough

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Dead River	10.7	0.02	10.7	0.02	0.0	0.00	1.4	0.00	12.9%
Harrisons Brook	216.7	0.34	216.7	0.34	0.0	0.00	47.0	0.07	21.7%
Upper Passaic River	2,285.2	3.57	2,268.6	3.54	16.6	0.03	198.8	0.31	8.8%
Raritan River North Branch	5,752.0	8.99	5,697.7	8.90	54.3	0.08	411.5	0.64	7.2%
Total	8,264.6	12.91	8,193.8	12.80	70.9	0.11	658.7	1.03	8.0%

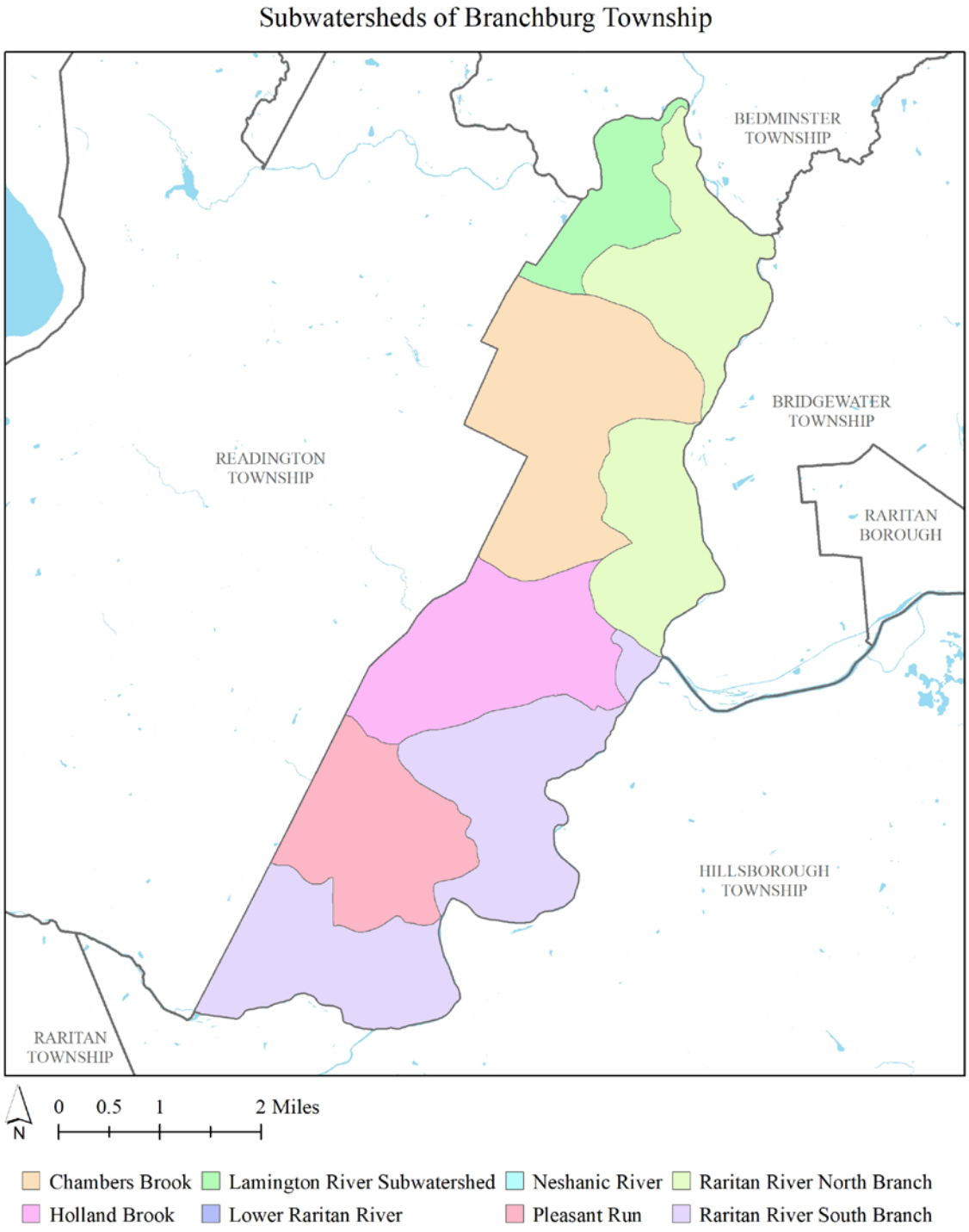
Subwatersheds of Bound Brook Borough



Map of the subwatersheds in Bound Brook Borough

Impervious cover analysis by subwatershed for Bound Brook Borough

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Green Brook	501.3	0.78	498.5	0.78	2.8	0.00	148.0	0.23	29.7%
Lower Raritan River	1,084.8	1.69	1,058.2	1.65	26.5	0.04	376.3	0.59	35.6%
Total	1,586.1	2.48	1,556.7	2.43	29.4	0.05	524.3	0.82	33.7%

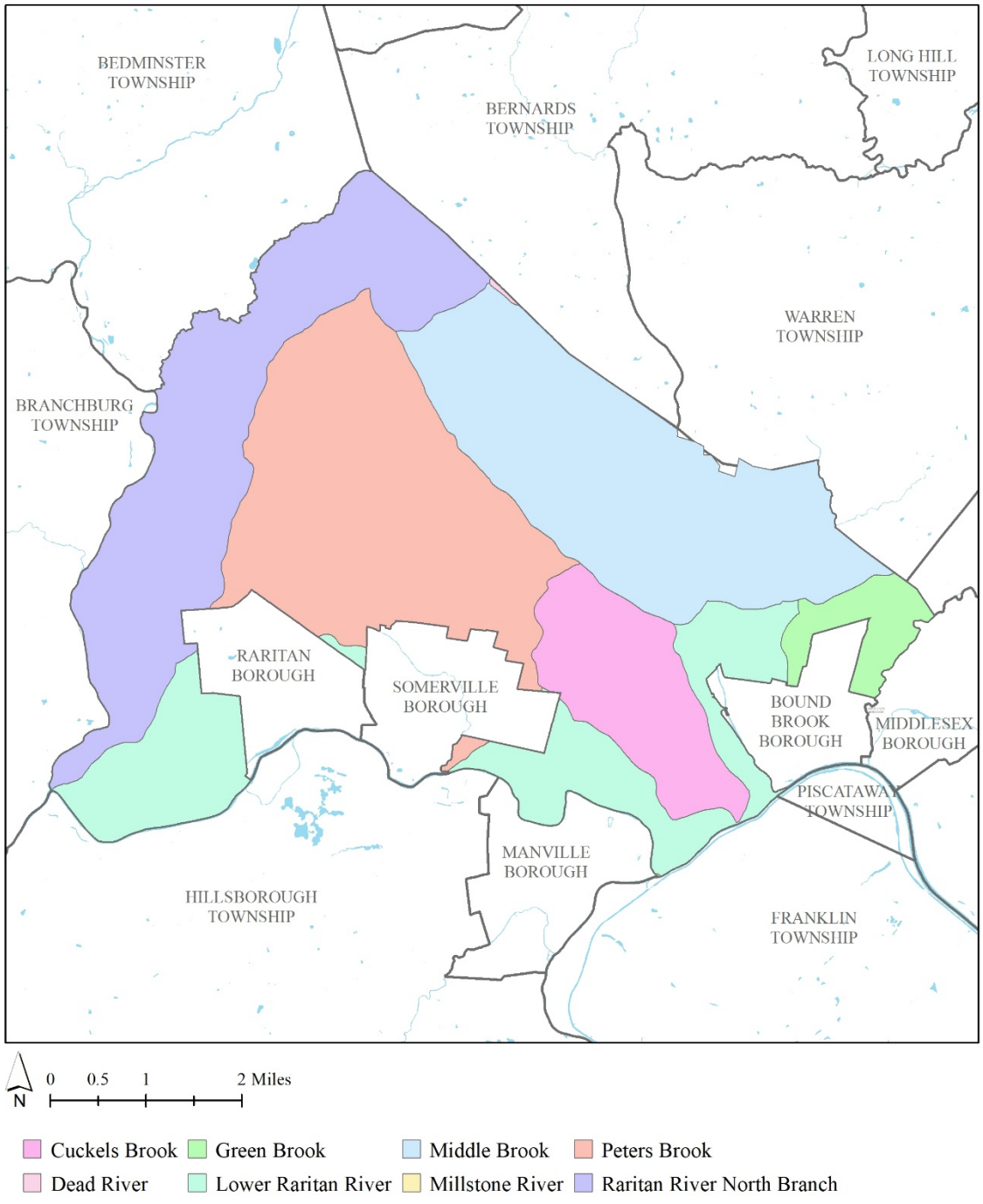


Map of the subwatersheds in Branchburg Township

Impervious cover analysis by subwatershed for Branchburg Township

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Chambers Brook	2,564.9	4.01	2,544.81	3.98	20.1	0.03	524.5	0.82	20.6%
Holland Brook	1,942.7	3.04	1,925.9	3.01	16.8	0.03	289.6	0.45	15.0%
Lamington River	802.1	1.25	788.6	1.23	13.5	0.02	53.3	0.08	6.8%
Neshanic River	0.1	0.00	0.1	0.00	0.0	0.00	0.0	0.00	0.2%
Pleasant Run	1,589.6	2.48	1,574.1	2.46	15.5	0.02	99.4	0.16	6.3%
Raritan River Lower	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.2%
Raritan River North Branch	2,678.0	4.18	2,611.2	4.08	66.8	0.10	351.9	0.55	13.5%
Raritan River South Branch	3,392.5	5.30	3,285.9	5.13	106.5	0.17	221.0	0.35	6.7%

Subwatersheds of Bridgewater Township

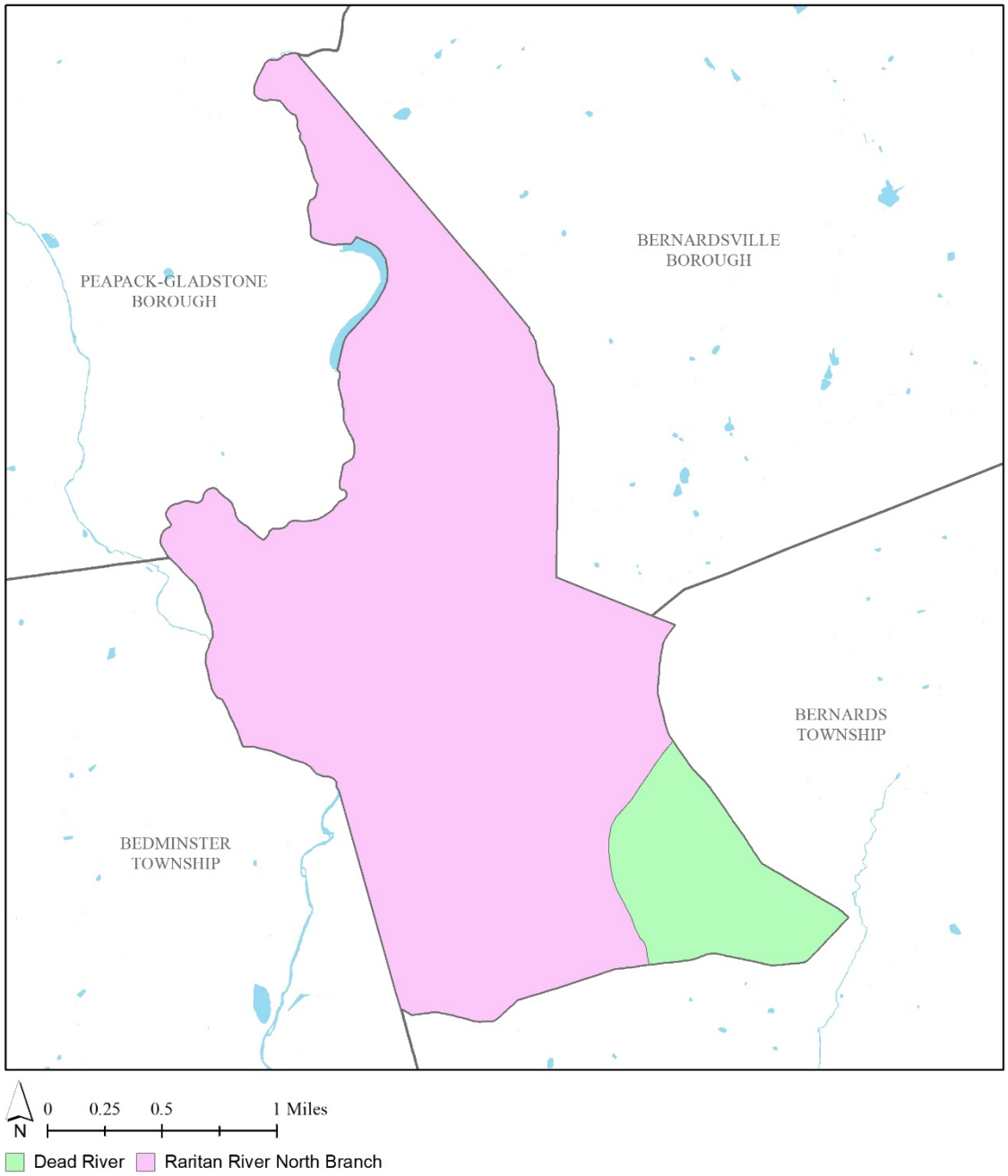


Map of the subwatersheds in Bridgewater Township

Impervious cover analysis by subwatershed for Bridgewater Township

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Cuckles Brook	1,870.8	2.92	1,842.0	2.88	28.9	0.05	533.8	0.83	29.0%
Dead River	10.5	0.02	10.5	0.02	0.00	0.00	0.57	0.00	5.5%
Green Brook	617.2	0.96	611.6	0.96	5.59	0.01	93.5	0.15	15.3%
Middle Brook	5,047.3	7.89	4,997.2	7.81	50.1	0.08	509.3	0.80	10.2%
Millstone River	0.46	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00%
Peters Brook	5,247.8	8.20	5,226.9	8.17	20.9	0.03	1,222.5	1.91	23.4%
Lower Raritan River	3,170.2	4.95	2,986.8	4.67	183.4	0.29	659.5	1.03	22.1%
Raritan River North Branch	4,747.2	7.42	4,674.0	7.30	73.2	0.11	868.9	1.36	18.6%
Total	20,711.2	32.4	20,348.8	31.80	362.4	0.57	3,888.0	6.08	19.1%

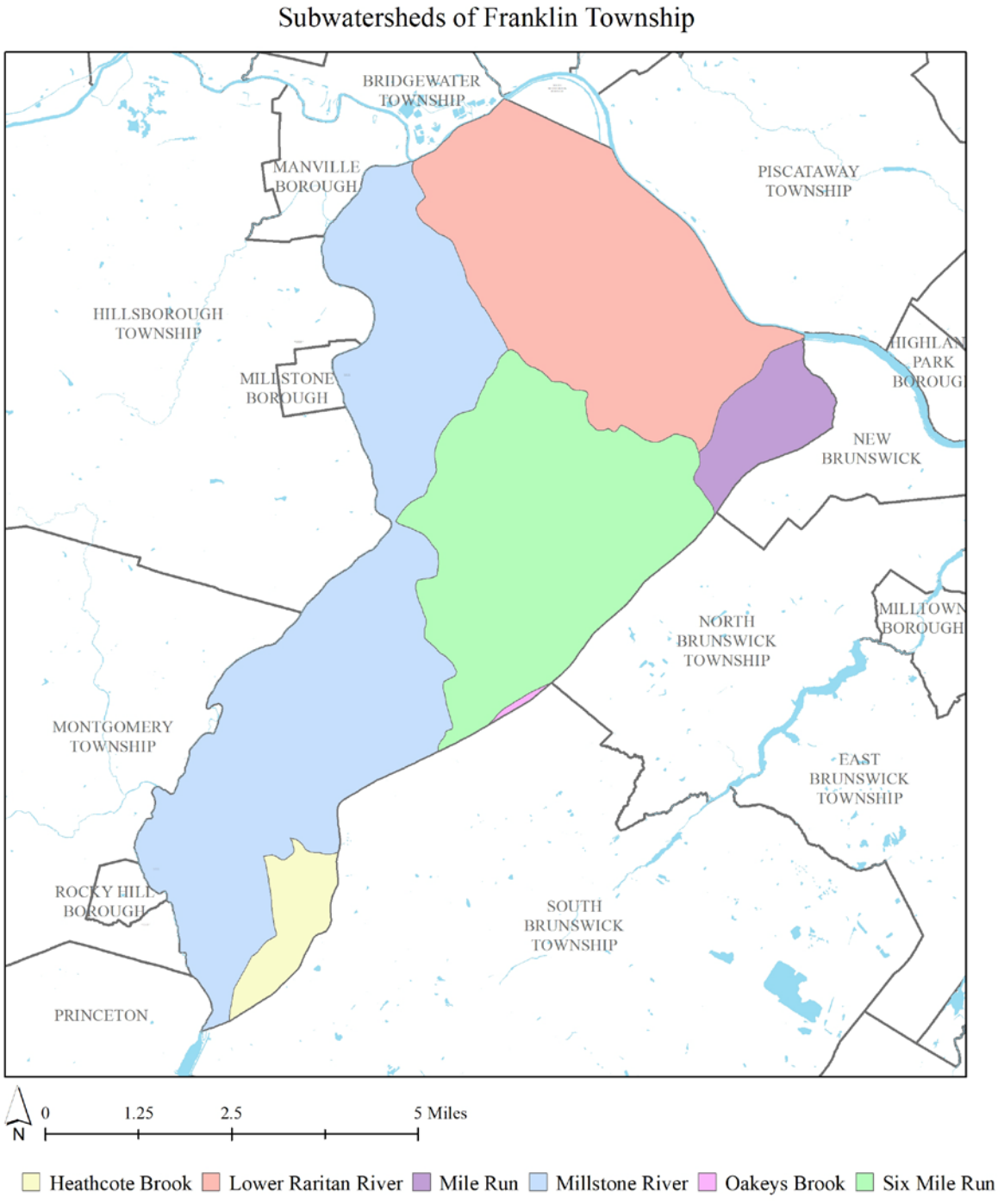
Subwatersheds of Far Hills Borough



Map of the subwatersheds in Far Hills Borough

Impervious cover analysis by subwatershed for Far Hills Borough

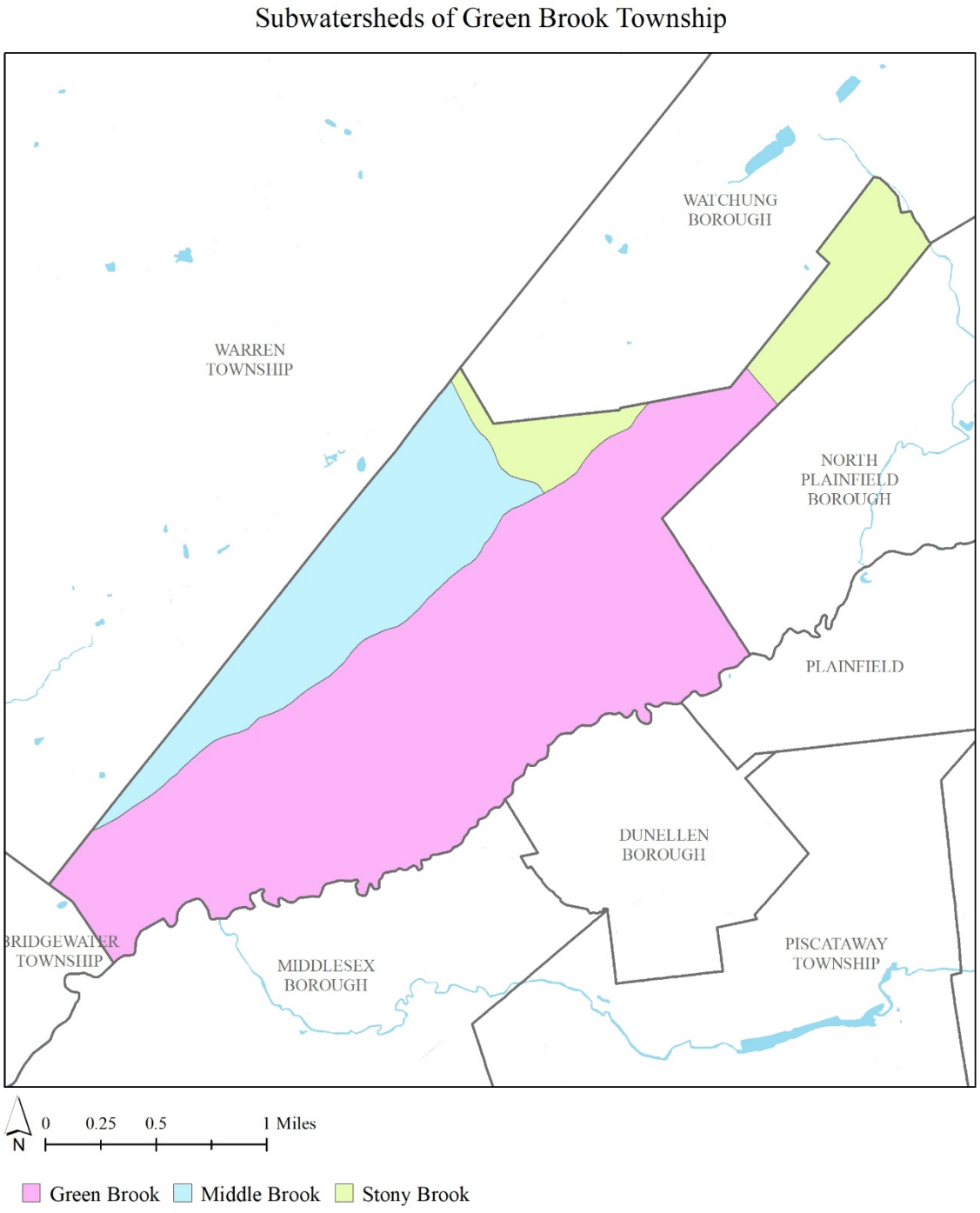
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Dead River	3,149.3	4.92	3,096.0	4.84	53.2	0.08	145.7	0.23	4.7%
Raritan River North Branch	2,799.6	4.37	2,747.1	4.29	52.5	0.08	126.8	0.20	4.6%
Total	5,948.9	9.30	5,843.2	9.13	105.7	0.17	272.5	0.43	4.7%



Map of the subwatersheds in Franklin Township

Impervious cover analysis by subwatershed for Franklin Township

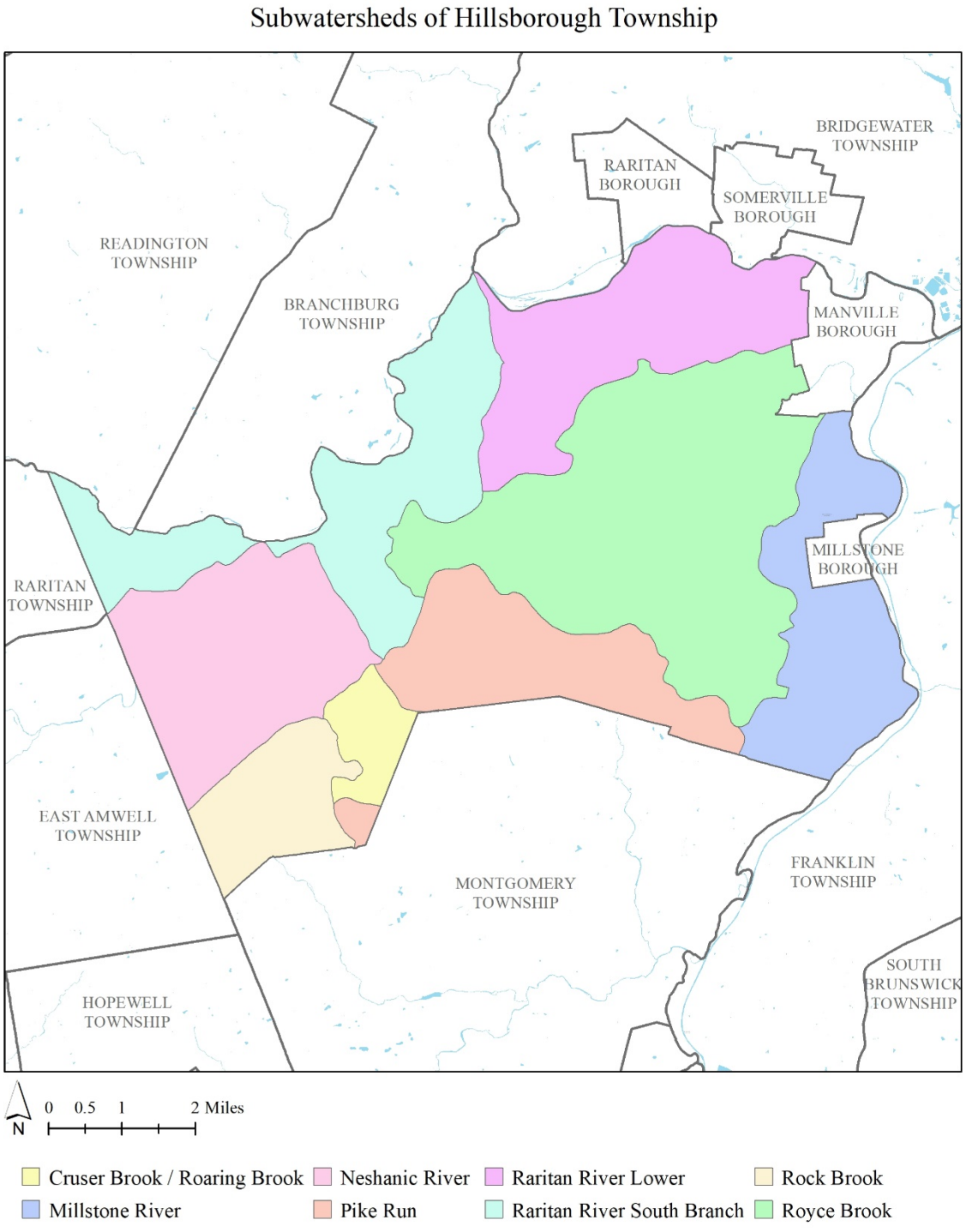
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Heathcote Brook	980.9	1.53	979.25	1.53	1.7	0.00	44.9	0.07	4.6%
Mile Run	1,321.8	2.07	1,316.1	2.06	5.7	0.01	452.2	0.71	34.4%
Millstone River	12,045.2	18.82	11,717.8	18.31	327.4	0.51	730.6	1.14	6.2%
Oakeys Brook	36.4	0.06	36.1	0.06	0.3	0.00	23.4	0.04	65.0%
Lower Raritan River	7,937.4	12.40	7,765.9	12.13	171.5	0.27	2,284.0	3.57	29.4%
Six Mile Run	7,676.1	11.99	7,643.3	11.94	32.8	0.05	867.6	1.36	11.4%
Total	29,997.9	46.87	29,458.5	46.03	539.4	0.84	4,402.8	6.88	14.9%



Map of the subwatersheds in Green Brook Township

Impervious cover analysis by subwatershed for Green Brook Township

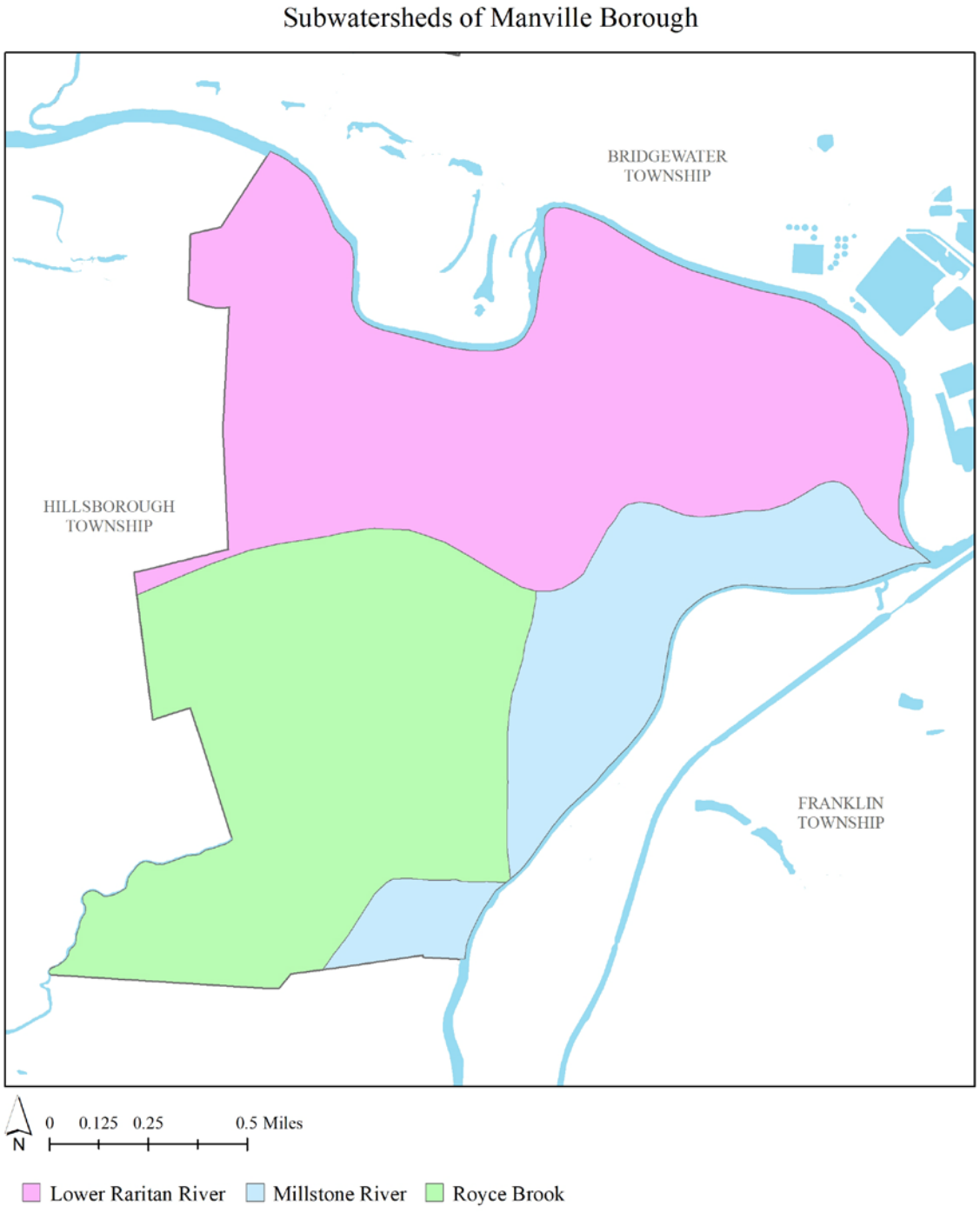
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Green Brook	1,916.8	2.99	1,902.88	2.97	13.9	0.02	477.6	0.75	25.1%
Middle Brook	592.9	0.93	592.9	0.93	0.0	0.00	77.6	0.12	13.1%
Stony Brook	310.4	0.48	309.3	0.48	1.1	0.00	34.3	0.05	11.1%
Total	2,820.0	4.41	2,805.0	4.38	15.0	0.02	589.5	0.92	21.0%



Map of the subwatersheds in Hillsborough Township

Impervious cover analysis by subwatershed for Hillsborough Township

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Cruser Brook/Roaring Brook	912.9	1.43	912.9	1.43	0.0	0.00	4.6	0.01	0.5%
Millstone River	3,889.1	6.08	3,840.9	6.00	48.2	0.08	372.9	0.58	9.6%
Neshanic River	4,810.1	7.52	4,769.2	7.45	40.9	0.06	97.5	0.15	2.0%
Pike Run	3,736.7	5.84	3,725.5	5.82	11.2	0.02	237.5	0.37	6.4%
Lower Raritan River	4,826.2	7.54	4669.7	7.30	156.5	0.24	241.5	0.38	5.0%
Raritan River South Branch	5,082.6	7.94	4,975.2	7.77	107.4	0.17	169.3	0.26	3.3%
Rock Brook	2,027.9	3.17	2,023.3	3.16	4.5	0.01	21.8	0.03	1.1%
Royce Brook	9,995.3	15.62	9,945.6	15.54	49.7	0.08	1,642.9	2.57	16.4%
Total	35,280.7	55.13	34,862.4	54.47	418.4	0.65	2,788.0	4.36	7.9%

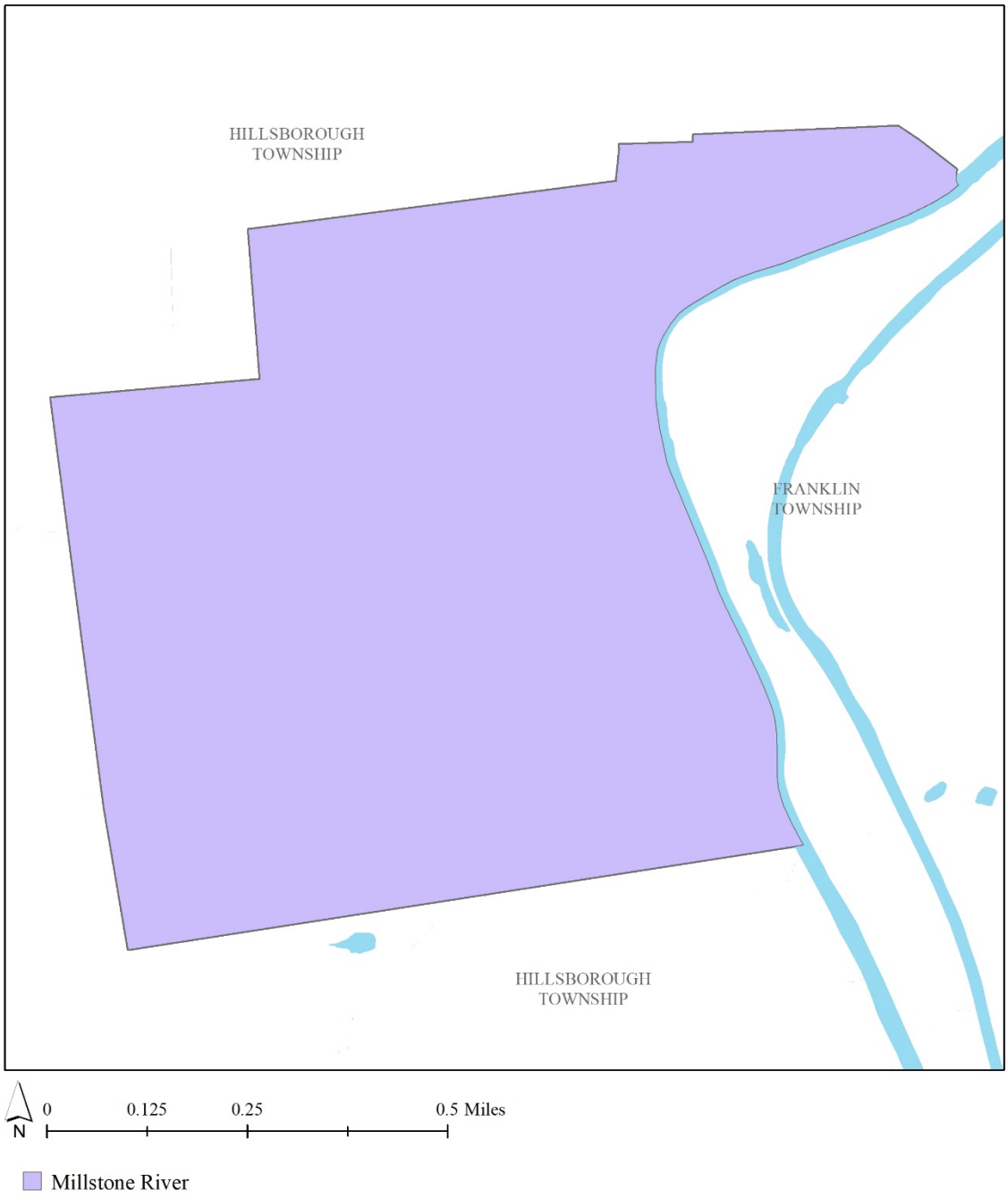


Map of the subwatersheds in Manville Borough

Impervious cover analysis by subwatershed for Manville Borough

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Millstone River	267.6	0.42	252.46	0.39	15.1	0.02	56.7	0.09	22.4%
Lower Raritan River	1,567.5	2.45	1,511.6	2.36	55.9	0.09	522.7	0.82	34.6%
Royce Brook	581.4	0.91	572.7	0.89	8.7	0.01	194.3	0.30	33.9%
Total	2,416.5	3.78	2,336.8	3.65	79.7	0.12	773.6	1.21	33.1%

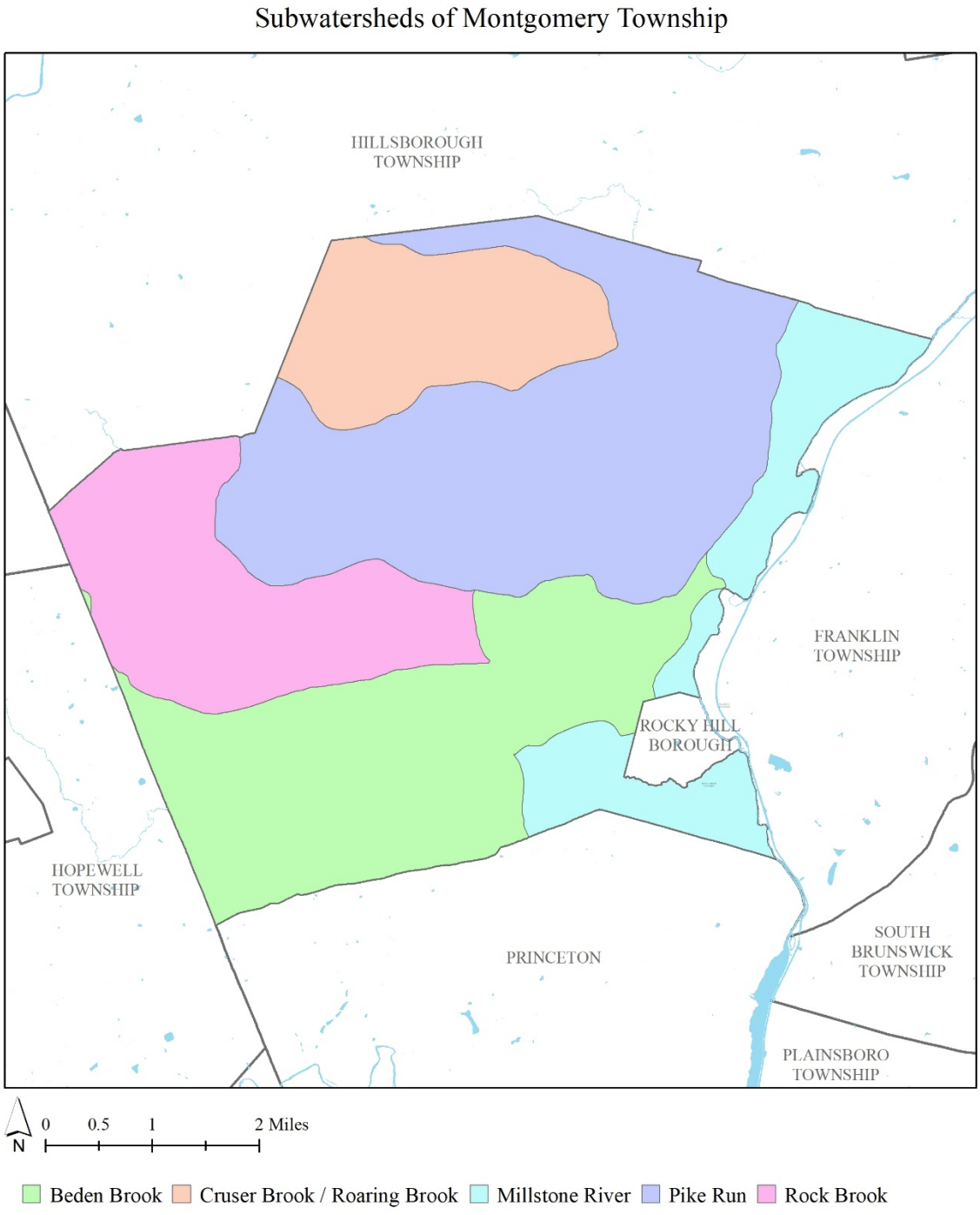
Subwatersheds of Millstone Borough



Map of the subwatersheds in Millstone Borough

Impervious cover analysis by subwatershed for Millstone Borough

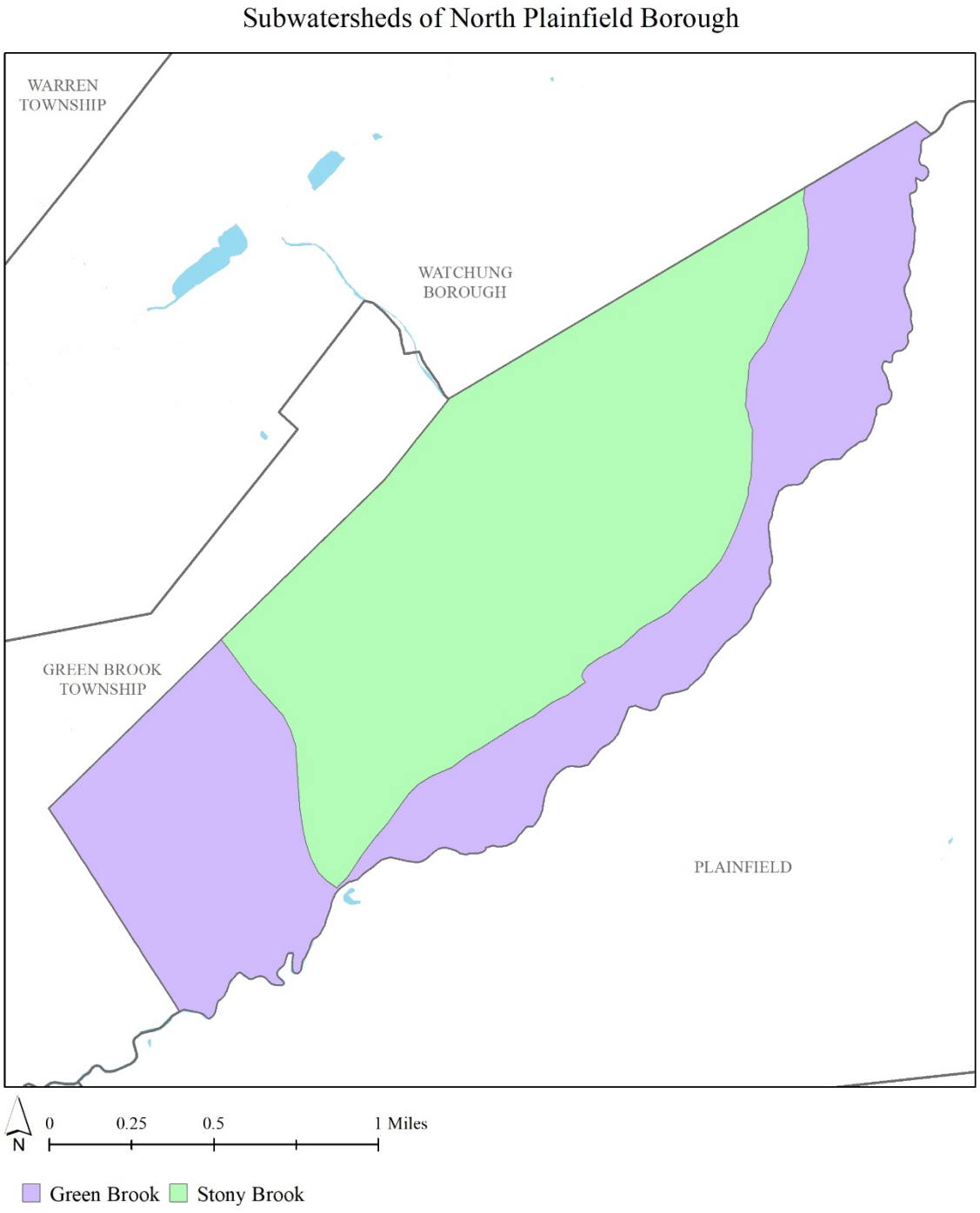
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Millstone River	443.7	0.69	436.2	0.68	7.5	0.01	37.8	0.06	8.7%
Total	443.7	0.69	436.2	0.68	7.5	0.01	37.8	0.06	8.7%



Map of the subwatersheds in Montgomery Township

Impervious cover analysis by subwatershed for Montgomery Township

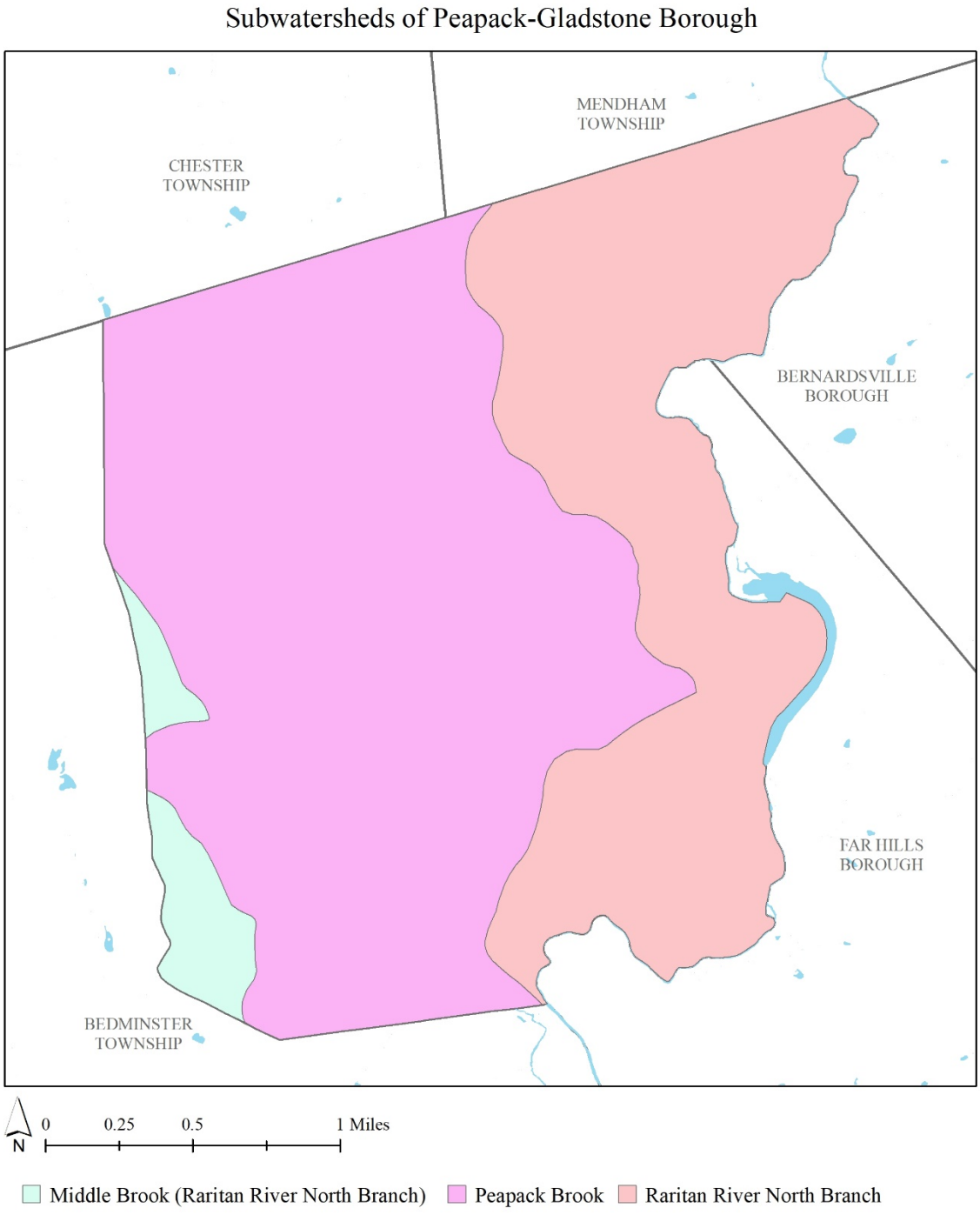
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Beden Brook	5,437.3	8.50	5,370.3	8.39	67.00	0.10	430.4	0.67	8.0%
Cruser Brook / Roaring Brook	2,424.7	3.79	2,421.9	3.78	2.79	0.00	3.8	0.01	0.2%
Millstone River	2,303.7	3.60	2,263.3	3.54	40.38	0.06	3.6	0.01	0.2%
Pike Run	20,788.5	32.48	20,605.7	32.20	182.77	0.29	1675.0	2.62	8.1%
Rock Brook	3,515.4	5.49	3,479.2	5.44	36.14	0.06	5.5	0.01	0.2%
Total	34,469.5	53.86	34,140.5	53.34	329.08	0.51	2118.3	3.31	6.2%



Map of the subwatersheds in North Plainfield Borough

Impervious cover analysis by subwatershed for North Plainfield Borough

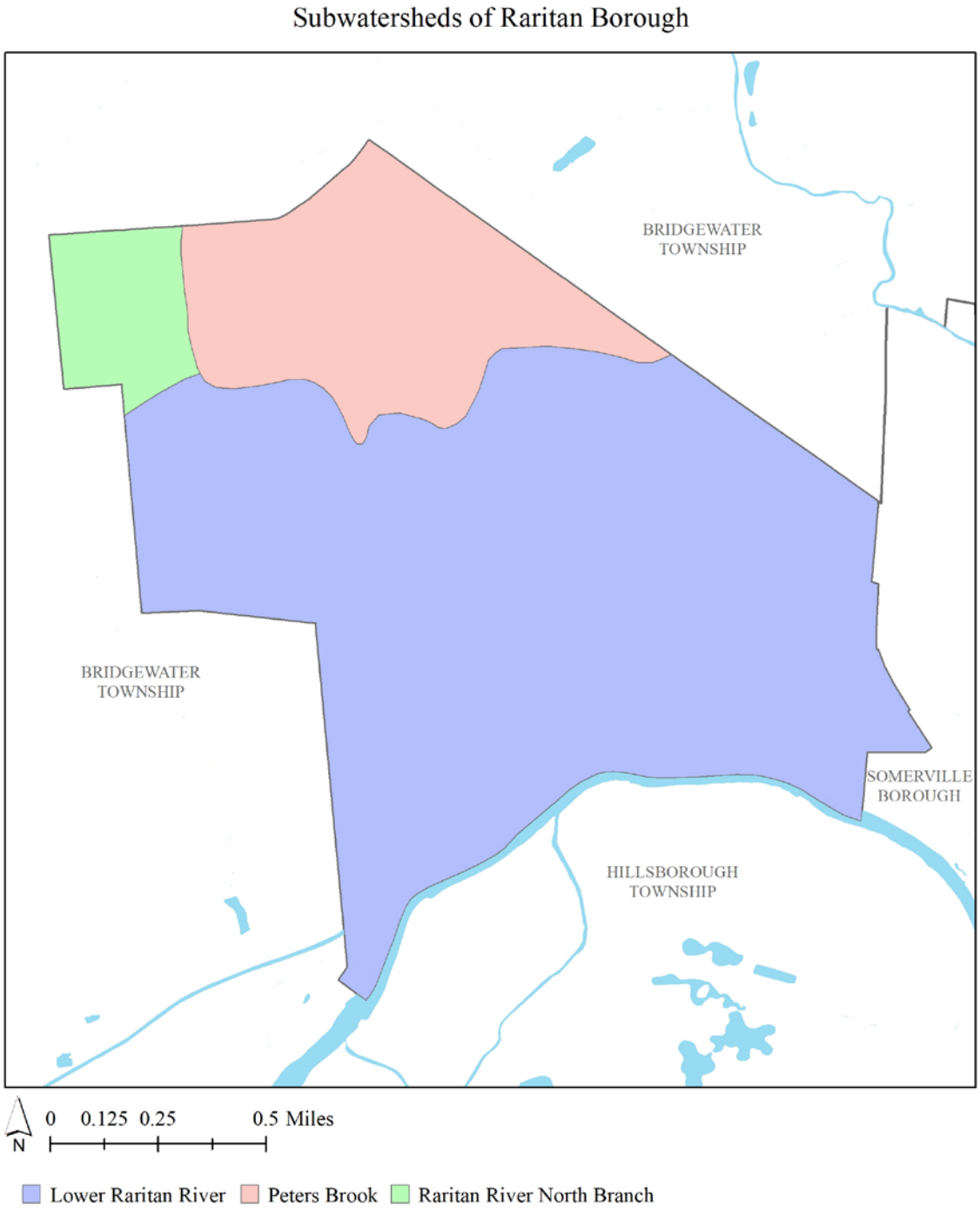
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Green Brook	797.6	1.25	786.61	1.23	11.0	0.02	308.0	0.48	39.2%
Stony Brook	1,007.5	1.57	996.2	1.56	11.3	0.02	406.0	0.63	40.8%
Total	1,805.1	2.82	1,782.8	2.79	22.3	0.03	714.1	1.12	40.1%



Map of the subwatersheds in Peapack-Gladstone Borough

Impervious cover analysis by subwatershed for Peapack-Gladstone Borough

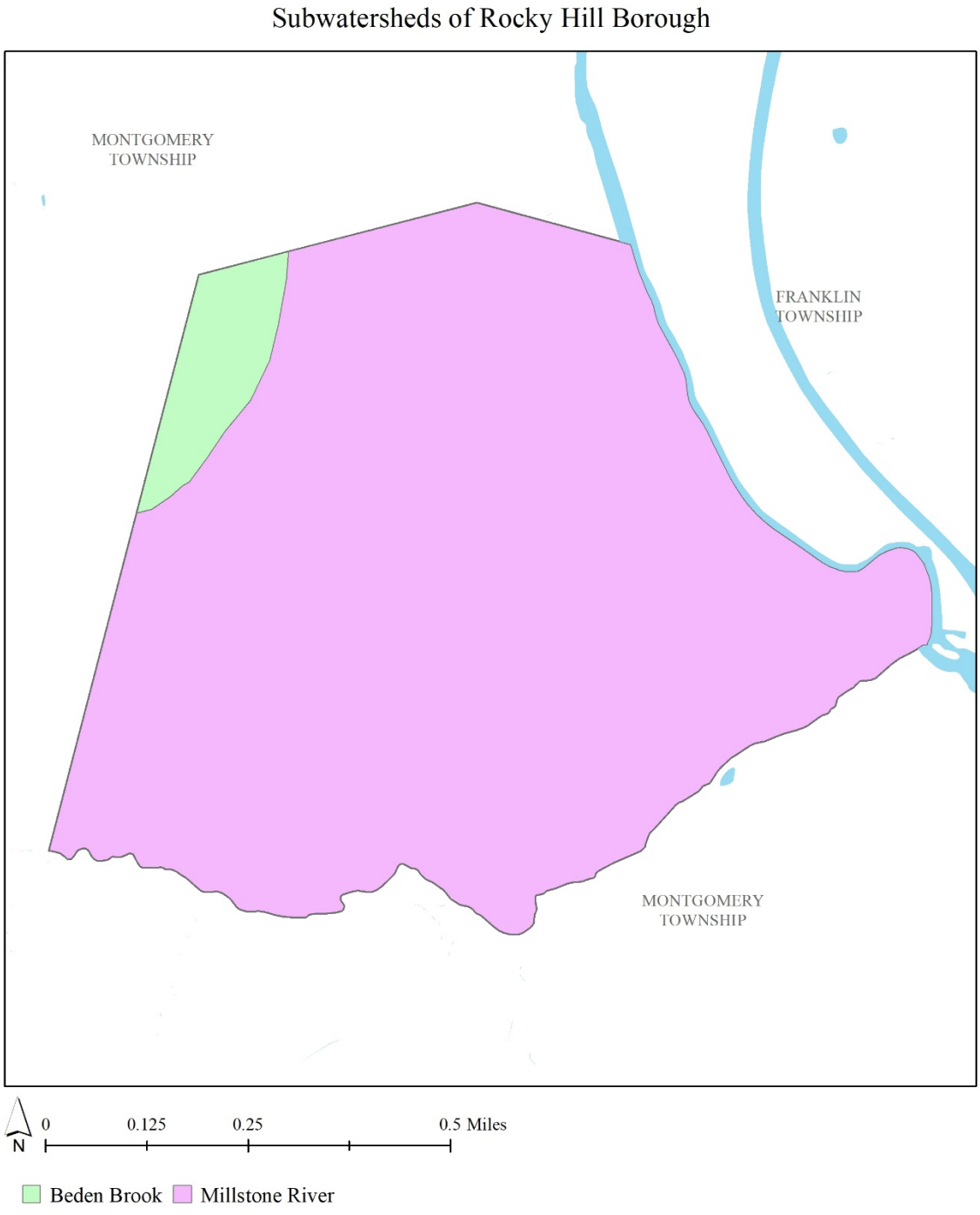
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Middle Brook / Raritan River North Branch	138.4	0.22	137.3	0.21	1.1	0.00	0.2	0.00	0.2%
Peapack Brook	138.4	0.22	137.3	0.21	1.1	0.00	7.6	0.01	5.6%
Raritan River North Branch	1,334.2	2.08	1,299.2	2.03	35.0	0.05	37.7	0.06	2.9%
Total	1,610.9	2.52	1,573.7	2.46	37.2	0.06	45.5	0.07	2.9%



Map of the subwatersheds in Raritan Borough

Impervious cover analysis by subwatershed for Raritan Borough

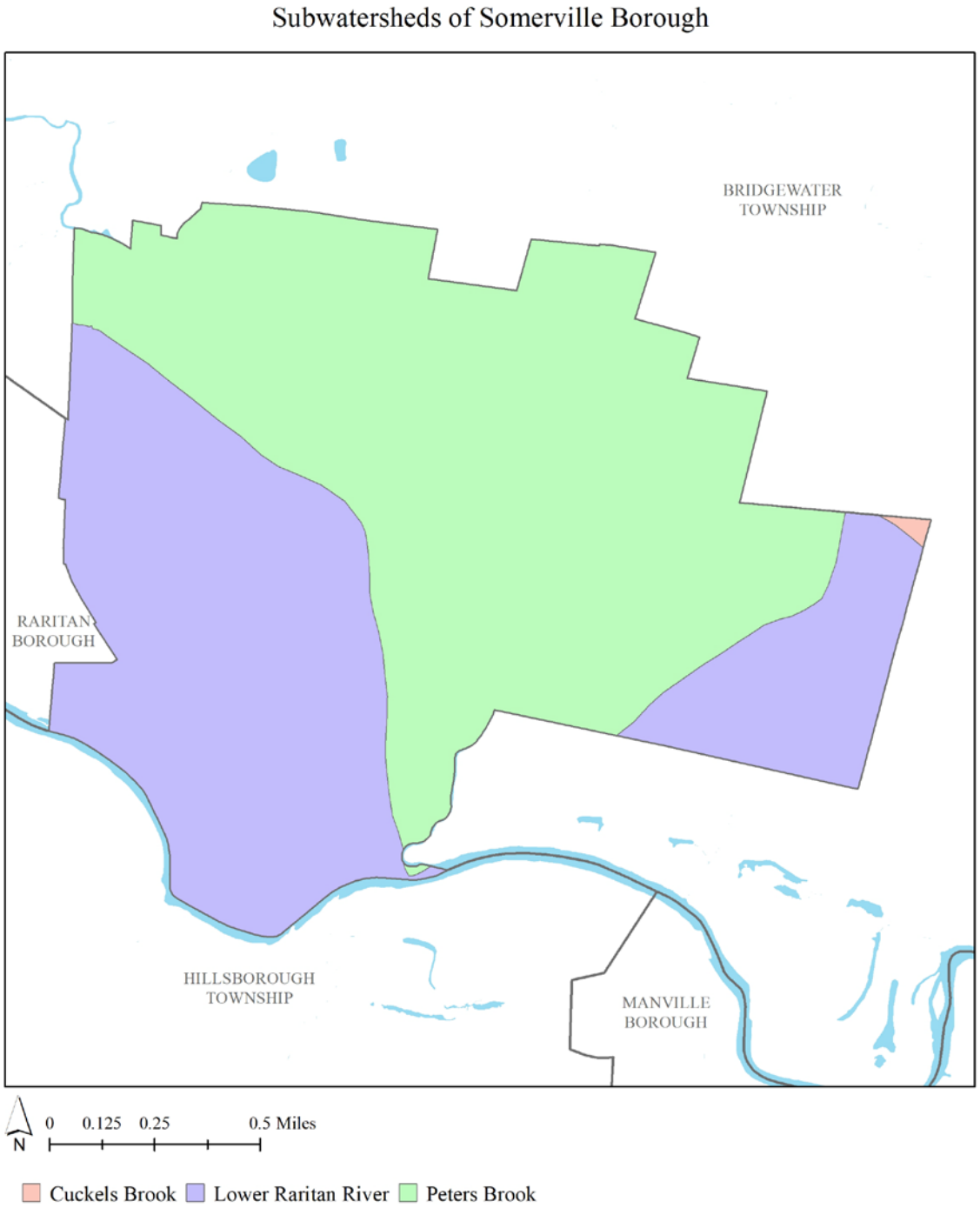
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Peters Brook	253.6	0.40	253.1	0.40	0.46	0.00	61.6	0.10	24.3%
Lower Raritan River	974.7	1.52	943.9	1.47	30.8	0.05	400.0	0.63	42.4%
Raritan River North Branch	70.6	0.11	69.9	0.11	0.6	0.00	21.7	0.03	31.0%
Total	1,298.8	2.03	1,266.9	1.98	31.9	0.05	646.8	0.76	51.1%



Map of the subwatersheds in Rocky Hill Borough

Impervious cover analysis by subwatershed for Rocky Hill Borough

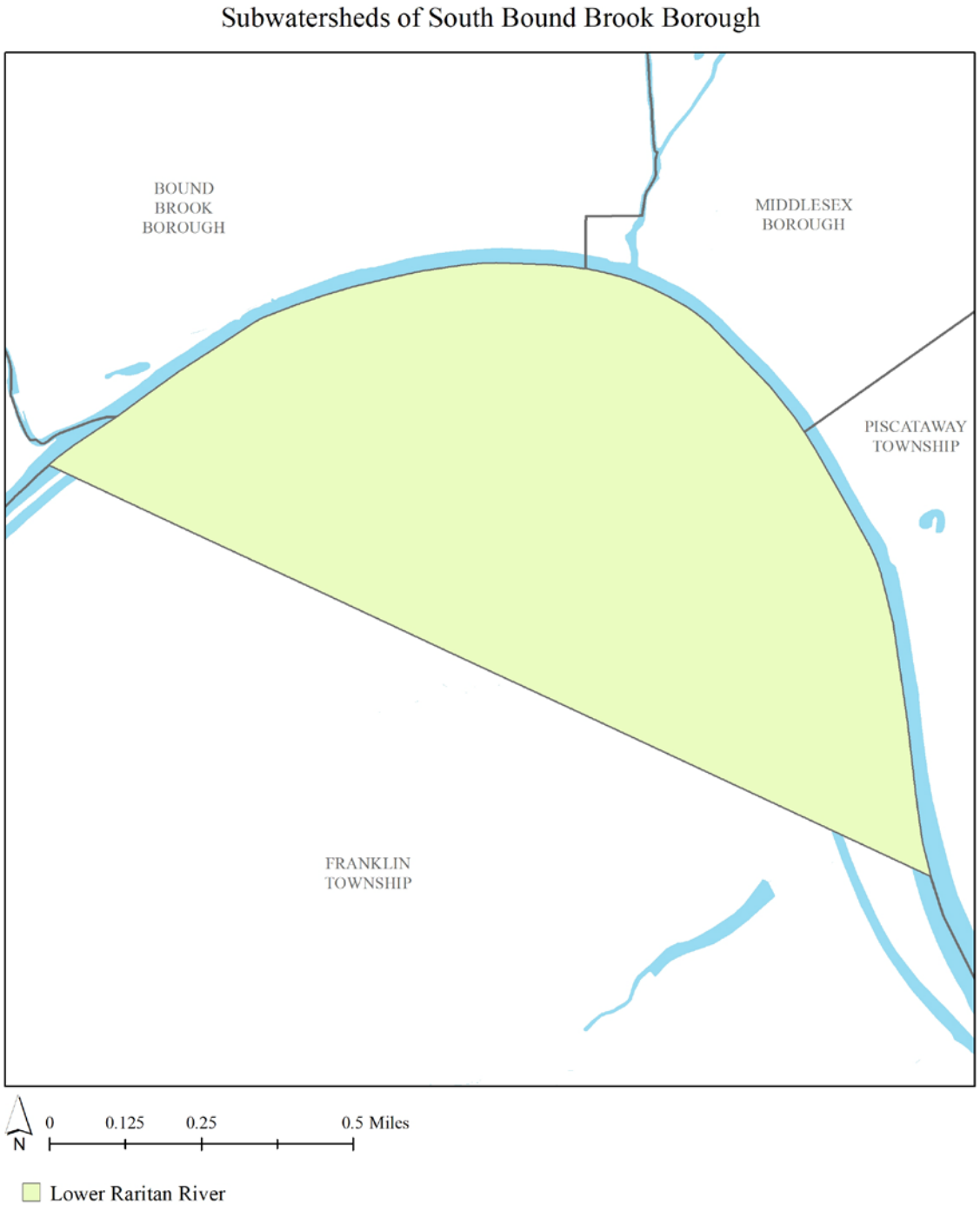
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Beden Brook	397.3	0.62	391.8	0.61	5.5	0.01	59.0	0.09	15.1%
Millstone River	379.4	0.59	373.9	0.58	5.5	0.01	55.8	0.09	14.9%
Total	776.7	1.21	765.7	1.20	11.0	0.02	114.8	0.18	15.0%



Map of the subwatersheds in Somerville Borough

Impervious cover analysis by subwatershed for Somerville Borough

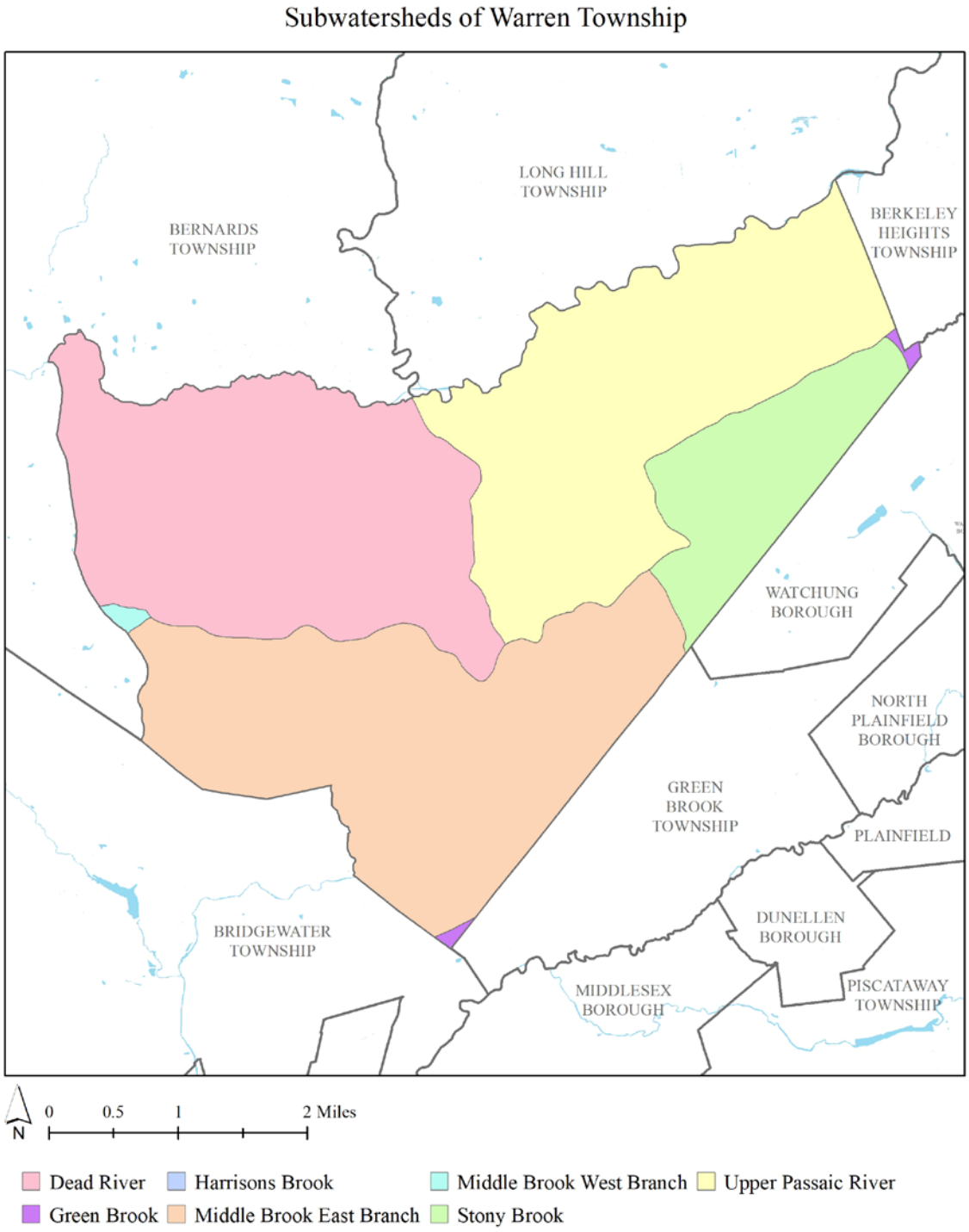
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Cuckels Brook	2.4	0.00	2.37	0.00	0.0	0.00	1.7	0.00	72.3%
Peters Brook	857.2	1.34	847.6	1.32	9.5	0.01	367.3	0.57	43.3%
Lower Raritan River	641.4	1.00	627.4	0.98	14.0	0.02	222.3	0.35	35.4%
Total	1,500.9	2.35	1,477.4	2.31	23.6	0.04	591.3	0.92	40.0%



Map of the subwatersheds in South Bound Borough

Impervious cover analysis by subwatershed for South Bound Brook Borough

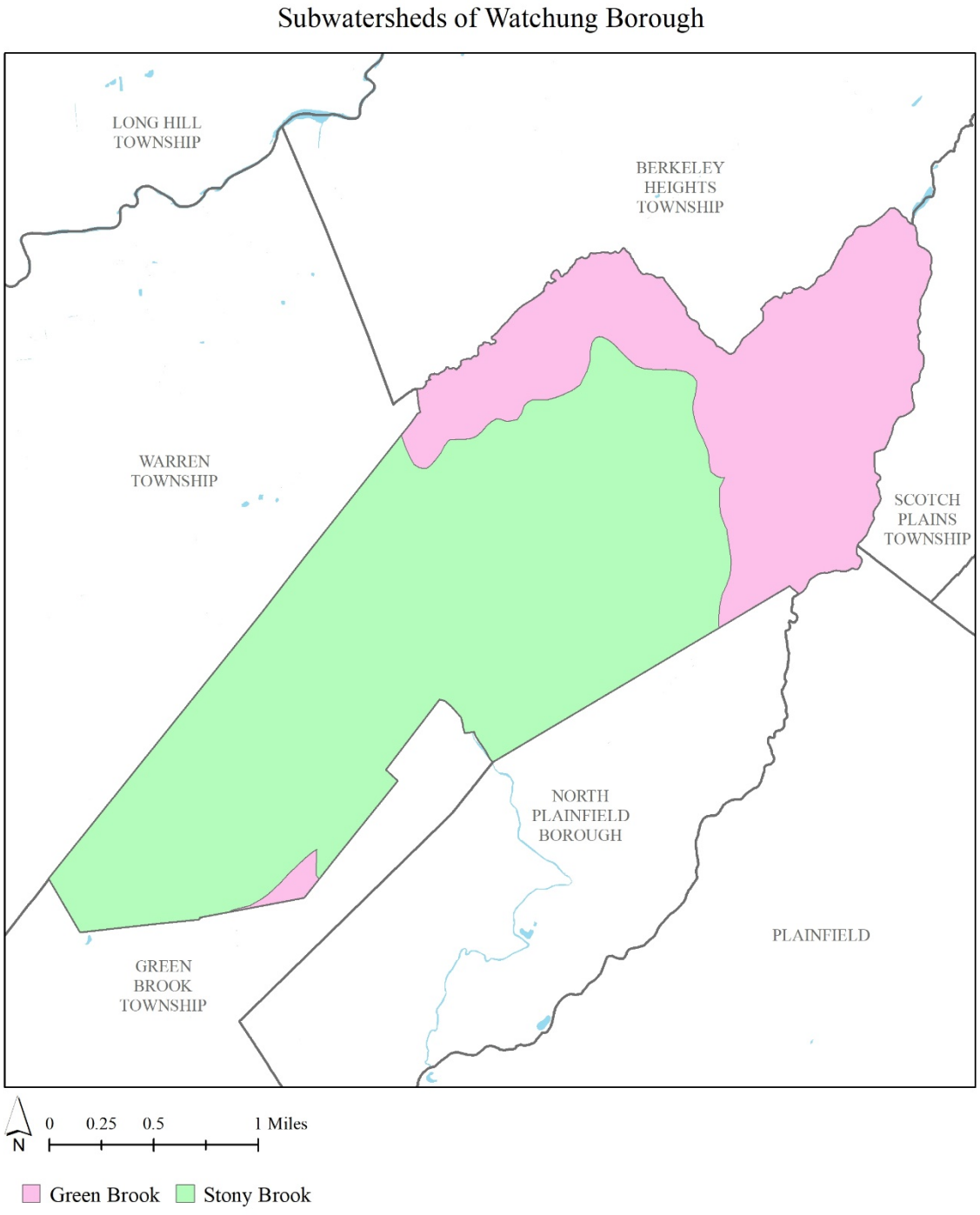
Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Lower Raritan River	473.3	0.74	413.7	0.65	59.6	0.09	140.8	0.22	34.0%
Total	473.3	0.74	413.7	0.65	59.6	0.09	140.8	0.22	34.0%



Map of the subwatersheds in Warren Township

Impervious cover analysis by subwatershed for Warren Township

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Dead River	3,732.4	5.83	3,713.59	5.80	18.8	0.03	493.3	0.77	13.3%
Green Brook	31.3	0.05	31.3	0.05	0.0	0.00	4.1	0.01	13.1%
Harrisons Brook	0.1	0.00	0.1	0.00	0.0	0.00	0.0	0.00	0.2%
Middle Brook East Branch	3,901.8	6.10	3,884.7	6.07	17.1	0.03	527.0	0.82	13.6%
Middle Brook West Branch	30.3	0.05	30.3	0.05	0.0	0.00	5.3	0.01	17.4%
Stony Brook	1,256.3	1.96	1,255.3	1.96	0.9	0.00	158.4	0.25	12.6%
Upper Passaic River	3,611.2	5.64	3,578.3	5.59	32.9	0.05	409.4	0.64	11.4%
Total	12,563.4	19.63	12,493.7	19.52	69.7	0.11	1,597.5	2.50	12.8%



Map of the subwatersheds in Watchung Borough

Impervious cover analysis by subwatershed for Watchung Borough

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(ac)	(mi^2)	(%)
Green Brook	1,259.7	1.97	1,254.5	1.96	5.2	0.01	244.0	0.38	19.4%
Stony Brook	2,607.6	4.07	2,587.3	4.04	20.3	0.03	406.8	0.64	15.7%
Total	3,867.3	6.04	3,841.8	6.00	25.5	0.04	650.8	1.02	16.9%